

**CITY OF SAN ANGELO**  
**ITEM 200**  
**SUBGRADE PREPARATION**

**200.1 DESCRIPTION.**

This Item shall govern the scarifying, blading, and rolling of the subgrade to obtain uniform texture and density throughout the required depth as shown on the Plans.

**200.2 TESTING.**

The subgrade under areas to be paved shall be compacted to a minimum depth of **8 inches** and to a density of **not less than 95 percent for cohesive soils** or **100 percent for noncohesive soils** of the maximum density as determined by Test Method Tex-114-E / ASTM D 698. Noncohesive soils, for the purpose of determining compaction control, are those with a plasticity index (PI) of **less than 6**. The material to be compacted shall be **within +/- 2 percent of optimum moisture content** before rolled to obtain the prescribed compaction (except for expansive soils).

Field density determination will be made in accordance with Test Method Tex-115-E / ASTM D 2922 for field density and ASTM D 3017 for moisture content using a nuclear gage. If nuclear gages are to be used for density determination, the machines shall be calibrated in accordance with ASTM D 2922 using blocks of materials with densities that extend through a range representative of the density of the proposed embankment material.

Compaction is to be tested for density and moisture content acceptance as per Detail S-EE-1.

AASHTO T99 or T-180 (Moisture-Density) is required for soils that have more than 30 percent retained on the 3/4-inch sieve. The moisture-density relationship test procedures ASTM D 698 and D1557 are not applicable for materials with greater than 30 percent retained on the 3/4-inch sieve. A replacement procedure (ASTM D 4718) for the coarse material (greater than 3/4-inch) is used with ASTM methods but only until up to 30 percent is retained. Maximum density testing (ASTM D 4253) may be used but it also limits the material retained on the 1-1/2-inch sieve to 30 percent. The AASHTO T-99 and T-180 are similar to ASTM D 698 and D 1557, except they do not limit the replacement of the coarse material.

Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade. The finished grading operations, conforming to the typical cross section, shall be completed and maintained at least 1,000 feet (300 m) ahead of the paving operations or as directed by the City.

### **200.3 CONSTRUCTION METHODS.**

The roadbed or parking lot subgrade, as case may be, shall be excavated and shaped in conformity with the typical sections shown on the Plans and to the lines and grades established by the City. All unstable or otherwise objectionable material shall be removed or otherwise broken off to a depth of not less than six (6) inches below the surface of the subgrade. Holes or depressions resulting from the removal of such material shall be backfilled with suitable material compacted in layers not to exceed six (6) inches. All soft and unstable material and other portions of the subgrade, which will not compact readily or serve the intended purpose, shall be removed as directed. No direct payment will be made for such removal.

The subgrade shall be scarified to the depth shown on the Plans, then bladed and compacted in the manner outlined in the following paragraph, "Finishing and Compaction". The surface of the subgrade shall be finished to line and grade as established, and be in conformity with the typical sections shown on the Plans. Any deviation in excess of one-half (1/2) inch in cross section and in a length of sixteen feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and compacting by sprinkling and rolling. Material excavated in the preparation of the subgrade shall be disposed in a manner acceptable to the City.

### **200.4 FINISHING AND COMPACTION.**

The subgrade course, including an area one foot back of the proposed curb line, or as the case may be, shall be sprinkled as required and rolled as directed until a uniform compaction and the required density is obtained. Compaction of the subgrade may be done using any of the rolling equipment acceptable to the City. Rolling shall continue until the subgrade has been compacted to the required testing minimums per Section 200.2.

Tests will be made at the times and locations selected by the City. Notification will be a minimum of 24 hours.

Rolling shall progress gradually from the sides to the center of the lane under construction by lapping uniformly each preceding tract by at least 12 inches.

After rolling and watering, the subgrade shall be checked by the use of string line or instrument and all portions that do not conform to the lines and grades as shown on the Plans shall be scarified for at least six (6) inches, corrected and recompact to correct elevations.

Until the base course or pavement is placed, the subgrade shall be maintained free from cuts and depressions, in a smooth and compacted condition true to lines and grade and to the density requirements contained herein. All of the Contractor's hauling and other equipment used in such a way as to cause rutting and raveling of the subgrade shall either be removed from the work or suitable run-ways or other equivalent means shall be provided to prevent rutting.

The Contractor shall be responsible for maintaining and protecting the roadbed or the parking lot subgrade, as the case may be, for the entire length of the project.

During construction, grading of the subgrade shall be conducted so that berms of earth or other material do not substantially impede the flow of storm waters. Ditches and drains along the subgrade shall be maintained so as to drain effectively.

**200.5. MEASUREMENT.**

The subgrade preparation will be measured by the number of square yards of subgrade prepared and accepted by the Owner.

**200.6. PAYMENT.**

The amount of subgrade area measured as outlined under "Measurement" will be paid for at a unit price bid for this Item which will be full compensation for removing excess material, shaping, fine grading and compacting the subgrade; for furnishing and hauling all materials, blading and finishing and all labor, tools and incidentals necessary to complete the work.