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### Legacy report on the 1997 *Uniform Building Code*™ and the 2000 *International Building Code*®

**DIVISION: 13—SPECIAL CONSTRUCTION**  
**Section: 13150—Swimming Pools**

#### HYDRA VINYL-LINED IN-GROUND RESIDENTIAL SWIMMING POOLS

HYDRA, A DIVISION OF PI, INC.  
543 SOUTH MAIN STREET  
SWEETWATER, TENNESSEE 37874

#### 1.0 SUBJECT

Hydra Vinyl-lined In-ground Residential Swimming Pools.

#### 2.0 DESCRIPTION

##### 2.1 General:

The Hydra vinyl-lined swimming pools are residential-type in-ground pools with a one-piece vinyl liner supported by vermiculite at the base and vertical wall panels at the pool periphery. Maximum pool depth is 8 feet, 4 inches (2540 mm). Various sizes, shapes, and depths of pool are available.

##### 2.2 Materials:

**2.2.1 Vinyl Liner:** The vinyl liner is one-piece, 20-mil-thick (0.5 mm), polyvinyl chloride sheeting.

**2.2.2 Pool Panels:** Pool panels measure 1/4 inch (6.4 mm) thick, 42 inches (1067 mm) tall, and from 24 to 72 inches (610 to 1829 mm) long. Refer to Figure 1 for details of a typical panel. Panels at pool corners have special-shaped sections. Panel material is polystyrene PS 331.

**2.2.3 Bracing:** The bracing system is a framed support system consisting of diagonal bracing and a stake. Bracing material is medium-impact polypropylene.

**2.2.4 Back-fill:** Back-fill material is gravel, sand, or nonexpansive native soil.

**2.2.5 Fasteners:** Fasteners used to connect the panels to the bracing member must be cadmium-plated or galvanized 1/2-inch-diameter (12.7 mm) bolts and nuts conforming to ASTM A 307 Grade A and ASTM A 563 Grade A, respectively.

**2.2.6 Concrete:** Concrete used in panel foundation and around the periphery of the pool must be normal-weight concrete having a minimum 2,000 psi (13.8 MPa) compressive strength at 28 days.

**2.2.7 Reinforcement:** Reinforcing steel rods used at the perimeter of the panels must be deformed reinforcement bars complying with ASTM A 615, A 616, A 617, A 706, A 767 or A 775, Grade 40 or better.

**2.2.8 Pool Base:** Pool base material must be lightweight concrete having aggregates conforming to ASTM C 330, or other approved aggregates.

##### 2.3 Installation:

**2.3.1 Site Conditions:** A soil investigation by a qualified engineer of the proposed pool location is required when any of the following conditions are encountered:

1. The existence of groundwater within the depth of the pool excavation.
2. The existence of uncompacted fill or expansive soil.
3. The use of nonconforming back-fill material.
4. The existence of soil with an angle of repose that does not allow excavation of desired slopes.
5. A pool location that endangers life or property.

Required soil investigation must conform to Section 1804 of the 1997 *Uniform Building Code*™ or Section 1802 of the 2000 *International Building Code*®.

**2.3.2 Swimming Pool:** The excavation for the desired pool shape and depth permits installation of the vermiculite concrete base layer, bracing system, wall panels, concrete footing, back-fill material, and plumbing. The base has a 2-inch-thick (51 mm) layer of vermiculite concrete. A 4-inch-thick (102 mm) concrete foundation around the perimeter of the pool supports the wall panels and the bracing system. The braces are spaced a maximum 9 feet (2743 mm) on center. A 3-foot-wide-by-4-inch-thick (914 mm by 102 mm) concrete deck supports the top of the wall panels. The concrete foundation and deck are reinforced with No. 4 bars. The panels are connected to each other with a minimum of four bolts. The vinyl liner is installed after the bottom and sides are complete. The pool is filled with water and simultaneously backfilled. Refer to Figures 2, 3, 4 and 5 for typical details.

