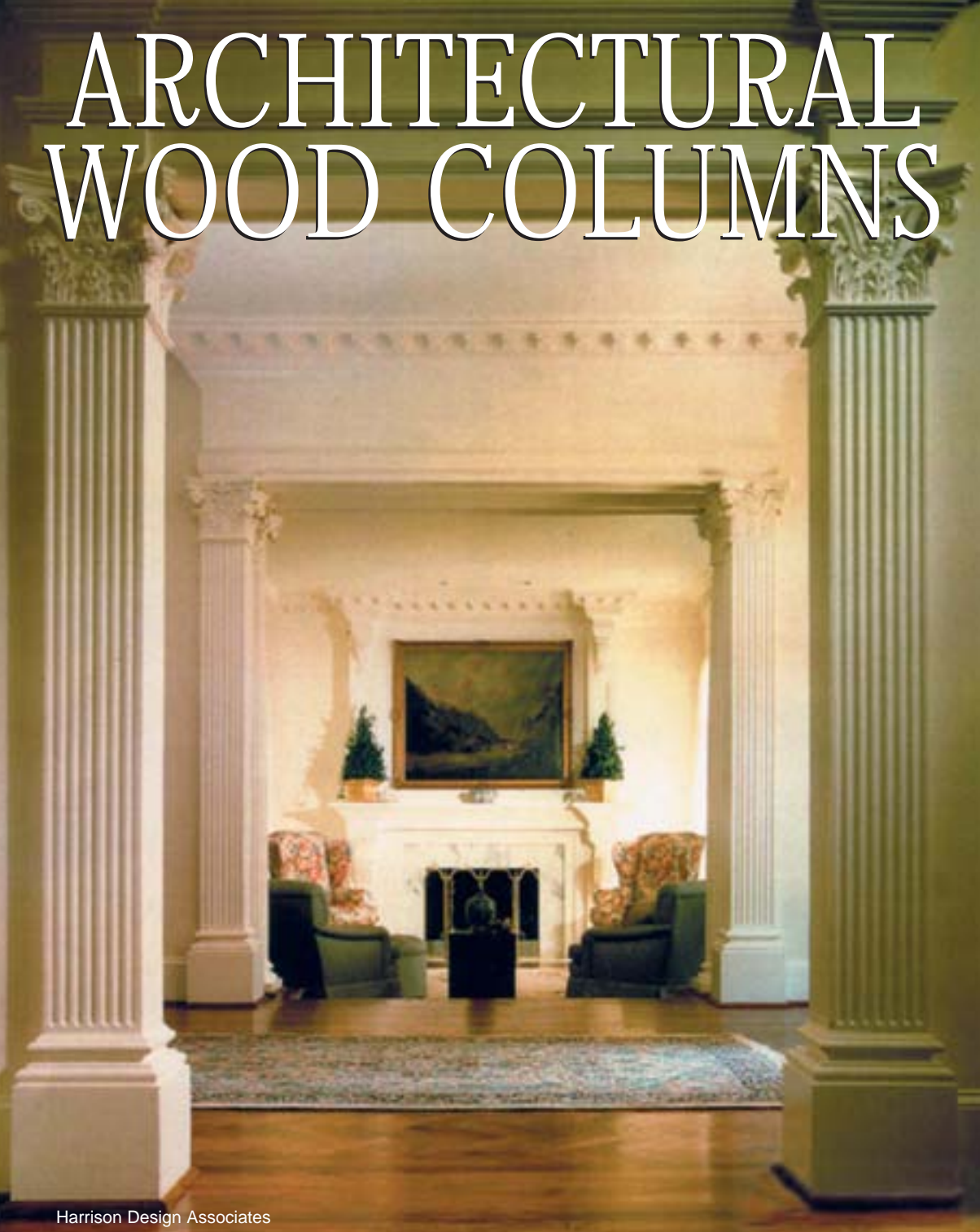


ARCHITECTURAL WOOD COLUMNS



Harrison Design Associates

species are available upon request. An interior asphaltum coating is applied on all columns to be used for exterior use. Columns that will be painted are primed with two to three coats of an oil-based primer after they are turned. Each coat of primer is hand sanded to give an excellent surface for your final topcoats.

Columns may serve as a decorative accent or as a structural member bearing weight. Columns which are to be installed around a structural post for decorative purposes will be manufactured in halves and provided

with a spline joint for aligning the halves. For load bearing capacities, please contact our Architectural Specialists.

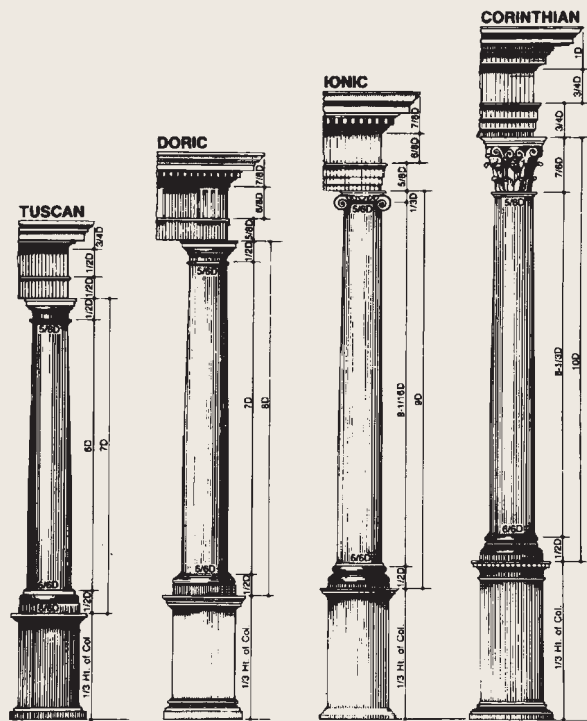
A large selection of capitals and base/plinths are available and are manufactured from a high-density polyurethane, fiberglass or wood. Numerous styles of Decorative Capitals are also available to complement any design.

Hartmann-Sanders Architectural Wood Columns are based on the timeless Orders of Classical Architecture. From the design of the capital to the proportions and shape of the column shaft we follow the standards of classic column design. With over 100 years of experience manufacturing columns, Hartmann-Sanders offers the largest selection of Architectural Wood Columns in the industry.

We recommend solid stave or finger-joint western red cedar or clear heart redwood for exterior applications. It is naturally weather resistant and immune to decay and infestation. Pine or poplar may be used for interior columns that are to be painted. We also offer a large selection of stain grade columns. Oak, cherry, maple, mahogany and poplar are the most common species used for stain grade, however other wood

The Five Orders of Architecture

The predominant designs of Hartmann-Sanders Columns are based on the three Grecian and two Latin orders of Architecture.



Tuscan:

Tuscan is the Latin order Vignola put first for its massive simplicity. It comprises the fewest parts and appears capable of bearing the heaviest loads. Classically, the shaft length is seven times its diameter and plain rather than fluted.

Doric:

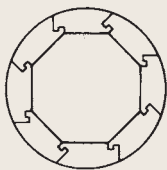
The Doric column is next in strength and simplicity to the Tuscan. Quite often it is seen without a base, in imitation of trees. Classically, the shaft length is eight times its bottom diameter. Doric shafts may be plain or fluted by 20 shallow channels. The Romans adapted this Greek order by creating more decorative bases and capitals.

