

DRAWINGS



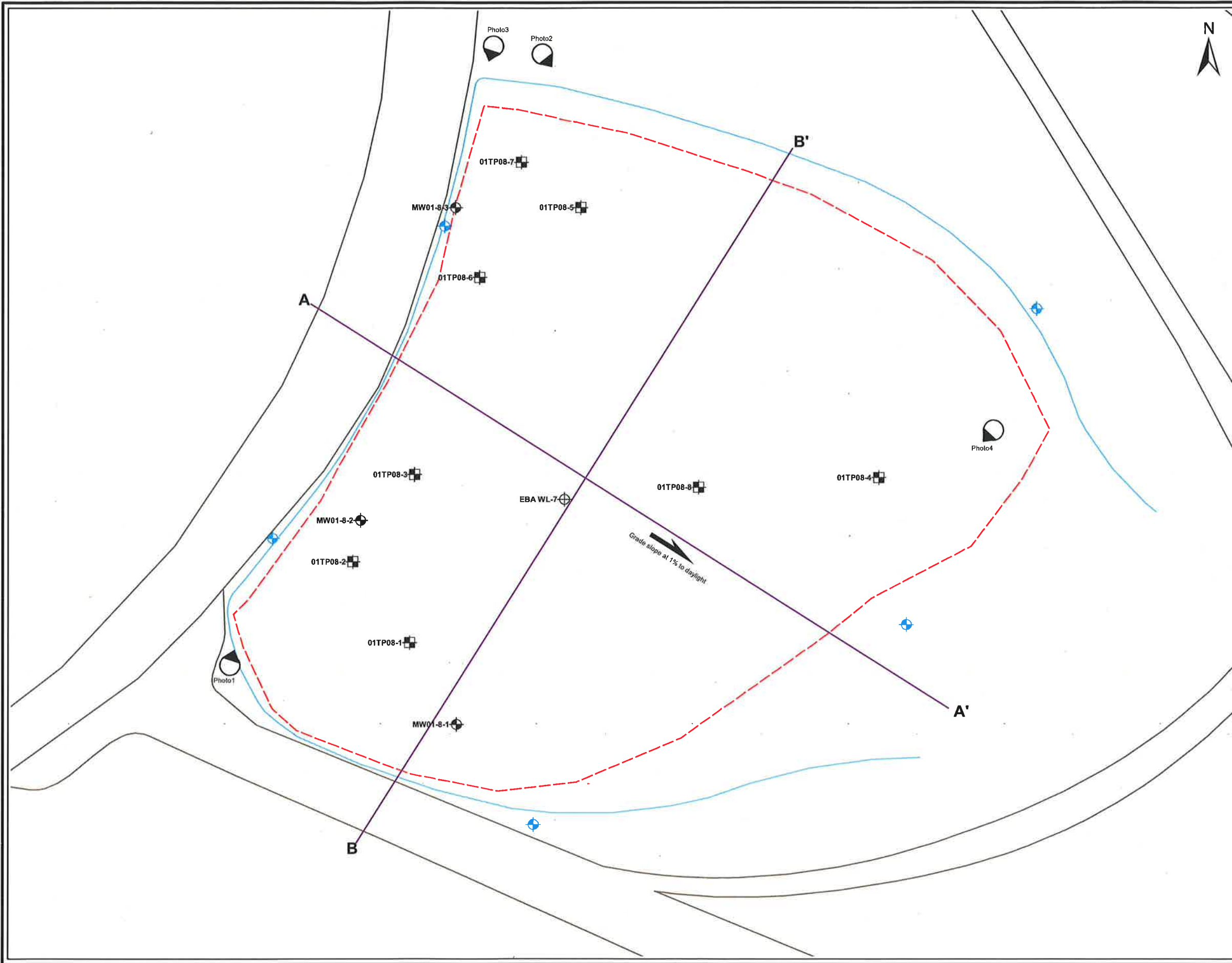
PROFESSIONAL
YUKON
RICHARD J. WELLS
TERRITORY
ENGINEER
Sep. 23/16

SITE LOCATION

LANDFILL CAPPING

Client:  **PUBLIC WORKS AND GOVERNMENT SERVICES CANADA**

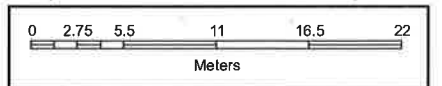
Date: **SEPTEMBER 2016**
Keystone Environmental
Drawing 1



