SECTION 312323
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for utilities outside the building.

B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

A. Section 015713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data for Manufactured Fill.

C. Materials Sources: Submit name of imported materials source.

D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
   1. 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 698
      c. Gradation table.
      d. Sulfate Soundness Test with no more that 20% loss.

E. Compaction Density Test Reports.

F. Testing Agency Qualification Statement.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.05 DELIVERY, STORAGE, AND HANDLING

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

1.06 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill - Fill Type Satisfactory Soils: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
   1. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
   2. Complying with ASTM D2487 Group Symbol GW, GP, GM, SW, SP, and SM . and having no more than 85 percent by weight material passing the No. 4 sieve, no more than 20 percent by weight material passing the No. 200 sieve.

B. Granular Fill - Fill Type Bedding Stone: Crushed bedrock ; free of shale, clay, friable material and debris meeting NYSDOT 703-0201 mixtrure of primary size 1 & 2.

C. Granular Fill - Fill Type Drainage Course: NYS DOT Specification.

1. Material shall meet the requirements of Item 605.0901, Type 1, or a 50-50 mixture of Type I and Type II (605.1001) as defined in the New York State Department of Transportation "Standard Specification".

D. Topsoil: Topsoil excavated on-site or imported in accordance wih Section 329219.
   1. Select.
   2. Graded.
   3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
   4. Acidity range (pH) of 5.5 to 7.5.
   5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
   6. Complying with ASTM D2487 Group Symbol OH.

2.02 ACCESSORIES

A. Subsurface Drainage Geotextile: As called out on the drawings or: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, complying with AASHTO M 288 . Provide the following or an approved equal: Mirafi S-Series Nonwoven Polypropylene , by Tencate

B. Separation Geotextile: As called out on the drawing or: Woven geotextile fabric, manufactured for separation applications, ; complying with AASHTO M 288.Provide the following or an approved equal. Mirafi HP 370 or HP 570, by TenCate

2.03 SOURCE QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

E. If Owner’s Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

F. Authorized additional excavation and replacement material will be paid for per Contract provisions for unit prices / alloawances or changes in the Work as applicable.

G. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner’s Representative, without additional compensation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage other work.

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

H. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

I. Compaction Density Unless Otherwise Specified or Indicated:
   1. At other locations turf or unpaved or non- traffic areas : 90 percent of maximum dry density.

J. Reshape and re-compact fills subjected to vehicular traffic.

K. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

B. Over Buried Utility Piping in Trenches:
   1. Bedding: Use granular fill (Bedding Stone).
   2. Cover with general fill use strutural fill below roadways and pavements.
   3. Fill up to subgrade elevation.
   4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density 90 percnet in non traffic or lawn areas.

C. At Lawn Areas:
   1. Use general fill.
   2. Compact to 90 percent of maximum dry density.
   3. See Section 312200 for topsoil placement.

D. At Planting Areas Other Than Lawns :
   1. Compact to 90 percent of maximum dry density.

3.05 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

3.06 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for general requirements for field inspection and testing.

B. Soil Fill Materials:
   1. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
   2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
   3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
   4. Frequency of Tests:

a. 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) Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 50 lineal feet or less of trench length, but no fewer than two tests

3.07 CLEANING

A. See Section 017419 - Construction Waste Management and Disposal, for additional requirements.

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

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION