

**APPENDIX A – MANITOBA GUIDELINES FOR WASTE DISPOSAL  
GROUNDS**

## **7.0 CLOSURE AND POST-CLOSURE PLAN**

### **7.1 SITE CLOSURE**

#### **7.1.1 Closure Plan**

A detailed closure and post-closure plan should be submitted to the Director for approval within one year prior to closure of the waste disposal ground. A staged closure plan will allow the operator to close, cap and revegetate areas of the site as they are completed over the life of the site. This will help minimize infiltration and leachate generation.

Manitoba Regulation 150/91 requires final cover to be placed within 12 months after an area of 0.5 ha or more is terminated (for currently defined Class 2 sites), or when the waste disposal ground is closed.

The post closure period should extend for at least 30 years after the site is closed unless otherwise approved by the Director.

#### **7.1.2 Waste Compaction, Covering and Final Slopes**

- a. All waste should be compacted and graded prior to placement of final cover.
- b. The final slopes of waste should be greater than or equal to 20 horizontal to 1 vertical (5%), but may not exceed 4 horizontal to 1 vertical (25 %).
- c. The Director may approve alternate slopes on a site specific basis providing the design objectives can be met.

#### **7.1.3 Final Cover Systems**

##### **7.1.3.1 Objectives**

All final cover systems shall be designed to meet the following objectives:

- Access should be blocked to the site after closure.
- Signs should be posted indicating that the WDG is closed, noting the location of the nearest waste disposal or waste transfer facility and giving a contact number for reporting.

DRAFT

Monitoring of sites with liners and leachate collection systems will include leachate level and leachate quality information as well as volumes pumped and disposal method.

Monitoring results should be reviewed annually to determine if any additional actions are necessary.

## **7.4 FINAL USE**

### **7.4.1 Restriction on Future Buildings and Structures**

Construction of buildings on a waste disposal ground (WDG), an abandoned WDG, or within 400 m of an active or closed waste WDG is prohibited. The Director may authorize exemptions after an investigation and report by qualified persons, that must be submitted prior to initiating construction activities.

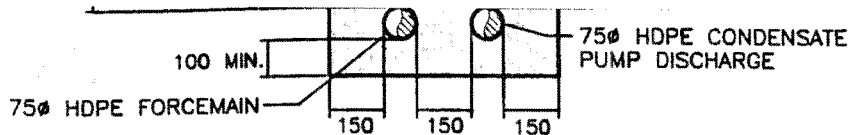
### **7.4.2 Legal Survey and Registration of Title**

A note should be registered at the Land Titles Office on the deed to the property indicating that the property was used as a WDG.

### **7.4.3 Potential Uses**

Closed WDGs can be successfully used for passive recreational activities such as green space, public parks, golf courses, ski hills and picnic areas. The final closure design should consider the end use of the facility. Areas that will receive a higher degree of use may need additional cover or maintenance to ensure that the public is protected from any safety hazards due to waste settlement, erosion of cover and venting of landfill gas.

Preserving the waste cover and preventing damage to monitoring installations must be a high priority at a closed WDG.



