MULHERN+KULP
residential structural engineering

PROJECT NAME: CARPORT

M&K PROJECT #: 018-18061
ENGINEER: MB
DATE: 9/14/18

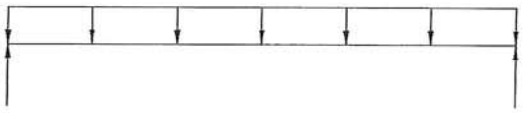
JAMES G. FRILING
STATE OF WASHINGTON
49880
REGISTERED
PROFESSIONAL ENGINEER

BEAM & HEADER CALCULATIONS

BEAM DESCRIPTION:

PARAMETERS:

L = 19 FT
W = .230 KLF
P = — K



ANALYSIS:

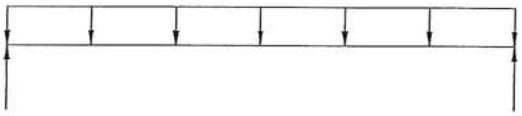
R_{MAX} = 2.185 K V_D = 2.185 K < V_{ALL} = 7.9 K ☑ ADEQUATE
M_{MAX} = 10.5 K-FT < M_{ALL} = 17.8 K-FT ☑ ADEQUATE
Δ_{TL} = .69 IN. L/ 330 < L/240 ☑ ADEQUATE

(2) 1 3/4 x 11 7/8 Gulam E = 2.0 x 10^6 psi

BEAM DESCRIPTION:

PARAMETERS:

L = FT
W = KLF
P = K



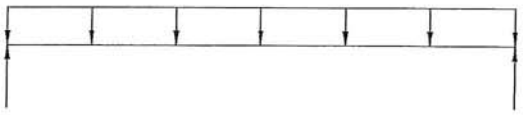
ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K ☐ ADEQUATE
M_{MAX} = K-FT < M_{ALL} = K-FT ☐ ADEQUATE
Δ_{TL} = IN. L/ < L/240 ☐ ADEQUATE

BEAM DESCRIPTION:

PARAMETERS:

L = FT
W = KLF
P = K



ANALYSIS:

R_{MAX} = K V_D = K < V_{ALL} = K ☐ ADEQUATE
M_{MAX} = K-FT < M_{ALL} = K-FT ☐ ADEQUATE
Δ_{TL} = IN. L/ < L/240 ☐ ADEQUATE

Project Title:
Engineer:
Project ID: 018-18061
Project Descr: CARPORT

JAMES G. FRILING
STATE OF WASHINGTON
49880
REGISTERED
PROFESSIONAL ENGINEER

Pole Footing Embedded in Soil

File = P:\CYJ7GB~P\0050QO~3\201

Lic. # : KW-06004787 Licensee : MULHERN & KULP STRUCTURAL ENGINEERING INC

Description : 16" Post Embedment Calc Sonotube

Code References

Calculations per IBC 2015 1807.3, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

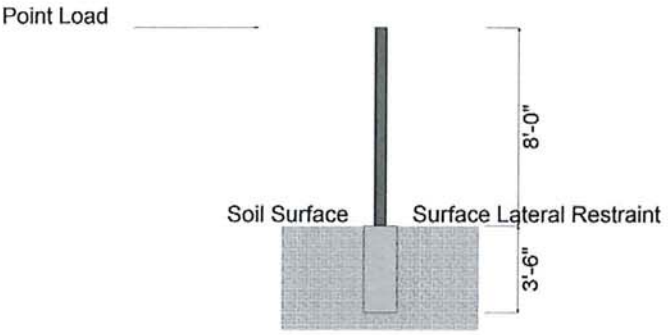
General Information

Pole Footing Shape	Circular
Pole Footing Diameter	16.0 in
Calculate Min. Depth for Allowable Pressures	
Lateral Restraint at Ground Surface	
Allow Passive	250.0 pcf
Max Passive	1,500.0 psf

Controlling Values

Governing Load Combination : +1.129D+1.050E+H

Lateral Load	0.420 k
Moment	3.360 k-ft
Restraint @ Ground Surface	
Pressure at Depth	
Actual	**874.29** psf
Allowable	**875.0** psf
Surface Retraint Force	2,460.0 lbs
Minimum Required Depth	**3.50 ft**
Footing Base Area	1.396 ft^2
Maximum Soil Pressure	1.457 ksf



Applied Loads

	Lateral Concentrated Load (k)	Lateral Distributed Loads (klf)			Applied Moment (kft)	Vertical Load (k)
D : Dead Load	0.0 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.9350 k
Lr : Roof Live	0.0 k	0.0	0.0	0.0 k/ft	0.0 k-ft	1.10 k
L : Live	0.0 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.0 k
S : Snow	0.0 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.0 k
W : Wind	0.1850 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.0 k
E : Earthquake	0.40 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.0 k
H : Lateral Earth	0.0 k	0.0	0.0	0.0 k/ft	0.0 k-ft	0.0 k
Load distance above ground surface	8.0 ft	TOP of Load above ground surface 0.0	0.0	0.0 ft		
		BOTTOM of Load above ground surface 0.0	0.0	0.0 ft		

Load Combination Results

Load Combination	Forces @ Ground Surface Loads - (k)	Moments - (ft-k)	Required Depth - (ft)	Pressure at Depth Actual - (psf)	Allow - (psf)	Soil Increase Factor
+D+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+L+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+Lr+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+S+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+0.750Lr+0.750L+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+0.750L+0.750S+H	0.000	0.000	0.13	0.0	31.3	1.000
+D+0.60W+H	0.111	0.888	2.25	559.1	562.5	1.000
+1.129D+1.050E+H	0.420	3.360	3.50	874.3	875.0	1.000
+D+0.750Lr+0.750L+0.450W+H	0.083	0.666	2.13	470.1	531.3	1.000

Project Title:
Engineer:
Project ID:
Project Descr:

Pole Footing Embedded in Soil

Lic. # : KW-06004787 **Licensee : MULHERN & KULP STRUCTURAL ENGINEERING INC**

Description : 16" Post Embedment Calc Sonotube

+D+0.750L+0.750S+0.450W+H	0.083	0.666	2.13	470.1	531.3	1.000
+1.097D+0.750L+0.750S+0.7875E+H	0.315	2.520	3.25	760.5	812.5	1.000
+0.60D+0.60W+0.60H	0.111	0.888	2.25	559.1	562.5	1.000
+0.4709D+1.050E+0.60H	0.420	3.360	3.50	874.3	875.0	1.000

Project Title: CARPORT
Engineer: MB
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Project Descr: 018-18061

Wood Beam

Lic. # : KW-06004787 Licensee : MULHERN & KULP STRUCTURAL ENGINEERING INC

Description : 8" Wood Post

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-10

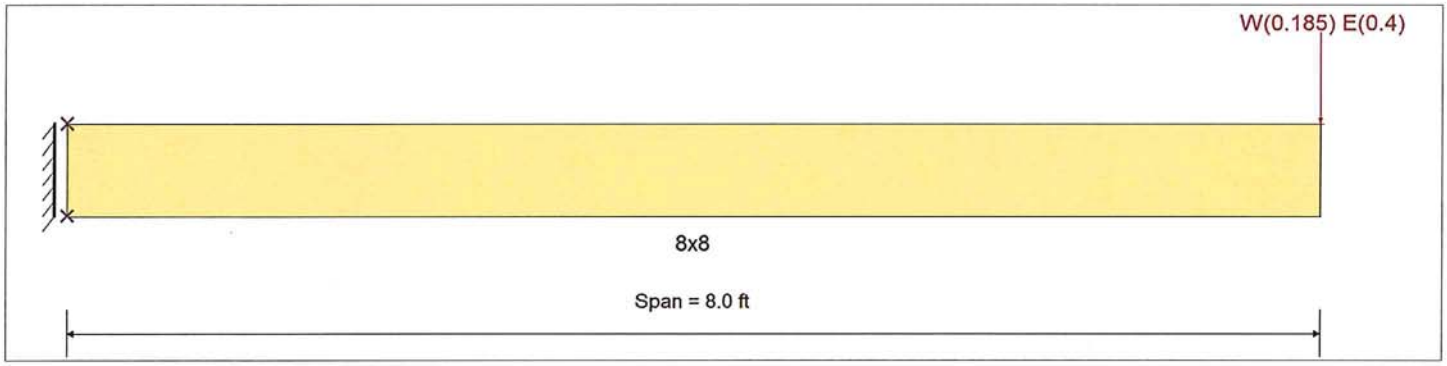
Wood Species : Southern Pine
Wood Grade : No.2 SR

Beam Bracing : Completely Unbraced

Fb +	850.0 psi
Fb -	850.0 psi
Fc - Prll	525.0 psi
Fc - Perp	375.0 psi
Fv	165.0 psi
Ft	550.0 psi

E : Modulus of Elasticity

Ebend- xx	1,200.0 ksi
Eminbend - xx	440.0 ksi
Density	34.320 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : W = 0.1850, E = 0.40 k @ 8.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.281 : 1	Maximum Shear Stress Ratio	=	0.028 : 1
Section used for this span		8x8	Section used for this span		8x8
fb : Actual	=	382.29 psi	fv : Actual	=	7.47 psi
FB : Allowable	=	1,360.00 psi	Fv : Allowable	=	264.00 psi
Load Combination		+D+0.70E+H	Load Combination		+D+0.70E+H
Location of maximum on span	=	0.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.372 in	Ratio =	516 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.260 in	Ratio =	736 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
E Only	1	0.3718	8.000		0.0000	0.000

Quote Date:		**Job Number:**	J-18-01698-A
Order Date:	10/29/2018	**Product:**	Roof
Sch. Delivery	11/2/2018	**Customer P.O. #:**	
Superintendent:	BLAKE LANZ	**Sales Rep:**	Gerry Klep
Estimator:	Simon Chavez	**Model Name:**	CARPORT
Designer	Simon Chavez	**Model Number:**	

RTS
ROOF TRUSS SUPPLY, INC.

SOLD TO: Valere Development

SHIP TO: CARPORT
3434 97TH AVE SE
MERCER ISLAND WA 98040

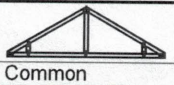
Address: 3434 97TH AVE SE **Lot:** **Subdiv:**

Plan: CARPORT **Delivery Area**

Delivery Notes:

Notes:

A Roof Trusses

Label	Profile	Qty / Ply	TC Pitch / BC Pitch	Span / Height	TC / BC	L-OH / R-OH	L-Cant / R-Cant	L-Stub / R-Stub	L-Heel / R-Heel	Wt. / Tot. Wt.	Pcs / BF
Y1		2	7 /12	12-00-00	2 x 4	-	-	-	4-05	44	16 pcs
		1-ply		3-10-05	2 x 4	-	-	-	4-05	89	56.00
Common Supported Gable		Notes:									
Y2		9	7 /12	12-00-00	2 x 4	-	9-00	-	4-05	36	54 pcs
		1-ply		3-10-05	2 x 4	-	9-00	-	4-05	325	204.00
Common		Notes:									
X1		18		1-10-06	2 x 4	-	-	-	1-03-01	6	72 pcs
		1-ply		1-03-02	2 x 4	-	-	-	1-03-01	107	72.00
Flat Supported Gable		Notes:									

A Totals: 29 / (3) 165-06-12 (L/F) 520 (lbs) 332.00 (B/F)

ROOF TRUSS SUPPLY, INC
(425) 481-0900

IMPORTANT

DO NOT CUT, DRILL, OR ALTER ANY TRUSSES WITHOUT PRIOR APPROVAL FROM ROOF TRUSS SUPPLY, INC

IMPORTANTE

NO CORTAR, PERFORAR, O ALTERAR NINGUNA TRAZA SIN AUTORIZACION PRIORITARIA DE ROOF TRUSS SUPPLY, INC

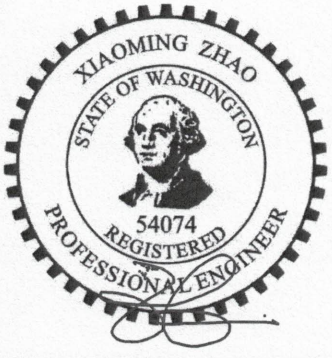
MiTek USA, Inc.
250 Klug Circle
Corona, CA 92880
951-245-9525

Re: J-18-01698-A
CARPORT

The truss drawing(s) referenced below have been prepared by MiTek USA, Inc. under my direct supervision based on the parameters provided by Roof Truss Supply.

Pages or sheets covered by this seal: K5343013 thru K5343015

My license renewal date for the state of Washington is September 28, 2019.



November 1,2018

Zhao, Xiaoming

IMPORTANT NOTE: Truss Engineer's responsibility is solely for design of individual trusses based upon design parameters shown on referenced truss drawings. Parameters have not been verified as appropriate for any use. Any location identification specified is for file reference only and has not been used in preparing design. Suitability of truss designs for any particular building is the responsibility of the building designer, not the Truss Engineer, per ANSI/TPI-1, Chapter 2.

Job	Truss	Truss Type	Qty	Ply	CARPORT
J-18-01698-A	X1	FLAT SUPPORTED GABLE	18	1	K5343013

Job Reference (optional)

Roof Truss Supply, Woodinville, WA - 98072,

8.230 s Oct 6 2018 MiTek Industries, Inc. Wed Oct 31 17:28:22 2018 Page 1
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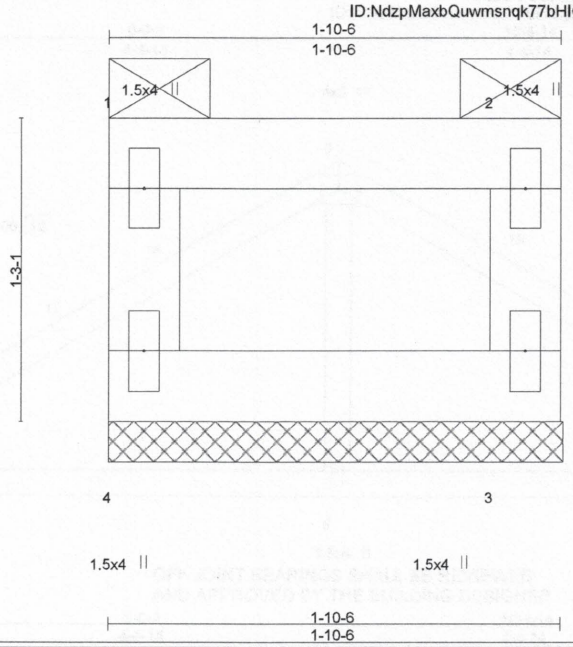

Scale = 1:9.1

LOADING (psf)		SPACING-	2-0-0	CSI.		DEFL.	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	25.0	Plate Grip DOL	1.15	TC	0.05	Vert(LL)	n/a	-	n/a	999	MT20	185/148
(Roof Snow=25.0)		Lumber DOL	1.15	BC	0.02	Vert(CT)	n/a	-	n/a	999		
TCDL	10.0	Rep Stress Incr	YES	WB	0.00	Horz(CT)	0.00	3	n/a	n/a		
BCLL	0.0 *	Code IRC2015/TPI2014		Matrix-R							Weight: 6 lb	FT = 10%
BCDL	10.0											

LUMBER-
TOP CHORD 2x4 HF No.2
BOT CHORD 2x4 HF No.2
WEBS 2x4 HF Stud/Std

BRACING-
TOP CHORD 2-0-0 oc purlins: 1-2, except end verticals.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS. (lb/size) 4=71/1-10-8, 3=71/1-10-8
Max Horz 4=-22(LC 10)
Max Uplift 4=-13(LC 8), 3=-13(LC 9)

FORCES. (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

NOTES-
1) Wind: ASCE 7-10; Vult=110mph (3-second gust) Vasd=87mph; TCDL=5.5psf; BCDL=4.0psf; h=25ft; B=45ft; L=24ft; eave=2ft; Cat. II; Exp B; Enclosed; MWFRS (directional) and C-C Corner(3) zone; cantilever left and right exposed ; end vertical left and right exposed;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
2) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see Standard Industry Gable End Details as applicable, or consult qualified building designer as per ANSI/TPI 1.
3) TCLL: ASCE 7-10; Pf=25.0 psf (flat roof snow); Category II; Exp B; Partially Exp.; Ct=1.00
4) Provide adequate drainage to prevent water ponding.
5) As requested, plates have not been designed to provide for placement tolerances or rough handling and erection conditions. It is the responsibility of the fabricator to increase plate sizes to account for these factors.
6) Gable requires continuous bottom chord bearing.
7) Truss to be fully sheathed from one face or securely braced against lateral movement (i.e. diagonal web).
8) Gable studs spaced at 1-4-0 oc.
9) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
10) * This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-6-0 tall by 2-0-0 wide will fit between the bottom chord and any other members.
11) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 100 lb uplift at joint(s) 4, 3.
12) Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.

