

**CITY OF NEW YORK
DEPARTMENT OF BUILDINGS**

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use in accordance with the Report of Materials and Equipment Acceptance (MEA) Division.

**Satish K. Babbar, R.A., Acting Commissioner
MEA 426-00-S**

Report of Materials and Equipment Acceptance Division

Manufacturer - Convault Inc., 4109 Zeering Road, Denair, CA 95316.

Trade Name(s) - Convault.

Product - Above Ground Protected and Insulated Storage Tanks for Heating Oil and Diesel.

Pertinent Code Section(s) -Section 27-133 Alternate or Equivalent Materials; 27-828, 27-829, 27-830.

Test(s) - UL 2085.

Laboratory - Underwriters Laboratories, Inc.

Test Report(s) - UL File MH15966 and CMH1594 issued June 4, 1993 and revised September 8, 1998 and UL letter dated November 27, 2000.

Test Item	Test Criteria	Test Result	Test Records
Load Test	1,000 lb load applied for 1 minute over a 12 in. by 12 in. area on top surface close to the center of the tank top.	No damage to the tank.	Test records No. 1 Test T1 page 2 of 7, Dated June 4, 1993
Strength of Pipe fittings (bending moment)	An increasing force of 0 to 2000 lb-ft applied to tank fittings.	Pipe bent at 1600 ft-lb, threads did not strip, no damage to tank.	Test records No. 1 Test T1 page 3 of 7, Dated June 4, 1993
Strength of Pipe fittings (Torque)	A torque of from 2,000 to 4,600 lb-in. applied to fittings ranging from 3/4" to 8 in. diameter, respectively.	Fitting did not crack, threads did not strip, no visual damage to tank or to insulation.	Test records No. 1 Test T1 page 3&4 of 7, Dated June 4, 1993
Full Scale Fire Test	A representative sample of insulated tank was fire tested in a furnace with 2,000 degrees °F for two hours in accordance with UL 1709 Rapid Rise Fire and UL 2085 Standard for Fire Resistant Tanks.	Tank did not exceed an average maximum temperature rise of 800°F. The maximum temperature rise of any single thermocouple did not exceed 1000°F.	Test records No. 1 Test T1 page 4 of 7, Dated June 4, 1993
Hose Stream Test	After the fire test and cooling period, a hose stream test was conducted in accordance with "Fire tests of Building Construction and Materials", (ANSI/UL263, ASTM E119).	There was some surface erosion of the concrete. There was no damage to the primary steel tank.	Test records No. 1 Test T1 page 6 of 7, Dated June 4, 1993

Test Item	Test Criteria	Test Result	Test Records
Density and Compressive Strength Tests	Samples of concrete employed in the insulated tank construction were tested for density and compressive strength in accordance with ASTM C567, and ASTM C873.	Density of sample was 138 lb/cu. Ft. and compressive strength of concrete was determined to be 3290 psi after 28 days.	Test records No. 1 Test T1 page 7 of 7, Dated June 4, 1993
Cold Exposure and Impact Test	A block of concrete (6 inch thick) was conditioned for 16 hr. in a cold box maintained at -40°F. Sample was subjected to an impact of a 1.18 lb. Steel ball with a diameter of 2 inch dropped from a 6 ft. height.	The sample did not crack.	Test records No. 1 Test T1 page 7 of 7, Dated June 4, 1993
Full Scale Fire Test	A representative sample of insulated tank was fire tested in a furnace with 2,000°F for two hours in accordance with ULC/ORD-C142.16 Standard for Fire protected Tank Assemblies.	Average temperature rise in tank did not exceed 260°F. maximum temperature rise of any thermocouple did not exceed 400°F.	Test records No. 2 Test T3 page 1 of 2, Dated (new) August 16, 1994
Vehicle Impact Test	A representative protected tank was subjected to impact of 11880 lb mass moving at a velocity of 14.7 ft/s. in accordance with ULC/ORD-C142.16 and UFC 79-7. Following the impact, the primary tank was pressurized to 5 psig for 1 hr.	There was no leakage or significant damage noted as a result of the impact.	Test records No. 2 Test T3 page 1 of 2, Dated (new) August 16, 1994
Ballistic Test	Two representative protected tank assemblies were subjected to the impact of five bullets followed by a 5 psi air pressure test of the primary tank.	There was no leakage of the primary tank.	Test records No. 2 Test T3 page 1 of 2, Dated (new) August 16, 1994
Hose Stream Test	Immediately following the 2 hr. fire exposure, tank assembly was subjected to the impact and to the cooling effects of the 29.7 psig hose stream. Primary tank was subjected to a leakage test of 5 psig.	The exposed wall of the assembly remained intact without significant concrete damage. Primary tank remained leak tight.	Test records No. 2 Test T3 page 2 of 2, Dated (new) August 16, 1994

Description - Model CVT Insulated Secondary Containment tank 250 through 7,400 gallons are double wall steel tanks, protected, fire resistant, vehicle impact and ballistic resistant tanks. They are listed under UL Standard 2085 for Protected Above ground Storage Tanks (AST) for flammable and combustible liquids and ULC/ORD-C142.16 Standard for Fire Protected Tank Assemblies. (Proposed ULC-S655).

Primary tank consists of a steel cylindrical tank and secondary consists of a rectangular steel tank both manufactured in accordance with UL Standard 142. The tanks can be made in single or in double compartments. The primary tank is testable to 25 psig and the secondary steel tank is testable to 5 psig.

