Expired

DEPARTMENT OF BUILDING & SAFETY
CITY OF BEAUMONT
BEAUMONT, CALIFORNIA

CONSTRUCTION ESTIMATE

	Sq Feet	Rate	Value
RESID GARAGE	750.00	$20.00	$15,000.00

ESTIMATED VALUATION $15,000.00

NO.	MECHANICAL FEES	
	Vent System: Hood ☐ Fan ☐ Evap. Cool ☐	
	Furnace: Unit ☐ Wall ☐ Floor ☐ Suspended ☐	
	Air Handling Unit	
	Natural Gas Pipe	
	Appliance Vent	
	Forced Heating System	
	Fireplace	
	Misc. Equipment	
	Permit Fee	
	TOTAL	$0.00

NO.	ELECTRICAL FEES	
	Private Pool	
	Distribution Pole	
	Signs	
	Motor 1HP/less	
	Motor >1HP-<10HP	
	Motor >10HP-<50HP	
	Motor >50HP-<100HP	
	Motor >100HP	
7	Fixtures-first 20	$7.00
	Fixtures-over 20	
7	Outlets-first 20	$7.00
	Outlets-over 20	
1	Subpanel	$16.25
	Misc Apparatus	
	Residential Appl.	
	Non-Residential Appl.	
	Construction Pole	
	Serv Ent/600Vor<200A	
	Serv Ent/600Vor<1000A	
	Serv Ent/>600Vor>1000A	
	Residence per sq.ft.	
1	Permit Fee	$25.00
	TOTAL	$55.25

NO.	PLUMBING FEES	
	Leach System	
	Lateral Connection	
	Drainage Piping	
	Drinking Fountain	
	Urinal	
	Water Piping	
	Floor Drain	
	Washer (Auto)	
	Laundry Tray	
	Kitchen Sink	
	Water Closet	
	Lavatory	
	Shower	
	Bath Tub	
	Water Heater	
	Sewage Disposal	
	House Sewer	
	Gas Piping	
	Grease Interceptor	
	Permit Fee	
	TOTAL	$0.00

E. Area Benefit Dist.		W. Area Benefit Dist.	
Sewer Connect Fee 9100-8660		Demolition Fee 1200-7740	
Plan Check Fee 1200-8502		Fire Station 1200-8502	
Spec. Inspection 1200-7740		Signalization 1200-B502	
Investigation 1200-7740		Construction Fee 1200-7750	$251.25
Railroad Crossing 1200-8502		Grading Fee 1200-7750	
Mechanical Fee 1200-7750	$0.00	Plumbing Fee 1200-7750	$0.00
Electrical Fee 1200-7750	$55.25	S.M.I.P. 1200-8502	$1.50
G.P.F. 1200-8502		B.S.F.F. 1200-8502	
TOTAL FEES	**$308.00**		

Cash ☐ Check ☑ Check No. 858

Received By Cynthia

Job Address 1765 Beech Pl.			Owner Ferguson
Legal Description 406-241-013			Valuation $15,000
Group Residential		Type New Outbuilding	
Project Description Garage			Date 4/22/03
Plan Checked		Plan No.	
Inspector / Approval			Final Date
Contractor			State License No.
Address			Business License No.
C/S/Z			Phone
Owner Lynn A Ferguson			
Address 1765 Beech Pl.			
C/S/Z Beaumont, Ca 92223			Phone

PERMIT NUMBER BP2003-628

This permit shall become void if work is not commenced within 180 days. Cessation of work for 180days shall also cause permit to become void. I hereby agree that all work in connection with this permit will be done in accordance with the ordinances of the City of Beaumont and the State of California. I also agree to carry compensation insurance upon my employees. Compliance with laws of the State of California covering contractors is also guaranteed.

Signature of contractor or Authorized Agent _____ Date _____ Signature of Owner (if owner) X Lynn A Ferguson Date 4/22/03

INSPECTION RECORD

ADDRESS _____

REASON _____

NO.	OPERATION	DATE	INSPECTOR
	STRUCTURAL		
1	Set Back		
2	FTGS & FRMS	5-20-03	KM
3	Steel		
4	Grout Blocks		
5	Bond Beams		
6	Roof Deck	6-25-03	KM
7	Framing		
8	Insulation		
9	Garage Fire Wall		
10	Fireplace P/L ☐ T/O ☐		
11	Exterior Lath		
12	Internal Lath		
13	Exterior Grade		
14	Shear Wall	6-25-03	KM
15	Slab		
16			
17	FINAL		
	ELECTRICAL		
18	Power Pole		
19	Conduit		
20	Service Entrance		
21	Wiring	12-2-03	TP
22	Fixtures		
23	Service		
24	Ufer		
25			
26			
27	FINAL		

NO.	OPERATION	DATE	INSPECTOR
	MECHANICAL		
28	Ventilation System		
29	Plenums & Ducts		
30	Furnace Compart.		
31	Inlets & Outlets		
32	Combustion Air		
33	Compressor		
34	Appl. Clearance		
35	Fire Damper		
36	Smoke Detention Device		
37	Commercial Hood		
38			
39			
40	FINAL		
	PLUMBING		
41	Ground Plumb		
42	Water		
43	Rough Plumb		
44	Vents		
45	Septic Tank		
46	Sewer		
47	Water Heater		
48	Copper		
49	Water Service		
50	Gas Test		
51			
52			
53			
54	Final		

OP N NO.	PROGRESS CHECKS
	8-25-04 Extended Permit 6 months TO 2-25-10 ma They Ran out of money.

B A C K

F R O N T

N



494 S. Fourth Street Banning, CA 92220

909-922-2532 Fax 909-922-2632

"TRUSS" us for quality!

Date: **2-14-03**

Quote #: **4173**

Customer Name: **Guy Thomas**

494 S. Fourth Street
Banning, CA 92220

THE TRUSS COMPANY

Phone 909-922-2532
Fax 909-922-2632

We are a material supplier not a Sub-Contractor. Be certain that the dimensions and quantity as shown on these calcs agree with your plans and are what you want. Consult with Building Contractor, Architect, Engineer or Building Consultant. **Contact your Truss Designer immediately with any questions or corrections.**

- **Signed authorization is required prior to fabrication**
- **Engineering is valid only if manufactured by the Truss Company**
- **Any product supplied by The Truss Company shall not be cut or altered in any way without specific instruction from an authorized representative of the The Truss Company.**

CERTIFIED IN PLANT WOOD TRUSS INSPECTIONS BY
NATIONAL INSPECTION ASSOCIATION, INC
IN ACCORDANCE WITH ENGINEERED PLAN SPECIFICATIONS
AND THE UNIFORM BUILDING CODE STANDARDS
UBC SECTION 2321.3 AND IBC SECTION 2303.4
PREFABRICATED TRUSSES

IAS 1607

MEMBER
Wood Truss Council of America

NOTICE * WARNING * NOTICE
BE SURE ERECTION CONTRACTOR UNDERSTANDS
HIB-91. SUMMARY SHEETS ENCLOSED

High Tech Quality & Service

NATIONAL INSPECTION ASSOCIATION, INC.

Inspection of Prefabricated Trusses / Quality Audited by AA-583

PLANT The Truss Company DATE/ARRIVE/DEPART 1-29-03

ADDRESS Banning, CA PLATE MANUFACTURER TRUSWAL

PLANT CONTACT Sherry; John ENGINEERS DES. DWG. Larry Messemer

Non-Scheduled In Plant Audits As Per Uniform Building Code Section 2321.3 and IBC Section 2303.4 or Newest Sectionsn, and In Accordance With Engineered Plan Specifications.

CATEGORY	CONFORMING	NON-CONFORMING	REMARKS
Lumber Grade	Conf.		On Grade per Engineer Up Grades
Connector Plates / I.C.B.O.	1607		
Span & Pitch	Conf.		
Workmanship	Excellent		
Joint Accuracy	Excellent		
Bearing of Wood Joints	Conf.		
Knots in Plate Area	Conf.		
Split Limitation	Conf.		
Plate Placement	Good		Per Ansi/TPI/WTCA 2002
Plate Size	Conf.		Up Grades
Condition of Plate Teeth	Conf.		
Plate to Wood Tolerance	Good		
In-Plant Handling	Good		
Bundling & Loading	Conf.		
Storage	Conf.		
Jig & Press Adequacy	Conf.		
Marking Legibility	O.K.		
Plant Stamp Verification	Conf.		How Many Stamps On Site: Three
Trusses Meet UBC & IBC Requirements	Yes		Trusses exceed UBC & IBC
In-Plant Q.C. Records	Conf		As Per ICBO/ES Requirements

Order No. / Name

W2049; W2085; W2048; W2078; W2083; W2053;

