

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal;
- .2 Section 31 23 10 – Excavation, Trenching and Backfilling;
- .3 Section 33 42 13 – Pipe Culverts.

1.2 MEASUREMENT PROCEDURES

- .1 Reshaping ditch item “Reprofilage de fossé existant” to be measured per linear meter, in accordance with defined limits. Works include the specification without being limited to the leveling of topsoil required to enable routing runoff to the retention basin as defined elevations and all machinery, equipment, materials and labor required to complete the works.
- .2 Stone work item “Perré d’enrochement 100 – 200 mm, épaisseur de 300 mm incluant géotextile Texel 7612 ” measured by unit. Works include without being limited to removing and disposing of non-reusable materials, leveling bedding the grubbing, clearing and rough grading and any machinery, equipment, materials and labor necessary to complete the works.

1.3 REFERENCES

- .1 Quebec Government
 - .1 Ministère du Développement durable, de l'Environnement et des Parcs
 - .1 Politique de protection et de réhabilitation des terrains contaminés (1999)
 - .2 Ministère des Transports du Québec
 - .1 Norme LC 21-040, Analyse granulométrique.
- .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM D698 - 91(1998), Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).

1.4 DEFINITIONS

- .1 Rock excavation
 - .1 Materials made up of igneous, sedimentary or metamorphic rock that, before being excavated, were part of the rock body; the materials that cannot be detached following reasonable trials with the help of a D9L Caterpillar engine or equivalent shall be considered as being part of the rock body.
 - .2 Rock boulders or rock fragments having an individual volume of one (1) cubic meter or greater.
 - .3 Ordinary excavations: materials other than rock excavation and the materials removed by stripping.

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- .4 Unclassified excavations: excavated materials of any sort, other than those that can be removed by stripping.
- .5 Stripping: removal of organic materials covering the original ground.
- .6 Excavation materials: materials originating from acceptable excavations and placed on the original ground or on a stripped ground, until the specified grade is obtained for the upper surface of the sub-grade.
- .7 Waste materials: materials that cannot be used as backfilling materials or as sub-grade backfilling materials, or excess materials.
- .8 Borrowed materials: materials obtained outside the property for backfilling or for other parts of the work.
- .9 Top soil: any material specifically favourable for vegetation growth and that can be used as a filler for landscaping or even for seeding.
- .10 Sub-grade: the sum of original soils or imported fill put in place from grading works and which support the road and its shoulders, and with the sub-grade line as an upper limit. This definition also applies to the original soils and imported fill under the top soil layer installed for the grass, under the stone pads, under the sidewalks, etc.

1.5 REGULATION

- .1 Support and brace the excavations, protect the slopes and embankments, and execute all the works according to the most severe requirements of the provincial and municipal regulations in force.

1.6 TESTS AND INSPECTIONS

- .1 The materials test and the backfills compaction test shall be executed by a laboratory designated by the PWGSC.
- .2 At the latest, one week before the backfilling or filling, submit a 23 kg sample of the proposed backfilling material for the execution of the works to the designated organism in charge of the tests.
- .3 Do not begin the backfilling or filling works before approval by the ministry Representative of the proposed material for the execution of the works.
- .4 At the latest 48 hours before proceeding to the backfilling or filling with the approved material, inform the ministry Representative of the works to come in order that the designated organism can make the compaction tests.
- .5 In the presence of the ministry Representative, before beginning the works, verify the status of the constructions which could be affected by the works, such as, the trees and the other vegetation elements, the grass, the fences, the service poles, the cables, the railroad tracks and the hard coated surfaces, the boundary marks and the existing benchmarks.

1.7 EXISTING CONDITIONS

- .1 The general layout drawing shows the surface and underground utility conduits as well as the other buried works which the location is known.
- .2 Before beginning the works, verify with Info-Excavation the location of all the underground utility conduits that are present on the site or in proximity to the latter.

1.8 PROTECTION MEASURES

- .1 Protect the fences, the trees, the benchmarks, the buildings, the hard coatings, the surface and underground utility conduits that shall remain in place according to the drawings. Unless otherwise indicated, repair the damaged elements in such a way as to return them to their initial state or to a better condition.
- .2 Ensure the maintenance of access roads in order to avoid any accumulation of construction related debris on the roads.
- .3 Protect the excavations against frost.
- .4 Keep the excavations clean, exempt of standing water and loose materials.
- .5 When the ground can considerably vary in volume because of the fluctuations in its humidity content, cover and protect it to the satisfaction of the Departmental representative.

1.9 IMPORTED SOIL BACKFILLING

- .1 At least 10 working days before the beginning of the works, submit to the ministry Representative, for each source of imported soil backfilling:
 - .1 The identification of the origin of the soil (address, lot number and owner coordinates)
 - .2 A certificate that the contaminant concentrations are less than the « A » criteria from the generic criteria of the Politique de protection des sols et de réhabilitation des terrains contaminés du ministère du Développement durable, de l'Environnement et des Parcs. The certificate shall include the following information:
 - .1 The name of the registered laboratory or of the ISO 9001 certified manufacturer laboratory.
 - .2 A table summarizing the contaminant concentration with respect to the chemical analysis results, and the identification of the corresponding generic criteria.
 - .3 The complete results of the granulometric analysis, as prescribed in standard LC 21-040.
 - .2 Advise the ministry Representative at least 2 working days before the delivery of the soils.
 - .3 Ensure to the ministry Representative for sampling purposes, the access to the procurement source as well the place of delivery.

