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Addendum

Beacon City School District
Beacon, New York

Reconstruction to
Beacon High School
Rombout Middle School
JV Forrestal Elementary School
Sargent Elementary School
South Avenue Elementary School

Addition and Alterations to
Glenham Elementary School

SED NO. 13-02-00-01-0-002-021
13-02-00-01-0-008-020
13-02-00-01-0-003-016
13-02-00-01-0-004-023
13-02-00-01-0-020-012
13-02-00-01-0-006-022

Tt Project No. 279180-22004

BID Addendum No. 1
to
Drawings and Project Manual

August 18, 2023

To: BIDDERS

This ADDENDUM forms a part of the BIDDING AND CONTRACT DOCUMENTS and modifies the following documents:
Original DRAWINGS dated October 28, 2022.
PROJECT MANUAL dated October 28, 2022.
Acknowledge receipt of the ADDENDUM in the space provided on the FORM OF PROPOSAL

This BID ADDENDUM consists of (3) pages and the following:

REISSUED PROJECT MANUAL SECTIONS

SECTION 31 20 00 – EARTH MOVING (WITH ATTACHMENTS)
SECTION 31 25 00 – EROSION AND SEDIMENTATION CONTROL (NON-SPDES)
SECTION 32 13 13 – CONCRETE PAVING
SECTION 32 93 00 – PLANTS
SECTION 33 41 00 – STORM UTILITY DRAINAGE PIPING

NEW DRAWINGS (30 x 42)

EV001 Topographic Survey of Portions of Lands of Rombout Middle School
EC100 Site Demolition and Soil Erosion and Sediment Control Plan
EC120 Site Layout and Landscape Plans

NEW DRAWINGS (30 x 42) (cont'd)

EC130 Site Grading, Drainage and Utility Plans
EC500 Site Details

PROJECT MANUAL MODIFICATIONS

ITEM 1-C-1: Refer to SECTION 00 01 10 – TABLE OF CONTENTS-VOLUME 2

1. Division 31, Section 31 20 00, AMEND to read as follows:

   "31 20 00 Earth Moving (with attachments)"

2. Division 31, Section 31 25 00, AMEND to read as follows:

   "31 25 00 Erosion and Sedimentation Controls (NON-SPDES)".

ITEM 1-C-2: Refer to SECTION 01 12 00 – MULTIPLE CONTRACT PROJECT SUMMARY-PROJECT SCHEDULE

1. Paragraph 1.6., A., ADD the following:

   "7. Site Contract SC-D4:

   a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
   b. Commencement of Construction (On-Site Activities): July 1, 2024.
   c. Submittals: Provide all submittals within 30 days after award of contract.
   d. Substantial Completion date: September 4, 2024.
   e. Final completion date: 30 days after Substantial Completion."

PROJECT MANUAL MODIFICATIONS - SITE

ITEM 1-C-3: Refer to SECTION 31 20 00 – EARTH MOVING

1. DELETE section in its entirety and, ADD new section attached to this addendum.

ITEM 1-C-4: Refer to SECTION 31 25 00 – EROSION AND SEDIMENTATION CONTROL

1. DELETE section in its entirety and, ADD new section attached to this addendum.

ITEM 1-C-5: Refer to SECTION 32 13 13 – CONCRETE PAVING

1. DELETE section in its entirety and, ADD new section attached to this addendum.

ITEM 1-C-6: Refer to SECTION 32 93 00 PLANTS

1. DELETE section in its entirety and, ADD new section attached to this addendum.

ITEM 1-C-7: Refer to SECTION 33 41 00 STORM UTILITY DRAINAGE PIPING

1. DELETE section in its entirety and, ADD new section attached to this addendum..

DRAWING MODIFICATIONS

ITEM 1-C-8: Refer to DRAWING G001

1. Reconstruction to DELETE Bus Maintenance Facility SED Control No. 13-02-00-01-5-018-006.

ITEM 1-C-9: Refer to DRAWING G002

1. Reconstruction to DELETE Bus Maintenance Facility SED Control No. 13-02-00-01-5-018-006.
2. Rombout Middle School – Civil, DELETE Drawing EC501 in its entirety.

END OF ADDENDUM

SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Preparing subgrades for foundations, slabs-on-grade, walks, pavements, turf and grasses and plants and synthetic turf areas.
2. Structural Fill: For backfill under structures, pavements, concrete pads, etc.
3. Granular Fill: Sub base for interior concrete slabs-on-grade, asphalt paving, concrete paving, etc.
4. Subsurface drainage fill for foundation drains, underdrains, etc.
5. Excavating and backfilling for buildings and structures.
6. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:

1. Section 01 32 00 - Construction Progress Documentation
2. Section 03 30 00 - Cast-in-Place Concrete
3. Section 31 10 00 - Site Clearing
4. Section 32 92 00 - Turf and Grasses
5. Section 32 93 00 - Plants
6. Section 33 41 00 - Storm Utility Drainage Piping

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Subbase: Granular aggregate layer supporting the slab-on-grade and pavement that also minimizes upward capillary flow of pore water.

G. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Geotechnical Engineer.

2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.

3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Geotechnical Engineer or Architect. Unauthorized excavation, as well as remedial work directed by Geotechnical Engineer or Architect shall be without additional compensation.

H. Fill: Soil materials used to raise existing grades.

I. Hazardous Soil Materials: Soils that are contaminated with petroleum product and/or hazardous chemicals, waste or industrial waste.

J. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Rock Excavation: Track-mounted excavator rated at not less than 222-hp flywheel power with weight of 70,000 lbs or greater and a 30-in wide short-tip radius rock bucket. (Ratings are based on Caterpillar's "Model No. 330B”.)

K. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below aggregate base, structural fill, drainage fill, or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

N. Non-Granular Fill: Soil fill material used to raise existing grades in areas that do not require granular or structural fill.

O. Well-Graded: Soils containing a good range of all representative particle sizes between the largest and the smallest. All sizes must be represented, and no one size should be either overabundant or missing.

P. Poorly-Graded: Soils which either contain a narrow range of particle sizes or have some intermediate sizes lacking.

1.4 SUBMITTALS

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

B. Action Submittals:

1. Product Data: For each type of the following manufactured products required:

a. Geotextiles.
b. Warning tapes.

2. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

a. Classification according to ASTM D 2487.
b. Laboratory compaction curve according to ASTM D 1557**.**
c. Submitted material testing and analysis shall demonstrate that no unsuitable soil groups are present.
d. Submitted material testing and analysis shall demonstrate that no absorbent clays are present.

3. Delegated-Design Submittal:

a. For excavations greater than or equal to 20 feet in depth require engineered systems design per OSHA requirements, signed and sealed by a professional engineer, and submitted for review.

4. Samples for Verification: For the following products, in sizes or quantities indicated below:

a. Fill: One-half gallon by volume of material in sturdy container of each type of fill, naming source for each material.
b. Geotextile: 12 by 12 inches.
c. Warning Tape: 12 inches long; of each color.

5. Verification of Conditions: Written confirmation from installer that installation of Earthwork Materials installed in accordance with specifications.

C. Informational Submittals:

1. Qualification Data: For qualified testing agency.

2. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, which might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Qualified Installers as defined below:

1. Earthwork Contractor Experience Requirements: Provide a list of at least four Earthwork projects of comparable size, scope, and quality completed successfully by the proposed Sub Contractor within the past two years that includes the date completed, project Owner's name and current contact information, including telephone numbers and e-mail addresses.

2. Natural Turf Athletic Field Installer Experience Requirements: For specifications regarding experience requirements for Natural Turf Athletic Field Installer, refer to Project Manual Section 32 92 00, TURF AND GRASSES.

B. Civil/Structural Preconstruction Conference: Attend Civil/Structural Preconstruction Conference.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: If work includes improvements on adjoining property, written authorization for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Architect.

C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.

D. Do not commence earth moving operations until temporary and permanent erosion- and sedimentation-control measures, specified in Division 31 Section "Erosion and Sedimentation Control" are in place.

E. Do not commence earth moving operations until plant-protection measures specified in Division 31 Sections "Erosion and Sedimentation Control" and "Site Clearing" are in place.

F. The following practices are prohibited within tree- or plant-protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.

6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
8. Directing vehicle or equipment exhaust towards protection zones.
9. Heat sources, flames, ignition sources, and smoking within or near protection zones.

G. Existing Hazardous Materials:

1. If during the performance of the work suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. If present, hazardous materials will be removed by Owner under a separate contract.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Soil Materials:

1. General: Provide imported soil materials when sufficient satisfactory soil materials are not available from onsite excavations.
2. Topsoil: Refer to Turf and Grasses Specification, Division 32.

B. Hazardous Materials:

1. Provide fill materials that are not contaminated with petroleum product, hazardous waste or industrial waste.
2. Contamination above federal, state or local requirements is not acceptable. Materials with a visible sheen or petroleum odor shall be rejected.

C. Unsuitable Soils: (Includes excavated native and imported non-granular, granular and structural fill materials)

1. Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

a. Soils Materials shall not contain any absorbent aluminum phyllosilicates, including but not limited to: bentonite (sodium, calcium, or potassium), tonstein, montmorillonite, kaolinite. or other absorbent clays.

2. Unsuitable soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

3. Submitted material testing and analysis shall demonstrate that material classification meets ASTM-D2487 USC system criteria and that no unsuitable soil groups, or absorbent clays are present.

D. Non-Granular Fill: Material is to comply with NYSDOT requirements for Select Borrow and Select Fill with modifications shown below. This material is not allowed in areas where granular soils are required, including within the building footprint, below pavement areas or below a synthetic turf athletic field.

1. On-Site Non-Granular Fill

   a. Submittal must be provided demonstrating that on-site soil material meets the criteria outlined in this Section for use as fill material.

   b. Obtain approval of Architect before proceeding with use of on-site material.

   c. Material is to have no particles greater than 3" in maximum dimension, no more than 70% by weight passing the #40 sieve and no more than 20% passing the #200 sieve.

   d. Testing submitted is to demonstrate that proper compaction can be achieved as required in Part 3, Execution.

2. Imported Non-Granular Fill

   a. Where quantity of approved non-granular fill materials required exceeds that available from on-site stock-piles, provide suitable material from off-site sources.

   b. Obtain approval of Architect before proceeding with use of imported fill material.

   c. Material is to have no particles greater than 3" in maximum dimension, no more than 70% passing by weight the #40 sieve and no more than 15% passing the #200 sieve.

   d. Testing submitted is to demonstrate that proper compaction can be achieved as required in Part 3, Execution.

E. Structural Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand.

1. Type 1 Fill (NYSDOT ITEM No. 304.11 Granular Fill) gradation requirements:

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
3 inch	100
2 inch	90 to 100
1/4-inch	30 to 65
#40	5 to 40
#200	0 to 10

F. Granular Fill: Import all granular fill types from off-site sources. Granular fill consists of stone, sand, and gravel, or blends of these materials, free of slag, complying with New York State Department of Transportation (NYSDOT) Standard Specification, Section 304, as modified below:

1. Type 2 Fill (NYSDOT ITEM No. 304.12 / Crushed / Blasted Ledge Rock Stone) Gradation Requirements.

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
2 inch	100
1/4-inch	25 to 60
#40	5 to 40
#200	0 to 10

2. Type 4 Fill (NYSDOT ITEM No. 304.14 / Select Granular Fill) Gradation Requirements.

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
2 inch	100
1/4-inch	30 to 65
#40	5 to 40
#200	0 to 10

3. RCA Fill: Recycled Portland cement concrete aggregate which is the product of mechanical crushing, complying with the following gradation requirements. May be used in lieu of Granular fill, upon permission from the Architect.

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
2 inch	100
1 inch	80 to 100
1/4-inch	50 to 85
#40	15 to 40
#200	0 to 10

   a. Material Requirements:

      1) Material is to be in accordance with current NYSDOT regulations for Recycled Portland Cement Concrete Aggregate (RCA).
      2) Material is to be free from organic and other deleterious material.
      3) Material may contain up to 5% by weight asphalt and / or brick.

G. Crushed Stone: Crushed stone to complying with New York State Department of Transportation (NYSDOT) Standard Specifications, Section 703-0201 which is product of mechanical crushing. Where indicated, provide the following fill materials, consisting of clean, free of slag, durable, sharp-angled fragments of rock of uniform quality. The crushed stone used as coarse aggregate for all items shall be obtained from sources conforming to the requirements of the NYSDOT as to sampling, testing methods, Quarry Reports and any other required procedures and complying with following requirements:

1. NYSDOT No. 1 Crushed Stone Gradation Requirements (NYSDOT 703-4 # 1 Stone):

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
1 inch	100
1/2-inch	90 to 100
1/4-inch	0 to 15
#200	0 to 1

2. NYSDOT No. 2 Crushed Stone Gradation Requirements (NYSDOT 703-4 #2 Stone):

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
1-1/2 inch	100
1 inch	90 to 100
1/2-inch	0 to 15
#200	0 to 1

H. No. 10 Fill (per ASTM D448)

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
3/8-inch	100
#4	85 to 100
#100	10 to 30

I. Drainage Fill: Mixture of 50 percent NYSDOT No. 1 crushed stone and 50 percent NYSDOT No. 2 crushed stone, complying with New York State Department of Transportation Standard Specifications, Section 703-02.

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
1-1/2 inch	100
1 inch	95 to 100
1/2-inch	25 to 60
# 4	0 to 10
# 8	0 to 5

J. Sand for general use and/or utility bedding: ASTM C 33; fine aggregate.

K. Sand for storm water quality sand filter: Clean (washed) AASHTO M-6/ASTM C-33 medium aggregate coarse concrete sand, with effective particle size (D10) between 0.3mm and 0.5mm, a uniformity coefficient (Uc) of < 4, and < 4% fines passing the 100 sieve.

L. Sand for Septic System – Sand Filter Bed Material.

1. Approved Filter Sand by applicable review and approval agency (NYSDEC, NYSDOH, Local Health Department).

Sieve Designation	**Percent by Weight Passing Square Mesh Sieves**
1/4 inch	100
# 4	95 to 100
# 8	80 to 100
# 16	45 to 85
# 30	15 to 60
# 50	3 to 15
# 100	0 to 4
# 200	0
Effective Grain Size	0.25 to 1.0 mm
Uniformity Coefficient	0 to 4

2.2 GEOTEXTILES

A. Separation/Filter Fabric - Nonwoven needle-punched polypropylene geotextile filter/separation fabric complying with the following:

Fabric Property	**Value**	**Test Method**
Grab Tensile Strength	120 lb	ASTM D 4632
Grab Tensile Elongation	50 percent	ASTM D 4632
Trapezoid Tear Strength	50 lbs	ASTM D 4533
CBR Puncture Strength	310 lbs min	ASTM D 6241
Apparent Opening Size	No. 70 sieve max	ASTM D 4751
Permittivity	1.7 sec^{-1}	ASTM D 4491
Flow Rate	135 gal min/ft^2	ASTM D 4491
UV Stability	70% after 500 hours	ASTM D 4355

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. TenCate Mirafi - 140N
   b. Amoco - 4547
   c. Geotex – 451

B. Soil Stabilization Fabric: Heavy duty, commercially manufactured woven polypropylene geotextile meeting the following properties:

Fabric Property	Test Method	Unit	Typical Value
Grab Tensile Strength	ASTM D 4632	lbs	200
Grab Tensile Elongation	ASTM D 4632	%	15
Trapezoidal Tear Strength	ASTM D 4533	lbs	75 min.
CBR Puncture Strength	ASTM D 6241	lbs	700
UV Resistant after 500 hours	ASTM D 4355	% Strength	70
Apparent Opening Size	ASTM D 4751	US Sieve	40
Permittivity	ASTM D 4491	sec^{-1}	0.05
Water Flow Rate	ASTM D 4491	$gal/min/ft^2$	4.0

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. TenCate Mirafi - 500X
   b. US Fabrics, Inc. - US 200
   c. Carthage Mills – FX-55
   d. Propex – 200 ST

C. Subsurface Drainage Geotextiles: Refer to Division 33 Section "Storm Utility Drainage Piping."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine conditions under which earthwork is to be accomplished in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Architect in writing of any conditions detrimental to proper and timely accomplishment. Do not proceed with earthwork until unsatisfactory conditions have been corrected in manner acceptable to Installer.

1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Architect written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

1. Contractor is entirely responsible for strength and adequacy of bracing and shoring, and for safety and support of construction from damage or injury caused by lack of adequate protection or by movement or settlement.