Other Comments or Remarks, If Needed, Will Be Added To An Addition Page

Q.C. Supervisor's Signature

Keith H. Anderson
NIA Inspector's Signature

2475 Lancaster Dr. N.E. • Suite B19
P.O. Box 17938 • Salem, Oregon 97305-7938

503-391-1003 Office
503-391-1007 Fax

ICBO Evaluation Service, Inc.
Certificate of Accreditation

This is to signify that

NATIONAL INSPECTION ASSOCIATION, Inc.
dba QUALITY SYSTEMS MANAGEMENT., Inc.
2475 LANCASTER DRIVE, N. E., SUITE B 19
SALEM, OREGON 97305

Quality Control Agency AA-583
(Revised: December 1, 2001)

has demonstrated compliance with the ICBO Evaluation Service, Inc., Acceptance Criteria for Quality Control Agency Accreditation (equivalent to ISO Guide 39) and has been accredited for two years, commencing February 1, 2001, to provide quality control inspection services for products in the following categories:

Structural Glued-Laminated Timber; Light Metal Plate Connected Wood Trusses and Wood-Framed Prefabricated Lateral-Force Resisting Panels; Precast and Prestressed Structural Concrete and Masonry; Steel Fabrication; Plumbing Fixtures

Patrick V. McCullen
Manager, Field Services Group

C. P. Ramani, P.E.
Vice-President

This accreditation certificate supersedes any ICBO ES accreditation certificate bearing an earlier date. The certificate becomes invalid upon suspension, cancellation, revocation, or expiration of accreditation. See the ICBO ES *Index of Evaluation Reports* (printed version, or on the web at www.icboes.org) for current accreditation information, or contact ICBO ES directly at (562) 699-0543. 12/13/2001

Certificate of Quality

National Inspection Association, Inc.
P.O. Box 17938
Salem, oregon 97305

We are an Inspection Agency recognized by the International Conference of Building Officials, ICBO ES Report No. AA-583.

This is to Certify that :

THE TRUSS COMPANY
BANNING, CALIFORNIA

Is under our Audited Quality Control Program and have been Since :

June 1998

We Audit production under UBC and IBC Structural Engineering .

U.B.C. Section : U.B.C. 97 Section 2304.4.4 & ANSI/TPI 2321.3

I.B.C. Section : I.B.C. 2000 Section 2303.4

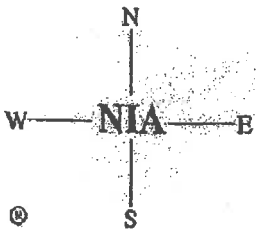
Inspections are made at least Quarterly and we make Intermittent Inspection of Trusses in the Field. We find Quality Observance of this Manufacture to be in Conformance to the Standards.

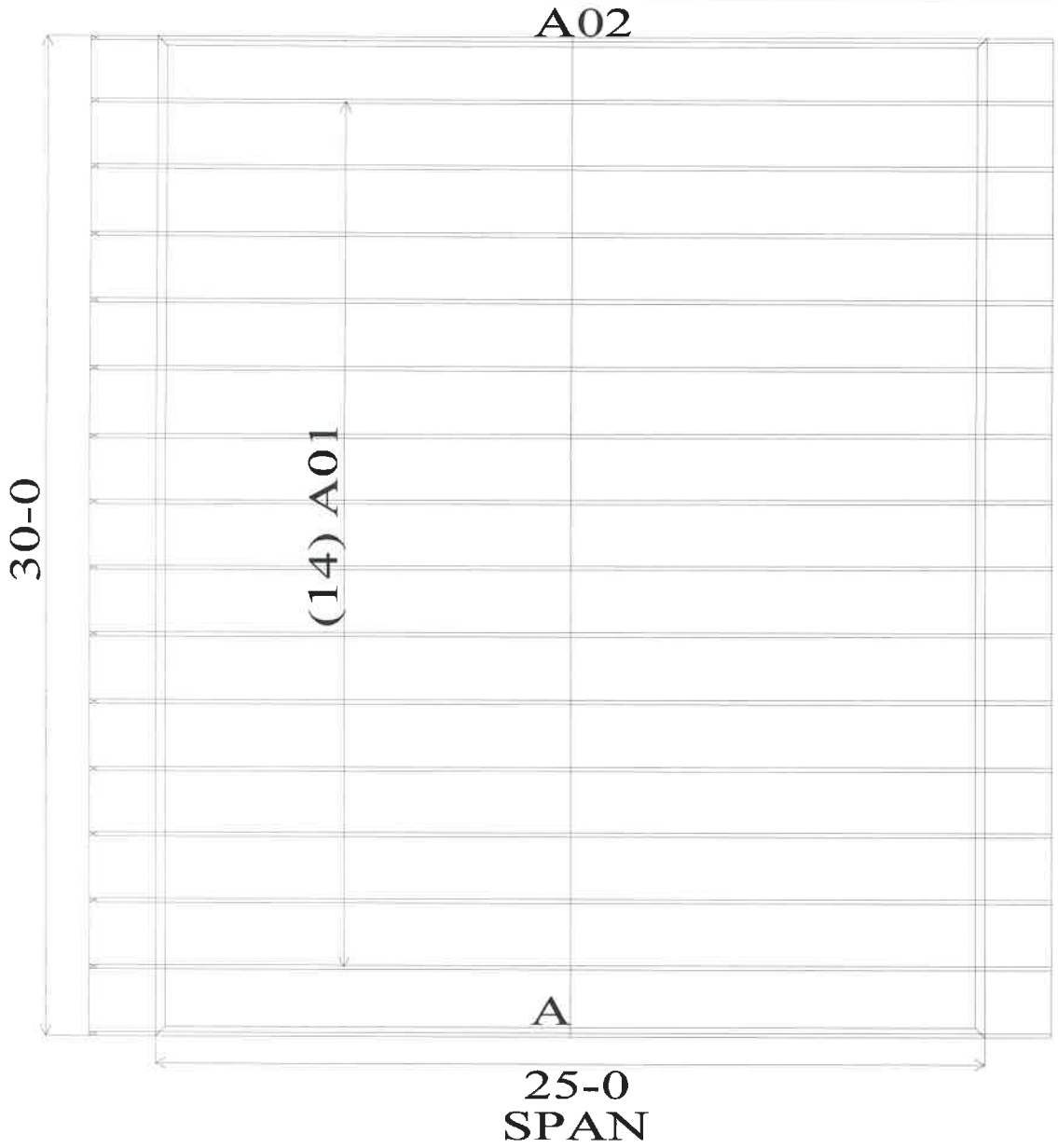
The Truss Company

Manufacture

Keith H. Anderson

National Inspection Association, Inc.
Keith H. Anderson, Vice President





Roof Pitch
5/12

Overhang
1 ft.

LICENSED ARCHITECT
Robert S Alcumbrac
NO. C-10381
REN. 8/2003
STATE OF CALIFORNIA

THE TRUSS COMPANY
494 S. FOURTH STREET
BANNING,CA 92220
(909)922-2532

THOMAS ADDITION
GUY THOMAS
1765 BEECH PLACE
BEAUMONT, CAL.

SALES REP : MN
DUE DATE :
DSGNR/CHKR : MN / MN

WO# : Q4173
Date : 2/12/2003 10:14

TC Live	16.00 psf
TC Dead	14.00 psf
BC Live	0.00 psf
BC Dead	7.00 psf
Total	37.00 psf

DurFac-Lbr : 1.25
DurFac-Plt : 1.25
O.C. Spacing : 24.0
Design Spec : UBC-97
#Tr/#Cfg : 16 / 3

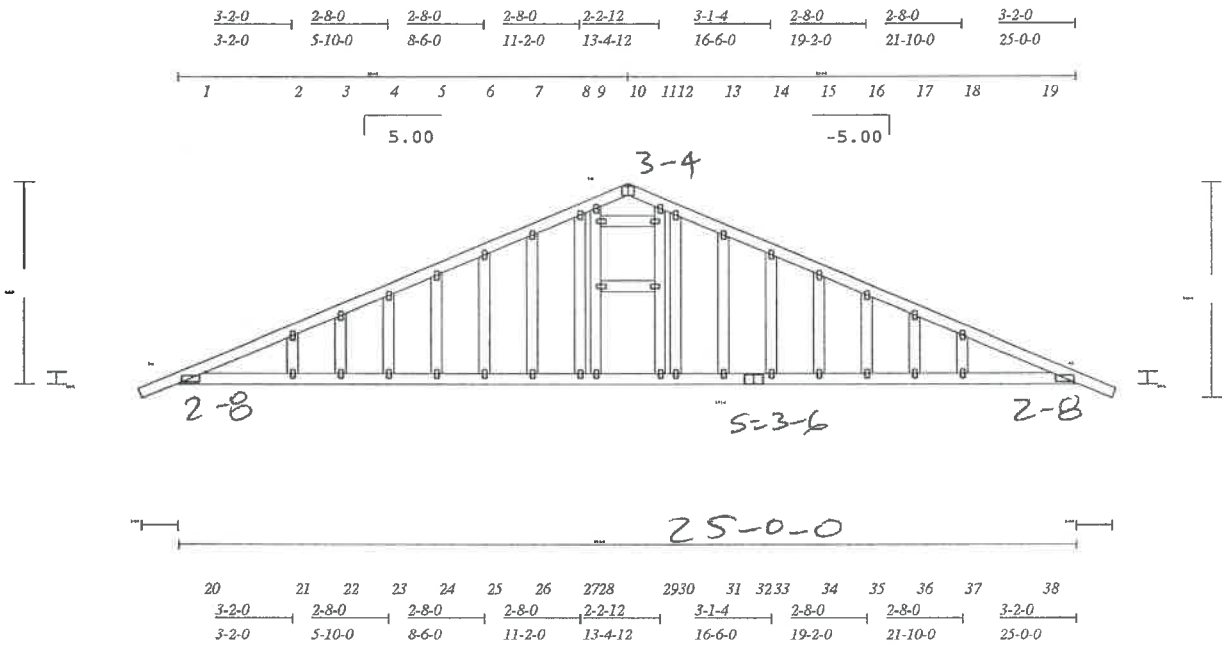
Job Name: THOMAS ADDITION | Truss ID: A | Qty: 1 | Drwg: CO03043045-001

