



Equip Tips

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U. S. DEPARTMENT OF AGRICULTURE — FOREST SERVICE EQUIPMENT DEVELOPMENT CENTER — SAN DIMAS, CALIFORNIA

Cross-linked Polyethylene Vault Toilet 1,000-Gallon Tank

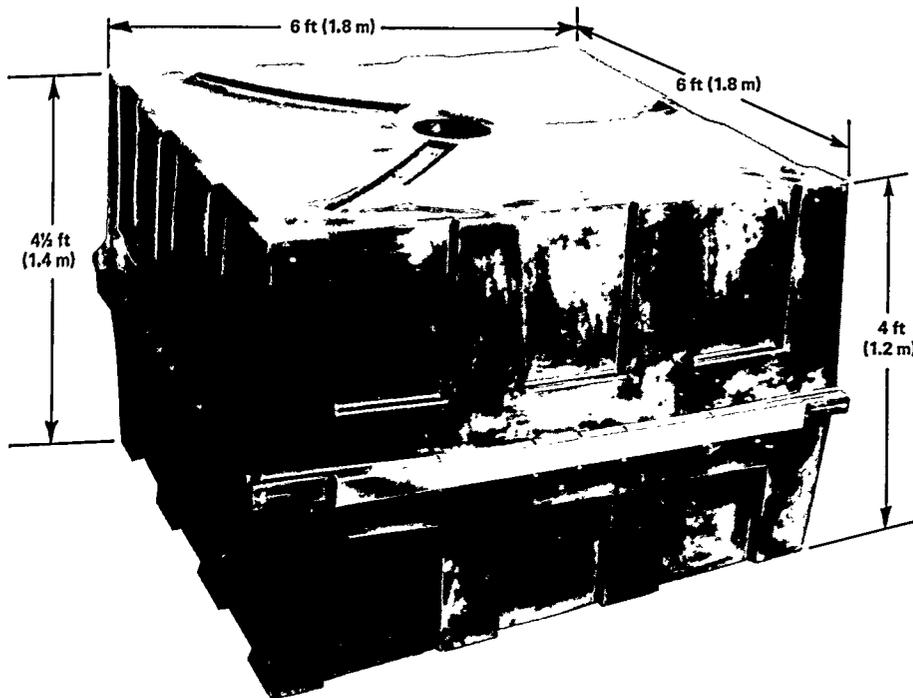


Figure 1. Cross-linked polyethylene vault toilet tank.

Vault toilet tanks (fig. 1), having a 1,000-gal (3 785-l) capacity and fabricated from cross-linked polyethylene (Marlex[®] CL-100; material specification is available from the tank manufacturer), have recently been offered and are an acceptable alternative to the concrete and fiberglass tanks currently in use.

ADVANTAGES

1. The monolithic cross-linked polyethylene tanks have no metal inside, which eliminates corrosion problems.

2. These tanks require fewer handling precautions than others and vibration during shipment is harmless.

3. Disinfecting and deodorizing chemicals in common use do not affect cross-linked polyethylene.

4. The sloped bottom (1 in/ft, 8.3 cm/m), shallow depth, and smooth interior make cleaning easier.

5. The black color reduces the visual impact of the wastes.

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6. The tanks can be buried without being inserted into an excavation liner of any sort; the outer metal support fits loosely, allowing for any initial tank movement during installation.

7. The plastic tanks are light in weight (450 lb, 240 kg).

DISADVANTAGES

1. These tanks are produced only in California, which adds to the cost of shipment and delivery time to the Midwest and East.

2. The surfaces of the tanks are not rigid; therefore, obtaining a watertight seal between the tank and the toilet building concrete floor slab is not easy.

3. Damage to cross-linked polyethylene is difficult to repair (instructions are available from the tank manufacturer).

INSTALLATION AND ORDERING INFORMATION

To maintain quality control, the manufacturer will occasionally cut an inspection hole approximately 14 by 16 in (36 by 41 cm) somewhere in the top of a tank. When placing orders, specify the exact location of this hole so that it will coincide with either a vault toilet riser or a cleanout location. Since there is no standard toilet building layout, there is no single location for the hole that will satisfy all installations.

(NOTE: For detailed installation specifications contact your Regional Sanitary Engineer.)

The following installation tips are offered (fig. 2):

Tank Excavation Base Preparation

Sand is the most-suited material for the base of the excavation; pea gravel or soil with pea-size stones is acceptable. Prior to lowering the tank into position within the excavation, the base should be thoroughly compacted and a support set in place so as to be under the tank column. One suggestion for a support is two 8 by 8 by 16 in (20.3 by 20.3 by 40.6 cm) concrete blocks. The tank column, when poured with concrete, prevents the tank from sagging after the concrete slab and the building are constructed.

Backfilling and the Concrete Slab

The backfilling should be carefully controlled to obtain optimum compaction. The tank should be

empty during backfilling. A select backfill is preferred, but soil with gravel-size stones is acceptable. Use reinforcing steel in the concrete slab poured on the tank, and extend the slab 1½ to 2 ft (0.46 to 0.61 m) beyond the tank's perimeter. By extending the concrete slab beyond the perimeter of the tank, the loading from the slab and the building is well distributed over the tank and surrounding soil. This should provide long life to the tank.

