

Part 1 General

1.1 MEASUREMENT PROCEDURES

- .1 Lump Sum

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM) latest edition
 - .1 ASTM C117, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ;) (600 kN-m/m ;).
 - .5 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ;) (2,700 kN-m/m ;).
 - .6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001, Cementitious Materials for Use in Concrete.
 - .2 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

1.3 DEFINITIONS

- .1 Excavation classes: one class of excavation will be recognized: common excavation.
 - .1 Common excavation: excavation of materials of whatever nature from construction of the Aboveground Storage Tank pad, bollards, fencing, and trenches.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling.

1.5 EXISTING CONDITIONS

- .1 Buried services:

- .1 Before commencing work verify location of buried services on and adjacent to site.
- .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
- .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
- .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
- .5 Confirm locations of buried utilities by careful test excavations.
- .6 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .7 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.
- .8 Record location of maintained, re-routed and abandoned underground lines and provide a drawing showing underground lines to the Owner.
- .9 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative

Part 2 Products

2.1 MATERIALS

- .1 Type 1 fill:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
 - .3 Table:

Sieve Designation	% Passing
	Type 1
75 mm	
50 mm	
37.5 mm	
25 mm	
19 mm	75 – 100
12.5 mm	60 – 90
9.5 mm	40 – 70
4.75 mm	27 – 55
2.00 mm	16 - 42
0.425 mm	8 – 30
0.180 mm	
0.075 mm	5 – 20

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 and walkways, according to sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .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.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement and concrete neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Keep excavations clean and free of standing water, ice, snow, and loose soil.
- .3 Protect buried services that are required to remain undisturbed.

3.4 STOCKPILING

- .1 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated in the Design Drawings.
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.
- .3 Do not disturb soil within branch spread of trees or shrubs that are to remain.
 - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .4 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.
- .5 Keep excavated and stockpiled materials safe distance away from edge of trench. Excavated soil to be stockpiled in a location on-site to be determined during the start-up meeting with the Owner.

- .6 Restrict vehicle operations directly adjacent to open trenches.
- .7 Stockpile excavated soil in locations as directed by Departmental Representative.
- .8 Dispose of surplus and unsuitable for re-use excavated material in off-site location approved by the Departmental Representative.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter or snow or ice.
- .10 Remove unsuitable material from trench bottom including those that extend below required elevations. The Contractor is to provide a subsurface material inspection report stamped and signed by a Professional Engineer registered or licensed in Province of Saskatchewan, Canada.

3.6 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular material for bedding and surround of underground services as indicated in Design drawings
- .2 Bedding must be dry unfrozen granular material.

3.7 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has approved installations.
 - .2 Departmental Representative has approved of construction below finish grade.
 - .3 Inspection, testing, approval, and recording location of underground utilities.
 - .4 Removal of concrete formwork.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated on Design drawing. Compact each layer to 95% MPD before placing succeeding layer. The Contractor is to provide a backfill compaction report stamped and signed by a Professional Engineer registered or licensed in Province of Saskatchewan, Canada. The backfill compaction report will be submitted to the Departmental Representative for review and approval.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
 - .3 Place layers simultaneously on both sides of installed Work to equalize loading.

3.8 RESTORATION

- .1 Clean and reinstate areas affected by Work as directed by Departmental Representative.

END OF SECTION