November 1,2018

MiTek
250 Klug Circle
Corona, CA 92880

Job	Truss	Truss Type	Qty	Ply	CARPORT	K5343015
J-18-01698-A	Y1	Common Supported Gable	2	1	Job Reference (optional)	

Roof Truss Supply, Woodinville, WA - 98072,

8.230 s Oct 6 2018 MiTek Industries, Inc. Wed Oct 31 17:28:23 2018 Page 1
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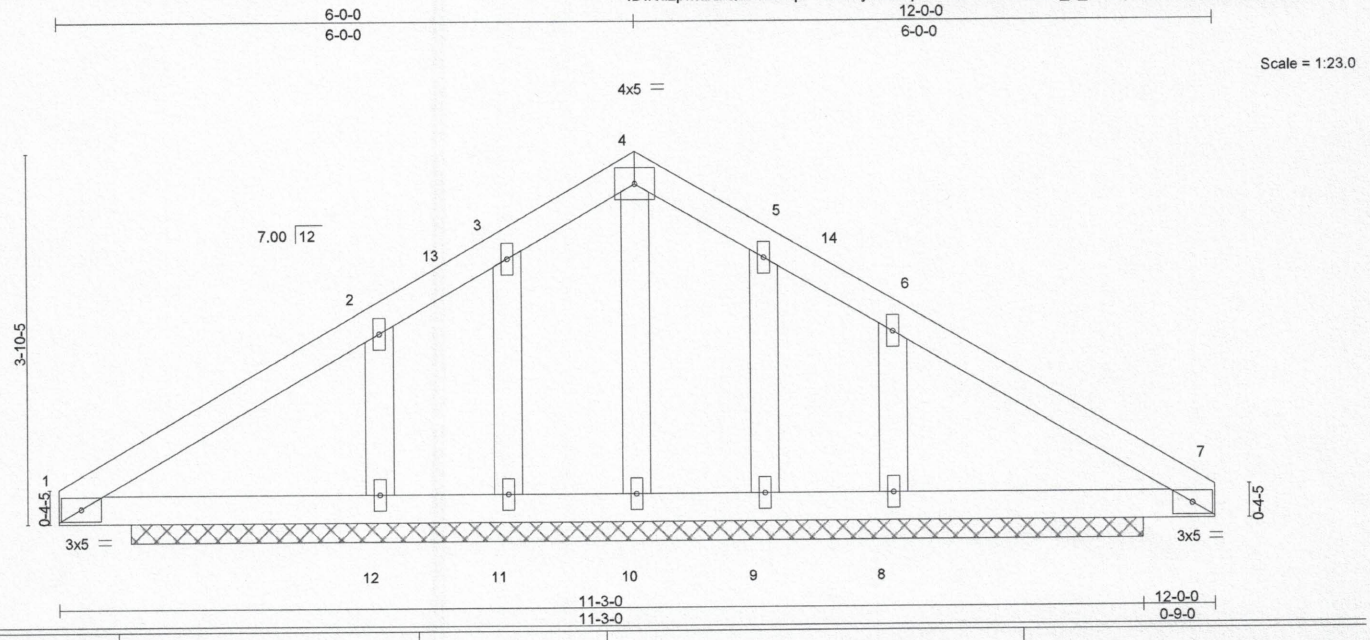


LOADING (psf)		SPACING-	2-0-0	CSI.		DEFL.	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL	25.0	Plate Grip DOL	1.15	TC	0.24	Vert(LL)	n/a	-	n/a	999	MT20	185/148
(Roof Snow=25.0)		Lumber DOL	1.15	BC	0.15	Vert(CT)	n/a	-	n/a	999		
TCDL	10.0	Rep Stress Incr	YES	WB	0.10	Horz(CT)	-0.00	8	n/a	n/a		
BCLL	0.0 *	Code IRC2015/TPI2014		Matrix-S							Weight: 44 lb	FT = 10%
BCDL	10.0											

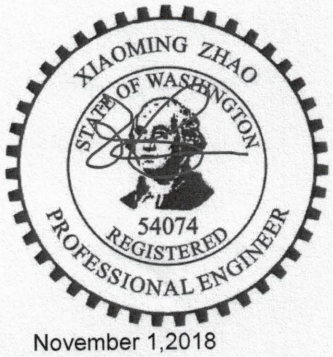
LUMBER-
TOP CHORD 2x4 HF No.2
BOT CHORD 2x4 HF No.2
OTHERS 2x4 HF Stud/Std

BRACING-
TOP CHORD Structural wood sheathing directly applied or 10-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

REACTIONS. All bearings 10-6-0.
(lb) - Max Horz 12=-51(LC 12)
Max Uplift All uplift 100 lb or less at joint(s) 11, 12, 9, 8
Max Grav All reactions 250 lb or less at joint(s) 11, 9 except 10=364(LC 1), 12=422(LC 18), 8=422(LC 19)

FORCES. (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 1-2=-28/297, 6-7=-28/297
WEBS 4-10=-315/0, 2-12=-276/84, 6-8=-276/84

NOTES-
1) Wind: ASCE 7-10; Vult=110mph (3-second gust) Vasd=87mph; TCDL=5.5psf; BCDL=4.0psf; h=25ft; B=45ft; L=24ft; eave=2ft; Cat. II; Exp B; Enclosed; MWFRS (directional) and C-C Corner(3) 0-0-0 to 3-0-0, Exterior(2) 3-0-0 to 6-0-0, Corner(3) 6-0-0 to 9-0-0, Exterior(2) 9-0-0 to 12-0-0 zone; cantilever left and right exposed ; end vertical left and right exposed;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
2) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see Standard Industry Gable End Details as applicable, or consult qualified building designer as per ANSI/TPI 1.
3) TCLL: ASCE 7-10; Pf=25.0 psf (flat roof snow); Category II; Exp B; Partially Exp.; Ct=1.00
4) Unbalanced snow loads have been considered for this design.
5) As requested, plates have not been designed to provide for placement tolerances or rough handling and erection conditions. It is the responsibility of the fabricator to increase plate sizes to account for these factors.
6) All plates are 1.5x4 MT20 unless otherwise indicated.
7) Gable studs spaced at 1-4-0 oc.
8) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
9) * This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-6-0 tall by 2-0-0 wide will fit between the bottom chord and any other members.
10) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 100 lb uplift at joint(s) 11, 12, 9, 8.
11) NA

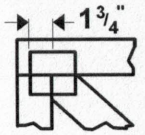


November 1,2018

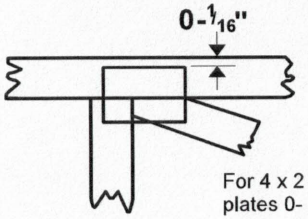
MiTek
250 Klug Circle
Corona, CA 92880

Symbols

PLATE LOCATION AND ORIENTATION



Center plate on joint unless x, y offsets are indicated. Dimensions are in ft-in-sixteenths. Apply plates to both sides of truss and fully embed teeth.



For 4 x 2 orientation, locate plates 0- 1/16" from outside edge of truss.

This symbol indicates the required direction of slots in connector plates.

*** Plate location details available in MiTek 20/20 software or upon request.**

PLATE SIZE

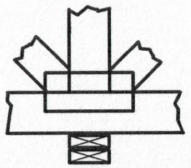
4 x 4

The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

LATERAL BRACING LOCATION

Indicated by symbol shown and/or by text in the bracing section of the output. Use T or I bracing if indicated.

BEARING

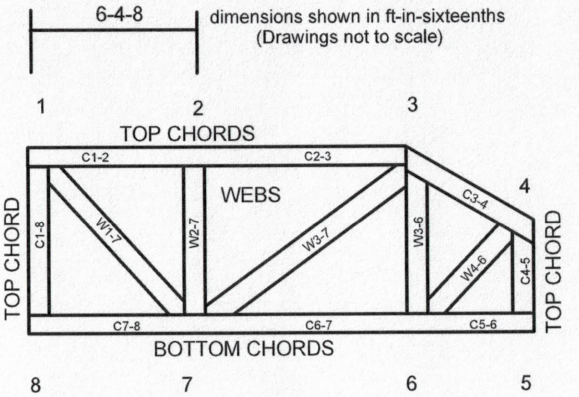


Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number where bearings occur. Min size shown is for crushing only.

Industry Standards:

ANSI/TPI1: National Design Specification for Metal Plate Connected Wood Truss Construction.
DSB-89: Design Standard for Bracing.
BCSI: Building Component Safety Information, Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

Numbering System



JOINTS ARE GENERALLY NUMBERED/LETTERED CLOCKWISE AROUND THE TRUSS STARTING AT THE JOINT FARTHEST TO THE LEFT.

CHORDS AND WEBS ARE IDENTIFIED BY END JOINT NUMBERS/LETTERS.

PRODUCT CODE APPROVALS

ICC-ES Reports:

ESR-1311, ESR-1352, ESR1988
ER-3907, ESR-2362, ESR-1397, ESR-3282

Trusses are designed for wind loads in the plane of the truss unless otherwise shown.

Lumber design values are in accordance with ANSI/TPI 1 section 6.3 These truss designs rely on lumber values established by others.

MiTek®

MiTek Engineering Reference Sheet: MII-7473 rev. 10/03/2015

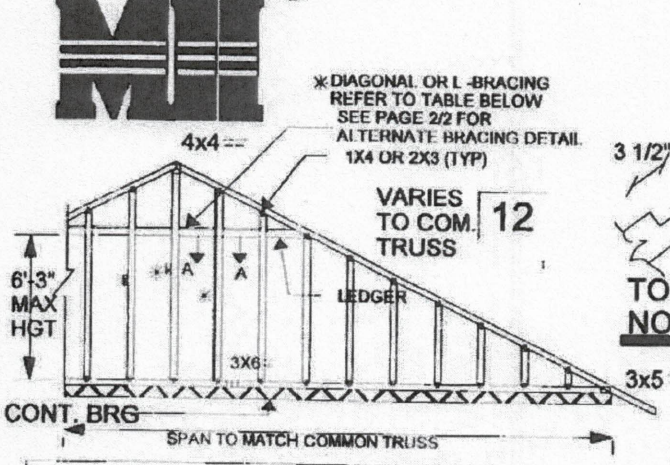
General Safety Notes

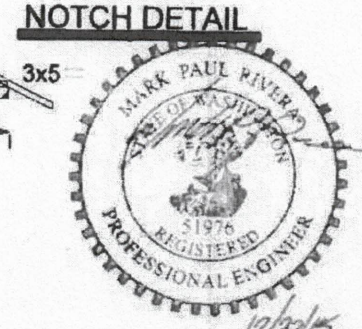
Failure to Follow Could Cause Property Damage or Personal Injury

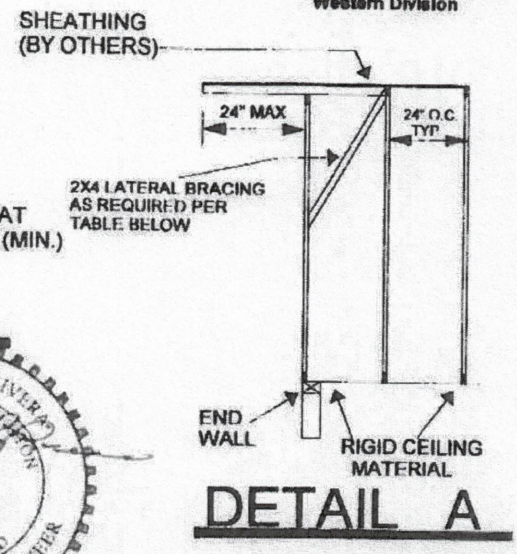
1. Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI.
2. Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative Tor I bracing should be considered.
3. Never exceed the design loading shown and never stack materials on inadequately braced trusses.
4. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
5. Cut members to bear tightly against each other.
6. Place plates on each face of truss at each joint and embed fully. Knots and wane at joint locations are regulated by ANSI/TPI 1.
7. Design assumes trusses will be suitably protected from the environment in accord with ANSI/TPI 1.
8. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
9. Unless expressly noted, this design is not applicable for use with fire retardant, preservative treated, or green lumber.
10. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
11. Plate type, size, orientation and location dimensions indicated are minimum plating requirements.
12. Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
13. Top chords must be sheathed or purlins provided at spacing indicated on design.
14. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
15. Connections not shown are the responsibility of others.
16. Do not cut or alter truss member or plate without prior approval of an engineer.
17. Install and load vertically unless indicated otherwise.
18. Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.
19. Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.
20. Design assumes manufacture in accordance with ANSI/TPI 1 Quality Criteria.

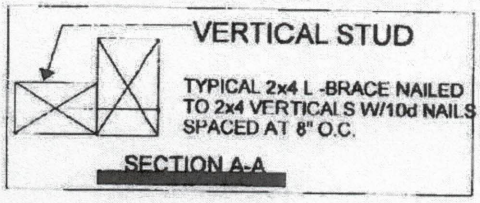
STANDARD GABLE END DETAIL	MII/COR - 20B	6/18/2015	PAGE 1 OF 2

MiTek Industries, Inc.
Western Division









12/29/15

LOADING(psf)		SPACING	2-0-0
TCLL	50.0	Plates Increase	1.15
TCDL	10.0	Lumber Increase	1.15
BCLL	0.0	Rep Stress Incr	YES
BCDL	10.0	Code	ASCE 7-10

LUMBER

TOP CHORD	2 X 4 DFL/SPF/HF - No.2
BOT CHORD	2 X 4 DFL/SPF/HF - STUD/STD
OTHERS	2 X 4 DFL/SPF/HF - STUD/STD

LATERAL BRACING NAILING SCHEDULE	
VERT. HEIGHT	# OF NAILS AT END
UP TO 7'-0"	2 - 16d
7'-0" - 8'-6"	3 - 16d
OVER 8'-6"	4 - 16d

MAXIMUM VERTICAL STUD HEIGHT			
SPACING OF VERTICALS	WITHOUT BRACE	WITH LATERAL BRACE	WITH L - BRACE
12 INCH O.C.	4-11-0	9-10-0	7-6-0
16 INCH O.C.	4-3-0	8-6-0	6-6-0
24 INCH O.C.	3-8-0	7-4-0	5-4-0

NOTES

1) VERT. STUDS HAVE BEEN CHECKED FOR 140 MPH WIND EXP. C, HEIGHT 30 FT (ASCE 7-10)
2) CONNECTION BETWEEN BOTTOM CHORD OF GABLE END TRUSS AND WALL TO BE PROVIDED BY PROJECT ENGINEER OR ARCHITECT.
3) FURNISH COPY OF THIS DRAWING TO CONTRACTOR FOR BRACING INSTALLATION.
4) BRACING SHOWN IS FOR INDIVIDUAL TRUSS ONLY. CONSULT BLDG. ARCHITECT OR ENGINEER FOR TEMPORARY AND PERMANENT BRACING OF ROOF SYSTEM.
5) DETAIL A (SHOWN ABOVE) APPLIES TO STRUCTURAL GABLE ENDS AND TO GABLE ENDS WITH A MAX. VERT. STUD HEIGHT OF 8'-6".

TOP CHORD NOTCHING NOTES

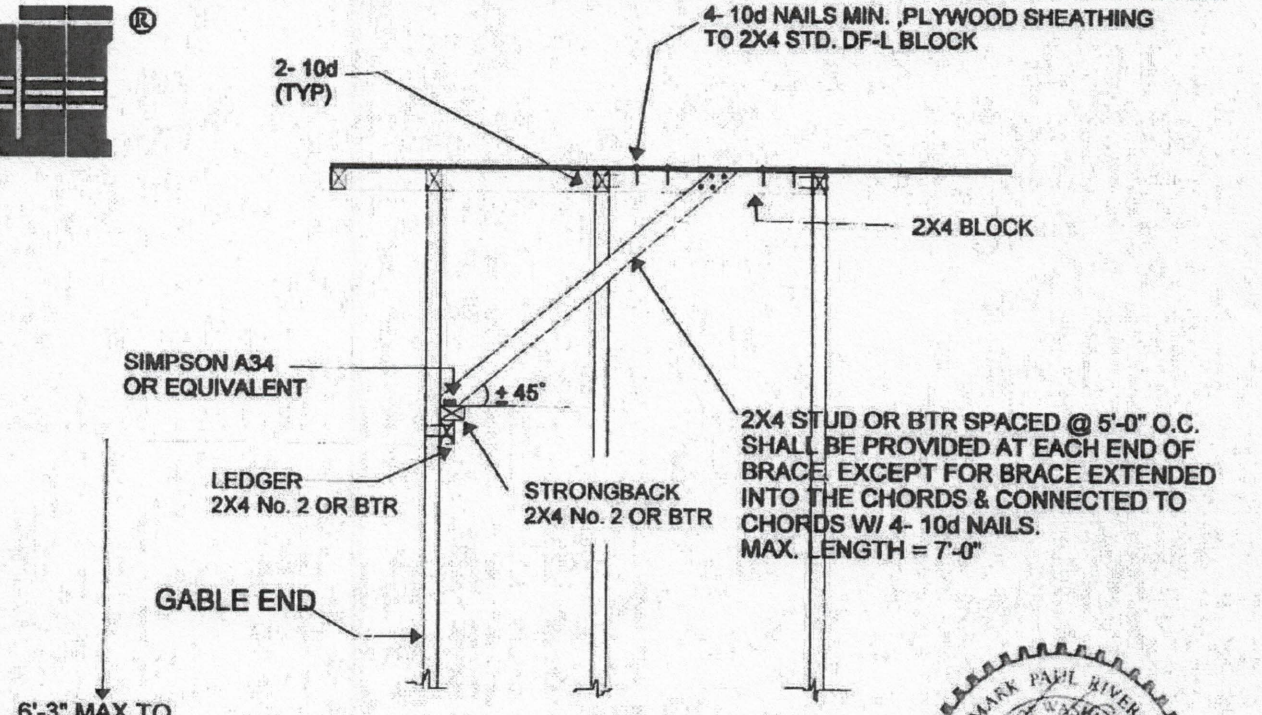
1) THE GABLE MUST BE FULLY SHEATHED W/RIGID MATERIAL ON ONE FACE BEFORE NOTCHING IF STUDS ARE TO BE SPACED AT 24" O.C. ATTACH SCAB (EQUAL OR GREATER TO THE TRUSS T.C.) TO ONE FACE OF THE TOP CHORD WITH 10D NAILS SPACED AT 6" O.C. IF STUDS ARE SPACED AT 24" O.C. AND FACE OF TRUSS IS NOT FULLY SHEATHED.
2) NO LUMBER DEFECTS ALLOWED AT OR ABOUT NOTCHES.
3) LUMBER MUST MEET OR EXCEED VISUAL GRADE #2 LUMBER AFTER NOTCHING.
4) NO NOTCHING IS PERMITTED WITHIN 2X THE OVERHANG LENGTH.

Continued on page 2

250 KLUG CIRCLE
CORONA, CA. 92880

MiTek

STANDARD GABLE END DETAIL	MII/COR - 20B	6/18/2015	PAGE 2 OF 2



MARK PAUL RIVERA
STATE OF WASHINGTON
51976
REGISTERED
PROFESSIONAL ENGINEER
12/20/15

ALTERNATE BRACING DETAIL

NOTES

1) 2X4 NO.2 OR BTR. FOR LEDGER AND STRONGBACK NAILED TOGETHER WITH 10D NAILS @ 6" O.C.
2) 2X4 LEDGER NAILED TO EACH STUD WITH 4- 10d NAILS .
3) 2X4 STRONGBACK TO BE CONNECTED TO EACH VERT. STUD WITH 2- 10d TOE NAILS
4) THE 10d NAILS SPECIFIED FOR LEDGER AND STRONGBACK ARE 10d BOX NAILS (0.131" DIA. X 3.0" LGT)

THIS ALTERNATE BRACING DETAIL IS APPLICABLE TO STRUCTURAL GABLE END IF THE FOLLOWING CONDITIONS ARE MET:

1. MAXIMUM HEIGHT OF TRUSS = 8'-6", UNLESS OTHERWISE SPECIFIED BY PROJECT ENG. OR QUALIFIED BUILDING DESIGNER.
2. MAXIMUM PANEL LENGTH ON TOP AND BOT. CHORDS = 7'-0"
3. THE HORIZONTAL TIE MEMBER AT THE VENT OPENING SHALL BE BRACED @ 4'-0" O.C. MAX.
4. PLEASE CONTACT TRUSS ENGINEER IF THERE ARE ANY QUESTIONS.

250 KLUG CIRCLE
CORONA, CA. 92880

MiTek

August 10, 2010	T-BRACE / I-BRACE DETAIL WITH 2X BRACE ONLY	ST - T-BRACE 2

MiTek Industries, Inc.

Note: T-Bracing / I-Bracing to be used when continuous lateral bracing is impractical. T-Brace / I-Brace must cover 90% of web length.

