

SECTION 2 – SITE WORK

SECTION 02223

EXCAVATION, BACKFILLING AND COMPACTING FOR PAVEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavate to line, grade and configuration as shown in the plans and specifications for proposed and future pavement areas.
- B. Fill to line, grade and configuration as shown in the plans and specifications for proposed and future pavement areas.
- C. Compacting fill materials in an acceptable manner as stated herein.

1.02 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 02227 - Aggregate Materials
- C. Section 02505 - Paving Base Course
- D. Section 02520 - Portland Cement Concrete Paving
- E. Section 02525 – Concrete Curb and Gutter and Sidewalks
- F. Construction Drawings
- G. Geotechnical Engineering Report dated March 19, 2012 By Geotechnical Testing Laboratory, Inc.

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition.
 - D 422 Method for Particle Size Analysis of Soils
 - D 698 Test for Moisture-Density Relations of Soils Using 5.5 lb. (2.5 kg) Rammer and 12-inch (304.8mm) Drop (Standard Proctor)
 - D 1556 Test for Density of soil in Place by the Sand Cone Method
 - D 1557 Test for Moisture-Density Relations of Soils Using 10-lb (4.5 Kg) Rammer and 18-inch (457 mm) Drop (Modified Proctor)
 - D 1559 Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
 - D 2167 Test for Density of Soil in Place by the Rubber Balloon Method
 - D 2216 Laboratory Determination of Moisture content of Soil
 - D 2487 Classification of Soils for Engineering Purposes
 - D 2922 Tests for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - D 3017 Test for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - D 4318 Test for Plastic Limit, Liquid Limit, and Plasticity Index of Soils
 - C 25 Chemical Analysis of Limestone, Quicklime and Hydrated Lime
 - C 110 Physical Testing for Quicklime and Hydrated Lime, Wet Sieve Method
 - C 618 Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
 - C 977 Quicklime and Hydrated Lime for Soil Stabilization

- B. American Association of State Highway and Transportation Officials (AASHTO) latest edition
T 88 Mechanical Analysis of Soils

1.04 QUALITY ASSURANCE

Independent testing laboratory selected and paid by owner shall be retained to perform construction testing on filling operations and subgrade analysis as specified in Section 02200 and as stated herein.

1.05 SUBMITTALS

- A. Shop drawings or details pertaining to excavating and filling for pavement are not required unless otherwise shown on the drawings or specifications or if contrary procedures to the project documents are proposed.
- B. Submit a sample of each type of off-site fill material that is to be used in backfilling in an air-tight, 10 lb. container for the testing laboratory or submit a gradation and certification of the aggregate material that is to be used to the testing laboratory for review.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Common fill material from on-site shall not be used under paved areas.
- B. Select fill material from off-site as specified in Section 02200 and approved by the owner's representative.
- C. Aggregate material as specified in Section 02227.
- D. Acceptable stabilization fabrics and geogrids as stated in Section 02200.

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify all lines, elevations and grades necessary to construct pavements, curb and gutter, bases, walkways and roadways as shown in the plans and specifications.
- B. Carefully protect benchmarks, property corners, monuments or other reference points.
- C. Locate and identify all site utilities that have previously been installed and may be in danger of damage by grading operations.
- D. Locate and identify all existing utilities that are to remain and protect them from damage.
- E. Over excavate and properly prepare areas of subgrade that are not capable of supporting the proposed systems. These areas shall be stabilized by using acceptable filter fabrics and/or aggregate material placed and compacted as specified.

3.02 EXCAVATION

- A. Excavate roadway and pavement areas to line and grade as shown in the plans and specifications.
- B. Engage all suitable material into the project fill areas as specified in Section 02200.
- C. Unsuitable excavated material is to be disposed of off-site in a manner and location that is acceptable to the Owner. Locations of spoil of this material will be made available adjacent to the site of Contractor desires.
- D. Perform excavation using capable, well maintained equipment and methods acceptable to the owner and the project document requirements.

3.03 FILLING AND SUBGRADE PREPARATION

- A. Areas exposed by excavation or stripping shall be prepared as subgrade in accordance with Sections 02100 and 02200.
- B. Fill materials used under pavements shall be placed in lifts or layers not to exceed 8" loose measure and compacted to a minimum density of 95% of maximum density, in accordance with ASTM D 698, at a moisture content of not less than 1% below and not more than 3% above the optimum moisture content.
- C. Fill material under pavements shall meet the requirements as specified in Section 02200.
- D. Material imported from off-site shall have a CBR (California Bearing Ratio) value equal to or above the pavement design subbase CBR value of 8, when compacted to specified minimum values.

3.04 COMPACTION

- A. Maintain optimum moisture content of fill materials to attain required compaction density.
- B. All materials shall be tested in accordance with Section 02200.
- C. An independent testing laboratory selected and paid by the owner, shall be retained to perform testing on-site.
- D. Compaction test will be as specified in Section 02200 together with the following for paving areas:
 - 1. In cut areas not less than one compaction test for every 5,000 square feet.
 - 2. In fill areas, same rate of testing for each 8" lift (measured loose).
- E. If compaction requirements are not complied with at any time during construction process, remove and recompact deficient areas until proper compaction is obtained at no additional expense to owner.

3.05 MAINTENANCE OF SUBGRADE

- A. Finished subgrade and subbase shall be verified to ensure proper elevation and conditions for construction above subgrade.
- B. Protect subgrade from excessive wheel loading during construction including concrete trucks and dump trucks.
- C. Remove areas of finished subbase found to have insufficient compaction density to depth necessary and replace in a manner that will comply with compaction requirements by use of material. Surface of subbase after compaction shall be hard, uniform, smooth, stable, and true to grade and cross-section.

3.06 FINISH GRADING

- A. Finish grading shall be in accordance with Section 02200 and as more specifically stated herein.
- B. Grading of paving areas shall be checked by string line from grade stakes (blue tops) set at not more than 50' centers. Tolerances of 0.10 feet, more or less, will be permitted. Contractor to provide engineering and field staking necessary for verification of lines, grades, and elevations.

END OF SECTION 02223