

CONSTRUCTION NOTES:

- Care must be taken to properly align and square the foundation pier layout because the entire building relies on accurate post placement.
- Pre-fabricated wood trusses should be used that meet the requirements of the 8th edition of the Massachusetts State Building Code and local building codes. Roof trusses must be supplied by a truss manufacturer who shall supply truss shop drawings with all truss bracing requirements and connections (including attachment to posts and girders) and stamped by a Massachusetts Registered Structural Engineer. The required configuration and minimum design loadings are:
 - 2 feet overhang with a 5/12 roof slope.
 - Design load=See "Design Loads" on the sheet.
 - Span to be determined for specific project
 - A truss spacing of 2 ft. is recommended. If necessary, a 4ft. spacing may be used to accommodate equipment in the facility. A maximum truss spacing of 2 ft. is required for truss spans exceeding 36 ft. See other requirements below for 4 ft. truss spacing.
- All lumber shall be stress graded and meet the following requirements:
 - Trusses are not required to be made of pressure treated lumber but pressure treated lumber is recommended for durability.
 - Posts shall be Southern Yellow Pine No. 2, for Regions 2 and 3 and Hemlock No. 1 for Region 1. An equivalent species may be substituted for the posts. Minimum tabulated bending stress required, $F_b=880$ psi.
 - Lumber for girders, knee braces, Y braces, girts, and purlins that span 4 ft. truss spacing, shall be Southern Yellow Pine, No. 2 or better with a minimum tabulated bending stress as presented in the 2005 NDS.
 - Roof purlins that span 2 ft. truss spacing and truss bracing members may be Spruce/Pine/fir No. 2 or better.
 - Posts and lumber shall be pressure treated, conforming to Standard C 16-03 of the American Wood Preservers Association; ACO 0.6 lbs per cubic foot for posts, 0.4 lbs per cubic foot for other lumber.
- Post lengths limited to 20 ft (measured to bottom of truss) for this standard drawing.
- Tops of posts shall be notched for connection of trusses and girders.
- Provide truss bearing blocks for the connection of the trusses to the girders. Bearing blocks shall be cut to fit between girders.
- Provide double trusses at all posts.
- The bottom chord shall be braced with 1"x4" minimum size stiffener running the length of the roof. They shall be placed at intersection of the webs and the bottom chord, not to exceed 8 feet spacing.
- 2"x6" diagonal braces shall be installed at 8 feet intervals on both sides of the center (king) post, forming an "X". If the trusses have no center post, then install the braces from the peak to the eaves.
- Use 2"x8" cleats nailed to girders to fasten Y-braces as shown on the drawing.
- Purlins shall meet the following requirements:
 - 2"x4" at 24" maximum spacing.
 - Minimum length shall be 8 ft. to span 3 trusses at a four foot spacing and 5 trusses at two foot spacing.
 - Minimum overlap of 1 foot.
- Girts if used, shall meet the following requirements:
 - When fastening purlins to the trusses, stagger the joints and use 2-16d nails minimum in each purlin at each truss.
 - 2"x4" at 24" maximum spacing, or
 - 2"x6" at 28" maximum spacing, or
 - 2"x8" at 36" maximum spacing, or
 - Minimum length of 2 post spans (16ft)
- The roofing material may be plastic, fiberglass or aluminum panels on 2"x4" purlins spaced 2'-0" on center where the truss spacing is 2'-0" or 4'-0" on center. Tab shingles on 15# felt over plywood panels may only be used over roof trusses that are spaced 2 ft. on center. Plywood roof sheathing shall be minimum of Identification Index 24/0, 3#8; Exterior Grade. The plywood shall be installed directly to the wood trusses with the face grain perpendicular to wood trusses.
- All bolts shall include a nut and 2 washers. Bolt holes shall be predrilled up to 1/16" larger than the bolt diameter. Tighten bolts snugly but not enough to crush the wood fibers. Do not recess the bolts or nuts. Bolts shall have square or hexagonal heads and nuts and meet the requirements of ASTM A 307. All bolts shall be galvanized in accordance with ASTM A 153. Tighten all bolt connections about six months after construction or when the pressure treated lumber is fully dried.
- All nail fasteners shall be in accordance with ASTM F 1667-05.
- Zinc coating shall conform to the requirements of ASTM A 153 for Zinc (Hot-Dip Galvanized) Coating for fastener products and ASTM A653, coating designation on G-185 for connector and sheet products.
- The structure is to be left open (can not be enclosed).

