SPECIAL PROVISIONS
FOR
CEMENT TREATED BASE

Ringgold County
FM-C080(67)--55-80
FM-C080(68)--55-80

Effective Date
October 20, 2015

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

154001.01 Description.
Base treatment shall consist of existing granular surfacing, soil from the subgrade, cement, and water to develop a sufficient subbase section. These materials shall be mixed, shaped, and compacted in accordance with the plans and these specifications.

154001.02 Materials.

A. Cement.
Cement shall be type I or type II cement meeting the chemical requirements of ASTM C-150. The source of the cement shall be identified and approved in advance of stabilization operations. Stored cement shall be in a weather tight facility to protect it from dampness. Cement that becomes partially set or contains hard lumps shall be discarded.

B. Mixing water.
Water shall meet the requirements of Section 4102 of the Standard Specifications and AASHTO T 26.

154001.03 Equipment.

A. General.
Machinery, tools, and equipment shall be on the project and approved by the Engineer prior to the beginning of operations. Pulverization of the existing grade and blending of the cement treated base shall be accomplished with a Cat RM-500 road reclaimer or suitable equivalent. Initial compaction shall be achieved using CS-64 vibrating padfoot compactor or suitable equivalent. Final compaction shall be achieved using a pneumatic rubber-tired roller or a smooth steel drum roller.

B. Trucking.
Each truck that provides cement to the work site shall have been weighed on a certified scale in

order to obtain the weight of certified cement. Tickets shall be delivered to the contracting authority at time of delivery.

154001.04 PLACEMENT.

A. General.
The purpose of this specification is to provide a completed, continuous section of cement treated base which contains uniform moisture content, no loose or segregated areas, has a uniform density and is 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 work, to use the proper amount of cement, to achieve final compaction within the specified time, and to maintain the work.

B. Weather.
Soil and air temperature shall be at or above 40°F for at least 24 hours prior to placement of cement. Cement spreading, mixing, and compaction of the mixture shall not proceed during periods of rain or snow or when rain or snow are possible before a stabilized base section can be completed.

C. Moisture Control.
Moisture control shall be achieved through the use of a road reclaimer equipped with a spray bar located inside the mixing drum. The spray bar shall be capable of applying the desired quantity of water in a single pass to achieve the required moisture content for the cement treated base mixture, and shall be capable of being regulated as necessary to maintain moisture content.

D. Application of Cement.
Cement shall be hauled in such a manner as to reduce the loss of material during transportation. Cement may be applied using the slurry method. After cement has been applied to the site, it shall be spread to the required depth to minimize scattering by wind. Cement shall not be placed when wind conditions are such that blowing cement becomes objectionable or reduces the amount incorporated into the base.

E. Mixing.
The existing material and cement shall be thoroughly mixed and continue to be mixed until a homogeneous soil/granular material/ cement mixture is obtained. The following gradation shall be targeted before compaction begins:

Sieve Size (in.)	Percent Passing
2”	100%
1”	≤80%
3/4”	≤50%

F. Compaction.

1. Compaction of the cement treated base mixture shall begin immediately after final mixing is completed and shall be completed within 2 hours of the beginning of initial mixing. Initial compaction shall be with a vibrating padfoot compactor. Following initial compaction, the materials shall be shaped to final grade by blading, and the surface upon completion shall be smooth and shall conform to the typical section shown on the plans and to establish lines and grades. Final compaction shall be achieved using a steel smooth drum roller or pneumatic rubber tired roller to seal the surface and reduce the loss of moisture. The full depth of compacted, stabilized base shall remain firm and stable. Final compaction shall be no less than 95% of maximum density. Further construction traffic shall be held to a bare minimum. If the material loses the required stability, density, or finish for any reason before the Engineer accepts the work, it shall be reprocessed, recompacted, and refinished at the sole expense of the contractor.

2. Contractor shall be responsible for providing density testing from a geotechnical engineer licensed in the State of Iowa, that final grade has reached specified minimum compaction. Maximum density shall be determined by materials laboratory test method No. Iowa 103-d. Five compaction samples shall be tested per mile at locations determined by the Engineer.

G. Finishing and Curing.

1. After final compaction the base shall be brought to the required lines and grades in accordance with the typical section.

2. After the cement treated base has been completed, the surface shall be protected against rapid drying and traffic. Seal coat application can begin after 96 hours provided the cement treated base can carry seal coating equipment traffic.

3. There is no delay allowed for application of curing seal on cement treated base. Prompt sealing is important to preserve the moisture for hydration. Traffic shall be limited on the curing seal. It shall not be used as a haul road.

4. The finished product needs to be evenly mixed, without skips, across the entire 26' width. The thickness of the cement treated base shall be determined by depth checks taken at intervals so that each will represent no more than 300 square yards. When the base thickness is deficient by more than 0.5 inch, the contractor shall correct such areas in a manner satisfactory to the Engineer.

5. A maximum of 2 hours of time is allowable from the time water is added to completion of final compaction and finishing. This time restriction must be complied with and is related to the rate at which cement will set up.

154001.05 METHOD OF MEASUREMENT.

Cement treated base material furnished and placed in accepted portions of work will be measured in square yards for the specified design thickness. The design thickness of the placed material will be verified by spot checks of the grade. The measured area will be based on plan quantity of cement for base treatment.

154001.06 BASIS OF PAYMENT.

A. The contractor will be paid the contract unit price per square yard for cement treated base. This payment shall be full compensation for furnishing all materials, water, preparation of existing grade, density testing, and doing all work necessary to complete the base treatment in compliance with the contract documents.

B. Price adjustments or removal and replacement will be required for all cement treated base areas that do not meet specified 95% compaction. Price adjustment shall be 5% of contract unit price for cement treated base for every percentage below specified 95% compaction.