Joint Locations			
1	0- 0- 0	20	0- 0- 0
2	3- 2- 0	21	3- 2- 0
3	4- 6- 0	22	4- 6- 0
4	5-10- 0	23	5-10- 0
5	7- 2- 0	24	7- 2- 0
6	8- 6- 0	25	8- 6- 0
7	9-10- 0	26	9-10- 0
8	11- 2- 0	27	11- 2- 0
9	11- 7- 4	28	11- 7- 4
10	12- 6- 0	29	13- 4-12
11	13- 4-12	30	13-10- 0
12	13-10- 0	31	15- 2- 0
13	15- 2- 0	32	16- 0- 0
14	16- 6- 0	33	16- 6- 0
15	17-10- 0	34	17-10- 0
16	19- 2- 0	35	19- 2- 0
17	20- 6- 0	36	20- 6- 0
18	21-10- 0	37	21-10- 0
19	25- 0- 0	38	25- 0- 0

TC 2x4 SPF 1650F-1.5E
BC 2x4 SPF 1650F-1.5E
GBL BLK 2x4 HF STUD
PLATE VALUES PER ICBO RESEARCH REPORT #1607.
Loaded for 10 PSF non-concurrent BCLL.
BUILDING DESIGNER MUST VERIFY GABLE LOADS!
[+] gable bracing required @ 58" intervals,
if exposed to wind load applied to face.
See "General Gable Details", CO02065035.

Plating spec : ANSI/TPI - 1995
THIS DESIGN IS THE COMPOSITE RESULT OF
MULITPLE LOAD CASES.
BEARING REQUIREMENTS shown are based ONLY
on the truss material at each bearing.

This truss is designed using the
UBC-97 Code.
Bldg Enclosed = Yes
Truss Location = End Zone
Hurricane/Ocean Line = No , Exp Category = C
Bldg Length = 80.00 ft, Bldg Width = 40.00 ft
Mean roof height = 12.77 ft, mph = 80
UBC Standard Occupancy, Dead Load = 21.0 psf



TYPICAL PLATE : 1.5-3

OVER CONTINUOUS SUPPORT

Truswal Systems Plates are 20 ga. unless shown by "18"(18 ga.), "H"(16 ga.), or "MX"(TWMX 20 ga.), positioned per Joint Details Report.
Circled plates and false frame plates are positioned as shown above.
Shift gable stud plates to avoid overlap with structural plates (or staple).

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C 45982
Exp. 12/31/06
CIVIL
STATE OF CALIFORNIA

2/12/2003
Scale: 3/16" = 1'

THE TRUSS CO. (CA)

TRUSWAL SYSTEMS
4445 Northpark Dr., Colo Springs, CO 80907

Tp5.0 Version T6.3.5

WARNING *Read all notes on this sheet and give a copy of it to the Erecting Contractor.*

This design is for an individual building component not truss system. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer must ascertain that the loads utilized on this design meet or exceed the loading imposed by the local building code and the particular application. The design assumes that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. This component shall not be placed in any environment that will cause the moisture content of the wood to exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace this truss in accordance with the following standards: 'JOINT DETAILS', by Truswal, 'ANSI/TPI 1', 'WTCA 1' - Wood Truss Council of America Standard Design Responsibilities, 'HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES' - (HIB-91) and 'HIB-91 SUMMARY SHEET' by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1111 19th Street, NW, Ste 800, Washington, DC 20036.

TBF: 78.7	WT:158 #	
Chk: MN		
Dsgnr: MN	#LC = 14	
TC Live	16.00 psf	
TC Dead	14.00 psf	
BC Live	.00 psf	
BC Dead	7.00 psf	
TOTAL	37.00 psf	

WO: Q4173
Customer Name:
GUY THOMAS

DurFacs L=1.25 P=1.25
Rep Mbr Bnd 1.15
O.C.Spacing 2- 0- 0
Design Spec UBC-97
Defl Ratio: L/240 TC: L/180

Job Name: THOMAS ADDITION — Truss ID: A01 — Qty: 14 — Drwg: CO03043045-002

BRG	X-LOC	REACT	SIZE	REQ'D
1	0- 1-12	999	3.50"	1.50"
2	24-10- 4	999	3.50"	1.50"

TC	FORCE	AXL	END	CSI
1-2	-1827	.02	.33	.36
2-3	-1557	.02	.33	.35
3-4	-1556	.02	.33	.35
4-5	-1827	.02	.33	.36

BC	FORCE	AXL	END	CSI
6-7	1633	.18	.22	.40
7-8	1091	.12	.22	.34
8-9	1633	.18	.22	.40

WEB	FORCE	CSI	WEB	FORCE	CSI
2-7	-388	.13	3-8	487	.17
3-7	488	.17	4-8	-388	.13

MAX DEFLECTION (span) :
L/999 IN MEM 8-9 (LIVE)
L= -.09" D= -.12" T= -.21"

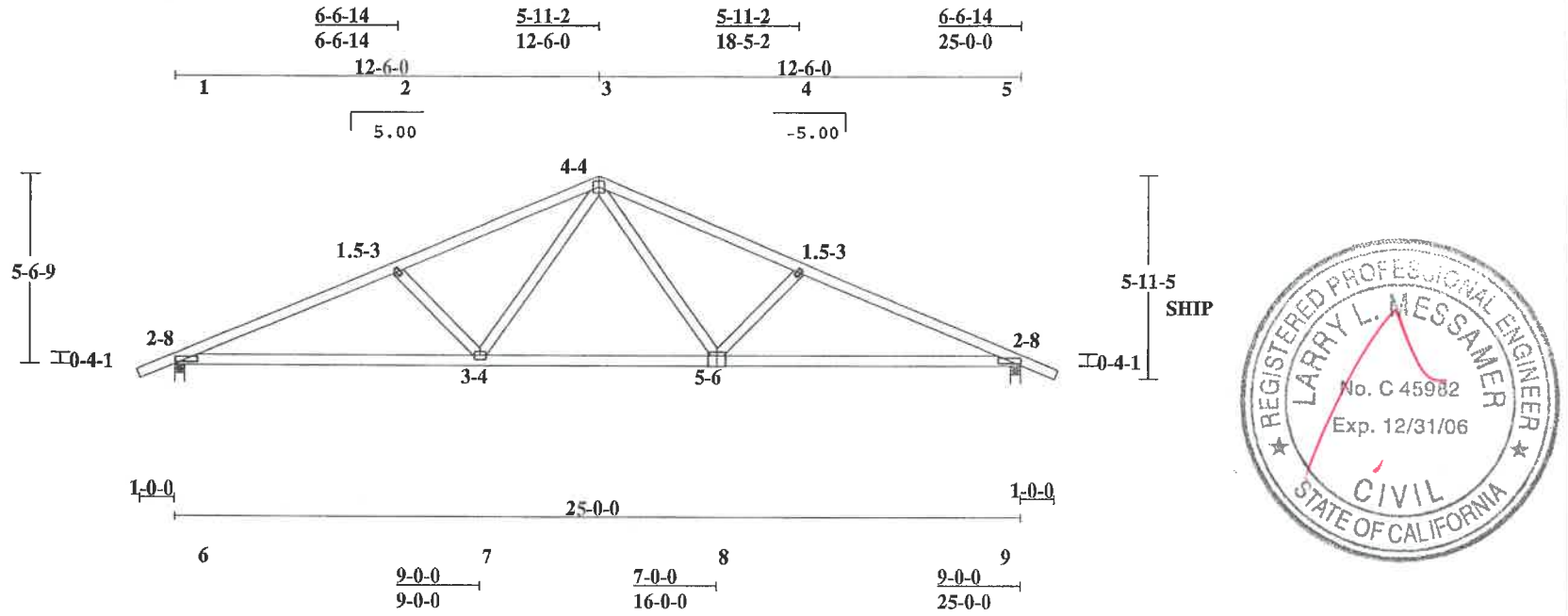
Joint Locations

1	0- 0- 0	6	0- 0- 0
2	6- 6-14	7	9- 0- 0
3	12- 6- 0	8	16- 0- 0
4	18- 5- 2	9	25- 0- 0
5	25- 0- 0		

TC 2x4 SPF 1650F-1.5E
BC 2x4 SPF 1650F-1.5E
WEB 2x4 HF STUD
PLATE VALUES PER ICBO RESEARCH REPORT #1607.
Loaded for 10 PSF non-concurrent BOLL.