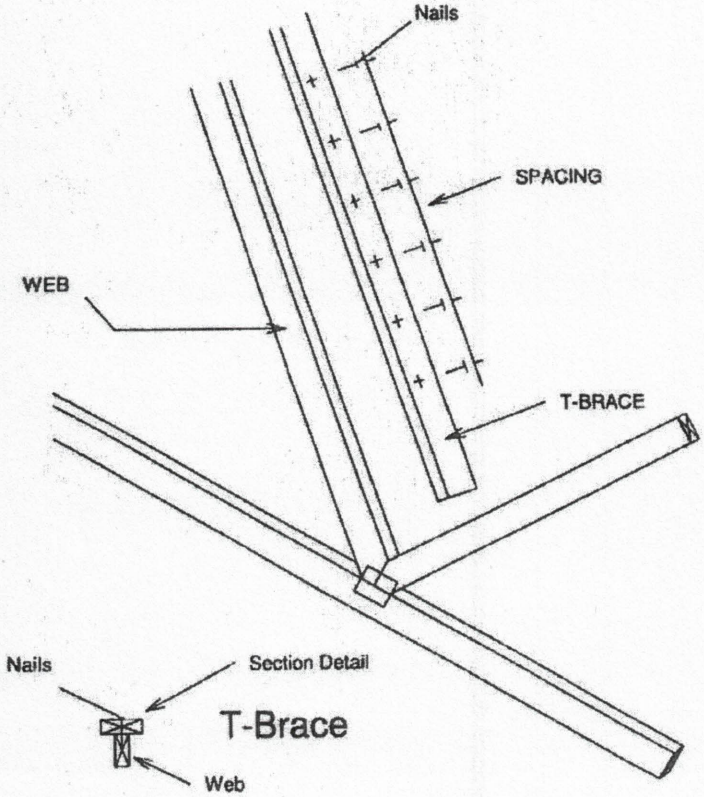
Note: This detail NOT to be used to convert T-Brace / I-Brace webs to continuous lateral braced webs.

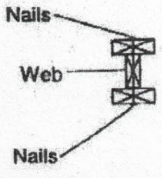
Nailing Pattern		
T-Brace size	Nail Size	Nail Spacing
2x4 or 2x6 or 2x8	10d	6" o.c.
Note: Nail along entire length of T-Brace / I-Brace (On Two-Ply's Nail to Both Plies)		

	Brace Size for One-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4 T-Brace	2x4 I-Brace
2x6	2x6 T-Brace	2x6 I-Brace
2x8	2x8 T-Brace	2x8 I-Brace

	Brace Size for Two-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4 T-Brace	2x4 I-Brace
2x6	2x6 T-Brace	2x6 I-Brace
2x8	2x8 T-Brace	2x8 I-Brace

T-Brace / I-Brace must be same species and grade (or better) as web member.





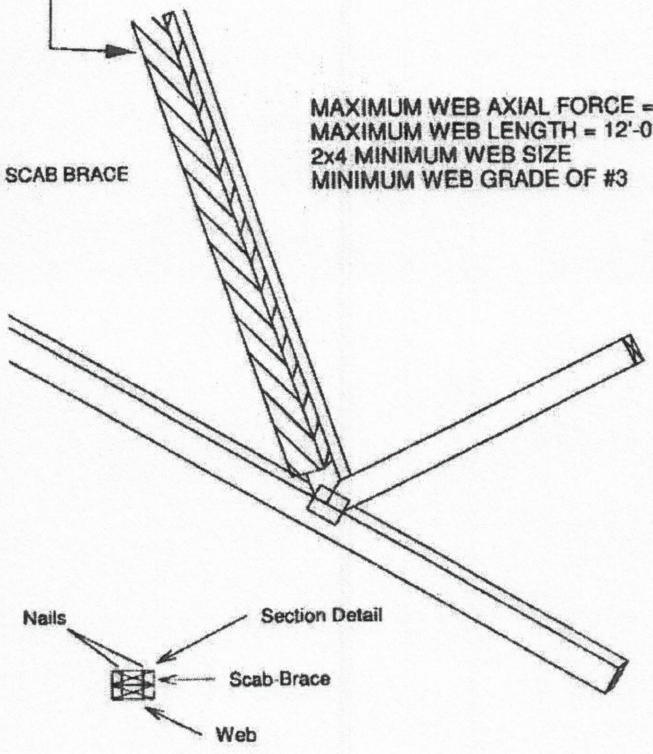
JANUARY 1, 2009	SCAB-BRACE DETAIL	ST - SCAB-BRACE

MiTek USA, Inc.

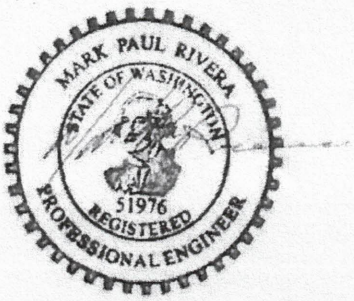
Note: Scab-Bracing to be used when continuous lateral bracing at midpoint (or T-Brace) is impractical.
Scab must cover full length of web +/- 6".

*** THIS DETAIL IS NOT APLICABLE WHEN BRACING IS ***
REQUIRED AT 1/3 POINTS OR I-BRACE IS SPECIFIED.

APPLY 2x___ SCAB TO ONE FACE OF WEB WITH
2 ROWS OF 10d (3" X 0.131") NAILS SPACED 6" O.C.
SCAB MUST BE THE SAME GRADE, SIZE AND
SPECIES (OR BETTER) AS THE WEB.



Scab-Brace must be same species grade (or better) as web member.



MARCH 12, 2009	WEB BRACING RECOMMENDATIONS	ST-WEBBRACE

MiTek USA, Inc.

MiTek USA, Inc.

BRACE BAY SIZE*	MAXIMUM TRUSS WEB FORCE (lbs.) (See note 7)											
	24"O.C.				48"O.C.				72" O.C.			
	BRACING MATERIAL TYPE				BRACING MATERIAL TYPE				BRACING MATERIAL TYPE			
	A	B	C	D	A	B	C	D	A	B	C	D
10'-0"	1610	1886	1886	2829								
12'-0"	1342	1572	1572	2358		3143	3143	4715			4715	7074
14'-0"	1150	1347	1347	2021								
16'-0"	1006	1179	1179	1768		2358	2358	3536				
18'-0"	894	1048	1048	1572							3143	4715
20'-0"	805	943	943	1414		1886	1886	2829				

*Bay size shall be measured in between the centers of pairs of diagonals.

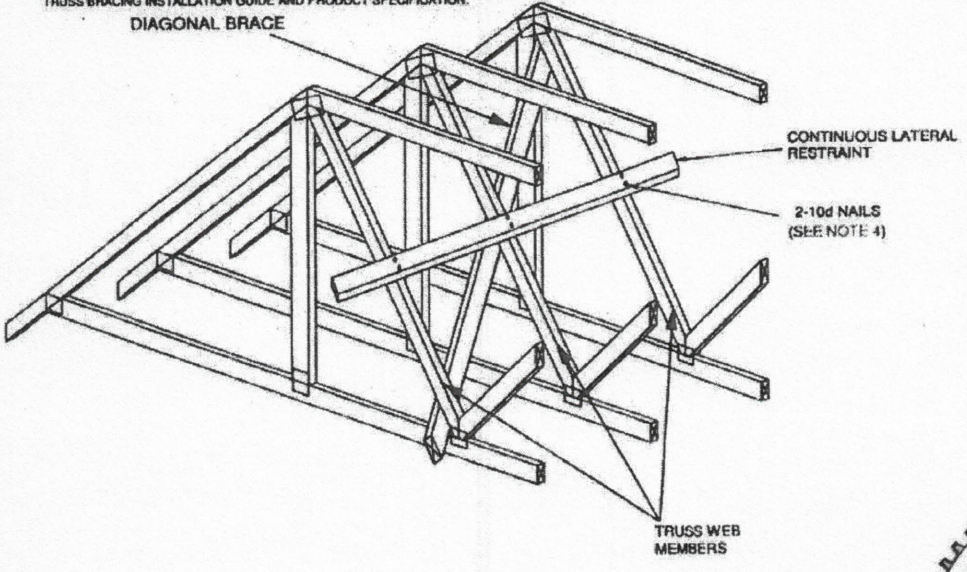
TYPE	BRACING MATERIALS
A	1 X 4 IND. 45 SYP -OR- 1 X 4 #2 SRB (DF, HF, SPF)
B	2 X 3 #3, STD, CONST (SPF, DF, HF, OR SYP)
C	2 X 4 #3, STD, CONST (SPF, DF, HF, OR SYP)
D	2 X 6 #3 OR BETTER (SPF, DF, HF, OR SYP)

GENERAL NOTES

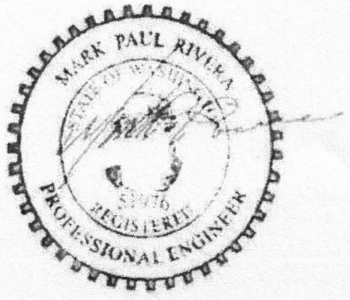
1. DIAGONAL BRACING IS REQUIRED TO TRANSFER THE CUMULATIVE LATERAL BRACE FORCE INTO THE ROOF AND/OR CEILING DIAPHRAGM. THE DIAPHRAGM IS TO BE DESIGNED BY A QUALIFIED PROFESSIONAL.
2. THESE CALCULATIONS ARE BASED ON LATERAL BRACE CARRYING 2% OF THE WEB FORCE.
3. DIAGONAL BRACING MATERIAL MUST BE SAME SIZE AND GRADE OR BETTER, AS THE LATERAL BRACE MATERIAL, AND SHALL BE INSTALLED IN SUCH A MANNER THAT IT INTERSECTS WEB MEMBERS AT APPROX. 45 DEGREES AND SHALL BE NAILED AT EACH END AND EACH INTERMEDIATE TRUSS WITH 2-8d (0.131"x2.5") FOR 1x4 BRACES, 2-10d (0.131"x 3") FOR 2x3 and 2x4 BRACES, AND 3-10d (0.131"x3") FOR 2x6 BRACES.
4. CONNECT LATERAL BRACE TO EACH TRUSS WITH 2-8d (0.131"X2.5") NAILS FOR 1x4 LATERAL BRACES, 2-10d (0.131"x3") NAILS FOR 2x3 and 2x4 LATERAL BRACES, AND 3-10d (0.131"x3") FOR 2x6 LATERAL BRACES.
5. LATERAL BRACE SHOULD BE CONTINUOUS AND SHOULD OVERLAP AT LEAST ONE TRUSS SPACE FOR CONTINUITY.
6. FOR ADDITIONAL GUIDANCE REGARDING DESIGN AND INSTALLATION OF BRACING, CONSULT DSB 89 TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES AND BCSI 1 GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES, JOINTLY PRODUCED BY WOOD TRUSS COUNCIL OF AMERICA and TRUSS PLATE INSTITUTE. www.sbcindustry.com and www.tpinst.org
7. REFER TO SPECIFIC TRUSS DESIGN DRAWING FOR WEB MEMBER FORCE.
8. TABULATED VALUES ARE BASED ON A DOL = 1.15

FOR STABILIZERS:

FOR A SPACING OF 24" O.C. ONLY, MITEK "STABILIZER" TRUSS BRACING SYSTEMS CAN BE SUBSTITUTED FOR TYPE A, B, C AND D BRACING MATERIAL. DIAGONAL BRACING FOR STABILIZERS ARE TO BE PROVIDED AT BAY SIZE INDICATED ABOVE. WHERE DIAPHRAGM BRACING IS REQUIRED AT PITCH BREAKS, STABILIZERS MAY BE REPLACED WITH WOOD BLOCKING. SEE "STABILIZER" TRUSS BRACING INSTALLATION GUIDE AND PRODUCT SPECIFICATION.



This information is provided as a recommendation to assist in the requirement for permanent bracing of the individual truss web members. Additional bracing may still be required for the stability of the overall roof system. The method shown here is just one method that can be used to provide stability against web buckling.



JANUARY 1, 2009	L-BRACE DETAIL	ST - L-BRACE

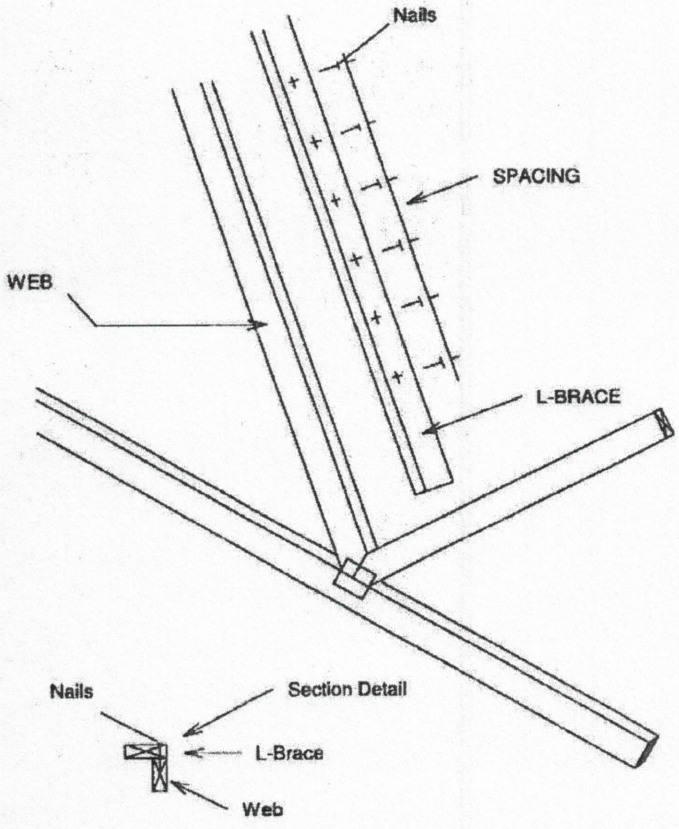
MiTek USA, Inc.

Nailing Pattern		
L-Brace size	Nail Size	Nail Spacing
1x4 or 6	10d	8" o.c.
2x4, 6, or 8	16d	8" o.c.
Note: Nail along entire length of L-Brace (On Two-Ply's Nail to Both Plies)		

Note: L-Bracing to be used when continuous lateral bracing is impractical. L-brace must cover 90% of web length.

	L-Brace Size for One-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	1x4	***
2x6	1x6	***
2x8	2x8	***

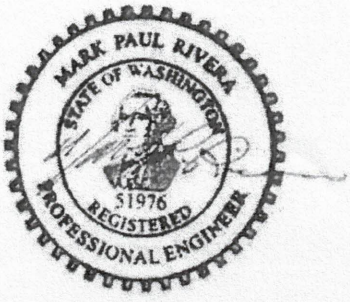
*** DIRECT SUBSTITUTION NOT APLICABLE.



	L-Brace Size for Two-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4	***
2x6	2x6	***
2x8	2x8	***

*** DIRECT SUBSTITUTION NOT APLICABLE.

L-Brace must be same species grade (or better) as web member.



ICC-ES Evaluation Report

ESR-1988

Reissued October 2014

This report is subject to renewal December 2016.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:

MITEK INDUSTRIES, INC.
14515 NORTH OUTER FORTY, SUITE 300
CHESTERFIELD, MISSOURI 63017
(314) 434-1200
www.mii.com

EVALUATION SUBJECT:

MiTek® TRUSS CONNECTOR PLATES: TL18, MT18, MT18HS™, M18SHS™, TL20 and MT20

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)
- 1997 *Uniform Building Code™* (UBC)

Property evaluated:

Structural

2.0 USES

MiTek® metal truss connector plates are used as joint connector components of light wood-frame trusses.

3.0 DESCRIPTION

3.1 MiTek® TL18 and MT18:

Models TL18 and MT18 metal truss connector plates are manufactured from minimum No. 18 gage [0.0466 inch total thickness (1.18 mm)], ASTM A653 SS, Grade 40 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.16 mm). The plates have teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of the slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch (12.7 mm) width increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.2 MiTek® MT18HS™:

Model MT18HS™ metal truss connector plates are manufactured from minimum No. 18 gage [0.0466 inch total thickness (1.18 mm)], ASTM A653, Grade 60, high-strength, low-alloy steel (HSLAS) with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.16 mm). The plate has teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of the slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch (12.7 mm) width increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.3 MiTek® M18SHS™:

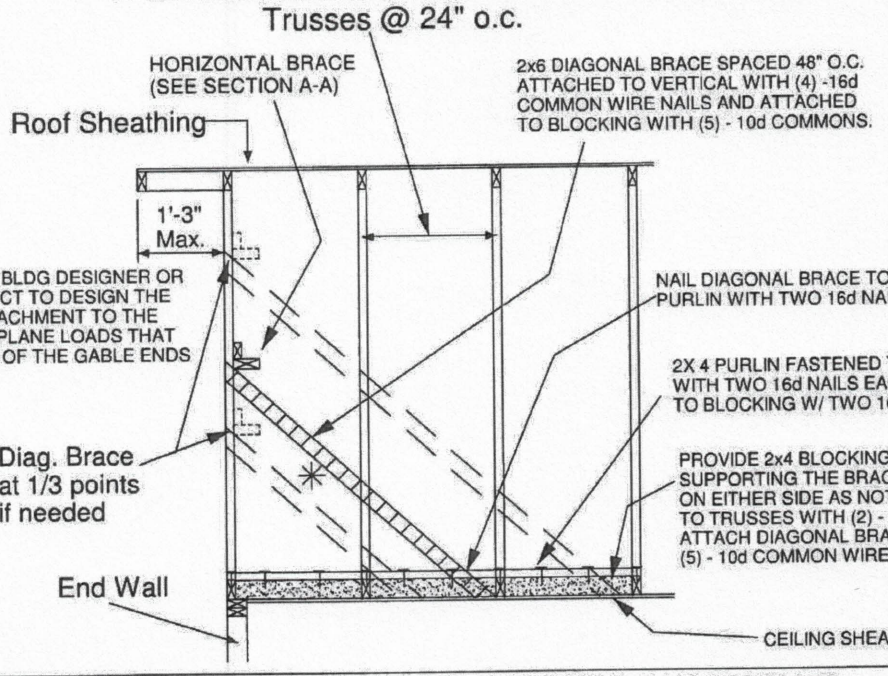
Model M18SHS™ metal truss connector plates are manufactured from minimum No. 18 gage [0.0466-inch (1.18 mm) total thickness], hot-dipped galvanized steel that meets the requirements of ASTM A653 SS, Grade 80 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base metal thickness of 0.0456 inch (1.16 mm). The plates have $^3/_8$-inch-long (9.5 mm) teeth, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch-width (12.7 mm) increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.4 MiTek® TL20 and MT20™:

Models TL20 and MT20™ metal truss connector plates are manufactured from minimum No. 20 gage [0.0356 inch total thickness (0.9 mm)], ASTM A653 SS, Grade 40 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0346 inch (0.88 mm). The plates have teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on

MiTek USA, Inc.

