

Focus of this Issue: Septic, Storm Water, and Waste Water Systems

13,000 Gallon Replacement Septic Tank

When it was determined that the Andover (NY) Central School District's old septic tank was leaking at the pipe connections and segment joints, the engineer/architect design team for a replacement tank, Buffalo Engineering and Habitera Associates, selected a new 13,000 gallon concrete structure with vertical gasketed **watertight** joints made with preformed rubber gaskets meeting the new ASTM C-1677-09 (more information on this follows).



13,000 Gallon Kon-Seal-Kon-Lock Watertight Gasketed Septic Tank©

Photo by: Kistner Concrete Products

The new tank, designed and sized to the latest NYSDEC requirements, by incorporating Kistner's latest joint sealing technology and connection system, will assure the School District a long lived, correctly and safely functioning septic tank. The tank pictured is made from 4 sections, 6' x

12' x 24' long, with internal baffle walls. Using this method, tanks can be manufactured from 10,000 gal. to 100,000 gal. – even up to 1,000,000 gal., depending on layout.

The riser is 4' x 4' (ID) x 6' tall, with a 3 sf locking aluminum hatch, to allow access and service. Other riser configurations are available, such as 4' diameter. Kistner utilizes a proprietary draw together system, and a single offset rubber gasket per ASTM C 1677-09 as the primary joint seal. The tank installation was **fast**, needing only 2 1/2 hours; including crane setup time, this was an easy 1/2 day installation. Standard Specification for Joints for Concrete Box, Using Rubber Gaskets (ASTM C 1677-09)

This new specification covers flexible joints for concrete box sections, using rubber gaskets for leak resistant joints. The acceptability of the box joints and gaskets is determined by the results of the physical tests prescribed, the first condition being after two sections of box with gaskets have been fitted together, the assembly shall be subjected to a hydrostatic pressure of 5 psi for 10 minutes. To further insure the integrity of this tank after installation, it was filled with water to conduct an 8 hour test. But it took so long to fill that the test scheduled for Friday was put off till Monday. Nevertheless, the tank filled Friday actually sat till Monday, when it was observed that no loss in water level had occurred.

This is clear evidence how the precast concrete industry has advanced with vertical gasketed watertight joints for all types of products. This can be utilized in many applications besides septic, such as water storage, storm water detention, emergency fire water cisterns, etc. Thanks to Mike Kistner, Robert Nordin, AIA, and Jeff LeMere for their input to this story.

Specify PCANY Certified Tanks – Then Look for the RED DISK Stating “PCANY LISTED”

A few years ago, a group of septic tank producers formed a PCANY specialty group, whose goal was to insure that concrete septic tanks are properly designed, manufactured, installed, tested, and even used correctly. A rigorous testing and inspection program was agreed upon, with

many producers undergoing the technical steps to qualify, which includes certification by a Registered Engineer. These firms are listed on the PCANY website (www.pcany.org/prods/central_registry_of_listed_tanks.cfm).

(Red Disk)



Vacuum testing a PCANY Certified Tank

The purpose of the PCANY Certification Program for Water and Wastewater Products is to assure the public and approving agencies that tanks or chambers achieving certification have been subjected to a rigorous testing and evaluation program, all for the benefit and protection of the Public and the Environment. *Specify and require that no tank may be installed unless it is PCANY Certified – look for the RED DISK.*

CERTIFIED TANK PRODUCERS

The list keeps growing. Welcome to Concrete Building Supply, Plattsburgh, NY, the latest septic

tank producer member to undergo the required independent testing, inspection, and documentation.

1500 Gallon Dual Compartment Step System Tank Required in Adirondack Park

To upgrade an old home system on Chazy Lake, the original 1000 gal, single compartment tank was left in place, to serve as a trash tank, fol-

lowed by a new 1500 gal dual compartment step system tank, fitted with a 400 GPD Scat Aerocell Treatment Unit. A Polyloc PL-122 outlet filter was



Setting bottom section



Setting top section



Operating system & lakeside view

Step System Tank *(continued)*

installed between the inlet and outlet compartments of the new tank, to insure solids would not enter the outlet flow to eventually clog the leach field. The Clinton County Board of Health now requires an outlet filter in any advanced treatment unit. The old leach field consisted of 60 LF of 4”

perforated pipe and stone, located only 100’ from the lake; the entire lot was just 80’ wide by 140’ deep to the water. The system, story, and photos were supplied by Darren Babbie of Concrete Building Supply (also see paragraph on previous page).

Stormwater Detention/Infiltration/Treatment System

When Tim Green, a managing partner with Commercial Real Estate Associates, began coordinating construction of Aquia Park, a 12.65 acre commercial and retail development of 9 buildings in

Stafford, VA, he faced two major factors. How could they maximize space use while providing storm water detention and how could that system meet both water quantity and quality considerations? The answer was reached working with Vitech

Engineering and Rotondo Environmental Solutions. The system chosen provides storage for approximately 193,000 cf of water and treatment for the Water Quality Volume (WQv), as well as meeting ground water recharge requirements.

In many locations, tight land availability for building structures requires the most efficient way to treat Stormwater, and developers wrestle with the decision of proprietary versus non-proprietary approaches. But sometimes pond systems can use as much as 20 percent of the land, can clog up, and cause silt buildup downstream – a maintenance nightmare.

Since a parking lot was going over the top of the stormwater detention system, the structure is designed for HS-20 traffic loading. The internal outlet control structure provides volumetric controls for the first 1” runoff storage volume (WQv) at 48 hour hydraulic residence time and stormwater detention for the 10 yr. flood with a one year, 24 hour storage. The first 1” of runoff of the WQv was



Each precast arch has an 18’ internal span, 12’ internal rise, and is 8’ long, cast with monolithic foundation pads

Stormwater Detention/Infiltration/Treatment System (continued)

for groundwater recharge, while the 1 yr 24 hr storage was needed to protect the wetland channels at two key discharge points at the site. Water quality control was achieved by constructing a 3' bed of surge stone beneath the precast units. (Additional information and data is available on these aspects of the system.) In all, 119 arch sections (18' x 12' x 8'), 12 end wall panels, one 4' x 8' Outlet Control Structure, and 10 - 36" RCP Equalization Pipes, all set over 4,000 tons of #57 stone, were installed in 8 days. Thanks to John Rotondo, PE, for submitting this story and photos.



The SWM system consists of 6 barrels side by side, by 120' long each. Photos by: Rotondo Environmental Solutions LLC

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