Plating spec : ANSI/TPI - 1995
THIS DESIGN IS THE COMPOSITE RESULT OF MULTIPLE LOAD CASES.
BEARING REQUIREMENTS shown are based ONLY on the truss material at each bearing.

This truss is designed using the UBC-97 Code.
Bldg Enclosed = Yes
Truss Location = End Zone
Hurricane/Ocean Line = No , Exp Category = C
Bldg Length = 80.00 ft, Bldg Width = 40.00 ft
Mean roof height = 12.77 ft, mph = 80
UBC Standard Occupancy, Dead Load = 21.0 psf



REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C 45982
Exp. 12/31/06
CIVIL
STATE OF CALIFORNIA

Truswal Systems Plates are 20 ga. unless shown by "18"(18 ga.), "H"(16 ga.), or "MX"(TWMX 20 ga.), positioned per Joint Details Report.
Circled plates and false frame plates are positioned as shown above.
Shift gable stud plates to avoid overlap with structural plates (or staple).

2/12/2003
Scale: 3/16" = 1'

THE TRUSS CO. (CA)

TRUSWAL SYSTEMS
4445 Northpark Dr., Colo Springs, CO 80907

Tp5.0 Version T6.3.5

WARNING ***Read all notes on this sheet and give a copy of it to the Erecting Contractor.***

This design is for an individual building component not truss system. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer must ascertain that the loads utilized on this design meet or exceed the loading imposed by the local building code and the particular application. The design assumes that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. This component shall not be placed in any environment that will cause the moisture content of the wood to exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace this truss in accordance with the following standards: 'JOINT DETAILS', by Truswal, 'ANSI/TPI 1', 'WTCA 1' - Wood Truss Council of America Standard Design Responsibilities, 'HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES' - (HIB-91) and 'HIB-91 SUMMARY SHEET' by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1111 19th Street, NW, Ste 800, Washington, DC 20036.

TBF: 53.3	WT:109 #	
Chk: MN		
Dsgnr: MN	#LC = 14	
TC Live	16.00 psf	
TC Dead	14.00 psf	
BC Live	.00 psf	
BC Dead	7.00 psf	
TOTAL	37.00 psf	

WO: Q4173	
Customer Name:	
GUY THOMAS	
DurFacs	L=1.25 P=1.25
Rep Mbr Bnd	1.15
O.C.Spacing	2- 0- 0
Design Spec	UBC-97
Defl Ratio:	L/240 TC: L/180

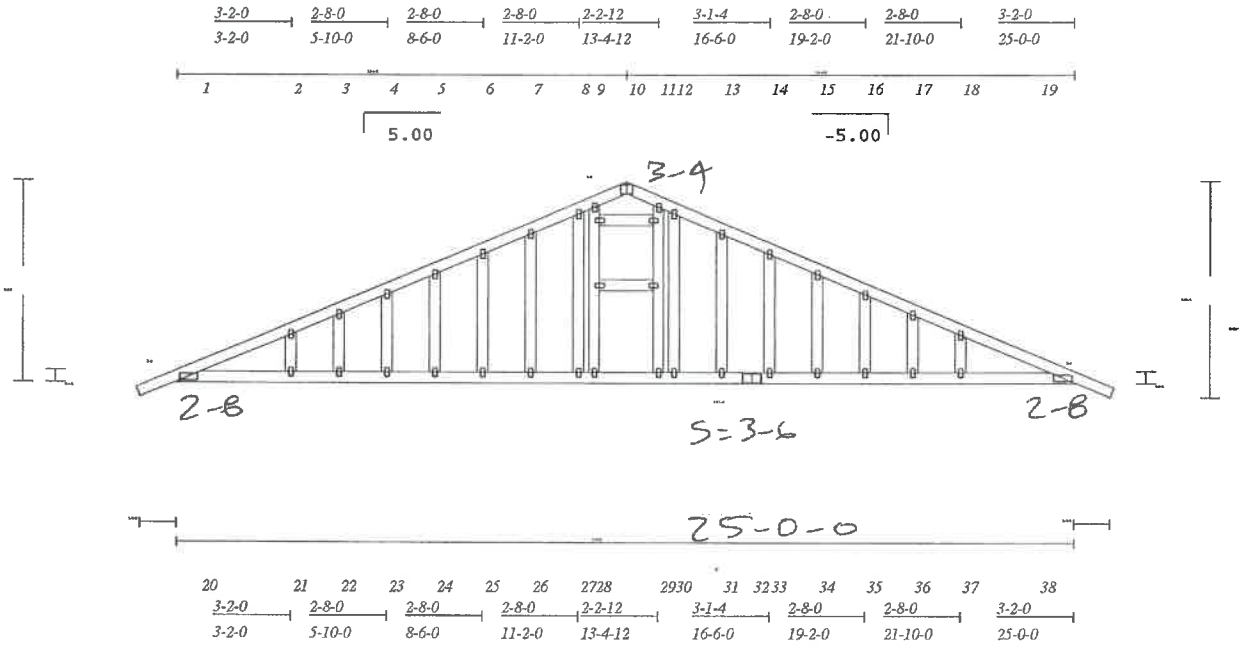
Job Name: THOMAS ADDITION | Truss ID: A02 | Qty: 1 | Drwg: CO03043045-003

Joint Locations			
1	0- 0- 0	20	0- 0- 0
2	3- 2- 0	21	3- 2- 0
3	4- 6- 0	22	4- 6- 0
4	5-10- 0	23	5-10- 0
5	7- 2- 0	24	7- 2- 0
6	8- 6- 0	25	8- 6- 0
7	9-10- 0	26	9-10- 0
8	11- 2- 0	27	11- 2- 0
9	11- 7- 4	28	11- 7- 4
10	12- 6- 0	29	13- 4-12
11	13- 4-12	30	13-10- 0
12	13-10- 0	31	15- 2- 0
13	15- 2- 0	32	16- 0- 0
14	16- 6- 0	33	16- 6- 0
15	17-10- 0	34	17-10- 0
16	19- 2- 0	35	19- 2- 0
17	20- 6- 0	36	20- 6- 0
18	21-10- 0	37	21-10- 0
19	25- 0- 0	38	25- 0- 0

TC 2x4 SPF 1650F-1.5E
BC 2x4 SPF 1650F-1.5E
GBL BLK 2x4 HF STUD
PLATE VALUES PER ICBO RESEARCH REPORT #1607.
Loaded for 10 PSF non-concurrent BCLL.
BUILDING DESIGNER MUST VERIFY GABLE LOADS!
[+] gable bracing required @ 58" intervals, if exposed to wind load applied to face.
See "General Gable Details", CO02065035.

Plating spec : ANSI/TPI - 1995
THIS DESIGN IS THE COMPOSITE RESULT OF MULTIPLE LOAD CASES.
BEARING REQUIREMENTS shown are based ONLY on the truss material at each bearing.

This truss is designed using the UBC-97 Code.
Bldg Enclosed = Yes
Truss Location = End Zone
Hurricane/Ocean Line = No , Exp Category = C
Bldg Length = 80.00 ft, Bldg Width = 40.00 ft
Mean roof height = 12.77 ft, mph = 80
UBC Standard Occupancy, Dead Load = 21.0 psf



TYPICAL PLATE : 1.5-3

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Shift gable stud plates to avoid overlap with structural plates (or staple).

OVER CONTINUOUS SUPPORT

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C 45982
Exp. 12/31/06
CIVIL
STATE OF CALIFORNIA

2/12/2003
Scale: 3/16" = 1'

THE TRUSS CO. (CA)
TRUSWAL SYSTEMS
4445 Northpark Dr., Colo Springs, CO 80907

Tp5.0 Version T6.3.5

WARNING ***Read all notes on this sheet and give a copy of it to the Erecting Contractor.***
This design is for an individual building component not truss system. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer must ascertain that the loads utilized on this design meet or exceed the loading imposed by the local building code and the particular application. The design assumes that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. This component shall not be placed in any environment that will cause the moisture content of the wood to exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace this truss in accordance with the following standards: 'JOINT DETAILS', by Truswal, 'ANSI/TPI 1', 'WTCA 1' - Wood Truss Council of America Standard Design Responsibilities, 'HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES' - (HIB-91) and 'HIB-91 SUMMARY SHEET' by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1111 19th Street, NW, Ste 800, Washington, DC 20036.

