

SECTION 31 23 26 COMPACTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Compaction of granular fill materials.

1.2 REFERENCES

- A. ASTM D 698: Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- B. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- C. ASTM D 2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.
- D. ASTM D 2922: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D 3017: Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D 3282: Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
- G. ASTM D 3740: Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3 DEFINITIONS

- A. A-1 Soil: Defined in ASTM D 3282.
- B. Modified Proctor Density: The maximum laboratory density, as defined in and determined by ASTM D 1557 using procedure A, B or C as applicable.
- C. Relative Density (or Relative Compaction): The ratio of field dry density to the maximum laboratory density expressed as a percentage.
- D. Standard Proctor Density: The maximum laboratory density, as defined in and determined by ASTM D 698 using procedure A, B or C as applicable.

1.4 QUALITY ASSURANCE

- A. Use a laboratory that follows and complies with ASTM D 3740.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.1 COMPACTION

- A. Moisten or dewater backfill material to obtain optimum moisture for compaction.

- B. Correct deficient compaction conditions. Replace or repair materials and damaged facilities.
- C. When no density compactive effort is specified, compact the entire area to eliminate unstable zones.

3.2 **FIELD QUALITY CONTROL**

- A. Testing: Perform control testing of materials. Perform additional testing at no additional cost to OWNER.
 - 1. Because of changes in source of materials or proportions requested by CONTRACTOR.
 - 2. Because of Failure of materials to meet specification requirements.
 - 3. For other testing services needed or required by CONTRACTOR.
- B. Report: For each material tested, record the following.
 - 1. Vertical and horizontal location of the test.
 - 2. Optimum laboratory moisture content.
 - 3. Field moisture content.
 - 4. Maximum laboratory dry density.
 - 5. Field density.
 - 6. Percent compaction results.
 - 7. Certification of test results by testing agency.
- C. Optimum Soil Density: Use ASTM D 2216 and the following industry standards.
 - 1. For A-1 Soils: Use test method C of ASTM D 1557 (Modified Proctor)
 - 2. For All Other Soils: Use test method C of ASTM D 698 (Standard Proctor).
- D. Field Density:
 - 1. Use ASTM D 3017 and test method C of ASTM D 2922 for shallow depth nuclear testing.
 - 2. No density determinations are required on any material containing more than 65 percent material retained on the number 10 sieve or more than 60 percent material retained on the number 4 sieve. In lieu of reporting densities in such cases, report the sieve analysis to document the material type.

END OF SECTION