

PART 1        GENERAL

1.1            Definitions

.1            Topsoil:

- .1            The top layer of soil containing organic material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.2            Subsoil:

- .1            Soil located immediately below the topsoil, usually characterized by higher clay content or presence of roots and a lighter or darker colour than the soil immediately above or below.

1.2            Measurement for Payment

- .1            Topsoil and subsoil stripping will be measured for payment in cubic meters and charged under bid item 3 - Stripping.

The work includes:

- .1            Furnishing all labour, equipment, and materials for execution and hauling to stockpiles of all works specified including all incidental work.  
.2            Stripping within the areas shown on the drawings.  
.3            Separation and separate stockpiling or windrowing of the topsoil and subsoil.  
.4            Stockpiling on site or removal and disposal of existing concrete landscaping blocks as directed by the Departmental Representative.

PART 2        PRODUCTS

- .1            Not used.

PART 3        EXECUTION

3.1            Temporary Erosion and Sedimentation Control

- .1            Provide temporary erosion and sedimentation control measures in accordance with section 01 35 43 – Environmental Procedures.

3.2            Stripping of Topsoil

- .1            Remove topsoil before construction procedures commence to avoid compaction of topsoil.  
.2            Excavate topsoil as close as is practicable to the lines and grades shown on the Drawings, or as required by the Departmental Representative.  
.3            Topsoil will be stripped to a depth that will ensure complete removal of all organic materials.  
.4            Stripped topsoil shall be separated and stockpiled in areas indicated on the drawings or as otherwise designated by the Departmental Representative.

- .5 Topsoil stockpile must be placed on an unstripped topsoil area.
- .6 Special care must be taken to avoid mixing topsoil with the underlying soil. The Departmental Representative may require that the Contractor provide a separate stockpile for topsoil contaminated with common material. Protect stockpiles from contamination and compaction.

END OF SECTION

PART 1      GENERAL

1.1      Definitions

- .1      Common Excavation: all excavated material such as earth, clay, hardpan, soft shale, sand, gravel, or frozen earth.
- .2      Unsuitable Materials: Unsuitable materials are materials other than organic materials that are, in the opinion of the Departmental Representative, not suitable for use in subgrade of parking area, perimeter and access roads, embankments or fills.

1.2      Measurement for Payment

- .1      Site grading and obliteration of existing parking facility access will be measured for payment in cubic meters and charged under bid item 2 – Grading. Preparation of Subgrade will be measured in squared meters and charged under bid item 4 – Subgrade Preparation. Site grading includes supply of all labour, material and equipment to excavate all materials within the site limits and construct all fills and embankments or haul to stockpile areas as shown on the drawings. Unusable materials will be disposed offsite or blended into existing grade on site as directed by the Departmental Representative.
- .2      The Work includes:
  - .1      Surveying and staking all excavation and embankments.
  - .2      Excavation to lines, grades and elevations shown on the drawings.
  - .3      Obliteration of existing parking facility access off of township road 444.
  - .4      Supply and install all silt fencing in areas of fill and near water bodies.
  - .5      Construction of embankments to lines, grades and elevations shown on the drawings.
  - .6      Excavation and removal of unsuitable materials from excavation to designated areas on site as directed by Departmental Representative.
  - .7      Placement and compaction of material in fills and embankments to a minimum of 98% Standard Proctor Density or as shown on the drawings.
  - .8      Contractor is responsible for the quality assurance and quality control (QA/QC).
  - .9      Watering for compaction.
  - .10      Excavation, scarification and recompaction of all areas noted on the construction drawings.
  - .11      Ditch construction, trimming and clean-up.
  - .12      Perform any dewatering required before or during construction, levelling, and grading.
  - .13      Disposal of unusable materials offsite.
  - .14      Provision of all labour, materials and equipment required to complete the work as specified, and
  - .15      All incidental work for which payment is not specified elsewhere.

.3 Work does not include:

.1 Construction, maintenance and rehabilitation (including topsoil removal/replacement and any grubbing and clearing) of the Contractor's haul roads are incidental to the work.

.4 Over excavation will not be paid for.

### 1.3 Protection

.1 Contractor will be responsible for locating and protecting all existing underground and surface structures, utility pipelines, overhead lines and poles, fences, building services, cables, culverts and other works. Contractor will repair all damage incurred at his expense.