LEGEND

- Approximate Extent of Landfill
- Surface Water Diversion Ditch
- Cross Section Lines
- Borehole
- Monitoring Well
- Testpit
- Proposed Annual Monitoring Well

Note to Contractor:
Protect or reinstall all wells damaged during capping of landfill

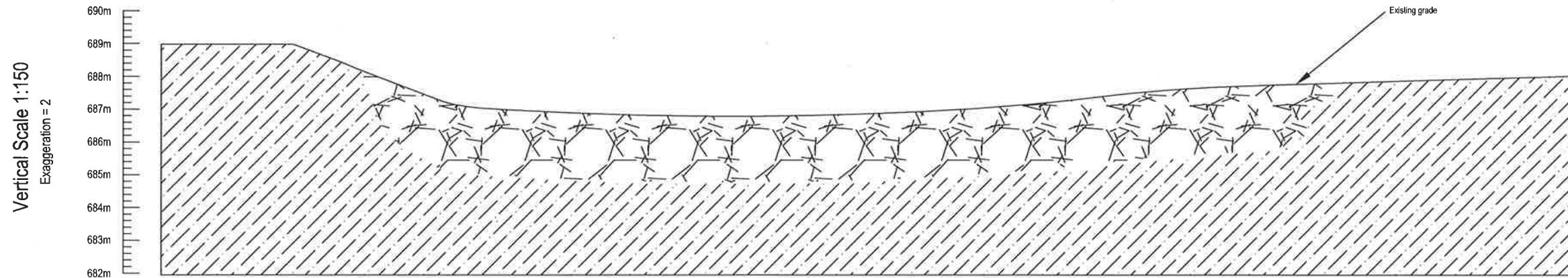


Title:	AEC8 LANDFILL - PLAN VIEW
Project:	LANDFILL CAPPING
Client:	PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Date:	OCTOBER 2010
Updated:	SEPTEMBER 2016
	Drawing 2



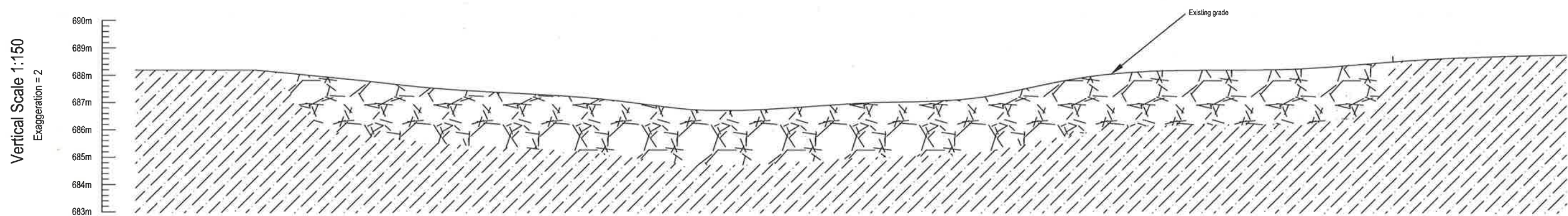
A Northwest

A' Southeast



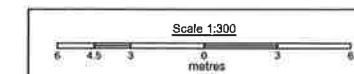
B Southwest

B' Northeast



LEGEND

-  Soil
-  Suspect Landfill Debris Intermixed with Soil



Title:	AEC 8 LANDFILL - CROSS SECTIONS ORIGINAL GRADE
Project:	LANDFILL CAPPING
Client:	 PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Date:	SEPTEMBER 2016
	 Drawing 3

COMPACTION

Compact to density of not less than 95% maximum dry density in accordance with Standard Proctor Maximum Dry Density (ASTM D 698). Contractor may have to use static rolling techniques and compact to either 95% maximum dry density in accordance with ASTM D 698 or maximum achievable density.

