

PERMA-COLUMN® SPECIFICATION

DIVISION 03 00 00 CONCRETE

Section 034800 Precast Concrete Specialties

DIVISION 05 00 00 METALS

Section 055000 Metal Fabrications

DIVISION 13 00 00 SPECIAL CONSTRUCTION

Section 13121 Pre-Engineered Timber Column Structure

PART 1 GENERAL

1.1 SCOPE

- A. Post frame building column consisting of a pre-cast concrete embedded portion, a wood upper portion, a steel bracket connection between wood and concrete, and galvanized steel uplift anchors for post uplift resistance.

1.2 DESIGN GUIDANCE

- A. ICC-ES Evaluation Report ESR-4238 issued 04/2019 for PC6300, PC6400, PC6600, PC8300, PC8400 and PC8500 models by International Code Council Evaluation Service.
- B. Perma-Column® Design and Use Guide for PC4600, PC6300, PC6400, PC660, PC8300, PC8400 and PC8500 Models by Dmitry A. Reznik, P.E., Timber Tech Engineering, Inc.

1.3 STANDARDS

- A. Building Code Requirements for Structural Concrete by the American Concrete Institute.
- B. Steel Construction Manual by the American Institute of Steel Construction (AISC).
- C. The National Design Specification for Wood Construction (NDS) by The American Forest and Paper Association (AF&PA).
- D. ANSI/ASAE EP 559, Design Requirements and Bending Properties for Mechanically Laminated Columns.
- E. ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
- F. ASTM A1018 SS – Standard Specification for Heavy Gauge Structural Steel.
- G. AWS D1.1- Structural Welding Code- Steel
- H. AWS D1.4 – Structural Welding Code- Reinforcing Steel

PART 2 PRODUCTS

2.1 PERMA-COLUMNS®

- A. Manufacturer: Perma-Column®, LLC.; Contact: 400 Carol Ann Lane
Ossian, IN 46777; Telephone: (260) 622-7190; Fax: (260) 622-7192;
Website: www.permacolumn.com
- B. Models:
 - 1. PC 6300: for a 3 ply, 2x6 Mechanically Laminated Column (5½" x 4½")
 - 2. PC 6400: for a 4 ply, 2x6 Mechanically Laminated Column (5½" x 6")
 - 3. PC 6600: for a 6x6 Solid Sawn Post Column (5½" x 5½")
 - 4. PC 8300: for a 3 ply, 2x8 Mechanically Laminated Column (7¼" x 4½")
 - 5. PC 8400: for a 4 ply, 2x8 Mechanically Laminated Column (7¼" x 6")
 - 6. PC 8500: for a 5 ply, 2x8 Mechanically Laminated Column (7 ¼"x 7 ½")
 - 7. PC 4600: for a 4x6 Solid Sawn Post Column (3½"x5½")

2.2 MATERIALS

- A. Concrete Column: 10,000 (Nominal) psi pre-cast self consolidating concrete (SCC) with four (4) continuous vertical reinforcing bars of A706 weldable 60 ksi yield strength steel. Number 4 bars are used for the PC4600, PC6300, PC6400, and PC6600 while number 5 bars are used for the PC8300 and PC8400 models. Superplasticizers and polymer fiber reinforcement are added as well as other admixtures to increase freeze/thaw resistance, rust resistance, flexural and compressive strength as well as optimizing the hydration process.
- B. Uplift Anchors: Galvanized, 36 ksi yield strength steel available in two sizes, PC20UA 2"x 2"x 8.5"x 0.134"; PC25UA 2"x 2"x 12"x 0.134"
- C. Steel Bracket: A U-shaped ¼" ASTM A1018 Grade 40 steel bracket with 5/8" diameters holes for bolts, and 5/16" diameter holes for screws. The bracket uses ½" SAE J429 Grade 5 bolts with hex nuts torqued to 110 foot-pounds as well as 0.242"x3" structural screws or equal.

2.3 FABRICATION

- A. The concrete is produced in a controlled environment using a digital batching system to ensure precise curing.
- B. The steel U-bracket is welded to the vertical reinforcing bars to transfer bending loads directly into the foundation.
- C. The wood upper portion may be preassembled to the steel bracket, or assembled in the field.

2.4 HARDWARE

- A. Hardware Kits
 - 1. HW63 for the PC6300
 - 2. HW64 for the PC6400
 - 3. HW66 for the PC6600
 - 4. HW83 for the PC8300
 - 5. HW84 for the PC8400
 - 6. HW85 for the PC8500
 - 7. HW46 for the PC4600

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® LLC
- B. Protect installed product from damage during handling, storage, and construction. Repair or replace damaged installed products.