## PART 2 PRODUCTS

### 2.1 Materials

.1 Acceptance of material at source does not preclude future rejection if the material is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

## PART 3 EXECUTION

### 3.1 Grading

.1 Grading shall include the removal and/or satisfactory placement of all materials necessary for the construction and preparation of embankment, slopes, drainage works, alignment, grade and cross-section shown on the Drawings or as required by the Departmental Representative.

.2 All soft and yielding material, if so directed by Departmental Representative, shall be removed and replaced with acceptable material, and all loose stone, clods, weeds, trash, etc. shall be removed from side slopes, ditches and back slopes. All improperly compacted material shall be excavated, brought to optimum moisture content if required, and recompacted at Contractor's own expense. On the side slopes and back slopes, and in the bottom of ditches, all projecting boulders must be removed or broken off at least flush with the lines and grades, and the resultant cavities, if any, backfilled.

### 3.2 Embankments

.1 Embankment shall be constructed by depositing, shaping and compacting acceptable excavated material. The embankments shall be constructed above the natural ground or other level as required by the Departmental Representative, in conformity with the lines, grades and cross-sections shown on the Drawings.

.2 All suitable material from excavations shall be used in forming embankments or shall be otherwise transported to stockpile as Department Representative may require.

- .3 Embankment shall be formed of suitable unfrozen material. Stumps, trees, rubbish, sod, topsoil or other unsuitable material shall not be placed in the embankment.
- .4 Embankment material shall not be placed on frozen earth, snow or ice, nor shall frozen soils, ice or snow be placed in any embankment. Any frozen material in the embankment shall be removed and disposed of at Contractor's expense before proceeding with further embankment construction.
- .5 Embankment shall be constructed so that after settlement is complete the required grade and cross section is attained at all points. If at any time before final acceptance of the work the embankment settles below the required grade, it shall be brought back to the required grade by the Contractor.

### 3.3 Scarification and Recompaction (Subgrade Preparation)

- .1 Scarification shall be performed to 150 mm depth. Where the depth of scarification noted on the Drawings exceeds 150 mm, the material shall be excavated and replaced in 150 mm lifts.
- .2 Scarified areas shall be recompacted to a minimum of 98% Standard Proctor Density at or above the optimum moisture content (OMC). Where the material is below the OMC, water shall be added. Where the material is significantly above the optimum moisture content, the material shall be dried. Where the areas to be recompacted exceed 150 mm, the material shall be replaced in 150 mm (compacted) lifts.

### 3.4 Embankment Compaction

- .1 All material placed in embankments shall be spread and bladed smooth in successive layers, not to exceed 150 mm in depth when compacted and to the full width of the cross-section. Where the embankment to be placed traverses muskeg or yielding ground and it is not possible to place the initial embankment lift in a 150 mm compacted depth, the Contractor may, upon approval of the Departmental Representative, construct the first embankment lift to a depth sufficient to support the construction equipment. Each layer shall be compacted by means approved by the Departmental Representative to a minimum of 98% Standard Proctor Density. The material in each layer shall be compacted to the optimum moisture content plus or minus 2%, unless otherwise required by the Departmental Representative. The degree of compaction and/or moisture content will be determined by insitu density testing before the succeeding layer is placed at the Departmental Representative's discretion.
- .2 Compaction over the entire surface area of each layer shall be obtained by equipment to meet the specified density requirements. Hauling equipment will not be accepted in lieu of compaction equipment. Compaction to the specified density shall be obtained uniformly throughout each layer.
- .3 Where moisture content tests indicate that material being used for embankment is above optimum moisture content, the material shall be thoroughly worked until its optimum moisture content is reached or as directed by the Departmental Representative.
- .4 Where moisture content tests indicate the material for embankment is below optimum moisture, water shall be added. The material shall be thoroughly disced

and broken down, water added in amounts as required, and the material thoroughly worked to mix the water uniformly throughout the soil prior to commencing compaction operations. The type of water hauling and spraying equipment used shall be satisfactory to the Departmental Representative.

