

Atlantis®
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HP Data Center

Project Location

Paine, Metropolitan Region, Chile

Atlantis Application

Underground Infiltration Tanks

Project Overview

The HP Data Center development required a stormwater infiltration solution for a 21,496 m² catchment comprising roof and paved surface areas. The system was designed to store and infiltrate runoff generated by the 10-year design rainfall event, while being located beneath an area subject to truck and vehicle movements.

IRH Consulting Engineers Limited incorporated an underground Atlantis modular infiltration trench providing 679.43 m³ of storage volume. The system used 560 Atlantis Flo-Tank® Deca Modules in a 10-high configuration, allowing the required capacity to be accommodated within a relatively narrow underground footprint.

Technical Summary

Project	HP Data Center
Location	Paine, Metropolitan Region, Chile
Application	Underground Infiltration Tanks
Completion	2011
Size	679.43 m³
Surface Use	Truck and vehicle traffic area
Atlantis System	Flo-Tank® Deca

Design Challenge

The construction of the HP Data Center created a 21,496 m² stormwater catchment, incorporating both roof and paved surface areas. The stormwater strategy required an infiltration trench capable of temporarily storing runoff and infiltrating the required water volume generated by a 10-year return-period rainfall event.

A significant constraint was the location of the system beneath an area used for truck and vehicle movement. The underground structure therefore needed to combine hydraulic storage and infiltration capacity with sufficient resistance for the imposed surface loading, including an appropriate safety factor.

The required storage volume also had to be accommodated within a trench only 2.87 m wide and 54.8 m long. This resulted in a deep modular configuration extending to 4.32 m, making vertical system configuration a central component of the design.

01 Manage runoff from a 21,496 m² catchment comprising roofs and paved surfaces.

02 Provide 679.43 m³ of underground storage volume.

03 Store and infiltrate runoff associated with the 10-year design rainfall event.

04 Position the system beneath an area subject to truck and vehicle movements.

05 Provide resistance appropriate to the imposed traffic loads, incorporating a suitable safety factor.

06 Accommodate the required system within a trench measuring 4.32 m high × 2.87 m wide × 54.8 m long

Solution

The infiltration system was configured using 560 Flo-Tank® Deca Modules, with each module assembled 10 high. The completed trench provided a total volume of 679.43 m³ within dimensions of 4.32 m high, 2.87 m wide and 54.8 m long.

The Atlantis modular system provided 95% void space, maximising the volume available for stormwater storage within the underground structure. A stated resistance of 26 t/m² allowed the system to be incorporated beneath the truck and vehicle movement area, with the design considering an appropriate safety factor for the imposed loads.

The resulting configuration combined stormwater storage and infiltration within the available subsurface space while maintaining the required trafficable surface use.

Benefits

- 679.43 m³ storage volume provided within the underground infiltration trench.
- 95% void space maximised available stormwater storage within the modular structure.
- 10-high configuration allowed the required volume to be achieved within a trench only 2.87 m wide.
- Stormwater from a 21,496 m² catchment could be managed within the site.
- The system provided storage and infiltration for the 10-year design rainfall event.
- 26 t/m² stated resistance supported installation beneath the designated truck and vehicle movement area.

Considerations

The infiltration trench required a substantial vertical configuration, with the modular structure extending to 4.32 m high while maintaining a width of 2.87 m. The system comprised 560 Flo-Tank® Deca Modules assembled in a 10-high arrangement, making module configuration and handling relevant considerations during construction.

Module handling data identified a 13.63 m^3 module volume with a total weight of 575.12 kg, equivalent to 42.17 kg per m^3 of modules.

The completed underground system also had to accommodate the loads associated with truck and vehicle movements above, with the design incorporating an appropriate safety factor relative to the stated 26 t/m^2 resistance. Case Study Infiltration HP Data.

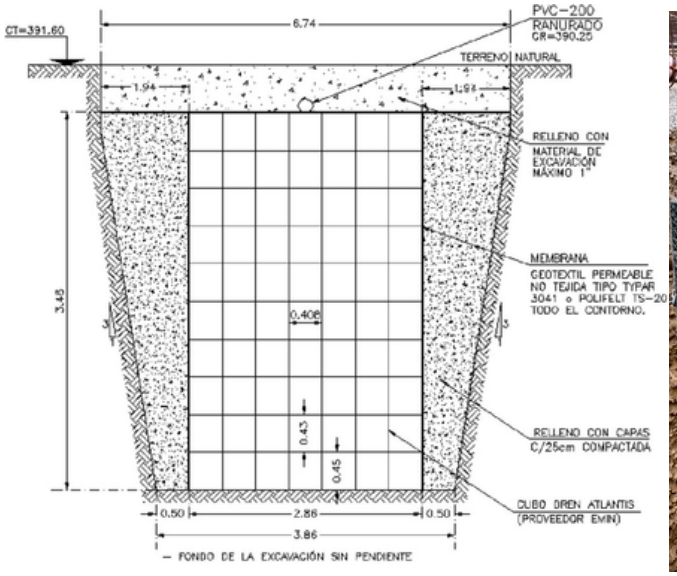
Project Outcomes

- 679.43 m^3 of underground stormwater storage and infiltration capacity.
- Management of runoff from a 21,496 m^2 catchment, including roofs and paved surfaces.
- System designed for runoff generated by a 10-year return-period rainfall event.
- 560 Atlantis Deca Modules installed in a 10-high configuration.
- Required capacity accommodated within a trench measuring 4.32 m high × 2.87 m wide × 54.8 m long.
- Underground installation integrated beneath an area used for truck and vehicle movements.

The project demonstrates the value of vertical modular configuration where available trench width is constrained relative to the required storage volume. Using a 10-high arrangement allowed 679.43 m^3 of stormwater storage and infiltration capacity to be incorporated within a trench only 2.87 m wide, while the system's stated structural resistance addressed the requirements of the trafficable surface above.

Did You Know?

The HP Data Center infiltration trench used 560 Atlantis Deca Modules in a 10-high configuration, creating 679.43 m³ of underground capacity within a footprint approximately 2.87 m wide × 54.8 m long.









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Thank You For Your Attention



Contact Us

Phone Number:
+61 (2) 9417 8344

Website:
www.atlantiscorporation.com.au

Email Address:
info@atlantiscorp.com.au