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The Committee on Evaluation has reviewed the data submitted for compliance with the Standard Building Code®, the International One and Two Family Dwelling Code, and the Florida Building Code 2001 - Building and submits to the Building Official or other authority having jurisdiction the following report. The Committee on Evaluation, SBCCI PST & ESI and its staff are not responsible for any errors or omissions to any documents, calculations, drawings, specifications, tests or summaries prepared and submitted by the design professional or preparer of record that are listed in the Substantiating Data Section of this report. Copyrighted © 2003 SBCCI PST & ESI

REPORT NO.: 2301

EXPIRES: See the current EVALUATION REPORT INDEX

CATEGORY: MANUFACTURED COMPONENTS

SUBMITTED BY:

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1. PRODUCT TRADE NAME

- 1.1 PermaCast Columns
1.2 PermaCast Fire Rated Columns

2. SCOPE OF EVALUATION

- 2.1 Structural
2.2 Surface Burning Characteristics
2.3 Weather Resistance

3. USES

- 3.1 PermaCast Columns are used as exterior columns both loadbearing and nonloadbearing on buildings of combustible construction.
3.2 PermaCast Fire Rated Columns are used as interior columns both loadbearing and nonloadbearing on buildings of combustible construction.

4. DESCRIPTION

4.1 General

PermaCast Columns and PermaCast Fire Rated Columns are spincast hollow Fiber-Reinforced Polymer FRP composite columns produced in two formulations, one for exterior use and one for interior use. The columns are produced in both round and square cross sections. The round columns are tapered toward the top of the column and the wall thickness varies. The round columns are produced in nominal sizes of 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 and 30 inch diameter. The square columns are produced in a plain style and plain with optional molding. The square columns are not tapered. The Square columns are produced in nominal sizes of 6, 8, 10, 12 and 16 inch dimensions. Structural load bearing columns are limited to the sizes and lengths shown in Tables 1 and 2. Non-load bearing columns may be any size and length produced and are also supplied as factory split columns. Column caps and bases are available in various styles. Dimensions of columns are shown in the manufacturer's literature.

4.1.1 PermaCast Columns are limited to use on the exterior of buildings of combustible construction.

4.1.2 PermaCast Fire Rated Columns are filled polyester composite architectural columns used on the interior of combustible buildings where a Class A, B or C Interior finish rating is required by the applicable Code.

4.2 Structural

The PermaCast Columns and PermaCast Fire Rated columns were tested for structural gravity loads applied axial. Allowable design capacities of the columns with concentric load conditions were determined. The PermaCast Columns were also tested for eccentric gravity load conditions. Testing was also performed to document resistance to Code specified guard rail loadings and for column connections top and bottom. Allowable design loads for axial capacity and maximum eccentricity are shown in Tables 1 and 2.

4.3 Surface Burning Characteristics

4.3.1 PermaCast Column Standard Mixture Base Line at a nominal 1/2 inch thickness was tested for surface burning characteristics under ASTM E 84 and demonstrated a FSI of 80 and an SDI of 750 which restricts the use of these columns to exterior use only.

4.3.2 PermaCast Fire Rated Columns SS703015B filled polyester material at a nominal 1/2 inch thickness was tested for

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surface burning characteristics under ASTM E 84 and demonstrated FSI of less than 25 and an SDI of less than 450 which is a Class A Interior Finish Rating.

#### 4.4 Weather Resistance

PermaCast columns material was subjected to accelerated weathering, salt spray exposure, freeze-thaw, and resistance to deicing chemicals.

#### 4.5 Quality Assurance

Quality assurance is provide by RBCMMM, Troy, AL.

### 5. INSTALLATION

#### 5.1 General

PermaCast Columns and PermaCast Fire Rated Columns are installed in accordance with the manufacturer's published installation instructions and this report.

The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's instructions and this report.

#### 5.2 Structural Load Bearing Columns

Structural load bearing columns are limited to the sizes and lengths shown in Tables 1 and 2 below. The columns resist gravity loads only and have been evaluated to include resistance to Code specified guardrail loadings.

Design loads shall be determined using Chapter 16 of the *Standard Building Code*© and shall not exceed the loads shown in Tables 1 and 2 below. The design values are applicable for temperatures not exceeding 125° F. The columns shall be designed to resist gravity axial loads only and shall not be designed to resist wind uplift, transverse or bending moment loads.

Structural design calculations shall be submitted to the code official when applying for a permit. The calculations shall be signed, sealed and dated by a registered professional engineer when required by the *Code*.

**TABLE 1  
ALLOWABLE LOADS  
PERMACAST COLUMNS**

Column Type and Nominal Size (in)	Maximum Length (ft-in)	Allowable Load (lbs) Concentric	Eccentric Loadings	
			Maximum "e" (in)	Allowable Load (lbs)
8 - Round	10-0	10,000	1-3/8	7,400
10 - Round	12-0	14,000	2-1/4	7,200
12 - Round	12-0	18,000	2-7/8	7,000
6x6 Square	10-0	8,000	1-1/4	8,000
8x8 Square	12-0	10,000	2-1/4	10,000
10x10 Square	12-0	14,000	3-1/4	14,000
12x12 Square	12-0	18,000	4-1/4	16,480

#### Table 1 Notes:

1. SI Units conversion; 1 in. = 25.4 mm, 1 ft = 0.3 m, 1 lbf = 4.5 N.
2. Round columns include plain and fluted.
3. **Maximum "e" (in)** is eccentricity measured in inches from the center line of the top of the column. Eccentric loaded columns assume a nominal 4 inch wide wood member installed with edge of wood on outside face of column.
4. Guardrails maximum 8 foot span may be attached to the columns.

