18'x16' Vinyl A-Frame Pavilion

Deanna Aheam Laird
72 Vineyard Meadow Farms Road
West Tisbury, MA 02575

DESIGN ENGINEER:

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Drawing Index

GENERAL NOTES

All notes do not necessarily apply due to different requirements on each project. This plan is intended to reflect only the structural design of this building. The contractor shall review all applicable local, state, and federal building codes prior to the start of construction to ensure building conformance. Timber Tech Engineering, Inc. is not responsible for information pertaining to this project if not shown on drawings or listed below. Revisions to the plans shall be approved by engineer of record.

DESIGN REQUIREMENTS

1. Governing Code:
   Including, not limited to: IBC 2015
   Risk Category II
2. Dead Loads:
   A. Roof 10 psf
   B. Floor n/a psf
   C. Other n/a psf
3. Live Loads:
   A. Roof (See also note #4) 37.8 psf
   B. Floor n/a psf
   C. Other n/a psf
4. Snow Loads:
   A. Ground Snow (Pg) 45 psf
   B. Flat Roof Snow (Pf) 37.8 psf
   C. Snow Exposure Factor (Ce) 1.0
   D. Snow Load Risk Factor (I) 1.0
   E. Unbalanced Snow
      i. Windward Roof 0 psf
      ii. Leeward Roof 45 psf
5. Wind Load (ASCE 7-10)
   A. Ultimate Wind Speed (V ult) 130 mph
   B. Wind Exposure Category C
   C. Enclosure Category Open
6. Earthquake Design Data:
   (Analysis based on equivalent lateral force procedure)
   A. Spectral Response Acceleration at 1 sec, S 0.25
   B. Spectral Response Acceleration at short periods, S 0.34
   C. Seismic Importance Factor, I 1.0
   D. Site Class D
   E. Seismic Design Category D
   F. Basic Structural System
      Cantilevered Column: Timber Frame
   G. Response Modification Factor (R) 1.5
   H. Deflection Amplification Factor (Cd) 1.5

WOOD

1. General Requirements
   A. Structural wood members and connections shall be of sufficient size or capacity to carry all design loads without exceeding the allowable design values specified in "The National Design specification for Wood Construction" (NDS), and its "Supplement" by the American Wood Council (AWC).
   B. Wood members used for load supporting purposes shall have the grade mark of a lumber grading agency certified by the American Lumber Standards Committee.
2. Heavy Timbers
   A. Structural solid sawn timbers shall be designed, fabricated and installed in accordance with the NDS by AWC.
   B. Structural glued laminated soft wood timbers shall conform with the "American National Standard or Structural Glued Laminated Timber", (ANSI/AITC 190.1).
   C. Structural decking shall conform to the NDS.
   D. Glued laminated columns shall be manufactured with laminating combinations that will provide a minimum design value of 1,850 psi for compressive stress (Fc), and 2,200 psi for bending stress (Fb).
3. Dimension Lumber
   A. All lumber species, graded visually or mechanically, shall comply with the NDS by AWC, and the "American Softwood Lumber Standard" (PS 20) by the U.S. Department of Commerce.
   B. The minimum grade and species for posts, beams, headers, and other primary structural members shall be Dense Select Structural Southern Pine, unless specified otherwise.
   C. Lumber used for secondary framing shall be #1 Southern Yellow Pine (SYP) or better.
   D. Mechanically laminated columns shall conform with ANSI/ASAE EP 559.
4. Pressure Preservative Treatment (PPT)
   A. Pressure treatment to be performed according to the American Wood Preservers' Association (AWPA) standards.
   B. Pressure treated members shall have the inspection mark of an agency accredited by the American Lumber Standards Committee.
   C. Preservative: Ammonia Copper Quaternary ammonia (ACQ) or Copper Boron Azole (CBA)
   D. Minimum waterborne treatment retention shall be 0.4 pcf for members above ground, and 0.6 pcf for members in contact with earth.
   E. Treat indicated items and the following:
      1. Wood members exposed to weather or insect infestation.
      2. Wood members in direct contact with earth or concrete.
      3. Wood members exposed to high moisture content (>19% for dimension lumber, >16% for glued laminated timber).
      4. Wood members less than 12 inches above grade.
   F. Field treat newly exposed wood where cutting, drilling or notching pressure treated lumber.
   G. Metal connectors used in treated wood shall be hot-dip galvanized as per ASTM A153.
5. Connections shall be designed and constructed according to the NDS by AWC and shall conform to the following:
   A. The minimum connection shall be two #10x3 ½" wood screws, or as detailed on the drawings.
   B. Other connections as per standard construction practice.