Ionic:

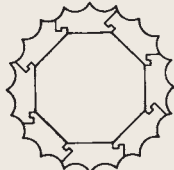
The classically correct Ionic column shaft is slightly more than nine times its bottom diameter in length, so it is more graceful than the Doric. Its easily recognizable capital is decorated with spiral volutes both in the original Greek and adapted Roman design. The shaft is often decorated with 24 semi circular flutes separated by flat edges or fillets.

Fluting

Column shafts may be plain or fluted, with the flutes being of either Doric or Ionic design. The following illustrations show each design.

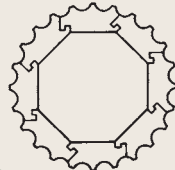


Plain



Doric

Section showing the standard 20 Doric Flutes on designs 215 and 195.



Ionic

Section showing the standard 24 Ionic flutes on all other fluted column designs

Corinthian:

The most slender (ten times the bottom diameter) belongs to the Greek Corinthian order and its adaption, the Latin Composite. The Corinthian order features an inverted bell capital decorated with two tiers of eight stylized acanthus leaves, topped by volutes. The shaft is plain or fluted in the Ionic style.

Composite:

This order is the Roman adaptation of the Corinthian order, with an even more ornate capital. It uses the same proportions for base, shaft, capital and entablature as the Corinthian order; the shaft, again, is plain or fluted in the Ionic style.

Stave Construction:

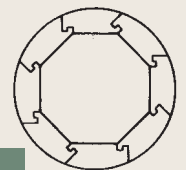
Our Wood Column shafts are formed of nominal 4" width staves. The thickness of the stave depends on the height and diameter of the column shaft. Each stave is connected to the next with our patented Koll's Lock-Joint, and is tapered to achieve uniform thickness throughout the shaft length. With today's advanced glues we are able to offer the tongue and groove joint for exterior columns with the same warranty as the Koll's Lock-Joint. The staves are glued with the highest quality Type 1 water-resistant glue, interlocked, and kept under pressure for a minimum of eighteen hours.

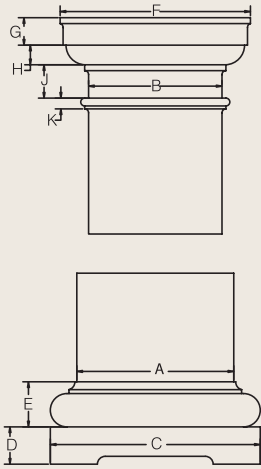
Stave Thickness:

Our experience in the construction of columns has indicated that the thickness of the stock used is important and must provide enough material for proper architectural detail and strength. The nominal thickness of stock used is shown in the table below.

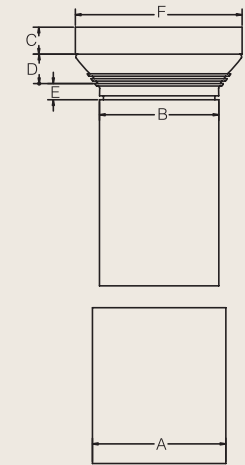
| STAVE THICKNESS | | | |
|-------------------------|-----------------|--------------------------|-----------------|
| Plain Shaft Size (dia.) | Stave Thickness | Fluted Shaft Size (dia.) | Stave Thickness |
| Up to 10" and 10' tall | 1.5" | 6" to 10" | 1.5" |
| 11" to 20" | 2" | 11" to 18" | 2" |
| 21" to 26" | 3" | 19" to 24" | 3" |
| 27" and up | 4" | 25" and up | 4" |

Koll's Lock-Joint





| TUSCAN CAP & BASE/PLINTH {Column Design #200 plain; #205 fluted} | | | | | | | | | |
|--|----------|--------|-------|-----------|------------|--------|-----------|--------|-------|
| Column Bottom Dia. (inches) | Top Dia. | Plinth | | Base Mold | Cap Square | | Cap Round | | |
| A | B | C | D | E | F | G | H | J | K |
| 6 | 5 | 8 1/2 | 1 1/2 | 1 3/4 | 7 1/2 | 1 1/16 | 11/16 | 1 1/4 | 3/4 |
| 8 | 6 1/2 | 10 3/4 | 1 7/8 | 2 3/8 | 9 3/8 | 1 3/8 | 1 | 1 5/8 | 1 |
| 10 | 8 1/2 | 13 3/8 | 2 3/8 | 2 7/8 | 12 1/8 | 1 3/4 | 1 1/4 | 2 1/16 | 1 1/4 |
| 12 | 10 | 16 1/8 | 2 3/4 | 3 1/4 | 14 3/8 | 2 | 1 3/8 | 2 1/2 | 1 3/8 |
| 14 | 12 | 18 3/4 | 3 3/8 | 4 | 17 1/8 | 2 3/8 | 1 5/8 | 2 7/8 | 1 1/2 |
| 16 | 13 1/2 | 21 1/2 | 3 7/8 | 4 1/2 | 19 1/4 | 2 3/4 | 1 7/8 | 3 3/8 | 2 |
| 18 | 15 | 24 1/4 | 4 1/4 | 5 3/8 | 21 1/2 | 3 | 2 1/8 | 3 3/4 | 2 1/8 |
| 20 | 17 | 27 | 4 3/4 | 6 | 24 1/4 | 3 3/8 | 2 1/4 | 4 1/8 | 2 1/4 |
| 22 | 18 1/2 | 29 3/4 | 5 1/4 | 6 7/8 | 26 1/2 | 3 3/4 | 2 1/2 | 4 1/2 | 2 1/2 |
| 24 | 20 | 32 1/2 | 5 3/4 | 7 1/2 | 28 3/4 | 4 1/8 | 2 3/4 | 5 | 2 5/8 |
| 26 | 22 | 35 | 6 1/4 | 8 3/8 | 31 1/2 | 4 3/8 | 3 | 5 3/8 | 2 7/8 |
| 28 | 23 1/2 | 38 | 6 3/4 | 8 3/4 | 33 3/8 | 4 3/4 | 3 1/4 | 5 7/8 | 3 |
| 30 | 25 | 40 1/2 | 7 1/4 | 9 1/4 | 35 3/4 | 5 1/8 | 3 1/2 | 6 1/4 | 3 1/2 |
| 32 | 27 | 43 3/8 | 7 3/4 | 10 | 37 5/8 | 5 1/2 | 3 3/4 | 6 5/8 | 3 5/8 |
| 34 | 28 1/2 | 46 | 8 1/4 | 10 7/8 | 41 | 5 3/4 | 3 7/8 | 7 1/8 | 3 3/4 |
| 36 | 30 | 48 3/4 | 8 3/4 | 11 3/8 | 42 3/4 | 6 1/4 | 4 1/4 | 7 1/2 | 4 |