The steel secondary tank is wrapped in a 30 mil High density polyethylene encased in a 6-inch thick monolithically poured reinforced concrete. The tanks exterior is finished using high quality paint or are exposed aggregate sealed with high quality sealants. These vaults provide 2-hour firewall and a secondary containment from 60 to 240%.

These tanks have been tested and listed by UL and ULC as "Protected", Fire resistant, Vehicle Impact resistant and ballistic impact resistant.

This application is for CVT-NYC models consist of the following capacities: 500, 1,000, 1,500, 2,000, 3,000, 4,000, 5,200, 6,000 and 7,400 gallons. As indicated on drawings T12001 pages 1 through 4 (not enclosed).

Pursuant to "Promulgation of the Rules relating to Material and Equipment Application Procedures" dated November 5, 1992, the Bureau of Fire Prevention has no objections letter dated January 24, 2001, Certificate of Approval #4989 for equivalent tanks.

Recommendation - That the above described horizontal double wall construction, reinforced concrete steel tanks be accepted for below grade level storage of fuel oil and diesel at pressures not exceeding 14.7 pounds per square inch absolute, under the following conditions:

- 1. Acceptance is for heating fuel oil storage tanks at atmospheric pressure. Regulations applicable to fuel oil for bulk storage facilities and storage of diesel oil for motor vehicles are accordance with provisions of Title 27, Chapter 4, Fire Prevention Code of the New York City Administrative Code.**
- 2. Installation shall be in accordance with recommended procedure contained in NFPA 31, Oil Burning Equipment.**

3. Except as modified by the manufacturer's specifications for tank design, installation and maintenance shall comply with Section 27-830.

Due to the unique design of the tank some Sections of 27-829 do not apply and only the following items shall be complied with which are extracts from Section 27-829 as follows:

[C26-1416.3] 27-829 Location of tanks.-

(a) Inside of building, above ground on the lowest floor.-

(1) TANK CAPACITY OF FIVE HUNDRED FIFTY GALLONS OR LESS. -

Storage tanks having a capacity of five hundred fifty gallons or less may be installed above ground on the lowest floor of a building, provided that such tanks are mounted on adequate noncombustible supports, with the tanks anchored thereto. No more than five hundred fifty gallons of total storage capacity may be connected to one burner or may be installed without the protection provided in paragraph two or three of this subdivision.

(2) TANK CAPACITY MORE THAN 550 GAL. BUT LESS THAN ELEVEN HUNDRED GALLONS. - Storage tanks having a capacity of more than five hundred fifty gallons but less than eleven hundred gallons may be installed above ground on the lowest floor of a building.

(3) TANK CAPACITY ELEVEN HUNDRED GALLONS OR MORE. - Storage tanks having a capacity of eleven hundred gallons or more may be installed above ground on the lowest floor of a building.

(4) MAXIMUM TANK SIZE. - The capacity of individual storage tanks in no case shall exceed twelve thousand gallons.

(b) Inside of building above the lowest floor. -

(1) These Fuel oil storage tanks having a capacity of two hundred seventy-five gallons or less may be installed inside of buildings above the lowest story.

(c) Inside of buildings, below grade. -

(1) Storage tanks having a capacity greater than two hundred seventy-five gallons may be installed inside a building provided that the top of the tank is at least feet below floor level.

(2) No tank shall be installed within three feet of any foundation wall or footing.

(e) Outside of buildings, above ground.

(1) Storage tanks of a capacity greater than two hundred seventy-five gallons located outside of buildings above ground shall be not less than one and one-quarter (1 1/4) tank diameters and in no case less than ten feet from the line of adjoining property, the nearest building or adjacent tank. The minimum clearance between individual tanks located outside of buildings above ground and the line of adjoining property which may be built upon shall be fixed by the following formula:

$$\text{M.C.} = 10 + 4 \frac{(G - 275)}{5000}$$

Where:

M.C. = minimum clearance from nearest surface of tank to adjoining property, in feet.

G = capacity of tank, in gallons.

The maximum allowable capacity of fuel oil storage tanks located outside of buildings above ground shall be one hundred thousand gallons.

(2) Tanks shall be located so as not to obstruct or interfere with any means of egress.

(f) Tanks located along line of subways.

(1) No tank shall be placed within twenty feet of the outside line of a subway wall. Where an above ground tank within a building is located within the outer lines of the subway, or within twenty feet of the outside line of the subway wall, such tank shall be placed within a welded steel oil tight pan of not less than No. 18 manufacturer's standard gauge metal suitably reinforced and of capacity to contain the contents of the tank.

(2) For the purpose of the foregoing requirement, a subway shall be deemed to include any subsurface railroad or rapid roadbed.

4. All tanks and annular spaces shall be pneumatically tested in accordance with New York City Fire Department specifications after installation in the presence of a Fire representative.
5. Tanks located in flood hazard area as defined by the Building Code and any other location showing evidence of the presence of ground water shall be installed with an appropriately designed anchorage system.

6. Tanks are usually shipped from the factory with a vacuum on the annular space. Vacuum is usually broken at the installation site and only in the presence of a Fire Department representative. Any other arrangement shall be first cleared with the Fire Department prior to shipment.

A non-corrosive metal tag of ample size shall be suitably affixed to the tank, certifying the tank shipped or delivered is equivalent to that tested and acceptable for use, as provided for in Section 27-131 of the Building Code. The tank will be certified that it has been manufactured and tested in accordance with ASTM Specification.

Final Acceptance March 23, 2001

Examined By Mark Jubling