F.A.A. STANDARD SPECIFICATION EXTRACTED FROM THE "STANDARDS FOR SPECIFYING CONSTRUCTION OF AIRPORTS"

TEST 611 COMPACTION CONTROL TESTS
GENERAL

611-1.1 Description. This specification shall govern the determination of the maximum density, field density, and percent compaction of those materials for which a minimum percent compaction is specified. It covers the basic procedures to be followed in performing the test for maximum density, field density, and percent compaction. In all cases density shall be stated as the dry weight in pounds per cubic foot.

611-2.1 Maximum Density. Maximum density is defined as the maximum dry weight in pounds per cubic foot obtained when a material is mixed with different percentages of water and compacted in a standard manner. The percentage of water at which maximum density is obtained is termed the optimum moisture content.

611-2.2 Laboratory Compaction Tests. The maximum density shall be determined by the appropriate method shown below:

(a) Where all of the material passes a No. 4 sieve, Use AASHO T 180, Method A (or B) for areas designed for aircraft weighing 30,000 pounds or more, and AASHO T 99, Method A (or B) for areas designed for aircraft weighing less than 30,000 pounds.
(b) Where the material contains particles larger than a No. 4 sieve. Use AASHO T 180, Method C (or D) for areas designed for aircraft weighing 30,000 pounds or more and AASHO T 99, Method C (or D) for areas designed for aircraft weighing less than 30,000 pounds.
(c) Where the material contains particles larger than ¾ inch. Follow the replacement procedure given in the note under Method C of AASHO T 99 or T 180.

611-3.1 Field Density. Field density refers to the dry density expressed in pounds per cubic foot of a layer of compacted material in place at the site as determined by a sample representative of the compacted layer. The field density shall be determined in accordance with AASHO T 147, AASHO T 181, ASTM D 1556, ASTM D 2167, or other methods approved by the engineer.
611-4.1 Percent Compaction. The percent compaction is defined as the density of the compacted layer expressed as a percentage of the maximum density of the material when tested in accordance with these specifications.
611-4.2 Computation. The percentage of compaction is computed by the formula:

$$Percentcompaction = \frac{Fielddensity}{Maximumdensity} \times 100$$