| GREEK DORIC CAP & NO BASE {Column Design #190 plain; #195 fluted} | | | | | | |
|---|----------|------------|-----------|----------|------------|--|
| Column Bottom Dia. (inches) | Top Dia. | Cap Square | Cap Round | Cap Neck | Cap Square | |
| A | B | C | D | E | F | |
| 8 | 6 1/2 | 1 3/8 | 1 5/8 | 1/2 | 9 1/4 | |
| 10 | 8 1/4 | 1 3/4 | 2 1/16 | 5/8 | 11 5/8 | |
| 12 | 9 3/4 | 2 1/8 | 2 9/16 | 3/4 | 13 3/4 | |
| 14 | 11 1/4 | 2 7/16 | 2 13/16 | 1 | 16 | |
| 16 | 12 3/4 | 2 13/16 | 3 3/8 | 1 1/8 | 18 1/8 | |
| 18 | 14 1/2 | 3 1/8 | 3 11/16 | 1 1/4 | 20 1/2 | |
| 20 | 16 | 3 1/2 | 4 1/16 | 1 7/16 | 22 5/8 | |
| 22 | 18 | 3 3/4 | 4 3/8 | 1 9/16 | 25 1/4 | |
| 24 | 19 1/2 | 4 1/4 | 4 7/8 | 1 3/4 | 27 1/8 | |
| 26 | 20 1/2 | 4 9/16 | 5 5/16 | 1 7/8 | 29 | |
| 28 | 22 1/2 | 4 7/8 | 5 3/4 | 2 | 31 3/4 | |
| 30 | 24 | 5 1/4 | 6 1/8 | 2 1/8 | 34 | |
| 32 | 26 | 5 5/8 | 6 9/16 | 2 1/4 | 36 3/4 | |
| 34 | 27 1/4 | 5 7/8 | 6 7/8 | 2 3/8 | 38 3/4 | |
| 36 | 29 | 8 1/4 | 7 3/8 | 2 1/2 | 41 | |

Ordering or Estimating Columns, Pilasters, or Square Columns:

The following information is necessary for estimating or processing your requirements:

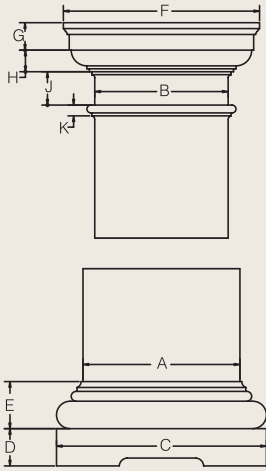
1. Quantity Required.
2. Design or Catalog Number or Description.
3. Plan Type (if F, G, H, K, O, shaft returns need to be noted).
4. Bottom Diameter and Overall Length.
5. Indicate if for Exterior or Interior Application.
6. Wood or Fiberglass Shaft Material.
7. Indicate size and shape of structural post if column needs to be split for reassembly.
8. Will column have to match an existing column?

| LOAD BEARING CAPACITY | | | |
|-----------------------|-----------------|--------|------------------------------|
| Bottom Dia. (inches) | Stave Thickness | Height | Load Bearing Capacity (lbs.) |
| 12 | 2" | 10' | 6,000 |
| 18 | 2" | 14' | 10,000 |
| 20 | 2" | 16' | 14,000 |
| 24 | 2" | 18' | 18,000 |

Plan Types:

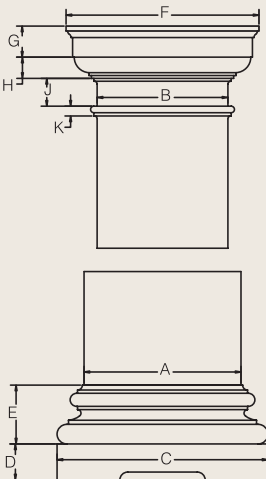


ROMAN DORIC CAP & BASE/PLINTH {Column Design #210 plain; #215 fluted}



| Column Bottom Dia. (inches) | Top Dia. | Plinth | | Base Mold | Cap Square | | Cap Round | | |
|-----------------------------|----------|--------|-------|-----------|------------|-------|-----------|--------|-------|
| A | B | C | D | E | F | G | H | J | K |
| 6 | 5 | 8 1/2 | 1 1/2 | 1 3/4 | 8 | 1 1/8 | 7/8 | 1 1/4 | 3/4 |
| 8 | 6 1/2 | 10 3/4 | 1 7/8 | 2 3/8 | 9 3/4 | 1 1/2 | 1 1/8 | 1 5/8 | 1 |
| 10 | 8 1/2 | 13 3/8 | 2 3/8 | 3 | 12 1/2 | 1 3/4 | 1 3/8 | 2 1/16 | 1 1/4 |
| 12 | 10 | 16 1/8 | 2 3/4 | 3 7/16 | 14 3/4 | 2 3/8 | 1 5/8 | 2 1/2 | 1 3/8 |
| 14 | 12 | 18 3/4 | 3 3/8 | 4 | 17 1/2 | 2 3/4 | 2 | 2 7/8 | 1 1/2 |
| 16 | 13 1/2 | 21 1/2 | 3 7/8 | 4 7/8 | 19 7/8 | 3 1/8 | 2 1/4 | 3 3/8 | 2 |
| 18 | 15 | 24 1/4 | 4 1/4 | 5 5/8 | 22 1/4 | 3 1/2 | 2 1/2 | 3 3/4 | 2 1/8 |
| 20 | 17 | 27 | 4 3/4 | 6 1/4 | 25 | 4 | 2 3/4 | 4 1/8 | 2 1/4 |
| 22 | 18 1/2 | 29 3/4 | 5 1/4 | 6 3/4 | 27 3/8 | 4 3/8 | 3 | 4 1/2 | 2 1/2 |
| 24 | 20 | 32 1/2 | 5 3/4 | 7 1/2 | 29 3/4 | 4 1/2 | 3 1/4 | 5 | 2 5/8 |
| 26 | 22 | 35 | 6 1/4 | 8 1/8 | 32 1/2 | 5 1/8 | 3 1/2 | 5 3/8 | 2 7/8 |
| 28 | 23 1/2 | 38 | 6 3/4 | 8 5/8 | 34 5/8 | 5 1/2 | 3 7/8 | 5 7/8 | 3 |
| 30 | 25 | 40 1/2 | 7 1/4 | 9 3/8 | 37 | 5 7/8 | 4 1/8 | 6 1/4 | 3 1/2 |
| 32 | 27 | 43 3/8 | 7 3/4 | 10 | 39 1/4 | 6 1/4 | 4 1/4 | 6 5/8 | 3 5/8 |
| 34 | 28 1/2 | 46 | 8 1/4 | 10 3/4 | 42 1/8 | 6 5/8 | 4 5/8 | 7 1/8 | 3 3/4 |
| 36 | 30 | 48 3/4 | 8 3/4 | 11 1/4 | 44 1/8 | 7 | 5 | 7 1/2 | 4 |