2. Contractors are advised that they are required to comply with Occupational Safety and Health Administration's (OSHA) standards pertaining to excavation.

3. All excavations must be barricaded at all times using either traffic or A-Frame type barricades. Gaps between barricades may be up to 6-inches wide and must be blocked with caution tape.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.3 UNDERGROUND UTILITY SURVEY

A. An underground utility survey must be conducted prior to the start of any excavation. Call 811.

3.4 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.5 EXPLOSIVES

A. Explosives: Do not use explosives.

3.6 SITE CLEARING

A. Refer to Division 31 Section "Site Clearing."

3.7 EXCAVATION, GENERAL

A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Geotechnical Engineer. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.

    a. Intermittent drilling; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

2. Rock excavation includes removal and disposal of rock (refer to Definitions section: "Rock" paragraph above). Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

    a. 24 inches outside of concrete forms other than at footings.
    b. 12 inches outside of concrete forms at footings.
    c. 6 inches outside of minimum required dimensions of concrete cast against grade.
    d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
    e. 6 inches beneath bottom of concrete slabs-on-grade.
    f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

3.8 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

    a. See Structural Drawings for specific removal and replacement instructions if required.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

2. Protect trees and other plants in accordance with requirements in Division 1 Section "Temporary Facilities and Controls" and Division 31 Section "Erosion and Sedimentation Control."

3.9 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.10 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms: Excavate trenches 6 inches (150 mm) deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe. Remove projecting stones and sharp objects along trench subgrade.

D. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

3. Cut and protect roots in accordance with standard nursery practice and Division 31 Section “Erosion and Sedimentation Control.”

3.11 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.
B. If Geotechnical Engineer determines that unsuitable soil is present, continue excavation and replace with compacted backfill or fill material as directed.

3.12 PROOF-ROLLING

A. Proof-roll subgrade below building slabs, concrete pads and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction and repeating proof-rolling in direction perpendicular to first direction with a minimum of six overlapping passes. Limit vehicle speed to 3 mph.

2. Excavate soft spots, unsuitable soils, and areas of excessive pumping or rutting, as identified by Geotechnical Engineer and as directed by Owner, and replace with compacted backfill or fill as directed. Notify Architect in writing of any required remediation.

3. Foundations: Proof-roll prior to excavation for foundations but after top soil is stripped.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities without additional compensation.

3.13 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. CLSM (flowable fill), per this specification section, may be used when approved by Architect.

1. Fill unauthorized excavations under other construction, pipe, or conduit in accordance with this Section unless otherwise directed by Geotechnical Engineer.

3.14 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.15 SOIL STABILIZATION FABRIC

A. Install soil stabilization fabric: After subgrade has been compacted and proof-rolled, install soil stabilization fabric as specified by the manufacturer, including the following:

1. Lay fabric in the direction of traffic.
2. Overlap fabric side to side and end to end a minimum of two feet.
3. Insure that fabric lies flat during fill placement.

3.16 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.17 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Concrete".

D. Trenches under Roadways: Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Division 03 Section "Cast-in-Place Concrete".

E. Backfill voids with satisfactory soil while removing shoring and bracing.

F. Place and compact initial backfill of subbase material or satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

G. Place and compact final backfill of satisfactory soil to final subgrade elevation.

H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.18 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows. Refer to Part 2 for material requirements and specific conditions for the use of each type of soil material. All fill materials to be approved by Architect per requirements noted in Part 2.

1. Under grass and planted areas:

a. Use satisfactory non-granular fill material.

2. Under walks, pavements and exterior slabs:

a. Use Structural Fill below subbase layer and Type 2 granular fill for subbase layer.

3. Under steps and ramps

a. Use structural fill below subbase layer and Type 2 granular fill for subbase layer.

4. Under building slabs:

   a. Use structural fill below subbase layer. For subbase, use No. 2 Crushed Stone. See Drawings for depth.

5. Under synthetic turf fields:

   a. Use Structural Fill or Granular Fill below subbase.
   b. For subbase requirements, refer to Synthetic Turf Infrastructure Section].

6. Under footings and foundations:

   a. Use structural fill.

7. Under catch basins, manholes, vaults or other underground structures.

   a. Use structural fill or as noted on drawings.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.19 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry density.

3.20 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Maximum layer depth before compaction:

1. Under Pavement: Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

2. Place backfill and fill soil materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 8 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry weight density according to ASTM D 1557:

1. Under structures, building slabs, steps, synthetic turf and pavements, including running tracks and tennis courts:

    a. Scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.

2. Under walkways:

    a. Scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.

3. Under natural turf or unpaved areas:

    a. Compact each layer of subgrade backfill or fill soil material at 85 percent. Compact all layers beneath the upper 2'-0" to at least 95 percent.

4. Utility trenches:

    a. Compact each layer of initial and final backfill soil material at 85 percent.

5. Landscape Planting Areas:

    a. Compact each layer of subgrade backfill or fill soil material at 75 percent.

6. Stone Dust:

    a. Compact each layer of material in accordance with the required compaction, minimum of 95 percent.

7. Under catch basins, manholes, vaults or other underground structures.

    a. Scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.

3.21 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge and within +0" / -1" tolerance of bottom of slab.

3.22 SUBSURFACE DRAINAGE

A. Drainage Tubing / Subdrainage Pipe: Specified in Division 33 Section "Storm Utility Drainage Piping."

B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench as shown in Drawings.

1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698.

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.

1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698 with a minimum of two passes of a plate-type vibratory compactor.

3.23 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place granular fill base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place granular fill base course under pavements and walks as follows:

1. Place base course material over subgrade under hot-mix asphalt pavement.

a. If separation geotextile is shown in details, install on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

2. Shape base course to required crown elevations and cross-slope grades.

3. Place base course 6 inches or less in compacted thickness in a single layer.

4. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

5. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.24 SUB BASE FOR CONCRETE SLABS-ON-GRADE

A. Place sub base on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact sub base under cast-in-place concrete slabs-on-grade as follows:

1. Place sub base 8 inches or less in compacted thickness in a single layer.
2. Place sub base that exceeds 8 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 8 inches thick or less than 3 inches thick.
3. Compact each layer of sub base to required cross sections and thicknesses to not less than 95 percent of maximum dry density according to ASTM D 4254.

3.25 INSTALLATION OF SURFACE STONE MATERIAL

A. Place surface stone material (stone dust, cover stone, etc.) on subgrades free of mud, frost, snow, or ice.

B. Compact so that surface stone layer is consolidated. During installation avoid bringing subgrade material to the surface. If subgrade material becomes intermixed with surface stone, remove contaminated surface stone material and reinstall new surface stone.

3.26 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections unless otherwise noted.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

C. Inspections and Tests:

1. Geotechnical observations: Proof rolling procedures, site preparation, unsuitable soils removal, excavations, footing bearing, and fill placement.

2. Field Density Testing:

a. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Geotechnical Engineer.

b. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1) Fill under Footings: In each compacted fill layer, 1 compaction test for every 30 linear feet of wall may be taken. 1 compaction test may be made under each individual footing.

2) Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 50 feet or less of wall length, but no fewer than two tests.

3) Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2,000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

4) Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.

c. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3. Laboratory testing for on-site fills:

a. ASTM D 1557 Modified Proctor compaction curve including sieve analysis.

3.27 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Geotechnical Engineer or Architect; reshape and recompact.

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

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.28 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 20 00

GEOTECHNICAL BORING MAPS AND LOGS

Appendix to Project Manual Section 31 20 00, EARTH MOVING

EXPLORATION PLAN – ROMBOUT MIDDLE SCHOOL

Beacon CSD Phase D ■ Beacon, NY

August 24, 2022 ■ Terracon Project No. JB225036

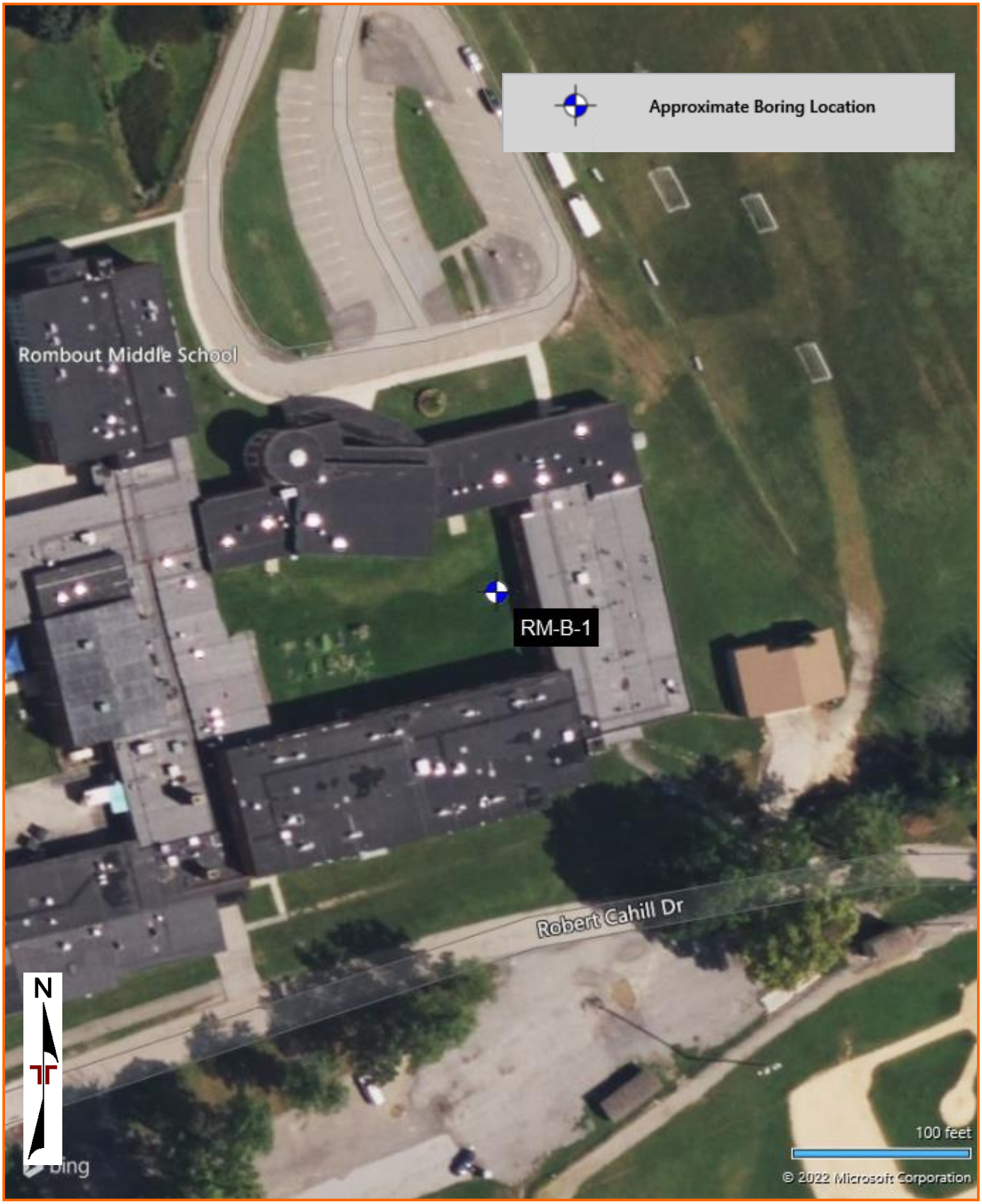


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

BORING LOG NO. RM-B-1

PROJECT: Beacon CSD Phase D

CLIENT: Beacon City School District
Beacon, NY

SITE: 125 Liberty Street
Beacon, NY

LOCATION See Exploration Plan

Latitude: 41.5118° Longitude: -73.9625°

Approximate Surface Elev.: 150 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
		0.6	149.4+/-						
		TOPSOIL							
1		**FILL - SILTY SAND**, rootlets, wood, and tar noted, brown					12	3-3-12-11 N=15	
1							12	7-8-11-12 N=19	18.7
		4.0	146+/-						
2		**SILTY SAND (SM)**, mottled, gray to brown, medium dense		5			19	7-8-8-10 N=16	19.3
2							18	4-5-5-5 N=10	
		9.0	141+/-						
4		**SILTY SAND WITH GRAVEL (SM)**, cobbles and boulders noted, orange to brown, medium dense, (GLACIAL TILL)					17	7-8-8-15 N=16	
		10.0	140+/-	10					
		Boring Terminated at 10 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
Portable tripod rig with cathead assembly and continuous soil sampling

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

WATER LEVEL OBSERVATIONS

No free water encountered

Collapsed at 6.5'

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from available USGS topographic information.

Notes:

Logged by: JCH

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 06-01-2022 | Boring Completed: 06-01-2022

Drill Rig: Portable tripod rig | Driller: J. Lamm

Project No.: JB225036

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS (Non-SPDES)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Off site sediment tracking controls are included in the contract documents, however, a location is not shown on the plans. It is assumed that a staging area will need to be installed outside of the building perimeter in a location yet to be determined. Off site sediment tracking controls will be needed for the staging area.

2. Erosion, sediment and pollution controls as shown on the Drawings and as directed by the Architect to significantly reduce runoff on downstream properties. This includes temporary control measures to mitigate land disruption by other contractors during construction of this project.

3. Erosion, sediment and pollution control includes, but is not limited to, the following:

   a. Standard control measures such as storm structure protection, silt fence, silt fence dikes, and rip rap.
   b. Off site sediment tracking controls.
   c. Seeding, sodding and erosion control fabric.
   d. Clean up.

4. Comply with the Soil Erosion and Sediment Control (SESC) for this Project in consultation with appropriate local agencies and soil conservation service. *Any local or State Agency requirements are considered part of these specifications.*

1.3 SUBMITTALS, GENERAL:

A. General; Submit all action submittals and informational submittals required by this section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product listed.

1. Filter fabric and hardware cloth for storm structure protection.
2. Silt fence and silt fence dikes.

3. Soil stabilization fabric for off-site sediment tracking control
4. Drop-In Inlet Protection

B. Material Certificates: Materials certificates showing content/mechanical analysis are required for the following products. Also, provide samples as noted.

1. Granular Backfill: Sample.
2. Granular Base Course Material: Sample.
3. Seeding & sodding.
4. No. 4 stone for off site sediment tracking control.
5. 4,000 psi concrete.

1.5 INFORMATIONAL SUBMITTALS

A. Quality Control Submittals

B. Qualifications Certification: Submit written certification or similar documentation signed by applicable subcontractor, Contractor and manufacturer (where applicable) indicating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

C. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner's contact and telephone number for each project, demonstrating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

1.6 QUALITY ASSURANCE

A. Perform erosion, sediment and pollution control in compliance with applicable requirements of the New York Standards and Specifications Erosion and Sediment Control and other governing authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle and store products according to manufacturer's written instructions.

1.8 NOTICES

A. Pre-Construction Conference: Within seven days of start of construction, attend Civil/Structural Preconstruction Meeting. Representatives of all Contractors responsible for earthwork operations are required to attend.

B. When the site has been finally stabilized, Contractor will notify the Architect, in writing, that a final inspection be performed.

C. Pay any fines issued by any agency as a result of non-compliance with the SESC Plans.

1.9 INSPECTIONS AND MAINTENANCE

A. The Architect or qualified personnel of the Owner shall inspect disturbed areas of the construction site. Special attention will be focused on areas not finally stabilized, structural control measures, and locations where vehicles enter or exit the site. Disturbed areas will be inspected for pollutants entering the drainage system. Structural control measures will be reviewed for effectiveness in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site will be inspected for evidence of off-site sediment tracking.

B. Provide timely maintenance of vegetation erosion and sediment control measures, and other protective measures, during construction.

C. Perform corrective measures within three calendar days of the Architect's or Owner's report at no cost to the Owner. Failure by the Contractor to perform corrective work within this schedule automatically authorizes the Owner to hire others and deduct from the Contract Sum the costs incurred by the Owner for the performance of this Work.

PART 2 - PRODUCTS

2.1 SILT FENCE

A. Meet the following criteria unless specific type is shown on plans or Architect accepts the change in criteria.

1. Silt Fence: Polypropylene filter fabric supported by non-pressure treated hardwood posts meeting the following requirements.

