

## Colorado Procedure 26-14

### *Standard Practice for*

## **Contractor Approval Process for Subgrade Stabilization**

### **1. SCOPE**

- 1.1 This practice describes the procedures for submitting design and construction information using mechanical stabilization with geosynthetics or chemical stabilization for subgrade stabilization in place of unbound aggregates.

### **2. REFERENCED DOCUMENTS**

- 2.1 CDOT 2013 Pavement Design Manual.
- 2.2 Chapter 5 of the FHWA Geosynthetic Design and Construction Guidelines dated August 2008.

### **3. APPROVAL OF SUBGRADE DESIGN**

- 3.1 The design of the subgrade stabilization shall be in conformance with the CDOT Pavement Design Manual and other specified Colorado, AASHTO, ASTM, and FHWA procedures. Significant variances from these specifications will require an Experimental Feature per CDOT's Procedural Directive 1401.1.
- 3.2 Mechanical Stabilization with Geosynthetics.
  - 3.2.1 Geotextile material shall be on the New York State DOT's Approved Products List for Geotextiles in the Stabilization Application.
  - 3.2.2 Designs using other geotextile or geogrids shall be submitted and approved by the Engineer before incorporation into the work.
  - 3.2.3 Design must be calculated with an AASHTO or FHWA approved methodology. Design considerations include, but are not limited to the following:
    - 3.2.3.1 Submit geosynthetic subgrade stabilization design calculations with input values and any assumptions used in the calculations.
    - 3.2.3.2 State geosynthetic design methodology used in design calculation and output values.
    - 3.2.3.3 State the estimated effective resilient modulus of the construction platform. Note: the minimum resilient modulus value used in the design shall be equal to or greater than the value shown on the plans or in the Pavement Justification Report.
    - 3.2.3.4 Upon request, the design software shall be made available to CDOT personnel.
    - 3.2.3.5 The design shall be stamped by a Professional Engineer registered in the State of Colorado.

3.2.4 Construction requirements include, but are not limited to the following:

3.2.4.1 The subgrade material shall be placed per the manufacturer's recommendations and Subsection 203.07.

3.2.4.2 Proof rolling shall be per Subsection 203.09.

3.3 Chemical stabilization may be accomplished with lime, cement, fly ash, or other chemical agents approved by the Engineer.

3.3.1 Design must be calculated with a CDOT, AASHTO, or ASTM approved methodology.

3.3.1.1 Submit design calculations at various application rates.

3.3.1.2 State the chemical-soil proportion for stabilization.

3.3.1.3 State unconfined compressive strength at the design value.

3.3.1.4 The design shall be stamped by a Professional Engineer registered in the State of Colorado.

3.3.2 Construction requirements using lime shall be per Subsection 307.04.

3.3.3 Construction requirements using other chemical agents shall be submitted and approved by the Engineer before incorporation into the work.

#### **4. DESIGN SUBMITTAL REQUIREMENTS**

4.1 All required design and supporting information shall be submitted electronically to the Project Engineer. Acceptable formats include pdf, MS Excel, MS Word, PowerPoint, jpg, and other compatible formats. Submittal shall be submitted in the order listed below.

4.2 Subgrade Stabilization Technology Supplier – Submittal shall include, but not limited to the following:

4.2.1 The Submittal for Mechanical Stabilization with Geosynthetics:

- Manufacturer's product datasheets.
- One sample measuring at least 4 inches by 8 inches.
- Quality control data for each lot incorporated into the project.
- The laboratory performing the quality control shall be currently accredited by GAI-LAP and shall include a copy of their current certificate.
- The manufacturer shall be registered in ISO 9000.
- Provide the name of the manufacturer's representative who will be available during construction.
- If available, include project locations, supporting design information, and any performance data from previous CDOT projects constructed within the last 10 years.

#### 4.2.2 The Submittal for Chemical Stabilization:

- Manufacturer's product datasheets.
- Quality control data on the chemical composition for each lot incorporated into the project.
- Quality control data on the gradation analysis for each lot incorporated into the project.
- Provide the name of the manufacturer's representative who will be available during construction.

#### 4.3 Subgrade Stabilization Contractor Submittals shall include:

- Summary of contractor's subgrade stabilization experience, if any. Contact names shall be included for owners of past projects.
- A list of best practices for subgrade stabilization.
- Solutions for corrective actions for typical problems that may need to be utilized. A written explanation shall be provided for the failures.

### 5. CDOT REVIEW PROCESS

- 5.1 A preliminary review of the contractor's subgrade stabilization proposal will be performed by the Project Engineer in conjunction with Regional Material Engineers as needed.
- 5.2 CDOT may request additional information from the Contractor.
- 5.3 Incomplete submittals may be rejected as unacceptable.
- 5.4 Preliminary review is estimated to take up to two weeks, depending upon the completeness of initial submittal.
- 5.5 Final approval may take an additional week after the conclusion of the preliminary review.

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