

1.0 GENERAL

1.1 Related Work Specified Elsewhere

- .1 Trenching, Backfilling and Compaction for Utilities Section 02315

1.2 Site Conditions

- .1 Subsurface investigation is the responsibility of the Contractor.
- .2 Underground and surface utility lines and buried objects are known to exist within the area. The Contractor shall contact applicable utility companies for staking and more precise information prior to commencement of work.

1.3 Protection

- .1 Prevent damage to fencing, trees, landscaping, natural features, bench marks, existing buildings, existing pavement, surface or underground utility lines which are to remain. Make good any damage.

1.4 Scope

- .1 Items of work covered by this Specification are those pertaining to excavation, filling, hauling, compaction, stockpiling and other associated work required to construct roadway subgrades and easements to the required cross-sections and grades. Lot grading in some areas will also be required.

1.5 Definitions

- .1 Common excavation is defined as the excavation of all material other than rock, and shall include over-burden over rock, hard pan, quicksand, frozen earth and boulders up to a size of 0.2 m³ or boulders having an average diameter less than 600 mm.
- .2 Ditch is defined as V-shaped earthen drainage channel of varying depth with 3:1 sideslopes.
- .3 Swale is defined as broad V-shaped earthen drainage channel of shallow depth with 8:1 or flatter sideslopes.

1.6 Measurement and Payment

- .1 Common Excavation to Embankment: Shall be measured in cubic metres.

Excavated materials for roadway and lot embankment to be measured for payment in cubic metres in their original position. Measurements will be computed from elevations taken before excavation for water and sewer construction and before site excavation commences and after subgrade construction has been completed. Elevations will be taken by the Engineer

and computations for quantities will be made using the end area method. Embankment quantities calculated using 25% shrinkage factor.

Payment for roadway and site common excavation to embankment shall be considered full payment for excavation, hauling, excavation of unsuitable subgrade, watering and dewatering, placing and compaction to specified density, regravelling of adjacent structures disturbed by construction, disposal of all boulders not allowed as backfill and all other work required for which separate payment is not indicated in the tender form.

.2 Common Excavation to Stockpile: Shall be measured in cubic metres.

Excavated materials for stockpile placement to be measured for payment in cubic metres in their original position. Measurements will be computed from elevations taken before excavation for water and sewer construction and before site excavation commences and after subgrade has been completed. Elevations will be taken by the Engineer and computations for quantities will be made using the end area method.

Payment for common excavation to stockpile shall be considered full payment for: excavation and trimming to the lines, grades, slopes and elevations shown on the drawings, hauling and placing and trimming within the stockpile limits. Stockpile location to be determined by Owner.

.3 Existing Stockpile Relocation: Shall be measured in cubic metres.

Stockpile relocation to be measured for payment in cubic metres in their original position. Elevations will be taken by the Engineer and computations for quantities will be made using the end area method.

Payment for stockpile relocation shall be considered full payment for: loading, hauling, placing and trimming with the stockpile limits. Stockpile location to be determined by Owner.

.4 Drainage Swales and Ditches

Drainage swale and ditch excavation shall be paid for as common excavation.

.5 Boulder Excavation: Shall be measured in cubic metres.

Boulders to be measured for payment shall be set at the side of the trench for measurement by Engineer. The boulders shall be individually measured in 3-point dimensions. Upon completion of measurement, the Engineer shall mark the boulders so they can be disposed of at a site approved by the Engineer and secured by the Contractor. The cost of this disposal and replacement with approved backfill shall be included in the unit price for boulder excavation.

2.0 PRODUCTS

2.1 Materials

- .1 Excavated or graded material to be approved by Engineer before use as fill for grading work.

3.0 EXECUTION

3.1 Construction of Embankments

- .1 Suitable excavated material shall be used in the formation of embankment fills or for other backfill. Excavation used as fill in the road shall be placed and compacted in lifts not exceeding 150 mm. The material shall be bladed, shaped and compacted with appropriate compaction equipment to 98% of Standard Proctor Density and to conform to the required gradelines and cross-sections. Sufficient compaction equipment shall be employed to keep pace with the rate of placement of embankment fill. If required, the material shall be wetted or dried during placing to ensure the proper moisture contents as determined by the Standard Proctor Density Test.
- .2 The Contractor shall be responsible for the supply of any water necessary for the work. Compaction water may be available from the City water mains upon approval of the Owner. The Contractor shall limit use of hydrants to one hydrant and shall notify the City well in advance which one he wishes to use. No separate payment shall be made for this work. Payment will be made on the basis of excavated volumes and no extra payment will be made for earth placed in fills or embankments.

3.2 Grading

- .1 Rough grade to levels, profiles, contours and typical cross-sections shown on the drawings or as staked by the Engineer.
- .2 The finished subgrade shall conform to the grade lines and cross-sections within a tolerance of ± 30 mm in all areas.
- .3 Compaction of sub-grade and fill material shall be at or near optimum moisture content to a minimum of 98% of the maximum dry density as determined by ASTM Test Designated D698.
- .4 If the soil contains moisture in excess of the optimum it shall be aerated until the moisture content has been reduced to optimum. Water shall be added if required for proper compaction.

3.3 Overhaul

- .1 There shall be no additional payment for overhaul for common excavation for embankments.
- .2 Contractor to determine these costs and include in the unit price bid for roadway and lot excavation.

3.4 Settlement

- .1 Immediately before the commencement of maintenance period, bring all fills that have settled up to grade with suitable site material. It will be the responsibility of the Contractor to restore to design grade only locations in which the settlement exceeds 50 mm during the maintenance period.

3.5 Granular Base Course Placement

- .1 After completion of road grading, underground utility installations, subgrade preparation, and geotextile filter fabric installation haul granular base course and place as shown on the drawings.

3.6 Testing

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by Engineer.
- .2 Costs for compaction testing will be borne by the Owner. Refer to Section 01450.

3.7 Surplus Material

- .1 Dispose of surplus material not required for grading to the designated stockpile.

END OF SECTION