1.10 EXCESS EXCAVATION MANAGEMENT AND DISPOSAL

- .1 The unused excess site excavation shall be transported off the site to a location that the contractor shall find himself, in compliance with the requirements of Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 The contractor shall submit to the Departmental representative a letter certifying the destination and the use of the excess excavation transported off the site.
- .3 The excess excavation shall be managed in compliance with the Politique de protection et de réhabilitation des terrains contaminés du ministère du Développement durable, de l'Environnement et des Parcs (MDDEP 1999). The excavation and usable excess materials could be reused on a property only in the event that they shall be compatible with the environmental quality (usage criteria observed for each of the measured parameters) and geotechnical quality of the soils of the receiving property. When the excess excavations are transported off the site, a backfill and excavation permit shall be

obtained in advance from the concerned municipality. The contractor shall incur the costs related to the characterization of soils of the receiving property and the permit costs.

- .4 The excess excavations shall not be transported to a burial site, unless they are used as daily covering materials in a sanitary burial site.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 The excavation materials shall be approved by the ministry Representative.
- .2 The excavation materials shall be able to be compacted, shall not contain more than 3 % in weight of organic materials, frozen clods, weeds, peat, roots, wood logs, stubs and other improper materials.
- .3 The excavation materials resulting from excavation or grading works can be used on site as filling materials if they meet the prescriptions of the present section.

PART 3 EXECUTION

3.1 GRASS AND TOP SOIL REMOVAL

- .1 Remove the grass and the top soil before the beginning of the construction works
- .2 Remove the top soil up to the depth indicated. Avoid mixing the top soil with the subgrade soil.
- .3 Eliminate the unused top soil by disposing it out of the site, if possible, according to an ecological method (for example, composting).

3.2 GRADING

- .1 Execute a rough grading according to the levels, profiles and indicated alignments, in consideration with the type of landscaping to execute on the surface.
- .2 Execute a rough grading to the following depths, measured below the specified final level.
 - .1 100 mm for grass surfaces;
 - .2 560 mm for pavements (including the shoulders);
 - .3 300 mm for crushed stone surfaces.
- .3 During the rough grading, make the land slope according to the indications on the drawing.
- .4 Slope the ditches according to the indications on the drawing.
- .5 Do not disturb the soil under the branches of the trees or the shrubs that shall remain in place.
- .6 Break or scarify the existing pavement coating before placing the backfilling materials (see section 02 41 14 – Asphalt Pavement Removal).

3.3 EXCAVATION

.1 Generalities

- .1 Inform the ministry Representative if waste material of any nature are discovered during the pavements excavation works, and remove these materials up to a depth of at least 0,60 m under the infrastructure line.
- .2 Dispose of these materials according to the prescriptions of section 01 74 21 – Construction/Demolition Waste Management and Disposal, and according to the laws and regulations in force.

.2 Drainage

- .1 Shape the profiles, the summits, and the transversal slopes of the excavated areas in order to optimise the drainage of the run-off waters.
- .2 Dig ditches as the works progresses to activate the drainage of run-off waters.
- .3 Build intercepting ditches according to the indications or instructions transmitted before the excavation or backfilling works on the adjacent surfaces.

3.4 BACKFILLING

- .1 Before depositing backfilling materials, stir the ground surface on a depth of 150 mm. To facilitate cohesion, maintain the backfilling materials and the existing ground surface at about the same degree of humidity.
- .2 Do not use frozen materials nor place backfilling materials on frozen surfaces, except in zones where this has been previously authorized.
- .3 Make a crowned profile surface throughout the works to ensure quick drainage of run-off waters.
- .4 Dry up all the low level zones before depositing materials.
- .5 Place the materials on the entire width of the surface to cover in layers 300 mm thick at most before compacting, then compact.

3.5 COMPACTION

- .1 Break the ground clods in dimensions allowing a good compaction, and mix them in order to obtain uniform humidity content on the entire thickness of the layer.
- .2 Do not use vibrating compaction equipment. The particular peak speed, as measured by a seismograph in any of three components of the vibration wave (transversal, longitudinal or vertical), shall not exceed 25 mm/s at the location of the works or structures. Contractor auto-control is required.
- .3 During the placing of materials, a compaction engine shall continuously circulate on each backfilling done. The compaction material shall allow obtaining layers of material having a density prescribed for the works. If not, either the material used shall be replaced, or the works shall be completed with the use of additional material.
- .4 Compact the disturbed surfaces and the surfaces having received the backfilling materials until the dry maximum density has been reached, as determined according to standard ASTM D698 (AASHTO T99), being:

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- .1 85 % under the landscaping.
- .2 90 % under the pavements.
- .5 Add water or aerate the materials according to the needs to give to the ground the required humidity content in order to obtain a compaction in compliance with the prescriptions. Water with the use of an equipment ensuring a uniform water distribution.

3.6 FINISHED SURFACE

- .1 Profile the road sub-grade to a tolerance of 25 mm with respect to the calculated level prescribed.
- .2 Profile the sub-grade of non-road surfaces to a tolerance of 50 mm with respect to the calculated level prescribed.

3.7 SUB-GRADE ADJUSTMENT

- .1 Adjust the sub-grade line of non-road surfaces with respect to the final levels as specified in the present section and according to the indications of the ministry Representative.

3.8 PROTECTION

- .1 Maintain the finished surfaces in good condition, in compliance with the prescriptions of the present section, up to the reception of works by the ministry Representative.

3.9 TESTS

- .1 The inspection and the compaction tests of soils shall be executed by a laboratory designated by the ministry Representative.

3.10 EXCESS MATERIALS DISPOSAL

- .1 Dispose of the excess materials and the materials improper for filling, grading or landscaping, off-site and in accordance with the specifications of the present section.

END OF SECTION