



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 21-09

April 13, 2021

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/Athar Khan
Athar Khan
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Engineering Department

SUBJECT: Cement Stabilized Subgrade Soils (CSSS)

REVISES: *Indiana Design Manual (IDM) Chapter 17, Sections 17-4.02(02) thru 17-4.02(04)*

EFFECTIVE: Lettings on or after June 1, 2021

INDOT has been applying CSSS for the last three years with good results on select contracts. This is a stronger, stiffer subgrade treatment which is beneficial in adding years of life to a pavement structure from the additional support it provides and is the most economical part of a pavement structure to invest in for the resulting return of extended service life.

Where specified in the geotechnical report, CSSS may be used in place of subgrade treatments. CSSS should not be use where:

- groundwater is within 5 ft of the proposed subgrade treatment elevation and subgrade width is less than 8 ft.
- when sulfate content in soil is greater than 1000 ppm.

Where CSSS is called for the following pay item should be included in the contract:

Pay item number...207-12377, Cement Stabilized Subgrade (Soil)SYS

Until the 2022 INDOT *Standard Specifications* is published RSP 219-R-723 will still be in effect.

IDM [Chapter 17](#), Quantity Estimating, has been updated to reflect updates concerning CSSS. An excerpt of the changes is shown at the end of this memo.

For additional guidance, see the INDOT Standard Specifications, section 219 or contact INDOT Geotechnical Services Division, at atkahn@indot.in.gov.

Chapter 17 Revisions

17-4.02(02) Subgrade Treatment Type Determination [Rev. Apr. 2020, Apr. 2021]

INDOT **Geotechnical Engineering Division** should be informed of possible shallow utilities, temporary pavement, need for a temporary runaround, or night construction so that it can make suitable recommendations for subgrade type. Such considerations should be documented in the field check minutes.

Chemical soil modification should not be used where groundwater is within 5 ft of the proposed subgrade treatment elevation. Due to equipment limitations, chemical soil modification should be limited to a subgrade width of at least 8 ft.

The type or types of subgrade treatments for each project will be specified in the geotechnical report. If the geotechnical report does not specify the subgrade treatment type, the designer should coordinate with INDOT Geotechnical Services for a subgrade treatment recommendation.

17-4.02(03) Cement Stabilized Subgrade Soils [Rev. Apr. 2021]

Cement Stabilized Subgrade Soils (CSSS) is not included with Subgrade Treatment Types in INDOT *Standard Specifications*, section 207, but may be specified in the geotechnical report in place of Subgrade Treatments.

CSSS should not be used where groundwater is within 5 ft of the proposed subgrade treatment elevation. Due to equipment limitations, CSSS should be limited to a subgrade width of at least 8 ft. For additional guidance, see the INDOT *Standard Specifications*, section 219, or contact INDOT Geotechnical Services Division at atkahn@indot.in.gov.

17-4.02(04) Determining Pay Items and Quantities [New Apr. 2021]

A divided highway may have parallel but separate subgrade treatment areas, likely of the same type, depending upon the width of the median. An isolated area such as that on an S-line, median crossover, or possibly a portion of the mainline, may be of a different treatment type than that of the mainline. Quantities should be determined for each required subgrade treatment pay item, **including CSSS, as described in 17-4.02(03).**