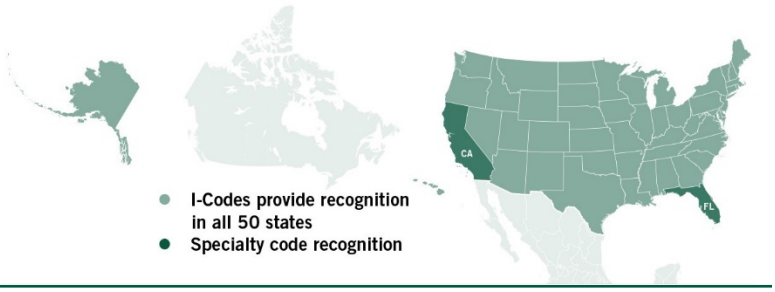
ICC EVALUATION SERVICE



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ICC-ES Evaluation Report

ESR-4238

Reissued April 2022

This report is subject to renewal April 2024.

DIVISION: 03 00 00—CONCRETE
Section: 03 48 00—Precast Concrete Specialties

DIVISION: 31 00 00—EARTHWORK
Section: 31 60 00—Special Foundations and Load-Bearing Elements

REPORT HOLDER:

PERMA-COLUMN, LLC

ADDITIONAL LISTEES:

MIDWEST PERMA-COLUMN, INC.

PERMA COLUMN EAST, LLC

TRI-STATE PERMA-COLUMN

EVALUATION SUBJECT:

PERMA-COLUMN COLUMNS: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018 and 2015 *International Building Code*® (IBC)
- 2018 and 2015 *International Residential Code*® (IRC)

Property evaluated:

- Structural

2.0 USES

Perma-Column columns described in this report are used as precast concrete piers with steel brackets on top for attachment of vertical wood posts in post frame buildings. Perma-Column columns are installed into holes in the ground and backfilled with suitable compacted soils, wet-poured concrete or a self-leveling and self-compacting cementitious material. Under the IRC, the Perma-Column columns may be used where an engineering design is submitted in accordance with Section R301.1.3.

3.0 DESCRIPTION

3.1 General:

The Perma-Column columns are factory manufactured precast, reinforced concrete columns with a steel "U"-shaped steel bracket on the top for attachment to a vertical wood post or laminated wood column. The Perma-Column column protrudes above finish grade, to allow for the attachment of a wood post or laminated wood column. See Figure 1 for an illustration of Perma-Column column and a typical installation of Perma-Column column. Table 1 provides the dimensions of Perma-Columns.

3.2 Materials:

3.2.1 Concrete: The concrete used for the Perma-Column columns complies with the requirements shown in Table 19.3.2.1 of ACI 318 for exposure classes F2 and C1, defined in Table 19.3.1.1 of ACI 318. The concrete has a minimum compressive strength (f'_c) of 10,000 psi (70 MPa) at 28 days.

3.2.2 Reinforcement: The steel reinforcing bars used in the Perma-Column columns are No. 4 or No. 5 bars complying with ASTM A706 Grade 60; and are welded to the bottom surface of the steel bracket. The rebar placement geometry is shown in Figure 1 and the rebar center to center spacing is shown in Table 4.

3.2.3 Bracket: The Perma-Column column bracket is manufactured from $^1/_4$-inch (6.35 mm) thick hot-rolled steel plate, complying with ASTM A1018 SS Grade 40. The bracket has nominal dimensions equal to the concrete portion of the column it is mated with. The vertical legs of the bracket are 13 inches (330 mm) or 18 inches (457 mm) long with pre-drilled holes for the placement of fasteners. The bracket is powder coated with a proprietary powder chemistry.

3.2.4 Wood: Wood posts for which the column brackets are used, must be made of dimension lumber, timber posts or glued-laminated (glulam) timber, complying with the ANSI/AWC National Design Specifications (NDS) for Wood Construction and its supplement. The designs of wood posts are outside the scope of this report.

3.2.5 Fasteners: The screws used to install wood posts to Perma-Column columns must be nominally $^1/_4$ inch (6.35 mm) in diameter by 3 inches (76.2 mm) in length, carbon or stainless steel proprietary wood screws recognized in a current ICC-ES evaluation report, having a minimum bending yield strength, F_{yb}, of 164,000 psi (1130 MPa). The unthreaded portion of the screws must have an actual shank diameter of 0.24 inch (6.1 mm) and a length between 1 inch (25 mm) and $1^1/_2$ inches (38 mm).

