

Structural Engineering Analysis For 12' x 12' Arbors Direct Pergola with 8" columns

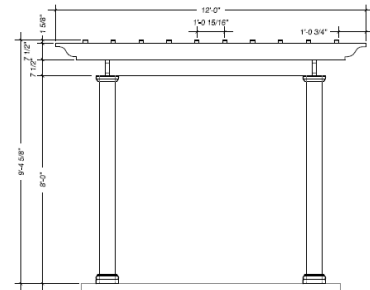
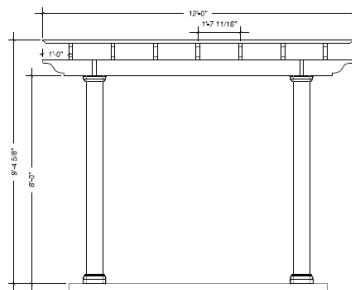
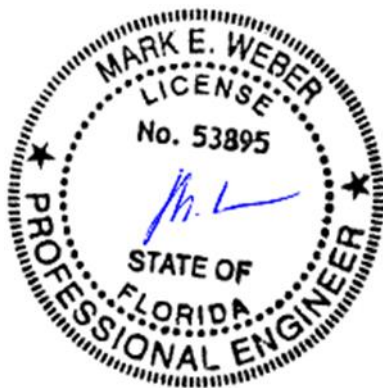
Analysis was performed based on ASCE 7-10 Code, for the 12' x 12' Arbors Direct Pergola with 8" round or square columns. The analyses were performed with four (4) anchors per column base plate and the design reflects ASCE 7-10 wind load rating of 160 MPH with the following assumptions:

- 1) (1) 8" Round or Square Anchor plate welded to 5/8" coupler as per Drawings dated 1JULY2014.
- 2) (4) Anchors – Wedge type stainless steel 5/8" diameter with 4" embedment and 3,000 psi concrete (True Bolt WW-5860, Kwik Bolt 3 – SS 5/8 (4) or equivalent).
- 3) (1) 5/8" threaded rod shall be B7 Alloy Steel Threaded Rod (std. Low Carbon Steel is not equivalent).
- 4) (16) Flat Washer, Large OD, 18-8 Stainless Steel washer at each (1/4" -14 x 2 1/2") screw location; qty: 4 per column; 16 washers in total.
- 5) Threaded rod extends through column and bolted to aluminum top plate.

Result: The configuration characterized herein for this structure can resist 160 MPH wind load as per ASCE 7-10 Code with minimum footing size: 24" x 24" x 24" deep.

Respectfully Submitted by:

MW Engineering, Inc.



Contents

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|---|--------------------------------------|
| - (4) 8"x8'-0" Round Pultruded Columns | - (28) Aluminum Angles |
| - (4) 8" Round Poly Cap/Base Sets | - (56) Stainless Steel Rafter Screws |
| - (4) 8'-0" Steel Threaded Rod | - (10) 2"x2"x12' Purlins |
| - (4) 10" Aluminum Top Anchor Plate | - (20) 2"x2"x12' Decorative Ends |
| - (4) Stainless Steel Column Hardware Set | - (70) Stainless Steel Purlin Screws |
| - (7) 2"x8"x12' Fiberglass Rafters | - (2) 2"x8"x7'-10" Header Supports |
| - (14) Decorative Spartan Rafter Tails | - (2) 2"x8"x12' Rafter Supports |
| | - (4) Decorative Rafter Tails |

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