

SECTION 203: UNSTABLE SUBGRADE STABILIZATION

203.1 DESCRIPTION

This work consists of stabilizing unstable subgrade soils encountered in non-borrow sections such as cuts or existing grades due to no fault or neglect of the Contractor. An unstable subgrade is defined as subgrade that is saturated, soft, pumping, and/or displaces with applied loading. This work includes costs associated with design/development of the Contractor's proposed stabilization option, materials, labor, tools, equipment, storage, laboratory and field testing, sampling, handling, excavation, disposal, removal, placement, hauling, processing with the subgrade, shaping, compacting, surveying, finishing to grade, proof-rolling the unstable subgrade areas after stabilization, and incidentals necessary to complete the work.

The City Engineer or designee shall have the option to either require the Contractor to stabilize the unstable subgrade soils in accordance with this section or to remove and replace them using the Section 202 Unclassified Excavation and Borrow pay items.

Subgrade modified by this specification is for stabilization only and is not considered in the structural design of the pavement structure. Therefore, no modification of the pavement structure shall be made.

203.2 MATERIALS

The Contractor shall use materials included in the contract or submit additional materials for review and approval by the City Engineer or designee.

203.3 CONSTRUCTION REQUIREMENTS

Where unstable subgrade is due to the failure of the Contractor to maintain adequate surface drainage, or is damaged due to the operations or any other fault or neglect of the Contractor, the unstable condition shall be corrected at the Contractor's expense.

In addition to areas identified as unstable during Section 205 Subgrade Preparation proof-rolling operations, materials that exhibit displacement under lightly loaded equipment shall be treated as unstable subgrade areas.

When stabilization requires more than blending, drying and recompacting, which is included in Section 202 of these specifications, the Contractor shall submit options to the City Engineer or designee for concurrence prior to performing stabilization operations. The Contractor shall choose any of the stabilization options listed below unless otherwise indicated in the contract. If site conditions warrant a change in the stabilization method, it shall be at the Contractor's expense.

1. Excavation and replacement with suitable material, including that which meets or exceeds the project design R-value with laboratory tests performed in accordance with AASHTO T-190 for the upper one (1) foot of the subgrade;
2. Use of aggregate base course, recycled asphalt pavement (RAP), or suitable backfill;
3. Installation of underdrains and associated geotextiles and material;
4. Geotextiles, geogrid base, and/or reinforcement materials;
5. Blending of existing materials with materials approved by the City Engineer or designee; or
6. Combinations thereof.

The City Engineer or designee may approve the use of excess material obtained within the right-of-way (ROW) that has previously been shown to be stable and workable. The drainage conditions or other earthwork function where the excess material is located shall not be changed by its removal. The material associated with the listed options and the work involved to obtain and place the material shall be incidental to the "unstable subgrade stabilization" item and shall not be paid separately. Areas disturbed to obtain excess material within the ROW but not designated in the contract shall be revegetated at the Contractor's expense.

After stabilization and prior to aggregate base course placement, the Contractor shall proof-roll the stabilized subgrade areas per the requirements of Section 205, Subgrade Preparation, as directed by the City Engineer or designee. The stabilized areas shall exhibit no displacement when proof-rolled.

The Contractor shall make the necessary adjustments in the equipment or operation so that underground utilities and permanent structures are not damaged.

The Contractor shall handle the processing of material in such a manner that the dust or debris created by the operation will not be hazardous to the public or workers and is in accordance with applicable ordinances.

The Contractor shall construct stabilized subgrade in such a manner that proper drainage is maintained.

The stabilized subgrade shall meet the grade and compaction requirements of Section 205, Subgrade Preparation, or as approved by the City Engineer or designee. Additional payment will not be made under the Subgrade Preparation item.

203.3.1 Equipment

Stabilization of unstable subgrade shall be performed with a machine or combination of machines or equipment that will produce a satisfactory product meeting the requirements for ripping, drying, recompaction, excavation, replacement, and blending of materials as provided in these specifications.

Single-shaft or multiple-shaft mixers are required for blending of existing materials with materials approved by City Engineer or designee. Agricultural disks or motor graders are not acceptable mixing

equipment unless the contractor can demonstrate thorough mixing and processing to the satisfaction of the City Engineer or designee.

203.3.2 Acceptance

Prior to placement of aggregate base material, the stabilized subgrade shall be approved by the City Engineer or designee. Stabilized subgrade locations that continue to exhibit displacement shall be corrected at the Contractor’s expense.

203.4 METHOD OF MEASUREMENT

Measurement for payment of Unstable Subgrade Stabilization will be by the square yard to the limits required, as authorized by the City Engineer or designee.

Unstable subgrade stabilization shall be measured by the square yard in two-foot maximum depth increments.

203.5 BASIS OF PAYMENT

Payment will only be made for the accepted quantities of unstable subgrade stabilization in accordance with Section 203.3.2, “Acceptance.” Each two-foot maximum depth increment shall be paid for separately.

PAY ITEM	PAY UNIT
Unstable Subgrade Stabilization	Square Yard

203.5.1 Work Included in Payment

The unit price bid per square yard shall include costs associated with the following:

1. Design/Development of contractor proposed stabilization option(s);
2. All materials required for stabilization;
3. Labor, tools, and equipment;
4. Sampling, storage, and laboratory and field testing;
5. Handling, excavating, removing, disposing, hauling, and placement;
6. Processing material with existing subgrade;
7. Shaping, compacting, surveying, finishing to grade, proof-rolling, and all appurtenances and incidentals necessary to complete the work;
8. Subgrade Preparation; and,
9. Revegetation of areas disturbed within the ROW, used to obtain excess materials for stabilization.