ROMAN DORIC CAP & ATTIC BASE/PLINTH {Design #220 plain; #225 fluted}



| Column Bottom Dia. (inches) | Top Dia. | Plinth | | Base Mold | Cap Square | | Cap Round | | |
|-----------------------------|----------|--------|-------|-----------|------------|-------|-----------|--------|-------|
| A | B | C | D | E | F | G | H | J | K |
| 6 | 5 | 8 1/2 | 1 1/2 | 2 7/16 | 8 | 1 1/8 | 7/8 | 1 1/4 | 3/4 |
| 8 | 6 1/2 | 10 3/4 | 1 7/8 | 3 1/4 | 9 3/4 | 1 1/2 | 1 1/8 | 1 5/8 | 1 |
| 10 | 8 1/2 | 13 3/8 | 2 3/8 | 3 7/8 | 12 1/2 | 1 3/4 | 1 3/8 | 2 1/16 | 1 1/4 |
| 12 | 10 | 16 1/8 | 2 3/4 | 4 1/2 | 14 3/4 | 2 3/8 | 1 5/8 | 2 1/2 | 1 3/8 |
| 14 | 12 | 18 3/4 | 3 3/8 | 5 3/8 | 17 1/2 | 2 3/4 | 2 | 2 7/8 | 1 1/2 |
| 16 | 13 1/2 | 21 1/2 | 3 7/8 | 6 1/4 | 19 7/8 | 3 1/8 | 2 1/4 | 3 3/8 | 2 |
| 18 | 15 | 24 1/4 | 4 1/4 | 7 1/8 | 22 1/4 | 3 1/2 | 2 1/2 | 3 3/4 | 2 1/8 |
| 20 | 17 | 27 | 4 3/4 | 8 1/8 | 25 | 4 | 2 3/4 | 4 1/8 | 2 1/4 |
| 22 | 18 1/2 | 29 3/4 | 5 1/4 | 9 | 27 3/8 | 4 3/8 | 3 | 4 1/2 | 2 1/2 |
| 24 | 20 | 32 1/2 | 5 3/4 | 9 15/16 | 29 3/4 | 4 1/2 | 3 1/4 | 5 | 2 5/8 |
| 26 | 22 | 35 | 6 1/4 | 10 5/8 | 32 1/2 | 5 1/8 | 3 1/2 | 5 3/8 | 2 7/8 |
| 28 | 23 1/2 | 38 | 6 3/4 | 11 3/8 | 34 5/8 | 5 1/2 | 3 7/8 | 5 7/8 | 3 |
| 30 | 25 | 40 1/2 | 7 1/4 | 12 | 37 | 5 7/8 | 4 1/8 | 6 1/4 | 3 1/2 |
| 32 | 27 | 43 3/8 | 7 3/4 | 13 1/8 | 39 1/4 | 6 1/4 | 4 1/4 | 6 5/8 | 3 5/8 |
| 34 | 28 1/2 | 46 | 8 1/4 | 14 | 42 1/8 | 6 5/8 | 4 5/8 | 7 1/8 | 3 3/4 |
| 36 | 30 | 48 3/4 | 8 3/4 | 14 3/4 | 44 1/8 | 7 | 5 | 7 1/2 | 4 |

WOOD ARCHITECTURAL COLUMN GUIDE SPECIFICATIONS

1.0 GENERAL

1.1 DESCRIPTION:

- A. Exterior columns shall be Koll's Lock-Joint or Tongue and Groove Stave Constructed Wood columns as manufactured by Hartmann-Sanders according to their Design No. ____ (Use design number in catalog or state: "To be made according to architects detail.")
- B. Column design shall have the correct proportions based on Orders of Architecture.
- C. Lumber species shall be _____. (Western Red Cedar or Clear Heart Redwood) (Finger-jointed Cedar or Redwood) for exterior and Paint Grade (Pine and Poplar) or Stain Grade (Clear Pine, Poplar, Mahogany, Oak, Maple, Cherry or other species) for interior.

1.2 SUBMITTALS

- A. Submit Hartmann-Sanders product data and shop drawings clearly marked to show column requirements.

1.3 DELIVERY, STORAGE AND HANDLING

- A. The protection, delivery, storage and handling of the columns and pilasters shall be according to the instructions furnished by the manufacturer. Storage must be inside a dry and well-ventilated area.

2.0 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER:

Hartmann-Sanders
 1700 West Grand Ave.
 Gadsden, AL 35901
 (800) 241-4308
 (205) 541-3048

2.2 MATERIALS

- A. All glue joints shall be pressure-glued with Type 1 water-resistant glue.
- B. Wood columns, which are to be painted, shall be factory coated with a minimum of two applications of primer and hand sanded between coats as necessary. All wood columns designated for exterior

application are to be completely coated inside with an asphaltum for moisture resistance.

- C. Capitals and bases shall be _____ (Specify Polyurethane, Fiberglass, or Marble for exterior and Polyurethane, Fiberglass, Marble or Wood for interior.)
- D. Plinths shall be _____ (Specify Polyurethane, Fiberglass or Aluminum for exterior and Polyurethane or Wood for interior.) and shall be manufacturer's standard proportions for diameter indicated. For design 190 or 195 ventilation plates are to be furnished at base of column shaft for exterior use.
- E. Wood and composition capitals shall be flashed with synthetic flashing provided by column manufacturer for exterior use. Fiberglass capitals require no flashing, except when made in halves for reassembly.
- F. Decorative capitals shall be made of Fiberglass Reinforced Polymers (FRP) using manufacturers standard mold of the design indicated.
- G. All matching pilasters or square columns shall be made by the column manufacturer consistent with the above specifications.