Polyvinyl Chloride Compound (PVC)

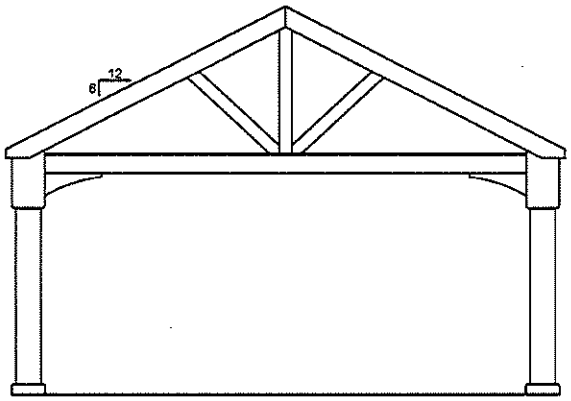
1. General Requirements
   A. PVC sleeve material used to wrap wood members to be supplied according to Certainteed corporation specifications or equivalent.
   B. PVC sleeve material to be 0.160" thick for posts, and 0.105" thick for other structural members

TTE DRAWING NUMBER: E185-23

5/8/23

COMMONWEALTH OF MASSACHUSETTS
TIMOTHY R. ROYER CIVIL No. 45614 E185-23
REGISTERED PROFESSIONAL ENGINEER

Timothy R. Royer, P.E. MA Eng.# 45614
Expiration Date: 06/30/2024



End Elevation

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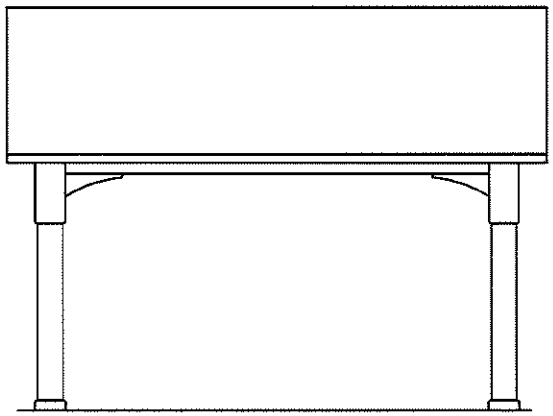

Side Elevation

Scale ¼" = 1'-0"

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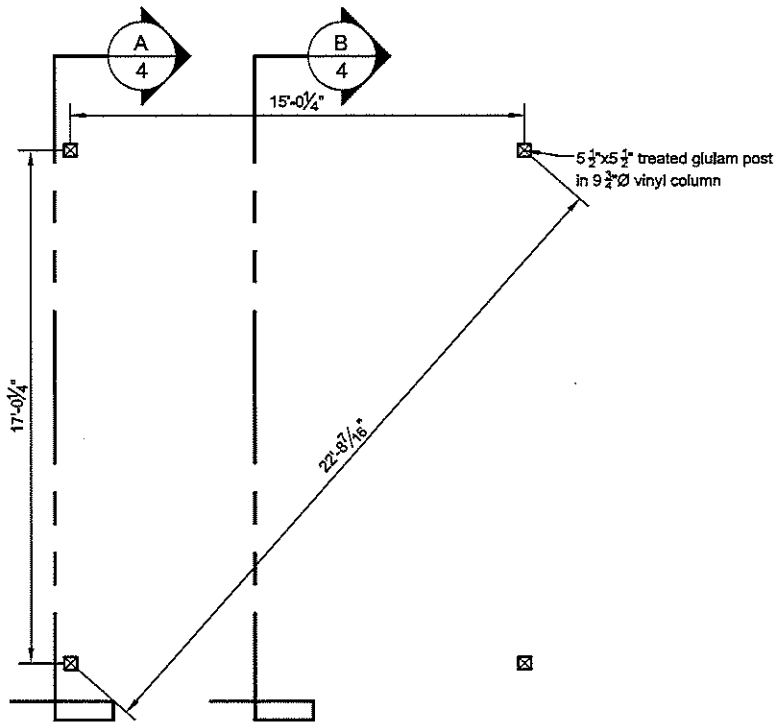
Drawing Title:
Elevations

