Dear Sirs:

CC: Joe Bigelow

RE: Request for a Declaratory Statement on Rule GB-72

ATTN: Mr. Mo Madani

Florida Department of Community Affairs

November 1, 2006
PART 2

PRODUCTS

Mechanically Laminated Columns

ASTM A340 E 559, Design Requirements and Bending Properties for American Forest and Paper Association (A.F.P.A.)

The National Building Code of Canada (N.B.C.)

American Institute of Steel Construction (A.I.S.C.)

Manual of Steel Construction, Load and Resistance Factor Design by The American Concrete Institute (A.C.I. 318)

1.3 STANDARDS

Engineering Inc.
P+8300 and P+8400 Models by Brent Leachmann, P.E., Timber Tech

System Engineering, University of Wisconsin-Madison

Engineering Design Manual for Series 0300, 6400, 8400, 9400, 4800, Perma-

1.2 DESIGN GUIDANCE

and concrete, and galvanized steel Mil 9147 for post uplift resistance.

Perma-Column Specification

Post Frame Building Column consisting of a pre-cast concrete embedded
PART 3  
EXECUTION

3.1 INSTALLATION

A. Columns to be erected and installed according to the Contract Documents and the Installation Manual by Perma-Column Inc.

B. Protect installed product from damage during handling, storage, and construction. Repair or replace damaged installed products.
April 18, 2005

E-Mail: b@timbertechengineering.com
TimberTech Engineering, Inc.
Brent Latham, P.E.

ENGINEERING

TimberTech

PC8300, PC8400 Models
PC6300, PC6400, PC6600

Perma-Column Design and Use Guide
The dimensions and material properties for the PC6300, PC6400, PC6600, PC8300, and PC8400 models are given in Table 3.5 of the Manual.

### Perma-Column Descriptions

The Perma-Column assembly is to be checked using the Service Load combinations as taken from AISC 360-05 Table 1.6 for heavy work with high or negative moments and analyzed for each of those combinations was performed using a stress and resistance factor (LSFD) according to the American Institute of Steel Construction (AISC) and its associated national consensus documents. The Perma-Column assembly consists of a reinforced concrete base, the steel bracket, and the reinforced laminated wood column. The Perma-Column assembly is intended for use in the Engineered Design Manual for Structural Engineers.
Figure 4.1

Steel Bracket Assemblies

Parts Notes:

D = 5/16" hole for screw
C = 5/8" hole for bolt
B = 1/4" steel seat plate
A = 1/4" steel bracket

PC8300

PC8400

PC8500

PC8400

PC8300
Figure 6.1: Structural analogs for a column with pin or fixed at top.

Element 4 in the analog represents the steel bracket. The purpose of this element is to model the bending flexibility of the steel bracket where it attaches to the concrete. The element was assigned a modulus of elasticity of 29 million psi and an effective length of 2.5 inches, and an effective moment of inertia of 7.6 inches.

Elements 1, 2, and 3 of the analogs shown in Figure 6.1 represent the reinforced concrete base.

Figure 6.1 shows an example of the structural analogs that were used to check each column.
<table>
<thead>
<tr>
<th>Column Height (ft)</th>
<th>60</th>
<th>69</th>
<th>78</th>
<th>87</th>
<th>96</th>
<th>105</th>
<th>114</th>
<th>123</th>
<th>132</th>
<th>141</th>
<th>150</th>
<th>160</th>
<th>170</th>
<th>180</th>
<th>190</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 SF P</td>
<td>49x6</td>
<td>48x6</td>
<td>44x6</td>
<td>42x6</td>
<td>40x6</td>
<td>38x6</td>
<td>36x6</td>
<td>34x6</td>
<td>32x6</td>
<td>30x6</td>
<td>28x6</td>
<td>26x6</td>
<td>24x6</td>
<td>22x6</td>
<td>20x6</td>
<td></td>
</tr>
<tr>
<td>2.5 SF D</td>
<td>45x6</td>
<td>44x6</td>
<td>40x6</td>
<td>38x6</td>
<td>36x6</td>
<td>34x6</td>
<td>32x6</td>
<td>30x6</td>
<td>28x6</td>
<td>26x6</td>
<td>24x6</td>
<td>22x6</td>
<td>20x6</td>
<td>18x6</td>
<td>16x6</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1.2: Penta-Column Design Chart**
This column is adequate for the design loading.

The minimum design shear strength of the PC8300 as given in Table 3.4.1 is 3.1 Kips. OK

Diagram in Figure 3.3.2 in the Manual shows that the shear above envelope is 92 inch-kips along with a factored axial force of 10 Kips. These are well within the maximum factored bending moment below grade under load combination 3.

Concrete Elements

8.2.5.1

8.2.5

8.2.4.1

8.2.4

8.2.3.1

8.2.3

8.2.2 1

Figure 8.1

Shear and Moment Diagram for PC8300, 16' high with 1.6'' maximum deflection under load combination 3.
Figure 9.1 Foundation Details

### Alternative Design

- footing
- grade line
- concrete column
- steel angle
- 7/16" bolt
- 1/2" steel angle
- concrete collar

### Standard Design

- footing
- grade line
- concrete column
- steel angle
- 7/16" bolt
- 1/2" steel angle
- concrete collar

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Table 9.1 Allowable Uplifted Uplifts

<table>
<thead>
<tr>
<th>Concrete Collar Uplift Angle (in.)</th>
<th>2 x 2 6/8 ¼</th>
<th>2 x 2 x 2 ¼</th>
<th>4 x 2 x 2 1/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(lb)</td>
<td>3236</td>
<td>3233</td>
<td>3231</td>
</tr>
<tr>
<td>(kips)</td>
<td>1469</td>
<td>1465</td>
<td>1462</td>
</tr>
<tr>
<td>(tons)</td>
<td>0.696</td>
<td>0.694</td>
<td>0.692</td>
</tr>
</tbody>
</table>

