



**CITY OF  
SWIFT CURRENT**  
where life makes sense

**SECTION 02010  
SITE PREPARATION AND GRADING**

**DECEMBER 2015**



## CONSTRUCTION SPECIFICATIONS

SECTION: 02010

### SITE PREPARATION AND GRADING

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## 1 GENERAL

### 1.1 DESCRIPTION

- 1.1.1 The work described in this section pertains to the preparation and grading for sites for construction.

### 1.2 DEFINITIONS

- 1.2.1 **Topsoil:** Material capable of supporting good vegetation growth and suitable for use in top dressing, landscaping and seeding.
- 1.2.2 **Common Excavation:** Common excavation shall consist of all materials such as earth, topsoil, organic material, muskeg, clay, hardpan, shale, silt, sand, gravel, fractured bedrock, cobbles and frozen material, removed from the roadway and placed in fill or embankment areas, or otherwise disposed as approved by the City. Excavation shall be to the lines and grades indicated on the plans, within limits of the work contracted, or as directed by the City. Borrow materials will be authorized only after excavated materials have been utilized.

### 1.3 RELATED SECTIONS

- 10000 Flexible Guide Posts and Delineators
- 12000 Regulatory Roadway Signs
- 02015 Sub-Grade Preparation
- 03001 Aggregates General
- 03005 Granular Base Course
- 03010 Granular Sub – Base
- 03060 Geotextile and Rolled Erosion Control Devices
- 03070 Rip – Rap
- 04000 Asphalt Pavement Crack Routing and Sealing
- 04001 Asphalt Pavement Crack Sealing
- 04015 Asphalt Concrete
- 04025 Prime, Tack and Fog Coats
- 04070 Asphalt Concrete Pavement Milling
- 06010 Concrete Side walk, Curb and Gutter Construction
- 07000 Pavement Markings

### 1.4 INSPECTION AND TESTING

- 1.4.1 Field density and moisture content tests shall be carried out by a representative approved by the City in accordance with the following ASTM standards:



The practice of like on like (topsoil on topsoil and sub soil on sub soil) shall be used in the stripping procedure and storage practices.

- 2.3.3 The Contractor shall salvage all soil materials using a single lift soil handling method consisting of the handling topsoil in a single distinct stripping procedure. If materials cannot be immediately redistributed, they shall be stored separately where they will not be disturbed, contaminated, or lost to erosion.
- 2.3.4 Soil salvaging operations should be scheduled to avoid handling wet and or frozen materials. Soil Stripping may be suspended by the Engineer if conditions are deemed unfavourable to successful quality control.
- 2.3.5 The Contractor shall locate, construct, and maintain all access, haul, and other support roads in such a manner as to control and minimize channeling and other erosion. Steep slopes, steep grades, drainage ways, and high erosion hazard areas should be avoided. Erosion should be minimized by reducing widths and lengths, controlling runoff and sedimentation by using appropriate and accepted practices which can include: berms, water bars, using energy dissipaters such as rocks, logs, and straw bales, constructing small settling basins and use of sediment control devices such as silt fence or coir logs. All temporary disturbances shall be stabilized on either side of the access with an erosion control seed mix.

## 2.4 STOCKPILING

- 2.4.1 The Contractor shall:
- Load, haul and place materials in stockpiles designated by the Engineer;
  - Stockpile in a manner that not endanger persons, the work or adjacent property;
  - Keep topsoil stockpiles separate and do not mix with common excavation;
  - Maintain a minimum of one meter (1m) separation between topsoil and common excavation material when stockpiling;
  - Leave openings in stockpiles so that fields are accessible to land owners.
  - Topsoil shall be stripped from areas dedicated for stockpile storage of clay, rock and other fill materials.

## 2.5 MIXING

- 2.5.1 If the topsoil and subsoil are mixes and the topsoil is adversely affected, the Contractor shall, at his expense, engage a soil specialist to determine the necessary remedial work, and shall perform the required work.

## 2.6 MOWING

- 2.6.1 Mowing of crops, or grassland may be required prior to stripping. All efforts shall be made for removal of crops from cultivated lands to enable easier reclamation of pipeline rights-of-way. These methods can be done by mowing, silaging, or swath/baling of crops, at the discretion of the Engineer. No extra payment shall be made, but considered incidental to the work.

## 2.7 DISPOSAL AREAS

- 2.7.1 Disposal areas shall be as designated by the Engineer.

