



ALABAMA DEPARTMENT OF TRANSPORTATION

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MATERIALS AND TESTS TECHNICAL ADVISORY 1-07

TO: Division Engineers

FROM: Larry Lockett, P.E. 
Materials and Tests Engineer

RE: Correction for Coarse Particles in the Soil Compaction Test

ALDOT Specifications require the use of AASHTO T 99 and T 180 to determine the maximum density and optimum moisture content for the compaction of materials.

Method A is used when 10% or less material is retained on the #4 sieve.

Method C is used when more than 10% is retained on #4 sieve, and less than 20% is retained on the 3/4" sieve.

Method D is used when 20% or more is retained on the 3/4" sieve.

AASHTO T 224 addresses the procedure for adjusting the densities of soil and soil aggregate mixtures to compare the total field density with the compacted specimen density. AASHTO T 224 shall be applied to T 99 for Method A with 5% or greater oversize particles as stated in T 224. All T 99 and T 180 Method C and Method D Proctor tests will use the T 224 corrections due to having more than 10% retained on the #4 sieve.

The moisture content of the oversize material retained on the sieve can be assumed to be two percent for most construction applications.

If the Specific Gravity of the oversize particles has been determined and published on List I-1 for approved sources of aggregates that value can be used. If not available, AASHTO T-85 can be used on local material to determine the value or the default value of 2.60 can be used.

These adjustments can be made automatically in the lab software Geosystem. Materials and Tests Soils Testing personnel can train division lab personnel on how to modify the testing parameters in the program. Training request should be made to Becky Keith, Soils Testing Engineer, 334-206-2360 or keithb@dot.state.al.us.

Note: Note 9 in both T 99 and T 180 states "The use of the replacement method previously specified, when the oversized particles are replaced with finer particles, to maintain the same percentage of coarse material, is not considered appropriate to compute the maximum density." This still applies and the +3/4 material should be discarded.

LL/RSK

cc: Mr. Mike Harper, P.E.
Division Materials Engineers
File