DESIGN LOADS:

DEAD = 15 psf
 ROOF LIVE = 20 psf
 BOTTOM CHORD LIVE LOAD = 20 psf

ASCE 7-05 SNOW LOADS:

(Plastic, Fiberglass, or Aluminum Roof Panels)
 65 psf Ground Snow Load
 $P_s=37.6$ psf
 55 psf Ground Snow Load
 $P_s=31.8$ psf
 35 psf Ground Snow Load
 $P_s=20.3$ psf
 Unbalanced snow load Per section 7.6 of ASCE 7-05

ASCE 7-05 DESIGN CASES:

3-sec Gust Speed	Ground Snow Load
Region 1. V=100mph	$P_g \leq 65$ psf
Region 2. V=110mph	$P_g \leq 55$ psf
Region 3. V=120mph	$P_g \leq 35$ psf

USE OF THE STANDARD DRAWING

- Use of this standard drawing requires strict adherence to all requirements shown on the drawing and in the construction notes.
- Ensure that the roof location is not adjacent to another structure such that snow could slide or drift onto the proposed roof.
- Minimum 12'-0" between adjacent structures. This standard drawing does not provide for the additional load due to drifting snow.
- The user of this standard drawing must ensure that the site meets the loading assumptions of this design as described in the construction notes, and must properly design the concrete piers based on the soils at the site.
- The posts are not to be attached to the concrete pad or walls of the facility in any way.

ESTIMATED BILL OF MATERIALS

Truss= _____ feet
 Building Length _____ feet
 Highest Elevation of Concrete Floor _____ feet
 Clearance required from concrete floor to bottom of truss= _____ feet
 Top of Pier Elevation= _____ Bottom of truss elevation= _____ feet
 Posts: _____ "x8", _____ feet long _____ no.
 Trusses @ _____ ft. spacing _____ no.
 Girders: 2"x _____ ", 8'-0" long _____ no.
 2"x _____ ", 16'-0" long _____ no.
 Concrete Piers: _____ " diameter _____ cu. yd.
 Rebar, #6, 5 per post _____ no.
 Knee Braces: 2"x _____ " 13'-6" long (2 per post) _____ no.
 Girder/Post (Y) Braces: 2"x6", 5'-4" long (4 per post) _____ no.
 Truss Bearing Blocking: 2"x6" _____ no.
 Fascia Board: 1"x6" _____ lin. ft.
 Plywood Sheathing, 5/8" CDX, if required _____ sq. ft.
 Purlins, 2"x4" _____ lin. ft.
 Roofing Material: _____ sq. ft.
 3/4" dia. bolts, _____ " long (knee braces to post connections, 3 per post) _____ no.
 3/4" dia. bolts, _____ " long (trusses to post connections, 2 per post) _____ no.
 5/8" dia. bolts, 15" long (Y braces to post connections, _____ per post) _____ no.
 1/2" dia. bolts, 9" long (girders to post connections, 4 per post) _____ no.
 Diagonal Truss Braces, 2"x6" _____ no.
 Truss Stiffeners, 1"x6" _____ no.
 Cleats _____ no.
 Nails (10d, 30d) _____ no.
 As needed _____ no.
 As needed _____ no.
 As needed _____ no.
 As needed _____ no.

NOTE: All wood to be pressure treated Southern Yellow Pine (SYP), No. 2, except posts in Region 1 which are to be pressure treated Hemlock No. 1. See construction notes for additional requirements.

DESIGN REGIONS

* Region 1 – V=100 MPH, P _g =65 psf				
Truss Span 12ft to 24ft				
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	8x8	2x10	2x6	2x6
	Truss Span 25ft to 36ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x12	2x10	2x8
	Truss Span 37ft to 50ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x14	2x10	2x10
* Region 2 – V=110 MPH, P _g =55 psf				
Truss Span 12ft to 24ft				
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	8x8	2x10	2x6	2x6
	Truss Span 25ft to 36ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x10	2x8	2x6
	Truss Span 37ft to 50ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x12	2x10	2x6
* Region 3 – V=120 MPH, P _g =35 psf				
Truss Span 12ft to 24ft				
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x10	2x8	2x6
	Truss Span 25ft to 36ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x10	2x10	2x10	2x6
	Truss Span 37ft to 50ft			
Embedded Post	Columns	Girders	Knee Braces	V-Braces
	10x12	2x10	2x12	2x6

* Table 1604.11 in the Massachusetts Amendments to the IBC 2009 specifies the ground snow load and basic wind speed for each City/Town in the State of Massachusetts. A City/Town shall not exceed the specified basic wind speed and ground snow load to qualify for the NRCS Standard Design drawings for that region.

