

215-R-814 CHEMICAL MODIFICATION OF SOILS

(Adopted 12-19-25)

The Standard Specifications are revised as follows:

SECTION 215, BEGIN LINE 3, DELETE AS FOLLOWS:

215.01 Description

This work shall consist of the modification of soils by uniformly mixing portland cement, ~~coal ash~~, or lime with soil to aid in strength gain and achieving the workability of soils.

SECTION 215, BEGIN LINE 13, DELETE AND INSERT AS FOLLOWS:

Coal Ash, Class C	901.02
Lime	913.04(b)
Portland Cement, Type I and Type 1L	901.01(b)
Water.....	913.01

Note: Quicklime or portland cement may be used dry or as a slurry.

SECTION 215, BEGIN LINE 27, DELETE AND INSERT AS FOLLOWS:

The quantities for hydrated lime, quicklime, or portland cement shall be based on 5.0% of the maximum dry density of the soils. The quantities for lime by-products shall be based on 6.0% of the maximum dry density of the soils. ~~The quantities for coal ash Class C shall be based on 12.0% of the maximum dry density of the soils. Class F coal ash shall not be used.~~

If hydrated lime, quick lime, lime by-products or portland cement are used, test results and the geotechnical consultant recommendations shall be submitted to the Engineer prior to use. ~~If coal ash is used, the test results and the geotechnical consultant recommendations shall be submitted to the Engineer and to the Department's Geotechnical Engineering Division for approval at least three business days prior to use.~~ If the modifier as bid is not appropriate for the soils encountered, portland cement shall be used. Portland cement, ~~coal ash~~, lime, and lime by-products shall be selected from the Department's QPLs of Cement Sources, Pozzolan Sources, and Soil Modifiers, respectively.

The quantity of chemical modifier may be adjusted for different soil types. ~~However, the source or type of chemical modifier shall not be changed during the progress of the work without approval. A change in source or type shall require a new mix design.~~

The source of a chemical modifier may be changed during the progress of the work provided the new source is from the QPL. A new mix design will not be required for changing the source of the chemical modifier.

If the type of chemical modifier is changed during the progress of the work, a new mix design shall be submitted for approval. If the type of cement is changed from Type I to Type 1L or from Type 1L to Type I, a new mix design shall be submitted for approval.

SECTION 215, BEGIN LINE 59, DELETE AND INSERT AS FOLLOWS:

215.06 Preparation of Soils

The soils shall be prepared in accordance with 207.03. All aggregates which are

larger than approximately 3 1 2 in. encountered before or after mixing the soils and chemical modifiers shall be removed.

215.07 Spreading of Chemical Modifiers

Where Type A-6 or Type A-7 soils are used or encountered, the surface shall be scarified to the specified depth prior to distribution of the chemical modifier. The chemical modifier shall be distributed uniformly by a cyclone, screw-type, or pressure manifold type distributor. If a slurry is used, the surface shall be scarified prior to the distribution of the slurry. The chemical modifier shall not be applied when wind conditions create problems in adjacent areas or create a hazard to traffic on any adjacent roadway. The spreading of ~~the chemical modifier~~ lime shall be limited to an amount which can be incorporated into the soil within the same day of work. *When spreading cement, mixing and compaction shall occur before cementation takes place.* If weather causes stoppage of work or exposes the chemical modifier to washing or blowing, additional chemical modifier may be spread when the work resumes.

SECTION 215, BEGIN LINE 98, DELETE AND INSERT AS FOLLOWS:

(b) ~~Coal ash modified soils shall be compacted within 4 h.~~

(eb) Lime modified soils shall be compacted within 24 h.

Acceptance of chemically modified soils will be determined in accordance with ITM 508 or ITM 509. *The frequency of LWD or DCP testing will be three tests for each 1,400 cu yds of chemically modified soils.* Testing of the chemically modified soils will begin a minimum of 24 h after compaction.

SECTION 215, BEGIN LINE 112, DELETE AS FOLLOWS:

For measuring the compaction with a DCP, three random test locations will be determined in accordance with ITM 802. Blow counts of 15 and above will be used to determine the average for the top 6 in. of a 14 in. lift. Blow counts of 14 and above will be used to determine the average for the bottom 8 in. of a 14 in. lift. Blow counts of 18 and above will be used to determine the average for the 8 in. lift. Locations with test results less than the specified minimum blow counts will be retested and shall be reworked if the minimum blow count is not obtained. ~~The frequency of LWD or DCP testing will be three tests for each 1,400 cu yds of chemically modified soils.~~

SECTION 215, BEGIN LINE 141, DELETE AND INSERT AS FOLLOWS:

215.10 Curing

Moisture content shall be maintained at *least* 1% above the optimum moisture content ~~for the first 48 h after~~ *during* mixing.

SECTION 215, BEGIN LINE 154, DELETE AS FOLLOWS:

215.13 Basis of Payment

The accepted quantity of chemically modified soils, for the material specified, will be paid for by the square yard, complete in place.

~~Coal ash, when used, will be paid for as lime.~~

All removal and replacement required to modify the soils below the specified depth

will be paid for in accordance with 203.28.

Adjustment of materials for chemical modification that exceeds the limits of 215.03 will be included in a change order for materials only and paid for as chemical modifier adjustments. If mix design test results show that the chemical modifier as bid by the Contractor is not appropriate and the strength of the modified soil can not be achieved, a price adjustment will be made for the use of portland cement. The price adjustment will be calculated at a cost equal to the difference in the invoice cost of the chemical modifier found to be appropriate for use and the invoice or quoted delivered cost of the chemical modifier as bid by the Contractor. This adjustment will be included in a change order and will be paid for as chemical modifier adjustments. ~~Coal ash will not be considered for price adjustment.~~ Payment for chemical modifier adjustments will be made for direct delivered material costs incurred by the Contractor in accordance with 109.05.