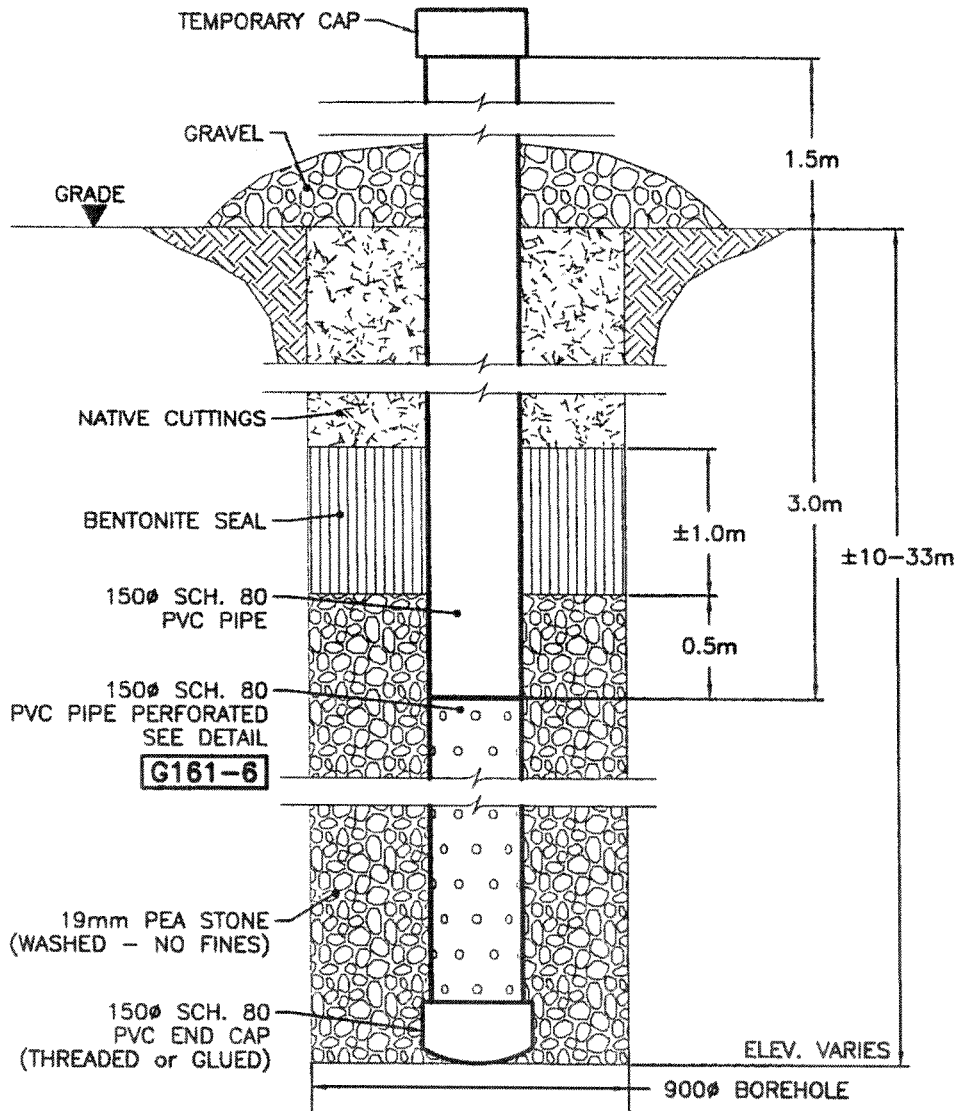
**TRENCH DETAIL**

1. THIS CONTRACTOR TO PROVIDE SUBSURFACE
2. WHERE ENCOUNTERED
3. SAND PIPE BEDDING TO EDGES.

**TWO (2) PIPE TRENCH**

**G161-**

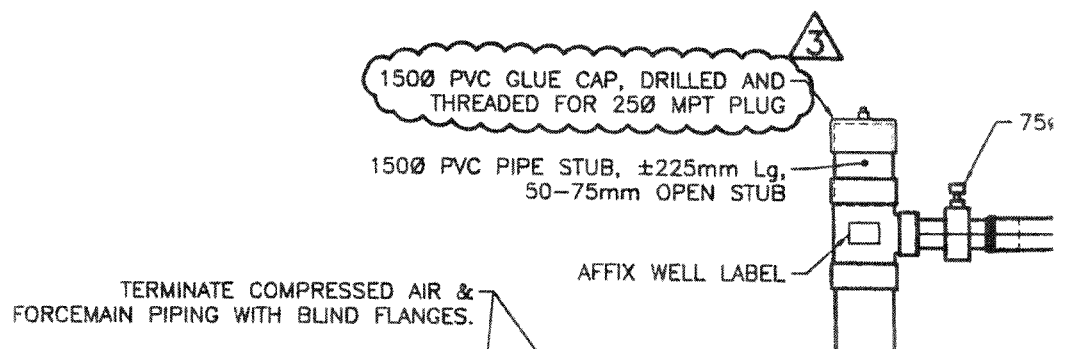
SCALE: 1:20



**LANDFILL GAS EXTRACTION WELL INSTALLATION**

**G161-5**

Not to Scale



~ 13Ø PERFORATION,  
TYPICAL

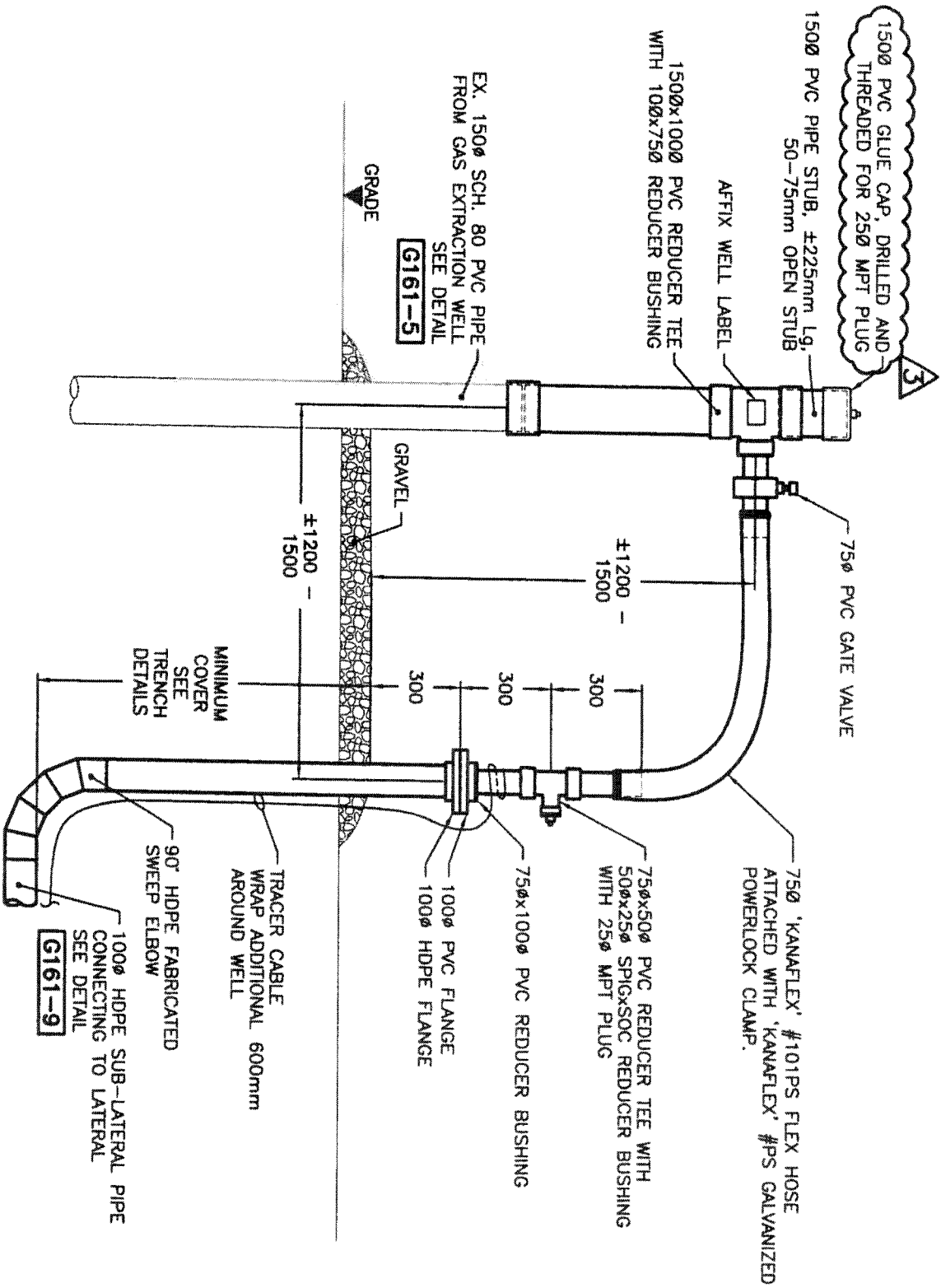
~ 150Ø SCH. 80  
PVC PIPE