The through-bolts used to install wood posts to Perma-Column columns must comply with SAE J429 Grade 5, having a minimum tensile yield strength, F_y, of 92,000 psi (635 MPa) and a minimum tensile strength, F_u, of

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120,000 psi (830 MPa). The bolts must comply with the coating requirement in ASTM F1470. The minimum diameter of the bolts is $^1/_2$ inches (12.7 mm).

The screws and through-bolts are optionally supplied by Perma-Column. The fasteners are outside the scope of this report.

3.2.6 Fasteners in Contact with Treated Lumber: Fasteners used in contact with preservative-treated or fire-retardant-treated lumber must comply with IBC Section 2304.10.5 and IRC Section R317.3, as applicable. The lumber treater or this evaluation report holder (Perma-Column, LLC), or both, must be contacted for recommendations on the appropriate coating or material to specify for the fasteners as well as the connection capacities of fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

3.2.7 Foundation: The Perma-Column columns are installed into holes in the ground and backfilled with suitable compacted soils, wet-poured concrete or a self-leveling and self-compacting material. The backfill material and foundation are outside the scope of this report.

4.0 DESIGN AND INSTALLATION

4.1 Structural Design:

4.1.1 General: The design of the Perma-Column columns must comply with all applicable codes and this evaluation report. The wood columns and must be designed in accordance with the AWC *National Design Specifications® for Wood Construction* (NDS) and its supplement or the ASABE EP 559.1 *Design Requirements and Bending Properties for Mechanically-Laminated Wood Assemblies*. Where applicable, the Perma-Column columns must be laterally restrained at the top of wood post or column by a roof diaphragm designed and detailed in accordance with the AWC *Special Design Provisions for Wind and Seismic* (SPDWS) or the ASABE EP 484.2 *Diaphragm Design of Metal-clad, Post-Frame Rectangular Buildings*. The soils and backfill underneath and around the Perma-Column columns must be designed in accordance with the ASABE EP 486.2 *Shallow Post Foundation Design*, referenced in Section 2306.1 of the IBC for post frame buildings. Calculated maximum internal moment, uplift, axial compression, and shear forces in the precast concrete segment of the Perma-Column column must not exceed the corresponding reference design values given in Tables 1 and 2. Calculated moment, uplift, and shear forces at steel bracket elevation (joint) must not exceed the corresponding reference design values given in Table 3. Designs must be performed by a registered design professional.

4.1.2 Wood Post to Anchor Brackets: The design values provided in Table 3 of this evaluation report are Allowable Stress Design (ASD) and Load and Resistance Factor Design (LRFD) design values for designs of the connections between the supported wood post/column and Perma-Column column brackets. The load duration factor, C_D, (ASD) and the Time Effect Factor, λ, (LRFD), have been applied to the corresponding loads in accordance with the NDS and its supplement. The connections are not designed to resist moments. Other components such as wood post/column and foundation described in Sections 3.2.4 through 3.2.7 must be designed and checked to determine the governing capacity in the system.

4.1.3 Foundation: The design values provided in Tables 1 and 2 of this evaluation report are ASD and LRFD design values for foundation design. The design values apply to the capacity of the Perma-Column precast concrete column only. The evaluation and design of soils and backfill beneath and around Perma-Column columns must be performed in accordance with ASABE EP 486.2 by a registered design professional.

4.2 Installation:

4.2.1 General: Perma-Column columns must be installed in accordance with Perma-Column's published installation instructions, the applicable code, the approved plans, and this report. If there is a conflict between the plans submitted for approval and this report, this report governs.

4.2.2 Perma-Column Column Installation: The Perma-Column columns must be placed into holes in the ground with the top concrete end protruding no more than 12 inches (305 mm), and no less than 8 inches (203 mm) above finish grade in accordance with IBC Section 2304.12.2.2. Once in place, the hole must be backfilled with suitable compacted soil, wet-poured concrete, or a self-leveling and self-compacting cementitious material.