ALTERNATE DIAGONAL BRACING TO THE BOTTOM CHORD



IT IS THE RESPONSIBILITY OF THE BLDG DESIGNER OR THE PROJECT ENGINEER/ARCHTECT TO DESIGN THE CEILING DIAPHRAGM AND ITS ATTACHMENT TO THE TRUSSES TO RESIST ALL OUT OF PLANE LOADS THAT MAY RESULT FROM THE BRACING OF THE GABLE ENDS

BRACING REQUIREMENTS FOR STRUCTURAL GABLE TRUSSES

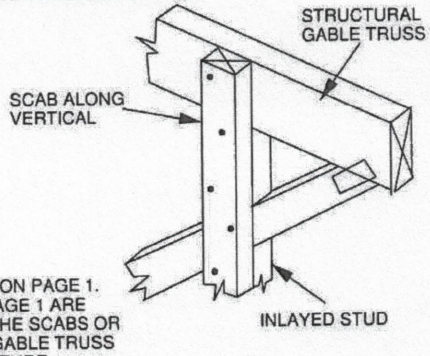
STRUCTURAL GABLE TRUSSES MAY BE BRACED AS NOTED:

METHOD 1 : ATTACH A MATCHING GABLE TRUSS TO THE INSIDE FACE OF THE STRUCTURAL GABLE AND FASTEN PER THE FOLLOWING NAILING SCHEDULE.

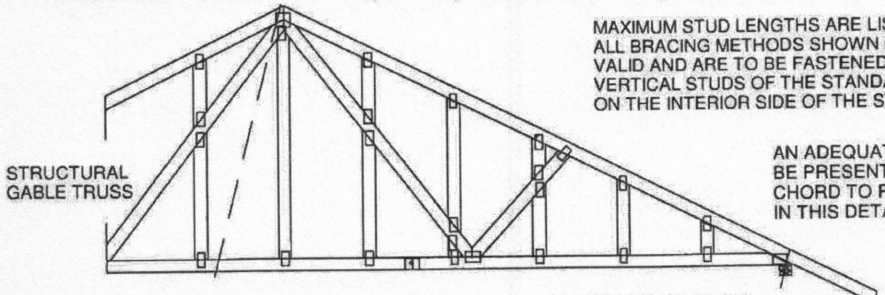
METHOD 2 : ATTACH 2X _ SCABS TO THE FACE OF EACH VERTICAL MEMBER ON THE STRUCTURAL GABLE PER THE FOLLOWING NAILING SCHEDULE. SCABS ARE TO BE OF THE SAME SIZE, GRADE AND SPECIES AS THE TRUSS VERTICALS

NAILING SCHEDULE:

- FOR WIND SPEEDS 120 MPH (ASCE 7-98, 02, 05), 150 MPH (ASCE 7-10) OR LESS, NAIL ALL MEMBERS WITH ONE ROW OF 10d (.131" X 3") NAILS SPACED 6" O.C.
- FOR WIND SPEEDS GREATER 120 MPH (ASCE 7-98, 02, 05), 150 MPH (ASCE 7-10) NAIL ALL MEMBERS WITH TWO ROWS OF 10d (.131" X 3") NAILS SPACED 6" O.C. (2X 4 STUDS MINIMUM)

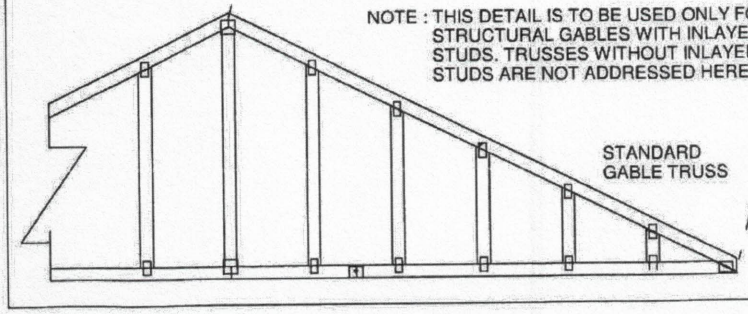


MAXIMUM STUD LENGTHS ARE LISTED ON PAGE 1. ALL BRACING METHODS SHOWN ON PAGE 1 ARE VALID AND ARE TO BE FASTENED TO THE SCABS OR VERTICAL STUDS OF THE STANDARD GABLE TRUSS ON THE INTERIOR SIDE OF THE STRUCTURE.



AN ADEQUATE DIAPHRAGM OR OTHER METHOD OF BRACING MUST BE PRESENT TO PROVIDE FULL LATERAL SUPPORT OF THE BOTTOM CHORD TO RESIST ALL OUT OF PLANE LOADS. THE BRACING SHOWN IN THIS DETAIL IS FOR THE VERTICAL/STUDS ONLY.

NOTE : THIS DETAIL IS TO BE USED ONLY FOR STRUCTURAL GABLES WITH INLAYED STUDS. TRUSSES WITHOUT INLAYED STUDS ARE NOT ADDRESSED HERE.



MiTek USA, Inc.

NOTES:
1. TOE-NAILS SHALL BE DRIVEN AT AN ANGLE OF 45 DEGREES WITH THE MEMBER AND MUST HAVE FULL WOOD SUPPORT. (NAIL MUST BE DRIVEN THROUGH AND EXIT AT THE BACK CORNER OF THE MEMBER END AS SHOWN.
2. THE END DISTANCE, EDGE DISTANCE, AND SPACING OF NAILS SHALL BE SUCH AS TO AVOID UNUSUAL SPLITTING OF THE WOOD.
3. ALLOWABLE VALUE SHALL BE THE LESSER VALUE OF THE TWO SPECIES FOR MEMBERS OF DIFFERENT SPECIES.

	TOE-NAIL SINGLE SHEAR VALUES PER NDS 2001 (lb/nail)					
	DIAM.	SP	DF	HF	SPF	SPF-S
3.5" LONG	.131	88.0	80.6	69.9	68.4	59.7
	.135	93.5	85.6	74.2	72.6	63.4
	.162	108.8	99.6	86.4	84.5	73.8
3.25" LONG	.128	74.2	67.9	58.9	57.6	50.3
	.131	75.9	69.5	60.3	59.0	51.1
	.148	81.4	74.5	64.6	63.2	52.5

VALUES SHOWN ARE CAPACITY PER TOE-NAIL.
APPLICABLE DURATION OF LOAD INCREASES MAY BE APPLIED.

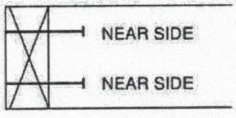
EXAMPLE:
(3) - 16d NAILS (.162" diam. x 3.5") WITH SPF SPECIES BOTTOM CHORD

For load duration increase of 1.15:
3 (nails) X 84.5 (lb/nail) X 1.15 (DOL) = 291.5 lb Maximum Capacity

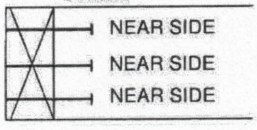
THIS DETAIL APPLICABLE TO THE THREE END DETAILS SHOWN BELOW

VIEWS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY

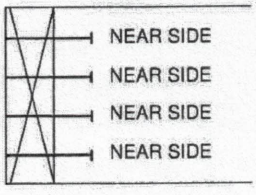
SIDE VIEW
(2x3)
2 NAILS

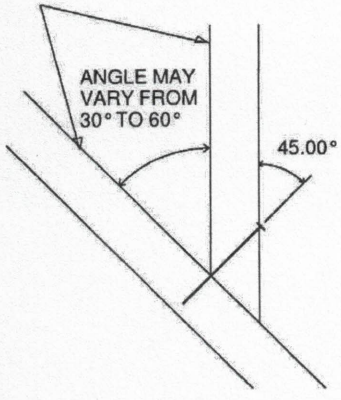


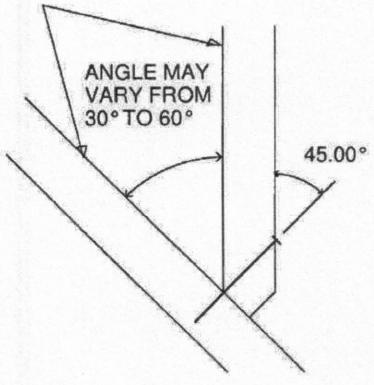
SIDE VIEW
(2x4)
3 NAILS

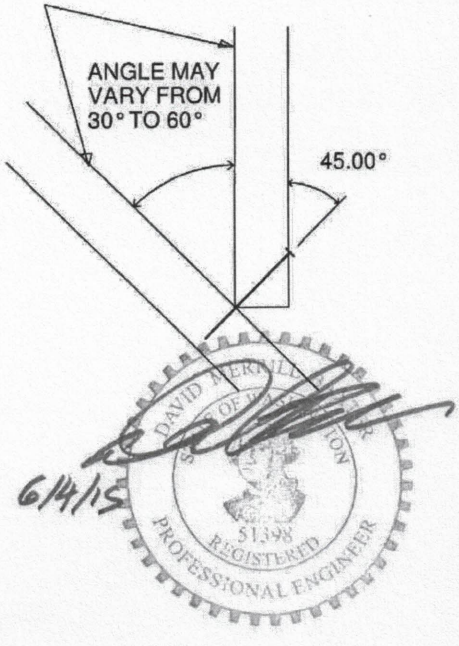


SIDE VIEW
(2x6)
4 NAILS





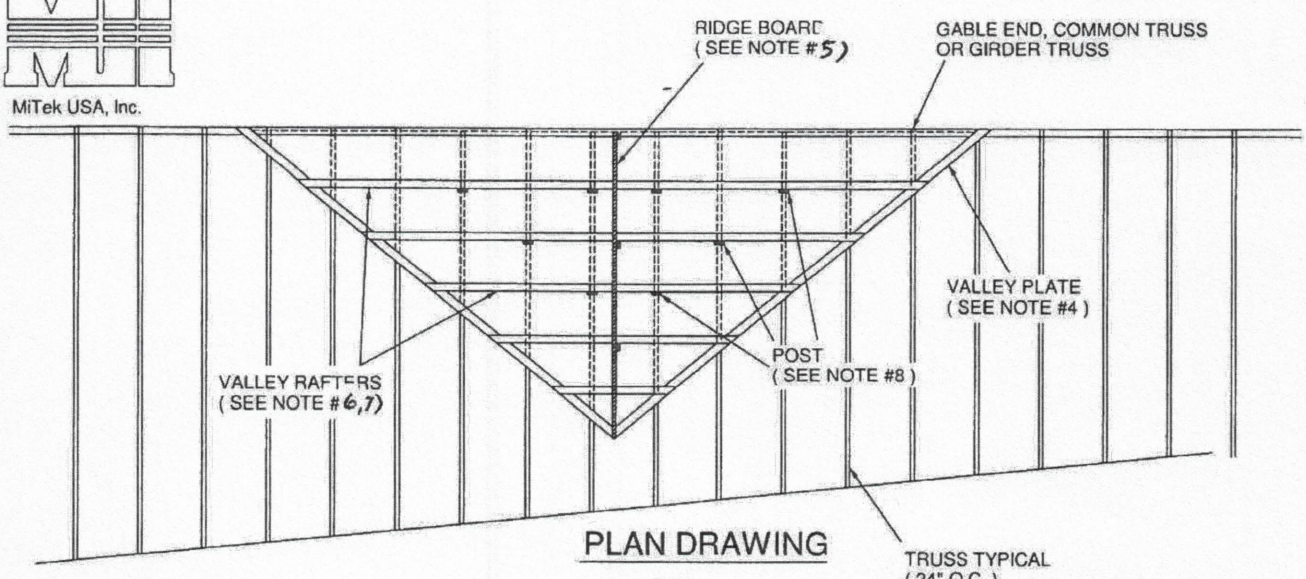




FEBRUARY 14, 2012	CONVENTIONAL VALLEY FRAMING DETAIL	ST-VALLEY1

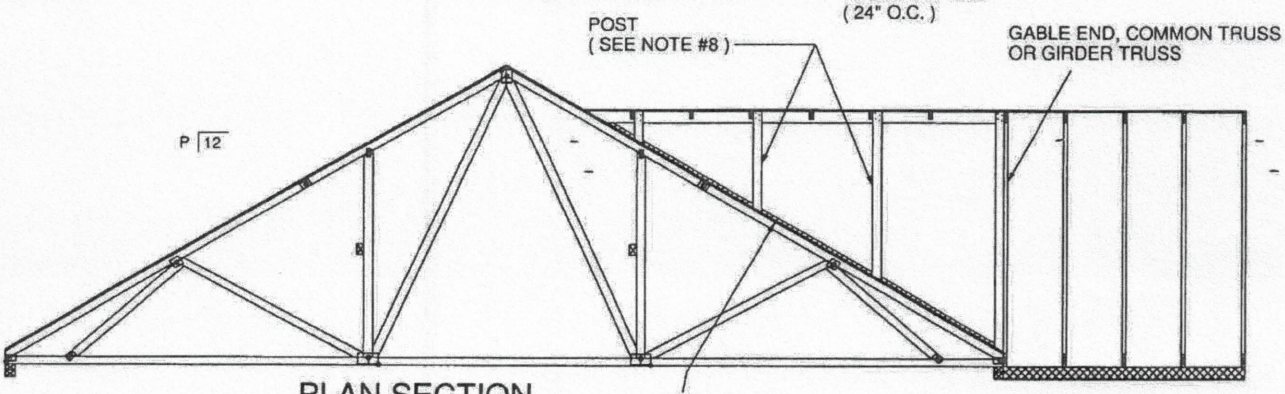
MiTek USA, Inc.

MiTek USA, Inc.



PLAN DRAWING

TRUSS TYPICAL
(24" O.C.)



PLAN SECTION

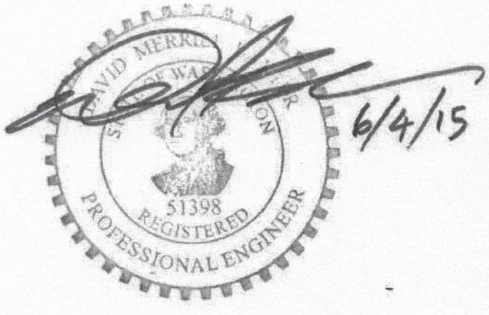
TRUSS MUST
BE SHEATHED

GENERAL SPECIFICATIONS

1. WITH BASE TRUSSES ERECTED (INSTALLED), APPLY SHEATHING TO TOP CHORD OF SUPPORTING (BASE) TRUSSES.
2. BRACE BOTTOM CHORD AND WEB MEMBERS PER TRUSS DESIGNS.
3. DEFINE VALLEY RIDGE BY RUNNING A LEVEL STRING FROM THE INTERSECTING RIDGE OF THE (a.) GABLE END, (b.) GIRDER TRUSS OR (c.) COMMON TRUSS TO THE ROOF SHEATHING.
4. INSTALL 2 x 4 VALLEY PLATES. FASTEN TO EACH SUPPORTING TRUSS WITH (2) 16d (3.5" X .131") NAILS.
5. SET 2 x 6 #2 RIDGE BOARD. SUPPORT WITH 2 x 4 POSTS SPACED 48" O.C.. BEVEL BOTTOM OF POST TO SET EVENLY ON THE SHEATHING. FASTEN POST TO RIDGE WITH (4) 10d (3" X .131")NAILS. FASTEN POST TO ROOF SHEATHING WITH (3) 10d (3" X .131")TOE-NAILS.
6. FRAME VALLEY RAFTERS FROM VALLEY PLATE TO RIDGE BOARD. MAXIMUM RAFTER SPACING IS 24" O.C.. FASTEN VALLEY RAFTER TO RIDGE BEAM WITH (3) 16d (3.5" X .131") TOE-NAILS. FASTEN VALLEY RAFTER TO VALLEY PLATE WITH (3) 16d (3.5" X .131") TOE-NAILS.
7. SUPPORT THE VALLEY RAFTERS WITH 2 x 4 POSTS 48" O.C (OR LESS) ALONG EACH RAFTER. INSTALL POSTS IN A STAGGERED PATTERN AS SHOWN ON PLAN DRAWING. ALLIGN POSTS WITH TRUSSES BELOW. FASTEN VALLEY RAFTER TO POST WITH (4) 10d (3" X .131") NAILS. FASTEN POST THROUGH SHEATHING TO SUPPORTING TRUSS WITH (2) 16d (3.5" X .131") NAILS.
8. POSTS SHALL BE 2 x 4 #2 OR BETTER SPRUCE PINE FIR, DOUG FIR LARCH OR SOUTHERN YELLOW PINE. POSTS EXCEEDING 75" SHALL BE INCREASED TO 4 x 4 OR BE PRE-ASSEMBLED (2) PLY 2 x 4's FASTENED TOGETHER WITH 2 ROWS OF 10d NAILS 6" O.C.

NOTE:
48" O.C. MAXIMUM POST SPACING

LIVE LOAD = 30 PSF (MAX)
DEAD LOAD = 15 PSF (MAX)
D.O.L. INC = 1.15
ASCE 7-98, ASCE 7-02, ASCE 7-05 90 MPH (MWFRS)
ASCE7-10 115 MPH (MWFRS)



FEBRUARY 14, 2012	TRUSSED VALLEY SET DETAIL (BEVELED BOTTOM CHORD)	ST-VALLEY2

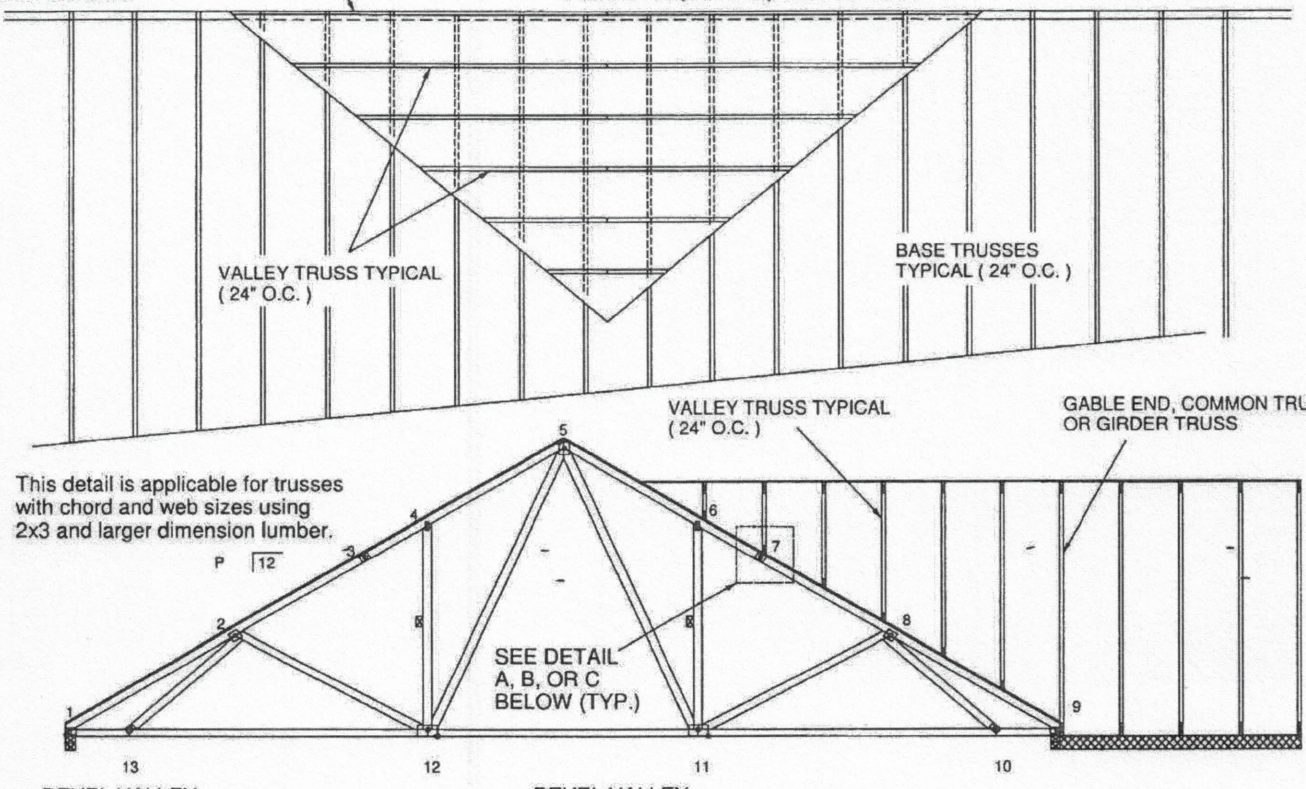
MiTek USA, Inc.