Sealing Against Ground Water Infiltration

Instead of attempting to seal each of the tank holes (toilet risers, vent, and cleanout) against water infiltration, an effective seal can be obtained by lining the outer edge of the tank with either a rubber gasket or an asphaltic compound prior to pouring the concrete. Care should be exercised during concrete pouring to prevent slippage of the gasket material.

To order the 1,000-gal (3 785-1) tanks, specify part number OD2040. The price as of June 1979, fob, Canoga Park, Calif., is \$850 each. Available from:

Ontrak Designs, Inc.
21600 Osborne Street
Canoga Park, CA 91304

Telephone: 213/998-5105

Additional Vault Toilet Information

This *Equip Tips* is the latest in a series of Forest Service documents on the subject of vault toilets at outdoor recreation sites. The following previously issued reports are available from the Forest Service, U.S. Department of Agriculture, Equipment Development Center, 444 East Bonita Avenue, San Dimas, CA 91773:

- February 1976—"Vault Toilets . . . design and maintenance considerations," *Special Report*
- July 1978—"Cross-linked Polyethylene Vault Toilet Riser," *Equip Tips* No. 7823 1301
- August 1978—"Updated Vault Toilet Concepts," *ED&T Report* 2300-13.

The July 1978 *Equip Tips* is a companion document to this *Equip Tips*. The tank discussed herein is produced by the same manufacturer, using the same plastic material as in the vault toilet riser.

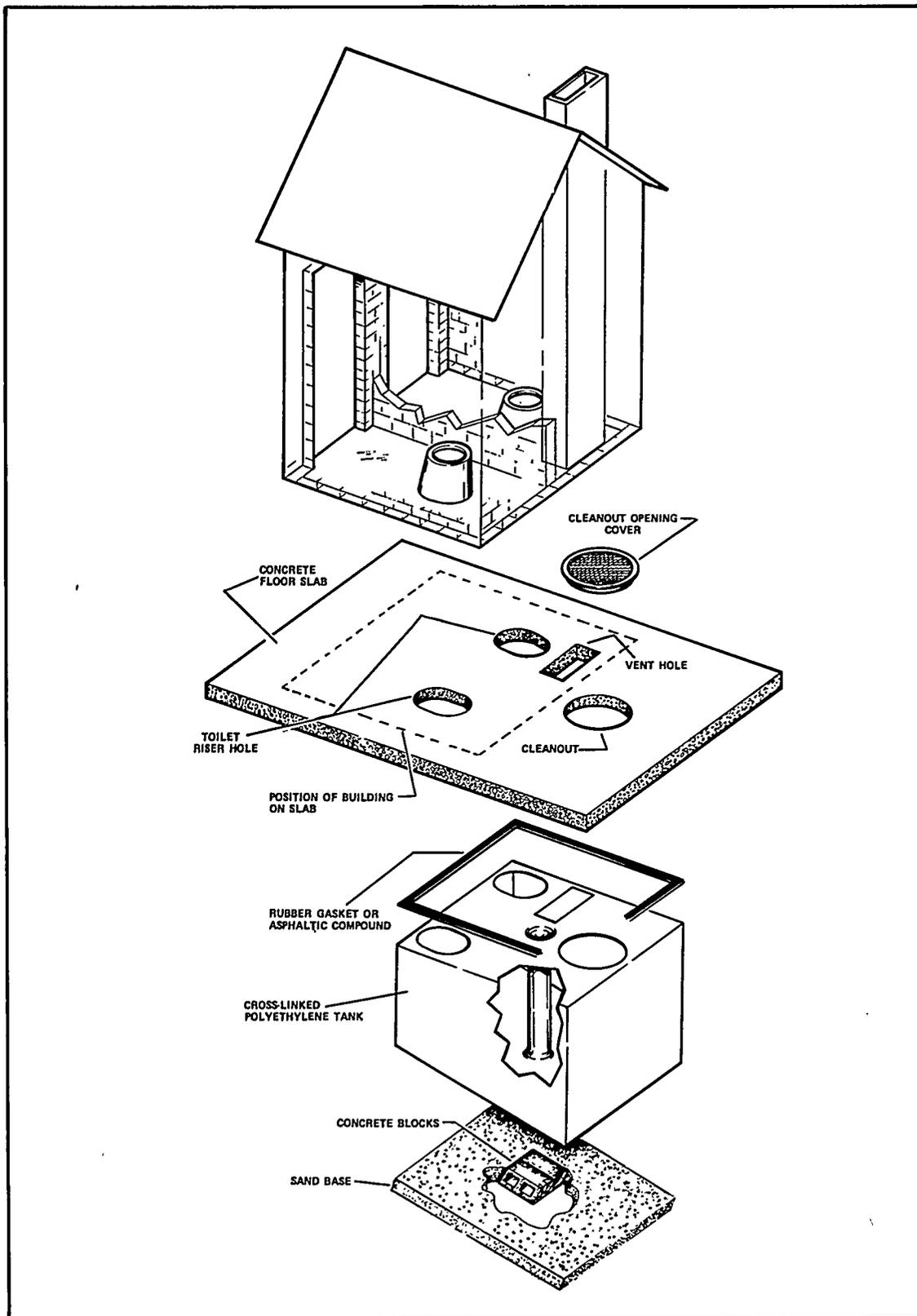


Figure 2. Exploded view of 1,000-gal (3 785-1) tank installation.