## 2.8 COMMON EXCAVATION WASTE

- 2.8.1 All common and rock excavation deemed unsuitable for use in embankments, or other project items of work, or in excess of that required for embankment, shall be disposed at locations determined by the Contractor and approved by the Engineer.
- 2.8.2 All disposal areas shall be left in a neat and tidy condition satisfactory to the Engineer. Excavation materials shall be graded smooth to promote surface drainage and not to impede existing surface drainage by the Contractor, to the approval of the Engineer.
- 2.8.3 The Contractor shall excavate and grade all areas to levels, cross section lines and dimension as set out in the field.
- 2.8.4 All surfaces and side slopes shall conform to grade and cross section staked by the Engineer.

## 2.9 COMMON EXCAVATION

- 2.9.1 The Contractor shall remove topsoil and unsuitable material from areas designated for embankments.
- 2.9.2 Low areas are to be filled first so embankment may be constructed full width in uniform layers.
- 2.9.3 Relative elevation shall be graded to plus or minus fifty millimeters (+/- 50mm), but not consistently high or low.
- 2.9.4 Embankment shall be placed on lots and within the road right-of-way, but not under the road structure. It shall be uniformly constructed to the typical cross section and grades shown on the plans or as set out by the Engineer, and shall include the formation, compaction and shaping of the embankment.
- 2.9.5 The full depth of fills shall be constructed of suitable material, in layers not exceeding two hundred millimetres (200mm) compactive depth. Each layer shall be compacted to a minimum of ninety eight percent (98%) Standard Proctor Density (SPD) within plus or minus 2 percent ( $\pm 2\%$ ) optimum moisture content.
- 2.9.6 Material shall not be placed in free-standing water. If water is present than it shall be drained before placing materials.
- 2.9.7 Materials which cannot be compacted to the specified density, due to high or low moisture content, shall be dried or watered by the Contractor to their optimum moisture content as necessary to achieve the specified compaction.

## 2.10 ASPHALT REMOVAL WASTE

- 2.10.1 The existing Asphalt surface is to be removed separately from the roadway. This material is to be hauled to a waste site approved by the Engineer.

### 3 MEASUREMENT AND PAYMENT

#### 3.1 TOPSOIL STRIPPING

- 3.1.1 Topsoil stripping will be paid for at the contract unit rate per cubic meter ( $m^3$ ) and classified as Common Excavation for this material to be moved once, based on measurements taken by the Engineer. Such payment shall be considered full compensation for all labour, materials and equipment necessary for all stripping, loading, hauling, and stockpiling of topsoil on site, at a Municipal landfill site, or other locations designated by the Engineer. Stripping excavation shall be measured in cubic meters ( $m^3$ ) in place from the cross sections taken before and after stripping, and computed using the average end area method.

#### 3.2 COMMON EXCAVATION WASTE

- 3.2.1 Payment for common excavation disposed of on site, as approved by the Engineer, or at an approved off-site disposal location, shall include all costs for excavating, loading, hauling, shaping and smoothing of disposal areas, constructing and maintaining of access roads, and clean up. Over excavation, unless ordered by the Engineer, will not be paid for. No allowance will be made in the measurement or payment for bulking or shrinkage.
- 3.2.2 Payment will be made at the bid unit price per cubic meter ( $m^3$ ). Measurement shall be the difference between the volume of total common excavation and the volume of total common excavation to embankment, based on the average end area method, using cross sections at approximately twenty meter (20m) intervals along the road centreline.

#### 3.3 COMMON EXCAVATION

- 3.3.1 Payment for common excavation excavated to subgrade limits, and as a result of lot grading, shall include all cost for excavation, hauling, placing, construction of embankments, compacting, watering or drying the material, culling and disposal of cobbles and boulders, trimming, filling and compacting embankment material low areas, finishing and shaping to grade and the designated cross section (including minor excavation to grade), trimming and shaping of boulevards, lot grading, disposal of excess materials and debris at approved locations, and clean up.
- 3.3.2 There will be no allowance made in the measurement or payment of this item for shrinkage of embankment material due to the watering and compaction required to achieve the specified material densities.
- 3.3.3 Payment for excavation below design grade will be made only if the Contractor has been instructed to excavate below that elevation. Unauthorized over excavation shall be replaced with acceptable materials and compacted by the Contractor, at no cost to the owner.
- 3.3.4 Payment will be made at the bid unit price per cubic meter ( $m^3$ ). Measurement will be by cross sectional measurements, and shall be taken by the Engineer at twenty meter (20m) intervals along the centre line of the road, extending out to the boundary of cut lines before excavation, placement and compaction of the embankment material, and subgrade



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construction. These preconstruction cross sections will be compared to the subgrade final cross section to derive the common excavation quantity.

**END OF SECTION**