

## **PART 1        GENERAL**

### **1.1            RELATED REQUIREMENTS**

- .1        Section 32 01 90 33 - Tree and Shrub Preservation
- .2        Section 31 23 33 01 – Excavation, Trenching and Backfilling
- .3        Section 32 91 19 13 – Topsoil Placement and Grading

### **1.2            REFERENCES**

- .1        ASTM International
  - .1        ASTM D 698-12e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>2</sup>) (600kN-m/m<sup>2</sup>).
- .2        CSA International
  - .1        CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  - .2        CSA A3000-13, Cementitious Materials Compendium.
- .3        Ministère des Transports du Québec
  - .1        CCDG, Cahier des charges et devis généraux, dernière version.
- .4        Norme 1101, Classification des sols..
- .5        Bureau de normalisation du Québec
  - .1        BNQ 1809-300/2004, dernière version.
  - .2        NQ 2560-114, Travaux de génie civil - Granulats.

### **1.3            EXISTING CONDITIONS**

- .1        Examine soil analysis, appended to this document.
- .2        Refer to the paragraph on drying excavations in Section 31 23 33.01 - Excavation, Trenching and Backfilling.
- .3        Buried services:
  - .1        Take necessary precautions to locate, protect and replace as required existing Works and structures to be preserved (posts, electrical wiring and conduits, telephone cables or other, catch basin frames, covers and grating, buildings, benches, signage, signs, displays, fencing of all types, fountains (water point), furniture, landscaping, trees, vegetation, etc.) whether or not indicated on the plans or on private property or on road shoulder. In short, any existing Works for which an item has not been provided for on the schedule and included in “Montant forfaitaire” of the tender schedule.
  - .2        All expenses incurred by Contractor to locate, protect and replace these Works (if damaged by Work) are considered to be included in “Montant forfaitaire” of the schedule.

## **1.2 EXISTING CONDITIONS (cont'd)**

- .3 In all cases, the Contractor must notify the Owner or the Departmental Representative of damage or hazard created by Work.
- .4 The Contractor is responsible for locate all overhead and underground utilities (Hydro-Québec, Bell, Cable, Pipeline, etc.) prior to commencing Work. The Contractor must notify the Departmental Representative of discrepancies in actual location and location indicated on plans to allow for modifications if necessary. If such is the case, do not begin Work until approved by Departmental Representative.
- .5 The Contractor is responsible for expenses incurred to support underground utilities, temporary relocation and/or temporary support of posts, temporary raising of wire or other work by public utility companies.
- .4 The Contractor must take note that the location of services and utilities identified on the plans are approximate and may not actually be present and therefore must locate all services on or near the site.
- .5 Remove signage creating an obstacle to Work and replace afterwards. Protect signage from damage. Identify location in order to return to same area or an area approved by Departmental Representative. Work related to traffic signs must be included in "Montant forfaitaire" of schedule. The amount must include protection, removal, location, return and incidental expenses.

## **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

## **PART 2 PRODUCT**

### **2.1 MATERIALS**

- .1 Granular material to NQ 2560-114.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Evaluation:
  - .1 Study geotechnical report.
  - .2 Before commencing work, verify locations of buried services on and adjacent to site.

### **3.2 PREPARATION**

- .1 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.

**3.2 PREPARATION (cont'd)**

- .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 required to remain undisturbed.
- .2 Removal:
  - .1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.
  - .2 Remove stumps and tree roots below footings, slabs, and paving, and to [600] mm below finished grade elsewhere.
  - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.

**3.3 EXCAVATION**

- .1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations whichever is more stringent.
- .2 Take necessary health and safety measures in accordance with Section 01 35 29.06 – Health and Safety.
- .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.
  - .1 Stockpile topsoil on site for later use.
- .4 Excavate as required to carry out work.
  - .1 Do not disturb soil or rock below bearing surfaces.
  - .2 Notify Departmental Representative when excavations are complete.
  - .3 If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.
  - .4 Excavation taken below depths shown without Departmental Representative's written authorization to be filled with concrete of same strength as for footings at Contractor's expense.
- .5 Excavate trenches to provide uniform continuous bearing and support for 150 mm thickness of pipe bedding material on solid and undisturbed ground.
  - .1 Trench widths below point 150 mm above pipe not to exceed diameter of pipe plus 600 mm.
- .6 Excavate for paving to subgrade levels.
  - .1 In addition, remove all topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

**3.4 FIELD QUALITY CONTROL**

- .1 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by Departmental Representative.
- .2 Not later than 1 week minimum before backfilling or filling, submit to designated testing agency or Departmental Representative samples of backfill.

### **3.4 FIELD QUALITY CONTROL (cont'd)**

- .3 Do not begin backfilling or filling operations until material has been approved for use by Departmental Representative.
- .4 Not later than 48 hours before backfilling or filling with approved material, notify Departmental Representative to allow compaction tests to be carried out by designated testing agency.

### **3.5 BACKFILLING**

- .1 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .2 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
- .3 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as fill.
  - .1 Fill excavated areas with selected subgrade material compacted as specified for fill.
- .4 Placing:
  - .1 Place backfill, fill and base course material in 300 mm lifts: add water as required to achieve specified density.
- .5 Compaction: compact each layer of material to following densities for material to ASTM D698.
  - .1 To underside of base courses: 95%.
  - .2 Base courses and topcoat: 98%.
  - .3 Elsewhere: 90%.
- .6 In trenches:
  - .1 Up to 300 mm above pipe or conduit: sand placed by hand.
  - .2 Over 300 mm above pipe or conduit: native material approved by Departmental Representative.
- .7 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.
- .8 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.
- .9 Against foundations (except as applicable to trenches and under paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

### **3.6 GRADING**

- .1 Grade so that water will drain away from trenches, walls and paved areas, to catch basins and other disposal areas approved by Departmental Representative.
  - .1 Grade to be gradual between finished spot elevations shown on drawings.

**3.7 REQUIRED OR SURPLUS MATERIALS**

- .1 Provide all materials necessary for backfilling and levelling work, within admissible limits, more or less, for initial levelling.
- .2 Dispose of excess material off site.

**3.8 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Dispose of cleared and grubbed material off site daily.

**END OF SECTION**