

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Inter-Departmental Memorandum

TO: Design Team Leaders

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SUBJECT OR PROJECT NO: Application Rates

INFORMATION COPY TO:

COUNTY:

Roadway Design Division Engineer (Pickering)
Assistant Roadway Design Division Engineer (Purvis)
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The application rates for chemical treatment shown below are to be used to calculate estimated quantities for design purposes. Examples are shown for clarification.

CHEMICAL TREATMENT OF SUBGRADE

LIME TREATMENT

Application rate = 6% lime by weight
Weight of soil = 100 lbs per cubic foot

Mixing : width(ft) x length(ft) x 1/9 = SY

Lime : width(ft) x length(ft) x depth(ft) x %lime/100 x 100#\cf x 1 ton/2000# = Tons

Example: Treating 100 ft of subgrade, 30 ft wide and 6 inches deep

Mixing = $100 \times 30 \times 1/9 = 333.33$ SY

Lime = $100 \times 30 \times 0.5 \times 6/100 \times 100 \times 1/2000 = 4.5$ tons

LIME-FLYASH TREATMENT

Application rates = 3% lime by weight; 12% flyash by weight
Weight of soil = 100 lbs per cubic foot

Processing: width(ft) x length(ft) x 1/9 = SY

Lime : width(ft) x length(ft) x depth(ft) x %lime/100 x 100#\cf x 1 ton/2000# = Tons

Flyash : width(ft) x length(ft) x depth(ft) x %flyash/100 x 100#\cf x 1 ton/2000# = Tons

Example: Treating 100 ft of subgrade, 30 ft wide and 6 inches deep

Processing = $100 \times 30 \times 1/9 = 333.33$ SY

Lime = $100 \times 30 \times 0.5 \times 3/100 \times 100 \times 1/2000 = 2.25$ tons

Flyash = $100 \times 30 \times 0.5 \times 12/100 \times 100 \times 1/2000 = 9.00$ tons

CHEMICAL TREATMENT OF SUBGRADE (continued)

CEMENT TREATMENT (note: cement rates are measured by volume)

Application rate = 4% cement by volume

Weight of cement = 94 lbs per cubic foot

CWT = hundred weight

Mixing: width(ft) x length(ft) x 1/9 = SY

Cement: width(ft) x length(ft) x depth(ft) x %cement/100 x 94#/cf x CWT/100# = CWT

Example: Treating 100 ft of subgrade, 30 ft wide and 6 inches deep

Mixing = $100 \times 30 \times 1/9 = 333.33$ SY

Cement = $100 \times 30 \times 0.5 \times 4/100 \times 94 \times 1/100 = 56.40$ CWT

CHEMICAL TREATMENT OF GRANULAR MATERIAL

Conversion Factors (CF)

Weight of granular material Class 1 & 2 = 1.7685 tons per cubic yard

Weight of granular material Class 3 & 4 = 1.7415 tons per cubic yard

Weight of granular material Class 5 & 6 = 1.7145 tons per cubic yard

Weight of granular material Class other = 1.5390 tons per cubic yard

LIME TREATMENT

Application rate = 6% lime by weight

Mixing: width(ft) x length(ft) x 1/9 = SY

Lime : width(ft) x length(ft) x depth(ft) x 1/27 x %lime/100 x CF = Tons

Example: Treating 100 ft of Cl. 6, Gp. B granular material, 30 ft wide and 6 inches deep

Mixing = $100 \times 30 \times 1/9 = 333.33$ SY

Lime = $100 \times 30 \times 0.5 \times 1/27 \times 6/100 \times 1.7145 = 5.715$ tons

LIME-FLYASH TREATMENT

Application rates = 3% lime by weight; 12% flyash by weight

Processing: width(ft) x length(ft) x 1/9 = SY

Lime : width(ft) x length(ft) x depth(ft) x 1/27 x %lime/100 x CF = Tons

Flyash : width(ft) x length(ft) x depth(ft) x 1/27 x %flyash/100 x CF = Tons

Example: Treating 100 ft of Cl. 9, Gp. C granular material, 30 ft wide and 6 inches deep

Processing = $100 \times 30 \times 1/9 = 333.33$ SY

Lime = $100 \times 30 \times 0.5 \times 1/27 \times 3/100 \times 1.5390 = 2.565$ tons

Flyash = $100 \times 30 \times 0.5 \times 1/27 \times 12/100 \times 1.5390 = 10.26$ tons

CHEMICAL TREATMENT OF GRANULAR MATERIAL (continued)

CEMENT TREATMENT (note: cement rates are measured by volume)

Application rate = 4% cement by volume

Weight of cement = 94 lbs per cubic foot

CWT = hundred weight

Mixing: width(ft) x length(ft) x 1/9 = SY

Cement: width(ft) x length(ft) x depth(ft) x %cement/100 x 94#/cf x CWT/100# = CWT

Example: Treating 100 ft of Cl. 9, Gp. C granular material, 30 ft wide and 6 inches deep

Mixing = $100 \times 30 \times 1/9 = 333.33$ SY

Cement = $100 \times 30 \times 0.5 \times 4/100 \times 94 \times 1/100 = 56.40$ CWT

The application rates and equations shown above are to be used unless otherwise advised. Application rates are to be shown on typical sections. If you have any questions, please advise.