MATERIALS

Sample and provide representative grain size analysis (wash analysis) and fracture count test results for proposed 19.5 mm crush product and 12.5 mm sand product, allow PWGSC representative 3 business days to review and approve for use prior to placing product.

- 19.5mm crush gravel to conform to the following requirements:
 - 60% 2 face fracture,
 - 100% passing the 19.5 mm sieve
 - less than 5% passing the 0.075mm sieve)

- Base sand layer to conform to the following requirements:
- 100% passing the 12.5 mm sieve
 - less than 5% passing the 0.075mm sieve)

GRADING

Rough grade to levels, profiles, and contours allowing for surface treatment as indicated. Grade ditches to depth required for maximum run-off. Compact filled and disturbed areas to 95% standard proctor maximum dry density (ASTM D 698).

BACKFILLING

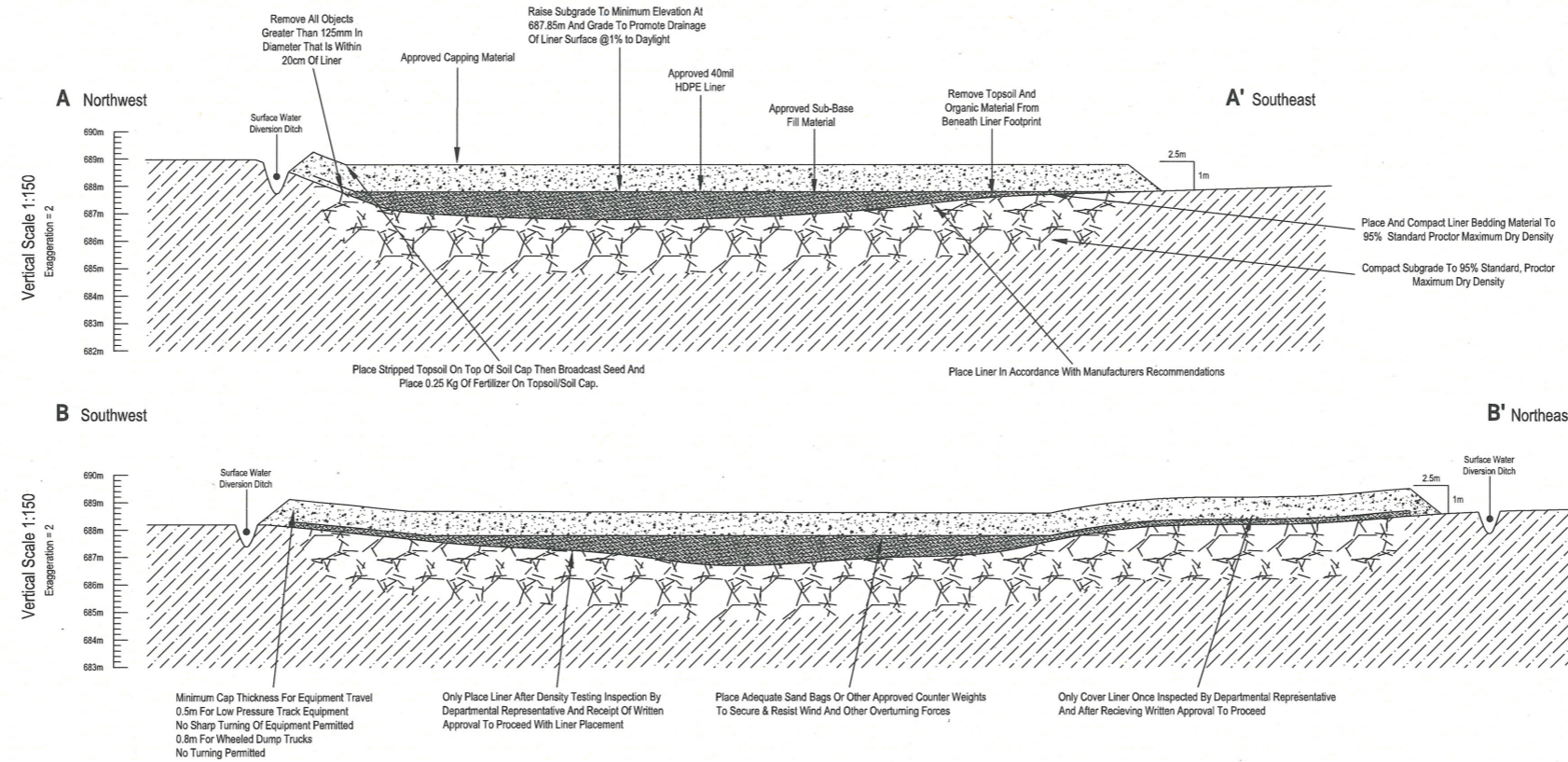
Do not use backfill material which is frozen or contains ice, snow or debris. Place backfill material in uniform layers not exceeding 300 mm compacted thickness, or in accordance with the Contract. Compact each layer to the satisfaction of the Qualified Professional and in accordance with the Contract before placing succeeding layer.