A maximum of four $^3/_{16}$-inch-diameter (4.8 mm) and $1^1/_4$-inch-deep (32 mm) holes may be drilled into the concrete portion of the Perma-Column column protruding from the ground for installation of splash boards. A minimum edge distance of $1^1/_2$ inches (38 mm) must be provided, and the holes must be spaced at least $2^1/_2$ inches (64 mm) apart.

5.0 CONDITIONS OF USE

The Perma-Column 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 The Perma-Column columns must be installed in accordance with the applicable code, published installation instructions, the approved plans and this report.

5.2 Complete plans and calculations demonstrating compliance with this report must be submitted to the code official for approval when required. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.3 Use of Perma-Column columns to resist the external applied loads must be designed in accordance with Section 4.1.2 of this evaluation report and must be justified to the satisfaction of the code official.

5.4 The connection between the supported wood post/column and the Perma-Column column must be designed in accordance with Section 4.1.2 this evaluation report and must be justified to the satisfaction of the code official.

5.5 The connections between Perma-Column column anchor brackets and the supported wood posts have not been evaluated to resist moment. The designer must model and detail the supported wood post to anchor bracket connection with zero moment for the design of post frame buildings.

5.6 Wood posts, and fasteners must comply, respectively, with Sections 3.2.4 and 3.2.5 of this evaluation report.

5.7 Use of Perma-Column columns with preservative treated or fire-retardant-treated lumber must be in accordance with Section 3.2.6 of this evaluation report.

5.8 Other than as noted in Section 4.2.2, the Perma-Column columns must not be field modified (e.g. cut, drilled, torched, etc.) in any way.

5.9 The Perma-Column columns are manufactured at the Perma-Column LLC's facility located in Ossian, Indiana, and the listee's facilities noted in Section 7.3 of this evaluation report, under an approved quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Steel Connectors for Connecting Light-Frame Construction Members to Concrete (AC398), dated February 2020.

6.2 Engineering calculations of Perma-Column precast concrete columns in accordance with ACI 318 and AISC 360 as required in Section 1.2.4 of ICC-ES Acceptance Criteria for Steel Connectors for Connecting Light-Frame Construction Members to Concrete (AC398), dated February 2020.

7.0 IDENTIFICATION

7.1 Product labeling shall include, the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-4238) may be used in lieu of the mark of conformity. The precast columns bear the name of the report holder (Perma-Column, LLC) and listee (Midwest Perma-Column, Inc., Perma Column East, LLC, or Tri State Perma-Column), Model ID, date of manufacture, and the evaluation report number (ESR-4238).

7.2 The report holder's contact information is the following:

PERMA-COLUMN, LLC
400 CAROL ANN LANE
OSSIAN, INDIANA 46777
(260) 622-7190
www.permacolumn.com
info@permacolumn.com

7.3 The Additional Listees' contact information is the following:

MIDWEST PERMA-COLUMN, INC.
7407 NORTH KICKAPOO-EDWARDS ROAD
EDWARDS, ILLINOIS 61528
(309) 589-7949
www.midwestpermacolumn.com
info@midwestpermacolumn.com

PERMA COLUMN EAST, LLC
POST OFFICE BOX 87
LENHARTSVILLE, PENNSYLVANIA 19534
(610) 562-7161
www.permacolumneast.com
permacolumneast@verizon.net

TRI-STATE PERMA-COLUMN
2570 NORTH MAIN STREET
CRAIGVILLE, INDIANA 46731
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www.tristatepc.com
sales@tristatepc.com

TABLE 1—PERMA-COLUMN PRECAST CONCRETE COLUMNS MODEL ID AND PRECAST CONCRETE COLUMN AXIAL AND MOMENT DESIGN CAPACITIES[1,2,3]