**2.3.3 Special Conditions:** The pools must remain full of water at all times. A permanent sign, attached to the plumbing equipment, reads as follows:

**Notice:** Pool is designed to remain full of water at all times. Pool may be damaged if water level is allowed to drop below the pool inlet. When appreciable draw-down is noticed or if it becomes necessary to drain the pool, contact the pool manufacturer or its dealer for pool installer instructions.

Adjacent to this sign, a permanent label indicates the manufacturer's licensee name, address, and telephone number.

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## 2.4 Identification:

A label attached to each panel identifies the part, the name and address of Hydra, A Division of PI, Inc., and the evaluation report number (ER-5339). The pool liner has a label identifying the manufacturer's name and address.

## 3.0 EVIDENCE SUBMITTED

Calculations, reports of vinyl durability tests, and published manufacturer's installation instructions.

## 4.0 FINDINGS

That the Hydra Vinyl-lined In-ground Residential Swimming Pools described in this report comply with the 1997 *Uniform Building Code*™ (UBC) and the 2000 *International Building Code*® (IBC), subject to the following conditions:

4.1 Materials and pool installation comply with this report and the manufacturer's published instructions.

4.2 The electrical and plumbing installations comply with the respective codes in effect at the construction site.

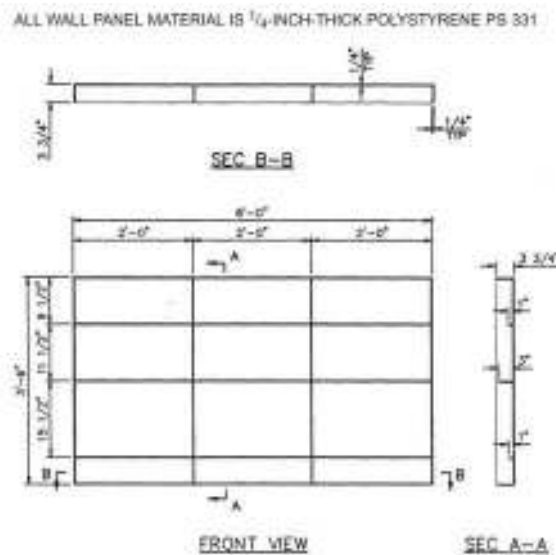
4.3 Clearance from slopes conforms to Section 1806.5.4 of the UBC or Section 1805.3.3 of the IBC.

4.4 The pools are installed by installers approved by Hydra, Inc.

4.5 Barriers in accordance with Appendix Chapter 4, Division 1, of the UBC are provided where pools are located on premises of Group R, Division 3, Occupancies.

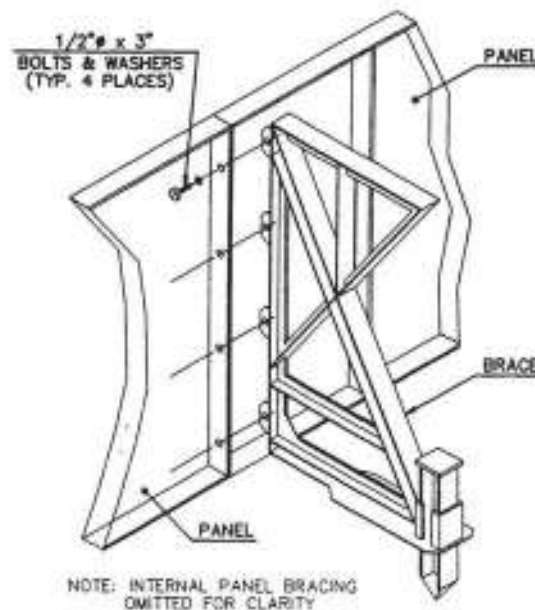
4.6 Enclosures in accordance with Section 3109.4 of the IBC are provided when pools are located on the premises of Group R Occupancies.

