

QUALITY CONTROL AND CONSTRUCTION SPECIFICATIONS
for
High-Calcium Quicklime

1.01 Description

This work consists of mixing in-place soil with dry quicklime and water; then spread, mix, and compact the mixture to the lines, grades and dimensions shown on the plans and as specified in these specifications or special provisions.

1.02 Materials

In-place material shall not contain rocks or solids other than soil clods larger than 2.5 inches in any dimension. Removing and disposing of said rocks or solids larger than 2.5 inches will be paid for as extra work.

Quicklime – Quicklime shall be ASTM Designation: C 977 (Specification for Quicklime and Hydrated Lime for Soil Stabilization). Sampling shall conform to ASTM C 50. The Quicklime shall be protected from moisture until used and be sufficiently dry to flow freely when handled. Quicklime shall be furnished in bulk.

When dry sieved in a mechanical sieve shaker for 10 minutes +/- 30 seconds a 250-gram test sample of Quicklime shall conform to the following grading requirements:

Sieve Size	Percentage Passing
1/8	98 - 100

Water shall be clean and potable and shall be added as needed during mixing and re-mixing operations, during compacting, and during the curing period.

1.03 Proportioning / Spreading

The Quicklime shall be spread in one operation to the required width, grade and cross section. Quicklime shall be evenly spread at the designated rate and shall not vary more than 10 percent on any area. Only a calibrated spreader able to provide a uniform distribution of the Quicklime throughout the treatment area shall spread the Quicklime. The Quicklime shall be added in a dry state and every precaution shall be taken to prevent dusting.

Tailgate spreading of the Quicklime will not be permitted. Tailgating is defined as having manual control of the spread rate, instead of automatic. The spreader truck shall demonstrate the ability to maintain a consistent spread rate over variable travel speeds.

The contractor will demonstrate the consistency of the spread rate by conducting multiple pan tests.

No traffic other than the mixing equipment or other related construction equipment will be allowed to pass over the spread Quicklime until after completion of mixing.

1.04 Initial Mixing

Mixing equipment shall be equipped with a visible depth indicator showing mixing depth, an odometer to indicate travel speed and a controllable water additive system for regulating water added to the mixture. The initial mix shall be done while introducing water through a controllable pump on the mixing machine.

Mixing equipment shall be the type that can mix to the full depth of the desired thickness and leave a relatively smooth bottom of the treated section. Mixing and re-mixing, regardless of equipment used, will continue until the material is uniformly mixed, free of streaks or pockets of unhydrated Quicklime. Moisture content shall be more than **4 percent** over the treated soils design optimum after the initial mixing.

Treated material shall not be mixed or spread while the atmospheric or soil temperature is below 35 F or below 1.67 C.

The first and final mixings shall not be performed on the same day.

1.05 Mellowing and Re-Mixing

After initial mixing and hydration, the treated material shall mellow for a minimum of 16 hours prior to re-mixing. Once the mellowing period has been completed, the treated soil shall be re-mix and re-hydrated to the full depth of treatment.

All material other than rock or aggregate complies with the following requirements:

Sieve size	Percent Passing
1"	98 Min.

No color reaction of the treated material, exclusive of one inch or larger clods, is tested with the standard phenolphthalein alcohol indicator, will be considered evidence of inadequate mixing.

1.06 Compacting

The Quicklime treated soils shall be compacted to a minimum relative compaction determined by ASTM 1557 modified by using the maximum wet density compared to the in-place wet density.

The maximum compacted thickness of a single layer may be any thickness the contractor can demonstrate to the Engineer that his equipment and method of operation will provide the required compacted density throughout the layer.

Initial compaction shall be performed by means of sheepsfoot compactor. Final rolling shall be by means of steel-tired or pneumatic-tired rollers. Areas inaccessible to rollers shall be compacted to the required compaction by other means satisfactory to the Engineer.

1.07 Curing

The surface of each compacted layer of treated material shall be kept moist until covered by a subsequent layer i.e. baserock. If treated section is to be exposed for more than 3-days, then a curing seal may be considered. The cure seal shall consist of SS or CSS grade asphaltic emulsion, can be applied as an option to continued water curing after the initial 3-days.

Curing seal shall be applied at a rate of between 0.45- and 0.90-L per square meter of surface. Curing seal shall not be placed when the atmospheric temperature is below 5°C.