LOAD AND RESISTANCE FACTOR DESIGN (LRFD)							
MODEL ID	**WIDTH (in)**	**DEPTH (in)**	**LENGTH[4] (in)**	**P_{LRFD} (lb)**	**M_{LRFD-x} (ft-lb)**	**M_{LRFD-z} (ft-lb)**	**T_{LRFD} (lb)**
PC6300	$5^3/_8$	$5^3/_8$	$59^3/_4$	113,100	6,517	6,620	10,320
PC6400	$6^7/_8$	$5^3/_8$	$59^3/_4$	140,100	9,217	6,723	9,070
PC6600	$6^3/_8$	$5^3/_8$	$59^3/_4$	131,100	8,317	6,694	9,360
PC8300	$5^3/_8$	$7^1/_8$	$59^3/_4$	153,100	9,781	14,545	15,710
PC8400	$6^7/_8$	$7^1/_8$	$59^3/_4$	188,900	139,66	14,792	13,590
PC8500	$8^3/_8$	$7^1/_8$	$59^3/_4$	223,000	179,55	14,945	12,340
ALLOWABLE STRENGTH DESIGN (ASD)							
MODEL ID	**WIDTH (in)**	**DEPTH (in)**	**LENGTH[4] (in)**	**P_{ASD} (lb)**	**M_{ASD-x} (ft-lb)**	**M_{ASD-z} (ft-lb)**	**T_{ASD} (lb)**
PC6300	$5^3/_8$	$5^3/_8$	$59^3/_4$	70,700	4,073	4,137	6,870
PC6400	$6^7/_8$	$5^3/_8$	$59^3/_4$	87,600	5,761	4,202	6,030
PC6600	$6^3/_8$	$5^3/_8$	$59^3/_4$	82,000	5,198	4,184	6,230
PC8300	$5^3/_8$	$7^1/_8$	$59^3/_4$	95,700	6,113	9,091	10,450
PC8400	$6^7/_8$	$7^1/_8$	$59^3/_4$	118,100	8,729	9,245	9,040
PC8500	$8^3/_8$	$7^1/_8$	$59^3/_4$	139,400	11,222	9,341	8,210

For **SI:** 1 inch = 25.4 mm, 1 pound = 4.4482 N

[1]For biaxial bending: $\frac{mx}{Mx} + \frac{mz}{Mz} \leq 1$

[2]The tabulated design values account for combined axial compression load and bending moment load. No reduction in axial compression loads and bending moment loads for combined axial compression and bending moment is required.

[3]For combined tension loads and bending moment loads: $\frac{t}{T} + \frac{m}{M} \leq 1$

[4]Length is measured from the top of the concrete to the bottom of the concrete.

P_{LRFD} = Maximum compression capacity (ΦP_n) of the column based on Load and Resistance Factor Design (LRFD).
P_{ASD} = Maximum compression capacity (P_n/Ω) of the column based on Allowable Strength Design (ASD).
M_{LRFD-x} = Maximum moment capacity (ΦM_n) of the column about the x-axis based on LRFD.
M_{ASD-x} = Maximum moment capacity (M_n/Ω) of the column about the x-axis based on ASD.
M_{LRFD-z} = Maximum moment capacity (ΦM_n) of the column about the z-axis based on LRFD.
M_{ASD-z} = Maximum moment capacity (M_n/Ω) of the column about the z-axis based on ASD.
T_{LRFD} = Maximum tension (ΦP_n) of the column based on LRFD.
T_{ASD} = Maximum tension (P_n/Ω) of the column based on ASD.
m = Design moment load.
t = Design tension load.

TABLE 2—PERMA-COLUMN PRECAST CONCRETE COLUMN SHEAR CAPACITIES[1]