TBF: 78.7	WT:158 #	
Chk: MN		
Dsgnr: MN	#LC = 14	
TC Live	16.00 psf	
TC Dead	14.00 psf	
BC Live	.00 psf	
BC Dead	7.00 psf	
TOTAL	37.00 psf	

WO: Q4173
Customer Name:
GUY THOMAS

DurFacs L=1.25 P=1.25
Rep Mbr Bnd 1.15
O.C.Spacing 2- 0- 0
Design Spec UBC-97
Defl Ratio: L/240 TC: L/180

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EVALUATION REPORT

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MODEL 20, TW18 AND TW16 METAL CONNECTOR PLATES FOR WOOD TRUSSES

TRUSWAL SYSTEMS CORPORATION
1101 NORTH GREAT SOUTHWEST PARKWAY
ARLINGTON, TEXAS 76011

1.0 SUBJECT

Model 20, TW18 and TW16 Metal Connector Plates for Wood Trusses.

2.0 DESCRIPTION

2.1 General:

Model 20, TW18 and TW16 are metal connector plates for wood trusses. The plates are manufactured to various lengths, widths, and thicknesses or gages, and have integral teeth that are designed to laterally transmit load between truss wood members. Plans and calculations must be submitted to the building official for the trusses using metal connector plates described in this report. Floor-ceiling or roof-ceiling assemblies described in this report using wood trusses with metal connector plates have one-hour fire-resistive ratings.

2.2 Materials:

2.2.1 Model 20 and TW18 Connector Plates: Model 20 plates are manufactured from minimum 20-gage-thick [0.036 inch (0.91 mm)], ASTM A 653, Grade 37, structural-quality steel with a hot-dipped galvanized zinc coating designated G60. TW18 plates are manufactured from minimum 18-gage-thick [0.047 inch (1.19 mm)], ASTM A 653, Grade 37, structural-quality steel with a hot-dipped galvanized coating designated G60.

Each plate has slots approximately $^{7}/_{16}$ inch (11.1 mm) long that have been punched along the longitudinal axis of the plate. Each punched slot forms two opposite-facing, sharply pointed teeth protruding at right angles from the parent metal. The punched slots are spaced approximately $^{1}/_{4}$ inch (6.4 mm) on center across the width of the plate and approximately 1 inch (25.4 mm) on center along the length of the plate, with adjacent longitudinal rows staggered approximately $^{1}/_{8}$ inch (3.2 mm). Connector plates are available in 1-inch (25.4 mm) increments of width and length. Minimum plate width and length are 1 inch (25.4 mm) and 3 inches (76.2 mm), respectively. See Figure 3 for details of plate dimensions.

There are eight teeth per square inch of plate surface. The length of each tooth, including the thickness of the parent metal, is approximately $^{3}/_{8}$ inch (9.5 mm), and the width of each tooth is approximately $^{1}/_{8}$ inch (3.2 mm). The shank of each tooth is concave and the tip of each tooth is twisted approximately 35 degrees with respect to the plate width. Adjacent longitudinal rows of teeth are twisted in the opposite direction.

2.2.2 TW16 Connector Plates: TW16 plates are manufactured from minimum 16-gage-thick [0.058 inch (1.47 mm)], ASTM A 653, Grade 37, structural-quality steel with a hot-dipped galvanized zinc coating designated G60.

Each plate has slots approximately $^{1}/_{2}$ inch (12.7 mm) long that have been punched along the longitudinal axis of the plate. Each punched slot forms two opposite-facing, sharply pointed teeth protruding at right angles from the parent metal. The punched slots are spaced approximately $^{1}/_{3}$ inch (8.5 mm) on center across the width of the plate and approximately $1^{1}/_{4}$ inches (31.8 mm) on center along the length of the plate, with adjacent longitudinal rows staggered approximately $^{5}/_{8}$ inch (15.9 mm). Connector plates are available in 1-inch (25.4 mm) increments of width and $1^{1}/_{4}$-inch (31.8 mm) increments of length. Minimum plate width and length are 3 inches (76.2 mm) and $7^{1}/_{2}$ inches (190.5 mm), respectively. See Figure 4 for details of plate dimensions.

There are 4.8 teeth per square inch of plate surface. The length of each tooth, including the thickness of the parent metal, is approximately $^{7}/_{16}$ inch (11.1 mm), and the width of each tooth is approximately $^{5}/_{32}$ inch (4 mm). The shank of each tooth is concave, and the tip of each tooth is twisted approximately 42 degrees with respect to the plate width. Adjacent longitudinal rows of teeth are twisted in the same direction.

2.3 Allowable Loads:

2.3.1 Model 20, TW18, and TW16 Plate Connectors: Tables 1, 2, 3 and 4 provide allowable lateral loads, tension loads, shear loads, and reduction factors for Model 20, TW18, and TW16 plate connectors. These values are based on the National Design Standard for Metal Plate Connected Wood Truss Construction, ANSI/TPI 1-1995. A copy of the ANSI/TPI 1-1995 standard must be supplied to the building department when requested by the building official.

2.3.2 Lateral Resistance: Each Model 20, TW18, and TW16 metal connector plate must be designed to transfer the required load without exceeding the allowable load per square inch of plate contact area, based on species, the orientation of the teeth relative to the load, and the direction of load relative to grain. Design for lateral resistance must be in accordance with Section 11.2.1 of ANSI/TPI 1-1995. Table 1 specifies allowable lateral loads for the metal connector plates.

2.3.3 Tension Resistance: Each Model 20, TW18, and TW16 metal connector plate must be designed for tension capacity, based on the orientation of the metal connector plate relative to the direction of load. Design for tension must be in accordance with Section 11.2.2 of ANSI/TPI 1-1995. Table 2

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specifies allowable tension loads for the Model 20, TW18, and TW16 metal connector plates. Additionally, the net section of the metal connector plates for tension joints must be designed using the allowable tensile stress of the metal adjusted by the metal connector plate tensile effectiveness ratios shown in Table 2.

2.3.4 Shear Resistance: Each Model 20, TW18, and TW16 metal connector plate must be designed for shear capacity, based on the orientation of the plate relative to all possible lines of shear. Design for shear must be in accordance with Section 11.2.3 of ANSI/TPI 1-1995. Table 3 provides allowable shear loads for the Model 20, TW18, and TW16 metal connector plates. Additionally, the net section of the metal connector plates for heel joints and other joints involving shear must be designed using the allowable shear stress for the metal connector plates adjusted by the shear resistance effectiveness ratios shown in Table 3.

2.3.5 Metal Plate Reductions: Several allowable load reduction factors for the metal plates must be considered cumulatively, when applicable, in the design of metal connector plates used in fabricated wood trusses. The load reduction factors are as follows:

1. Allowable lateral resistance values for the Model 20, TW18, and TW16 metal connector plates must be reduced by a strength reduction factor, Q_R, shown in Table 4, when the plates are installed in lumber with a single-pass, full-embedment roller system. The strength reduction factor, Q_R, is applicable for roller diameters equal to or greater than roller diameters shown in Table 4. This reduction does not apply to embedment hydraulic-platen presses, multiple roller presses that use partial embedment followed by full embedment rollers, or combinations of partial embedment roller/hydraulic-platen presses that feed trusses into a stationary finish roller. When trusses are fabricated with single-pass roller presses, the calculations for the truss design submitted to the building department for approval must specify the minimum diameter of the roller press and the appropriate strength reduction factor from this report.
2. Allowable lateral resistance values for the Model 20, TW18, and TW16 metal connector plates must be reduced by 15 percent when the plates are installed on the narrow face of truss lumber members.
3. Allowable lateral resistance values must be reduced by 20 percent when the Model 20, TW18, and TW16 metal connector plates are installed in lumber having a moisture content greater than 19 percent at the time of truss fabrication.
4. Allowable lateral resistance values for Model 20, TW18, and TW16 metal connector plates installed at the heel joint of fabricated wood trusses must be reduced by the heel-joint reduction factor, H_R, as follows:

$$H_R = 0.85 - 0.05(12\tan\theta - 2.0)$$

where:

$0.65 \le H_R \le 0.85$

θ = angle between lines of action of the top and bottom chords as shown in Figure 5.

This heel-joint reduction factor does not apply to conditions with top chord slopes greater than 12:12.

2.3.6 Combined Shear and Tension: Each Model 20, TW18, and TW16 metal connector plate must be designed for combined shear and tension capacity, based on the orientation of the metal connector plate relative to the directions of loading. Design for combined shear and tension must be accordance with Section 11.2.4 of ANSI/TPI 1-1995.

2.3.7 Combined Flexure and Axial Loading: Metal connector plates designed for axial forces only are permitted as splices in the top and bottom chord located within 12 inches (305 mm) of the calculated point of zero moment. Design of metal connector plates located at splices in the top and bottom chord not located within 12 inches (305 mm) of the calculated point of zero moment must include combined flexure and axial stresses.