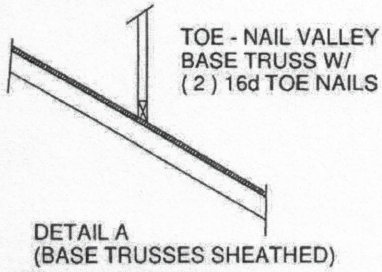
MiTek USA, Inc.

GABLE END, COMMON TRUSS OR GIRDER TRUSS

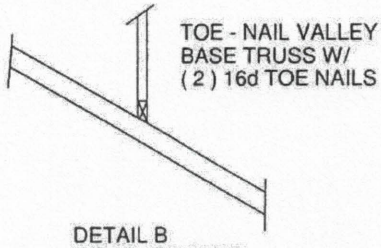
TOTAL TOP CHORD LOAD = 65 PSF (MAX)
D.O.L. INC = 1.15
ASCE 7-98, ASCE 7-02, ASCE 7-05 (MWFRS) 110 MPH WIND
ASCE 7-10 (MWFRS) 140 MPH WIND

NOTE: VALLEY STUD SPACING NOT TO EXCEED 48" O.C. SPACING

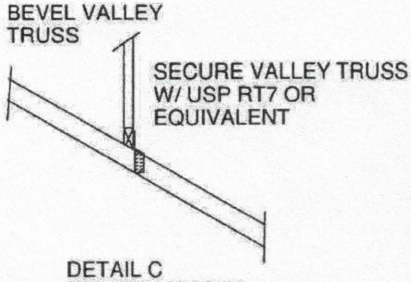




DETAIL A
(BASE TRUSSES SHEATHED)



DETAIL B
(NO SHEATHING)



DETAIL C
(NO SHEATHING)

1. INSTALL BASE TRUSSES.
2. DETAIL A, APPLY SHEATHING TO TOP CHORD OF SUPPORTING TRUSSES. DETAILS B & C, VALLEY TRUSSES MAY PROVIDE BRACING. BASE TRUSSES MUST BE DESIGNED FOR PURLIN SPACING EQUIVALENT TO VALLEY TRUSS SPACING (NOT TO EXCEED 24" O.C.).
3. INSTALL VALLEY TRUSSES (24" O.C. MAXIMUM) AND SECURE TO BASE TRUSSES AS PER DETAIL A, B, OR C ABOVE.
4. BRACE VALLEY WEBS IN ACCORDANCE WITH THE INDIVIDUAL DESIGN DRAWINGS.
5. ALL NAILS TO BE (0.131" X 3-1/2")

NOTE:
FOR VALLEY TRUSSES BUILT WITH 2x3 LUMBER, BASE TRUSSES ARE NOT TO EXCEED AN 8/12 PITCH AND VALLEY TRUSSES BUILT WITH 2x4 LUMBER OR LARGER, BASE TRUSSES ARE NOT TO EXCEED AN 12/12 PITCH

FEBRUARY 25, 2015	STANDARD PIGGYBACK TRUSS CONNECTION DETAIL	ST-PIGGY-ALT 7-10

MiTek USA, Inc.

MiTek USA, Inc.

MAXIMUM WIND SPEED = REFER TO NOTES D AND OR E MAX MEAN ROOF HEIGHT = 30 FEET MAX TRUSS SPACING = 24 " O.C. CATEGORY II BUILDING EXPOSURE B or C ASCE 7-10 DURATION OF LOAD INCREASE : 1.60
DETAIL IS NOT APPLICABLE FOR TRUSSES TRANSFERING DRAG LOADS (SHEAR TRUSSES). ADDITIONAL CONSIDERATIONS BY BUILDING ENGINEER/DESIGNER ARE REQUIRED.

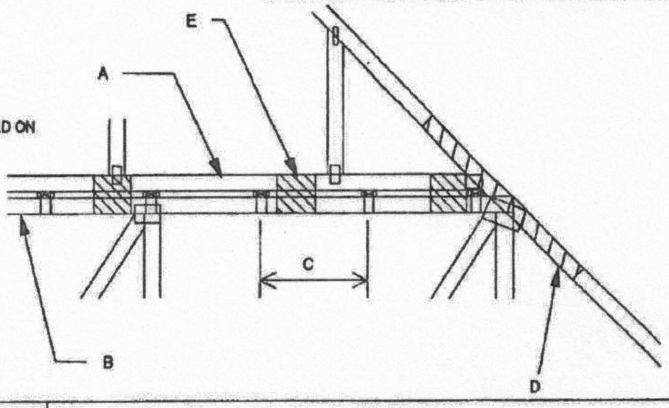
A - PIGGBACK TRUSS, REFER TO MITEK TRUSS DESIGN DRAWING. SHALL BE CONNECTED TO EACH PURLIN WITH (2) 0.131" X 3.5" TOE NAILED.

B - BASE TRUSS, REFER TO MITEK TRUSS DESIGN DRAWING.

C - PURLINS AT EACH BASE TRUSS JOINT AND A MAXIMUM 24" O.C. UNLESS SPECIFIED CLOSER ON MITEK TRUSS DESIGN DRAWING. CONNECT TO BASE TRUSS WITH (2) 0.131" X 3.5" NAILS EACH.

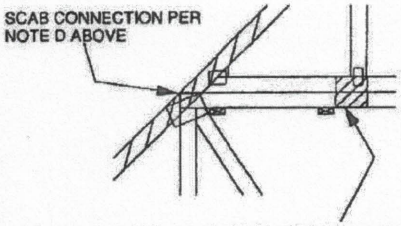
D - 2 X __ X 4'-0" SCAB, SIZE TO MATCH TOP CHORD OF PIGGYBACK TRUSS, MIN GRADE #2, ATTACHED TO ONE FACE, CENTERED ON INTERSECTION, WITH (2) ROWS OF 0.131" X 3" NAILS @ 4" O.C. SCAB MAY BE OMITTED PROVIDED THE TOP CHORD SHEATHING IS CONTINUOUS OVER INTERSECTION AT LEAST 1 FT. IN BOTH DIRECTIONS AND:
1. WIND SPEED OF 115 MPH OR LESS FOR ANY PIGGYBACK SPAN, OR
2. WIND SPEED OF 116 MPH TO 160 MPH WITH A MAXIMUM PIGGYBACK SPAN OF 12 ft.

E - FOR WIND SPEED IN THE RANGE 126 MPH - 160 MPH ADD 9" x 9" x 1/2" PLYWOOD (or 7/16" OSB) GUSSET EACH SIDE AT 48" O.C. OR LESS. ATTACH WITH 3 - 6d (0.113" X 2") NAILS INTO EACH CHORD FROM EACH SIDE (TOTAL - 12 NAILS)

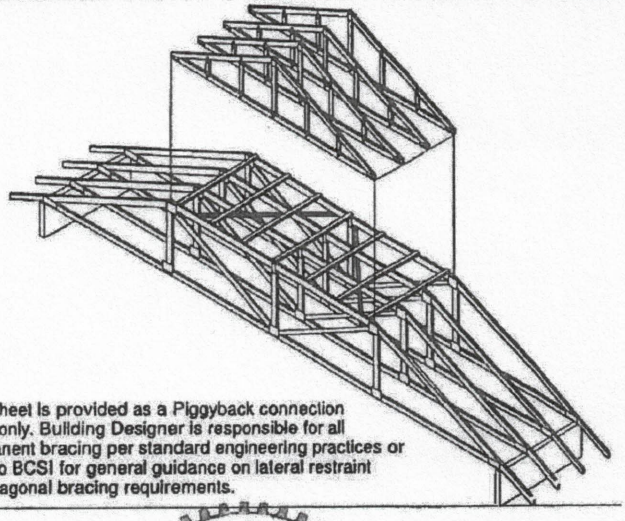


WHEN NO GAP BETWEEN PIGGYBACK AND BASE TRUSS EXISTS:

REPLACE TOE NAILING OF PIGGYBACK TRUSS TO PURLINS WITH PLYWOOD GUSSETS AS SHOWN, AND INSTALL PURLINS TO BOTTOM EDGE OF BASE TRUSS TOP CHORD AT SPECIFIED SPACING SHOWN ON BASE TRUSS MITEK DESIGN DRAWING.

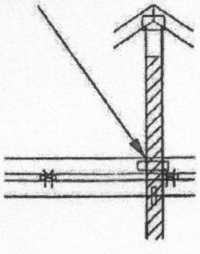


7" x 7" x 1/2" PLYWOOD (or 7/16" OSB) GUSSET EACH SIDE AT 24" O.C. ATTACH WITH 3 - 6d (0.113" X 2") NAILS INTO EACH CHORD FROM EACH SIDE (TOTAL - 12 NAILS)



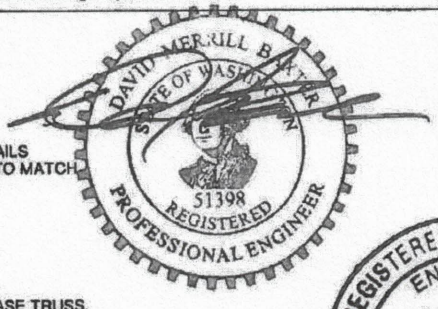
This sheet is provided as a Piggyback connection detail only. Building Designer is responsible for all permanent bracing per standard engineering practices or refer to BCSI for general guidance on lateral restraint and diagonal bracing requirements.

VERTICAL WEB TO EXTEND THROUGH BOTTOM CHORD OF PIGGYBACK



FOR LARGE CONCENTRATED LOADS APPLIED TO CAP TRUSS REQUIRING A VERTICAL WEB:

1) VERTICAL WEBS OF PIGGYBACK AND BASE TRUSS MUST MATCH IN SIZE, GRADE, AND MUST LINE UP AS SHOWN IN DETAIL.
2) ATTACH 2 x ___ x 4'-0" SCAB TO EACH FACE OF TRUSS ASSEMBLY WITH 2 ROWS OF 10d (0.131" X 3") NAILS SPACED 4" O.C. FROM EACH FACE. (SIZE AND GRADE TO MATCH VERTICAL WEBS OF PIGGYBACK AND BASE TRUSS.) (MINIMUM 2X4)
3) THIS CONNECTION IS ONLY VALID FOR A MAXIMUM CONCENTRATED LOAD OF 4000 LBS (@1.15). REVIEW BY A QUALIFIED ENGINEER IS REQUIRED FOR LOADS GREATER THAN 4000 LBS.
4) FOR PIGGYBACK TRUSSES CARRYING GIRDER LOADS, NUMBER OF PLYS OF PIGGYBACK TRUSS TO MATCH BASE TRUSS.
5) CONCENTRATED LOAD MUST BE APPLIED TO BOTH THE PIGGYBACK AND THE BASE TRUSS DESIGN.



EXPIRES: 12/31/15

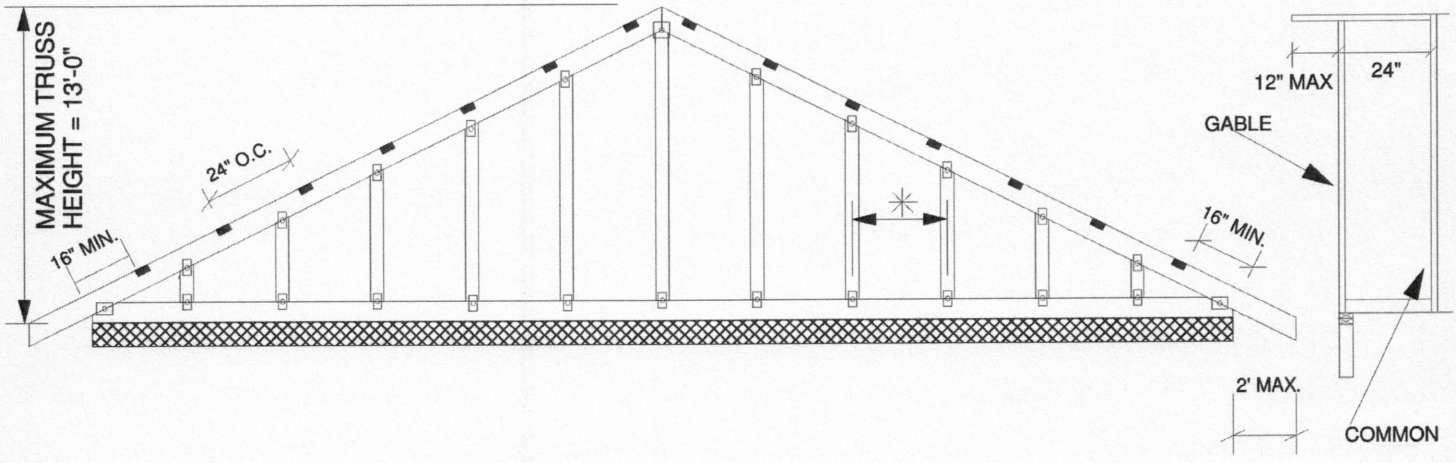
SEPTEMBER 7, 2017	REPAIR TO NOTCH 2X6 TOP CHORD OF GABLE TRUSS	MII-REP19

MiTek USA, Inc.
ENGINEERED BY TRENCO
A MiTek Affiliate

NOTES:
1. LUMBER MUST BE CUT CLEANLY AND ACCURATELY AND THE REMAINING WOOD MUST BE UNDAMAGED.
2. THIS REPAIR IS TO BE USED FOR SINGLE PLY TRUSSES IN THE 2X_ ORIENTATION ONLY.
3. CONNECTOR PLATES MUST REMAIN FULLY EMBEDDED AND UNDISTURBED
4. SEE MITEK STANDARD GABLE END DETAILS FOR WIND BRACING REQUIREMENTS.

3 1/2" WIDE X 1 1/2" DEEP NOTCH IN TOP CHORD 24" O.C. AS SHOWN
LUMBER TO BE CUT CLEANLY AND ACCURATELY,
NO PLATES ARE TO BE DISTURBED.
NO REPAIR NEEDED.

✳ MAXIMUM STUD SPACING = 24" O.C.



TRUSS CRITERIA

MAXIMUM SPAN: 50'
SPACING = 24" O.C.
PITCH BETWEEN 3/12 AND 12/12
LOADING : 40-10-0-10 (MAX)
DURATION FACTOR : 1.15
TOP CHORD : 2x6 (NO 2 MIN)
BEARING : CONTINUOUS
STUD SPACING :24" O.C. (MAX)
CATEGORY II BUILDING
ASCE7-98, ASCE7-02, ASCE7-05 -100 MPH
ASCE7-10 - 125 MPH
TRUSSES NOT FITTING THESE CRITERIA SHALL BE EXAMINED INDIVIDUALLY.

DAVID MERRILL BAXTER
STATE OF WASHINGTON
51398
REGISTERED
PROFESSIONAL ENGINEER
09/11/2017

REFER TO INDIVIDUAL TRUSS DESIGN
FOR PLATE SIZES AND LUMBER GRADES

REGISTERED PROFESSIONAL ENGINEER
89200PE
OREGON
MAY 14, 2014
DAVID MERRILL BAXTER
09/11/2017

EXPIRES: 12/31/2017

SEPTEMBER 7, 2017	REPAIR TO NOTCH 2X4 TOP CHORD OF GABLE TRUSS	MII-REP19A

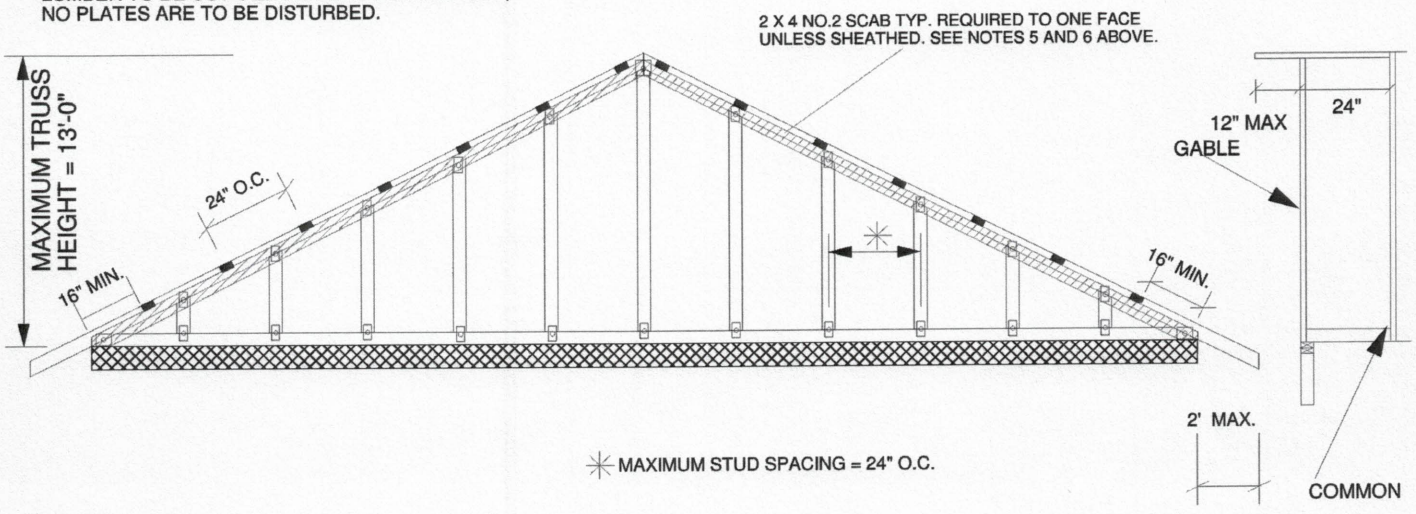
MiTek USA, Inc.