Project:
18'x16' Vinyl A-Frame Pavilion for
Deanna Ahearn Laird
72 Vineyard Meadow Farms Road
West Tisbury, MA 02575

Revisions:	Date:	By:

Drawing Number: E185-23	Page: 1 of 6
Engineered By: T. Royer	Start Date: 5/8/23
Drafted By: K. Salyer	Certified Date: 5/8/23



Post Layout Plan

Scale ¼" = 1'-0"

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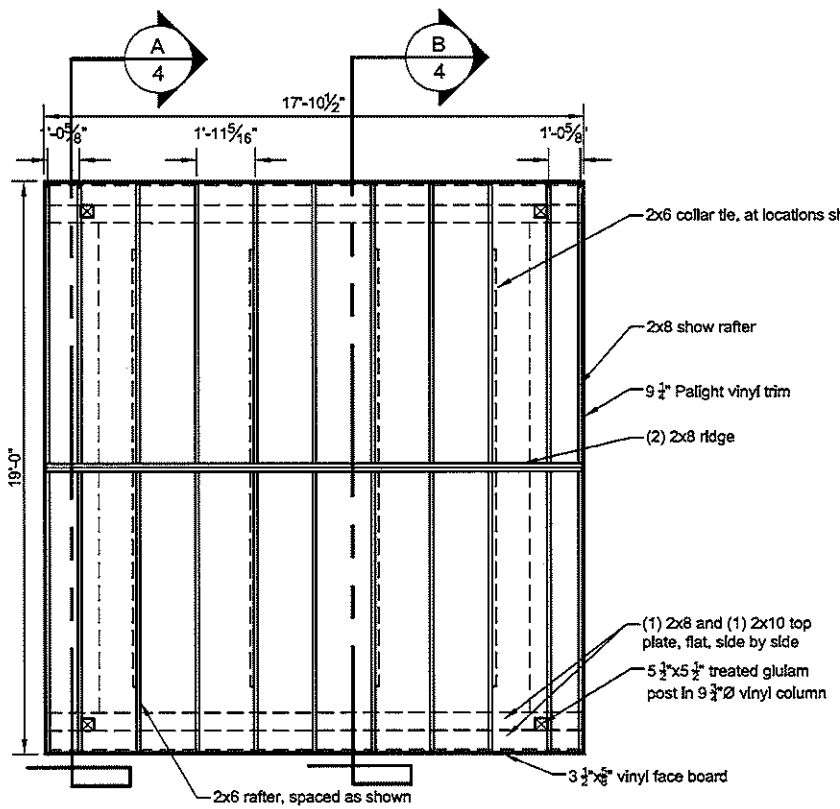

Roof Framing Plan

Scale ¼" = 1'-0"

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Drawing Title:
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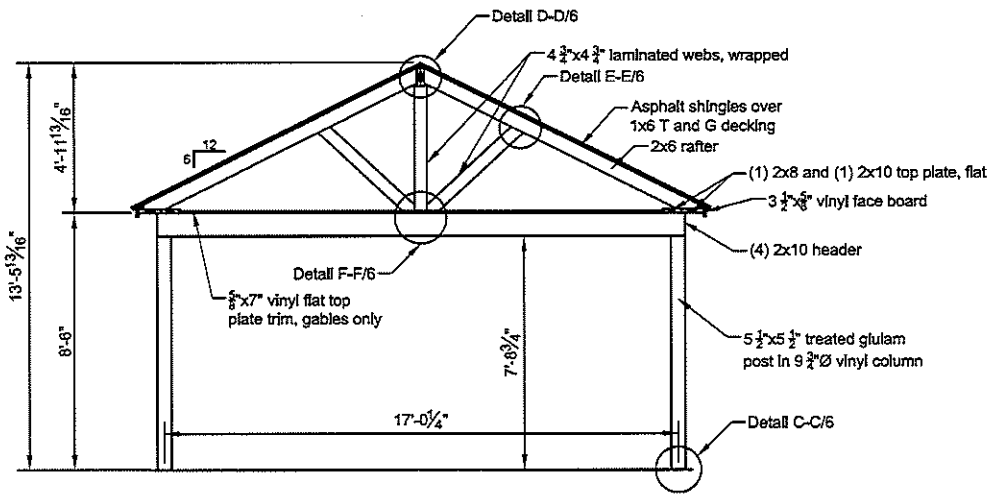