2.4 Truss Design:

Plans and calculations must be submitted to the building official for the trusses using metal connector plates described in this report. The truss design must show compliance with the code and accepted engineering principles. Allowable loads for the metal connector plates may be increased for duration of load in accordance with Section 2304.3.4 of the code. Calculations need to specify the deflection ratio or the maximum deflection for live and total load. For each truss design drawing, the following minimum information should be specified by the design engineer:

1. Truss slope or depth, span and spacing.
2. Dimensioned location of truss joints.
3. Model, size and dimensioned location of metal connector plates at each joint.
4. Truss chord and web lumber size, species, and grade.
5. Required bearing widths at truss supports.
6. Top and bottom chord live and dead loads, concentrated loads and their locations, and controlling wind or earthquake loads.
7. Design calculations conforming to ANSI/TPI 1-1995 or UBC Section 2343 (which is based on the Design Specification for Light Metal Plate Connected Wood Trusses, TPI-85), and any adjustments to lumber and metal connector plate allowable values for conditions of use.

2.5 Truss Fabrication:

Model 20, TW18, and TW16 plate connectors shall be installed by an approved truss fabricator who has an approved quality assurance program covering the wood truss manufacturing and inspection process in accordance with Sections 2343.7 and 2343.8 of the code and Section 4 of ANSI/TPI 1-1995, National Standard for Metal Plate Connected Wood Truss Construction. The allowable loads recognized in this report are for plates that are pressed into wood truss members using hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full embedment rollers, or combinations of partial embedment roller/hydraulic-platen presses that feed trusses into a stationary finish roller press. When truss fabricators use single-pass roller presses, the rollers must have minimum 16- or 20-inch (406 or 508 mm) diameters, depending on the reduction factor, Q_R, specified in the design calculations.

2.6 One-hour Fire-resistive Floor-ceiling or Roof-ceiling Assemblies:

2.6.1 Assembly No. 1: See Figure 6 for details.

2.6.1.1 Trusses: Wood trusses are parallel-chord trusses having an overall minimum depth of 12 inches (305 mm). Trusses are spaced a maximum of 24 inches (610 mm) on center.

2.6.1.2 Strongback Bracing: Bracing must be minimum 2-by-6 grade-marked lumber oriented vertically, and must be installed perpendicular to trusses on maximum 10-foot (3048 mm) centers. Braces are attached to each truss with a minimum of three 10d nails.

2.6.1.3 Roof-Floor Sheathing: Floor or roof sheathing shall be minimum $^{19}/_{32}$-inch-thick (15.1 mm) tongue-and-groove plywood. Long edges are installed perpendicular to trusses. Plywood sheathing is attached in accordance with Section 2322 of the code.

2.6.1.4 Ceiling Membrane: Two layers of $^1/_2$-inch-thick (12.7 mm) USG Gold Bond Fire Shield® Type X wallboard

are applied directly to the bottom chord members of the wood truss. The base ply is applied perpendicular to the trusses and is attached to the wood chord members with $1^1/_4$-inch-long (31.8 mm), Type S drywall screws or $1^7/_8$-inch-long (47.6 mm), 6d cooler or box nails, spaced 24 inches (610 mm) on center. The face ply is also applied perpendicular to the trusses with side and butt joints staggered 24 inches (610 mm) from the joints of the base ply. The face ply is attached to the bottom chord members with $1^7/_8$-inch-long (47.6 mm), Type S drywall screws spaced 12 inches (305 mm) on center, or $2^3/_8$-inch (60.3 mm), 8d cooler or box nails spaced 7 inches (178 mm) on center. Additionally, $1^1/_2$-inch-long (38.1 mm), Type G drywall screws are installed 3 inches (76.2 mm) from the face ply butt joints and are spaced 12 inches (305 mm) on center. Face layer joints and screws or nailheads are covered with joint compound and are taped.

2.6.2 Assembly No. 2: See Figure 7 for details.

2.6.2.1 Trusses: Wood trusses are labeled Truswal SpaceJoists®, and must comply with evaluation report ER-3687. Overall minimum truss depth is $10^3/_4$ inches (273 mm). SpaceJoist trusses are spaced a maximum of 24 inches (610 mm) on center. SpaceJoist trusses must have SpaceJoist metal webs having minimum $^5/_{16}$-inch-long (8 mm) teeth. The continuous portion of the metal web member of the SpaceJoists must be located at the bottom chord, and the break in the web member must be located at the top chord. Splices in the bottom wood chord member are permitted provided they occur outside the middle third of the truss span. See ER-3687 for details of the Truswal SpaceJoist.

This fire-resistive assembly using Truswal SpaceJoists requires a factory-installed TrusGuard™, a No. 30 gage [0.013 inch (0.33 mm)] steel channel, attached along the entire length of the bottom wood chord member of the truss. The TrusGuard is attached to the bottom chord with metal connector plates pressed through the sides of the steel channel. Splices in the TrusGuard must occur at metal connector plate locations and must be lapped a minimum of 6 inches (305 mm).

2.6.2.2 Roof-Floor Sheathing: Floor or roof sheathing shall be minimum $^{23}/_{32}$-inch-thick (18.2 mm) tongue-and-groove plywood with exterior glue. Long edges are installed perpendicular to trusses, and end joists are staggered a minimum of 4 feet (1219 mm). Plywood sheathing is attached with minimum 6d ring-shanked nails with spacing in accordance with Table 23-I-Q of the code. A $^3/_8$-inch (9.5 mm) bead of AFG-01 adhesive is applied to the top chord of the trusses and in the plywood grooves before installation of sheathing.

A single layer of minimum $^{23}/_{32}$-inch-thick (18.2 mm) tongue-and-groove structural wood-based sheathing underlayment, having a minimum floor span rating of 24 inches (610 mm), may be used as an alternate to the plywood sheathing.

2.6.2.3 Lightweight Concrete Floor Topping (Optional): Optional perlite or vermiculite aggregate or gypsum concrete may be placed on top of the wood sheathing without affecting the fire-resistive rating. Minimum thickness of the concrete fill is $^3/_4$ inch (19 mm). A plastic or paper vapor retarder should be placed on the wood sheathing before placement of the concrete.

Forta-Fill (ER-4147) and Gyp-Crete (ER-3433) may be placed on the flooring without affecting the fire-resistive rating, provided the topping is installed in accordance with its evaluation report.

2.6.2.4 Strongback Bracing: Bracing must be minimum 2-by-6 grade-marked lumber oriented vertically and must be installed perpendicular to trusses on maximum 10-foot (3048 mm) centers. Braces are attached to each truss with a minimum of three 10d nails.

2.6.2.5 Ceiling Membrane: One layer of $^5/_8$-inch-thick (15.9 mm), USG, Type C wallboard is applied directly to the bottom chord members of the wood truss. All joints must be blocked with minimum $3^1/_2$-inch-wide (89 mm) steel channels or wood members. All wallboard edges are attached to the wood chord members or blocking with $1^5/_8$-inch-long (41.3 mm), Type S drywall, spaced 8 inches (203 mm) on center. Wallboard joints and screws are covered with joint compound and are taped.

2.7 Identification:

Model 20, TW18 and TW16 plates are embossed with the identifying marks "TW20," "TW18," and "TW16," respectively, stamped into the parent metal.

3.0 EVIDENCE SUBMITTED

Test data in accordance with National Design Standard for Metal Plate Connected Wood Truss Construction, ANSI/TPI 1-1995, for the Model 20, TW18 and TW16 plates.

4.0 FINDINGS

That the Model 20, TW18 and TW16 metal connector plates for wood trusses comply with the 1997 *Uniform Building Code*™, subject to the following conditions:

4.1 Plans and calculations must be submitted to the building official for the trusses using metal connector plates described in this report.

4.2 Model 20, TW18 and TW16 metal connector plates are designed to transfer the required loads using the design formulae in ANSI/TPI 1-1995. A copy of the ANSI/TPI 1-1995 standard must be supplied to the building department when this is requested by the building official.

4.3 The allowable loads for the metal connector plates comply with this evaluation report.

4.4 Metal connector plates are not permitted to be located where knots occur in connected wood truss members.

4.5 Metal connector plates are installed in pairs on opposite faces of truss members connected by the plates.

4.6 Trusses using metal connector plates described in this report must be fabricated by a truss fabricator approved by the building official in accordance with Sections 2311.6 and 2343.8 of the code.

4.7 Allowable loads shown in the tables in this report may be increased for duration of load in accordance with Section 2304.3.4 of the code.

4.8 Allowable loads shown in the tables in this report are not applicable for metal connector plates embedded in lumber treated with fire-resistive chemicals.

4.9 Where one-hour fire-resistive construction is required, refer to Section 2.6 of this report, or to evaluation report ER-1352 or ER-1632, for descriptions of code-complying floor-ceiling or roof-ceiling fire-resistive assemblies.