LOAD AND RESISTANCE FACTOR DESIGN (LRFD)												
P (lb)	**PC6300**		**PC6400**		**PC6600**		**PC8300**		**PC8400**		**PC8500**	
	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)	V_{LRFD-x} (lb)	V_{LRFD-z} (lb)
10,000	3,722	3,706	4,610	4,977	4,314	4,556	5,121	4,640	6,386	6,305	7,592	7,878
9,000	3,668	3,652	4,555	4,918	4,260	4,498	5,063	4,587	6,327	6,247	7,533	7,817
8,000	3,614	3,598	4,501	4,860	4,205	4,441	5,004	4,534	6,269	6,190	7,475	7,756
7,000	3,559	3,544	4,447	4,801	4,151	4,384	4,946	4,481	6,210	6,132	7,416	7,695
6,000	3,505	3,490	4,392	4,742	4,097	4,326	4,887	4,428	6,151	6,074	7,357	7,634
5,000	3,451	3,436	4,338	4,684	4,042	4,269	4,828	4,375	6,093	6,016	7,299	7,573
4,000	3,397	3,382	4,284	4,625	3,988	4,212	4,770	4,321	6,034	5,958	7,240	7,513
3,000	3,342	3,328	4,229	4,566	3,934	4,154	4,711	4,268	5,976	5,900	7,181	7,452
2,000	3,288	3,274	4,175	4,507	3,879	4,097	4,653	4,215	5,917	5,843	7,123	7,391
1,000	3,234	3,220	4,120	4,449	3,825	4,039	4,594	4,162	5,858	5,785	7,064	7,330
0	3,180	3,166	4,066	4,390	3,771	3,982	4,535	4,109	5,800	5,727	7,005	7,269
-1,000	2,963	2,950	3,849	4,155	3,553	3,753	4,301	3,897	5,566	5,495	6,771	7,026
-2,000	2,746	2,734	3,631	3,921	3,336	3,523	4,067	3,684	5,331	5,264	6,536	6,782
-3,000	2,528	2,518	3,414	3,686	3,119	3,294	3,832	3,472	5,097	5,033	6,301	6,539
-4,000	2,311	2,302	3,196	3,451	2,901	3,064	3,598	3,260	4,862	4,801	6,067	6,295
-5,000	2,094	2,086	2,979	3,216	2,684	2,835	3,363	3,047	4,628	4,570	5,832	6,051
ALLOWABLE STRENGTH DESIGN (ASD)												
P (lb)	**PC6300**		**PC6400**		**PC6600**		**PC8300**		**PC8400**		**PC8500**	
	V_{ASD-x} (lb)	V_{ASD-z} (lb)	V_{ASD-x} (lb)	V_{ASD-z} (lb)	V_{ASD-x} (lb)	V_{ASD-z} (lb)	V_{ASD-x} (lb)	V_{ASD-z} (lb)	V_{ASD-x} (lb)	V_{ASD-z} (lb)	V_{ASD-x} (lb)	V_{ASD-z} (lb)
6,250	2,326	2,316	2,881	3,111	2,696	2,847	3,201	2,900	3,991	3,941	4,745	4,924
5,625	2,292	2,283	2,847	3,074	2,662	2,812	3,164	2,867	3,954	3,905	4,708	4,886
5,000	2,259	2,249	2,813	3,037	2,628	2,776	3,128	2,834	3,918	3,869	4,672	4,848
4,375	2,225	2,215	2,779	3,001	2,594	2,740	3,091	2,800	3,881	3,832	4,635	4,810
3,750	2,191	2,181	2,745	2,964	2,560	2,704	3,054	2,767	3,845	3,796	4,598	4,771
3,125	2,157	2,148	2,711	2,927	2,526	2,668	3,018	2,734	3,808	3,760	4,562	4,733
2,500	2,123	2,114	2,677	2,891	2,492	2,632	2,981	2,701	3,771	3,724	4,525	4,695
1,875	2,089	2,080	2,643	2,854	2,458	2,596	2,944	2,668	3,735	3,688	4,488	4,657
1,250	2,055	2,046	2,609	2,817	2,425	2,561	2,908	2,635	3,698	3,652	4,452	4,619
625	2,021	2,013	2,575	2,780	2,391	2,525	2,871	2,601	3,662	3,615	4,415	4,581
0	1,987	1,979	2,541	2,744	2,357	2,489	2,835	2,568	3,625	3,579	4,378	4,543
-625	1,852	1,844	2,405	2,597	2,221	2,345	2,688	2,435	3,478	3,435	4,232	4,391
-1,250	1,716	1,709	2,270	2,450	2,085	2,202	2,542	2,303	3,332	3,290	4,085	4,239
-1,875	1,580	1,574	2,134	2,304	1,949	2,058	2,395	2,170	3,186	3,145	3,938	4,087
-2,500	1,445	1,439	1,998	2,157	1,813	1,915	2,249	2,037	3,039	3,001	3,792	3,934
-3,125	1,309	1,303	1,862	2,010	1,677	1,772	2,102	1,905	2,893	2,856	3,645	3,782

For **SI:** 1 inch = 25.4 mm, 1 pound = 4.4482 N

[1]The tabulated shear values are for columns with the either axial compression or axial tension load, calculated by using ACI 318-14 Eq. 22.5.6.1 and Eq. 22.5.7.1, respectively.

P = Axial design load (negative values represent the axial compression, while positive values represent the axial tension)

V_{LRFD-x} = Maximum shear capacity (ΦV_n) of the column parallel to the x-axis based on LRFD.