Cross Section A/4

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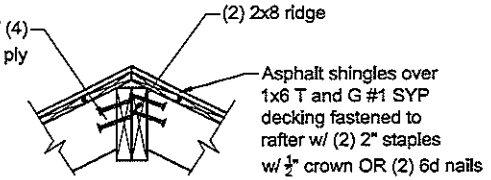

Detail A-A/4

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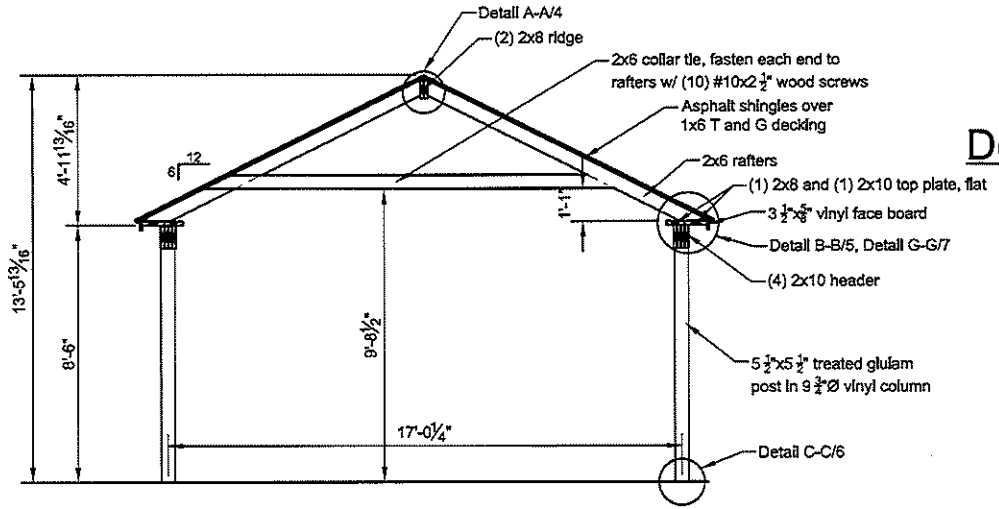

Cross Section B/4

Scale ¼" = 1'-0"

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Drawing Title:
Cross Section A/4
Cross Section B/4
Detail A-A/4

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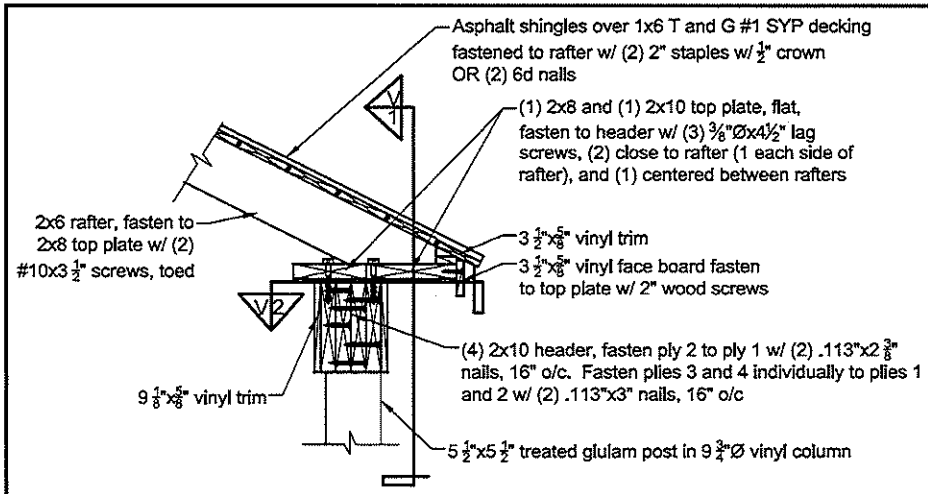

Detail B-B/5

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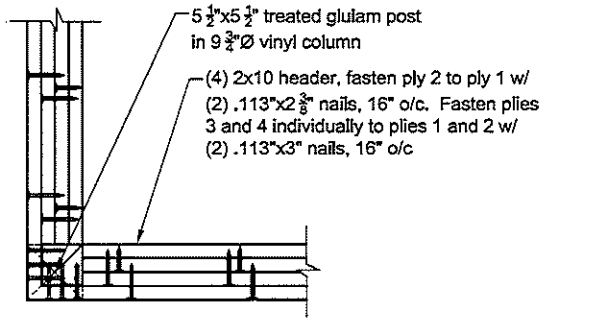

View 2 Detail B-B/5

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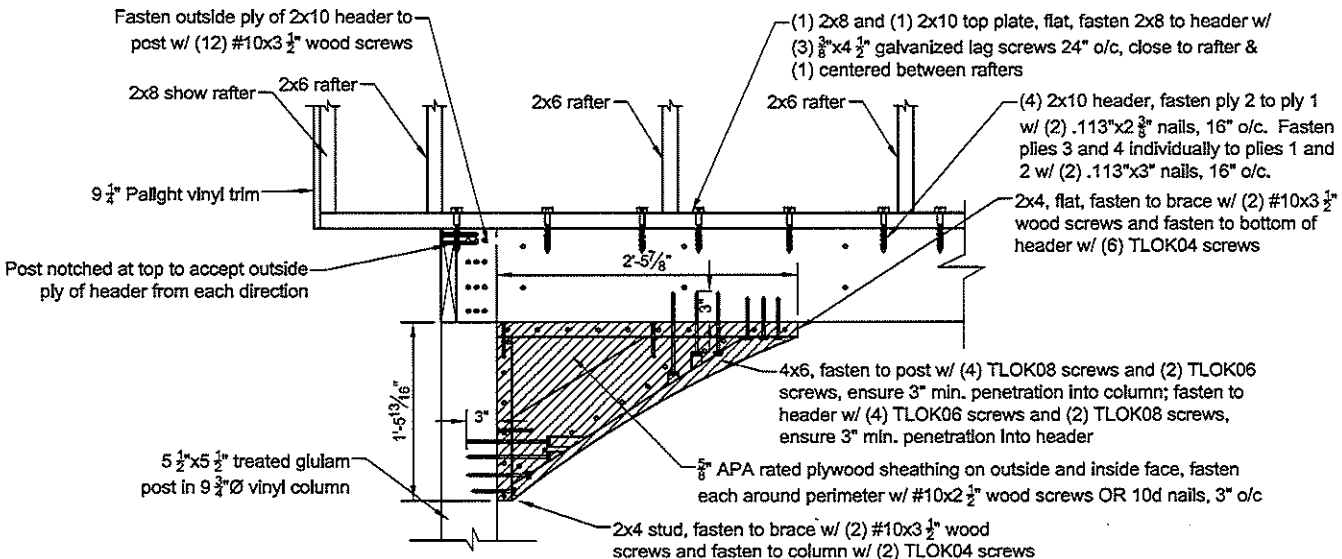

View 1 Detail B-B/5

Scale 1" = 1'-0"

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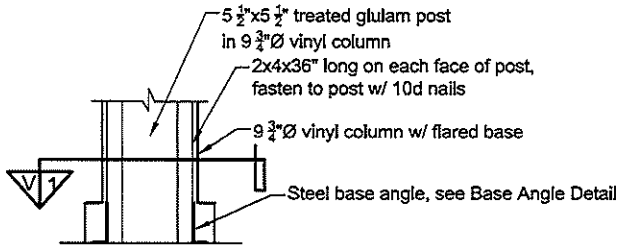

Detail C-C/6

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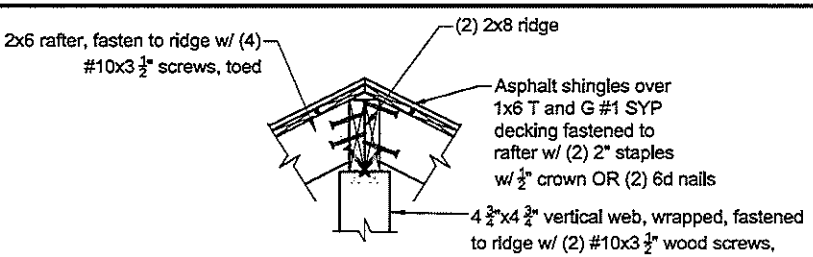

Detail D-D/6

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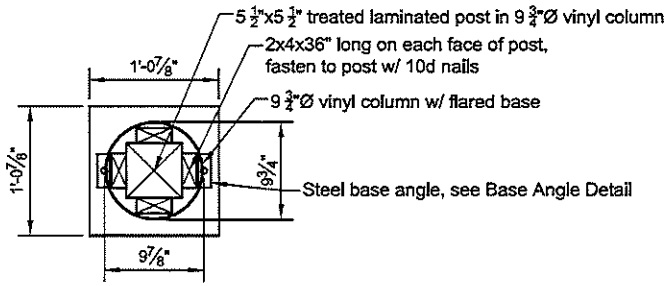

View 1 Detail C-C/6

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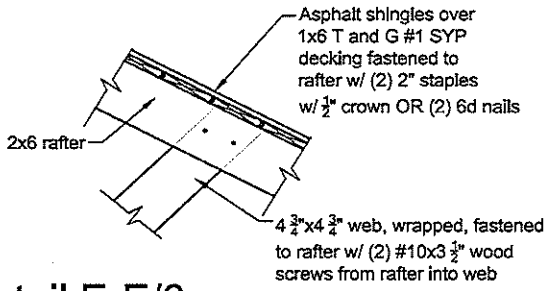

Detail E-E/6

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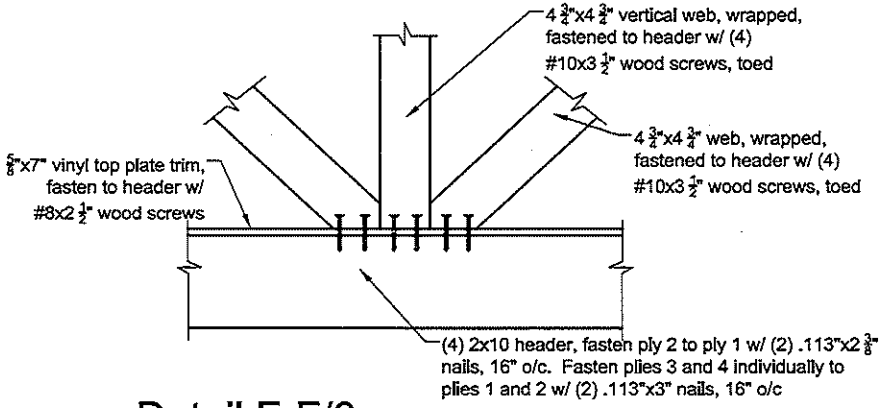

Detail F-F/6

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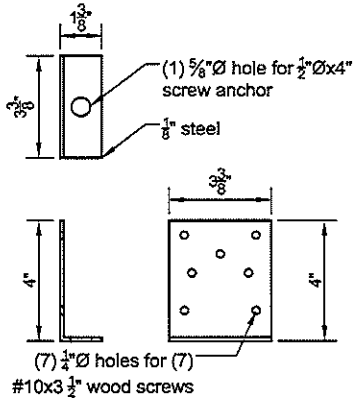

Base Angle Detail

Scale 3" = 1'-0"

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Drawing Title:
Detail C-C/6
Detail D-D/6
Detail E-E/6
Detail F-F/6
Base Angle Detail

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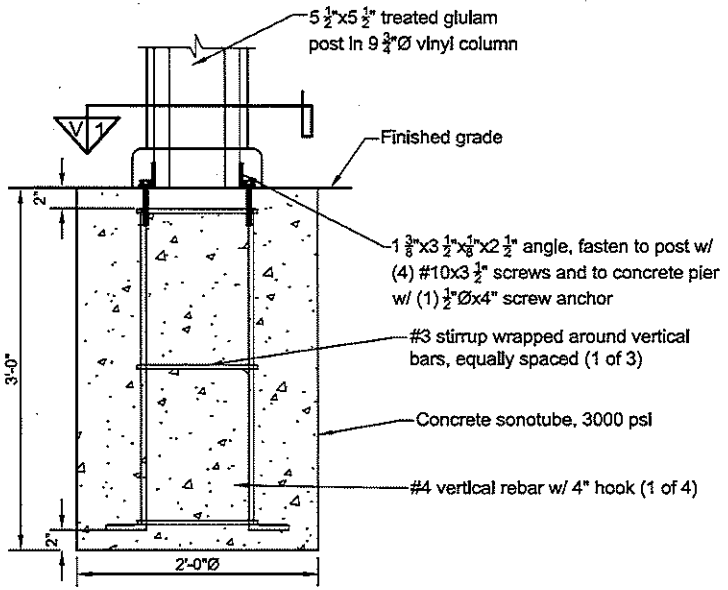

Pier Design

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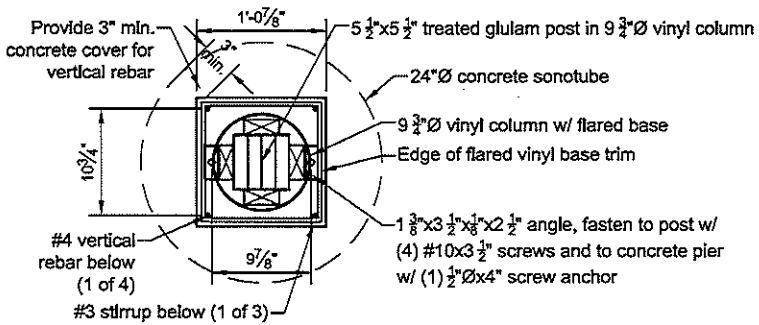

View 1 Pier Design

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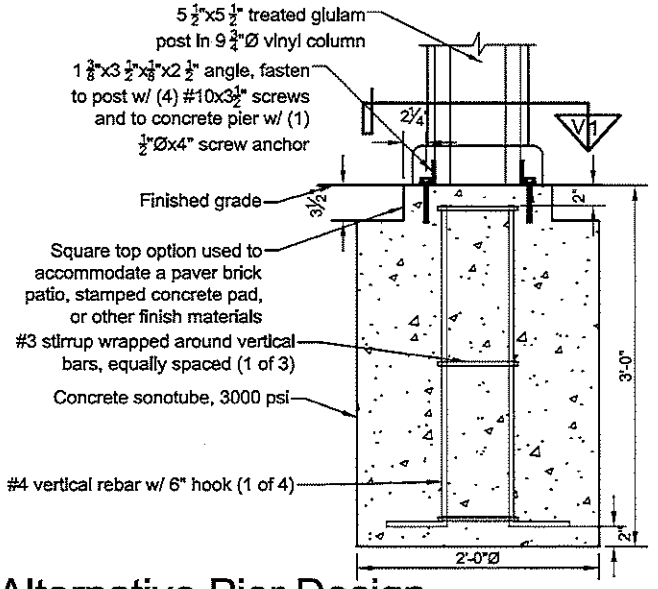
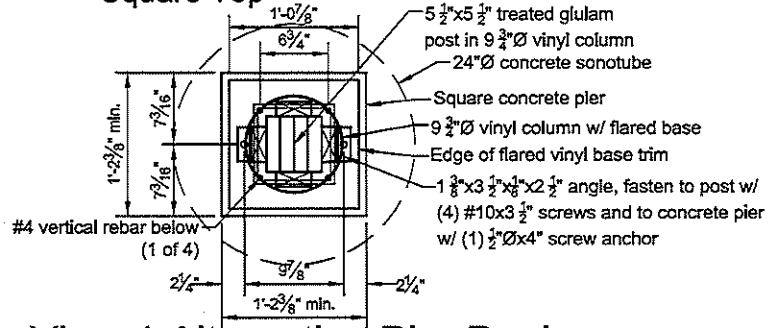


Alternative Pier Design

Scale 1" = 1'-0"

Square Top



View 1 Alternative Pier Design

Scale 1" = 1'-0"

Square Top

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Drawing Title:
Foundation Details

Project:
18'x15' Vinyl A-Frame Pavilion for
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Revisions:	Date:	By:

Drawing Number: E185-23	Page: F1
Engineered By: T. Royer	Start Date: 5/8/23
Drafted By: K. Salyer	Certified Date: 5/8/23

EARTHWORK

1. Requirements
   A. Provide a construction grade extending ten feet beyond building exterior walls or an alternative method per Section 1804 of the IBC.
   B. Excavate for foundations to subgrade elevations regardless of character of materials and obstructions encountered, unless otherwise approved by the structural engineer.
   C. Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.
2. Materials
   A. Satisfactory soil: ASTM D2487 unified soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than two inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.
   B. Unsatisfactory soil: ASTM D2487 unified soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
   C. Backfill and fill: satisfactory soil materials.
3. Execution
   A. Footings have been designed for an assumed allowable loadbearing pressure of 2,000 psf. (No increases permitted.) The contractor shall verify this assumption, and shall immediately notify the structural engineer in writing of any deficiency.
   B. Place backfill and fill in layers not more than eight inches in loose depth at optimum moisture content. Compact each layer under footings and slabs to a dry density of at least 95 percent of maximum dry density as determined by ASTM D1557.
   C. Bottom of exterior footings shall be a minimum of 36 inches below finished grade, unless noted otherwise