ENGINEERED BY TRENCO
A MiTek Affiliate

NOTES:

1. THE END DISTANCE, EDGE DISTANCE, AND SPACING OF NAILS SHALL BE SUCH AS TO AVOID SPLITTING OF THE WOOD.
2. LUMBER MUST BE CUT CLEANLY AND ACCURATELY AND THE REMAINING WOOD MUST BE UNDAMAGED.
3. THIS REPAIR IS TO BE USED FOR SINGLE PLY TRUSSES IN THE 2X_ ORIENTATION ONLY.
4. CONNECTOR PLATES MUST REMAIN FULLY EMBEDDED AND UNDISTURBED.
5. 2 X 4 NO.2 SCAB REQUIRED TO ONE FACE OF TOP CHORD OF TRUSS WITH ONE ROW OF 10d (0.131 X 3") NAILS SPACED 6" O.C.
6. SCAB SHOWN MAY BE OMITTED IF THE OUTSIDE FACE OF THE GABLE IS SHEATHED WITH (MIN) 7/16" OSB OR PLYWOOD.
7. SEE MITEK STANDARD GABLE END DETAILS FOR WIND BRACING REQUIREMENTS.

3 1/2" WIDE X 1 1/2" DEEP NOTCH IN TOP CHORD 24" O.C. AS SHOWN
LUMBER TO BE CUT CLEANLY AND ACCURATELY,
NO PLATES ARE TO BE DISTURBED.



TRUSS CRITERIA

MAXIMUM SPAN: 50'
SPACING = 24" O.C.
PITCH BETWEEN 3/12 AND 12/12
LOADING : 40-10-0-10 (MAX)
DURATION FACTOR : 1.15
TOP CHORD : 2x4 (NO 2 MIN)
BEARING : CONTINUOUS
STUD SPACING :24" O.C. (MAX)
CATEGORY II BUILDING
ASCE7-98, ASCE7-02, ASCE7-05 -100 MPH
ASCE7-10 - 125 MPH
TRUSSES NOT FITTING THESE CRITERIA SHALL BE EXAMINED INDIVIDUALLY.

REFER TO INDIVIDUAL TRUSS DESIGN
FOR PLATE SIZES AND LUMBER GRADES

DAVID MERRILL BAXTER
STATE OF WASHINGTON
51398
REGISTERED
PROFESSIONAL ENGINEER
09/11/2017

REGISTERED PROFESSIONAL ENGINEER
89200PE
OREGON
MAY 14, 2014
DAVID MERRILL BAXTER
09/11/2017

EXPIRES: 12/31/2017

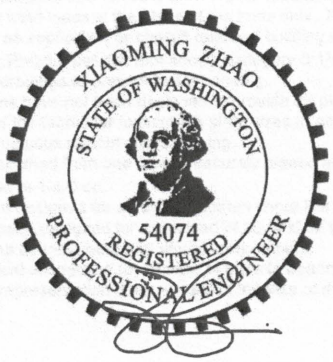
MiTek USA, Inc.
250 Klug Circle
Corona, CA 92880
951-245-9525

Re: J-18-01698-A
CARPORT

The truss drawing(s) referenced below have been prepared by MiTek USA, Inc. under my direct supervision based on the parameters provided by Roof Truss Supply.

Pages or sheets covered by this seal: K5343013 thru K5343015

My license renewal date for the state of Washington is September 28, 2019.



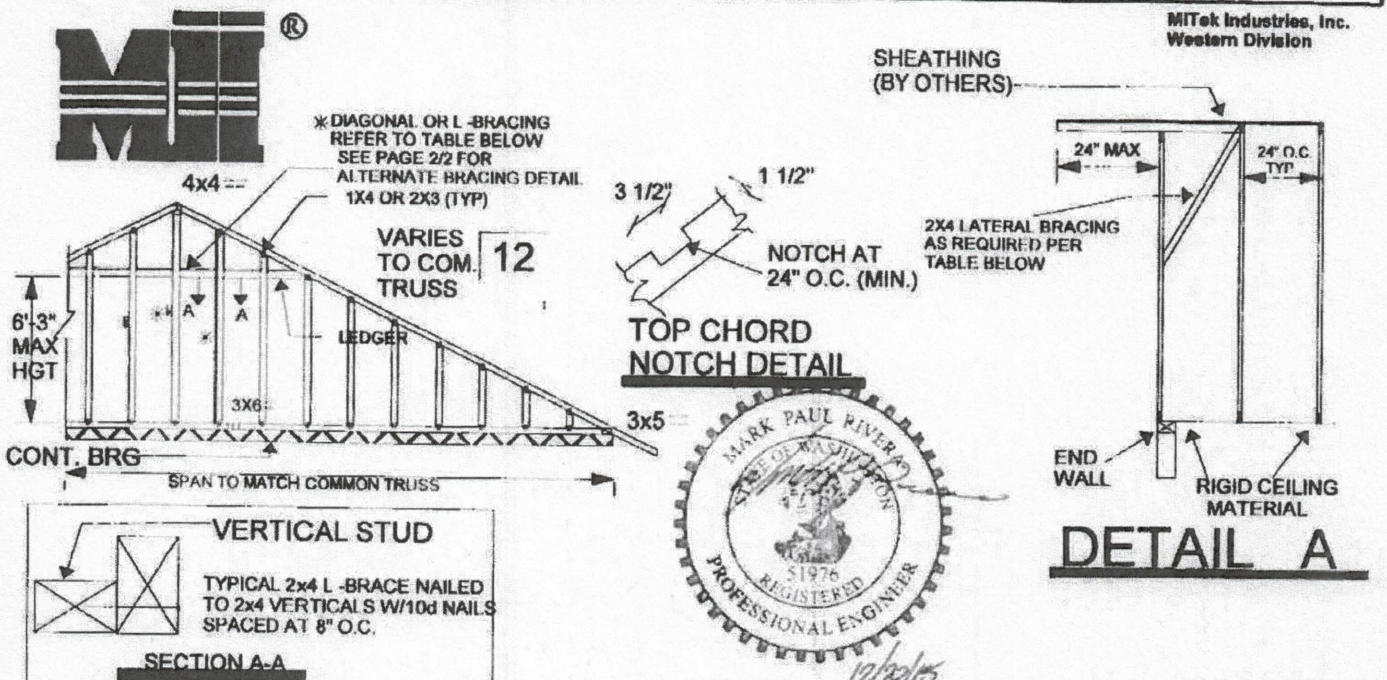
November 1,2018

Zhao, Xiaoming

IMPORTANT NOTE: Truss Engineer's responsibility is solely for design of individual trusses based upon design parameters shown on referenced truss drawings. Parameters have not been verified as appropriate for any use. Any location identification specified is for file reference only and has not been used in preparing design. Suitability of truss designs for any particular building is the

STANDARD GABLE END DETAIL	MII/COR - 20B	6/18/2015	PAGE 1 OF 2

MiTek Industries, Inc.
Western Division



VERTICAL STUD

TYPICAL 2x4 L -BRACE NAILED TO 2x4 VERTICALS W/10d NAILS SPACED AT 8" O.C.

SECTION A-A

12/29/15

LOADING(psf)		SPACING	2-0-0
TCLL	50.0	Plates Increase	1.15
TCDL	10.0	Lumber Increase	1.15
BCLL	0.0	Rep Stress Incr	YES
BCDL	10.0	Code	ASCE 7-10

LUMBER

TOP CHORD 2 X 4 DFL/SPF/HF - No.2
BOT CHORD 2 X 4 DFL/SPF/HF - STUD/STD
OTHERS 2 X 4 DFL/SPF/HF - STUD/STD

LATERAL BRACING NAILING SCHEDULE	
VERT. HEIGHT	# OF NAILS AT END
UP TO 7'-0"	2 - 16d
7'-0" - 8'-6"	3 - 16d
OVER 8'-6"	4 - 16d

MAXIMUM VERTICAL STUD HEIGHT			
SPACING OF VERTICALS	WITHOUT BRACE	WITH LATERAL BRACE	WITH L - BRACE
12 INCH O.C.	4-11-0	9-10-0	7-6-0
16 INCH O.C.	4-3-0	8-6-0	6-6-0
24 INCH O.C.	3-8-0	7-4-0	5-4-0

NOTES

1) VERT. STUDS HAVE BEEN CHECKED FOR 140 MPH WIND EXP. C, HEIGHT 30 FT (ASCE 7-10)
2) CONNECTION BETWEEN BOTTOM CHORD OF GABLE END TRUSS AND WALL TO BE PROVIDED BY PROJECT ENGINEER OR ARCHITECT.
3) FURNISH COPY OF THIS DRAWING TO CONTRACTOR FOR BRACING INSTALLATION.
4) BRACING SHOWN IS FOR INDIVIDUAL TRUSS ONLY. CONSULT BLDG. ARCHITECT OR ENGINEER FOR TEMPORARY AND PERMANENT BRACING OF ROOF SYSTEM.
5) DETAIL A (SHOWN ABOVE) APPLIES TO STRUCTURAL GABLE ENDS AND TO GABLE ENDS WITH A MAX. VERT. STUD HEIGHT OF 8'-6".

TOP CHORD NOTCHING NOTES

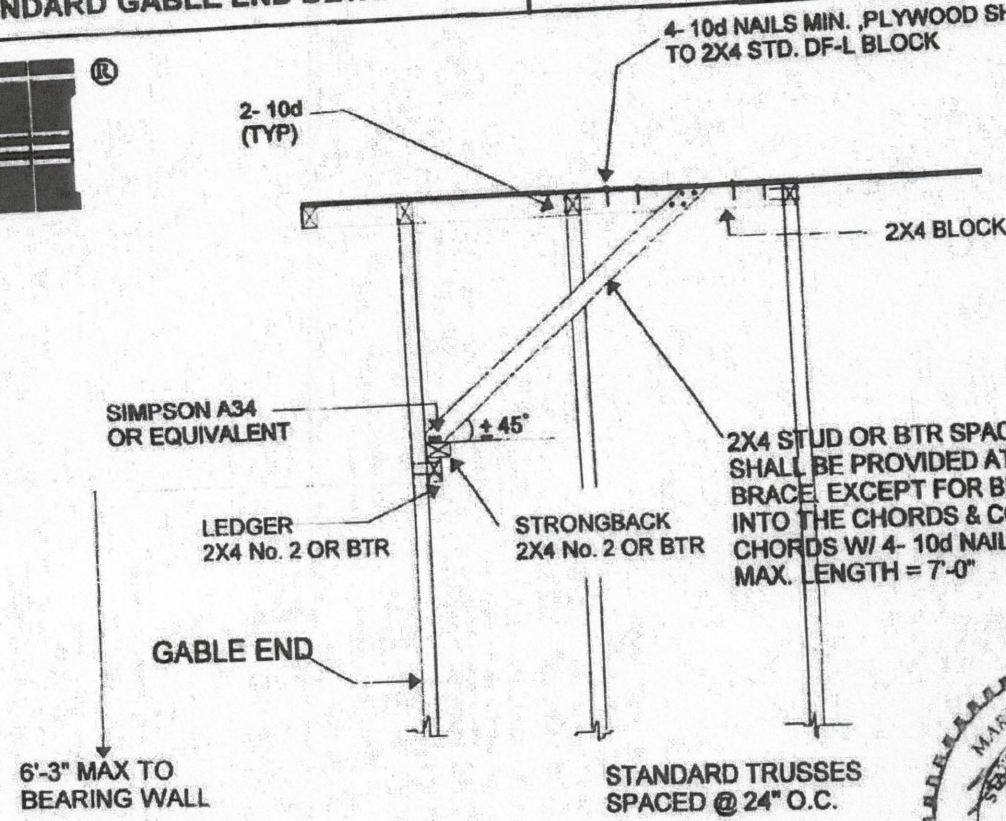
1) THE GABLE MUST BE FULLY SHEATHED W/RIGID MATERIAL ON ONE FACE BEFORE NOTCHING IF STUDS ARE TO BE SPACED AT 24" O.C. ATTACH SCAB (EQUAL OR GREATER TO THE TRUSS T.C.) TO ONE FACE OF THE TOP CHORD WITH 10D NAILS SPACED AT 6" O.C. IF STUDS ARE SPACED AT 24" O.C. AND FACE OF TRUSS IS NOT FULLY SHEATHED.
2) NO LUMBER DEFECTS ALLOWED AT OR ABOUT NOTCHES.
3) LUMBER MUST MEET OR EXCEED VISUAL GRADE #2 LUMBER AFTER NOTCHING.
4) NO NOTCHING IS PERMITTED WITHIN 2X THE OVERHANG LENGTH.

Continued on page 2

250 KLUG CIRCLE
CORONA, CA. 92880

MiTek

STANDARD GABLE END DETAIL	MII/COR - 20B	6/18/2015	PAGE 2 OF 2



ALTERNATE BRACING DETAIL

MARK PAUL RIVERA
STATE OF WASHINGTON
51976
REGISTERED
PROFESSIONAL ENGINEER
12/20/15

NOTES
1) 2X4 NO.2 OR BTR. FOR LEDGER AND STRONGBACK NAILED TOGETHER WITH 10D NAILS @ 6" O.C.
2) 2X4 LEDGER NAILED TO EACH STUD WITH 4- 10d NAILS .
3) 2X4 STRONGBACK TO BE CONNECTED TO EACH VERT. STUD WITH 2- 10d TOE NAILS
4) THE 10d NAILS SPECIFIED FOR LEDGER AND STRONGBACK ARE 10d BOX NAILS (0.131" DIA. X 3.0" LGT)

THIS ALTERNATE BRACING DETAIL IS APPLICABLE TO STRUCTURAL GABLE END IF THE FOLLOWING CONDITIONS ARE MET:

1. MAXIMUM HEIGHT OF TRUSS = 8'-6", UNLESS OTHERWISE SPECIFIED BY PROJECT ENG. OR QUALIFIED BUILDING DESIGNER.
2. MAXIMUM PANEL LENGTH ON TOP AND BOT. CHORDS = 7'-0"
3. THE HORIZONTAL TIE MEMBER AT THE VENT OPENING SHALL BE BRACED @ 4'-0" O.C. MAX.
4. PLEASE CONTACT TRUSS ENGINEER IF THERE ARE ANY QUESTIONS.

250 KLUG CIRCLE
CORONA, CA. 92880

August 10, 2010	T-BRACE / I-BRACE DETAIL WITH 2X BRACE ONLY	ST - T-BRACE 2

MiTek Industries, Inc.

Note: T-Bracing / I-Bracing to be used when continuous lateral bracing is impractical. T-Brace / I-Brace must cover 90% of web length.

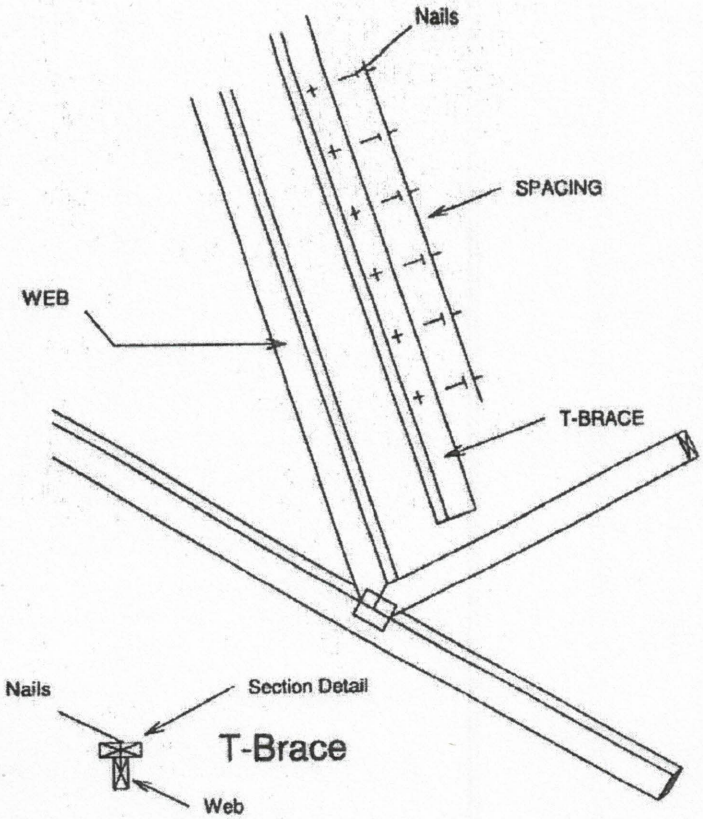
Note: This detail NOT to be used to convert T-Brace / I-Brace webs to continuous lateral braced webs.

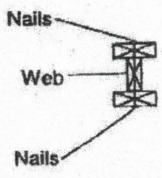
Nailing Pattern		
T-Brace size	Nail Size	Nail Spacing
2x4 or 2x6 or 2x8	10d	6" o.c.
Note: Nail along entire length of T-Brace / I-Brace (On Two-Ply's Nail to Both Plies)		

	Brace Size for One-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4 T-Brace	2x4 I-Brace
2x6	2x6 T-Brace	2x6 I-Brace
2x8	2x8 T-Brace	2x8 I-Brace

	Brace Size for Two-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4 T-Brace	2x4 I-Brace
2x6	2x6 T-Brace	2x6 I-Brace
2x8	2x8 T-Brace	2x8 I-Brace

T-Brace / I-Brace must be same species and grade (or better) as web member.





I-Brace

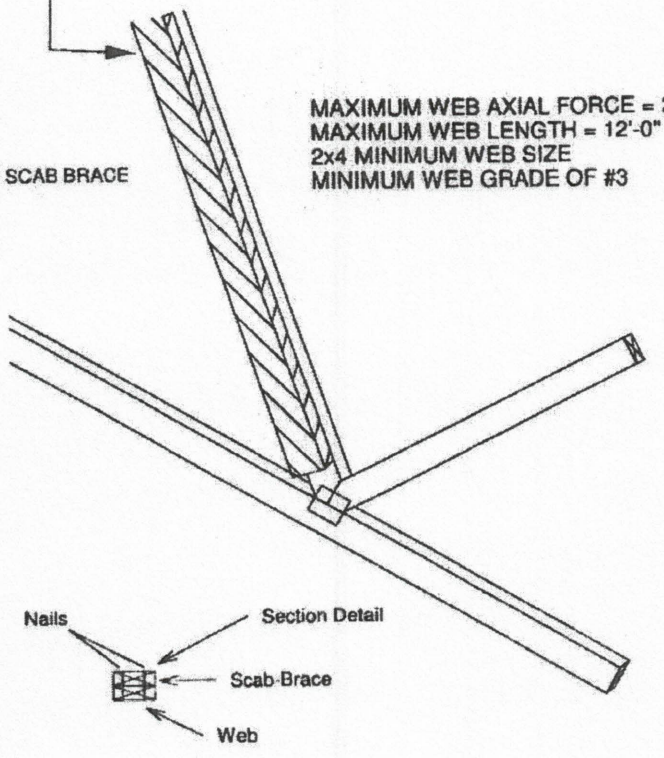
JANUARY 1, 2009	SCAB-BRACE DETAIL	ST - SCAB-BRACE

MiTek USA, Inc.

