

## 301 - SUBGRADE CONSTRUCTION

### 301.1 DESCRIPTION

This work shall consist of constructing fly ash or cement treated subgrade, in accordance with Section 303 of the Standard Specifications except as otherwise modified herein.

### 301.2 MATERIALS

Suitable subgrade soil shall be defined as entirely imperishable soil with that portion passing the No. 40 Sieve having a liquid limit not exceeding 40 and a plasticity index not exceeding 25 when tested in accordance with ASTM D 4318. In no case shall rocks, larger than three inches in any dimension, be placed in subgrade.

For publicly funded projects the City Engineer may waive or redefine the requirements for suitable material if soil mitigation measures are included in the contract documents.

For privately funded street improvements, the Engineer shall provide a geotechnical report for approval by the City Engineer. The geotechnical report shall analyze proposed subgrade materials and if necessary make recommendations for soil modification as required to meet the soil suitability requirements in this specification or shall provide alternate mitigation recommendations.

Unstable material is considered to be material that has a moisture content above the plastic limit of the soil.

All fly ash and cement for subgrade treatment shall conform to Section 2000 of the Standard Specifications, and water used for treated subgrade shall conform to Section 2400 of the Standard Specifications.

Water used for subgrade treatment shall be provided by the Contractor.

### 301.3 CONSTRUCTION REQUIREMENTS

Application equipment for subgrade treatment shall be approved by the City Engineer one week prior to beginning operations. The contractor shall use equipment capable of producing a consistent application rate.

The treatment rate shall be established by the City Engineer, based on laboratory tests on the site materials and specific material to be supplied by the Contractor. The required moisture content shall be established by the City Engineer, based on laboratory tests on the site materials and the specified treatment rate.

When the thickness is greater than 8 inches, compact multiple lifts of equal thickness with a maximum lift thickness of 8 inches.

Treated trimmings shall be removed from the site and disposed of in accordance with all local, state, and federal regulations governing the incorporated materials.

#### a. Subgrading in Cut Sections

In the event that the subgrade material cannot be made suitable by soil treatment, the unsuitable material shall be removed and replaced with suitable soil. Where rock, shale, or similar material is found, the excavation shall be carried 18 inches below the finished subgrade for the full width of the paved area plus an additional width for form work for curbs, catch basins, curb inlets, etc. The excavated area shall be backfilled with suitable soil.

Unsuitable materials shall be wasted or used for embankment elsewhere on the project, with the approval of the Engineer. All waste sites shall be provided by the Contractor and approved by the City Engineer.

In the event that unstable material is observed within the subgrade subsequent to excavation to finished grades, refer to Section 205 of the City of Overland Park Standard Specifications.

#### b. Subgrading in Fill Sections

The Contractor shall make every reasonable attempt to utilize the most suitable material on site, as designated by the City Engineer, for preparation of subgrade. Prior to constructing grades in these

areas the Contractor shall inform the City Engineer of the materials to be used, in order that tests to determine the suitability of the materials may be conducted.

#### **301.4 MEASUREMENT AND PAYMENT**

The Engineer will measure the fly ash material by the ton and the manipulation of the fly ash by the square yard.

The Engineer will measure the cement material by the ton and the manipulation of the cement by the square yard.

The Engineer will measure "Excavation (Unsuitable)" by the cubic yard by cross-sectioning the area and computing the volume by the average end area method. Where it is impractical to measure material by the cross section method, the Engineer may use 3-dimensional measurements or other methods agreed to by both the Engineer and Contractor.

Payment for "Fly Ash", "Cement", and "Manipulation for Treated Subgrade" at the contract unit prices bid is full compensation for the specified work.

Payment for "Excavation (Unsuitable)" at the contract unit prices bid is full compensation for the specified work. No additional payment will be made for furnishing, backfilling and compacting these areas with suitable material.

Refer to City of Overland Park Standard Specification Section 205 for measurement and payment of "Excavation (Unstable)".

No separate payment will be made for water required for subgrade treatment.