This report is subject to re-examination in two years.

TABLE 1—ALLOWABLE LATERAL RESISTANCE VALUES FOR THE MODEL 20, TW18, AND TW16 METAL CONNECTOR PLATES

PLATE MODEL	LUMBER		DIRECTION OF GRAIN AND LOAD WITH RESPECT TO LENGTH OF PLATE[1,2,3]			
	Species	Specific Gravity	AA	EA	AE	EE
			Allowable Load (pounds per square inch of plate contact area)			
TW16	Douglas fir	0.49	157	161	111	132
	Hem-fir	0.43	108	120	86	99
	Southern pine	0.55	156	159	140	131
	Spruce-pine-fir	0.42	112	110	81	93
	Spruce-pine-fir	0.50	136	150	119	117
	Timber Strand®	0.69	181	172	132	153
	Western woods	0.36	101	114	79	50
TW18 and Model 20	Douglas fir	0.49	186	169	143	133
	Hem-fir	0.43	150	125	117	114
	Southern pine	0.55	195	172	181	154
	Spruce-pine-fir	0.42	187	131	126	116
	Spruce-pine-fir	0.50	189	163	159	142
	Timber Strand®	0.69	198	178	181	166
	Western woods	0.36	130	116	105	101

For SI: 1 psi = 6.89 kPa.

[1]See Figure 1 for an explanation of the position of plates with respect to wood grain and teeth orientation.

[2]Metal connector plates must be installed in pairs on opposite faces of truss members connected by plates.

[3]Values are based on the Gross Area Method.

TABLE 2—ALLOWABLE TENSION VALUES AND TENSION EFFICIENCY RATIOS FOR MODEL 20, TW18, AND TW16 METAL CONNECTOR PLATES

PLATE MODEL	DIRECTION OF LOAD WITH RESPECT TO LENGTH OF PLATE[1]			
	0°	90°	0°	90°
	ALLOWABLE TENSION LOAD (pounds per linear inch per pair of plates)		TENSION LOAD EFFICIENCY RATIO	
TW16	1,906	1,133	0.72	0.43
TW18	1,032	1,160	0.48	0.54
Model 20	789	882	0.48	0.54

For SI: 1 pound/inch = 0.175 N/mm.

[1]The length of plate refers to the dimension of the longitudinal axis of the area of the plate from which the plate teeth were sheared during plate fabrication. See Figure 2 for a visual explanation.

TABLE 3—ALLOWABLE SHEAR VALUES AND SHEAR EFFICIENCY RATIOS FOR MODEL 20, TW18, AND TW16 METAL CONNECTOR PLATES

PLATE MODEL	DIRECTION OF LOAD WITH RESPECT TO LENGTH OF PLATE						DIRECTION OF LOAD WITH RESPECT TO LENGTH OF PLATE					
	0°	30°	60°	90°	120°	150°	0°	30°	60°	90°	120°	150°
	ALLOWABLE SHEAR LOAD (pounds per linear inch per pair of plates)						SHEAR LOAD EFFICIENCY RATIO					
TW16	1,091	1,094	1,441	1,088	943	789	0.61	0.62	0.81	0.61	0.53	0.44
TW18	845	917	1,046	616	673	630	0.59	0.64	0.73	0.43	0.47	0.44
Model 20	640	693	792	473	509	483	0.59	0.64	0.73	0.43	0.47	0.44

For SI: 1 pound/inch = 0.175 N/mm.

TABLE 4—ALLOWABLE LATERAL LOAD ADJUSTMENT FACTOR, Q_R, FOR MODEL 20, TW18, AND TW16 METAL CONNECTOR PLATES INSTALLED WITH SINGLE-PASS ROLLER PRESSES

PLATE MODEL	LUMBER SPECIES SPECIFIC GRAVITY[1]	ROLLER PRESS DIAMETER (inches)	
		16	20
TW16	0.49	1.00	0.89
	0.50	0.80	0.89
TW18 and Model 20	0.49	0.92	0.99
	0.50	0.76	0.94

For SI: 1 inch = 25.4 mm.

[1]The Q_R value for the lumber species specific gravity of 0.49 applies to all wood species combinations with published average specific gravity of 0.49 or lower, and the Q_R value for the lumber species specific gravity of 0.50 applies to all lumber species combinations with published average specific gravities of 0.50 or higher.

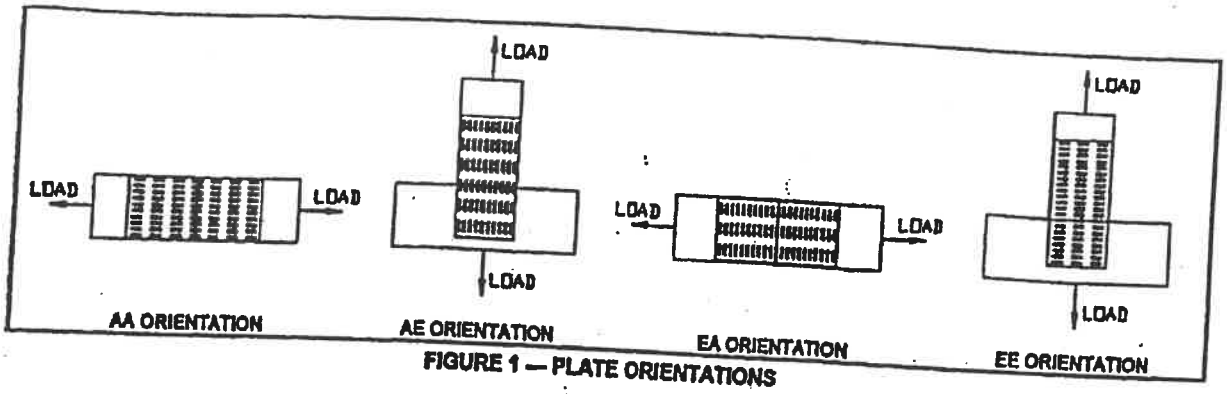


FIGURE 1 — PLATE ORIENTATIONS

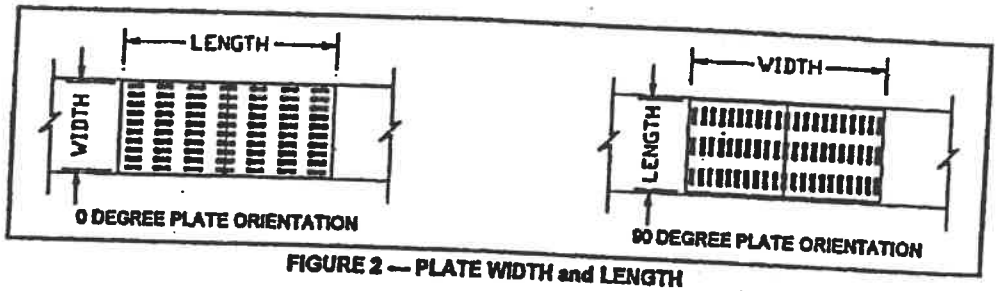
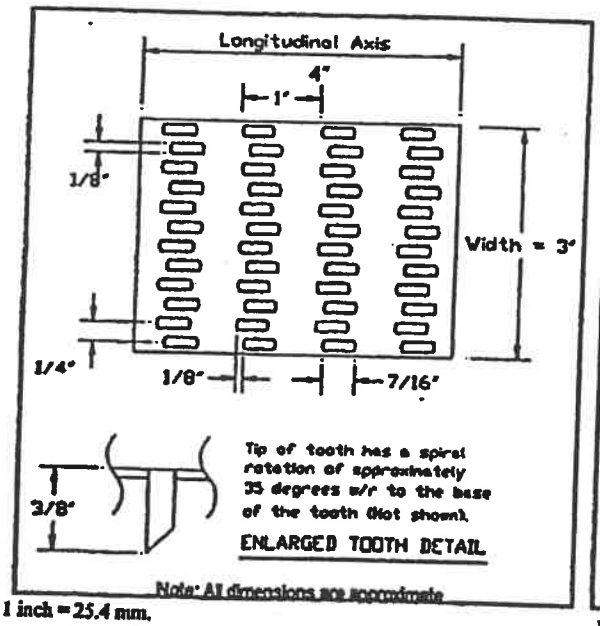
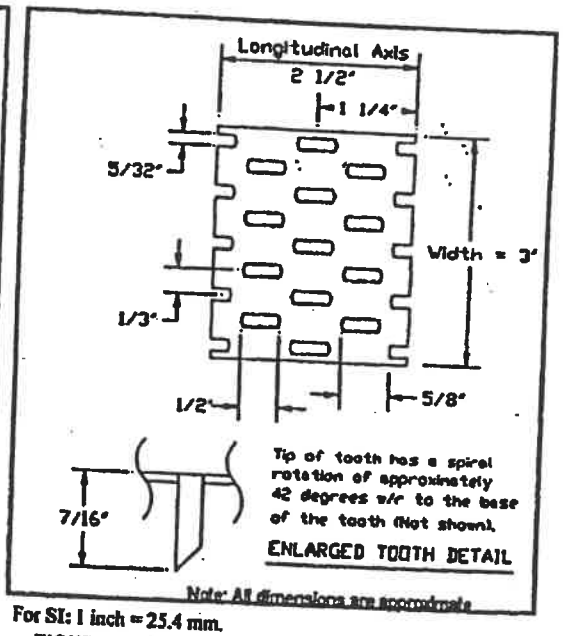


FIGURE 2 — PLATE WIDTH and LENGTH



For SI: 1 inch = 25.4 mm.