**PLAN VIEW**

— 13Ø PERFORATION,  
TYPICAL

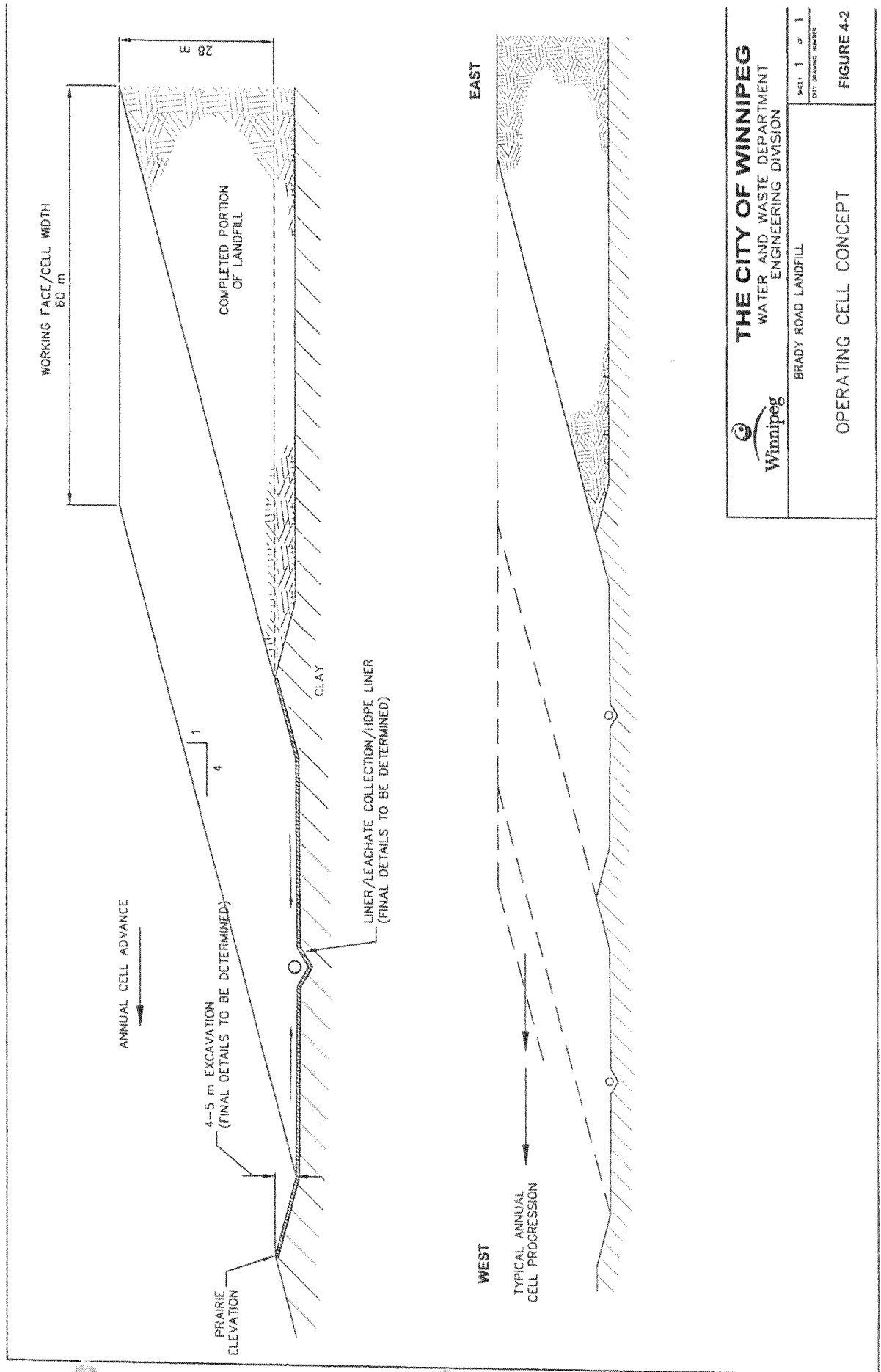
— 30mm SPACING  
BETWEEN ALTERNATE  
ROWS OF  
PERFORATIONS.

**ELEVATION**



**G161-6**

TYPICAL LANDFILL GAS EXTRACTION WELL VALVE AND MONITORING PORT ASSEMBLY G161-  
SCALE: 1:20



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 www.stantec.com



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Client Name: \_\_\_\_\_  
 Project Name: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Scale: \_\_\_\_\_  
 Drawing No.: \_\_\_\_\_

Legend

Notes

Item	Description	Quantity	Unit
1	GEOSYNTHETIC DRAINAGE LAYER	...	...
2	NON-WOVEN GEOTEXTILE	...	...
3	PERFORATED PIPE	...	...
4	DRAINAGE CHANNEL	...	...
5	SUBSTRATE GEOSYNTHETIC	...	...
6	NON-WOVEN GEOTEXTILE	...	...
7	PERFORATED PIPE	...	...
8	DRAINAGE CHANNEL	...	...
9	SUBSTRATE GEOSYNTHETIC	...	...
10	NON-WOVEN GEOTEXTILE	...	...

