Kentucky Method 64-520-0~~82~~
Revised ~~11/18/02~~02/26/08
Supersedes KM 64-520-0~~20~~
Dated ~~1/21/00~~11/18/02

SUBGRADE CHEMICAL STABILIZATION TEST

1. SCOPE: The following test method shall be used to determine the percent chemical that will be added to a soil subgrade for stabilization. The type chemical (cement or lime) will be determined in accordance with Federal Highway's manual FHWA-IP-80-2, "Soil Stabilization in Pavement Structures-A User's Manual".

2. MOISTURE-DENSITY:

   2.1. A minimum of 2 moisture-density tests shall be performed on each sample. One test shall be performed on the natural soil and another with 5 percent chemical added based on dry weight.

   2.2. The test shall be performed in accordance with Kentucky Method KM 64-511 with the following additions:

      2.2.1. Add to the soil for test no. 2 the required amount of chemical prior to adding water and mix thoroughly to a uniform color.

      2.2.2. When the test is performed with a lime additive, the sample shall be allowed to mellow for one hour in a covered pan after adding water prior to compaction.

3. UNCONFINED COMPRESSION:

   3.1. Apparatus:

      3.1.1. Specimen molds: The molds shall be cylindrical in shape and made of rigid metal with a inside diameter of 2.80 ± 0.01 in. The height-to-diameter ratio shall be between 2 and 2.5. Refer to Figures 1 and 2 for details of the compaction equipment.

      3.1.2. Balance: A balance that has a 0.1 g. readability.

      3.1.3. Oven: A thermostatically controlled drying oven capable of maintaining a temperature of $230^{o} \pm 9^{o}$F for drying moisture samples and $120^{o} \pm 9^{o}$F for curing samples.

      3.1.4. Mixing Tools: Mixing pans, spoons, trowels, etc. and a device for measuring increments of water.

   3.2. Sample Preparation: Samples shall be compacted for unconfined compression testing with varying percentages of chemical additive. Four samples are recommended for lime (0,4,5

and 6%) and 3 for cement (0,4, and 6%). The samples shall be compacted at 95% of maximum density and at optimum moisture. The density test with 5% additive shall be used for all samples for preparing test specimens for unconfined testing. Samples shall be prepared as follows:

3.2.1. One specimen shall be prepared for each percentage. Prepare a predetermined weight of the uniformly mixed soil or soil-chemical to provide a specimen of the designed density. When using lime the mixture shall mellow for one hour prior to compacting in the mold.

3.2.2. The mixture shall be compacted in the mold in four equal layers by tapping the piston with a rubber mallet. One sleeve shall be added to the piston for each layer.

3.2.3. The sample shall be removed from the mold and weighed. Unconfined compression tests shall be performed on untreated samples after weighing. Treated samples shall be placed in a sealed plastic bag. This bag is placed in another bag, approximately 3 ounces of water added for a moisture barrier, sealed, and placed in an oven at 120 ^{o}F± 9 ^{0}F. The sample is cured for 48 hours and then tested.

3.2.4. Unconfined Compression tests shall be in accordance with AASHTO T-208.

4. CALCULATION: When the unconfined compressive strengths have been determined a plot shall be made of Qu (psi) verses percent chemical.

5. REPORT: The recommended percentage of chemical shall be determined and reported as follows:

5.1. The percentage at which a 50 psi increase occurs above the untreated soil strength, but with a unconfined compressive strength not less than 100 psi.

5.2. The percentage at which the peak strength occurs when 5.1.1 is not obtained.

APPROVED _____
DIRECTOR
DIVISION OF MATERIALS

DATE 02/26/08

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~~DATE 11/18/02~~