Property	Unit	Test Method	Value
Grab Tensile Strength (Machine Direction)	lbs	ASTM D 4632	124 min
Grab Tensile Strength (Cross-Machine Direction)	lbs	ASTM D 4632	124 min
Grab Tensile Elongation	%	ASTM D 4632	15 / 15
Trapezoid Tear Strength	lbs	ASTM D 4533	65 min
Mullen Burst Strength	psi	ASTM D 3786	300 min
Puncture Strength	lbs	ASTM D 4833	60
Ultraviolet Stability (Strength Retained)	%	ASTM D 4355	70
Apparent Opening Size (AOS)	U.S. Sieve	ASTM D 4751	30
Permittivity	sec^{1}	ASTM D 4491	0.10
Coeff of Permeability	CM/Sec	ASTM D 4491	0.005 min
Water Flow Rate	$gal/min/ft^2$	ASTM D 4491	10 min

2. Basis of Design Product: Subject to compliance with requirements provide Tencate Geosynthetics Mirafi 100X fabric or comparable product.

3. Reinforced fence: Fabric backed with 14-1/2 gauge by 6 inch square mesh woven wire. See plans and details for specific locations or requirements.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. DGI Industries.
2. Hanes Geo Components.
3. TenCate Geosynthetics (Mirafi).

2.2 PERMANENT SEEDING AND SODDING

A. Refer to applicable section.

2.3 TEMPORARY SEEDING (unless otherwise shown on Drawings):

A. Minimum Requirements:

1. Lime: 1/2 ton per acre.
2. Fertilizer: Commercial 5-10-10 or equivalent (600 lbs per acre).
3. Seed: Ryegrass (annual or perennial) (40 lbs. per acre).
4. Mulch: Straw at 2 ton per acre.

2.4 STABILIZED CONSTRUCTION ENTRANCE

A. No. 4 stone meeting the following requirements:

Standard ASTM Sieve Size	Percent Passing by Weight
4 inch	100
3 inch	90-100
2 inch	0-15
Passing No. 50	5-10
Passing No. 100	2-5

B. Soil Stabilization Fabric:

1. Stabilization Fabric: Commercially manufactured, UV stabilized low clogging, high flow, woven geotextile meeting the following requirements.

Property	Unit	Test Method	Value
Grab Strength	lbs	ASTMD-4632	315 min
Tensile Strength	lbs/in	ASTMD-4595	175 min
Grab Elongation	%	ASTMD-4632	15 max
Trapezoid Tear	lbs	ASTMD-4533	120 min
Mullen Burst	psi	ASTMD-3786	600 min
Permittivity	/Sec	ASTMD-4491	.05min
Water Flow Rate	gal/min/ft^2	ASTMD-4491	4 min

2. Basis of Design Product: Subject to compliance with requirements provide Tencate Geosynthetics Mirafi 600X fabric or comparable product.

3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. DGI Industries.
   b. Hanes Geo Components.
   c. TenCate Geosynthetics (Mirafi).

C. Granular Base Course Material: Shall be as specified in Earth Moving Section.

2.5 DROP-IN INLET PROTECTION:

A. Standard of quality for aftermarket inlet protection for use in existing and proposed catch basin, drop inlets, curb box inlets and storm manholes shall be Flexstorm Inlet Filters, by Inlet and Pipe Protection, Inc., Naperville, Illinois.

1. Description of System:

   a. An aftermarket drop-in inlet filter system designed to collect silt and sediment from surface storm water runoff at drainage locations shown on the plans, at existing inlets in pavement where adjacent disturbance will allow sediment runoff to occur, in areas where access to the site dictates their use due to phasing issues, or as directed by the Engineer.

   b. An aftermarket drop-in inlet filter system comprised of a corrosion resistant steel frame and a replaceable geotextile sediment bag attached to the frame with a stainless steel locking band. The sediment bag hangs suspended from the rigid frame at a distance below the grate that shall allow full water flow into the drainage structure if the bag is completely filled with sediment.

   c. The aftermarket drop-in inlet filter frame includes lifting handles in addition to the standard overflow feature. A proprietary Removal Tool engages the lifting bars or handles to allow manual removal of the assembly without machine assistance. The frame suspension system is adjustable in ½" increments up to 5" per side on rectangular designs should the casting or drainage structure have imperfections.

   d. Standard woven polypropylene sediment bags with a typical flow rate of 200 gpm / sq ft.

2. Woven Sediment Bag Material Specifications:

		MARV[2]	
PROPERTY	TEST METHOD	ENGLISH	METRIC
Mechanical			
Tensile Strength (Grab)	ASTM D-4632	255 x 275 lbs	1130 x 1220 N
Elongation	ASTM D-4632	20 x 15 %	20 x 15 %
Puncture	ASTM D-4833	135 lbs	600 N
Mullen Burst	ASTM D-3786	420 psi	2890 kPa
Trapezoidal Tear	ASTM D-4533	40 x 50 lbs	175 x 220 N
Endurance			
UV Resistance	ASTM D-4355	90%	90%
Hydraulic			
Apparent Opening Size (AOS)[3]	ASTM D-4751	20 US Std. Sieve	0.850 mm
Percent Open Area (POA)	CW-02215 Mod.[4]	20%	20%
Permittivity	ASTM D-4491	1.50 sec^{-1}	1.50 sec^{-1}
Water Flow Rate	ASTM D-4491	200 gpm/ft^2	8,145 $l/min/m^2$

3. Tested Filtration Efficiency:

a. All testing performed in general accordance with the ASTM D 7351, *Standard Test Method For Determination of Sediment Retention Device Effectiveness in Sheet Flow Application*, with flow diverted into an area inlet. Test Soil used as sediment had the following characteristics with a nominal 7% sediment to water concentration mix:

Soil Characteristics	Test Method	Value
% Gravel	ASTM D 422	2
% Sand		60
% Silt		24
% Clay		14
Liquid Limit, %	ASTM D 4318	34
Plasticity Index, %		9
Soil Classification	USDA	Sandy Loam
Soil Classification	USCS	Silty Sand (SM)

Tested Efficiencies:

Property	Woven Sediment Bag
Filtration Efficiency	82%

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine conditions under which soil erosion and sediment control is to be installed notify Architect in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Beginning installation constitutes Contractor's acceptance of substrate and conditions.

3.2 GENERAL EROSION CONTROL

A. Install initial construction erosion control features, as indicated on SESC Drawings and Specifications or as directed by the Architect, prior to topsoil stripping, earthwork, and removal of existing vegetation. Keep the disturbance to a minimum. Install other features as described in the sequence of erosion, sediment and pollution control on the drawings.

B. Minimize amount of bare soil exposed at one time. Cumulative disturbance in excess of one acre requires coverage under NYSDEC SPDES Permit for Construction Activities.

C. Start permanent seeding within seven calendar days of rough grading. When this is not possible, provide temporary seeding of perennial rye grass at the rate of three pounds seed per one thousand square feet. Provide temporary seeding within seven days on non-roof, non-paved areas. When adverse weather conditions prevent good germination, repeat seeding as directed by the Architect until the area is stabilized. Till under temporary grass and fine grade when preparing for final seeding.

D. Until a disturbed area is stabilized, trap runoff sediment by the use of debris basins, sediment basins, silt traps, or other methods acceptable to the Architect and governing authorities. Construct sediment basins to dimensions shown on plans.

E. Inspect erosion and sediment control measures immediately after each rainfall and at least daily during prolonged rainfall. Make required repairs immediately.

F. Remove sediment deposits when they reach approximately one-half of the height of the barrier. Dispose sediment in a manner that does not result in additional erosion or pollution.

G. Provide prompt removal and disposal of rubbish and debris in accordance with the governing authorities.

H. Coordinate temporary erosion and sediment control measures with permanent erosion control features specified elsewhere in the Contract Documents to the maximum extent possible to assure economical, effective, and continuous erosion control.

I. Remove all temporary measures at completion of construction.

3.3 MUNICIPAL SEWER AND WETLAND EROSION CONTROL

A. Control erosion, siltation and pollution to municipal sewers, water bodies and wetlands by taking appropriate measures such as, but not limited to, the following:

1. Prevent petroleum products and excessive amounts of silt, clay, and muck from entering municipal sewers, waters or wetlands of New York State during construction.

2. Prevent fresh concrete, concrete leachate and washings from equipment and trucks, from entering municipal sewers, waters or wetlands of New York State during construction.

3. Place silt fence to control erosion at the down slope edge of disturbed areas. Place this barrier to sediments before disturbance of the ground occurs and maintain in good condition until disturbed land is heavily vegetated or otherwise permanently stabilized.

4. Seed areas of soil disturbance resulting from this Project with appropriate perennial grass seed and mulch with straw within seven calendar days as described in general erosion control. Maintain mulch until a suitable vegetative ground cover is established.

3.4 STORM STRUCTURE PROTECTION

A. As shown on the Soil Erosion and Sediment Control Plans (SESC), provide storm structure protection at each inlet as shown on the detail plan. Clean storm structure protection material after each storm event to permit the fabric and/or drainage stone to work effectively. Remove the drainage material when the site is stabilized and approved by the Architect.

3.5 SILT FENCE/STRAW BALE DIKES

A. Locate in accordance with plans and details and as directed by the Architect. Excavate trench along the lower perimeter(s) of site, along the contract limit line, and as indicated on the Drawings. The placement of silt fence and/or bales shall consider drainage paths and intercept drainage prior to leaving site or entering storm system. Place excavated material on uphill side of trench for backfilling.

B. Drive stakes securely into the downhill side of the trench. When prefabricated silt fence with fabric attached to stakes is used, drive stakes so that fabric is buried in the ground as detailed.

C. Backfill trench with excavated material, so that fabric is securely buried in the ground to prevent undermining. Tamp soil.

D. Join sections by overlapping fabric between two stakes. Set stakes simultaneously. Overlap by minimum six inches, fold, and staple to prevent sediment bypass.

E. Attach silt fence securely to stakes spaced no more than eight feet on center. Secure fence fabric to stake with minimum three one inch staples.

F. Provide silt fence dikes perpendicular to swale center lines in swales one and one half percent and steeper. Locate dikes at a maximum interval of fifty feet on center unless otherwise shown on drawings.

G. Removal of silt and replacement of silt fence and/or bales shall be on going throughout the duration of the project to maintain an effective silt removing barrier.

3.6 TEMPORARY SEEDING

A. When necessary, provide temporary seeding as described in this Section.

B. Seedbed Preparation:

1. Scarify soil if compacted.
2. Remove debris and obstacles such as rocks and stumps.
3. Apply lime and fertilizer.
4. Apply seed uniformly by mechanical seeder or hydroseeder.
5. Apply straw mulch.

C. Provide permanent seeding as described elsewhere in the Contract Documents.

3.7 OFFSITE SEDIMENT TRACKING CONTROLS

A. Stabilization Blanket: Install as detailed and shown on Drawings to eliminate tracking sediment off site. Inspect after each rain storm and at least one time per week. When sediment begins tracking off site, immediately replace stone with clean No. 4 stone to retain sediment on site. Remove fabric and stone at project completion. Complete construction of proposed final surface(s).

3.8 DROP-IN INLET PROTECTION

A. Install channel drain inlet matting per manufacturer's installation requirements.
B. Clean silt from filter bag following each rain event and as required. Do NOT allow accumulated sediment to enter the inlet.

3.9 CLEANING

A. During the Contract and at intervals as directed by the Architect and as erosion, sediment and pollution control procedures are completed, clear the site of extraneous materials, rubbish, and debris. Leave the site in a clean, safe, well draining, and neat condition.

B. Clean storm ponding areas, catch basins, detention basins, and Oil and Grit Separator(s): Clean out contaminants, sediment, rubbish, construction debris, foreign objects and accumulated floatables from chambers and ponding areas thoroughly, immediately prior to final acceptance.

END OF SECTION 31 25 00

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Sidewalks.
2. Joint Sealant.
3. Concrete Sealer.
4. Curing materials.
5. Joint forming materials.
6. Joint Filler.
7. Sealers.

B. Related Sections:

1. Section 03 30 00 "Cast-in-Place Concrete" for general concrete mix, materials, installation and building-related concrete requirements.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

B. Refer to Division 03 concrete section for concrete submittal requirements, material certificates, installer qualification data and other required action and informational submittals.

1.4 ACTION SUBMITTALS

A. Provide Product Data and Testing Information for each type of product indicated.

1. Forms.
2. Form release agent.
3. Sealer.
4. Joint Sealant.
5. Curing Compound.
6. Expansion Joint Material.
7. Expansion Joint Forming System.

1.5 SHOP DRAWINGS

A. Jointing Plan: Provide shop drawing showing concrete joint layout, specifically indicating the locations of expansion, tooled and control joints.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer. (Refer to Division 03 concrete section for requirements.)

1.7 QUALITY ASSURANCE

A. For Installer and Manufacturer requirements, refer to Division 03 concrete section**.**

B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship in the location and of the size indicated where directed by Architect and not less than 96 inches by 96 inches.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PREINSTALLATION MEETING

A. Concrete Paving Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place architectural concrete to attend, including the following:

    a. Contractor's superintendent.
    b. Independent testing agency responsible for concrete design mixtures.
    c. Ready-mix concrete manufacturer.
    d. Cast-in-place architectural concrete subcontractor.

2. Review concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction joints, forms and form-removal limitations, reinforcement accessory installation, concrete repair procedures, and protection of cast-in-place architectural concrete.

1.9 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 Refer to Division 03 Concrete Section for products, unless noted below.

2.2 FORMS

A. Form Materials: Metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 CONCRETE MATERIALS

A. Refer to Division 03 concrete section for cementitious material, aggregates, admixtures, and other concrete materials.

2.4 CURING MATERIALS

A. Standard Concrete Curing Compound: Clear, Waterborne, Membrane-Forming Curing Compound in accordance with ASTM C 309, Type 1-D, Class B, dissipating, with fugitive dye. Minimum 2-coats required.

2.5 SEALER

A. Standard Concrete Sealer: Penetrating, Silane Sealer: Single component, 40% silane, waterbased slab sealer that forms chemical bond to the concrete. VOC compliant.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals; MasterProtect H 400.
b. Chem Masters; Aquanil Plus 40.
c. Dayton Superior Corporation; Weather Worker 40% J29WB.

2.6 JOINT SEALANT

A. Joint Sealant: Two-part, elastomeric polyurethane or polysulfide-based pourable self-leveling joint sealant complying with ASTM C 920, Type M, Grade P, Class 25, NT and CRD-C-506, Type 1, Classes A & B.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems; Sonolastic SL 2.

1) Color for uncolored concrete: Limestone.

b. W.R. Meadows, Inc.; Deck-O-Seal Sealant.

1) Color for uncolored concrete: Stone Gray.

2.7 EXPANSION JOINT MATERIALS

A. Expansion/Isolation-Joint-Filler Strips: ½-inch rigid, extruded polystyrene insulation (at exterior walls) ASTM D 1751; asphalt-saturated cellulosic fiber, or ASTM D 1752.

B. Plastic Expansion Joint Forming System ("Zip-Strip"): Plastic joint form plus cap.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following: (inserted space).

a. W.R. Meadows, Inc.; Snap-Cap.

2.8 CONCRETE MIXTURES

A. Refer to Division 03 concrete section for concrete mixtures.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving in accordance with Section 31 20 00 "Earth Moving." Identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

3.4 STEEL REINFORCEMENT

A. Refer to Division 03 concrete section for steel reinforcement.

3.5 JOINTS

A. General: Form construction, expansion/isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.

2. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Expansion / Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 30 feet maximum unless otherwise indicated.

2. Extend joint fillers full width and depth of joint.

3. Plastic Expansion Joint Forming System (“Zip Strip”). Install so that cap of channel is flush with surrounding concrete pavement. Install per manufacturer’s installation instructions. Remove plastic cap after concrete is cured.

4. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.

5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

D. Control / Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving unless otherwise noted:

1. Tooled / Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.

2. Tooled / Grooved and Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks. Sawed joints without tooling are not allowed.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Refer to Division 03 concrete section for concrete placement information.

B. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

C. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

D. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

E. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

F. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, (4.3.2.1 Slump Adjustment).

1. With each concrete mixture submittal, indicate amounts of mixing water to be withheld for later addition at Project site.

2. Water added must not increase the water-cement ratio past the approved mix design ratio.

3. Add additional water reducer or plasticizer to mix instead of adding water to achieve flowable, workable concrete. Do not add water to concrete after adding these admixtures to mixture.

4. Do not add water after truck is more than half empty.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.

I. Screed paving surface with a straightedge and strike off.

J. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

K. Machine-Placed Curbs and Gutters: Allowed only upon Architect approval. Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

L. Slip-Form Paving: Allowed only upon Architect approval. Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

M. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

N. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and 305R for hot-weather protection during curing.

