



Pressurized Sand Mound System for Commercial Development Uses Quick4® Standard Chambers

Limited space and high water table create a challenge in the design of an advanced wastewater treatment system.

Project

Pressurized sand mound system utilizing 5,616 SF of Quick4 Standard chambers.

Installation Date

June 2007

Contractor/Installer

Steve Voigt
Steve's Excavating, Inc.
St. Cloud, MN

Designers

Tim Haeg, Don Fischer &
Greg Haeg
Watab Inc.
St. Joseph, MN

Permitting Agency

Stearns County Environmental
Services Department
St. Cloud, MN

Owner

Kiffmeyer Family Partnership
St. Joseph, MN

Design Specifications

Soil Type: Sand fill

Distribution Type: Pressure
2" PVC force main & manifold,
1½" PVC pressure distribution
lines with ⅜" orifices every 5 ft.

Drainfields: 468 Quick4
Standard chambers installed
in 3 alternating zones of
156 chambers each

Total Trench Area: 5616 SF

Design Flow: 5617 GPD

Integral Components: FAST 9.0
ATU and precast concrete tanks
by Wieser Concrete



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Case Study #19

The Delux Business Center is a new commercial development in St. Augusta, Minnesota. Extremely limited space and high water table made the design of a wastewater treatment system a challenge. This challenge was amplified by the need to treat the high strength wastes from a 125 seat restaurant, sandwich shop, and pizza delivery store slated to open in the development. A liquor store and three commercial units were also included as part of the system design.

Several options were considered, however due to the use of sand fill, and the size and location of the system, these designs were impractical. The final decision was to install Infiltrator Systems' Quick4 Standard chambers for the drainfield in conjunction with the combination of a grease trap, septic tank, timed dosing tank, ATU pre-treatment, and final dosing tank.

"We chose Infiltrator Quick4 Standard chambers for the drainfield because of their demonstrated performance and ease of installation," said Tim Haeg, project designer from Watab, Inc.

Because the existing soils could not provide the necessary separation from the water table, the drainfield had to be built above the existing grade. Prior to construction, 3 feet of soil was removed from the drainfield area and filled with clean sand. The drainfield which includes Quick4 Standard chambers was constructed on top of a 72" deep clean sand pad with trenches 65" on center. There are three alternating zones each with 156 chambers. A pressure distribution system was incorporated to provide even distribution with individual shut-off valves and flush valves.

High-strength waste from the kitchens is routed by a separate sewer line to a 5000 gallon grease interceptor tank, where it then flows to a centralized 6100 gallon septic tank. All other wastewater from the facility travels directly to the 6100 gallon septic tank. From the septic tank, effluent flows to a 7700-gallon duplex timed-dosing tank, which delivers measured flows to a High-Strength FAST 9.0 ATU in the 9100 gallon pre-treatment tank. The pre-treated effluent then travels to a 2000 gallon triplex demand-dose tank. Each pump in the tank is connected to one drainfield zone, allowing redundancy and the ability to control use of the drainfield.

The system is up and running and the facility is scheduled to open in late fall 2007. Operation and maintenance will include monitoring flows, and adjusting zones and timer settings accordingly. Wastewater will also be tested on a periodic basis to ensure that adequate treatment is being achieved.