EROSION AND SEDIMENT CONTROL

Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.

SUBBASE MATERIAL

Subbase material must be pit run material suitable for placement during winter conditions. During Placement manual removal of large debris (roots etc.) and rocks over 125mm is required. After placement, material must be compacted to create a smooth, continuous surface, free of debris that could puncture the liner or objects greater than 125 mm in diameter. The thickness of the layer to be in accordance with the attached figures for each landfill.



CAPPING

The first lift of approved fill must not contain objects greater than 75 mm in diameter. Minimum thickness of first lift is 300 mm. No machine travel over liner until 0.6 m of fill has been placed over liner.

CAPPING FILL MATERIAL

Capping Fill Material must be pit run material suitable for placement during winter conditions. During placement manual removal of large debris (roots etc.) and rocks over 125mm is required. Compacted to create a smooth, continuous surface, free of debris that could puncture the liner or objects greater than 125mm in diameter.

SUBGRADE PREPARATION AND PLACEMENT OF SUBBASE

The Work Areas shall be cleared of snow and vegetation including grasses and shrubs. The site subbase is to be graded to direct surface water away from the landfill area, and into the surface drainage ditches. Slopes steeper than 2.5 Horizontal to 1 Vertical will be regraded to an approximate maximum slope of 2.5 H:1 V. Subbase material will be placed on the capping area to fill in low lying areas and create smooth transitions in grade changes.

PLACEMENT OF APPROVED FILL CAP

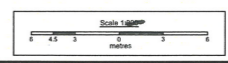
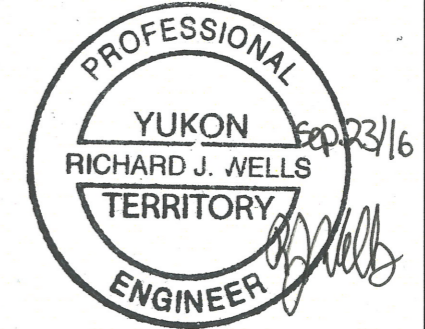
Approved fill material will be placed in lifts on top of the liner to a minimum vertical thickness of 0.8m. This fill cap should extend horizontally past the extent of subbase and liner by 2.5m.

SURFACE WATER DIVERSION DITCHES

Excavate ditches to intercept up-gradient and cross-gradient surface water flows. Ditches must be excavated to promote positive drainage to a down-gradient area 15m from base of landfill. Silt Fences must be installed periodically as required to prevent erosion and ditches rerouted to minimize erosion. Ditches must be armoured or vegetated adequately to minimize long term erosion.

LEGEND

- Soil
- Suspect Landfill Debris Intermixed with Soil
- Gravel (0.2m Thick)
- Approved Fill (0.8m Thick)
- Liner (40mil HDPE Geomembrane Liner)



Title:	AEC 8 LANDFILL - CROSS SECTIONS
Project:	LANDFILL CAPPING
Client:	PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
Date:	SEPTEMBER 2016
Company:	Keystone Environmental
Drawing:	Drawing 4

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