REVISIONS	
DATE	TITLE

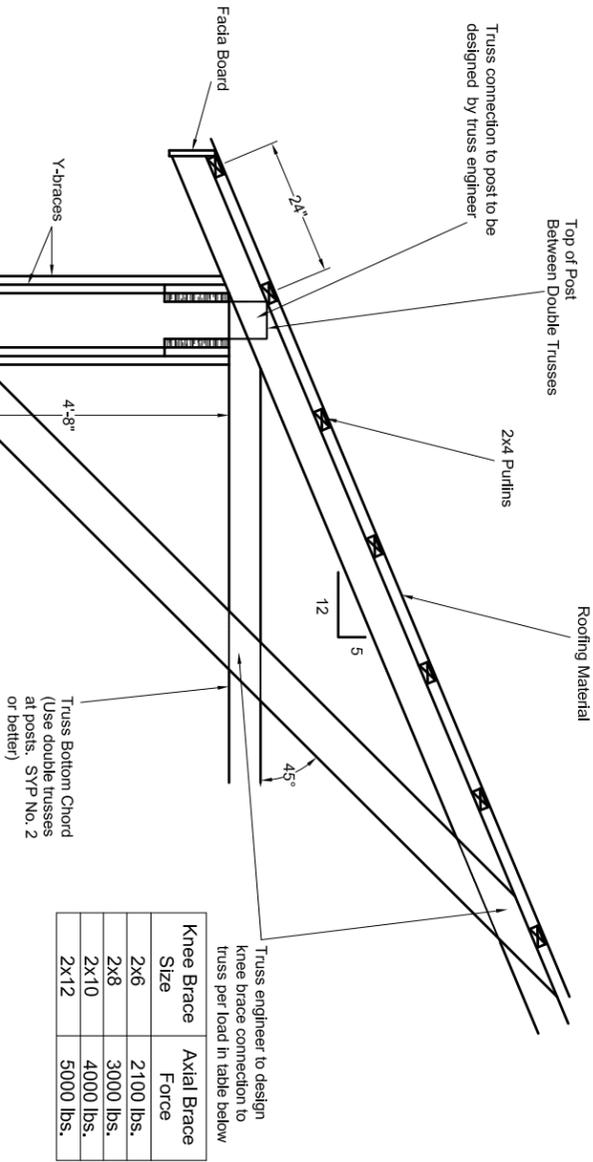
Date	
05-25-12	APM
05-25-12	DQH
05-25-12	DEP

Massachusetts

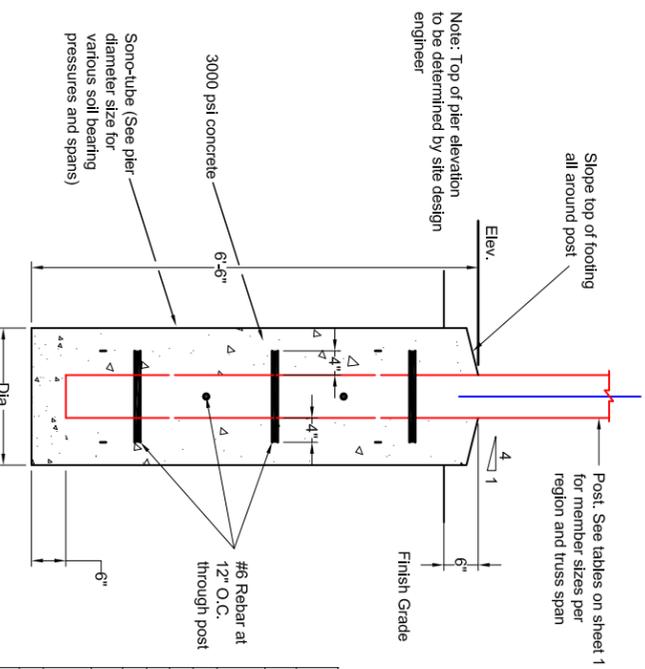
**GABLE TRUSS ROOF STANDARD DRAWING (EMBEDDED POSTS)
 GABLE ROOF CONSTRUCTION NOTES**



