

TxDOT Revises Base Proctor Test Method

Government Liaison Committee
John S. Landwermyer, P.E., Committee Chair

Effective January 1, 2010, TxDOT has announced changes to several test specifications, including TxDOT Test Method Tex-113-E, "Laboratory Compaction Characteristics and Moisture-Density Relationship of Base Materials." This procedure is central to the qualification of laboratories conducting the testing; the qualification of material from base suppliers, and acceptance of the field compaction achieved by contractors.

The laboratory procedure has always required a compactive effort of 13.26 ft-lbs/in³. Until now, that effort was only theoretical. In reality, losses occur due to friction and misalignment and/or maladjustment of the equipment. The procedure will now require that the compaction equipment be fit with a "Soil Compactor Analyzer" (SCA) to measure the actual effort, ensuring that the full 13.26 ft-lbs/in³ is delivered to the sample.

The following summary of changes was prepared by Caroline Herrera, P.E., Director, Construction Division, Materials and Pavements Geotechnical, Soils and Aggregates Branch, Texas Department of Transportation:

1. DMS-7400, "Qualification Procedure for Laboratories Conducting Compaction and Triaxial Compression Testing of Soils and Base Materials." This new Departmental Specification creates an approved list of labs that will be qualified by CST/M&P to perform Tex-113-E and Tex-117-E. Implementation of this requirement is optional to producers and laboratories performing compaction and strength tests. However, only producers that use qualified labs for these tests will be allowed to request referees when their tests do not agree with TxDOT results. In order to be placed on the list of labs approved to perform Tex-113-E and Tex-117-E, the laboratory must have a Soil Compactor Analyzer (SCA) in use on their compactor to control compactive effort. TxDOT will allow a transition period for acquisition of the SCA until May, 2010. During the transition period, TxDOT will continue to perform referees without requiring producer/contractor results. This will allow industry time to acquire SCAs and bring their compactors into compliance with the Jan. 1, 2010 version of Tex-113-E and the DMS.
2. Tex-198-E, "Minimum Standards for Acceptance of a Laboratory for Soils and Flexible Base Testing" (Equipment Calibration). The changes in this procedure introduce new calibration procedures for compaction and testing equipment including the SCA, slide hammer, load cell, and other equipment standardization to improve repeatability.
3. Tex-113-E, "Laboratory Compaction Characteristics and Moisture-Density Relationship of Base Materials":
 - a. Add the requirement to use the Soil Compactor Analyzer (SCA) and the slide finishing hammer during fabrication of molded samples;
 - b. Change the percent molding moisture from 2% to 1% increments when constructing the moisture-density curve;
 - c. Change the length of time required for material to cure after mixing the flex base and water together from 12 hours to a range of 18-24 hours.
 - d. Add the requirement to use a 7/8" sieve to separate the material retained on the 7/8" sieve from the material passing the 7/8" sieve and to use a horsehair bristle brush to remove the fines that get stuck to the sieve;
 - e. Clarify wording about placement of material in each lift;

- f. Add requirement to use TxDOT's electronic worksheets to record data (including data recorded by the SCA for each lift), perform calculations, and construct the moisture-density curve; and
- g. Add the requirement for samples to be split three ways: one split for the producer, one split for the district tests, and one split for CST for referee and blind samples. The sample size can be reduced if the producer waives the right to his split.

Rainhart has stated they would be able to produce SCAs within a month of receiving an order. Pine Instruments also plans to provide them. Stephen Sebesta with TTI is contracted with TxDOT to assist industry with implementation of the SCA. TxDOT plans to have all district labs equipped with SCAs by January 1.

- 4. Tex-117-E, "Triaxial Compression for Disturbed Soils and Base Materials":
 - a. Added instructions for use of automated compression machines;
 - b. Requires testing for the zero, three, and fifteen lateral pressures for a total of 10 cylinders.
- 5. Tex-400-A, "Sampling Flexible Base, Stone, Gravel, Sand, and Mineral Aggregates":
 - a. Requires identification of locations around the perimeter of the stockpile that represent the approximate quarter-points of the stockpile.
 - b. Requires use of a front-end loader to cut into the stockpile from bottom to top in one continuous motion four times at each quarterpoint. This material is used to build four mini-sampling piles.
 - c. Material is sampled from each of the four cuts using a shovel to dig into the pile at the midpoint of each bucket load.
 - d. This procedure is repeated for each of the quarterpoints of the stockpile.

Please note that any effort to summarize carefully edited, published test methods will necessarily omit important details. The revised standards in their entirety can be found at http://www.txdot.gov/business/contractors_consultants/test_procedures/default.htm