

# ICC-ES Evaluation Report

**ESR-2844**

Issued March 1, 2009

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**DIVISION: 06—WOOD AND PLASTIC**  
**Section: 06170—Prefabricated Structural Wood****REPORT HOLDER:****SYNERGY PACIFIC ENGINEERED TIMBER LTD.**  
4175 CROZIER ROAD  
ARMSTRONG, BRITISH COLUMBIA V0E 1B6  
CANADA  
(250) 546-6808  
[www.synergypacific.com](http://www.synergypacific.com)**EVALUATION SUBJECT:****QUATTROPOST™ COLUMNS****ADDITIONAL LISTEE:****WOODTONE INDUSTRIES**  
8007 AITKEN ROAD  
CHILLIWACK, BRITISH COLUMBIA V2R 4H5  
CANADA**ADDITIONAL LISTEE PRODUCT NAME:****REALPOST™ COLUMNS****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- *Other Codes* (see Section 8.0)

**Property evaluated:**

Structural

**2.0 USES**

QuattroPost™ columns are used as light structural columns for load-bearing and nonload-bearing applications in buildings of Type V-B construction under the IBC, and buildings constructed under the IRC, under conditions of dry service and normal temperatures. QuattroPost™ columns can also be used as light structural columns for load-bearing and nonload-bearing applications in buildings of Type III-B construction under the IBC where combustible building elements are allowed, under conditions of dry service and normal temperatures.

**3.0 DESCRIPTION****3.1 General:**

QuattroPost™ columns have nominal sizes of 4-by-4 (102 by 102 mm), 6-by-6 (152 by 152 mm) and 8-by-8 (203 by 203 mm), with actual dimensions, respectively, of 3½ inches by 3½ inches (89 mm by 89 mm), 5½ inches by 5½ inches (139 mm by 139 mm) and 7¼ inches by 7¼ inches (185 mm by 185 mm). The columns have lengths up to 40 feet (12.2 m). QuattroPost™ columns must be installed in dry, covered conditions, where the average in-service moisture content of the wood will not exceed 16 percent.

Structural load-bearing columns are limited to the sizes and lengths shown in Table 1. Nonload-bearing columns may be any size and length produced. Column caps and bases are available in various styles. Dimensions of columns are shown in the manufacturer's literature.

**3.2 Material:**

QuattroPost™ columns are appearance-grade, kiln-dried, structural-engineered columns. All columns are manufactured by laminating graded kiln-dried spruce-pine-fir (SPF) Select Structural, SPF No. 2, Douglas fir-larch (DF-L) Select Structural, DF-L No. 2 lumber, or Western red cedar. The exterior-grade adhesives used for finger-jointing lumber and laminating of QuattroPost™ are phenol-resorcinol timber laminating resin or one-component polyurethane, with both conforming to ASTM D 2559.

**4.0 DESIGN AND INSTALLATION****4.1 Design:**

QuattroPost™ columns were tested for structural gravity loads applied axially. Allowable design capacities of the columns with concentric and eccentric load conditions were determined. Allowable design loads for axial capacity and maximum eccentricity are shown in Table 1.

Design loads must be determined using Chapter 16 of the IBC or Section R301.1.3 of the IRC, as applicable, and must not exceed the loads shown in Table 1. The columns must be designed to resist axial loads only and must not be designed to resist transverse loads or bending moments. QuattroPost™ columns may be used to resist uplift loads if designed by a professional engineer using appropriate connecting hardware as required in the installation instructions, but in no case should the applied uplift loads exceed the allowable axial loads given in Table 1.

Structural design calculations and details for specific applications must be furnished to the code official to verify compliance with this report and the applicable code, when requested.

#### 4.2 Installation:

**4.2.1 General:** QuattroPost™ columns must be installed in accordance with the manufacturer's published installation instructions and this report. A copy of these instructions must be available at all times on the jobsite during installation.

**4.2.2 Structural Load-bearing Columns:** Structural load-bearing columns are limited to the sizes and lengths shown in Table 1. The columns are to be installed in locations where the sustained temperatures do not exceed 130°F.