**TABLE 2**  
**ALLOWABLE LOADS**  
**PERMACAST FIRE RATED COLUMNS**

Nominal Size (in)	Maximum Length (ft)	Allowable Load (lbs) Concentric	Eccentric Loadings	
			Maximum "e" (in)	Allowable Load (lbs)
8 - Round	10-0	10,000	1-3/8	7,400
10 - Round	10-0	14,000	2-1/4	7,200
12 - Round	10-0	18,000	2-7/8	7,000
8x8 Square	10-0	10,000	2-1/4	10,000

**Table 1 Notes:**

1. SI Units conversion; 1 in. = 25.4 mm, 1 ft = 0.3 m, 1 lbf = 4.5 N.
2. Round columns include plain and fluted.

**5.3 Non-Load Bearing Columns**

PermCast Columns and PermCast Fire Rated Columns may be installed as non-load bearing columns. Non-load bearing columns may be any size and length produced and are also supplied as factory split columns used for architectural appearance around structural supports.

**6. SUBSTANTIATING DATA**

- 6.1 Manufacturer's descriptive literature, specifications, engineering drawings and installation instructions.
- 6.2 Test reports, structural load testing, Cerny & Ivey Engineers, Inc., signed by Phillip B. Plyer and signed and sealed by Robert N. Kenney, P.E. :
  - 6.2.1 Structural gravity concentric axial loads testing, Report 22008, January 29, 2002,
  - 6.2.2 Load testing of columns to resist guard rail loads, Report 22114, June 7, 2002.
  - 6.2.3 Column fastener load tests, Report No. 93045-9, June 1, 1994, signed by Todd Breedlove, and signed and sealed by Arthur C. Ivey, P.E.
  - 6.2.4 Eccentric load testing, Report No. 22043, March 22, 2002.
  - 6.2.5 Compression load testing of fire rated column formulation, Report 22076, April 10, 2002.
- 6.3 Test reports on surface burning characteristics under ASTM E 84, Commercial Testing Company, signed by Jonathan Jackson:
  - 6.3.1 Standard Mixture Base Line, Report No. 02-05346, May 22, 2002.
  - 6.3.2 Fire retardant SS703015b formulation, Report No. 02-05030, May 2, 2002.
- 6.4 Test reports on physical properties, ITS Intertek Testing Services, signed by Vern W. Jones, CET and David H. Wren, P.Eng.:
  - 6.4.1 Accelerated weathering under ASTM G 23, 284-5045-1, September 15, 1999.
  - 6.4.2 Salt spray exposure under ASTM B 117, 284-5045-2, September 15, 1999.
  - 6.4.3 Freeze-thaw under ASTM C 67, 284-5045-3, September 16, 1999.
  - 6.4.4 Resistance to deicing chemicals under ASTM C 672, 284-5045-4, September 16, 1999.

- 6.5 Engineering calculations for determining allowable loads for eccentric loadings, Cerny & Ivey Engineers, Inc., October 22, 2002, signed by Phillip B. Plyer and signed and sealed by Robert N. Kenney, P.E.
- 6.6 Quality assurance manual, prepared by RBCHMM, E. Roy Baggett, B.S., M.S., CHMM, April 18, 2002, Revision: October 16, 2002.

**7. CODE REFERENCES**

*Standard Building Code*® - 1999 Edition

Section 103.7	Alternate Materials and Methods
Section 608	Type VI Construction
Section 803	Restrictions on Interior Finishes
Chapter 16	Structural Loads
Chapter 17	Structural Tests and Inspection

International One and Two Family Dwelling Code - 1998 Edition

Section 108	Alternate Materials and Systems
Section 301	Design Criteria
Section 318	Flame Spread and Smoke Developed

Florida Building Code 2001 - Building

Section 103.7	Alternate Materials and Methods
Section 608	Type VI Construction
Section 803	Restrictions on Interior Finishes
Chapter 16	Structural Loads
Chapter 17	Structural Tests and Inspection

**8. COMMITTEE FINDINGS**

The Committee on Evaluation in review of the data submitted finds that, in their opinion, PermaCast Columns and PermCast Fire Rated Columns as described in this report conform with or are suitable alternates to that specified in the *Standard Building Code*®, the International One and Two Family Dwelling Code, and the Florida Building Code 2001 - Building or Supplements thereto.

**9. LIMITATIONS**

- 9.1 This Evaluation Report and the installation instructions, when required by the code official, shall be submitted at the time of permit application.
- 9.2 The columns shall only be installed on buildings of Type VI combustible construction. PermaCast Columns are limited to use on the exterior of buildings. PermaCast Fire Rated Columns are permitted for use on the interior of buildings.
- 9.3 Structural design of the columns shall be in accordance with Section 5.2 above.
- 9.4 The columns have not been evaluated for use in High Velocity Hurricane Zones (Broward and Dade Counties) as covered in the Florida Building Code 2001 - Building.

**10. IDENTIFICATION**

Each PermaCast Column and PermaCast Fire Rated Column covered by this report shall be labeled with the manufacturer's name and/or trademark, the SBCCI Public Safety Testing and Evaluation Services Inc. Seal or initials (SBCCI PST & ESI), and the number of this report for field identification.

**11. PERIOD OF ISSUANCE**

SEE THE CURRENT EVALUATION REPORT INDEX FOR STATUS OF THIS EVALUATION REPORT.

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