



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Memorandum

May 24, 2007

CONSTRUCTION MEMORANDUM 07-11

TO: District Deputy Commissioners
District Highway Operation Directors
District Construction Engineers
District Testing Engineers
District Area Engineers
Project Engineers/Supervisors

FROM: Mark A. Miller, Director *MAM*
Division of Construction Management

SUBJECT: Compaction Acceptance Testing of Chemically Modified Soils

The Department has approved an alternative testing procedure using a Dynamic Cone Penetrometer (DCP) for acceptance testing of compaction of chemically modified soils. The attached Recurring Special Provision, 215-R-543, replaces the requirements of 215.09. The utilization of the DCP test replaces the use of either nuclear gauge or sand cone density testing. The test is performed on the finished grade in accordance with ASTM D 6951. A DCP Testing Log form is attached to be used to record the results of the test.

Each District must determine which contracts will utilize DCP testing based on availability of testing equipment. The special provision may be added to an active contract by processing a no-cost Change Order. For future contracts, the District should request the special provision be included in the contract documents prior to advertising for letting.

Note that the special provision requires the moisture content of the chemically modified soil mixture to be at the optimum moisture content or above the optimum moisture content. The Contractor is responsible for determining the optimum moisture content in accordance with 215.03. One moisture content test in accordance with ITM 506 is required each day that DCP tests are taken and the test results should be recorded in the remarks section of the DCP Testing Log. Additional moisture tests may be required if there is a failing moisture test or if there is an obvious visual change in the soil.

MAM:RPW:rlh

Attachment (2)

DYNAMIC CONE PENETROMETER TEST FOR COMPACTION OF CHEMICALLY MODIFIED
SOILS

The Standard Specifications are revised as follows:

SECTION 215, BEGIN LINE 80, DELETE AND INSERT AS FOLLOWS:

215.09 Compaction

The moisture content of the mixture shall be at the optimum moisture or above the optimum moisture content as determined by the mix design in accordance with 215.03. Moisture content will be determined in accordance with ITM 506. Aeration or drying by further mixing, or the addition of water and further mixing, may be done to obtain the required moisture content. Compaction of the mixture shall begin as soon as practicable after mixing. Compaction after mixing shall be as follows:

- (a) For cement modified soils, mixing shall be completed within 30 min of cement placement and compaction shall be completed within 3 h after mixing.
- (b) Fly ash modified soils shall be compacted within 4 h.
- (c) Lime modified soils shall be compacted within 24 h.

Compactive efforts shall be in accordance with 203 or 207.03 as applicable.

~~Maximum dry densities will be determined in accordance with AASHTO T 272 at the same time and location as each in place density test is performed when in place densities do not meet AASHTO T 99. The field in place dry density shall be in accordance with AASHTO T 191 or AASHTO T 310.~~

Acceptance testing for compaction of chemically modified soils will be performed on the finished grade with a Dynamic Cone Penetrometer (DCP) in accordance with ASTM D 6951. The chemically modified soil lift shall meet the following requirements for compaction:

- (a) *A minimum DCP blow count of 17 for the top 6 in. (150 mm) of a 16 in. (400 mm) lift*
- (b) *A minimum DCP blow count of 20 for the bottom 10 in. (250 mm) of a 16 in. (400 mm) lift*
- (c) *A minimum DCP blow count of 20 for an 8 in. (200 mm) lift*
- (d) *A minimum of 1 passing test for each 1500 lft (450 m) of chemically modified soil for each two-lane pavement*

~~The moisture content of the mixture shall be between the optimum moisture and the optimum moisture plus 2.0%. Aeration or drying by further mixing, or the addition of water and further mixing, may be required to obtain the optimum moisture content.~~

Construction traffic or equipment shall not be *operated* on the treated soils within 72 h after compaction.



Indiana Department of Transportation Office of Materials Management

Contract No.:

Route No.:

Item No. and Description:

Subgrade Treatment Depth:

One test for each 1500 lft of two-lane pavement

Frequency:

Test Method:

ASTM D 6951

DYNAMIC CONE PENETROMETER TESTING LOG

Test Station	Offset	Subgrade Construction Start Date	Test Date	16 in Lift		8 in. Lift	Remarks
				Blow Count 0 to 6 in.	Blow Count 6 to 16 in.	Blow Count 0 to 8 in.	

Cc: Office of Materials Management
District Office
file

Signed: _____

Checked: _____