This report is subject to re-examination in two years.



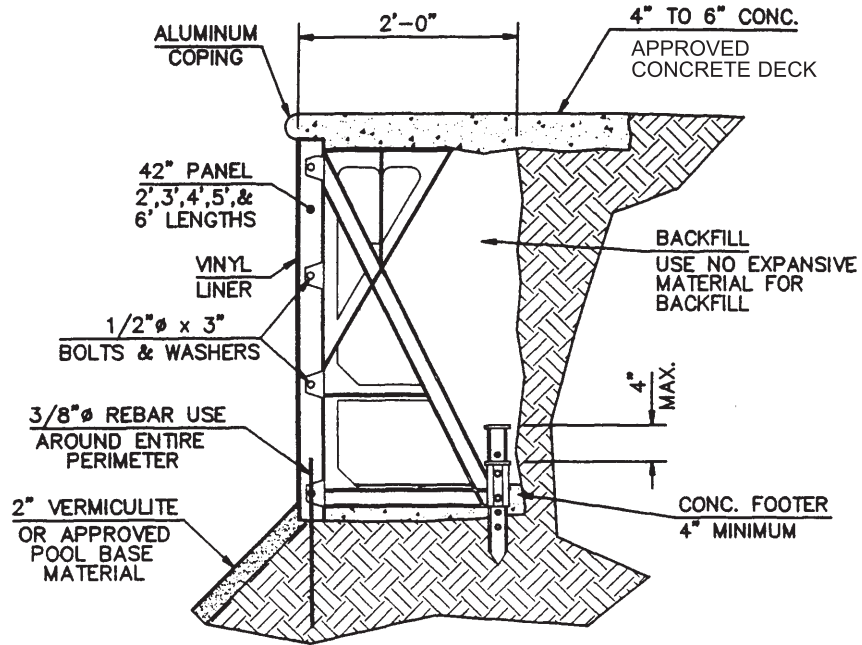
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE 1—SIX-FOOT-LONG WALL PANEL



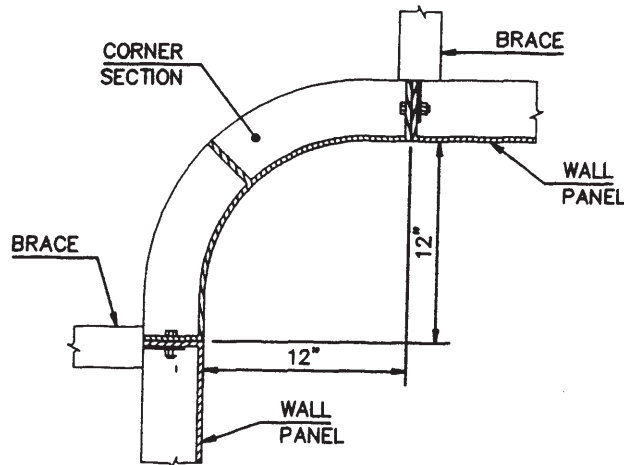
For SI: 1 inch = 25.4 mm.

FIGURE 2—STANDARD BRACE AND PANEL ASSEMBLY



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE 3—TYPICAL SECTION



For SI: 1 inch = 25.4 mm.

FIGURE 4—TYPICAL (90-DEGREE) CORNER ASSEMBLY

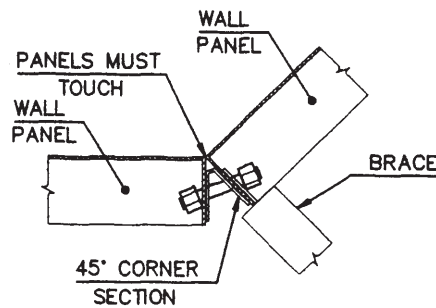


FIGURE 5—TYPICAL (45-DEGREE) CORNER ASSEMBLY