

SECTION 025210
LIME STABILIZATION

1. DESCRIPTION

This specification shall consist of treating the subgrade, subbase or base by the pulverizing, addition of lime, mixing and compacting the mixed material to the required density. This specification applies to natural ground, embankment, existing pavement structure or proposed base, and shall be constructed as specified herein and in conformity with the typical sections, lines and grades as shown on the plans or as established by the Engineer.

2. MATERIALS

- (1) The lime shall be a commercially produced "Hydrated Lime" in accordance with AASHTO M216, or in accordance with TxDOT Specification Item 260. The specifications apply specifically to the normal hydrate of lime made from "high-calcium" type limestone. Hydrated lime for stabilization purposes shall be applied as a slurry.
- (2) Lime to be used for the treated subgrade, existing subbase, existing base or proposed base is determined by preliminary tests and shall be applied at a rate indicated on the drawings, but no less than 6%.

3. EQUIPMENT

The machinery, tools and equipment necessary for proper prosecution of the work shall be on the project and approved by the Engineer prior to the beginning of construction operations.

All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.

Hydrated lime shall be stored and handled in closed weatherproof containers until immediately before distribution on the roadbed. If storage bins are used, they shall be completely enclosed. Hydrated lime in bags shall be stored in weatherproof buildings with adequate protection from ground dampness. If lime is furnished in trucks, each truck shall have the weight of lime certified on public scales.

If lime is furnished in bags, each bag shall bear the manufacturer's certified weight. Bags varying more than 5 percent from that weight may be rejected and the average weight of bags in any shipment, as shown by weighing 50 bags taken at random, shall not be less than the manufacturer's certified weight.

4. CONSTRUCTION METHODS

General - It is the primary requirement of this specification to secure a completed course of treated material containing a uniform lime mixture, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth and with a smooth surface suitable for placing subsequent courses. It shall be the responsibility of the Contractor to regulate the sequence of his work, to use the proper amount of lime, maintain the work and rework the courses as necessary to meet the above requirements.

Application - Lime shall be spread only on that area where the first mixing operations can be completed during the same working day.

Unless otherwise shown on drawings, lime shall be applied at a rate in pounds of dry-hydrated lime per square yard, in the form of a slurry. Application rate may be varied by the Engineer, if conditions warrant, but no less than 6% must be applied.

Certification of lime quantity and quality shall be provided as required to monitor the application. Certification should be in the form of weight tickets which indicate the actual weight of dry hydrated lime, CA(OH)_2 .

The application and mixing of lime with the material shall be accomplished by the method hereinafter described.

The lime shall be mixed with water in trucks with approved distributors and applied as a thin water suspension or slurry.

Mixing - The mixing procedure shall be as hereinafter described.

- (a) **First Mixing:** The material and lime shall be thoroughly mixed by approved road mixers or other approved equipment, and the mixing continued until, in the opinion of the Engineer, a homogeneous, friable mixture of material and lime is obtained, free from all clods or lumps. Materials containing plastic clays or other material which will not readily mix with lime shall be mixed as thoroughly as possible at the time of the lime application, brought to the proper moisture content and left to cure 1 to 4 days as directed by the Engineer. During the curing period, the material shall be kept moist as directed.
- (b) **Final Mixing:** After the required curing time, the material shall be uniformly mixed by approved methods. If the soil binder-lime mixture contains clods, they shall be reduced in size by raking, blading, discing, harrowing, scarifying or the use of other approved pulverization methods so that, when all nonslaking aggregates retained on the No. 4 sieve are removed, the remainder of the material shall meet the following requirements when tested dry by laboratory sieves:

	<u>Percent</u>
Minimum Passing 1" Sieve.....	100
Minimum Passing No. 4 Sieve.....	85

Old bituminous wearing surface shall be pulverized so that 100% will pass a 2 ½" sieve.

During the interval of time between applications and mixing, hydrated lime that has been exposed to the open air for a period of 6 hours or more, or to excessive loss due to washing or blowing, will not be accepted for payment.

Compaction - Compaction of the mixture shall begin immediately after final mixing and in no case later than 3 calendar days after final mixing, unless approval is obtained from the Engineer. The material shall be aerated or sprinkled as necessary to provide the optimum moisture. Compaction shall begin at the bottom and shall continue until the entire depth of mixture is uniformly compacted as hereinafter specified.

If the total thickness of the material to be treated cannot be mixed in one operation, the previously mixed material shall be bladed to a windrow just beyond the area to be treated and the next layer mixed with lime as previously specified. The first layer of the material shall be compacted in such a manner that the treated material will not be mixed with the underlying material.

The course shall be sprinkled as required to maintain moisture content on the wet side of optimum and compacted to the extent necessary to provide the specified density. Unless shown otherwise on the drawings, all lime treated subgrades, sub-bases, and bases that are not in direct contact with surface or binder course shall be compacted to a minimum of 95% Standard Proctor density (AASHTO T99), unless otherwise specified.

In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, tests, as necessary, will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements.

Rework, when required to meet pulverization requirements or density requirements, shall include the addition of lime, about 10% to 15% of the initial application rate, or as deemed necessary by the Engineer. A new optimum density will be obtained.

Throughout this entire operation, the shape of the course shall be maintained by blading, and the surface, upon completion, shall be smooth and in conformity with the typical section shown on the drawings and to the established lines and grades.

5. MEASUREMENT AND PAYMENT

Unless otherwise specified on the Bid Form, lime stabilization for bases, sub-bases and subgrade shall be measured by the square yard of lime-stabilized material in place.

Pulverizing, mixing, watering grading, compacting, working material etc., shall not be measured for pay but shall be subsidiary to other work.

Payment shall be full compensation for all materials, labor, equipment, tools, and incidentals necessary for the completion of work.