3.0 EXECUTION

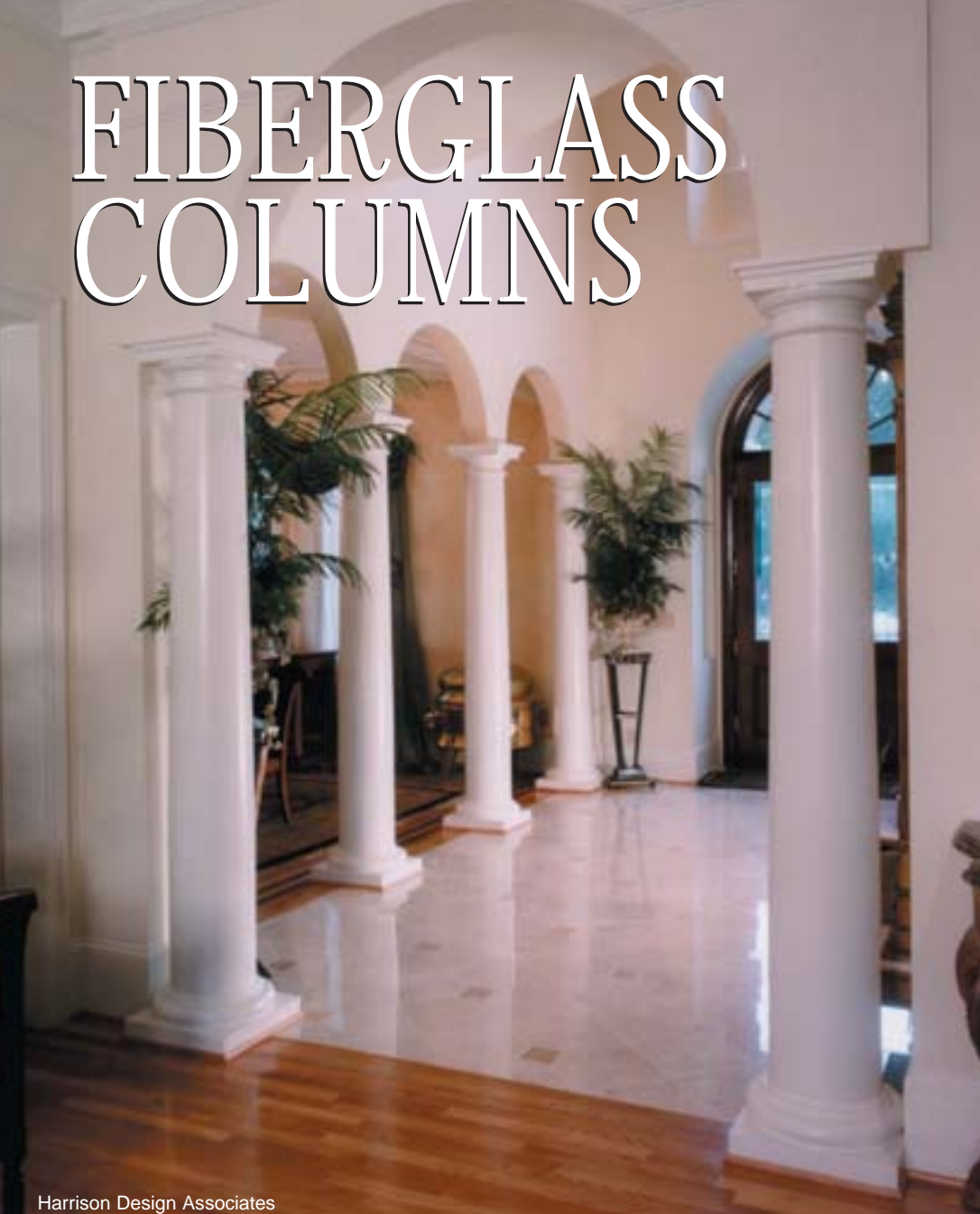
3.1 INSTALLATION:

- A. Follow manufacturer's detailed installation procedures. (Proper STORAGE, VENTILATION, AND PAINTING must be provided by installing contractor for exterior use.)

3.2 WARRANTY:

- A. Manufacturer shall provide certification of a ten-year warranty against deterioration and joint separation of solid stave or fingerjoint Western Red Cedar or Clear Heart Redwood columns with synthetic caps, bases and plinths.
- B. Manufacturer shall furnish a one-year warranty against manufacturing defects of all composition caps, Cedar or Redwood caps, bases and plinths.
- C. Manufacturer shall furnish a one-year warranty against manufacturing defects of products using other wood species.

FIBERGLASS COLUMNS



Harrison Design Associates

Hartmann-Sanders offers three distinct lines of Fiberglass Columns we call *DuraCast*, *DuraWound* and *DuraLite*. These columns are designed for all types of decorative and load bearing installations and have architecturally correct proportions and projections.

Hartmann-Sanders Fiberglass Columns carry a limited lifetime warranty, require very little maintenance, are extremely durable and are ideal for indoor and outdoor applications. All parts are non-porous, waterproof, and impervious to insect infestation.

DuraCast Fiberglass Columns are classified

as NFPA Class A and UBC Class 1, with a smoke density rating below 450 according to ASTM testing criteria.

DuraCast Fiberglass Columns 6" x 8' - 30" x 30' are manufactured from highly advanced fiberglass reinforced polymers (FRP). This composition creates one of the most durable load bearing columns available. All sizes are available in a plain shaft. Sizes 6" x 8' through 16" x 12' are available with fluted shafts. Caps and bases/plinths for columns 6" in diameter through 24" in diameter are manufactured from high-density polyurethane and fit around the load bearing shaft.

DuraWound Fiberglass Columns are available in size 36" x 24'. These columns are manufactured using a unique filament winding process which gives them great load bearing capacity yet makes them extremely lightweight and easy to install. Larger sizes are available upon request.

Each *DuraCast* and *DuraWound* column comes standard with an architecturally correct shaft and Tuscan cap and base/plinth. Attic and Roman Doric bases/plinths and decorative capital component designs are also available. Special size columns are available by quotation only.

All Fiberglass Columns must be painted with at least one coat of a high quality exterior paint. All of our *DuraCast* Fiberglass Columns are 100% sanded prior to shipping to ensure the highest quality surface for painting.

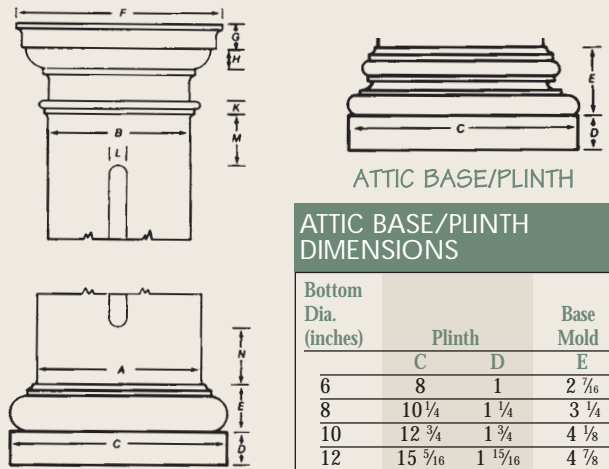
Our *DuraLite* Square Fiberglass Column offers strength, beauty, and versatility. *DuraLite* Columns are more often than not, the most cost-effective alternative to a carpenter's wood square column. It is easy to install because of its lightweight shaft and high-density polyurethane capital, bead, and base/plinth. Decorative Capitals and Attic style bases are also available. Each *DuraLite* Column has a load bearing capacity of 10,000 lbs.

DuraCast & DuraWound DIMENSIONS

| Column Dia. (inches) | Bottom Dia. A | Neck Dia. B | Bead K | ADJUSTABLE FLUTES | | | No. Flutes |
|----------------------|---------------|-------------|--------|-------------------|-------------|----------------|------------|
| | | | | Flute Width L | Top Flute M | Bottom Flute N | |
| 6 | 5 5/8 | 5 | 1 | 5/8 | 1 | 10 5/8 | 16 |
| 8 | 7 5/8 | 6 1/2 | 1 | 1 1/8 | 1 | 10 5/8 | 24 |
| 10 | 9 5/8 | 8 1/4 | 1 | 1 1/4 | 1 | 10 5/8 | 24 |
| 12 | 11 5/8 | 9 1/8 | 1 | 1 1/2 | 1 | 10 5/8 | 24 |
| 14 | 13 5/8 | 11 1/4 | 1 1/4 | 1 3/4 | 1 | 10 5/8 | 24 |
| 16 | 15 5/8 | 13 | 1 1/2 | 2 | 1 1/4 | 10 5/8 | 24 |
| 18 | 17 5/8 | 15 | 1 5/8 | 2 1/4 | 1 1/2 | 10 5/8 | 24 |
| 20 | 20 | 17 | 1 3/4 | 2 1/2 | 1 3/4 | 10 5/8 | 24 |
| 22 | 22 | 18 1/2 | 1 7/8 | 2 3/4 | 1 3/4 | 10 5/8 | 24 |
| 24 | 24 | 20 | 2 | 3 | 2 | 10 5/8 | 24 |
| 26 | 26 | 22 | 2 1/8 | 3 1/4 | 2 1/4 | 10 5/8 | 24 |
| 28 | 28 | 23 1/2 | 2 1/4 | 3 1/2 | 2 1/2 | 10 5/8 | 24 |
| 30 | 30 | 25 | 2 1/2 | 3 3/4 | 2 3/4 | 10 5/8 | 24 |
| 36 | 36 | 29 5/8 | 3 1/4 | 4 1/4 | 3 1/4 | 10 5/8 | 24 |