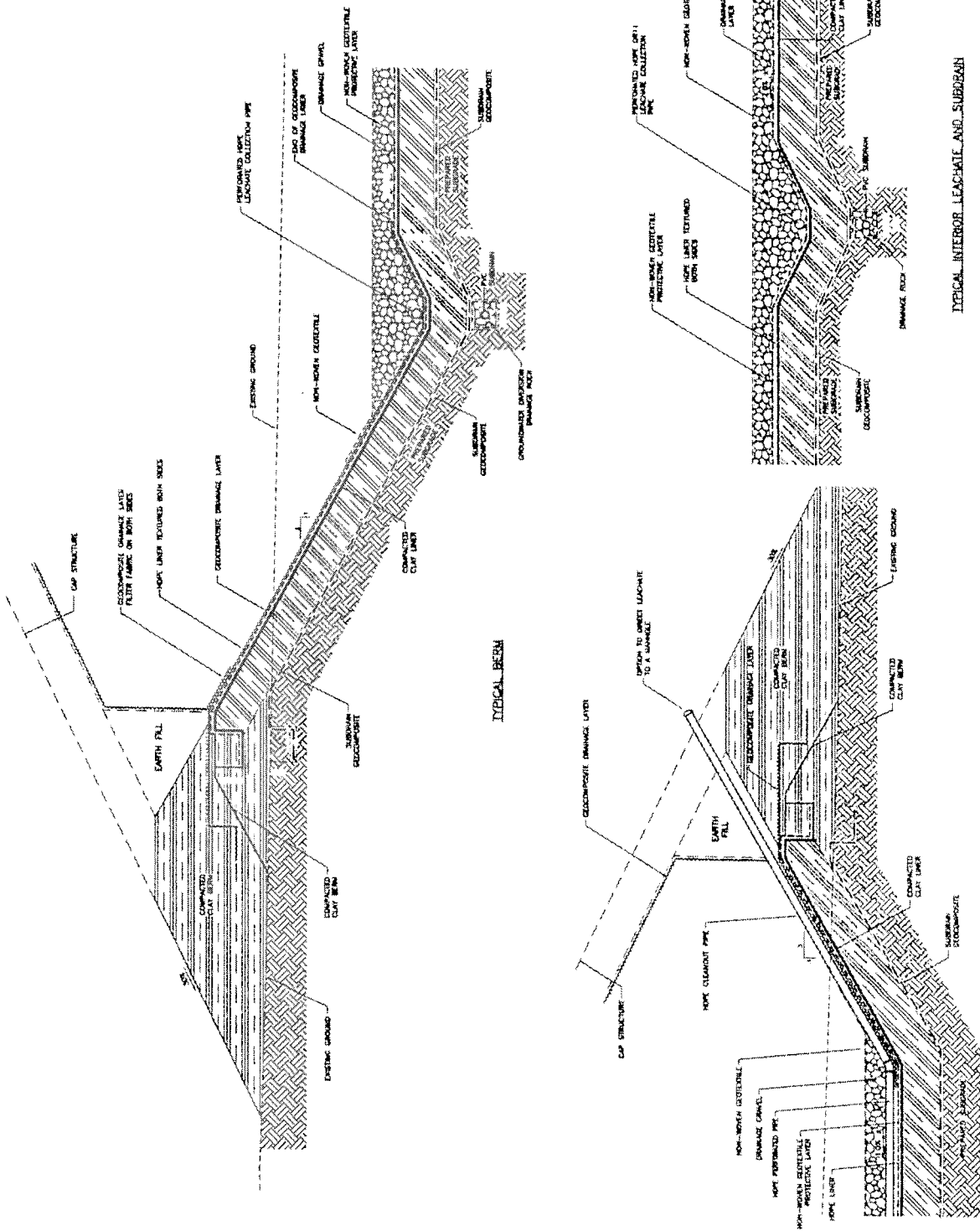


Figure 4-5: Conceptual Landfill Liner Construction for Future City of Winnipeg Landfill Cells