Note: Scab-Bracing to be used when continuous lateral bracing at midpoint (or T-Brace) is impractical.
Scab must cover full length of web +/- 6".

*** THIS DETAIL IS NOT APLICABLE WHEN BRACING IS *** REQUIRED AT 1/3 POINTS OR I-BRACE IS SPECIFIED.

APPLY 2x___ SCAB TO ONE FACE OF WEB WITH
2 ROWS OF 10d (3" X 0.131") NAILS SPACED 6" O.C.
SCAB MUST BE THE SAME GRADE, SIZE AND
SPECIES (OR BETTER) AS THE WEB.



Scab-Brace must be same species grade (or better) as web member.

MARCH 12, 2009	WEB BRACING RECOMMENDATIONS	ST-WEBBRACE

MiTek USA, Inc.

MiTek USA, Inc.

BRACE BAY SIZE*	MAXIMUM TRUSS WEB FORCE (lbs.) (See note 7)										
	24"O.C.				48"O.C.				72" O.C.		
	BRACING MATERIAL TYPE				BRACING MATERIAL TYPE				BRACING MATERIAL TYPE		
	A	B	C	D	A	B	C	D	C	D	
10'-0"	1610	1886	1886	2829							
12'-0"	1342	1572	1572	2358		3143	3143	4715	4715	7074	
14'-0"	1150	1347	1347	2021							
16'-0"	1006	1179	1179	1768		2358	2358	3536			
18'-0"	894	1048	1048	1572					3143	4715	
20'-0"	805	943	943	1414		1886	1886	2829			

*Bay size shall be measured in between the centers of pairs of diagonals.

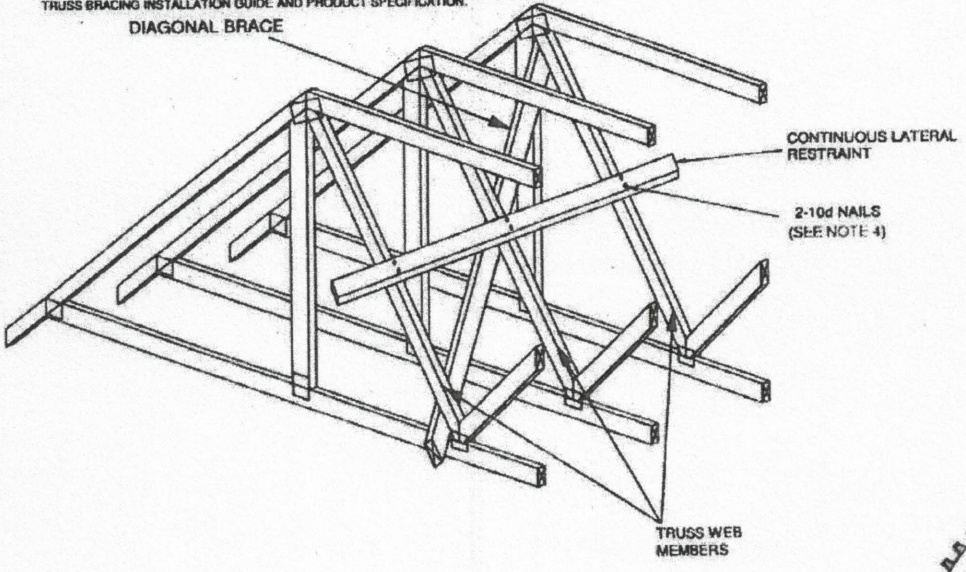
TYPE	BRACING MATERIALS
A	1 X 4 IND. 45 SYP -OR- 1 X 4 #2 SRB (DF, HF, SPF)
B	2 X 3 #3, STD, CONST (SPF, DF, HF, OR SYP)
C	2 X 4 #3, STD, CONST (SPF, DF, HF, OR SYP)
D	2 X 6 #3 OR BETTER (SPF, DF, HF, OR SYP)

GENERAL NOTES

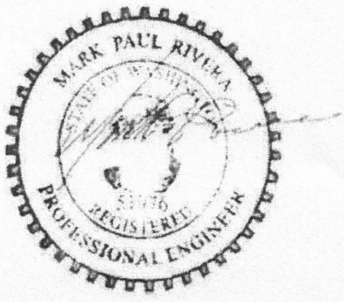
1. DIAGONAL BRACING IS REQUIRED TO TRANSFER THE CUMULATIVE LATERAL BRACE FORCE INTO THE ROOF AND/OR CEILING DIAPHRAGM. THE DIAPHRAGM IS TO BE DESIGNED BY A QUALIFIED PROFESSIONAL.
2. THESE CALCULATIONS ARE BASED ON LATERAL BRACE CARRYING 2% OF THE WEB FORCE.
3. DIAGONAL BRACING MATERIAL MUST BE SAME SIZE AND GRADE OR BETTER, AS THE LATERAL BRACE MATERIAL, AND SHALL BE INSTALLED IN SUCH A MANNER THAT IT INTERSECTS WEB MEMBERS AT APPROX. 45 DEGREES AND SHALL BE NAILED AT EACH END AND EACH INTERMEDIATE TRUSS WITH 2-8d (0.131"x2.5") FOR 1x4 BRACES, 2-10d (0.131"x 3") FOR 2x3 and 2x4 BRACES, AND 3-10d (0.131"x3") FOR 2x6 BRACES.
4. CONNECT LATERAL BRACE TO EACH TRUSS WITH 2-8d (0.131"X2.5") NAILS FOR 1x4 LATERAL BRACES, 2-10d (0.131"x3") NAILS FOR 2x3 and 2x4 LATERAL BRACES, AND 3-10d (0.131"x3") FOR 2x6 LATERAL BRACES.
5. LATERAL BRACE SHOULD BE CONTINUOUS AND SHOULD OVERLAP AT LEAST ONE TRUSS SPACE FOR CONTINUITY.
6. FOR ADDITIONAL GUIDANCE REGARDING DESIGN AND INSTALLATION OF BRACING, CONSULT DSB 89 TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES AND BCSI 1 GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES, JOINTLY PRODUCED BY WOOD TRUSS COUNCIL OF AMERICA and TRUSS PLATE INSTITUTE. www.sbcindustry.com and www.tpinst.org
7. REFER TO SPECIFIC TRUSS DESIGN DRAWING FOR WEB MEMBER FORCE.
8. TABULATED VALUES ARE BASED ON A DOL. = 1.15

FOR STABILIZERS:

FOR A SPACING OF 24" O.C. ONLY, MITEK "STABILIZER" TRUSS BRACING SYSTEMS CAN BE SUBSTITUTED FOR TYPE A, B, C AND D BRACING MATERIAL. DIAGONAL BRACING FOR STABILIZERS ARE TO BE PROVIDED AT BAY SIZE INDICATED ABOVE. WHERE DIAPHRAGM BRACING IS REQUIRED AT PITCH BREAKS, STABILIZERS MAY BE REPLACED WITH WOOD BLOCKING. SEE "STABILIZER" TRUSS BRACING INSTALLATION GUIDE AND PRODUCT SPECIFICATION.



This information is provided as a recommendation to assist in the requirement for permanent bracing of the individual truss web members. Additional bracing may still be required for the stability of the overall roof system. The method shown here is just one method that can be used to provide stability against web buckling.



JANUARY 1, 2009	L-BRACE DETAIL	ST - L-BRACE

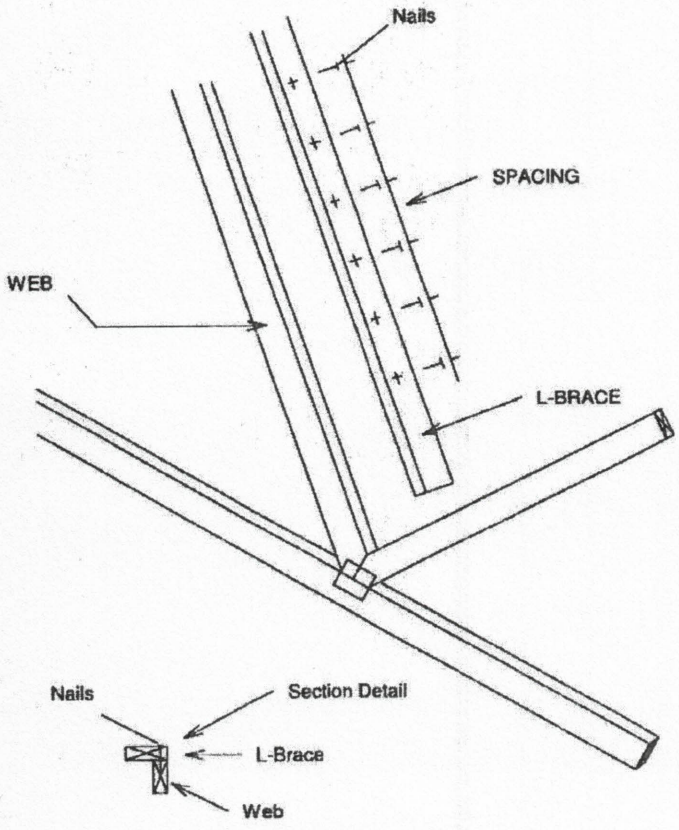
MiTek USA, Inc.

Nailing Pattern		
L-Brace size	Nail Size	Nail Spacing
1x4 or 6	10d	8" o.c.
2x4, 6, or 8	16d	8" o.c.
Note: Nail along entire length of L-Brace (On Two-Ply's Nail to Both Plies)		

Note: L-Bracing to be used when continuous lateral bracing is impractical. L-brace must cover 90% of web length.

	L-Brace Size for One-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	1x4	***
2x6	1x6	***
2x8	2x8	***

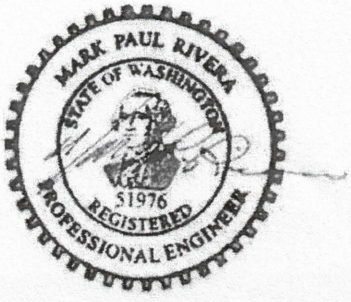
*** DIRECT SUBSTITUTION NOT APLICABLE.



	L-Brace Size for Two-Ply Truss	
	Specified Continuous Rows of Lateral Bracing	
Web Size	1	2
2x3 or 2x4	2x4	***
2x6	2x6	***
2x8	2x8	***

*** DIRECT SUBSTITUTION NOT APLICABLE.

L-Brace must be same species grade (or better) as web member.



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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:

MITEK INDUSTRIES, INC.
14515 NORTH OUTER FORTY, SUITE 300
CHESTERFIELD, MISSOURI 63017
(314) 434-1200
www.mii.com

EVALUATION SUBJECT:

MiTek® TRUSS CONNECTOR PLATES: TL18, MT18, MT18HS™, M18SHS™, TL20 and MT20

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)
- 1997 *Uniform Building Code™* (UBC)

Property evaluated:

Structural

2.0 USES

MiTek® metal truss connector plates are used as joint connector components of light wood-frame trusses.

3.0 DESCRIPTION

3.1 MiTek® TL18 and MT18:

Models TL18 and MT18 metal truss connector plates are manufactured from minimum No. 18 gage [0.0466 inch total thickness (1.18 mm)], ASTM A653 SS, Grade 40 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.16 mm). The plates have teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of the slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch (12.7 mm) width increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.2 MiTek® MT18HS™:

Model MT18HS™ metal truss connector plates are manufactured from minimum No. 18 gage [0.0466 inch total thickness (1.18 mm)], ASTM A653, Grade 60, high-strength, low-alloy steel (HSLAS) with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.16 mm). The plate has teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of the slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch (12.7 mm) width increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.3 MiTek® M18SHS™:

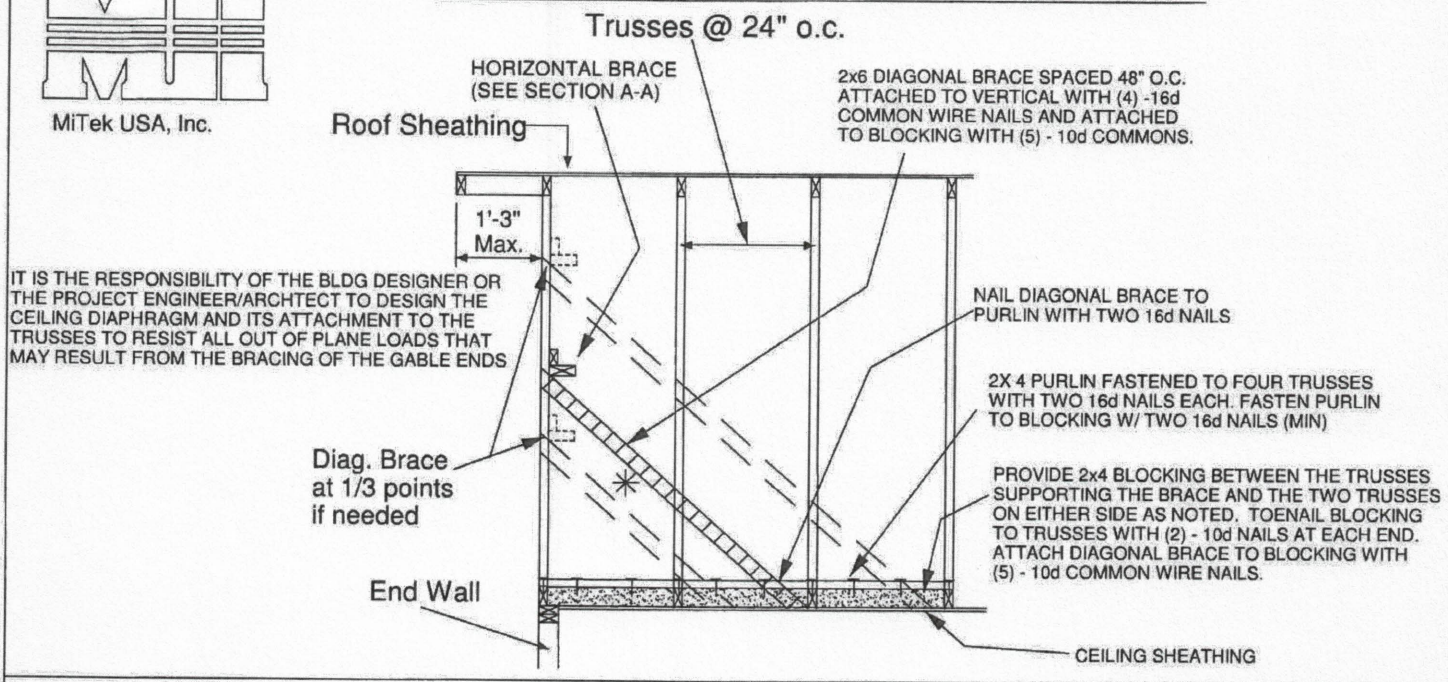
Model M18SHS™ metal truss connector plates are manufactured from minimum No. 18 gage [0.0466-inch (1.18 mm) total thickness], hot-dipped galvanized steel that meets the requirements of ASTM A653 SS, Grade 80 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base metal thickness of 0.0456 inch (1.16 mm). The plates have $^3/_8$-inch-long (9.5 mm) teeth, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on center. The transverse centerlines of adjacent slots are staggered 0.10 inch (2.54 mm). The distance between longitudinal centerlines of slots is 0.25 inch (6.35 mm). There are eight teeth per square inch (645 mm^2) of surface area. Plates are available in $^1/_2$-inch-width (12.7 mm) increments, up to 12 inches (304.8 mm), and lengthwise in 1-inch (25.4 mm) multiples. See Figure 1 for details.

3.4 MiTek® TL20 and MT20™:

Models TL20 and MT20™ metal truss connector plates are manufactured from minimum No. 20 gage [0.0356 inch total thickness (0.9 mm)], ASTM A653 SS, Grade 40 steel, with a G60 galvanization coating [0.0005 inch thickness on each side (0.013 mm)] and having a base-metal thickness of 0.0346 inch (0.88 mm). The plates have teeth $^3/_8$ inch (9.5 mm) long, punched in pairs formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch (25.4 mm) on

MiTek USA, Inc.

ALTERNATE DIAGONAL BRACING TO THE BOTTOM CHORD



BRACING REQUIREMENTS FOR STRUCTURAL GABLE TRUSSES

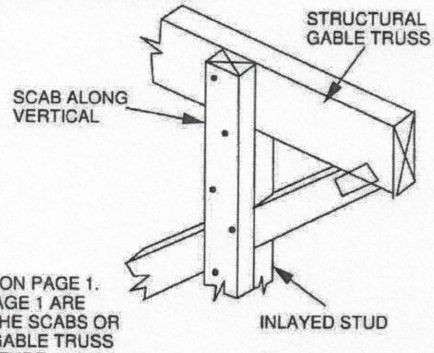
STRUCTURAL GABLE TRUSSES MAY BE BRACED AS NOTED:

METHOD 1 : ATTACH A MATCHING GABLE TRUSS TO THE INSIDE FACE OF THE STRUCTURAL GABLE AND FASTEN PER THE FOLLOWING NAILING SCHEDULE.

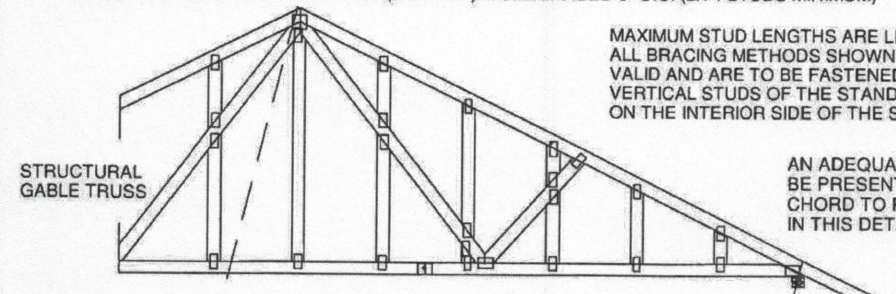
METHOD 2 : ATTACH 2X_ SCABS TO THE FACE OF EACH VERTICAL MEMBER ON THE STRUCTURAL GABLE PER THE FOLLOWING NAILING SCHEDULE. SCABS ARE TO BE OF THE SAME SIZE, GRADE AND SPECIES AS THE TRUSS VERTICALS

NAILING SCHEDULE:

- FOR WIND SPEEDS 120 MPH (ASCE 7-98, 02, 05), 150 MPH (ASCE 7-10) OR LESS, NAIL ALL MEMBERS WITH ONE ROW OF 10d (.131" X 3") NAILS SPACED 6" O.C.
- FOR WIND SPEEDS GREATER 120 MPH (ASCE 7-98, 02, 05), 150 MPH (ASCE 7-10) NAIL ALL MEMBERS WITH TWO ROWS OF 10d (.131" X 3") NAILS SPACED 6" O.C. (2X 4 STUDS MINIMUM)

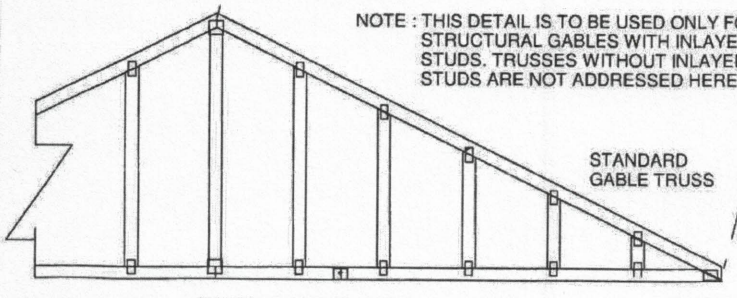


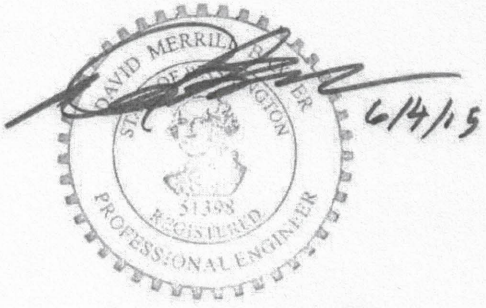
MAXIMUM STUD LENGTHS ARE LISTED ON PAGE 1. ALL BRACING METHODS SHOWN ON PAGE 1 ARE VALID AND ARE TO BE FASTENED TO THE SCABS OR VERTICAL STUDS OF THE STANDARD GABLE TRUSS ON THE INTERIOR SIDE OF THE STRUCTURE.