Structural Steel

1. Connections shall be designed and constructed according to AISC, and shall conform to the following:
   A. Screw Anchors (exterior applications): Use screw anchors of the diameter and length indicated on the drawings as manufactured by Red Head or approved equal. Use LDT Stainless Steel bolts, or LDT bolts with EnvireX coating in concrete and CMU. Fill CMU cells at all bolt locations.
   B. Connections exposed to weather or high relative humidity shall be hot-dip galvanized per ASTM A153 / A153M.

CAST-IN-PLACE CONCRETE

1. Concrete work shall conform to the following specifications by The American Concrete Institute (ACI).
   A. "Building Code Requirements for Structural Concrete" (ACI 318).
   B. "Hot Weather Concreting" (ACI 318).
   C. "Cold Weather Concreting" (ACI 318).
2. Materials used shall adhere to the following:
   A. Portland Cement: ASTM C150, type 1.
   B. Fly Ash: ACI 318.
   C. Aggregates: ASTM C33, maximum aggregate size is one inch.
   D. Fiberglass reinforcement: PCI MNL 128 Standard.
   E. Air-entraining admixture: ACI 318.
   F. Chemical admixtures: ASTM C494, water reducing. All concrete, except footings, shall contain a water reducing admixture. No admixtures containing calcium chloride are permitted. All other additives shall not be used without prior approval of the structural engineer.
   G. Vapor retarder: Clear 8-mil thick polyethylene.
3. Proportion normal-weight (145 pcf) concrete mixes to provide the following properties:
   A. Compressive strength: 3,000 psi at 28 days (unless noted otherwise).
   B. Slump limit: 4 inches (3 inches for slab-on-grade) at point of placement.
   C. Water-cement ratio: 0.45 maximum at point of placement.
   D. Air content: 5 to 7 percent for concrete exposed to freezing and thawing, 2 to 4 percent elsewhere.
4. Reinforcing steel shall be fabricated, detailed and placed in accordance with the ACI 318, and shall conform to the following:
   A. Deformed reinforcing bars: ASTM A615/A 615M with a minimum yield strength of 60,000 psi (grade 60).
   B. Welded wire fabric (WWF): ASTM A1064, flat sheets, not rolls.
   C. Ties/Stirrups: ASTM A615/A615M, grade 40.
5. Concrete work shall be executed according to the following:
   A. Maintain tolerances and surface irregularities within ACI 117 limits of class A for concrete exposed to view, and class C for other concrete surfaces. Floor slabs shall be screeded, floated and steel troweled to a smooth, dense and plane surface.
   B. Accurately position, support, and secure reinforcement.
      1. Reinforcing bars shall lap 48 bar diameters at splices in concrete unless otherwise noted.
      2. Provide corner bars to match all continuous reinforcing in concrete and masonry.
      3. Reinforcing bar hooks shall be ACI standard.
      4. WWF shall have ends lapped one full mesh, and shall extend onto supporting walls.
      5. Chairs, bolsters, bar supports, and spacers shall be sized and shaped for strengthand support of reinforcement during concrete placement.
   C. Provide minimum concrete cover on reinforcing bars as follows:
      1. Cast against earth.....3"
      2. Exposed to earth or weather (#5 or smaller)....1 1/2"
      3. Exposed to earth or weather (#6 or larger).....2"
      4. Slabs and walls not exposed.....3/4"
   D. The contractor shall be responsible for stability and integrity of all excavations and existing structures.

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5/8/23

COMMONWEALTH OF MASSACHUSETTS
TIMOTHY R. ROYER CIVIL No. 45614 E185-23
REGISTERED PROFESSIONAL ENGINEER

Timothy R. Royer MA Eng. Cert # 45614
Expiration Date: 06-30-2024

Contractor:
Country Lane Woodworking
540 Hollander Road
New Holland, PA 17557
PH: (717) 351-9250

Drawing Title:
Foundation Notes

Project:
18'x16' Vinyl A-Frame Pavilion for
Deanna Aheam Laird
72 Vineyard Meadow Farms Road
West Tisbury, MA 02575

Revisions:	Date:	By:

Drawing Number: E185-23	Page: F2
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