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*See Figure 9.2 for details.*

The maximum uplift is calculated by the equation: $P_{allow} = \frac{1}{2}S'' \cdot F''$, where $S''$ and $F''$ are analyzed as a cantilever with a unit load at the midpoint. The anchors will resist 3.92 kips (3920 pounds). The uplift angles are analyzed as a cantilever with a unit load at the midpoint. Table 9.2: A 1/4" bolt has a cross section area of 0.196 in.  In a Grade 2 bolt in double Grade 2 bolt (ASTM A307 bolt) is 1.0 ft as published by the AISC North Edition ASD Constitution. The values in the chart are all limited by the weight of the soil column. The shear strength of a 1/2" concrete column.
PermEx Post Column Size Chart

Conditions:
- Spans 1.21 to 1.49 horizontal clearances
- Spans greater than 1.49 horizontal clearances
- Spans less than 1.49 horizontal clearances

Engineer of Record Required:
- To be used for estimating purposes only
- Not for actual design
- Load includes live and dead loads

8 ft. 6 in. Post Load

TOTAL ROOF POST BLOCKS IN TILL
"THE PERMANENT SOLUTION"

Extreme Strength
Lasting Longevity
Environmentally Friendly
Option 1: Press-assembled Column

1. Place unassmebled PC's close to the assembly table.
2. Assembly table to be level and no more than 1/2" off the ground to facilitate manual lifting. (C) If 2 hoists is available,
3. A 3 x 10' plank with the assembly table works best at around 30' high.
4. Lift PC using a nylon "choke" strap around each end.
5. Place PC on assembly table and insert wood column in steel bracket.
6. Clean wood column to expose before drilling 1 1/2" bolt holes.
7. Install 1/4" x 3" Simpson" SDS screws (or equal) required for PC6900 and PC8000.
8. Premium #5 HCHS bolt nut and washer required for PC6900 and PC8000.
9. Roll assembled column on the pack side of the table.
10. Approximately 10 foot pounds of torque.
11. Insert 1/2" Grade 5 bolts in drilled holes and tighten.

Fastener Requirements:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; x 3&quot;</td>
<td>1 1/2&quot;</td>
<td>5</td>
</tr>
<tr>
<td>1/2&quot; x 3&quot;</td>
<td>6&quot;</td>
<td>5</td>
</tr>
<tr>
<td>1/4&quot; x 3&quot;</td>
<td>1 1/4&quot;</td>
<td>5</td>
</tr>
<tr>
<td>1/4&quot; x 3&quot;</td>
<td>1/4&quot;</td>
<td>5</td>
</tr>
</tbody>
</table>

Wood dowel and wood column:

(a) Locate travas and bolt holes.
(b) Install 1/4 x 3" Simpson" SDS screws (or equal) required for PC6900 and PC8000.
(c) The assembly table works best at around 30' high.
(d) Lift PC using a nylon "choke" strap around each end.
(e) Place PC on assembly table and insert wood column in steel bracket.
(f) Clean wood column to expose before drilling 1 1/2" bolt holes.
(g) Install 1/4 x 3" Simpson" SDS screws (or equal) required for PC6900 and PC8000.
(h) Premium #5 HCHS bolt nut and washer required for PC6900 and PC8000.
(i) Roll assembled column on the pack side of the table.
(j) Approximately 10 foot pounds of torque.
(k) Insert 1/2" Grade 5 bolts in drilled holes and tighten.
Column Placement and Leveling

1. Attach a 3/8" wood filler to the (1) corner columns to make girts and skirt flush. (J)
2. Lift multiple PC assemblies with a skid loader and drive along the post hole line. (J)
3. Place concrete pad in bottom of hole prior to setting PC. Consult design professional to determine thickness of concrete pad. (J)
4. Plumb the PC columns using standard leveling procedures. (K)
5. Backfill post holes with appropriate materials, tamping 6" layers until hole is filled. (K)
6. Tilt PC assemblies off skid loader forks into post hole. (J)

TYPICAL BUILDING CORNER
CONSTRUCTED W/ PERMA-COLUMNS

SIDE WALL

END WALL COLUMN

CORNER COLUMN

SIDE WALLING COLUMN

END WALL COLUMN

SIDE WALLING COLUMN
Thank you for your consideration.

Done at the University of Wisconsin and Purdue University.

preparing by L Transactions, our eQuesting Firm, and based on the results of extensive testing
websites at https://www.permacolumn.com/downloads/lnn. These documents have been
installation manuals to local officials. All of these documents can be downloaded from our
We are also capable of providing VA specifications, design and usage guides, and
required by all of the States (20+) that we have worked with this far.

318-07/AC1318R-02. We are familiar with this process because it has been the process
Product is essentially a precast beam which is governed by the applicable codes in the AIC
codes otherwise as opposed to having through a formal product approval due to the fact that our
Our product has been widely accepted in the Midwest as a beneficial upgrade to post-frame
Our product is competitive in the performance of treated lumber in similar conditions.
Column is beneficial in that concrete offers support durability and insect resistance in ground
member is specifically comprised of pressure-treated lumber. The PEMA- Ground Column. This member is specifically comprised of pressure-treated lumber. The PEMA-
used in post frame construction to replace the section of the support column which is in
This is our formal request for a Declaration statement regarding the necessity of product

Dear Sirs:

CC: Joe Bigelow

RE: Request for a Declaration Statement on Rule 9B-72

ATTN: Mr. Mo Madani

11th Avenue, P.O. 32399-2100
2555 Shimmered Oak Blvd
Building Codes and Standards
Florida Department of Community Affairs

November 1, 2006