

Procedure Checklist

AASHTO T-99: The Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop

		P	F	N/A
Procedure				
1.	Representative sample selected to provide approximately 30 lb after sieving.			
2.	If sample is too wet, is it dried until friable under a trowel at 60°C (140°F) max?			
3.	Material passed 3/4 in sieve.			
4.	Care taken to avoid reducing natural individual size of particles.			
5.	Percent retained on 3/4 sieve recorded and preserved for oversized particle correction			
6.	Representative sample with mass approximately 11 lb prepared.			
7.	Water added to specimen in increasing amounts so that the moisture contents vary by approx 1% moisture.			
8.	Moisture contents should start approximately 4 to 8% below optimum and end 2% past optimum.			
9.	Each specimen thoroughly mixed.			
10.	Compacted in 3 approximately equal layers.			
11.	Each layer receives 25 uniformly distributed blows.			
12.	During compaction does mold rest on a uniform rigid foundation.			
13.	When using a manual rammer, is care taken to avoid rebound of the rammer from the top end of the guide-sleeve.			
14.	Mold selected and extension collar attached.			
15.	Guide-sleeve held steady and within 5° of vertical.			
16.	Blows applied at a uniform rate.			
17.	Is surface of specimen completely covered.			
18.	Extension collar removed.			
19.	Soil carefully trimmed even with top of mold.			
20.	Holes patched with smaller sized materials.			
21.	Trimmed with the straight edge.			
22.	Weighed to the nearest 1g or 0.005 lbs.			
23.	Mass of specimen (minus the mold) divided by mold volume.			
24.	Recorded as wet density (w_1) in lbs/ft ³ .			
25.	Material removed from mold.			
26.	Representative moisture content sample taken from cut face after specimen is sliced vertically, or sample taken from mixing bowl prior to compaction.			
27.	Moisture contents determined in accordance with T 265			
28.	Steps 9 through 27 repeated for each specimen prepared.			
Calculations				
29.	Moisture content = $[(A - B)/(B - C)] \times 100$ _____. To the nearest 0.1 % _____.			
	Dry unit mass = $W_1/(w + 100) \times 100$ _____. To the nearest 0.1 lbs/ft ³ _____.			
	where; w = Percent moisture A = Mass of wet soil + tare B = Mass of dry soil + tare C = Mass of tare W_1 = Wet unit mass			
Moisture – Density Relationship				
30.	Unit weight plotted as ordinates (vertical).			
31.	Moisture content plotted as abscissas (horizontal).			
32.	Points plotted in 30-31 connected with a smooth line.			
33.	Moisture content corresponding to the peak of the curve equals the "optimum moisture-content".			

34.	The oven dry density of the soil at the optimum moisture content equals the "maximum density".			
Oversized Particles Correction				
35.	Correction applied to samples with more than 5% weight of oversized particles (unless otherwise specified)			
36.	Bulk specific gravity determined by T 85 or 2.600 used			
37.	Dry mass of oversized and fine fractions determined (Mdc and Mdf)			
38.	Percent of dry oversized and fine particles determined (Pc and Pf)			
39.	Corrected optimum moisture content of total sample determined.			
40.	Corrected dry density of total sample determined.			
Report				
41.	Report includes: Corrected optimum moisture content to the nearest. 0.1%.			
42.	Corrected maximum dry density, to the nearest 0.1 lbs/ft ³ .			

**Remarks: Comparison Criteria: Max. Density within 4.5 PCF of the IA Result
% Optimum Moisture within 15% of the average**

Date: _____ Technician: _____ IA Observer: _____

Technician's E-mail Address: _____

Employer's/ Supervisor's E-mail Address: _____