**4.2.3 Nonload-bearing Columns:** QuattroPost™ columns may be installed as nonload-bearing columns. Nonload-bearing columns may be any size and length produced for architectural appearance around structural supports.

#### 5.0 CONDITIONS OF USE

The QuattroPost™ columns described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published instructions and this report, this report governs.
- 5.2 QuattroPost™ columns are used only in buildings of Type V-B construction under the IBC, and buildings constructed under the IRC; and for Type III-B construction under the IBC where combustible building elements are allowed.
- 5.3 Structural design must be in accordance with Section 4.1 of this report.
- 5.4 QuattroPost™ columns are not recommended for use in contact with ground surfaces. The use of these columns in wet service conditions is beyond the scope of this report.
- 5.5 The use of these columns in areas requiring termite and decay resistance is beyond the scope of this report.
- 5.6 QuattroPost™ columns have not been evaluated for use in fire-resistant-rated construction and are not applicable to Section 721.6.3 of the IBC.
- 5.7 Column caps and column bases have not been evaluated for use in load-bearing columns.
- 5.8 The product is manufactured at 4175 Crozier Road, Armstrong, British Columbia, under a quality control program with inspections by CertiWood Technical Center (AA-694).

#### 6.0 EVIDENCE SUBMITTED

- 6.1 Reports of compression and delamination testing of QuattroPosts in accordance with ANSI/AITC A190.1-1992 and ASTM D 198-99, D 2915-98 and D 4761-96/4761-02.
- 6.2 Reports of full-size flexural testing of QuattroPosts in accordance with ASTM D 198-99, D 2915-98 and D 4761-02.

6.3 Reports of flexural and tension testing of QuattroPost finger joints in accordance with AITC 200-92 and ASTM D 198-99 and D 4761-02.

6.4 Technical report on qualification testing and establishing of structural capacities.

6.5 QuattroPost™ handling and installation instructions.

6.6 Quality control documentation.

#### 7.0 IDENTIFICATION

Each QuattroPost™ column described in this report is identified by a stamp or label bearing the manufacturer's name and/or trademark, the species/grade, the evaluation report number (ESR-2844), and the name and trademark of the inspection agency (CertiWood Technical Center, AA-694)

#### 8.0 OTHER CODES

##### 8.1 Evaluation Scope:

In addition to the codes referenced in Section 1.0, the product recognized in this report was evaluated for compliance with the following codes:

- BOCA® *National Building Code*/1999 (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)

##### 8.2 Uses:

Revise Section 2.0 to read as follows:

QuattroPost™ columns are used as light structural columns for load-bearing and nonload-bearing applications in buildings of Type 5B construction under the BNBC, Type VI–Unprotected construction under the SBC and Type V–N construction under the UBC, under conditions of dry service and normal temperatures. QuattroPost™ columns can also be used as light structural columns for load-bearing and nonload-bearing applications in buildings of Type 3-B construction under the BNBC, Type V–Unprotected construction under the SBC and Type III–N construction under the UBC where combustible building elements are allowed, under conditions of dry service and normal temperatures.

##### 8.3 Description:

See Section 3.0.

##### 8.4 Design and Installation:

See Section 4.0.

##### 8.5 Conditions of Use:

See Section 5.0, except revise Section 5.2 to read as follows:

QuattroPost™ columns must only be installed in buildings of Type 5B construction under the BNBC, Type VI–Unprotected construction under the SBC and Type V–N construction under the UBC; and for buildings of Type 3-B construction under the BNBC, Type V–Unprotected construction under the SBC and Type III–N construction under the UBC where combustible building elements are allowed.

##### 8.6 Evidence Submitted:

See Section 6.0.

##### 8.7 Identification:

See Section 7.0.

TABLE 1—ALLOWABLE AXIAL LOADS (lbs) TABLE 1—ALLOWABLE AXIAL LOADS (lbs)

WRC - Western Red Cedar			
Column Length (feet)	6 x 6 - Select Structural (5 <sup>1</sup> / <sub>2</sub> x 5 <sup>1</sup> / <sub>2</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	12891	14648	15820
6'	11641	13086	14038
8'	10313	11406	12100
10'	8579	9297	9741
12'	7007	7477	7751
14'	5734	6042	6226
16'	4717	4941	5076
18'	3937	4102	4196
20'	3330	3452	3521

For SI: 1 in. = 25.4 mm, 1 ft = 0.3 m, 1 lbf = 4.5 N.

