

TECH TALK

USEFUL INFORMATION RELATED TO SEPTIC TANKS

Question: Which **ASTM 'C' Specifications** are applicable to designing liquid containment tanks (septic, storm, grease interceptors, etc)?

Answer: Depending on what you are building, and with what precast products and connection or sealing materials, more than one is most likely needed to assure a quality, long life, leak free system. There are different specifications for products that **hold** liquids (septic, storm, grease interceptors, etc) and products that **convey** them (sewer pipe, manholes, culverts, etc).

For septic tank construction, ASTM C 1227-05 is the common specification – not 1577-06 (see list below). C 1577 covers single-cell precast reinforced concrete box sections intended to be for the construction of culverts and for the conveyance of storm water, industrial wastes and sewage. C 1227-05 further references ASTM C 890-06 to determine the minimum structural design loading.

Of the extensive list of ASTM C Specifications below, only a few others are applicable to septic tanks, storm water tanks, or grease interceptors. C 890-06 is applicable, while C 891-90, which contains many useful points, is probably not, when considering precast structures that **hold** liquids. C 913-02 is applicable to water and wastewater structures such as solar heating reservoirs, cisterns, holding tanks, leaching tanks, extended aeration tanks, wet wells, pumping stations, grease traps, distribution boxes, oil-water separators, treatment plants, manure pits, catch basins, drop inlets, and similar structures; it is not for concrete pipe, box culverts, utility structures, septic tanks, and items included under the scope of specification C 478.

Insuring that joints are watertight brings up several other specs. Use C 1644 in connection with reinforced concrete tanks used for septic effluent treatment/detention, including those referenced in C 913 and C 1227. C 1677 covers flexible joints for concrete box sections, using rubber gaskets for leak resistant joints.



ASTM Specifications Discussed in This TECH TALK

- C 443-05a Specifications for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- C 478-06b Specifications for Precast Reinforced Manhole Sections
- C 506-05a Specifications for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
- C 507-05a Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
- C 655-04 Specification for Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
- C 822-06 Standard Terminology Relating to Concrete Pipe and Related Products
- C 857-95(2001) Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
- C 858-83(2004) Specification for Underground Precast Concrete Utility Structures
- C 877-02 Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections
- C 890-06 Specification for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water or Waste Water Structures
- C 891-90(2003) Practice for Installation of Underground Precast Concrete Utility Structures

C 913-02 Specification for Precast Concrete Water and Wastewater Structures
C 920-05 Specification for Elastomeric Joint Seals
C 923-02 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
C 990-06 Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
C 1227-05 Specifications for Precast Concrete Septic Tanks
C 1433-06 Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
C 1478-06 Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes, and Laterals
C 1504-04 Specification for Manufacture of Precast Reinforced Concrete Three-Sided Structures for Culverts and Storm Drains
C 1577-06 Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD
C 1644-06 Specification for Resilient Connectors Between Reinforced Concrete On-Site Wastewater Tanks and Pipes
C 1677-09 Standard Specification for Joints for Concrete Box, Using Rubber Gaskets

This **TECH TALK** is part of a series related to septic tanks, whose goal is to inform. We welcome your participation, assistance, suggestion or complaint.

The Precast Concrete Association of New York (PCANY) is an organization of over 100 members. It has 30 concrete producers, 17 of whom produce concrete septic tanks. Our mission is to assure the physical integrity and satisfactory performance of septic tanks for the benefit of all who depend upon on-site wastewater treatment systems.

To successfully achieve this mission, PCANY has:

1. Established a "Manufacturers Certification Program", which includes a Quality Control/Quality Assurance component, to produce and deliver precast concrete septic tanks that are watertight and structurally sound.
2. Communicated with the regulatory community to develop standards for the siting, installation, monitoring, maintenance, management and operation of all components of an on-site wastewater treatment system.
3. Acted on behalf of all PCANY members through participation on committees and boards, where the unique attributes and importance of the concrete septic tank in the on-site management of wastewater are subjects of discussion.
4. Published "Concrete Septic Tank Installation Guidelines."

PCANY SEPTIC TANK PRODUCING MEMBERS --

Binghamton Precast & Supply, Binghamton 607-722-0334; Keeler Vault Co., Inc., Hudson, 518-851-6281; Burnett Concrete Products, Inc, Wolcott 315-594-2242; Kistner Concrete Products, East Pembroke 585-762-8216 (also E. Bethany 585-343-7811, Lockport 716-434-6157, Springville 716-592-2811, Portville 716-933-7440, Phelps 315-462-7372, and Jamestown 716-763-0415); Concrete Building Supply, Plattsburgh 518-563-0700; Lakelands Concrete Products Inc, Lima 585-624-1990; R. Deso, Inc, Champlain 518-298-8411; Oneonta Block, Oneonta 607-432-6641; Sunnycrest Inc., Auburn 315-252-7214; The Fort Miller Co, Inc, Schuylerville 518-695-5000; Woodard's Concrete Products, Inc, Bullville 845-361-3471; Grimm Building Materials Co, Troy 518-272-1100; United Concrete Products, Inc., Yalesville, CT 800-234-3119; Guardian Concrete Products, Schenectady 518-372-0080; Zeiser Wilbert Vault, Elmira 607-733-0568; Jefferson Concrete Corp, Watertown 315-788-4171;

The PCANY website, www.pcanyc.org, identifies the plants that have qualified under our Certification Program, and lists the specific tanks authorized to cast in the "PCANY LISTED" red disk, which means they have been properly designed, manufactured, and vacuum tested for water tightness. The RECOMENDED GUIDELINES FOR INSTALLATION OF CONCRETE SEPTIC TANKS is also listed on the website.

FATS, OILS and GREASE – Why Precast Concrete for Grease Interceptors?

Built Tough – precast concrete grease interceptors can easily support vehicular loads allowing for convenient placement under a parking lot near food service establishments.

Built Watertight – standard watertight sealants are formulated to adhere to precast concrete, making watertight multiple-seam precast structures routine.

Stays Put – precast concrete structures resist the buoyant forces associated with buried installation. Compare concrete, which has a specific gravity of 2.40, with fiberglass at 1.86, or high density polyethylene at 0.97.

Healthier Environment - Large outdoor grease interceptors provide a level of health safety that indoor units cannot provide. By conducting the collection, maintenance, and disposal of FOG outside the kitchen area, health concerns created by performing these functions in the workplace as food preparation is eliminated.

Precast concrete grease interceptors are the best choice for effective removal of fats, oil, and grease. Only properly sized and maintained outdoor type grease interceptors provide acceptable effluent quality. Precast concrete grease interceptors are easily produced to be watertight, durable during storage and transportation, easy to install and provide a healthy food service environment.

(FOG portion borrowed from NPCA Precast Solutions)

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