AN ADEQUATE DIAPHRAGM OR OTHER METHOD OF BRACING MUST BE PRESENT TO PROVIDE FULL LATERAL SUPPORT OF THE BOTTOM CHORD TO RESIST ALL OUT OF PLANE LOADS. THE BRACING SHOWN IN THIS DETAIL IS FOR THE VERTICAL/STUDS ONLY.

NOTE : THIS DETAIL IS TO BE USED ONLY FOR STRUCTURAL GABLES WITH INLAYED STUDS. TRUSSES WITHOUT INLAYED STUDS ARE NOT ADDRESSED HERE.





JANUARY 28, 2015	LATERAL TOE-NAIL DETAIL	ST-TOENAIL_SP

MiTek USA, Inc.

NOTES:
1. TOE-NAILS SHALL BE DRIVEN AT AN ANGLE OF 45 DEGREES WITH THE MEMBER AND MUST HAVE FULL WOOD SUPPORT. (NAIL MUST BE DRIVEN THROUGH AND EXIT AT THE BACK CORNER OF THE MEMBER END AS SHOWN.
2. THE END DISTANCE, EDGE DISTANCE, AND SPACING OF NAILS SHALL BE SUCH AS TO AVOID UNUSUAL SPLITTING OF THE WOOD.
3. ALLOWABLE VALUE SHALL BE THE LESSER VALUE OF THE TWO SPECIES FOR MEMBERS OF DIFFERENT SPECIES.

TOE-NAIL SINGLE SHEAR VALUES PER NDS 2001 (lb/nail)

	DIAM.	SP	DF	HF	SPF	SPF-S
3.5" LONG	.131	88.0	80.6	69.9	68.4	59.7
	.135	93.5	85.6	74.2	72.6	63.4
	.162	108.8	99.6	86.4	84.5	73.8
3.25" LONG	.128	74.2	67.9	58.9	57.6	50.3
	.131	75.9	69.5	60.3	59.0	51.1
	.148	81.4	74.5	64.6	63.2	52.5

VALUES SHOWN ARE CAPACITY PER TOE-NAIL.
APPLICABLE DURATION OF LOAD INCREASES MAY BE APPLIED.

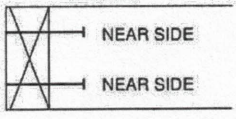
EXAMPLE:
(3) - 16d NAILS (.162" diam. x 3.5") WITH SPF SPECIES BOTTOM CHORD

For load duration increase of 1.15:
3 (nails) X 84.5 (lb/nail) X 1.15 (DOL) = 291.5 lb Maximum Capacity

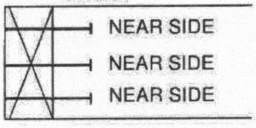
THIS DETAIL APPLICABLE TO THE THREE END DETAILS SHOWN BELOW

VIEWS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY

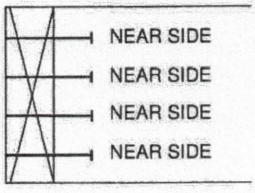
SIDE VIEW
(2x3)
2 NAILS

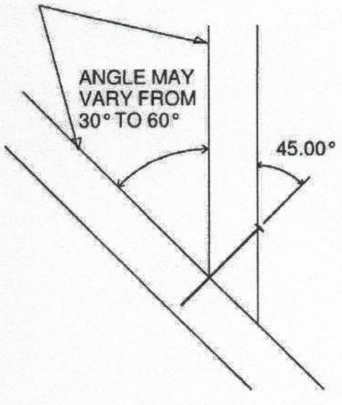


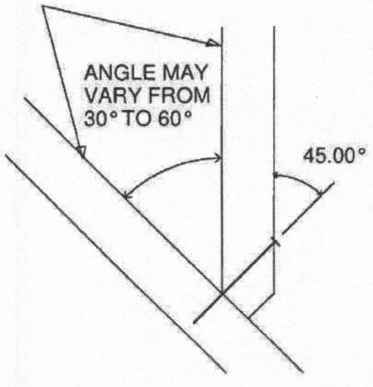
SIDE VIEW
(2x4)
3 NAILS

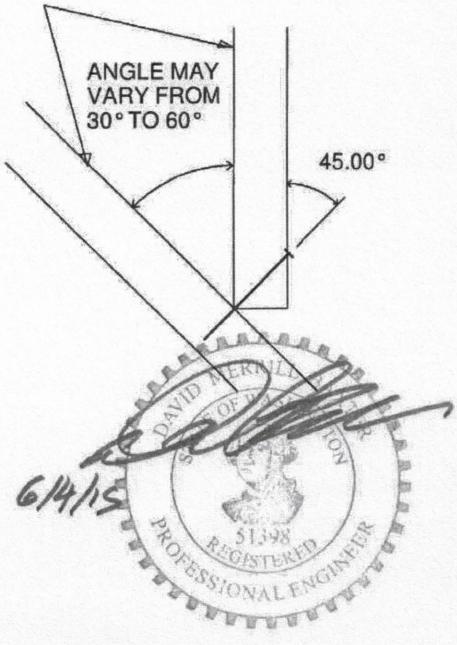


SIDE VIEW
(2x6)
4 NAILS





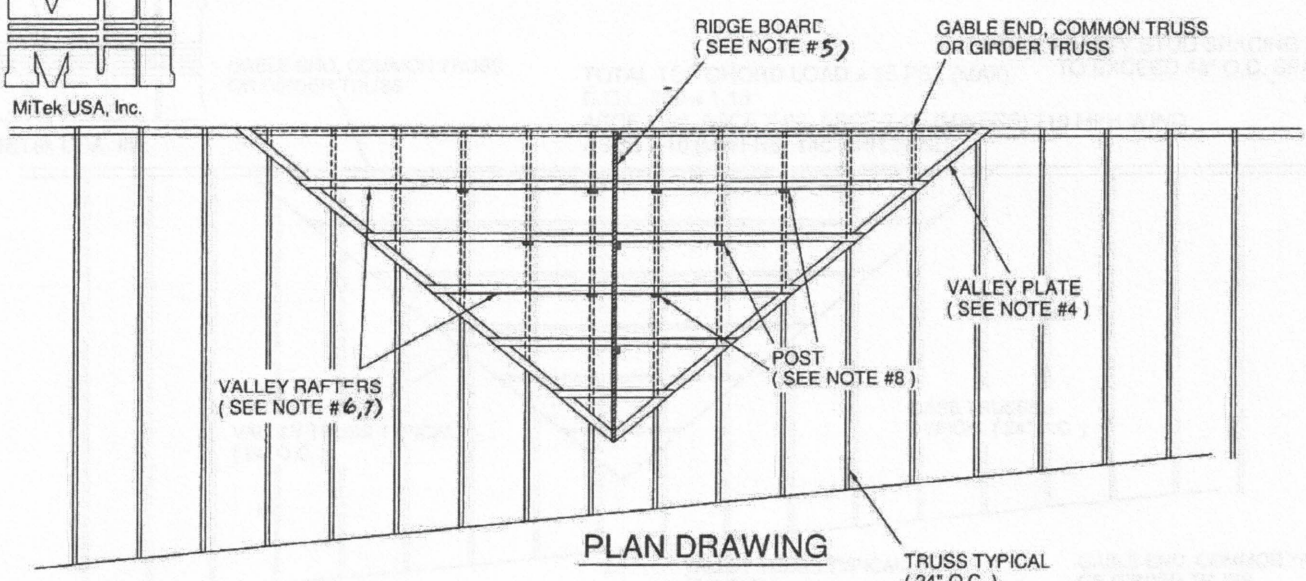




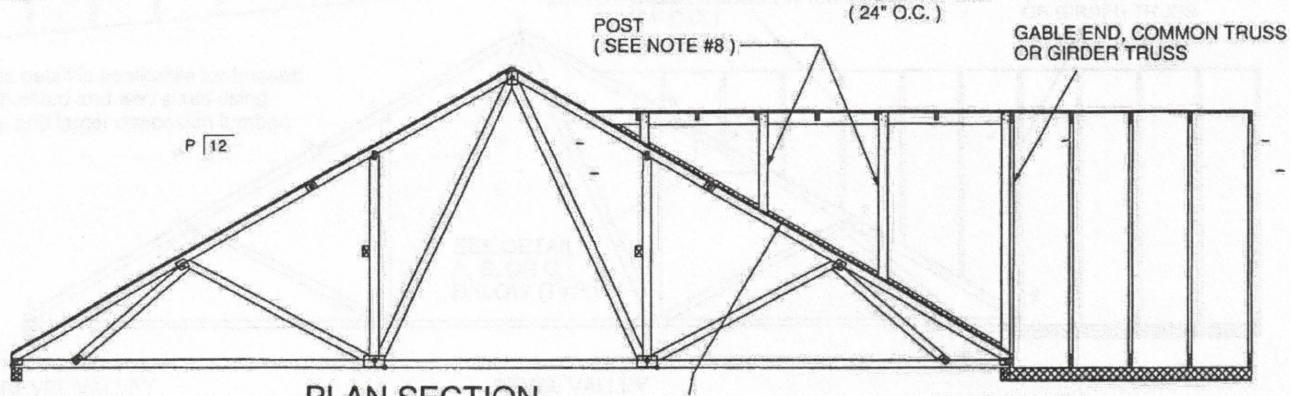
FEBRUARY 14, 2012	CONVENTIONAL VALLEY FRAMING DETAIL	ST-VALLEY1

MiTek USA, Inc.

MiTek USA, Inc.



PLAN DRAWING



PLAN SECTION

GENERAL SPECIFICATIONS

1. WITH BASE TRUSSES ERECTED (INSTALLED), APPLY SHEATHING TO TOP CHORD OF SUPPORTING (BASE) TRUSSES.
2. BRACE BOTTOM CHORD AND WEB MEMBERS PER TRUSS DESIGNS.
3. DEFINE VALLEY RIDGE BY RUNNING A LEVEL STRING FROM THE INTERSECTING RIDGE OF THE (a.) GABLE END, (b.) GIRDER TRUSS OR (c.) COMMON TRUSS TO THE ROOF SHEATHING.
4. INSTALL 2 x 4 VALLEY PLATES. FASTEN TO EACH SUPPORTING TRUSS WITH (2) 16d (3.5" X .131") NAILS.
5. SET 2 x 6 #2 RIDGE BOARD. SUPPORT WITH 2 x 4 POSTS SPACED 48" O.C.. BEVEL BOTTOM OF POST TO SET EVENLY ON THE SHEATHING. FASTEN POST TO RIDGE WITH (4) 10d (3" X .131")NAILS. FASTEN POST TO ROOF SHEATHING WITH (3) 10d (3" X .131")TOE-NAILS.
6. FRAME VALLEY RAFTERS FROM VALLEY PLATE TO RIDGE BOARD. MAXIMUM RAFTER SPACING IS 24" O.C.. FASTEN VALLEY RAFTER TO RIDGE BEAM WITH (3) 16d (3.5" X .131") TOE-NAILS. FASTEN VALLEY RAFTER TO VALLEY PLATE WITH (3) 16d (3.5" X .131") TOE-NAILS.
7. SUPPORT THE VALLEY RAFTERS WITH 2 x 4 POSTS 48" O.C (OR LESS) ALONG EACH RAFTER. INSTALL POSTS IN A STAGGERED PATTERN AS SHOWN ON PLAN DRAWING. ALLIGN POSTS WITH TRUSSES BELOW. FASTEN VALLEY RAFTER TO POST WITH (4) 10d (3" X .131") NAILS. FASTEN POST THROUGH SHEATHING TO SUPPORTING TRUSS WITH (2) 16d (3.5" X .131") NAILS.
8. POSTS SHALL BE 2 x 4 #2 OR BETTER SPRUCE PINE FIR, DOUG FIR LARCH OR SOUTHERN YELLOW PINE. POSTS EXCEEDING 75" SHALL BE INCREASED TO 4 x 4 OR BE PRE-ASSEMBLED (2) PLY 2 x 4's FASTENED TOGETHER WITH 2 ROWS OF 10d NAILS 6" O.C.

NOTE:
48" O.C. MAXIMUM POST SPACING

LIVE LOAD = 30 PSF (MAX)
DEAD LOAD = 15 PSF (MAX)
D.O.L. INC = 1.15
ASCE 7-98, ASCE 7-02, ASCE 7-05 90 MPH (MWFRS)
ASCE7-10 115 MPH (MWFRS)

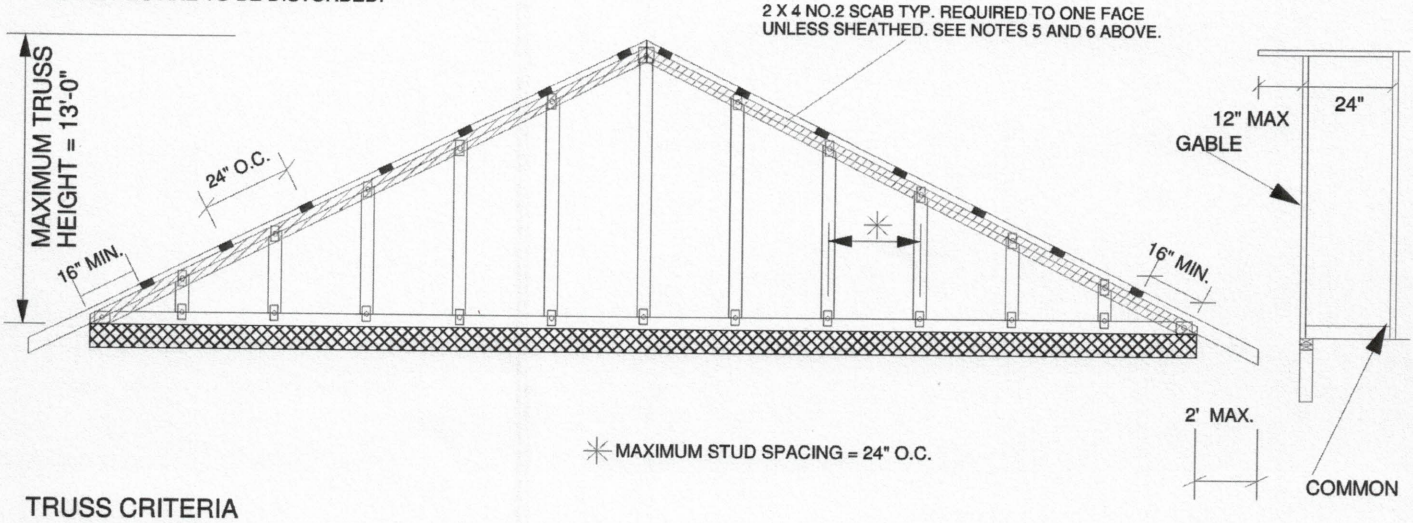
SEPTEMBER 7, 2017	REPAIR TO NOTCH 2X4 TOP CHORD OF GABLE TRUSS	MII-REP19A

MiTek USA, Inc.
ENGINEERED BY TRENCO
A MiTek Affiliate

NOTES:

1. THE END DISTANCE, EDGE DISTANCE, AND SPACING OF NAILS SHALL BE SUCH AS TO AVOID SPLITTING OF THE WOOD.
2. LUMBER MUST BE CUT CLEANLY AND ACCURATELY AND THE REMAINING WOOD MUST BE UNDAMAGED.
3. THIS REPAIR IS TO BE USED FOR SINGLE PLY TRUSSES IN THE 2X_ ORIENTATION ONLY.
4. CONNECTOR PLATES MUST REMAIN FULLY EMBEDDED AND UNDISTURBED.
5. 2 X 4 NO.2 SCAB REQUIRED TO ONE FACE OF TOP CHORD OF TRUSS WITH ONE ROW OF 10d (0.131 X 3") NAILS SPACED 6" O.C.
6. SCAB SHOWN MAY BE OMITTED IF THE OUTSIDE FACE OF THE GABLE IS SHEATHED WITH (MIN) 7/16" OSB OR PLYWOOD.
7. SEE MITEK STANDARD GABLE END DETAILS FOR WIND BRACING REQUIREMENTS.

3 1/2" WIDE X 1 1/2" DEEP NOTCH IN TOP CHORD 24" O.C. AS SHOWN
LUMBER TO BE CUT CLEANLY AND ACCURATELY,
NO PLATES ARE TO BE DISTURBED.



TRUSS CRITERIA

MAXIMUM SPAN: 50'
SPACING = 24" O.C.
PITCH BETWEEN 3/12 AND 12/12
LOADING : 40-10-0-10 (MAX)
DURATION FACTOR : 1.15
TOP CHORD : 2x4 (NO 2 MIN)
BEARING : CONTINUOUS
STUD SPACING :24" O.C. (MAX)
CATEGORY II BUILDING
ASCE7-98, ASCE7-02, ASCE7-05 -100 MPH
ASCE7-10 - 125 MPH
TRUSSES NOT FITTING THESE CRITERIA SHALL BE EXAMINED INDIVIDUALLY.

REFER TO INDIVIDUAL TRUSS DESIGN
FOR PLATE SIZES AND LUMBER GRADES

DAVID MERRILL BAXTER
STATE OF WASHINGTON
51398
REGISTERED
PROFESSIONAL ENGINEER

09/11/2017

REGISTERED PROFESSIONAL ENGINEER
89200PE
OREGON
MAY 14, 2014
DAVID MERRILL BAXTER

09/11/2017

EXPIRES: 12/31/2017