| SPUNCAST (STANDARD) FLUTES | | | | | | | |
|----------------------------|--|--|--|-------|---|-------|----|
| 6 | | | | 5/8 | 1 | 6 1/4 | 16 |
| 8 | | | | 1 1/8 | 1 | 6 1/4 | 24 |
| 10 | | | | 1 1/4 | 1 | 7 1/4 | 24 |
| 12 | | | | 1 1/2 | 1 | 8 | 24 |

DURACAST & DURAWOUND ROUND COLUMNS



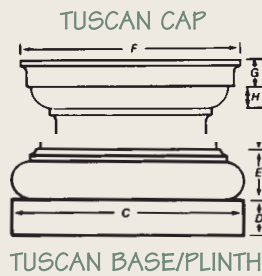
ATTIC BASE/PLINTH

ATTIC BASE/PLINTH DIMENSIONS

| Bottom Dia. (inches) | Plinth | | Base Mold |
|----------------------|---------|---------|-----------|
| | C | D | E |
| 6 | 8 | 1 | 2 5/8 |
| 8 | 10 1/4 | 1 1/4 | 3 1/4 |
| 10 | 12 3/4 | 1 3/4 | 4 1/8 |
| 12 | 15 9/16 | 1 15/16 | 4 7/8 |
| 14 | 18 5/8 | 3 9/16 | 5 1/2 |
| 16 | 21 1/8 | 3 15/16 | 6 1/4 |
| 18 | 24 1/4 | 4 1/4 | 7 1/8 |
| 20 | 27 | 4 3/4 | 8 1/8 |
| 22 | 29 3/4 | 5 1/4 | 9 |
| 24 | 32 1/2 | 5 3/4 | 9 15/16 |
| 26 | 35 | 6 1/4 | 10 5/8 |
| 28 | 38 | 6 3/4 | 11 3/8 |
| 30 | 40 1/2 | 7 1/4 | 12 |
| 36 | 48 3/4 | 8 3/4 | 14 3/4 |

TUSCAN CAP & BASE/PLINTH DIMENSIONS

| Bottom Dia. (inches) | Plinth | | Base Mold | Cap Square | | Cap Round |
|----------------------|--------|--------|-----------|------------|---------|-----------|
| | C | D | E | F | G | H |
| 6 | 8 1/2 | 1 7/8 | 1 3/4 | 7 1/2 | 1 | 5/8 |
| 8 | 10 1/4 | 1 7/8 | 2 1/2 | 9 1/2 | 1 3/8 | 1 1/8 |
| 10 | 12 3/4 | 2 1/2 | 3 | 11 15/16 | 1 7/8 | 1 1/4 |
| 12 | 15 1/8 | 2 7/8 | 3 1/4 | 14 3/8 | 2 1/8 | 1 1/2 |
| 14 | 18 5/8 | 3 3/8 | 4 1/8 | 16 3/8 | 2 7/16 | 1 5/8 |
| 16 | 21 3/8 | 4 | 4 5/8 | 18 1/2 | 2 13/16 | 1 11/16 |
| 18 | 24 1/8 | 4 9/16 | 5 1/2 | 21 1/4 | 3 1/4 | 2 1/4 |
| 20 | 27 | 4 3/4 | 6 | 24 1/8 | 3 1/2 | 2 7/16 |
| 22 | 29 3/4 | 5 1/4 | 6 7/8 | 26 1/2 | 3 3/4 | 2 1/2 |
| 24 | 32 1/2 | 5 3/4 | 7 1/2 | 28 3/4 | 4 1/8 | 2 3/4 |
| 26 | 35 | 6 1/4 | 8 3/8 | 31 1/2 | 4 3/8 | 3 |
| 28 | 38 | 6 3/4 | 8 3/4 | 33 3/8 | 4 3/4 | 3 1/4 |
| 30 | 40 1/2 | 7 1/4 | 9 1/4 | 35 3/4 | 5 1/8 | 3 1/2 |
| 36 | 48 3/4 | 8 3/4 | 11 3/4 | 42 3/4 | 6 1/4 | 4 1/4 |



TUSCAN BASE/PLINTH

ROMAN DORIC CAP & BASE/PLINTH DIMENSIONS

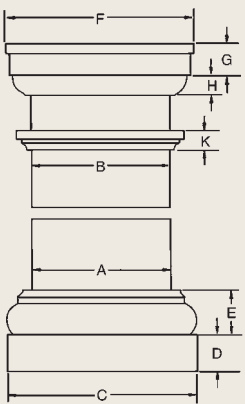
| Bottom Dia. (inches) | Plinth | | Base Mold | Cap Square | | Cap Round |
|----------------------|--------|-------|-----------|------------|-------|-----------|
| | C | D | E | F | G | H |
| 6 | 8 1/2 | 1 1/2 | 1 3/4 | 8 | 1 | 1 1/8 |
| 8 | 10 3/4 | 1 7/8 | 2 3/8 | 9 3/4 | 1 1/2 | 1 1/8 |
| 10 | 13 1/4 | 2 3/8 | 3 | 12 1/2 | 1 3/4 | 1 1/8 |
| 12 | 16 1/4 | 2 7/8 | 3 7/16 | 14 3/4 | 2 1/8 | 1 1/8 |
| 14 | 18 3/4 | 3 1/8 | 4 | 17 1/2 | 2 3/8 | 2 |
| 16 | 21 1/4 | 3 3/8 | 4 1/4 | 19 3/4 | 3 1/8 | 2 1/4 |
| 18 | 24 1/4 | 4 1/8 | 5 1/4 | 22 1/2 | 3 3/8 | 2 1/2 |
| 20 | 27 | 4 3/4 | 6 1/4 | 25 | 4 | 2 3/4 |
| 22 | 29 3/4 | 5 1/4 | 6 3/4 | 27 3/4 | 4 1/4 | 3 |
| 24 | 32 1/2 | 5 3/4 | 7 1/2 | 29 3/4 | 4 3/4 | 3 1/4 |
| 26 | 35 | 6 1/4 | 8 1/4 | 32 1/2 | 5 1/4 | 3 1/2 |
| 28 | 38 | 6 3/4 | 8 3/4 | 34 3/4 | 5 3/4 | 3 3/4 |
| 30 | 40 1/2 | 7 1/4 | 9 1/4 | 37 | 5 3/4 | 4 1/4 |
| 36 | 48 3/4 | 8 3/4 | 11 1/4 | 44 1/4 | 7 | 5 |

