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JEPCO NEWS

by Ed Pennypacker • March 2004

SEPTIC TANK ASSOCIATION

Septic tank precasters and vendors are working to bring to life an association for the good of the industry: a Certified Producer Program modeled after one that is already successful in Ontario. Briefly, the precasters propose to the Department of Health to adopt a Quality Control/Quality Assurance program that will assure structurally sound watertight septic tanks. In exchange, the Department of Health will agree that no other septic tank may be installed anywhere in the state. Each producer must submit product drawings that carry an engineer's seal. The engineer must certify that he has witnessed and approved of the production techniques and has physically tested at least one of each type of tank for which drawings are submitted. The tests follow procedures outlined in ASTM C-1227.

Certified Producers do not have to belong to the NY Association, but it is planned that the Association will help underwrite some of the costs to its members. More news from New York will follow in the next few months.

TOP-SEAM vs. MID-SEAM

If you want to really stir the pot, bring this topic up at a meeting of individuals interested in the septic industry. It is a widely spread rumor that top-seam tanks are more likely to be watertight. False! Either can be made watertight; either can be made to leak. Personal experience shows that mid-seam tanks are easier to work with. They are inherently stronger and the extra weight of the top section helps compress the ConSeal.

Additionally, since the joints are formed against a steel pallet, they tend to be more regular in shape than hand finished joints in top-seam tanks that are poured right side up.

Either type of tank can be made watertight. Just pay attention to details and make sure all the necessary steps are taken.



Watertight top-seam tanks at Rosenberry's, Shippensburg, PA. Clamps for the rubber seals are next to the risers. No rain water gets into the tanks. Contractors love them.



Concrete tanks can easily withstand vacuum testing to 4 inches of Hg, but polyethylene risers have trouble. Note the sucked down lid which continued to leak. The space between riser and concrete held after a bead of caulk.

ASTM C-1227

ASTM specification C-1227 for precast concrete septic tanks is the spec most often used in regions where regulators govern septic tanks. It is a reasonable standard, and if you do not have a copy get one. Some of the highlights of the spec are:

- All tanks will be clearly marked within 2 feet of the inlet to show date of manufacture, name of manufacturer, tank capacity, and the feet of earth cover that the tank is designed to resist.
- Tests for leakage are either done by applying 4 inches of Mercury in a vacuum test or by filling with water. Proof testing for structural strength is performed in such a way as to simulate actual anticipated loads.
- Steel reinforcing requires a minimum of 1 inch concrete cover. Fibers are allowed as nonstructural manufacturing material. Chairs and spacers must be of non-corroding materials. Cutting mesh to bend a bit of wire to touch the form (for spacing) is not permitted.
- Access openings larger than 12 inches must be heavy (59 lbs or more) or be locked to prevent unwanted entry. Covers and risers must be prevented from moving laterally. Flimsy plastic pipe risers do not meet the spec. Other sections of the standard refer to quality materials, structural design, capacity, shape and the like. A minimum of 4,000 psi at 28 days is required.

PLASTIC AND FIBERGLASS TANKS

In the first week of November, The National Onsite Wastewater Recycling Association (NOWRA) held its annual meeting. Among the many topics considered is a proposed Model Code for Wastewater Treatment. Included in the code is a standard for septic tanks — not just precast tanks — all materials are covered.

Defining just what is covered under the terms “watertight” and “structurally sound” is one of the problems faced by the committee. Plastic septic tanks tend to collapse when they are pumped dry (or subjected to a vacuum test). Naturally the plastic tank producers are not fond of such tests so they point to the durability of plastic in harsh environments.



Orenco's new mid-seam fiberglass tank shows the pump chamber, which is included in the tank. 100% tested water tight, designed for burial under 4 feet when empty, and easy to install.

but they tend to pop out of the ground when they are pumped dry. Orenco and Xerxes have incorporated a wide flange around their mid-seam design to help prevent flotation. Xerxes shows diagrams of heavy “deadman” anchors (looks like a bumper block) that add resistance to flotation.

Septic Tank Effluent Pumps (STEP) systems take the wastewater that has been treated in the septic tank and pump it to secondary treatment and filtration tank. The two tanks are usually separate, but the Orenco tank eliminates the pump tank by including the pump in the second chamber. Since this disrupts the residence time in the septic chamber and since it creates turbulence, the performance of these tanks remains in question. Additionally, the length to width to depth ratios are thrown off by the tubular shape of the tanks. Anaerobic tanks need a “quiescent” (quiet, still) chamber so that the bacteria can ferment and separate solids and begin the digestion of wastewater as it returns to nature’s hydraulic cycle.

Residence time is important. Tripping off a pump on a regular basis disrupts the quiescent state. Cylindrical tanks have a shortened residence time. Currents induced by their shape disrupt the process.