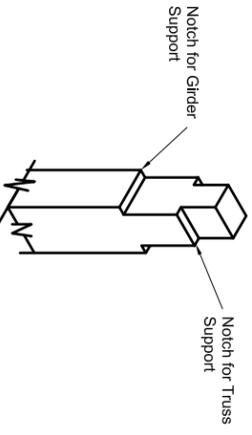
Drawing Name
 Truss Roof-Embedded.dwg
 Layout Name
 Notes
 12/21/11
 Sheet 1 of 2



Knee-Brace to Post and Truss Connection Detail
Scale: 3/4" = 1'-0"

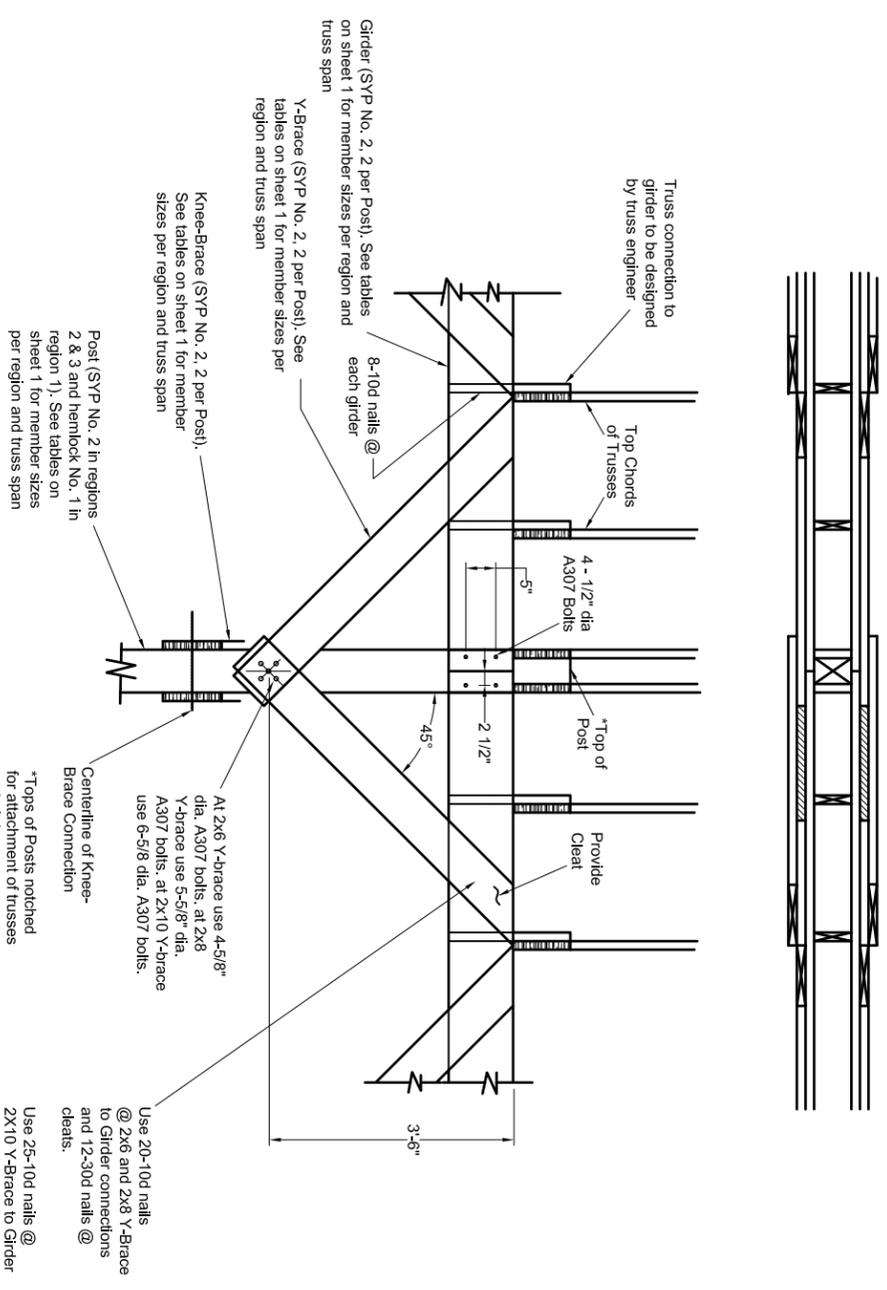


Embedded Footing Detail
Not to Scale

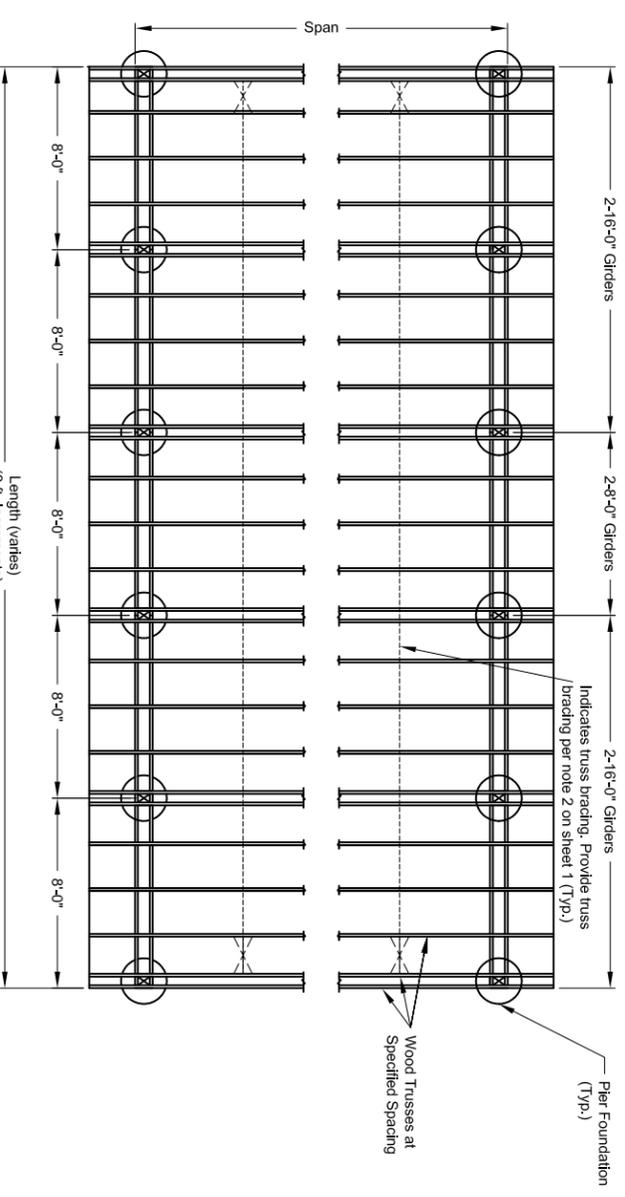


Top of Post Detail
Scale: 3/4" = 1'-0"

PIER DIAMETER SIZE FOR VARIOUS SOIL BEARING PRESSURES & SPANS			
USCS Soil Class	Allowable Bearing (ksf)	Region 1	
		18"Ø	24"Ø
M.L, M.H, C.L, S.M, S.C, G.M,	2	16	24
G.C, S.W, S.P	3	24	36
G.W, G.P	5	32	50
Bedrock	6	24	32
		32	50
Region 2			
USCS Soil Class	Allowable Bearing (ksf)	Max. Span (ft)	
		18"Ø	24"Ø
M.L, M.H, C.L, S.M, S.C, G.M,	2	16	30
G.C, S.W, S.P	3	24	42
G.W, G.P	5	28	50
Bedrock	6	28	44
		44	50
Region 3			
USCS Soil Class	Allowable Bearing (ksf)	Max. Span (ft)	
		18"Ø	24"Ø
M.L, M.H, C.L, S.M, S.C, G.M,	2	16	30
G.C, S.W, S.P	3	16	32
G.W, G.P	5	16	32
Bedrock	6	16	32



Y-Brace to Post and Girders Detail
Scale: 3/4" = 1'-0"



Typical Structure Plan Layout
Scale: 1/4" = 1'-0"

DATE	APPROVED	TITLE

REVISIONS	TITLE



GABLE TRUSS ROOF STANDARD DRAWING (EMBEDDED POSTS)
GABLE TRUSS ROOF DETAILS

	Designed	Drawn	Checked	Approved	Date
	APM	DQH	DEP	...	05-25-12
					05-25-12
					05-25-12
					...

Massachusetts