3.5 Obliteration of Existing Roadway

- .1 When sections of the existing roadway, accesses and crossings, are obliterated upon completion of the new roads or when approved alternative roads are operational, any topsoil and subsoil from the area to be obliterated shall be excavated and salvaged separately. The material excavated from the obliteration operation shall be utilized for embankment construction or disposed of as determined by the Departmental Representative.
- .2 Obliterated areas shall be graded to provide positive drainage, and shall be reclaimed to a neat and tidy condition comparable to that of the adjacent ground. The Work shall be carried out in accordance with Subsection 3.1, Grading, and Specification 32 92 19.13 – Topsoil and Seeding, to the satisfaction of the Departmental Representative.

3.6 Testing

- .1 Testing of materials and compaction testing will be carried out by an independent testing company and paid for by the Contractor.
- .2 Compaction results shall be based on a minimum of one density test per 1500 square meters per lift of embankment. If, upon inspection, proof rolling appears to be insufficient, additional tests may be called for by the Departmental Representative.
- .3 Field density tests shall conform with ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

3.7 Finishing and Tolerances

- .1 Finished surfaces are to be graded to promote positive drainage and minimize standing water.

3.8 Maintenance

- .1 Maintain finished surfaces in a condition in accordance with this Section until succeeding material is applied or until acceptance.

END OF SECTION

PART 1      GENERAL

1.1      Measurement for Payment

- .1      No separate payment shall be made for Excavation, Trenching, and Backfill. Excavation, Trenching, and Backfill shall be considered incidental to the associated work.

PART 2      PRODUCTS

2.1      Materials

- .1      Materials for use in Backfill shall conform to the City of Edmonton Construction Specifications Section 02318 – Trench and Backfill.

PART 3      EXECUTION

3.1      Trenching

- .1      All trench work including excavation, trench dimensions, shoring, trenching in poor ground, trenching in rock, and boring, shall conform to the City of Edmonton Construction Specifications Section 02318 – Trench and Backfill.

3.2      Dewatering

- .1      Keep the excavation free of water.
- .2      Protect open excavations against flooding and damage due to surface run-off.
- .3      Do not allow ground water to drain into water pipes.
- .4      Water from the excavation or from a well point system shall be disposed of in accordance with the General Requirements or in a manner approved by the Departmental Representative. Do not pump muddy water into local sewers. Obtain written approval for disposal of clean water into local sewers.
- .5      Dispose of water in a manner not detrimental.

3.3      Backfilling and Compaction

- .1      Backfill the trench with approved fill material from the top of bedding to the designated subgrade elevation or existing ground level, whichever is lower.
- .2      Place backfill in uniform horizontal lifts and compact each lift according to trench and backfill types in 3.6 below.
- .3      Remove any free water from a lift before placing the next lift of backfill.
- .4      Do not start daily excavation, backfilling or compaction for open cut trenches under pavement when the average air temperature is expected to be -10°C or lower or when the minimum air temperature is expected to be -20°C or lower.
- .5      Do not backfill with frozen soil or with material containing ice, snow, straw, organic or other deleterious material.

- .6 backfill shall conform to the City of Edmonton Construction Specifications Section 02318 – Trench and Backfill type 2 backfill and meet all required compaction and moisture content requirements.

#### 3.4 Testing

- .1 Trench greater than 15 m in length: A minimum of 2 density tests per 600 mm of trench depth per 100 m of trench length. The tests shall be representative of the entire length, width and depth of trench backfill, including areas around catch basins, manholes, valves and service connections. The Departmental Representative or a qualified geotechnical representative, may require additional testing as deemed necessary.
- .2 Trench 15 m or less in length: A minimum of 3 density tests evenly spaced through the depth and length of the trench or as directed by the Departmental Representative.
- .3 Non-compliance: If a density test result is less than the required density, that test result is discarded and 3 retests shall be performed on the area represented by the failed test. The average of the 3 retests shall represent the density of that area. If this average is less than the required density, the area shall be reworked to the full depth of the lift, the soil moisture altered as necessary and recompact to the required density. If the area is not retested but is reworked and recompact the area shall be tested at normal testing frequencies.

#### 3.5 Restoration and Cleanup

- .1 Restore or replace all pavement structures, sidewalk and curb and gutter damaged or removed during trenching and backfilling, unless directed otherwise by the Departmental Representative.
- .2 Restore or replace in an approved manner all fences, poles, shrubs, grass and other structures damaged or removed during trenching and backfilling, unless directed otherwise by the Departmental Representative.
- .3 Remove and dispose of all debris, surplus fill and unused material excavated from the trench.

END OF SECTION