B. Slabs: Protect slabs within building from precipitation accumulation. Immediately remove water, snow or ice from surface of slabs within building regardless if source is from precipitation, construction activities, etc.

C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Formed Surfaces: Cure formed concrete surfaces, including supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

F. Cure concrete according to ACI 308.1:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 FIELD QUALITY CONTROL

A. Refer to Division 03 concrete section for field quality control information.

1. Contractor Requirements:

a. Provide access to concrete construction for representatives of testing agency employed by Owner to perform concrete testing.
b. Notify Architect at least four days in advance of each concrete placement to allow notification of Owner's testing agency.

3.10 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 32 93 00 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Plants.
2. Planting soils.
3. Tree stabilization.
4. Mulch.

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required.

D. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

E. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

F. Finish Grade: Elevation of finished surface of planting soil.

G. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

H. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

I. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

J. Planting Area: Areas to be planted.

K. Planting Soil: Manufactured topsoil that is modified with soil amendments and fertilizers to produce a soil mixture best for plant growth.

L. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

M. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

N. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

P. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

Q. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated, including soils.

1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.

B. Samples for Verification: For each of the following:

1. Organic Compost Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

2. Shredded Bark Mulch: 1-pint volume in sealed plastic bag

3. Weed Control Barrier: 12 by 12 inches.

C. Warranty: Sample of special warranty.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Material Test Reports:

1. For existing native surface topsoil and imported topsoil.

C. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.

1.7 CLOSEOUT SUBMITTALS

A. Warranty: Executed special warranty.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.

2. Experience: Five (5) years of experience in landscape installation in addition to requirements in Section 01 40 00 "Quality Requirements."

3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

4. Personnel Certifications: Installer's field supervisor shall have certification in the following categories from the Professional Landcare Network:

a. Certified Landscape Technician - Exterior, with installation and maintenance areas, designated CLT-Exterior.

B. Soil-Testing Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.

1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.

2. The soil-testing laboratory shall oversee soil sampling; with depth, location, and number of samples to be taken per instructions from Architect. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.

3. Report suitability of tested soil for plant growth.

    a. Based upon the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.

    b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.

D. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

E. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.

2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

F. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Handle planting stock by root ball.

E. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.

F. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.

2. Do not remove container-grown stock from containers before time of planting.

3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.10 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others.

C. Planting Restrictions: Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion. Adjust planting period for plant species that require a specific planting period per industry standards.

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

E. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.11 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from incidents that are beyond Contractor's control.
b. Structural failures including plantings falling or blowing over.
c. Faulty performance of tree stabilization and/or other landscaping products provided.
d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods from Date of written acceptance of planting by Architect:

a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

3. Include the following remedial actions as a minimum:

a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
d. Replace plants with material of the same species, quantity and size unless a substitution is approved by the Architect.
e. Provide extended warranty for period equal to original warranty period, for replaced plant material.

1.12 MAINTENANCE SERVICE

A. Initial Maintenance Service for Trees, Shrubs, Ground Covers and other plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.

1. Maintenance Period: 12 months from date of written acceptance of planting by Architect.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.

2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label each plant with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature from “Standardized Plant Names” listing by American Joint Committee of Horticulture for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

E. If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread.

2.2 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.

2. Provide lime in form of ground dolomitic limestone if additional magnesium is determined by soil testing to be required; provide calcitic limestone or mollusk shells if additional magnesium is not required.

B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.

G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

2.3 ORGANIC SOIL AMENDMENTS

A. Compost: Well-decomposed, stable, and weed-free organic matter derived from agricultural, food, or industrial residuals; biosolids; animal manures; yard trimmings; or source-separated or compostable mixed solid waste, meeting the following requirements:

Parameters	Units of Measure	Range	Analysis Method
pH	pH units	5.8-7.8	TMECC 04.11-A
Soluble Salts Concentration (electrical conductivity)	dS/m (mmhos/cm)	Maximum 7	TMECC 04.10-A
Moisture Content	%, wet weight basis	20-45	TMECC 03.09-A
Organic Matter Content	%, dry weight basis	40-90	TMECC 05.07-A
Particle Size	% passing a selected mesh size, dry weight basis	97-100% Passing 3/8”	TMECC 02.02-B or ASTM D 2977
C:N Ratio	Ratio, dry weight basis	5:1 – 30:1	TMECC 05.02-A

Physical Contaminants (man-made inerts)	%, dry weight basis	<1	TMECC 03.08

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Sustane 2-6-3 Concentrated Compost, Sustane Natural Fertilizer, Inc.
    b. WeCare Compost, manufactured by WeCare Organics, LLC; www.wecareorganics.com.
    c. Agresoil Compost, manufactured by Agresource, Inc; www.agresourceinc.com

2.4 FERTILIZERS

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight or as recommended in soil-testing reports.

C. Chelated Iron: If recommended in soil-testing report, provide commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

2.5 PLANTING SOILS

A. Native Planting Soil: Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation process and stockpiled on-site. Verify suitability of native surface topsoil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

1. Supplement with imported planting soil when quantities are insufficient.

2. Mix existing, native surface topsoil with the following soil amendments and fertilizers in the following quantities to produce planting soil:

    a. Compost: Ratio of loose compost to topsoil by volume: 1:4. Compost is required to be added to planting topsoil regardless of organic content of topsoil.
    b. Weight of Commercial Fertilizer per 1,000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.
    c. Weight of Lime per 1,000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.
    d. Weight of Sulfur per 1,000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.
    e. Weight of Agricultural Gypsum per 1,000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.

f. Volume of Sand Plus 10 Percent [Diatomaceous Earth] per 1000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.
g. Weight of Bonemeal per 1,000 Sq. Ft.: To be determined by pH and nutritional testing of soils provided by Contractor.

B. Imported Planting Soil: ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

1. For quantity of soil amendments and fertilizers, see requirements for Native Topsoil above, including compost and commercial fertilizer.

2. Additional Properties of Imported Topsoil or Manufactured Topsoil: Screened and free of stones 1 inch or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials harmful to plant growth; free of obnoxious weeds and invasive plants including quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass; not infested with nematodes; grubs; or other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens; friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled pore space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

2.6 MULCHES

A. Shredded Hardwood Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs complying with requirements below. Shredded former wood products are not allowed (ex., wood pallets).

1. Type: Shredded hardwood.
2. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Natural (no added color).

2.7 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally-encountered chemicals, alkalis, and acids.

2.8 TREE STABILIZATION MATERIALS

A. Stakes and Guys:

1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood or softwood with specified wood pressure-preservative treatment, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.

2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes, turnbuckles or compression springs.

3. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.

2.9 MISCELLANEOUS PRODUCTS

A. Wood Pressure-Preservative Treatment: AWPA C2, with waterborne preservative for soil and freshwater use, acceptable to authorities having jurisdiction, and containing no arsenic; including ammoniacal copper arsenate, ammoniacal copper zinc arsenate, and chromated copper arsenate.

B. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

C. Burlap: Non-synthetic, biodegradable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.

Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

1. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.

2. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.

3. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Stake locations of individual tree and shrub locations and areas for multiple plantings. Notify architect a minimum of one week prior to planting. Staked location to be approved by architect prior to installation, excavation of pits or preparation of beds. Make minor adjustments as required.

D. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

E. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

3.3 PLANTING AREA ESTABLISHMENT

A. Loosen subgrade of planting areas to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.

a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
b. If liming is required, mix lime with dry soil before mixing fertilizer.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate approximately three times as wide as ball diameter for balled and burlapped and container-grown stock.

2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.

3. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.

4. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.

5. Maintain supervision of excavations during working hours.

6. Keep excavations covered or otherwise protected at all times.

B. Subsoil removed from excavations may not be used as planting soil.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Use planting soil for backfill.

2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.

3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.

5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Use planting soil for backfill.

2. Carefully remove root ball from container without damaging root ball or plant.

3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.

5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. Set and support bare-root stock in center of planting pit or trench with root flare 1 inch above adjacent finish grade.

1. Use planting soil for backfill.

2. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots.

3. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside soil-covered roots about 1 inch from root tips; do not place tablets in bottom of the hole or touching the roots.

4. Continue backfilling process. Water again after placing and tamping final layer of soil.

F. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.6 TREE, SHRUB, AND VINE PRUNING

A. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

B. Do not apply pruning paint to wounds.

3.7 TREE STABILIZATION

A. Install trunk stabilization only when trees are subjected to windy or other conditions that increases the likelihood of tipping or leaning:

1. Upright Staking and Tying:

a. For trees of 2-inch through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Refer to Drawings for trunk stabilization requirements. Allow enough slack to avoid rigid restraint of tree or support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

2. Staking and Guying: Stake and guy trees more than 14 feet in height and more than 3 inches in caliper unless otherwise indicated. Securely attach no fewer than three guys to stakes 30 inches long, driven to grade.

a. Site-Fabricated Staking-and-Guying Method: For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide turnbuckle or compression spring for each guy wire and tighten securely. Support trees with one of two systems below:

1) Support trees with bands of flexible ties at contact points with tree trunk and reaching to turnbuckle or compression spring. Allow enough slack to avoid rigid restraint of tree.

2) Support trees with strands of cable or multiple strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle or compression spring. Allow enough slack to avoid rigid restraint of tree.

3) Paint turnbuckles and compression springs with luminescent white paint.

3.8 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in even rows with triangular spacing.
B. Use planting soil for backfill.
C. Dig holes large enough to allow spreading of roots.
D. For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.
E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.9 PLANTING AREA MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees and Tree-like Shrubs in Turf Areas: Apply organic mulch ring with radius as indicated in planting details around trunks or stems. Do not place mulch within 3 inches of trunks or stems.

2. Mineral Mulch in Planting Areas: Apply mineral mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 6 inches of trunks or stems.

3.10 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

B. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated past management practices whenever possible to avoid the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.11 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance period. Treat, repair, or replace damaged plantings.

C. After installation and before Substantial Completion, nursery stakes, tie tape, wire, burlap, and other debris from plant material, planting areas, and Project site.

1. Nursery tags to be removed only after Architect’s Substantial Completion review of plant materials.

3.12 DISPOSAL

A. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 32 93 00

SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Non-pressure transition couplings.
3. Drains.
4. Frames and grates/lids
5. Catch basins.

B. Related Sections:

1. Section 01 78 39 “Project Record Documents.”
2. Section 31 20 00 "Earth Moving."

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Catch basins. Include plans, elevations, sections, details, frames, covers, and grates.
2. Inline Drains: Include plans, elevations, sections, details, frames, covers, and grates.

C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

D. Quality Control Submittals

1. Qualifications Certification: Submit written certification or similar documentation signed by applicable subcontractor, Prime Contractor and manufacturer (where applicable) indicating compliance with applicable “Qualifications” requirements specified below in “Quality Assurance” article.

2. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner’s contact and telephone number for each project, demonstrating compliance with applicable “Qualifications” requirements specified below in “Quality Assurance” article.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Perform work, including shoring, in compliance with the applicable requirements of governing authorities having jurisdiction.

B. Comply with applicable Utility Company Regulations. Municipal Sewer Connection: Coordinate connection to existing municipal sewer with local sewer authority. Pay for all fees associated with connection to municipal sewer.

1. Local storm sewer authority contact:

City of Beacon Highway Department
30 Camp Beacon Road
Beacon, NY 12508
Telephone: (845) 831-0932

2. Install connections to municipal sewer in accordance with local sewer authority standards and OSHA regulations. Provide materials complying with local sewer authority standards.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.
B. Protect pipe, pipe fittings, and seals from dirt and damage.
C. Handle catch basins according to manufacturer's written rigging instructions.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Owner's written permission.

PART 2 - PRODUCTS

2.1 SOLID DOUBLE WALL HDPE SMOOTH INTERIOR PIPE:

A. Interior Diameter, 4" to 36": Corrugated polyethylene circular pipe with an integrally formed smooth interior complying with the following specifications:

1. Applicable Standards:

a. 4 inch to 10 inch pipe: AASHTO M 252-Type S or SP
b. 12 inch to 36 inch pipe: AASHTO M294-Type S or SP

2. Mannings “n” Value: 0.012.

3. ASTM D3034 for maximum allowable deflection.

4. Fittings: Meet performance requirements of ASTM D 3034 and ASTM F 1336. Gaskets to comply with ASTM F477.

5. Manufacturer: Similar to "N-12 Smooth Interior Pipe” by Advanced Drainage Systems, Inc.; London, Ohio.

B. Interior Diameter, 4" to 30": Corrugated polyethylene circular pipe with silt-tight joints and an integrally formed smooth interior complying with the following specifications:

1. Applicable Standards

a. 4 inch to 10 inch pipe: AASHTO M 252-Type S or SP
b. 12 inch to 36 inch pipe: AASHTO M 294-Type S or SP

2. Mannings “n” Value: 0.010.

3. Fitttings: AASHTO M252 or M294.

4. Joints: Meeting AASHTO Standard Specification for Highway Bridges, Section 26 paragraph 26.4.2.4(e). Silt tight – meeting ASTM D1056 Grade 2A2.

5. Materials: ASTM 3350 minimum cell classification 324420C (4" to 10") or 335420C (12" to 30").

6. Similar to “Hi-Q Pipe” by Hancor, Inc.; Findlay, Ohio.

2.2 PERFORATED SINGLE WALL HDPE CORRUGATED PIPE:

A. Interior Diameter, 3" to 24": Corrugated perforated single wall polyethylene circular pipe with uniform slots and drilled holes complying with the following specifications:

1. Applicable Standards:

a. 3 inch to 10 inch pipe: AASHTO M 252
b. 12 inch to 24 inch pipe: AASHTO M294

2. Fittings: Meet performance requirements of ASTM D 3034 and ASTM F 1336. Gaskets to comply with ASTM F477.

3. Manufacturer: Similar to “Perforated Single Wall Plastic Corrugated Pipe” by Advanced Drainage Systems, Inc.; London, Ohio.

2.3 PVC PIPE AND FITTINGS

A. PVC Gravity Sewer Piping:

1. Pipe: ASTM D 3034, SDR 26, PVC Type PSM sewer pipe, green in color, with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Charlotte Pipe and Foundry.
2. J-M Manufacturing.
3. IPEX Inc.

2.4 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Dallas Specialty & Mfg. Co.
b. Fernco Inc.
c. Mission Rubber Company; a division of MCP Industries, Inc.
d. NDS Inc.
e. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

2. Description: Elastomeric sleeve with corrosion-resistant-metal tension band and tightening mechanism on each end.

2.5 DRAINS

A. Inline Drains:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Nyloplast by Advance Drainage Systems, Inc.

2. Description: Precast PVC Inlet with cast or ductile iron body with anchor flange and round grate in diameter shown on Drawings. Include watertight pipe adapters of sizes indicated.

    a. Joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals.

    b. Metal used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05 for ductile iron and ASTM A-48-83 class 30B for 12” and 15” cast iron frames. Grates shall be provided painted black.

3. Backfill Material

    a. The backfill material shall be crushed stone or other granular material meeting the requirements of Structure Bedding as defined in Section 31 20 00 Earth Moving.
    b. The drainage inlets shall be bedded and back-filled uniformly in accordance with ASTM D2321.

4. Top-Loading Classification(s): Heavy Duty H20 Traffic Loading.

2.6 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4,000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

C. Ballast and Pipe Supports: Portland cement design mix, 3,000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.7 CATCH BASINS

A. Inside Dimension: 24-inch by 24 inch clear inside area, unless otherwise indicated.

B. Description: ASTM C 913, precast, reinforced concrete, of depth indicated, with provision for sealant joints.

C. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.

D. Riser Sections: 4-inch minimum thickness, Length, Width and Depth as indicated.

E. Top Section: Flat-slab-top type is indicated.

F. Joint Sealant: ASTM C 990, bitumen or butyl rubber.

G. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.

H. Grade Rings: Include two or three reinforced-concrete rings, of 6 to 9-inch total thickness, that match the frame and grate, and height as required to adjust manhole frame and cover to indicated elevation and slope.

I. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

2.8 CATCH BASIN FRAMES AND GRATES

A. Heavy Duty Ductile Iron Frame and Grate:

1. Description: Heavy-duty 24-in by 24-in (nominal clear opening) ductile iron frame and grate.

2. Material Requirements:

a. Material: ASTM A 536, Grade 70-50-05, ductile iron designed for A-16, structural loading. Meets AASHTO M306
b. Grate style: Bar, Flat
c. Frame style: Top Flange, Reversible, Bottom Flange
d. Coating: Asphaltic Coated
e. Color: Black
f. Origin of manufacture: USA
g. Clear opening depth: 24-in minimum, unless otherwise indicated
h. Clear opening length: 24-in minimum, unless otherwise indicated
i. Cover/Grate opening depth: 2-in
j. Cover/Grate opening width: 26-in
k. Cover/Grate opening length: 26in
l. Flange inner length: 26-in
m. Flange inner width: 26-in
n. Flange outer length: 32-in

o. Flange outer width: 32-in
p. Frame height: 6-in
q. Frame outside length: 27.5-in
r. Frame outside width: 27.5-in
s. Grate thickness: 2-in
t. Grate length: 25.75-in
u. Grate width: 27.75-in
v. Grate open area: 321 sq. in.
w. Grate wetted perimeter: 103-in
x. Slot width: 1.5-in
y. Tag Text: "Drains To Waterways Dump No Waste!"

3. Basis-of-Design Product: Subject to compliance with requirements, provide EJ Group Inc., Product No. 45726033C03 – "Classic Series V5626-2 REV 6" V5726 EXHD DI GR SET" by EJ Group Inc. (East Jordan Iron Works), 301 Spring Street, East Jordan, MI 49727 Telephone: 1-800-874-4100.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings.

1. Size: 24-in by 24-in minimum unless otherwise indicated.
2. Grate Free Area: Approximately 50 percent unless otherwise indicated.

C. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include 24-inch ID by 7 to 9-inch riser with 4-inch minimum width flange, and 26-inch- diameter flat grate with small square or short-slotted drainage openings.

1. Grate Free Area: Approximately 50 percent unless otherwise indicated.

2.9 IDENTIFICATION

A. Underground Warning Tape

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Presco, Inc.; Sherman, Texas
b. EMED Co., Buffalo, New York.
c. Seton Identification Products, A Tricor Direct Company.

2. Material: 6-inch wide, color-coded, heavy gauge 5-mil tape with aluminum backing.

3. All tapes printed with black ink on APWA (American Public Works Association) approved colors to meet or exceed industry standards.

4. Location: Provide warning tape 18 inches feet below finished grade in buried piping trenches and at foundation wall.

2.10 CONCRETE

A. Cast-in-Place Concrete: Refer to Division 03 concrete section for concrete strength, mixtures, fiber reinforcement and other requirements.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.

2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.

3. Install piping with 24-inch minimum cover.

4. Install PE corrugated sewer piping according to ASTM D 2321.

5. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:

1. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
2. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasketed joints.
3. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 DRAIN INSTALLATION

A. Embed drains in 4-inch minimum concrete around bottom and sides.
B. Fasten grates to drains if indicated.
C. Set drain frames and covers with tops flush with pavement surface.

3.6 CATCH BASIN INSTALLATION

A. Construct catch basins to sizes and shapes indicated.
B. Set frames and grates to elevations indicated.

3.7 CONCRETE PLACEMENT

A. Place and test cast-in-place concrete according to ACI 318 and Division 03 concrete section**.**

3.8 CONNECTIONS

A. Make connections to existing piping and underground manholes.

1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3,000 psi.

2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3,000 psi.

3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

    a. Use concrete that will attain a minimum 28-day compressive strength of 3,000 psi unless otherwise indicated.
    b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

B. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use non-pressure-type flexible couplings where required to join gravity-flow, non-pressure sewer piping unless otherwise indicated.

    a. Unshielded flexible couplings for same or minor difference OD pipes.
    b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
    c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

2. Use pressure-type pipe couplings for force-main joints.

3.9 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.10 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:

   a. Alignment: Less than full diameter of inside of pipe is visible between structures.
   b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
   c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
   d. Infiltration: Water leakage into piping.
   e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Submit separate report for each test.

3. Gravity-Flow Storm Drainage Piping: Test according to the following:

   a. Exception: Piping with soil tight joints unless required by authorities having jurisdiction.
   b. Option: Test plastic piping according to ASTM F 1417.

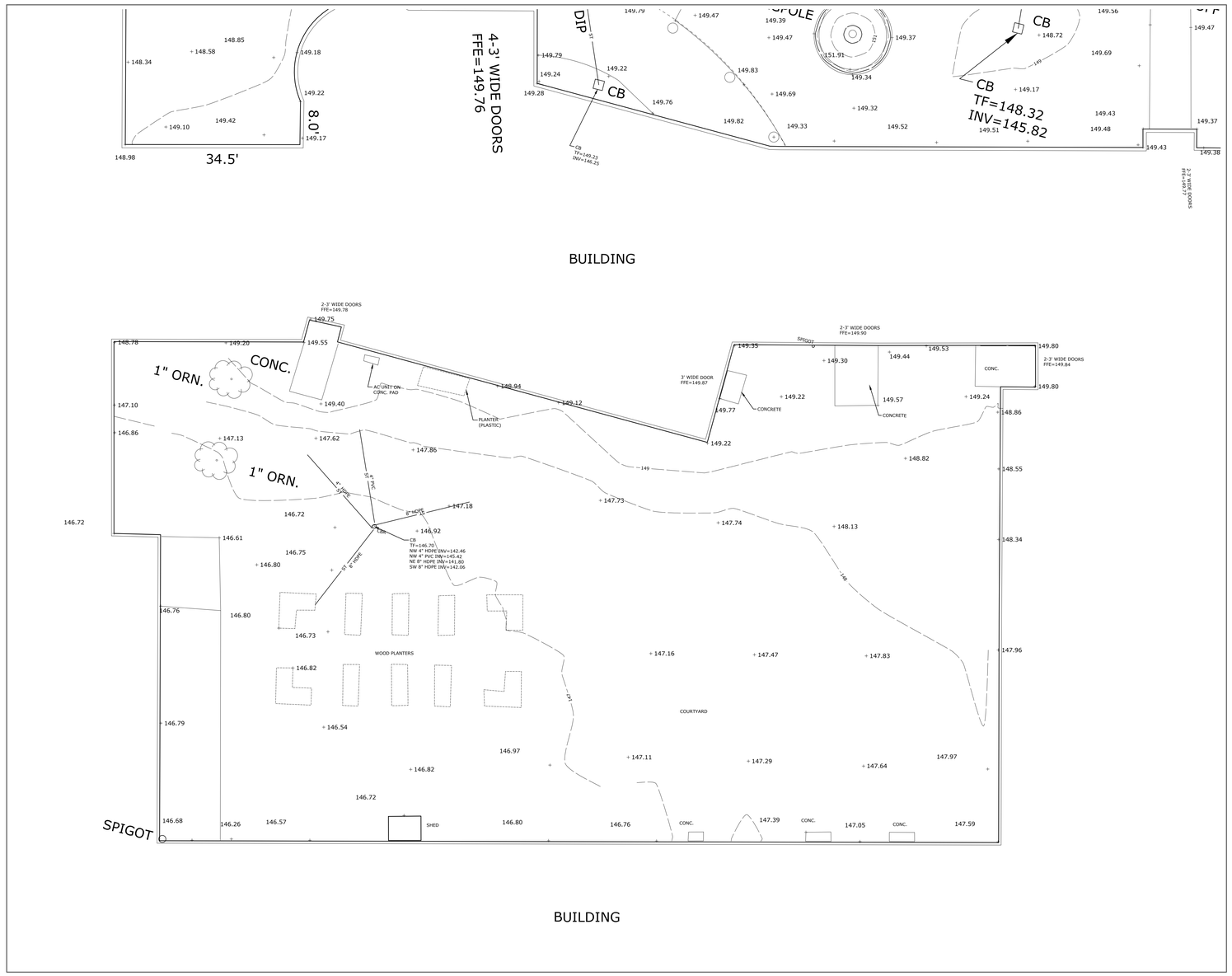
C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.11 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION 33 41 00



LEGEND

CB	Catch Basin
CO	Cleanout
HYD	Hydrant
TMH	Telephone Manhole
TPED	Telephone Pedestal
UMH	Unknown Manhole Type
WV	Water Valve
FFE	Finished Floor Elevation
HDPE	High Density Polyethylene Pipe
PVC	Polyvinyl Chloride Pipe
ST	Storm Sewer Line
TC / BC	Top of Curb Elevation / Bottom of Curb Elevation
N.H.O.A.	Nut Head of Arrow

Topographic Survey
1" = 10'

SCALE: 1" = 10'

MAP NOTES:

1. Topographic information shown hereon was compiled from an actual field survey conducted during the month of December, 2021, by CT Male Associates, PC of Latham, NY.
2. Vertical datum shown hereon is NAVD 88 (Geoid 12A) and was obtained from RTK GPS observations.
3. North orientation is referenced to Grid North and are based on the New York State Plane Coordinate System, East Zone, NAD 83/2011 epoch 2010.00.
4. Underground facilities, structures, and utilities have been plotted from data obtained from previous maps and record drawings. Surface features such as catch basin rims, manhole covers, water valves, gas valves, etc. are the result of field survey unless noted otherwise. There may be other underground utilities, the existence of which is not known to the undersigned. Size and location of all underground utilities and structures must be verified by the appropriate authorities. Dig Safely New York must be notified prior to conducting test borings, excavation and construction.

S.E.D. Control No. 13-02-00-01-0-004-023

Rev. No.:	Date:	Description:

BEACON CITY SCHOOL DISTRICT — WHERE EXCELLENCE IS THE STANDARD

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Tetra Tech Engineers, Architects & Landscape Architects, P.C.

BID SET

TETRA TECH
ARCHITECTS & ENGINEERS

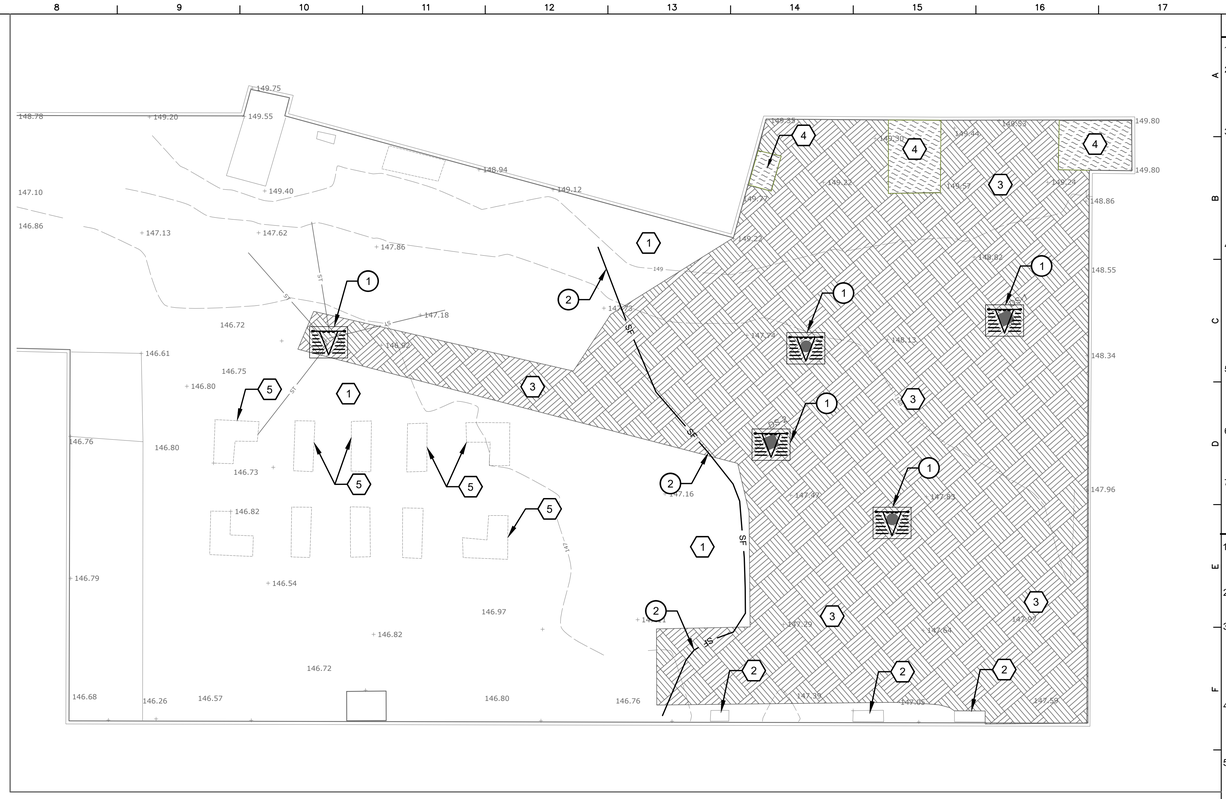
Beacon City School District
Beacon, New York

Reconstruction to:
Rombout Middle School

Topographic Survey of Portions of Lands of Rombout Middle School

Drawn by:	Date:	Drawing No.:
JMR	10/28/2022	EV001

Project No.: 279180-22004



Site Erosion and Sediment Control Notes

1. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS SPECIFIED IN THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (BLUE BOOK), LATEST EDITION, AND WILL BE INSTALLED IN PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
2. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN THIRTY DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PROHIBITS TEMP. SEEDING, THE DISTURBED AREA WILL BE MULCHED WITH SALT HAY OR EQUIVALENT AND BOUND IN ACCORDANCE WITH NYS DEC STANDARDS.
3. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT ACCORDING TO THE NY STANDARDS
4. STABILIZATION SPECIFICATIONS:

   A. SOIL AMENDMENTS:

   LIME - PROVIDE GROUND LIMESTONE TO PH OF 6.0.

   FERTILIZER - 14 LBS/1,000 S.F., 5-10-10 OR EQUIVALENT WORKED INTO SOIL A MINIMUM OF 4".

   B. TEMPORARY SEEDING AND MULCHING:

   SEED - ANNUAL RYEGRASS 30 LBS/ACRE; PLANT BETWEEN MARCH 1 AND MAY 15 OR BETWEEN AUGUST 15 AND OCTOBER 1. USE WINTER RYE IF SEEDING IN OCT./NOV.

   MULCH - SALT HAY OR SMALL GRAIN STRAW AT A RATE OF 90 LBS/1,000 S.F., TO BE APPLIED ACCORDING TO THE NY STANDARDS. MULCH SHALL BE SECURED BY WOOD FIBER MULCH (HYDROMULCH) AT 11-17 LBS./1,000 S.F. WOOD FIBER MULCH MUST BE APPLIED THROUGH A HYDROSEEDER IMMEDIATELY AFTER MULCHING.

   C. PERMANENT SEEDING AND MULCHING:

   SEED - REFER TO PROJECT MANUAL SPECIFICATIONS FOR SEED TYPE, RATE OF SEEDING AND SEASON OF SEEDING. RATE AND SEED TYPE ARE TO MEET THE MINIMUM REQUIREMENTS OF THE NY STANDARDS.

   MULCH - REFER TO PROJECT MANUAL SPECIFICATIONS FOR MULCH TYPE, RATE OF APPLICATION, ETC. RATE AND MULCH TYPE ARE TO MEET THE MINIMUM REQUIREMENTS OF THE NY STANDARDS.
5. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUN-OFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
6. ALL SEDIMENTATION STRUCTURES WILL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS.
7. ALL CATCH BASIN INLETS WILL BE PROTECTED WITH A FABRIC FILTER CRUSHED STONE OR FABRIC FILTER (FILTER DETAILS APPEAR ON THE PLAN).
8. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
9. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT TRAP OR APPROVED AFTERMARKET PRODUCT IN ACCORDANCE WITH SECTION 5A OF THE NY STANDARDS.