So what is the reason for buying one? Part of the answer is in a perception that plastic and fiberglass are modern and high-tech. Weight is also a factor. Watertightness is certainly a factor.



Rochester Rotational Molding puts holes through their tank so that dirt can fill the space and help prevent flotation.

EPA and the GOLDEN OPPORTUNITY

It will take hundreds of billions of dollars to bring this nation’s sewage treatment systems up to modern clean-water standards — too much to even consider! Driven by a mandate to guarantee clean waters, the Feds know they need to do something about aging wastewater treatment systems. The answer is not “The Big Pipe” public sewage treatment plants. Instead, onsite treatment looks attractive. The EPA “recognizes onsite wastewater treatment systems as a permanent and essential element

of the nation’s wastewater infrastructure.” That means septic tanks are part of the nations infrastructure! They intend to take steps to clean-up our waters by improving the onsite treatment industry.



NORWESCO says they sold over 40,000 tanks in 2003.

Joyce Hudson and Steve Hogye, speaking at the NOWRA meeting, said that the EPA is encouraging review of local and state codes, working with legislatures to improve statewide management programs, financing decentralized systems, funding programs for certification and licensing of practitioners, and more. The system is broken and there is no repair crew available. It is not like a storm damaged power grid where a mobilized crew of repairmen is available to go out and fix it. There just isn’t any trained crew available. Here is the golden opportunity: Modern onsite systems call for septic tanks, pump tanks, filter beds, and treatment chambers. Each new system takes multiple structures. Why not make them

precast structures? What we need to offer is a superior product to plastic or fiberglass. Structurally sound watertight tanks that don't break, crush or crack when they get pumped, and watertight systems that do not leak in or out. Not leaking at the seals, not at the risers, not at the inspection ports, not at the joints, not anywhere.

Timed dosing systems are the tattle-tales of the industry. Before them, septic tanks were a "set it and forget it" item — not now. Timed dosing matches the design of the system to the pumping schedule. With infiltration, rainwater enters the system and disrupts the schedule. When the pump goes on at the wrong time, an alarm goes off, alerting the home owner that there is a problem. The installer has to fix the problem. It costs a lot of money to go out on a rainy day only to find water leaking into a system through sloppy joints. It gives us all a bad name when the sloppy joints are in precast products. Blaming the problem on the contractor will not be enough. In-plant testing and QA/QC programs have got to be good. We have to be able to guarantee that our part of the job is so well made that it cannot possibly be the cause of the problem. Golden Opportunities do not come often. It is important not to miss this one. Only by making a commitment to quality, will precasters survive. The ones who cut corners, sell seconds, use left-over concrete, and ignore the need for watertightness are hurting all of us. As an industry we need to gather together and drive the standards higher. Price is not the selling point in the future. Plastic and fiber glass tanks cost more than precast. Yet they have a share of the market based on a perceived issue of quality.

GUARANTEES



E-Z Set risers are certified to 13 inches of Hg. Concrete bonds with polypropylene. No cracks form around the base where concrete and riser interact. Other risers do not work well with concrete and their incompatibility leads to leaks.

Nearly every manufacturer of plastic or fiberglass tanks offers a warranty. It promises to replace — at the manufacturer's option — any tank which, in the opinion of the manufacturer, is defective in materials or manufacture. To their credit, each of them gives a detailed, illustrated, set of instructions that covers every phase of installation from digging to backfill.



FRALO promises a 50 year watertight guarantee.

TATTLE TALE

The incidence of undersized sealants has not gone down. Near Providence, RI, a sample of 1¼" Butyl was so small that it qualified as ConSeal's 7/8" size.

Near Baltimore, MD the one inch size was only 80% of true size. Near Danbury, CT it was the same.

CONSEAL PROMISE

NO TRICKS, NO LIES. You get what you pay for. Sometimes it hurts to tell the truth. There is no free freight! Somebody pays to ship sealants from the manufacturer to you. Disguising the costs, or even worse, underwriting the costs by cheating on the size and quantity of the product is not CONSEAL's way of doing business.

Want to know whether you have been cheated? Just measure the size of the butyl you have purchased.

Compare it to the chart below. Squeeze the sealant. Is it sticky? Rubbery? Pull it like taffy. Does it stretch?

Ø size	πr^2	Full Size	Undersize	Ratio
½"	.19 in ²	.44 x .44 = .19	.375 x .375 = .14	.74
¾"	.44	.6 x .75 = .45	.5 x .75 = .38	.86
7/8"	.60	.75 x .75 = .56	.6 x .75 = .45	.80
1"	.79	.95 x .925 = .78	.625 x 1 = .625	.80
1¼"	1.26	.98 x 1.20 = 1.23	.88 x 1.25 = 1.1	.89
1½"	1.76	1.25 x 1.5 = 1.80	1.0 x 1.75 = 1.75	.97
2"	3.14	1.4 x 2.25 = 3.15	n/a	n/a