

**CITY OF COLUMBUS
PUBLIC SERVICE DEPARTMENT
TRANSPORTATION DIVISION**

**SUPPLEMENTAL SPECIFICATION 1502
SOIL MODIFICATION**

JULY 8, 2002

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SOIL MODIFICATION

1502.01 Description. This supplemental specification outlines the requirements for constructing an in-place modified soil structure by uniformly mixing an approved chemical modifier, such as Lime, Fly-Ash and/or Cement with the in-place soil and compacting the resulting mixture.

The intended purpose is to modify the soil to aid compaction by drying out wet areas, and to provide an improved working platform for subsequent construction. No credit will be accorded for this process in pavement design.

1502.02 Materials. The materials used shall meet the following requirements:

Lime. Hydrated lime and quicklime shall meet the requirements of section 712.04 (B) of the CMSC.

Cement. Cement shall meet the requirements of section 701 of the City of Columbus Construction and Material Specifications.

Fly Ash. Fly Ash, Class C or F, shall meet the requirements of section 705.13 and ASTM C 618. Fly ash not conforming to these requirements may be considered provided performance requirements of this specification can be achieved.

Water. Water shall be clean and clear. If the water is of questionable quality, it shall be tested in accordance with the requirements of AASHTO T 26.

Other Materials. It is not the intent of this document to limit the use of other materials, however, it is beyond the scope of this document to focus on materials for which AASHTO and ASTM standards have not been developed.

1502.03 Laboratory Testing Requirements. Proposed admixture proportions, along with moisture-density relationship curve(s), shall be submitted to the City by an approved geotechnical firm, selected by the Contractor, sufficiently in advance of the work for review and approval. A sufficient number of samples shall be taken to account for any changes in soil type.

1502.04 Equipment. The Contractor shall use equipment that will produce results meeting the requirements for application of materials, compaction, and finishing as controlled by these Specifications. All equipment necessary for the proper construction of the modified course shall be on the project and in satisfactory condition before construction begins. All equipment shall be subject to approval by the City.

1502.05 Storage and Handling. Modifiers shall be properly stored and handled in closed weatherproof containers until immediately before distribution. Hydrated lime, quicklime, or cement in bags shall be properly stored in weather-protected conditions with adequate protection from ground dampness, and the facility shall be approved by the City prior to commencement of any work.

1502.06 Construction Methods.

Temperature and Weather Limitations. Modification shall be performed only when ambient air temperature is above 40° F, and when the soil is not frozen. Do not perform this work during wet or unsuitable weather.

Preparation of Existing Roadway. Prior to starting the modification process all unsuitable materials, such as stumps, roots, and organic material shall be removed.

Spreading of Material. The modifier shall be spread using equipment that will provide uniform distribution over the entire repaired area and in such a manner as to limit scattering and loss by wind.

Tailgate spreading of material will not be permitted.

The material may be spread in either a slurry or dry form at the option of the Contractor.

Mixing. Immediately after spreading, the soil and modifier shall be uniformly mixed with blades, disks, harrows, or other suitable mechanical equipment. Water shall be uniformly applied to the soil mixture as needed to maintain optimal moisture content for the process.

Mixing operations shall be such that all ingredients are distributed evenly throughout the desired depth and provide a uniform mixture, free of segregation, satisfactory to the Engineer. The moisture content of the mixture should be maintained at $\pm 2\%$ of the optimum moisture content.

Compaction. Immediately upon completion of the spreading/mixing operations, the mixture shall be compacted to no less than 98% of the maximum dry density established by the laboratory in section 1502.03. All soil subgrade shall be compacted to 100%. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density.

If during the compaction operation depressions, defective areas or soft spots develop, they shall be corrected immediately.

After each section is completed, field density tests shall be made in accordance with COC Supplemental Specification 1501. If the compacted mixture fails to meet the specified density requirements, the City may require the area to be reworked as necessary to meet these requirements and may require the Contractor to change his compaction methods to obtain required density.

Finishing. When compaction of the modified soil is nearing completion, the surface shall be shaped to the required lines, grades and cross section; and compaction continued until uniform and required compaction is obtained. Once completed, the surface shall be sealed to protect against drying or damage due to inclement weather.

1502.07 Curing and Protection. After the subgrade has been finished as specified, it shall be cured for a period of at least 24 hours above 40°F.

All traffic or equipment other than curing equipment shall not be allowed on the finished subgrade until completion of curing, unless permitted by the Engineer.

1502.08 Maintenance/Defective Areas. The contractor shall maintain, at his expense the entire modified area in a manner satisfactory to the City. Maintenance shall include immediate repairs of any defective or damaged portions of the areas.

1502.09 Basis of Payment. The accepted quantities of modified soil will be paid for at the contract unit price per square yard or cubic yard, (*square meter or cubic meter*), which price and payment shall be full compensation for furnishing and placing all materials.

Item	Unit	Description
1502	Square Yard (<i>Square Meter</i>) Cubic Yard (<i>Cubic Meter</i>)	Soil Modification