V_{ASD-x} = Maximum shear capacity (V_n/Ω) of the column parallel to the x-axis based on ASD.

V_{LRFD-z} = Maximum shear capacity (ΦV_n) of the column parallel to the z-axis based on LRFD.

V_{ASD-z} = Maximum shear capacity (P_n/Ω) of the column parallel to the z-axis based on ASD.

TABLE 3—DESIGN VALUES FOR WOOD POST TO ANCHOR BRACKET CONNECTIONS[1,2,3]

MODEL NO.	BRACKET DIMENSIONS			POST SIZE	FASTENERS[4] (Quantity-Type)		ASD (C_D = 1.6)			LRFD (λ = 1.0)			ROTATIONAL STIFFNESS
	W (in.)	D (in.)	H (in.)		Screw	Bolt	F_1[5] (lbf)	F_{uplift} (lbf)	M_Z[6] (lbf-ft)	F_1[5] (lbf)	F_{uplift} (lbf)	M_Z[6] (lbf-ft)	M/θ[7] (lbf-ft/deg)
PC6300	4 5/8	5	13	3-ply 2x6	4	2	2,100	4,835	2,080	2,830	6,515	2,800	2,900
PC6400	6 1/8	5	18	4-ply 2x6	4	2	2,380	4,835	2,600	3,200	6,516	3,900	3,780
PC6600	5 5/8	5	13	6x6	4	2	2,100	4,835	2,080	2,830	6,515	2,800	2,960
PC8300	4 5/8	7	18	3-ply 2x8	8	2	3,030	8,490	4,120	4,080	11,450	5,550	6,930
PC8400	6 1/8	7	18	4-ply 2x8	8	2	3,030	8,490	4,120	4,080	11,450	5,550	6,640
PC8500	7 5/8	7	18	5-ply 2x8	8	2	3,030	8,210	4,120	4,080	11,450	5,550	6,520

For **SI:** 1 inch = 25.4 mm, 1 lb_f = 4.45 N, 1 lbf-ft = 1.356 N-m, 1 lbf-ft/deg = 1.356 N-m/deg.

[1]The reference design values are for Allowable Strength Design (ASD) method and the Load and Resistance Factor Design (LRFD) method and have been increased for wind or earthquake loading with no further increase allowed. The ASD values must be reduced when other load durations govern.

[2]Calculated internal shear, moment, and tension forces in the Perma-Column column at the joint elevation must not exceed the corresponding reference design values provided in this table. The design of wood column above the steel bracket and the concrete column below the steel bracket are not governed by this table..

[3]Axial compression load shall be checked and limited by the design capacity of the post or column.

[4]Screws and bolts must comply with Section 3.2.5 of this evaluation report and used together in order to achieve the tabulated allowable loads.

[5]Lateral load, F_1, is perpendicular to the axis of the fasteners in x-x axial direction.

[6]The tabulated allowable moment values are based on the test results of Perma-Column SWP Series products installed in concrete, having a minimum concrete compression stress of 3,000 psi (20.68 MPa).

[7]The tabulated rotational stiffness are based on the tabulated moments, and account for the rotation within the connections, deflection of the bracket, fastener slip and post deformation. The additional deflection of the post above the connection due to the post rotation and bending must be accounted in design.