<sup>1</sup>Allowable loads assume dry use, untreated applications and temperatures of less than or equal to 100°F (38°C). For service conditions in which sustained temperatures exceed 100°F (38°C) the allowable axial loads should be multiplied by the temperature factor C<sub>t</sub> in Table 2.3.3 of the National Design Specification for Wood Construction. Axial loads shown in the tables are the maximum allowable design loads for tension and compression, and no further increases are permitted for other load duration factors.

<sup>2</sup>Loads shown have been adjusted to accommodate worst-case eccentricity of 0.167 times the column width or thickness. All column loads have been reduced to account for incidental eccentricity due to construction tolerance.

<sup>3</sup>Table assumes the effective column length is equal to the actual column length and that the column ends are translation fixed and rotation free.

<sup>4</sup>The cross-sectional areas for the columns are as follows: 4X4 = 11.53 in<sup>2</sup> (7437 mm<sup>2</sup>); 6X6 = 21.91 in<sup>2</sup> (14,137 mm<sup>2</sup>); 8X8 = 31.47 in<sup>2</sup> (20,301 mm<sup>2</sup>).

TABLE 1— ALLOWABLE AXIAL LOADS (Continued)

DF-Douglas Fir-Larch						
Column Length	4 x 4 - Select Structural (3 <sup>1</sup> / <sub>2</sub> x 3 <sup>1</sup> / <sub>2</sub> )			4 x 4 - No. 2 (3 <sup>1</sup> / <sub>2</sub> x 3 <sup>1</sup> / <sub>2</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	9141	10156	10781	8340	9277	9863
6'	6733	7227	7500	6287	6758	7070
8'	4785	5024	5161	4565	4819	4956
10'	3442	3574	3652	3320	3457	3538
12'	2576	2661	2708	2502	2588	2640
14'	1990	2045	2075	1947	2007	2039
16'	1581	1621	1640	1555	1595	1617
18'	1285	1312	1328	1270	1299	1318
20'	1064	1083	1094	1055	1077	1089
Column Length	6 x 6 - Select Structural (5 <sup>1</sup> / <sub>2</sub> x 5 <sup>1</sup> / <sub>2</sub> )			6 x 6 - No. 2 (5 <sup>1</sup> / <sub>2</sub> x 5 <sup>1</sup> / <sub>2</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	17700	20117	21719	15723	17910	19336
6'	15723	17656	18921	14038	15820	16968
8'	13733	15156	16094	12390	13770	14629
10'	11484	12451	13047	10547	11536	12100
12'	9473	10107	10498	8838	9521	9888
14'	7793	8237	8477	7383	7813	8086
16'	6484	6797	6982	6195	6519	6714
18'	5463	5691	5820	5247	5488	5625
20'	4639	4819	4913	4492	4683	4785
Column Length	8 x 8 - Select Structural (7 <sup>1</sup> / <sub>4</sub> x 7 <sup>1</sup> / <sub>4</sub> )			8 x 8 - No. 2 (7 <sup>1</sup> / <sub>4</sub> x 7 <sup>1</sup> / <sub>4</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	24336	27813	30215	21406	24531	26563
6'	22461	25586	27588	19775	22500	24336
8'	20703	23379	25146	18281	20703	22217
10'	18516	20645	22031	16543	18555	19844
12'	16479	18164	19219	14893	16543	17578

For **SI**: 1 in. = 25.4 mm, 1 ft = 0.3 m, 1 lbf = 4.5 N.

<sup>1</sup>Allowable loads assume dry use, untreated applications and temperatures of less than or equal to 100°F (38°C). For service conditions in which sustained temperatures exceed 100°F (38°C) the allowable axial loads should be multiplied by the temperature factor C<sub>t</sub> in Table 2.3.3 of the National Design Specification for Wood Construction. Axial loads shown in the tables are the maximum allowable design loads for tension and compression, and no further increases are permitted for other load duration factors.