ROMAN DORIC BASE/PLINTH

DuraLite DIMENSIONS

| Column Dia. (inches) | Bottom Dia. A | Neck Dia. B | Plinth C | Base Mold | | Cap Square | | Cap Round H | Bead K |
|----------------------|---------------|-------------|----------|-----------|-------|------------|-------|-------------|--------|
| | | | | D | E | F | G | | |
| 8 | 7 1/2 | 7 1/2 | 10 3/8 | 1 1/4 | 2 1/4 | 10 3/8 | 1 1/4 | 1 | 1 |
| 10 | 9 1/2 | 9 1/2 | 13 | 2 1/4 | 2 3/4 | 12 1/2 | 1 1/4 | 1 1/4 | 1 |
| 12 | 11 1/2 | 11 1/2 | 15 1/4 | 2 3/4 | 3 1/4 | 15 1/4 | 2 | 1 1/2 | 1 |

DURALITE SQUARE COLUMN



LOAD BEARING CAPACITY of DuraCast & DuraWound

| Column Dia. (inches) | Available Column Lengths (Feet) | | | | | | | | | | | | Load Bearing Capacity* (lbs.) | | |
|----------------------|---------------------------------|---|---|----|----|----|----|----|----|----|----|----|-------------------------------|----|--------|
| | 5' 6" | 8 | 9 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | | 28 | 30 |
| 6 | | • | | | | | | | | | | | | | 8,000 |
| 8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 10,000 |
| 10 | | • | • | • | • | • | • | • | • | • | • | • | • | • | 14,000 |
| 12 | | • | • | • | • | • | • | • | • | • | • | • | • | • | 18,000 |
| 14 | | • | • | • | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 16 | | • | • | • | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 18 | | • | • | • | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 20 | | | • | • | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 22 | | | | • | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 24 | | | | | • | • | • | • | • | • | • | • | • | • | 20,000 |
| 26 | | | | | | • | • | • | • | • | • | • | • | • | 20,000 |
| 28 | | | | | | | • | • | • | • | • | • | • | • | 20,000 |
| 30 | | | | | | | | • | • | • | • | • | • | • | 20,000 |
| 36 | | | | | | | | | • | • | • | • | • | • | 30,000 |

* Load Bearing Capacity is dependent on the concentric loading of the column. Eccentric (non-centered) load bearing capacity available upon request.

•DuraCast Fiberglass Columns

*DuraWound Fiberglass Columns

Note: 2nd story balconies cannot be attached directly to the side of any column, contact Hartmann-Sanders for recommendations.

DECORATIVE CAPITALS

Harrison Design Associates

Decorative Capitals have adorned columns beautifully for centuries. Today, we extend our capital offering with the most popular designs of ancient Italy and Greece in sizes to fit any size column. Our Decorative Capitals will add a classic finish to any application.

The design of our Decorative Capitals closely follows the Orders of Architecture. These capitals are molded and sculpted entirely by Hartmann-Sanders craftsmen from hundreds of patterns. Our capitals are made of Fiberglass Reinforced Polymers (FRP) which make them load bearing as well as extremely durable in severe weather elements. Capitals may be split in half for pilaster applications or to be reassembled around structural supports. Since all of our capitals are made in house, we have the capability of matching existing capitals. Typically, Attic style bases are used with decorative capitals, however, Tuscan and Roman Doric style bases are also available.



Decorative Roman Doric



Empire



Empire w/ Necking



Greek Angular Ionic



Greek Angular Ionic w/ Necking



Greek Erectheum



Greek Erectheum w/ Necking



Greek Ionic



Modern Composite



Roman Corinthian



Roman Ionic



Scamozzi



Temple of Winds

FIBERGLASS COLUMN GUIDE SPECIFICATIONS

1.0 GENERAL

1.1 DESCRIPTION:

- A. Columns shall be *DuraCast*, *DuraWound*, or *DuraLite* Fiberglass Columns manufactured by Hartmann-Sanders based on design _____ (Tuscan, Roman Doric, Attic).
- B. Column design shall have the correct proportions based on Orders of Architecture, except when cut to a specific overall length.
- C. *DuraCast* Columns are manufactured from highly advanced fiberglass reinforced polymers (FRP).
- D. All *DuraCast* shafts shall be 100% sanded.
- E. All *DuraCast* shafts shall be classified as NFPA Class A and UBC Class 1, with a smoke density rating below 450 according to ASTM E84-01 testing criteria.
- F. Caps shall be Polyurethane, Fiberglass, or Composition.
- G. Bases shall be Polyurethane or Fiberglass.
- H. Plinths shall be Polyurethane or Fiberglass.

1.2 SUBMITTALS

- A. Submit Hartmann-Sanders product data and shop drawings clearly marked to show column requirements.

2.0 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER:

2.2 MATERIALS

- A. All fiberglass columns shall be manufactured from advanced fiberglass reinforced polymers (FRP).

2.3 DURACAST COLUMN PHYSICAL PROPERTIES

- A. Thermal Characterization - Flexural strength (ASTM D790), psi @ 73 degrees F; 157.
Flexural Modulus, psi @ 73 degrees F; $1.16 \times 10^{(6)}$
- B. Thermal Expansion (ASTM D696), Coefficient of thermal expansion (CTE); $5.7 \times 10^{(-5)}$ in/in/F degrees.
- C. Compression Testing (ASTM D695), psi @ 73 degrees F; 9,221
- D. Barcol Hardness using HB-934 = 44

3.0 EXECUTION

3.1 INSTALLATION

- A. Follow manufacturer's detailed installation procedures.
 1. Determine the position of the plinth by dropping a plumb line from the center of the soffit beam to the floor. Mark this point on the floor

with a "X". This mark is where you will center the plinth so that the top of the shaft will align with the soffit.

2. Measure the overall height. Raise the soffit or porch slightly with brace for easy installation of the columns.
3. Trim column shaft on the bottom end only. Trim with an abrasive saw. Finish both top and bottom of shaft with a rasp to ensure an even load distribution around the entire circumference.
4. Slide cap over top of column shaft. Let cap slide down to rest on neck mold temporarily until shaft is correctly positioned. (If installing a square column, slide neck mold over top of shaft to desired location. Fasten neck mold to shaft. Caulk between neck mold and shaft.)
5. Slide base/plinth onto column shaft from bottom.
6. Place column in a vertical position with load centered over column shaft with even distribution around bearing surfaces.
7. If installation requires that column be secured in place prior to bearing load, use small L brackets. Be careful to ensure L brackets do not interfere with seating of cap and base. Note: To secure bracket to column, drill hole in shaft and use through bolts. Do not use screws.
8. Remove brace to allow load to bear on column shaft.
9. Slide cap up to soffit and attach to soffit using corrosion resistant type screws. Attach base/plinth to floor using appropriate fasteners.
10. Caulk between the cap and the soffit, the cap and shaft, and the base and the shaft for a finished appearance.

