

**Part 1 General**

**1.1 SUMMARY**

- .1 This section specifies requirements for excavation and backfill for the site remediation work.

**1.2 RELATED REQUIREMENTS**

- .1 Section 02 61 00.01 – Soil Remediation.
- .2 Section 31 05 10 – Corrected Maximum Dry Density for Fill.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 600 kN-m/m<sup>3</sup>.
  - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700 kN-m/m<sup>3</sup>).
  - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control:
  - .1 Submit for review by Departmental Representative proposed dewatering methods as described in Part 3 of this Section.
  - .2 Submit to Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken, if necessary.
  - .3 Submit to Departmental Representative written notice when bottom of excavation is reached.
- .3 Preconstruction Submittals:

- .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
- .4 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Inform Departmental Representative at least 2 weeks prior to beginning Work, of proposed source of fill materials and provide sample for testing.

## **1.5 WORK INCLUDED**

- .1 Preparation, installation and removal of temporary access road/trail if required for equipment/truck access to the Site, also these areas include reinstatement.
- .2 Replacement to proposed grade level in all areas excavated.
- .3 Grading and the placement of fill material for the access roads to the PPAR and PMAD sites.
- .4 Supply, placement/grading of imported fill material in excavation zones as approved by Departmental Representative.

## **1.6 DEFINITIONS**

- .1 Unclassified excavation: Excavation of deposits of whatever character encountered in work.
- .2 Common Fill: Imported material from off site sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 100mm, ciders, ashes, sods, refuse or other deleterious materials.

## **1.7 EQUIPMENT**

- .1 The equipment required to complete the site remediation Work is at the discretion of the Contractor. The Contractor is required to provide an adequate number and type of equipment to carryout the remedial work in accordance with the Contractor's Work Schedule. Trucks used in the transport of contaminated soils to be equipped with water tight truck body and appropriate top covers or similar. The remedial work in some of the areas may require manual excavation methods due to limited access by the natural terrain, undulating landscape and bedrock outcrops.
- .2 Scale system with ability to weigh in and out semi dump trucks with or without trailers. Scale shall be certified by the Province or the manufacturer's authorized representative to have an accuracy of at least  $\pm 5\%$ . Minimum age of calibration is one year.

## **1.8 PROTECTION OF EXISTING FEATURES**

- .1 Existing surface features:

- .1 Conduct, with the Departmental Representative, condition survey of existing trees, survey bench marks, monitor wells and monuments which may be affected by Work.
- .2 Protect existing surface features which may be affected by work from damage while work is in progress and repair damage resulting from Work.
- .3 Use designated routes for transport and turning of trucks and excavator to minimize tear-up of grass covered areas.
- .4 Before commencing Work, verify the location of buried services on the Site.

## **1.9 MEASUREMENT PROCEDURES**

- .1 The supply, placement and compaction of imported fill shall be measured by the metric tonne compacted in place. Unit measurement for payment will be based on weigh slips from a weigh scale that is certified by the manufacturer's authorized representative to have an accuracy of at least  $\pm 5\%$ . Copy of scale certificate to be provided if requested by the Departmental Representative.
- .2 Lump sum price to upgrade and maintain as necessary, the access roads to the PPAR and PMAD sites to permit safe excavator and truck traffic during construction periods between the access road and the remediation areas. Work will likely consist of grading the access roads and the placement of fill material, as required, in order to access the areas requiring remediation.
- .3 No other separate pay item shall apply to the requirements of this section. Costs shall be included in the applicable lump sum prices and unit prices to which this section applies.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Common Fill: well graded material, approved for use intended by the Departmental Representative, unfrozen and free from stones larger than 100 mm diameter, free of organic materials, roots or stumps or other deleterious material and with no more than 30% fines.
- .2 Refer to clause 3.8 for compaction densities.

## **Part 3 Execution**

### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, water bodies, water sources, and walkways, according to requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.

- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Clear all alders, vegetative growth and shrubbery as approved by the Departmental Representative. Cut off branches overhanging area cleared as approved by the Departmental Representative. Dispose of all cleared alders, vegetative growth and shrubbery as approved by the Departmental Representative. Grub out stumps, roots and embedded logs to not less than 500 mm below the surface and remove all soil adhering to these items.
- .3 Clearing/grubbing materials to be handled as PCB contaminated solid waste within the designated remediation areas.
- .4 Prepare all temporary access roads/trails.
- .5 Do not commence excavation of the contaminated material until approval is received from the Departmental Representative. Contractor to notify Departmental Representative at least 48 hours in advance of intent to commence excavation.

