KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 1990 EDITION

SECTION 2002

HYDRATED LIME

Page 1010, subsection 2002.02(c). Delete this subsection, and replace with this:

(c) Hydrated Lime for Treating Soil, Soil-Aggregate and Bituminous Mixtures.

(1) Hydrated lime for this purpose shall be any hydrated lime product consisting of hydrated lime and insoluble inert material and conforming to the following as to chemical composition and residue:

- Available Lime Index as Calcium Hydroxide, minimum 90%
- Residue retained on a 600 µm sieve, maximum 1%
- Residue retained on a 75 µm sieve, maximum 20%

(2) Hydrated lime for treating soil and soil-aggregate may be manufactured at the jobsite by slaking of pebble quicklime. The equipment used for this process shall be specifically manufactured for this purpose, and shall be approved by the Field Engineer. Each load of quicklime shall be accompanied by a certification stating the purity for that load.

Using the relationship for Pure Quicklime (CaO) x 1.32 = Hydrated Lime ($Ca(OH)_2$), the basis of pay for jobsite slaked hydrated lime shall be the "calculated method" using the certified lime purity for each load. Determine the amount of water needed to make slurry from dry quick lime using the following:

$W_W = ((A+B)/P_S)-W_{QL}$

Where:

A = (Quicklime Delivered) * (% purity in decimal form) * 1.32 = $W_{QL} * P_{CaO} * 1.32$

B = (Quicklime Delivered) * (% inert material) * 1.0 = $W_{QL} * P_I$

A + B = Total Hydrated Lime Produced (Pay Quantity)

W_W = Mass of Water Required for Slurry of Given Percent Solids, megagrams

W_{QL} = Quicklime Mass, megagrams

P_{CaO} = Percent of CaO in the Quicklime, purity (as a decimal)

P_I = Percent of Inert Material in the Quicklime (as a decimal)

P_S = Percent Solids in the Lime Slurry (as a decimal)

Liters of Water = $W_W * 1\ 000$

If this process is used, verification sampling of the pebble quicklime is required on the basis of one per ten loads. The sample shall be identified as raw material for lime slaking, and the certification for the load sampled shall accompany the sample to the Materials and Research Center for comparison to the laboratory test.

(3) Carbide lime may also be used for treating soil and soil-aggregate. Carbide lime is hydrated lime which is created as a by-product during the manufacture of acetylene gas. It is a relatively pure form of hydrated lime and retains approximately 50% moisture indefinitely after the manufacturing process. It's consistency at delivery is that of a flowable to semi-flowable paste

which can be spread evenly over the subgrade. Hauling equipment shall be sufficiently sealed to prevent loss of the material during transportation.

During loading of the material, care should be taken to ensure the upper crust is thoroughly mixed with the lower portions to provide a consistent product. The solids portion of carbide lime material shall comply with all chemical and physical requirements of paragraph 2002.02(c), except as noted below.

The Contractor shall determine the percent solids of the material using a rapid method (e.g. microwave), which shall be approved by the Engineer. One test per five loads shall represent the quantity of material in those loads for pay, and for determining the rate of application. A copy of each test report shall be furnished to the Engineer along with copies of the mass tickets represented. If the material demonstrates consistent moisture content, a reduced testing frequency may be requested in accordance with Part V of the Construction Manual. The Engineer will conduct periodic unannounced check tests of the moisture content.

The pay quantity for carbide lime will be calculated as follows:

Mass of material delivered x % solids = Pay Quantity

The percent moisture will not be credited toward water for pay.

If carbide lime is used, verification sampling is required on the basis of one per ten loads. Samples shall be placed in an airtight container, sealed, and forwarded to the Materials and Research Center for complete analysis.

Prior to use of carbide lime on the project, the source shall be tested and approved. A representative sample of the material will be taken by the Engineer, and forwarded to the Materials and Research Center for analysis. The Engineer may approve the source without testing if the material is currently being used on another KDOT project for which approval testing has been completed.

If the available lime index falls below 90 percent during source qualification or verification testing, the first occurrence will be reported with a test result of non-comply (NCPL), and the Project Engineer will be notified immediately. The District Materials Engineer may elect to continue to use the source, and adjust the application and pay rates based on the available lime indexes reported on verification samples, or may require the contractor to obtain lime in another form or from another source. If it is decided to continue to use the source, all subsequent verification samples will report the available lime index with a test result of pass, attention advised (PAAA).

Page 1011, subsection 2002.04. Add the following to this subsection:

Shipments of pebble quicklime (for slaking) will be accepted upon receipt and approval of the certified lime purity for each load of quicklime, and the visual inspection of the final product in the field.

Acceptance of shipments of carbide lime (for use as hydrated lime) shall be based on approval of the source as outlined above, a Type C certification, visual inspection of the material in the field, and adjustments for moisture and available lime index as outlined above.

07-28-03 M&R(SP) (JJB) typographical correction 08-29-03

162020001	Hydrated Lime for Soil/Bitum (Carbide) , Lime for Soil/Bitum (Carbide)	ton	90P-120-R*	CRTD
162020002	Hydrated Lime for Soil/Bitum (Pebb Quick), Lime for Soil/Bitum (Pebb Quick)	ton	90P-120-R*	CRTD