

Atlantis®
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Development in Cochrane

Project Location

Cochrane, Alberta, Canada

Atlantis Application

Retaining Wall Drainage

Project Overview

A retaining wall development in Cochrane, Alberta, required an integrated stormwater management solution capable of providing effective subsurface drainage while improving construction efficiency and long-term hydraulic performance.

Specified by Thurber Engineering – Calgary, the Atlantis Flo-Tank® system was selected to replace conventional perforated pipe and gravel drainage behind the segmental retaining wall. The modular system combined drainage, detention and exfiltration within a single underground solution, eliminating the need for multiple drainage components while simplifying installation.

Technical Summary

Project	Cochrane Retaining Wall
Location	Cochrane, Alberta, Canada
Application	Retaining Wall Drainage & Stormwater Management
Completion	June 2004
Primary Function	Drainage, Detention & Exfiltration
Alternative To	Perforated pipe and gravel drainage
Specified By	Thurber Engineering – Calgary
Atlantis System	Flo-Tank®
Tank Configuration	SINGLE
Tank Height	0.45m

Design Challenge

Retaining wall drainage systems must effectively relieve hydrostatic pressure while managing stormwater runoff and maintaining long-term structural performance.

For this project, the design required a solution that could:

01 Provide continuous drainage behind the retaining wall.

02 Reduce hydrostatic pressure acting on the wall structure.

03 Incorporate stormwater detention and exfiltration within the same system.

04 Eliminate the need for a conventional concrete surface drainage swale.

05 Simplify construction adjacent to the retaining wall backfill.

06 Provide sufficient structural capacity for potential traffic loading.

Engineering Solution

The Atlantis Flo-Tank® system was installed directly behind the retaining wall to create a continuous subsurface drainage and stormwater management system. Unlike traditional pipe-and-gravel drainage, the modular tank system performs multiple hydraulic functions simultaneously by providing drainage, temporary stormwater storage and controlled exfiltration through a single integrated installation.

The high-void modular structure allows water to be collected and distributed efficiently while reducing reliance on multiple conventional drainage components. Wrapping the modules in geotextile further assists filtration by limiting soil migration into the storage system while maintaining long-term hydraulic performance.

Design Benefits

✓ Replaced conventional perforated pipe and gravel drainage.

✓ Combined drainage, detention and exfiltration within one integrated system.

✓ Reduced hydrostatic pressure behind the retaining wall.

✓ Eliminated the need for a surface concrete drainage swale.

✓ Modular design adaptable to changing site conditions.

✓ H-20 loading certification suitable for installation beneath trafficked areas.

Construction Considerations

The modular Atlantis system significantly simplified installation compared with traditional retaining wall drainage construction.

Because the system did not require concrete drainage structures or heavy construction equipment adjacent to the retaining wall, installation was completed efficiently while reducing disturbance to the backfill area.

The lightweight modular components also required no specialised installation techniques and could be readily adapted to site conditions as construction progressed.

Project Outcomes

- Successful drainage of the retaining wall structure.
- Integrated drainage, detention and exfiltration within one underground system.
- Elimination of conventional pipe-and-gravel drainage.
- Removal of the need for a concrete surface drainage swale.
- Faster installation with reduced construction complexity.
- H-20 certified system suitable for traffic loading applications.

Engineering Insight

Effective retaining wall performance depends on controlling groundwater and relieving hydrostatic pressure behind the wall structure. While conventional drainage systems typically rely on perforated pipes surrounded by gravel, modular stormwater systems can provide significantly greater hydraulic functionality by combining drainage, detention and exfiltration within a single engineered solution.

This integrated approach not only improves stormwater management but can also reduce material quantities, simplify installation and minimise the number of drainage components required on site.

Did You Know?

Why is hydrostatic pressure a critical consideration in retaining wall design?

One of the primary causes of retaining wall failure is the build-up of water pressure behind the wall. As groundwater accumulates within the retained soil, lateral forces acting on the structure increase significantly. Providing an effective drainage pathway relieves this pressure, improves long-term structural performance and reduces the likelihood of wall movement or premature failure.





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Thank You For Your Attention



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