Site Preparation/Demolition General Notes

1. THESE GENERAL SITE / PREPARATION / DEMOLITION NOTES REFER TO EC-SERIES DRAWINGS.
2. THE INTENT OF THIS DRAWING IS TO INDICATE PREPARATORY WORK, REMOVALS AND DEMOLITION NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THE REST OF THE CONTRACT DRAWINGS. SOME NOTES ARE GENERAL IN NATURE AND IT SHALL BE UNDERSTOOD THAT IT IS NOT FEASIBLE TO INDICATE EACH AND EVERY SPECIFIC REMOVAL. SITE PREPARATION / DEMOLITION DRAWINGS SHALL NOT BE USED ALONE, BUT SHALL BE USED IN CONJUNCTION WITH THE OTHER DRAWINGS FOR WORK TO BE REMOVED, REUSED, AND / OR REVISED NOT INDICATED HERE.
3. CONTRACTOR TO MAINTAIN UTILITY SERVICES TO BUILDINGS TO REMAIN. IF UTILITY SERVICES MUST BE INTERRUPTED THE CONTRACTOR SHALL COORDINATE THAT SHUTDOWN TO MINIMIZE IMPACT TO BUILDINGS. SEE PROJECT MANUAL REGARDING COORDINATION OF DEMOLITION WORK WITH UTILITY COMPANIES.
4. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SAFE SITE ACCESS TO PEDESTRIAN, VEHICULAR TRAFFIC, EMERGENCY AND HEALTH SAFETY AGENCIES. IF ACCESS WILL BE COMPROMISED IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE AT LEAST ONE WEEK IN ADVANCE WITH THE OWNER'S REPRESENTATIVE AND HEALTH SAFETY AGENCIES, UNLESS OTHERWISE NOTED IN PROJECT MANUAL.
5. UTILITIES, SIDEWALKS, PAVEMENT, SLABS, FOUNDATIONS, AND MISCELLANEOUS FEATURES NOTED TO BE DEMOLISHED SHALL BE SPOILED OFF-SITE IN A LEGAL MANNER UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE. NO BURNING OF DEBRIS SHALL BE ALLOWED. IMMEDIATELY BACKFILL VOIDS WITH COMPACTED GRANULAR MATERIAL AS SPECIFIED.
6. WHEN A SITE FEATURE IS INDICATED TO BE REMOVED, THE SITE FEATURE, INCLUDING APPURTENANCES AND FOOTINGS, SHALL BE DISPOSED OF LEGALLY OFF SITE, UNLESS OTHERWISE INDICATED. IMMEDIATELY BACKFILL VOIDS WITH COMPACTED GRANULAR MATERIALS AS SPECIFIED.
7. WHEN A SITE FEATURE IS INDICATED TO REMAIN, IT SHALL BE PROTECTED AS INDICATED AND / OR SPECIFIED. WHEN DISTURBANCE OCCURS AROUND AN EXISTING FEATURE, THE CONTRACTOR SHALL USE ADDITIONAL PRECAUTIONS INCLUDING, BUT NOT LIMITED TO HAND DIGGING TO PROTECT THE FEATURE.
8. EXISTING ON-SITE UTILITIES SHALL REMAIN UNLESS DESIGNATED FOR REMOVAL. PROTECT ALL EXISTING UTILITIES TO REMAIN.
9. MANHOLES, CATCH BASINS, CLEAN OUTS, VALVE BOXES, FRAMES, COVERS AND GRATES REMAINING IN USE SHALL BE PROTECTED AND ADJUSTED TO FINAL GRADES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.
10. CONTRACTOR IS RESPONSIBLE TO VERIFY GRADES AND UTILITIES SHOWN ON EXISTING CONDITIONS PLAN PRIOR TO START OF WORK. DISCREPANCIES ARE TO BE DOCUMENTED AND SUBMITTED TO THE OWNER'S REPRESENTATIVE AT THE TIME OF DISCOVERY.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATIONS, INCLUDING, BUT NOT LIMITED TO, UTILITIES, STORM DRAINAGE, SIGNS, ETC. AS INDICATED ON DESIGN DOCUMENTS.
12. IF EXISTING SITE FEATURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION BY CONTRACTOR, SITE FEATURES SHALL BE REPAIRED IN-KIND, TYPICAL.
13. CONTRACTOR TO REMOVE OR RELOCATE, WHEN APPLICABLE, ALL CONNECTING IMPROVEMENTS, DRAIN PIPES, SANITARY SEWER PIPES, POWER POLES, AND GUY WIRES, WATER METERS AND WATER LINES, WELLS, SIDEWALKS, SIGN POLES, UNDERGROUND GAS, SEPTIC TANKS, AND ASPHALT, SHOWN AND NOT SHOWN, WITHIN CONSTRUCTION LIMITS AND WHERE NEEDED, TO ALLOW FOR NEW CONSTRUCTION AS SHOWN.
14. CONTRACTOR TO NOTIFY OWNERS REPRESENTATIVE IF UNIDENTIFIED UTILITIES ARE ENCOUNTERED INCLUDING, BUT NOT LIMITED TO, STORM SEWER, SANITARY SEWER, TELECOMMUNICATIONS SERVICE, ELECTRICAL SERVICE, GAS SERVICE, WATER SERVICE, IRRIGATION LINES. UTILITIES LINES TO REMAIN UNDISTURBED UNTIL DIRECTED BY OWNERS REPRESENTATIVE.
15. CONTRACTOR SHALL REQUEST UFPO PRIOR TO START OF ANY WORK. "DIG SAFELY NEW YORK - CALL 811 - BEFORE YOU DIG".

1 Site Demolition & SESC Plan

1" = 10'

0 5' 10' 20'

SCALE: 1" = 10'

Site Preparation/Demolition Key Notes

1 EXISTING LAWN AREA TO REMAIN - REPAIR AS REQUIRED

2 EXISTING CONCRETE PAD TO REMAIN. PROTECT.

3 STRIP, SCREEN, AND STOCKPILE TOPSOIL. STOCKPILE LOCATION TO BE APPROVED BY OWNER'S REPRESENTATIVE. REMOVE SUBGRADE AS REQUIRED TO MEET DESIGN GRADES AND ACCOMMODATE NEW WORK. HAND DIG IN VICINITY OF EXISTING BURIED UTILITIES TO AVOID DAMAGE (TYPICAL).

4 REMOVE EXISTING CONCRETE SLAB AND SUBBASE NECESSARY TO ALLOW INSTALLATION OF PROPOSED IMPROVEMENTS (TYPICAL).

5 EXISTING RAISED PLANTING BEDS TO REMAIN, PROTECT.

Soil Erosion and Sediment Contol Key Notes

1 PROVIDE DROP-IN INLET PROTECTION, TYPICAL. SEE DETAIL 1 / EC500.

2 PROVIDE SILT FENCE, TYPICAL. SEE DETAIL 15 / EC500.

Site Erosion & Sediment Control Sequence

1. INSTALL TEMPORARY STORM SEWER INLET PROTECTION AT ALL EXISTING DRAINAGE INLETS THAT WILL BE RECEIVING STORM DRAINAGE FROM CONSTRUCTION ACTIVITIES.
2. PREPARE CONTRACTOR ACCESS DRIVES, PARKING AND STAGING AREAS WITH TYPE 2 FILL OR OTHER SURFACING THAT WILL PREVENT EROSION OF THESE AREAS. STRIP TOPSOIL AND STOCKPILE IN LOCATION SHOWN.
3. SURROUND ALL STOCKPILES WITH SILT FENCE OR HAY BALE BARRIER. THROUGHOUT GRADING OPERATIONS,
4. PROVIDE TEMPORARY AND PERMANENT SEEDING PER SOIL EROSION AND SEDIMENT CONTROL NOTES NOS. 2 & 3.
5. DURING EXCAVATION FOR FOOTINGS, TRENCHES, ETC., WHEN DEWATERING IS REQUIRED, PROVIDE MEANS TO REMOVE SEDIMENT IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #9 THIS DRAWING.
6. AS STORM STRUCTURES ARE BEING INSTALLED, PROVIDE TEMPORARY STORM SEWER INLET PROTECTION PER DETAIL AT ALL GRATED STORM SEWER INLETS PRIOR TO CONNECTING BASINS TO NEW STORM PIPING. MAINTAIN EROSION CONTROL DEVICES IN FULLY FUNCTIONAL CONDITION THROUGHOUT CONTRACT PERIOD.
7. PROVIDE ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED TO MEET NEW YORK STANDARDS OR AS REQUIRED BY SOIL CONSERVATION DISTRICT.
8. UPON OWNER APPROVAL, REMOVE TEMPORARY SOIL & EROSION CONTROL MEASURES AFTER PERMANENT MEASURES ARE IN PLACE AND FUNCTIONING EFFECTIVELY.

SOIL EROSION AND SEDIMENT CONTROL LEGEND	
SYMBOL	DESCRIPTION
SF	DROP-IN INLET PROTECTION
	SILT FENCE

General Site Notes

1. THESE GENERAL SITE NOTES APPLY TO EC-SERIES DRAWINGS.
2. REFER TO SURVEY FOR INFORMATION ON EXISTING FEATURES. IF EXISTING FEATURES ARE MISSING, MODIFIED, OBSCURED, OR THERE IS A CONFLICT BETWEEN HOW AN EXISTING FEATURE IS PORTRAYED ON THIS SHEET AND THE SURVEY, THE SURVEY SHALL GOVERN.
3. THE SURVEY(S) INCLUDED IN THESE DOCUMENTS ARE PROVIDED FOR INFORMATION ONLY AND ARE THE BASE INFORMATION USED TO PREPARE THE WORK INDICATED ON THESE DRAWINGS. THE DATA INDICATED REGARDING EXISTING CONDITIONS IS NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF THEIR ACCURACY. BY INCLUSION OF THE SURVEY(S) IN THIS SET OF DOCUMENTS, TETRA TECH AND THE OWNER DO NOT ASSUME RESPONSIBILITY FOR ACCURACY OF THE SURVEY, NOR FOR INTERPRETATIONS OR CONCLUSIONS DRAWN THEREFROM BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL FIELD VERIFY EXISTING FEATURES, CONDITIONS, UTILITIES, PROPERTY LINES AND TOPOGRAPHY PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES WHICH WILL AFFECT THE WORK REQUIRED AS PART OF THE CONTRACT DOCUMENTS SHALL BE IMMEDIATELY REPORTED IN WRITING TO THE ARCHITECT. COMMENCEMENT OF WORK WITHOUT THIS WRITTEN NOTIFICATION SHALL CONSTITUTE CONTRACTOR ACCEPTANCE OF THE EXISTING INFORMATION INDICATED ON THE DRAWINGS AS ACCURATE. NO ADJUSTMENTS TO THE CONTRACT WILL BE MADE FOR THE DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION AFTER WORK HAS BEGUN.
5. NO ATTEMPT HAS BEEN MADE TO SHOW ALL UNDERGROUND UTILITIES ON THIS DRAWING. CONTACT UNDERGROUND UTILITY LOCATION ORGANIZATION AND LOCAL UTILITY COMPANIES TO VERIFY THE LOCATION OF UTILITIES PRIOR TO EARTHWORK, TRENCHING OR EXCAVATION OPERATIONS.
6. CONTRACTOR SHALL PROVIDE CONSTRUCTION / PROTECTIVE FENCING OR OTHER MEANS NECESSARY TO PROTECT WORK AND TO ENSURE SAFETY OF THE PUBLIC, PEDESTRIANS AND VEHICULAR TRAFFIC DURING CONSTRUCTION.
7. FOR INFORMATION REGARDING SUBSURFACE CONDITIONS AND TEST LOCATIONS, COORDINATE WITH OWNER REGARDING THE AVAILABILITY OF GEOTECHNICAL INFORMATION.

Site Phasing Notes

1. INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES BEFORE SOIL DISTURBANCE AND INSTALLATION OF OTHER TEMPORARY CONSTRUCTION FEATURES.
2. CONTRACTOR PARKING IS RESTRICTED TO STAGING OR DESIGNATED TEMPORARY PARKING AREAS.
3. AT STAGING AND OTHER TEMPORARY AREAS TO BE RESTORED TO LAWN: THOROUGHLY REMOVE GRAVEL, STONES, DEBRIS, VEGETATION, ETC. FROM EXISTING TOPSOIL AND SCARIFY TO A MINIMUM DEPTH OF 6". AMEND TOPSOIL WITH COMPOST AND NUTRITIONAL AMENDMENTS AND FINE GRADE, FERTILIZE AND SEED OR SOD.
4. AT STAGING AND OTHER TEMPORARY AREAS ON EXISTING PAVING: CONTRACTOR TO REMOVE AND REPLACE EXISTING PAVING IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
5. LAWN THAT IS DAMAGED DUE TO CONSTRUCTION ACTIVITIES IS TO BE REMOVED AND THE AREA SCARIFIED. PROVIDE NEW TOPSOIL AS REQUIRED TO BRING THE AREA TO MATCH SURROUNDING GRADE. FERTILIZE AND SEED OR SOD.

SITE DEMOLITION AND PREPARATION LEGEND	
	REMOVE EXISTING CONCRETE PAVEMENT SECTION AND SUBBASE AS REQUIRED
	REMOVE EXISTING LAWN AND SOIL AS REQUIRED

S.E.D. Control No. 13-02-00-01-0-004-023

Rev. No.:	Date:	Description:

BEACON CITY SCHOOL DISTRICT — WHERE EXCELLENCE IS THE STANDARD

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Tetra Tech Engineers, Architects & Landscape Architects, P.C.

TETRA TECH ARCHITECTS & ENGINEERS

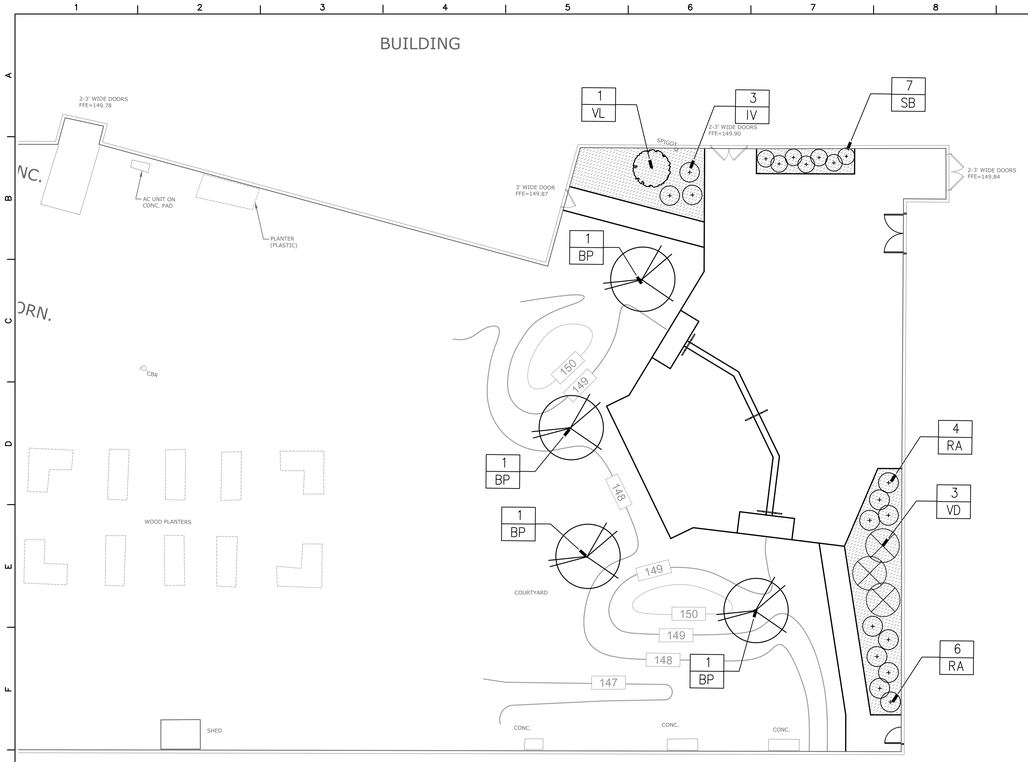
Beacon City School District
Beacon, New York

Reconstruction to:
Rombout Middle School

Site Demolition and Soil Erosion and Sediment Control Plan

Drawn by:	Date:	Drawing No.:
JMR	10/28/2022	EC100

Project No.: 279180-22004



General Site Notes

1. REFER TO DRAWING EC100 FOR GENERAL SITE NOTES THAT APPLY TO ALL EC-SERIES DRAWINGS.

Site Layout Notes

1. LAYOUT DIMENSIONS GIVEN ARE FROM FACE OF BUILDING (FOB), FACE OF CURB (F.O.C.), CENTER LINE (CL) AND EDGE OF PAVEMENTS UNLESS OTHERWISE NOTED.
2. OBJECTS ARE PARALLEL OR PERPENDICULAR TO EACH OTHER UNLESS OTHERWISE NOTED.
4. VERIFY DIMENSIONS IN FIELD WITH OWNER'S REPRESENTATIVE ANY DIMENSIONS NOTED AS "V.I.F."
6. SCORE CONCRETE SIDEWALKS AT 4-FT SQUARE UNLESS OTHERWISE NOTED.