<sup>2</sup>Loads shown have been adjusted to accommodate worst-case eccentricity of 0.167 times the column width or thickness. All column loads have been reduced to account for incidental eccentricity due to construction tolerance.

<sup>3</sup>Table assumes the effective column length is equal to the actual column length and that the column ends are translation fixed and rotation free.

<sup>4</sup>The cross-sectional areas for the columns are as follows: 4X4 = 11.53 in<sup>2</sup> (7437 mm<sup>2</sup>); 6X6 = 21.91 in<sup>2</sup> (14,137 mm<sup>2</sup>); 8X8 = 31.47 in<sup>2</sup> (20,301 mm<sup>2</sup>)

TABLE 1— ALLOWABLE AXIAL LOADS (Continued)

SPF-Spruce-Pine-Fir						
Column Length	4 x 4 - Select Structural (3 <sup>1</sup> / <sub>2</sub> x 3 <sup>1</sup> / <sub>2</sub> )			4 x 4 - No. 2 (3 <sup>1</sup> / <sub>2</sub> x 3 <sup>1</sup> / <sub>2</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	8392	9297	9888	7041	7861	8359
6'	6104	6523	6768	5219	5605	5829
8'	4224	4419	4529	3677	3857	3965
10'	2988	3093	3154	2623	2724	2777
12'	2203	2266	2299	1938	2000	2031
14'	1678	1718	1743	1480	1520	1541
16'	1318	1346	1361	1165	1190	1205
18'	1060	1077	1089	936	955	965
20'	867	880	889	769	781	789
Column Length	6 x 6 - Select Structural (5 <sup>1</sup> / <sub>2</sub> x 5 <sup>1</sup> / <sub>2</sub> )			6 x 6 - No. 2 (5 <sup>1</sup> / <sub>2</sub> x 5 <sup>1</sup> / <sub>2</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	16602	18867	20371	13672	15503	16719
6'	14746	16479	17578	12109	13574	14526
8'	12549	13721	14424	10391	11426	12085
10'	10156	10840	11250	8516	9141	9521
12'	8101	8545	8789	6866	7263	7500
14'	6519	6797	6973	5542	5811	5977
16'	5310	5503	5625	4546	4730	4846
18'	4395	4531	4614	3770	3906	3984
20'	3674	3784	3845	3162	3264	3326
Column Length	8 x 8 - Select Structural (7 <sup>1</sup> / <sub>4</sub> x 7 <sup>1</sup> / <sub>4</sub> )			8 x 8 - No. 2 (7 <sup>1</sup> / <sub>4</sub> x 7 <sup>1</sup> / <sub>4</sub> )		
	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25	C <sub>D</sub> =1.0	C <sub>D</sub> =1.15	C <sub>D</sub> =1.25
4'	23379	26719	28906	19004	21719	23516
6'	21719	24658	26523	17656	20098	21602
8'	19897	22266	23828	16211	18184	19531
10'	17578	19414	20605	14355	15918	16875
12'	15313	16602	17344	12578	13721	14375

For **SI**: 1 in. = 25.4 mm, 1 ft = 0.3 m, 1 lbf = 4.5 N.

<sup>1</sup>Allowable loads assume dry use, untreated applications and temperatures of less than or equal to 100°F (38°C). For service conditions in which sustained temperatures exceed 100°F (38°C) the allowable axial loads should be multiplied by the temperature factor C<sub>t</sub> in Table 2.3.3 of the National Design Specification for Wood Construction. Axial loads shown in the tables are the maximum allowable design loads for tension and compression, and no further increases are permitted for other load duration factors.

<sup>2</sup>Loads shown have been adjusted to accommodate worst-case eccentricity of 0.167 times the column width or thickness. All column loads have been reduced to account for incidental eccentricity due to construction tolerance.

<sup>3</sup>Table assumes the effective column length is equal to the actual column length and that the column ends are translation fixed and rotation free.

<sup>4</sup>The cross-sectional areas for the columns are as follows: 4X4 = 11.53 in<sup>2</sup> (7437 mm<sup>2</sup>); 6X6 = 21.91 in<sup>2</sup> (14,137 mm<sup>2</sup>); 8X8 = 31.47 in<sup>2</sup> (20,301 mm<sup>2</sup>)