### 3.3 STOCKPILING

- .1 All fill materials excavated from designated remediation areas to be handled as PCB contaminated soils for treatment unless analytical results indicate otherwise.
- .2 Any laydown area(s) used to temporarily store excavated impacted soil and/or debris pending shipment out of Pinetree, Stephenville must be approved by the Departmental Representative. The temporary laydown area(s) shall consist of areas that are level and bermed. The laydown areas shall be covered with impermeable liners onto which the soil or debris will be temporarily placed to prevent infiltration or runoff of potential contaminants into subsurface soil. **The storage of excavated material at the laydown area(s) past the end date of the Contract will not be permitted.** Following the removal of impacted-material from the area, the impermeable liner(s) will be removed and treated as impacted soil (in accordance with the type of contaminant present in the soil or debris stored). If deemed necessary by the Departmental Representative, surficial soil beneath the liner will also be removed and treated as impacted soil. The depth of soil removal will be specified by the Departmental Representative. The Contractor will be responsible for testing the affected area(s) following the removal of impacted-material. Sampling will be carried out under the supervision of the Departmental Representative.

### 3.4 DEWATERING

- .1 Refer to Section 01 35 43 – Environmental Procedures and 02 61 00.01 – Soil Remediation for information on dewatering the remedial excavation.

### **3.5 EXCAVATION**

- .1 Contractor to schedule excavation of impacted areas in consideration of wait times for receipt of sample analysis results.
- .2 Refer to Section 02 61 00.01 – Soil Remediation.
- .3 Do not obstruct flow of surface drainage or natural watercourses.
- .4 Remove concrete, masonry, paving, walks, demolished foundations and rubble and other obstructions encountered during excavation.
- .5 Dispose of PCB-impacted soil as indicated in Section 01 11 00 – Summary of Work and Section 02 61 00.01 – Soil Remediation.
- .6 Prior to backfilling, obtain Departmental Representative approval of completed excavation.

### **3.6 BACKFILLING**

- .1 Do not proceed with backfilling operations in the impacted area until the Departmental Representative has received confirmatory laboratory results and indicated that it is acceptable to backfill the excavation.
- .2 Where an excavation is left open pending return of confirmatory laboratory results, the Contractor shall provide suitable controls to prevent water erosion or dust emissions from exiting the site as specified in Section 01 35 43 – Environmental Procedures.
- .3 Where an excavation is left open pending return of confirmatory laboratory results, the Contractor shall provide suitable security (e.g., snow fence or other barrier) around the excavation to prevent personnel or the public from falling into the open excavation.
- .4 Areas to be backfilled to be free from debris, snow, ice, water or frozen ground.
- .5 Do not use backfill material which is frozen or contains ice, snow or debris.
- .6 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .7 Do not place backfill in freezing weather without written permission of the Departmental Representative.
- .8 Contractors are advised that clean backfill material is not available from the Pinetree Site area and clean backfill materials will have to be imported to the site. Contractors are advised to assess the suitability and quantities of backfill available in the Stephenville area prior to the tender closing.

### **3.7 RESTORATION**

- .1 Upon completion of Work, remove surplus materials and debris, trim slopes, and correct defects noted by the Departmental Representative.

- .2 Clean and reinstate areas affected by Work as approved by the Departmental Representative.
- .3 Reinstate roads on site to condition and elevation which existed before excavation.
- .4 Reinstate areas affected by equipment outside of planned area to condition which existed prior to commencement of Work and leave site in rake-clean condition as approved.

### **3.8 FILL TYPES AND COMPACTION**

- .1 Use fill types as indicated or specified below. Unless otherwise specified, compact to following densities:
  - .1 Gravel travelled surfaces: Compact Class 'B' gravels in layers to 95 percent maximum dry density to ASTM D698.
  - .2 Infill to Grade: materials to be common fill unless specified otherwise; placed in lifts not exceeding 300 mm and compacted to 95 percent of maximum dry density ASTM D698.
  - .3 Place backfill material in uniform layers. Compact each layer before placing succeeding layer.

### **3.9 BASIS FOR PAYMENT**

- .1 All costs associated with work specified in this section shall be deemed to be included in the appropriate unit and lump sum prices quoted in the Schedule of Quantities and Prices.

**END OF SECTION**