2 Landscape Plan
1" = 10'

0 5' 10' 20'
SCALE: 1" = 10'

1 Site Layout Plan
1" = 10'

0 5' 10' 20'
SCALE: 1" = 10'

Lawn Preparation and Lawn Planting Notes

1. AVOID RUNNING HEAVY CONSTRUCTION EQUIPMENT IN PROPOSED PLANTING AREAS.
2. TOPSOIL MOVED DURING THE COURSE OF CONSTRUCTION SHALL BE RETAINED AND DISTRIBUTED WITHIN THE SITE IN ACCORDANCE WITH THE PLANTING PLAN. STOCKPILED TOPSOIL/LOAM SHALL NOT BE MIXED WITH SUBSOIL OR OTHER UNSUITABLE MATERIALS.
3. LAWN PREPARATION IN NEWLY GRADED AREAS: REMOVE DEBRIS AND INORGANIC MATERIALS ON THE PREPARED SUBGRADE. SCARIFY SUBGRADE TO A MINIMUM OF 6". CORRECT ANY EROSION PRIOR TO SPREADING LOAM. SPREAD PLANTING SOIL TO A MINIMUM DEPTH OF 6" AND FINE GRADE TO PRODUCE A SMOOTH AND UNBROKEN FINISH SURFACE AT THE PROPOSED GRADES.
4. DISTURBED EXISTING LAWN AREAS: LAWN AREAS DISTURBED BUT NOT REMOVED DURING CONSTRUCTION ARE TO BE YORK RAKED TO REMOVE STONES, CORE AERATED TO A MINIMUM DEPTH OF 4", TOPDRESSED AND OVERSEEDED WITH APPROVED SEED BLEND. CUT A NEAT LINE BETWEEN NEWLY GRADED AREAS AND EXISTING LAWN. LAWN TO BE RESTORED TO ORIGINAL OR BETTER CONDITION BEFORE COMPLETION OF THE PROJECT.
5. TOPSOIL IMPORTED AND FROM ON SITE, SHALL MEET THE REQUIREMENTS OF THE TURFS AND GRASSES SPECIFICATION.
6. AN APPLICATION OF COMPOST IS TO BE BLENDED WITH TOPSOIL. REFER TO TURFS AND GRASSES SPECIFICATION FOR INFORMATION REGARDING QUANTITY AND TYPE OF ORGANIC COMPOST REQUIRED.
7. AFTER FINE GRADING IS COMPLETED, INFORM THE ENGINEER SO THAT AN INSPECTION OF THE FINE GRADING CAN TAKE PLACE BEFORE SEEDING IS BEGUN.

Plant Mulching Notes

1. TREES ARE TO HAVE A 6' DIAMETER SAUCER WITH 3" LAYER OF MULCH CENTERED ON BOLE OF TREE (TYPICAL). SEE DETAILS 8 AND 12 / EC500
2. PLANTING BEDS ARE TO HAVE A CONTINUOUS 3" LAYER OF SHREDDED BARK MULCH THROUGHOUT THE BED (TYPICAL). SEE DETAILS 8 AND 11 / EC500.

Planting Notes

1. CONTRACTOR IS RESPONSIBLE FOR COMPLETE COVERAGE OF PLANTING BEDS AT SPACING SHOWN.
2. PROPOSED PLANTING MATERIALS ARE SUBJECT TO THE APPROVAL OF THE ARCHITECT BEFORE, DURING AND AFTER INSTALLATION.
3. PLANT MATERIALS TO BE COMMERCIALLY GROWN AND BUD HARDY WITHIN USDA HARDINESS ZONE OF THE PROJECT.
4. PLANTING AREAS MUST BE NEATLY CUT OR EDGED AT BED LINE AND COMPLETELY MULCHED WITHIN BEDLINE WITH 3" CONTINUOUS SETTLED DEPTH OF MULCH SPECIFIED.
5. STAKE LOCATIONS OF INDIVIDUAL TREES, SHRUBS AND PLANT BEDLINES. NOTIFY ARCHITECT A MINIMUM OF ONE WEEK PRIOR TO PLANTING. STAKED LOCATIONS TO BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION, EXCAVATION OF PITS OR PREPARATION OF BEDS.
6. IF LOCATION OF TREES ARE SHOWN WITH ROOT BALL WITHIN FIVE FEET OF UNDERGROUND UTILITIES, TREES ARE WITHIN TWENTY FEET OF OVERHEAD WIRES OR OTHER OBSTRUCTION IS ENCOUNTERED, INFORM ARCHITECT AND DO NOT PROCEED WITH PLANTING UNTIL ARCHITECT APPROVES LOCATION ADJUSTMENTS.
7. LEGIBLY TAG PLANTS WITH NOMENCLATURE FROM "STANDARDIZED PLANT NAMES" LISTING BY AMERICAN JOINT COMMITTEE OF HORTICULTURE. RETAIN TAGS ON PLANT MATERIALS AND SHIPPING RECEIPTS FOR ARCHITECT REVIEW. TAGS TO BE REMOVED ONLY AFTER ARCHITECT'S FINAL REVIEW OF PLANT MATERIALS. PLANT MATERIALS TO BE TRUE TO NAME, FORM, SIZE AND LOCATION INDICATED ON DRAWINGS AND SPECIFIED.
8. FULLY MAINTAIN PLANTING AND LAWN AREAS INCLUDING, BUT NOT LIMITED TO: STAKING, WATERING, SPRAYING, PRUNING, MULCHING AND FERTILIZING UNTIL THE PROJECT IS FINAL REVIEWED AND ACCEPTED BY ARCHITECT.
9. PLANT MATERIAL WHICH DIES, TURNS BROWN, DEFOLIATES OR IS DEEMED UNSATISFACTORY BY ARCHITECT PRIOR TO ACCEPTANCE OF THE WORK SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY AND SIZE UNLESS A SUBSTITUTION IS APPROVED BY THE ARCHITECT.
10. B&B AND CONTAINER PLANTS WITH LOOSE OR CRACKED ROOTBALLS WILL NOT BE ACCEPTED.
11. REFER TO PLANTS SPECIFICATION FOR INFORMATION REGARDING PLANT SOIL REQUIREMENTS.
12. CONTRACTOR SHALL CAREFULLY ROOT PRUNE, BALL AND BURLAP AND TEMPORARILY HEEL-IN PLANT MATERIAL TO BE RELOCATED USING GOOD HORTICULTURAL PRACTICES. PLANTS MUST BE PLACED IN A PROTECTED AREA APPROVED BY THE ARCHITECT , WATERED DAILY DURING SUMMER MONTHS AND INSTALLED AT NEW LOCATIONS SHOWN ON DRAWINGS AS SOON AS CONSTRUCTION WILL PERMIT.

Site Layout Keynotes

1 SMOOTH TRANSITION FROM PROPOSED SURFACE TO ADJACENT EXISTING SURFACE, TYPICAL.

2 EXPANSION JOINT AT EXISTING SLAB. SEE DETAIL 9 / EC500.

3 CONCRETE SIDEWALK. SCORE JOINTS IN LOCATIONS SHOWN WHERE POSSIBLE. ALIGN WITH CORNERS WHEN POSSIBLE. SEE DETAILS 4 AND 5 / EC500.

4 SEEDED AREA - PROVIDE 6-INCHES OF AMENDED TOPSOIL, FINE GRADE, SEED, FERTILIZE AND MULCH. LEAVE NEAT SMOOTH EDGE, TYPICAL.

5 CONCRETE STAIR. SEE DETAIL 7 / EC500.

6 STAINLESS STEEL HANDRAIL. SEE DETAIL 16 / EC500.

7 STAMPED CONCRETE PAVING. SEE DETAILS 5 / EC500 AND AND PROJECT MANUAL SECTIONS 03 30 00 - CAST-IN-PLACE CONCRETE AND 32 13 13 - CONCRETE PAVING.

8 SOLID PODIUM ISLAND. SEE DETAIL 10 / EC500.

9 MULCH PLANTING BED. SEE DETAILS 8 AND 11 / EC500.

PLANT LIST

NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS	DETAIL NO.
		DECIDUOUS TREES					
4	BP	Betula populifolia 'Whitespire Senior'	Whitespire Senior Birch	10–12' Ht.	B&B	Clump form	12/EC500
		DECIDUOUS SHRUBS					
7	SB	Spirea bumalda	Anthony Waterer	12–18" Ht.			11/EC500
3	VD	Viburnum detantum 'Christom'	'Blue Muffin' Arrowood Viburnum	18–24" Ht.			11/EC500
1	VL	Viburnum letana	Nannyberry	4–5' Ht.	B&B		11/EC500
3	VL	Itea virginaica	Virginia Sweetspire	18–24" Ht.			11/EC500
10	RA	Rhus aromatica 'Grow-low'	Grow-low Fragrant Sumac	12–18" Spread			11/EC500

NOTE: PLANTS ARE TO COMPLY WITH ANSI Z60.1 STANDARDS WITH EXCEPTION OF MINIMUM SIZE REQUIREMENTS NOTED BELOW:
DECIDUOUS SHRUBS - MIN. 12" HEIGHT OR SPREAD (WHICHEVER IS GREATER)
EVERGREEN SHRUBS - MIN. 15" SPREAD

Site Layout Legend

	CONCRETE PAVING
	STAMPED CONCRETE PAVING
	CONCRETE WALK
	TOPSOIL, LAWN SEEDING & MULCHING
	MULCH BED

S.E.D. Control No. 13-02-00-01-0-004-023

Rev. No.:	Date:	Description:

BEACON CITY SCHOOL DISTRICT — WHERE EXCELLENCE IS THE STANDARD

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Tetra Tech Engineers, Architects & Landscape Architects, P.C.

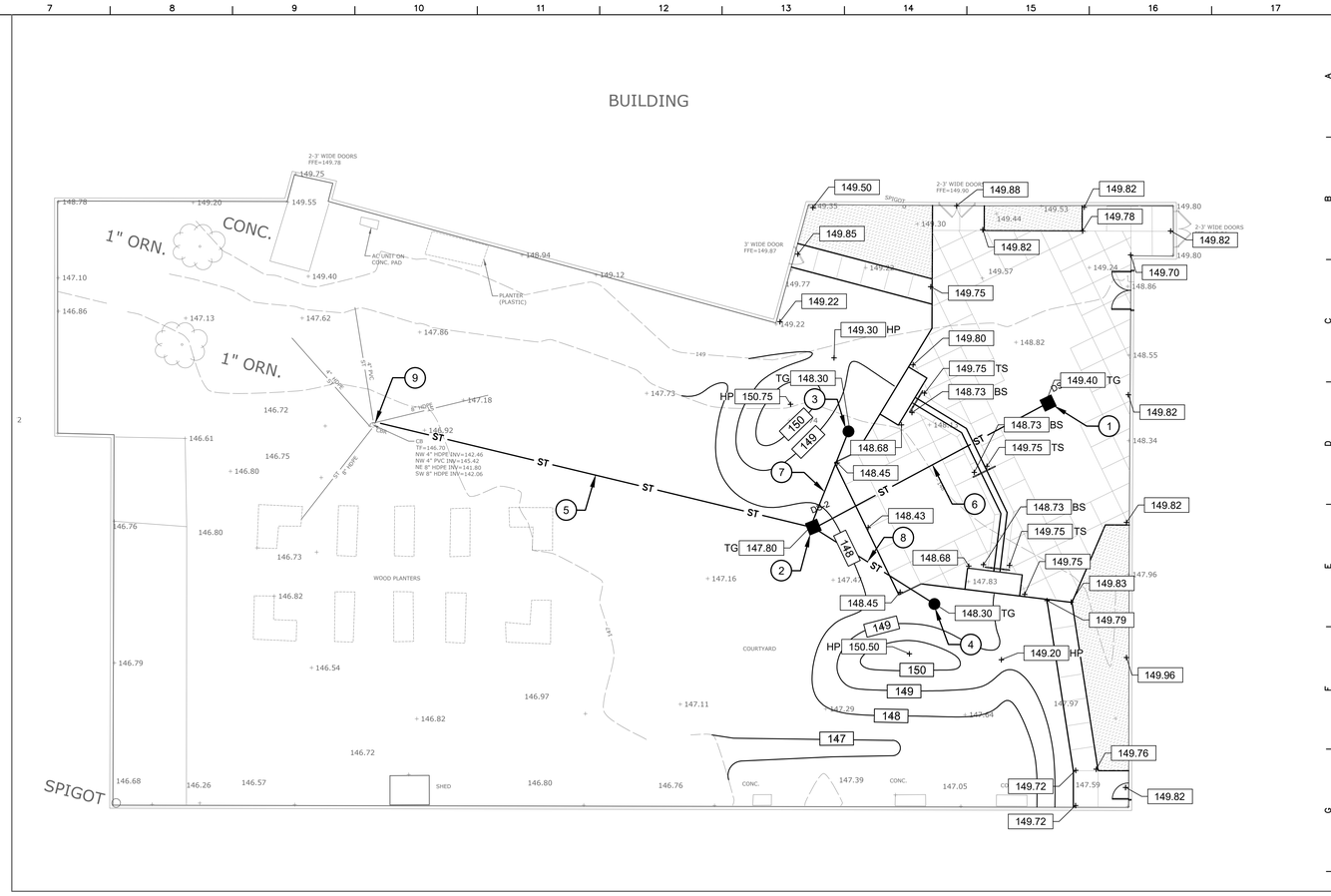
TETRA TECH
ARCHITECTS & ENGINEERS

Beacon City School District
Beacon, New York

Reconstruction to:
Rombout Middle School

Site Layout and Landscape Plans

Drawn by:	Date:	Drawing No.:
JMR	10/28/2022	EC120
Project No.: 279180-22004		



Site Utility, Grading and Drainage Plan

1" = 10'

SCALE: 1" = 10'

General Utility Plan Notes

1. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OR DAMAGE TO ANY EXISTING UTILITY DURING CONSTRUCTION AT NO COST TO THE OWNER.
2. SEE PROJECT MANUAL FOR BACKFILLING AND COMPACTION REQUIREMENTS FOR UTILITY TRENCHES.
3. FILL MATERIAL IS TO BE IN PLACE AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
4. ALL WATER AND OTHER UTILITIES SHOULD BE KEPT TEN-FEET 10-FT)APART(PARALLEL)OR WITH 18 INCH CLEARANCE WHEN CROSSING VERTICALLY(OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE.)
5. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
6. TOPS OF EXISTING MANHOLES, DRAINAGE INLETS, HYDRANTS AND WATER LINE VALVE BOXES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS.
7. DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES.
8. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
9. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND/OR MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. SEE PROJECT MANUAL REGARDING COORDINATION WITH UTILITY COMPANIES BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
10. THE CONTRACTOR SHALL CONDUCT REQUIRED TESTS TO THE SATISFACTION OF THE RESPECTIVE UTILITY COMPANIES AND THE OWNER'S INSPECTING AUTHORITIES.
11. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST STANDARDS OF OSHA DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION. THIS TO INCLUDE BUT IS NOT LIMITED TO ACCESS AND EGRESS FROM ALL EXCAVATION AND TRENCHING. CONTRACTOR IS RESPONSIBLE TO COMPLY WITH PERFORMANCE CRITERIA FOR OSHA.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING, PUMPING AND TREATMENT OF WATER. NO WATER FROM ANY CONSTRUCTION WORK, PROCESS OR AREA SHALL BE RELEASED DOWN STREAM OR INTO STORM SYSTEMS WITH OUT FIRST BEING TREATED TO REMOVE SEDIMENT, OILS, OR OTHER POLLUTANTS.

Site Utility, Grading and Drainage Keynotes

1 PROVIDE PRECAST CONCRETE 24-IN BY24-IN CATCH BASIN (DS-1).
SEE DETAIL 3 / EC500.
TOP OF GRATE = 149.45.
INVERT OUT (DP-2) = 145.45.

2 PROVIDE PRECAST CONCRETE 24-IN BY24-IN CATCH BASIN (DS-2).
SEE DETAIL 3 / EC500.
TOP OF GRATE = 147.80.
INVERT IN (DP-1) = 143.83.
INVERT IN (DP-3)= 144.34.
INVERT IN (DP-4) = 144.20.
INVERT OUT (DP-1) = 143.63.

3 PROVIDE 12 INCH DIAMETER PVC INLINE DRAIN (DS-3). SEE DETAIL 14 / EC500.
TOP OF GRATE = 148.30.
INVERT OUT (DP-3) = 145.30.

4 PROVIDE 12 INCH DIAMETER PVC INLINE DRAIN (DS-4). SEE DETAIL 14 / EC500.
TOP OF GRATE = 148.30.
INVERT OUT (DP-4) = 145.30.