3.2 PAINTING/FINISHING

- A. Make sure all surfaces are clean prior to painting. Use mineral spirits if oil or alkyd products are used. Warm soapy water should be used if latex products are utilized.
- B. It is necessary to sand the column and caps and base/plinths prior to priming and painting. Some filling may be required. Note: The surface on polyurethane caps and base/plinths must be thoroughly scuff sanded with 120 grit sand paper and wiped clean prior to priming and painting.
- C. Alkyd or oil based primer and paint are recommended. Latex products can be used, but additional sanding is required. Only alkyd or oil based primer and paint must be used on *DuraWound* columns, caps, and base/plinths.
- D. Use a good, high quality exterior paint. At least one coat of primer and two coats of paint should be applied.
- E. Follow paint manufacturer's instructions concerning use within temperature ranges for best results.
- F. Do not use paint or solvents containing acetone.

3.3 WARRANTY

- A. All fiberglass columns, polyurethane and fiberglass components, and decorative capitals have a Limited Lifetime Warranty.

BALUSTRADE SYSTEM GUIDE SPECIFICATIONS

1.0 GENERAL

1.01 DESCRIPTION:

- A. Balustrade system shall be Hartmann-Sanders composite fiberglass according to their Design _____ (Buckingham, Westminster, Churchill, Savannah, or Lexington)
- B. Balustrade system shall be manufactured from a high quality marble and fiberglass reinforced resin composite.
- C. Newel posts shall be Hartmann Sanders design _____.
- D. Post caps shall be Hartmann Sanders design number _____.
- E. Railings shall be Hartmann-Sanders design _____.

1.02 SUBMITTALS

- A. Submit Hartmann Sanders Balustrade Collection product literature.

1.03 DELIVERY, STORAGE AND INSTALLATION

- A. Storage and installation shall be according to manufacturer-supplied instructions.
- B. Balustrade components shall be protected from dirt and damage prior to and during installation.
- C. Railings must be stored on a flat surface prior to installation.

1.04 WARRANTY:

- A. Manufacturer shall provide a limited lifetime warranty to the original owner against defects in materials or workmanship provided the balustrade system has been properly installed.

2.0 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER:

2.02 MATERIALS

- A. Balustrade system shall be hand finished for a smooth, seamless surface.
- B. Balustrade system is made from a high quality marble and fiberglass reinforced resin composite.
- C. Churchill/Lexington/ Savannah balusters shall be manufactured with a steel rod.
- D. UV light will not affect balustrade system if properly finished per manufacturer's instructions.
- E. Balustrade system is moisture resistant.
- F. Structural performance testing exceeded all required BOCA testing requirements. Test data available upon request.

2.03 INSTALLATION HARDWARE

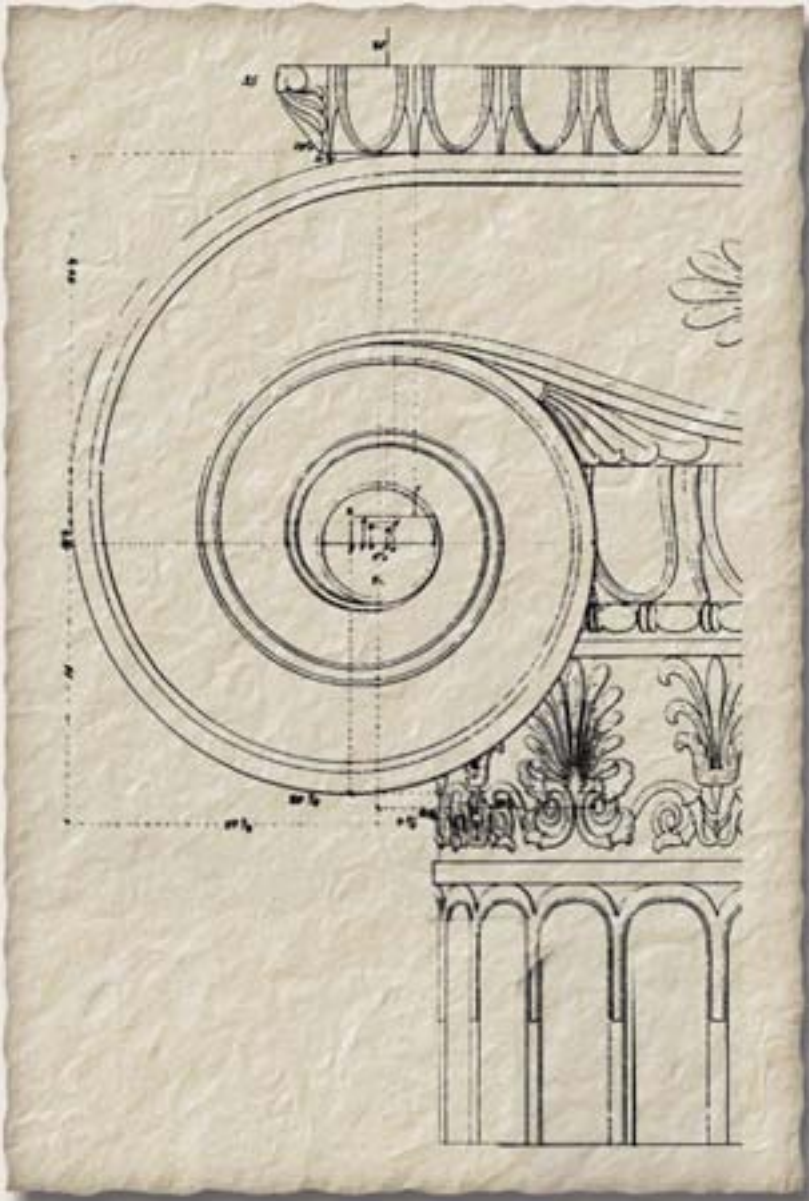
- A. Hardware and fasteners shall be non-corrosive.
- B. Baluster hardware - zinc coated threaded rods; concrete anchors or threaded wood inserts or toggle nuts; washers; and hex nuts.
- C. Railing hardware - Tapcon hex screws; cellulose PVC board for fillet; and L brackets.
- D. Newel hardware - channel irons; zinc coated threaded rods; concrete anchors; threaded wood inserts; and hex nuts.

3.0 EXECUTION

3.0.1 INSTALLATION

- A. Follow manufacturer's detailed installation procedures using recommended adhesives and sealant/caulks.
- B. Finished all surfaces with a light sanding and a high quality exterior primer and paint.

Hartmann-Sanders
1700 West Canal Ave
Canton, MI 48801
800-241-4303
Fax: 734-419-3043



Hartmann-Sanders offers over a century of excellence that dates back to 1898. As one of the largest manufacturers of authentic architectural columns in the United States, Hartmann-Sanders continues to have one of the most honored and artistic architectural traditions today. Hartmann-Sanders offers architectural wood columns (paint grade and stain grade), architecturally correct fiberglass columns, ornamental capitals and fiberglass balustrade systems.

Hartmann-Sanders has combined modern technology with time-honored craftsmanship of woodworking artisans to meet today's market demands. As one of the most recognized leaders in the industry today for architectural columns, the quality and construction of our products are unsurpassed. Thousands of installations attest to the durability and beauty of Hartmann-Sanders Columns.

