

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS
- .1 Section 312333.01 – Excavating, Trenching and Backfilling
 - .2 Section 329119.13 – Topsoil Placement and Grading
- 1.2 BASIS FOR PAYMENT
- .1 Erosion and Sediment Control Plan - The work under this item shall include the submission of an Erosion and Sediment Control Plan to the Departmental Representative for review and approval as well as supply of and maintenance of all required erosion and sediment control measures per the approved plan.

Payment at the contract lump sum price shall be full compensation for all labour, materials and equipment to do the work including disposal.
 - .2 No measurement for payment will be made under this section. Include costs in items where required including all labour, materials and equipment.
- 1.3 REFERENCES
- .1 ASTM International
 - .1 ASTM D 698-7e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600kN-m/m³).
 - .2 CSA International
 - .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .3 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS 1004-06, Material Specification for Aggregates-Miscellaneous.
 - .2 OPSS SP 110F13-03, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.
- 1.4 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 013300 - Submittal Procedures.
 - .1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with authorities having jurisdiction.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Granular A, B Type II, Select Subgrade to OPSS.
 - .2 Unshrinkable fill: concrete to CSA A23.1/A23.2.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions:
 - .1 Before commencing work establish locations of buried services on and adjacent to site and conduct, with the Departmental Representative, a survey of existing condition and structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.
- .2 Evaluation and Assessment:
 - .1 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.
 - .2 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by Departmental Representative.
 - .3 Not later than 1 week before backfilling or filling, provide to designated testing agency, 23 kg sample of backfill and fill materials proposed for use.
 - .4 Not later than 48 hours before backfilling or filling with approved material, notify Departmental Representative so that compaction tests can be carried out by designated testing agency.
 - .5 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Use temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in accordance with sediment and erosion control plan, specific to site, and to requirements of authorities having jurisdiction.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Protection of in-place conditions:
 - .1 Protect excavations from freezing.
 - .2 Keep excavations clean, free of standing water, and loose soil.
 - .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative 's approval.
 - .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing

- trees from damage.
- .5 Protect buried services that are to remain undisturbed.
- .6 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .7 No excavation in bedrock for must be carried out.
- .8 No raising of ground level more than 150mm within limit of protection of existing trees will be permitted. No removal of soil will be permitted within the limits of tree protection.
- . Carry out excavations to protect trees and archaeological resources in accordance with the requirements in drawings and current book of specifications.

.3 Removal:

- .1 Remove obsolete buried services within 2 m of foundations. Cap cut-offs.
- .2 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .3 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.
- .4 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.
- .5 Remove stumps and tree roots below footings, slabs, and paving, and to 600 mm below finished grade elsewhere.

3.3 EXCAVATION

.1 Topsoil stripping:

- .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
- .2 Strip topsoil to depths as directed by Departmental Representative. Avoid mixing topsoil with subsoil.
- .3 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.
- .4 Stockpile in locations as directed by Departmental Representative.

.2 Excavate as required to carry out work, in all materials met.

- .1 Before beginning landscape architecture related excavation work, erect a sufficient number of guides to properly align and locate work to be constructed.
- .2 Do not disturb soil or rock below bearing surfaces. Notify Departmental Representative when excavations are complete.
- .3 Excavate using guides and at required levels by providing space for subsequent work taking into account projected levels.
- .4 Comply with profiles prescribed in drawings.
- .5 Excavate to provide uniform and continuous bearing and to minimize the addition of fill materials.
- .6 If bearings are unsatisfactory, additional excavation will be

- authorized in writing and paid for as additional work.
- .7 Fill excavation taken below depths shown without Departmental Representative's written authorization with concrete of same strength as for footings.
- .8 The bottom of excavation trenches must be uniform, dry and undisturbed, unless otherwise indicated, and free organic matter or fill materials.
- .9 Give along the edge of the excavation an adequate slope to prevent water to seep in.
- .10 Provide and operate pumps and machinery necessary to free excavations of water from all sources and in all circumstances.

.3 Excavate trenches to provide uniform continuous bearing and support for 150 mm thickness of pipe bedding material on solid and undisturbed ground. Trench widths below point 150 mm above pipe not to exceed diameter of pipe plus 600 mm.

.4 Excavate for slabs and paving to subgrade levels.
.1 Remove topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

3.4 SITE QUALITY CONTROL

.1 Fill material and spaces to be filled to be inspected and approved by Departmental Representative.

3.5 BACKFILLING

.1 Start backfilling only after inspection and receipt of written approval of fill material and spaces to be filled from Departmental Representative.

.2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.4 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as specified for fill. Fill excavated areas with selected subgrade material compacted as specified for fill.

.5 Placing:
.1 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.
.2 Place unshrinkable fill in areas as indicated. Consolidate and level unshrinkable fill with internal vibrators.

.6 Compaction: compact each layer of material to densities as indicated in the geotechnical report or to ASTM D 698 if not otherwise indicated:
.1 To underside of basecourses: 95%.
.2 Basecourses: 100%.
.3 Elsewhere: 90%.

.7 Under slabs and paving:
.1 Use native backfill up to bottom of granular base courses.

- .2 Use the following for granular courses:
 - .1 Sub-base: minimum 300 mm Granular B Type II.
 - .2 Base: 150 mm Granular A.

- .8 In trenches:
 - .1 Up to 300 mm above pipe or conduit: sand or granular material as directed by Departmental Representative.
 - .2 Over 300 mm above pipe or conduit: native material approved by Departmental Representative.

- .9 Under planted, seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.

- .10 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

- .11 Under concrete pavers, cobble stone stone dust, and concrete bases and slabs:
 - .1 Use Granular A for the base, to depth according to prescriptions on plans.

- .12 Under concrete footings:
 - .1 Use native backfill up to bottom of granular base courses.
 - .2 Use Granular A for the base, to depth according to prescriptions on plans.

3.6 GRADING

- .1 Grade to ensure that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by Departmental Representative. Grade to be gradual between finished spot elevations as indicated.

- .2 Grade so that water will drain away from buildings, walls and paved areas, towards catch basins and other areas approved by the Departmental Representative. Grade to achieve a gradual transition between spot elevations shown on landscape architecture drawings. Unless otherwise noted, do not give finished ground a slope exceeding 5%.

- .3 Give to coarse grade a down slope in accordance with existing conditions or, by default 1:50, directing water towards existing catch basins when possible. Avoid directing water into neighbouring properties.

- .4 Connect construction work to existing adjacent surfaces to match existing elevations.

- .5 Grade for optimal water flow.

- .6 Before adding fill material, loosen surface to a depth of 150 mm. To favour bonding, ensure that fill material and existing surface contain roughly the same degree of humidity.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 017411 -
Cleaning.
 - .1 Dispose of cleared and grubbed material off site daily.
- .2 Final Cleaning: upon completion remove surplus materials,
rubbish, tools and equipment in accordance with Section 017411
- Cleaning.

***** END OF SECTION *****