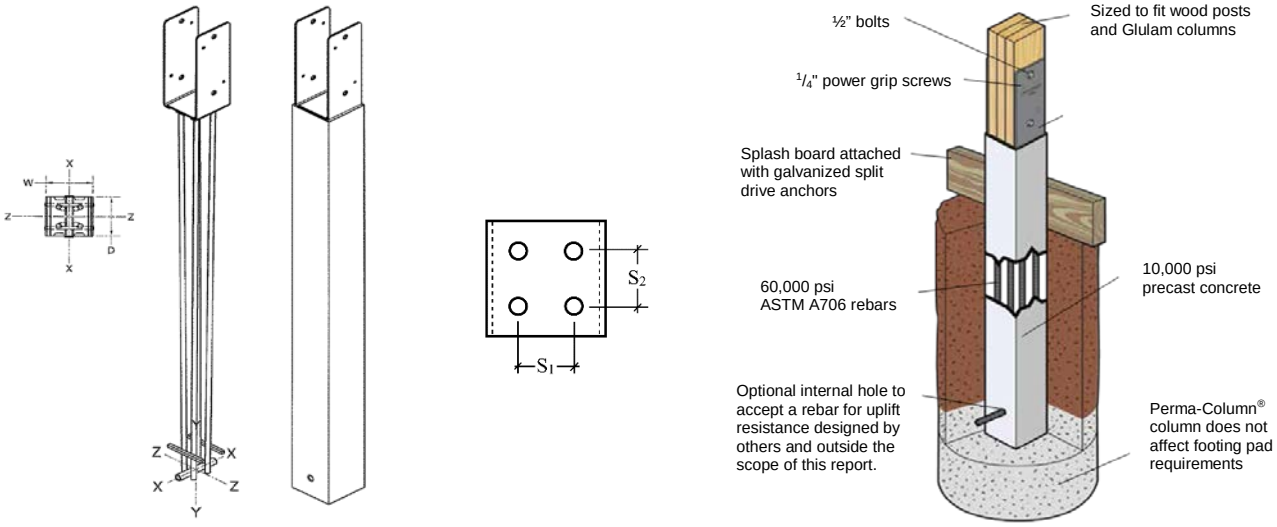

FIGURE 1—AN ILLUSTRATION OF PERMA-COLUMN® COLUMN (LEFT) AND TYPICAL INSTALLATION (RIGHT) WITH INTERNAL SLEEVE

TABLE 4—REBAR PLACEMENT GEOMETRY FOR PC MODLE ANCHOR BRACKETS[1,2,3]

MODEL NO.	S_1	S_2
	(in.)	(in.)
PC6300	2-1/4	2-7/16
PC6400	3-3/4	2-7/16
PC6600	3-1/4	2-7/16
PC8300	2-3/16	4-1/16
PC8400	3-11/16	4-1/16
PC8500	5-3/16	4-1/16

For **SI:** 1 inch = 25.4 mm

[1]Refer to Figure 1 for the rebar placement geometry and the definitions of S_1 and S_2.

[2]A minimum edge distance between the steel rebars and plate in S_1 direction is 0.69 inches (17.5 mm).

[3]A minimum edge distance between the steel rebars and plate in S_2 direction is 1.28 inches (32.5 mm).

DIVISION: 03 00 00—CONCRETE
Section: 03 48 00—Precast Concrete Specialties

DIVISION: 31 00 00—EARTHWORK
Section: 31 60 00—Special Foundations and Load-Bearing Elements

REPORT HOLDER:

PERMA-COLUMN, LLC

EVALUATION SUBJECT:

PERMA-COLUMN COLUMNS: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500, described in ICC-ES evaluation report ESR-4238, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2016 *California Building Code* (CBC)
- 2016 *California Residential Code* (CRC)

2.0 CONCLUSIONS

The Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500, described in Sections 2.0 through 7.0 of the evaluation report ESR-4238, comply with CBC Chapters 19 and 19A and CRC Section R301.1.3 provided the design and installation are in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of the CBC Chapters 16, 16A, 17, 17A, 18, 18A, 19 and 19A, as applicable.

3.0 CONDITIONS OF USE

The Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500, described in this evaluation report must comply with the following conditions:

- The ASD capacities described in the evaluation report must not be increased for seismic or wind load combinations.

This supplement expires concurrently with the evaluation report ESR-4238, reissued April 2022.

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DIVISION: 03 00 00—CONCRETE
Section: 03 48 00—Precast Concrete Specialties

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REPORT HOLDER:

PERMA-COLUMN, LLC

EVALUATION SUBJECT:

PERMA-COLUMN COLUMNS: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500, described in ICC-ES evaluation report ESR-4238, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2017 *Florida Building Code—Building*
- 2017 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500, described in Sections 2.0 through 7.0 of the evaluation report ESR-4238, comply with the *Florida Building Code—Building* and *Florida Building Code—Residential*, provided the design and installation are in accordance with the 2015 *International Building Code®* provisions noted in the evaluation report.

Use of the Perma-Column Columns: PC6300, PC6400, PC6600, PC8300, PC8400, PC8500 has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and *Florida Building Code—Residential*.

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report ESR-4238, reissued April 2022.

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