5 PROVIDE 74 LF 8-INCH HDPE STORM PIPING (DP-1) AT 2.20% SLOPE.
SEE DETAIL 2 / EC500.

6 PROVIDE 44 LF 8-INCH HDPE STORM PIPING (DP-2) AT 3.68% SLOPE.
SEE DETAIL 2 / EC500.

7 PROVIDE 17 LF 8-INCH HDPE STORM PIPING (DP-3) AT 4.00% SLOPE.
SEE DETAIL 2 / EC500.

8 PROVIDE 24 LF 8-INCH HDPE STORM PIPING (DP-4) AT 4.50% SLOPE.
SEE DETAIL 2 / EC500.

5 CONNECT STORM PIPING DP-1 TO EXISTING STORM LINE / STRUCTURE AT (ESTIMATED) INVERT 142.0+/-. VERIFY LOCATION AND DEPTH OF EXISTING STRUCTURE PRIOR TO CONSTRUCTION.

General Site Notes

1. REFER TO DRAWING EC100 FOR GENERAL SITE NOTES THAT APPLY TO ALL C-SERIES DRAWINGS.

General Grading Plan Notes

1. ALL FILL MATERIALS, INCLUDING ON-SITE MATERIALS, ARE TO BE SUBMITTED FOR ARCHITECT APPROVAL BEFORE PLACEMENT. REFER TO EARTH MOVING SPECIFICATION FOR REQUIREMENTS.
2. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
3. EXCESS MATERIAL CUT FROM THE SITE (WITH THE EXCEPTION OF TOPSOIL) SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF PER THE PROJECT MANUAL.
4. OWNER'S GEOTECHNICAL ENGINEER TO BE PRESENT FOR ALL FILL AND COMPACTION OPERATIONS, INCLUDING TRENCHES AND STORMWATER STRUCTURES. REFER TO EARTH MOVING SPECIFICATION FOR GEOTECHNICAL TESTING REQUIREMENTS.
5. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES FOR NATURAL AND PAVED AREAS.
6. SPREAD TOPSOIL TO A MINIMUM DEPTH OF 6-INCHES CONTINUOUS SETTLED DEPTH OVER AREAS OF THE SITE WHERE EARTH HAS BEEN DISTURBED, EXCEPT WHERE BUILDING OR PAVING IS PROPOSED.
7. DISTURBED AREAS THAT ARE NOT RECEIVING PAVEMENT SHALL BE FINE GRADED, SEEDED OR SODDED, FERTILIZED AND MULCHED AS PER THE PROJECT MANUAL.
8. AFTER FINE GRADING IS COMPLETED, INFORM THE OWNER AND A/E SO THAT AN INSPECTION OF THE FINE GRADING CAN TAKE PLACE BEFORE SEEDING IS BEGUN. IF INSPECTION DOES NOT TAKE PLACE, APPROVAL OF LAWN MAY BE DELAYED OR DENIED.
9. EXISTING AND PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1-FOOT INTERVALS.
10. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING LIDS.
11. CONTRACTOR SHALL ADJUST AND / OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
12. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

GRADING KEY	
TS	TOP OF STEP
BS	BOTTOM OF STEP
+	SPOT ELEVATION
HP	HIGH POINT
MATCH	MATCH EXISTING GRADE

ADA Site Notes

1. THE MAXIMUM SLOPE OF ACCESSIBLE PARKING STALLS AND ASSOCIATED ACCESS AISLE SHALL BE 2% (1V:50H).
2. THE MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL ON ACCESSIBLE PATHS SHALL BE 5% (1V:20H).
3. THE MAXIMUM CROSS SLOPE ON ACCESSIBLE PATHS SHALL BE 2% (1V:50H).
4. THE MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL ON ACCESSIBLE RAMPS AND CURB RAMPS SHALL BE 8.33% (1V:12H), AS INDICATED ON THE DETAILS.
5. GROUND SURFACES ON ACCESSIBLE PATHS SHALL BE STABLE, FIRM, AND SLIP RESISTANT.

S.E.D. Control No. 13-02-00-01-0-004-023

Rev. No.:	Date:	Description:

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Tetra Tech Engineers, Architects & Landscape Architects, P.C.

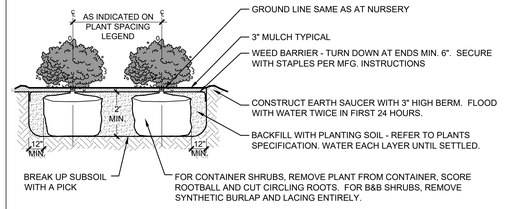
TETRA TECH ARCHITECTS & ENGINEERS

Beacon City School District
Beacon, New York

Reconstruction to:
Rombout Middle School

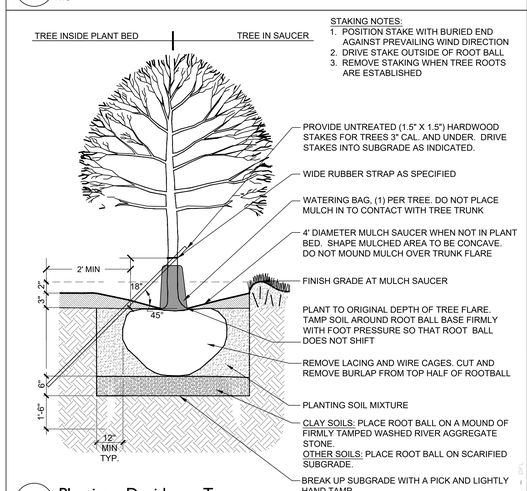
Site Grading, Drainage and Utility Plans

Drawn by:	Date:	Drawing No.:
JMR	10/28/2022	EC130
Project No.: 279180-22004		



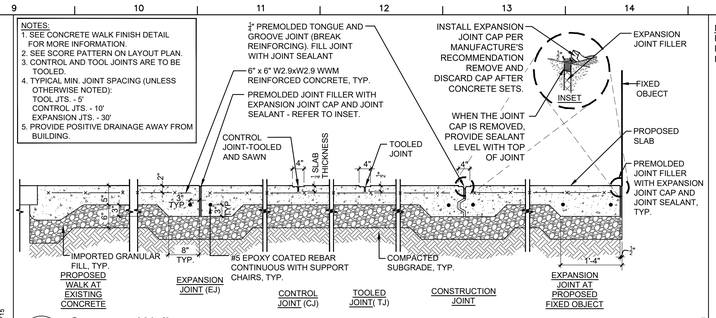
NOTES:
1. PRUNE ⅓ OF LEAF AREA BUT RETAIN NATURAL FORM. SPRAY WITH ANTIDESSICANT ACCORDING TO MANUFACTURERS INSTRUCTION IF FOLIAGE IS PRESENT.
2. FOR MASS PLANTINGS, EXCAVATE ENTIRE BED.
3. DURING BACKFILL PROCESS, WATER EACH LAYER UNTIL SETTLED.

11 Shrub Planting
NTS



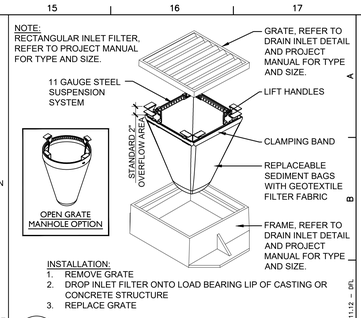
STAKING NOTES:
1. POSITION STAKE WITH BURIED END AGAINST PREVAILING WIND DIRECTION
2. DRIVE STAKE OUTSIDE OF ROOT BALL
3. REMOVE STAKING WHEN TREE ROOTS ARE ESTABLISHED

12 Planting - Deciduous Tree
NTS

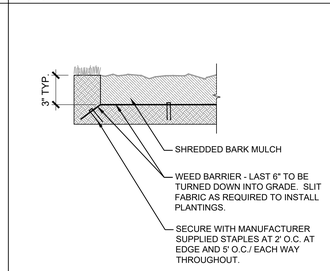


NOTES:
1. SEE CONCRETE WALK FINISH DETAIL FOR MORE INFORMATION.
2. SEE SCORE PATTERN ON LAYOUT PLAN.
3. CONTROL AND TOOL JOINTS ARE TO BE TOOLED.
4. TYPICAL MIN. JOINT SPACING (UNLESS OTHERWISE NOTED):
   TOOL JTS. - 5'
   CONTROL JTS. - 10'
   EXPANSION JTS. - 30'
5. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING.

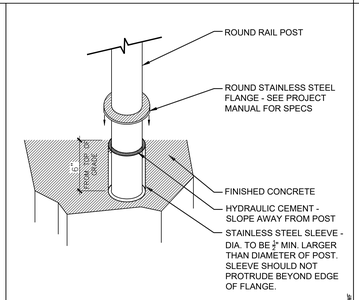
5 Concrete Walk
NTS



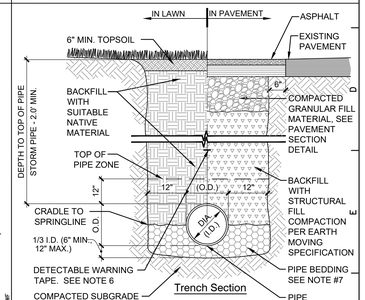
1 Drop Inlet Protection - Drop In Filter
NTS



8 Shredded Bark Mulch Planting Bed
NTS

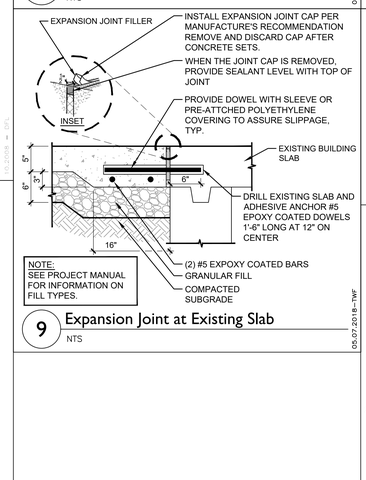


6 Post Mounting - Anchor Sleeve - Round
N.T.S.



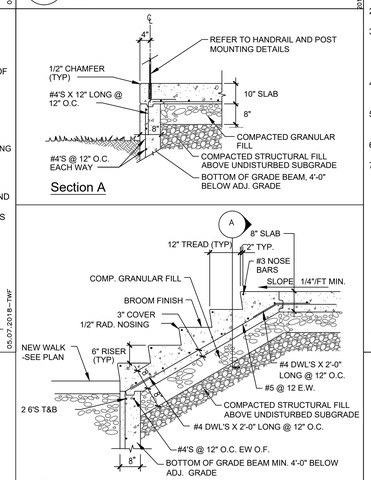
NOTES:
1. INSTALL PIPE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. INCLUDE SHORING AND DEWATERING IN TRENCHING OPERATIONS.
3. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS. THICKNESSES INDICATED ARE MINIMUMS. WHERE EXISTING CONDITIONS EXCEED THOSE SHOWN, MATCH EXISTING.
4. USE MOVABLE PROTECTIVE TRENCH SHIELDS IN UNSHEETED TRENCH AREAS AS REQUIRED BY OSHA REGULATIONS.
5. MINIMUM BURY DEPTHS SHOWN ABOVE APPLY UNLESS OTHERWISE INDICATED.
6. PROVIDE DETECTABLE WARNING TAPE AS SPECIFIED.
7. PIPE BEDDING SHALL BE:
   STORM - USE STRUCTURAL FILL OR APPROVED FILL MATERIAL IN PIPE ZONE.

2 Pipe Trench
NTS

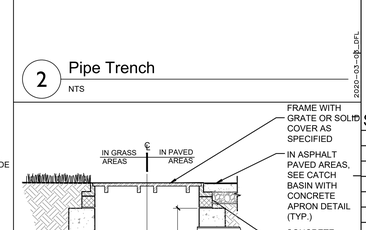


NOTE:
SEE PROJECT MANUAL FOR INFORMATION ON FILL TYPES.

9 Expansion Joint at Existing Slab
NTS



7 Concrete Stairs
N.T.S.

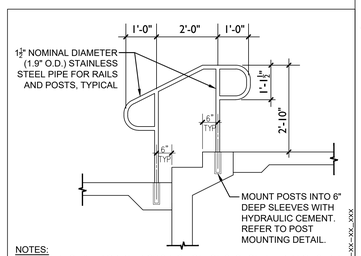


3 Catch Basin - 24" X 24"
NTS

10 Solid Podium Isles Detail
NTS

NOTE:
SEE CONCRETE WALK DETAIL FOR ADDITIONAL INFORMATION

4 Concrete Finish
NTS

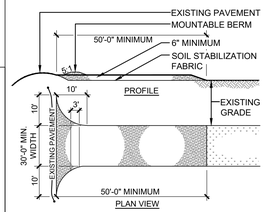


NOTES:
1. REFER TO EXTERIOR RAILINGS SPECIFICATION SECTION. ALL PIPING USED IN RAIL CONSTRUCTION TO BE STAINLESS STEEL.
2. GRIND ALL WELDS SMOOTH. PROTECT FINISH.
3. CORE DRILLING FOR RAILS IS NOT ALLOWED. PROVIDE SLEEVES AS DETAILED IN POST MOUNTING DETAIL.

16 Stair Handrails
NTS

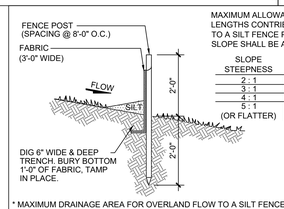
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE NO. 4 STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED BUT NOT LESS THAN 50'.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - THIRTY (30) FEET MINIMUM BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE EGRESS OCCURS.
5. SOIL STABILIZATION FABRIC - WILL BE PLACED OVER ENTIRE AREA PRIOR TO PLACEMENT OF STONE.
6. SURFACE WATER - SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH A 5H:1V SLOPE SHALL BE CONSTRUCTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO EXIT ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE, WHICH DRAINS INTO AN ARCHITECT APPROVED SEDIMENT TRAPPING DEVICE.
9. REGULAR INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS REQUIRED.



NOTE:
PROVIDE THE STABILIZED CONSTRUCTION ENTRANCE PER DETAIL AT ENTRANCE WHERE INDICATED ON PLANS. VERIFY LOCATION IN FIELD WITH ARCHITECT PRIOR TO CONSTRUCTION.

13 Stabilized Construction Entrance
NTS

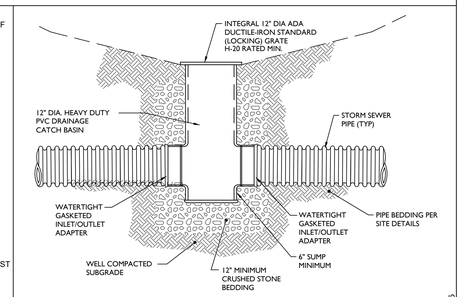


MAXIMUM ALLOWABLE SLOPE LENGTHS CONTRIBUTING RUNOFF TO A SILT FENCE PLACED ON A SLOPE SHALL BE AS FOLLOWS:

SLOPE STEEPNESS	MAXIMUM LENGTH
2 : 1	25'
3 : 1	50'
4 : 1	75'
5 : 1 (OR FLATTER)	100'

* MAXIMUM DRAINAGE AREA FOR OVERLAND FLOW TO A SILT FENCE SHALL NOT EXCEED ¼ ACRE PER 100 FEET OF FENCE, WITH A MAXIMUM PONDING DEPTH OF 1.5' BEHIND THE FENCE.
* SILT FENCE SHALL BE UTILIZED ONLY TO CAPTURE SHEET EROSION.
* CONCENTRATED FLOW OF STORMWATER RUNOFF TO THE SILT FENCE BARRIER SHALL NOT BE PERMITTED
* PLACE SILT FENCE AS CLOSE TO DISTURBANCE AREAS AS POSSIBLE, BUT AT LEAST 10' FROM TOE OF SLOPE AREAS TO ALLOW FOR MAINTENANCE.
* WHERE ENDS OF FILTER CLOTH ADJOIN EACH OTHER, OVERLAP 6", FOLD AND STAPLE ENDS TO PREVENT SEDIMENT BYPASS FROM OCCURRING.

15 Silt Fence - Standard
NTS



14 INLINE DRAINAGE STRUCTURE (PVC)
N.T.S.

S.E.D. Control No. 13-02-00-01-0-004-023

Rev. No.:	Date:	Description:

BEACON CITY SCHOOL DISTRICT — WHERE EXCELLENCE IS THE STANDARD

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TETRA TECH ARCHITECTS & ENGINEERS

Beacon City School District
Beacon, New York

Reconstruction to:
Rombout Middle School

Site Details

Drawn by:	Date:	Drawing No.:
JMR	10/28/2022	EC500
Project No.: 279180-22004		