

Atlantis®
GREEN CITIES FOR LIFE

Bell Pole and Lumber

Project Location

New Brighton, Minnesota, U.S.A.

Atlantis Application

Underground Infiltration Tanks

Project Overview

The Bell Pole and Lumber facility in New Brighton, Minnesota sorts and finishes large lumber used for utility poles across the Midwest. Two low areas within the facility experienced persistent standing water, leaving the ground consistently soft and unstable. Their elevation prevented the water from being connected to the existing stormwater system without significant cost, creating the need for an on-site infiltration solution.

The project used Atlantis Flo-Tank® Double Modules with five vertical plates to provide the required underground storage within a limited footprint while accommodating loads exceeding standard H-20 loading. Forty double tanks were used to create a 2,500-gallon storage volume, with the first of two infiltration tanks completed in a single day.

Technical Summary

Project	Bell Pole and Lumber
Location	New Brighton, Minnesota, U.S.A.
Application	Underground Infiltration Tanks
Completion	April 2009
Size	2,500-gallon storage volume
Surface Use	Heavy equipment operating area
Atlantis System	Flo-Tank® Double 5 Plates

Design Challenge

Two low areas at the Bell Pole and Lumber facility were affected by standing water, resulting in persistently soft and unstable ground. Connecting these areas to the existing stormwater system would have required significant cost because their elevation was too low for the water to be readily piped into the existing network. An alternative method was therefore required to store the water underground and infiltrate it back into the groundwater.

The system also needed to achieve the required storage volume within the smallest possible footprint. Structural loading was an additional requirement because the large equipment used to move utility poles imposed loads exceeding standard H-20 loading. The tank configuration therefore required additional load-bearing capacity compared with the standard four-internal-plate configuration.

01 Address persistent standing water in two low areas of the facility.

02 Improve conditions where standing water was leaving the ground soft and unstable.

03 Avoid the significant cost associated with piping the low areas into the existing stormwater system.

04 Provide the required underground storage volume within the smallest footprint.

05 Infiltrate captured water back into the groundwater.

06 Accommodate equipment loads exceeding standard H-20 loading.

Solution

The project incorporated Atlantis Flo-Tank® Double Modules to create the required underground infiltration storage. A total of 40 double tanks provided a 2,500-gallon storage volume.

The standard four-internal-plate tank configuration used for H-20 loading was modified for this application by incorporating an additional fifth vertical plate. This increased the load-bearing capacity of the tank system to address the heavier equipment used for moving utility poles at the facility.

The resulting configuration combined the required infiltration storage with the reduced footprint and increased structural capacity required for the operating conditions at the site.

Benefits

- 2,500 gallons of underground storage provided using 40 double tanks.
- Required storage volume accommodated within a reduced footprint.
- Five-plate module configuration provided increased load-bearing capacity for the application.
- System configured for loads exceeding standard H-20 loading.
- Captured water managed through on-site infiltration rather than connection to the existing stormwater system.
- The first of the two infiltration tanks was started and completed within the same day.

Considerations

The installation comprised two infiltration tanks, with 40 Atlantis Flo-Tank® Double modules used to provide the specified 2,500-gallon storage volume. The first of the two tanks was started and completed on the same day.

The module configuration was specifically modified for the site's loading conditions. Instead of the standard four internal plates used for H-20 loading, each double module incorporated a fifth vertical plate to increase the load-bearing capacity of the tank system.

Belair Excavating completed the installation and reported satisfaction with the ease of installation and simplicity of the system design.

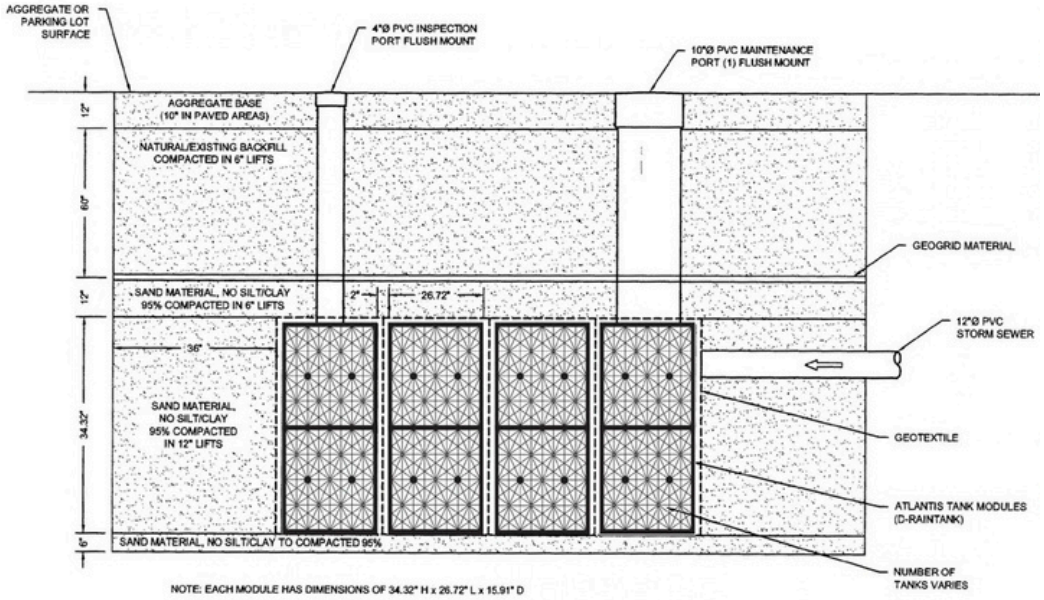
Project Outcomes

- 2,500-gallon underground storage volume provided.
- 40 Atlantis Flo-Tank® Double modules incorporated into the infiltration system.
- Five-plate configuration used to increase tank load-bearing capacity.
- System configured for site loads exceeding standard H-20 loading.
- Two low areas provided with an alternative to connection into the existing stormwater system.
- First of the two infiltration tanks completed within a single day.

The critical design relationship was between storage footprint and structural loading. The Flo-Tank® system provided the required 2,500-gallon storage volume within a reduced footprint, while modifying the standard four-plate configuration with a fifth vertical plate increased the tank's load-bearing capacity for the heavy equipment operating at the utility-pole facility.

Did You Know?

The infiltration system required loads greater than standard H-20 loading, leading to the use of an additional fifth vertical plate within the Atlantis Flo-Tank® Double modules to increase their load-bearing capacity.


AGGREGATE OR PARKING LOT SURFACE
4"Ø PVC INSPECTION PORT FLUSH MOUNT
10"Ø PVC MAINTENANCE PORT (1) FLUSH MOUNT
12"
AGGREGATE BASE (10" IN PAVED AREAS)
60"
NATURAL/EXISTING BACKFILL COMPACTED IN 6" LIFTS
GEOGRID MATERIAL
12"
SAND MATERIAL, NO SILT/CLAY 95% COMPACTED IN 6" LIFTS
2"
26.72"
12"Ø PVC STORM SEWER
36"
34.32"
SAND MATERIAL, NO SILT/CLAY 95% COMPACTED IN 12" LIFTS
GEOTEXTILE
ATLANTIS TANK MODULES (D-RAINTANK)
6"
SAND MATERIAL, NO SILT/CLAY TO COMPACTED 95%
NUMBER OF TANKS VARIES
NOTE: EACH MODULE HAS DIMENSIONS OF 34.32" H x 26.72" L x 15.91" D





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Thank You For Your Attention



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