FIGURE 3—TRUSWAL MODEL 20 and TW18 CONNECTOR PLATE



For SI: 1 inch = 25.4 mm.

FIGURE 4—TRUSWAL TW16 CONNECTOR PLATE

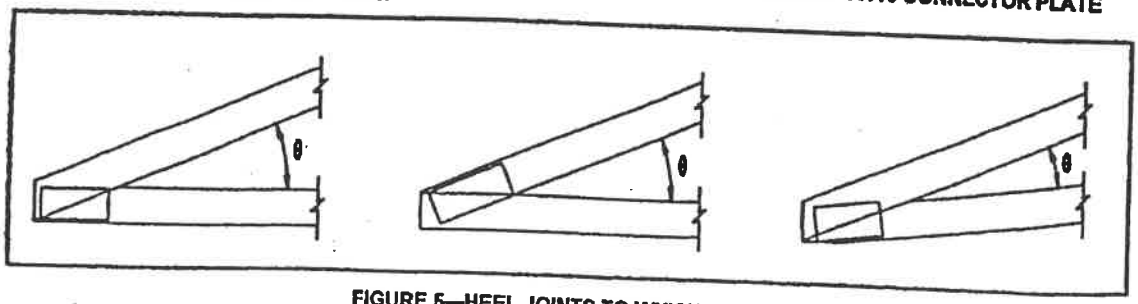
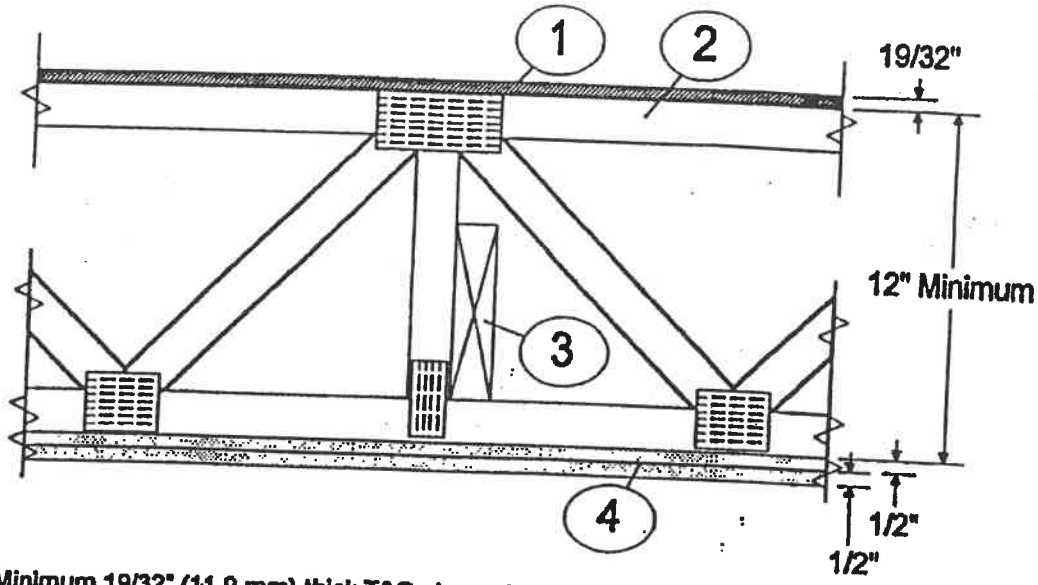


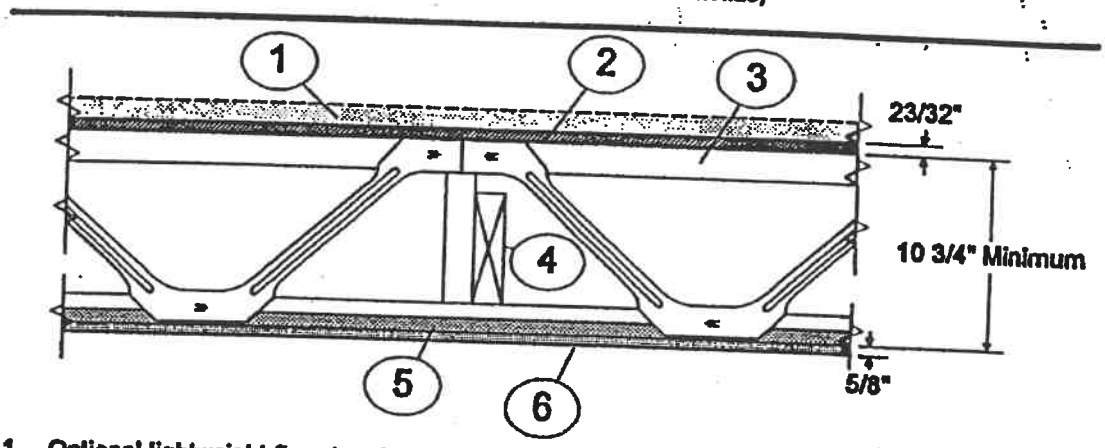
FIGURE 5—HEEL JOINTS TO WHICH THE REDUCTION FACTOR, H_R, APPLIES



1. Minimum 19/32" (11.9 mm) thick T&G plywood
2. Minimum 12" (305 mm) depth Truswal FlorTrus™ truss spaced 24" (610 mm) o.c. maximum
3. 2x6 strongback bridging/bracing at 10'-0" (3048 mm) o.c.
4. Two layers of ½" (12.7 mm) thick USG Gold Bond Fire Shield® Type X wall board

For SI: 1 inch = 25.4 mm.

FIGURE 6—ONE-HOUR FIRE ASSEMBLY NO. 1
(SEE SECTION 2.6.1 FOR COMPLETE DETAILS)



1. Optional lightweight floor topping
2. Minimum 23/32" (18.2 mm) thick T&G structural wood sheathing
3. Minimum 10 ¾" (273 mm) depth Truswal SpaceJoist® truss spaced 24" (610 mm) o.c. maximum
4. 2x6 strongback bridging/bracing at 10'-0" (3048 mm) o.c.
5. Factory-installed TrusGard™ No. 30 gage steel channel
6. One layer of 5/8" (15.9 mm) USG Type C wall board

For SI: 1 inch = 25.4 mm.

FIGURE 7—ONE-HOUR FIRE ASSEMBLY NO. 2
(SEE SECTION 2.6.2 FOR COMPLETE DETAILS)

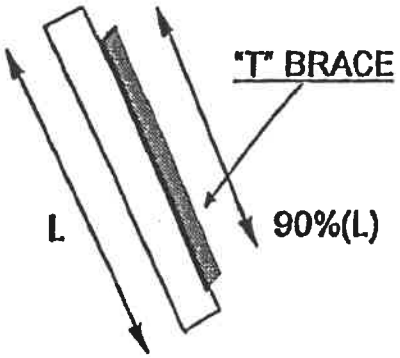
TRUSWAL SYSTEMS
4445 NORTHPARK DRIVE, SUITE 200
COLORADO SPRINGS, CO 80907
(800) 322-4045 FAX:(719) 598-8463

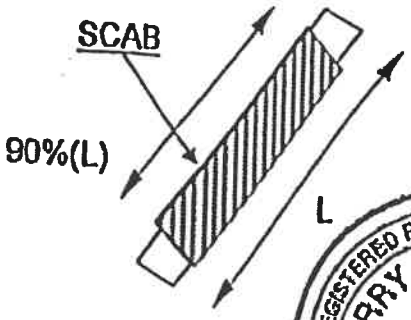
9/9/99 Users of Truswal engineering:

The TrusPlus™ engineering software will correctly design the location requirements for permanent continuous lateral bracing (CLB) on members for which it is required to reduce buckling length. Sealed engineering drawings from Truswal will show the required number and approximate locations of braces for each member needing bracing. In general, this bracing is done by attaching a 2x member (top or bottom edge of member) running perpendicular to the trusses and adequately designed, connected and braced to the building per the building designer (See ANSI/TPI current version). The following are other options (when perp. bracing is not possible or desirable) that will also satisfy bracing needs for individual members (not building system bracing):

1. A 1x or 2x structurally graded "T" brace by be nailed flat to the edge of the member with 10d common or box nails at 8" o.c. if only one brace is required, or may be nailed to both edges of the member if two braces are required. The "T" brace must extend a minimum of 90% of the member's length.
2. A scab (add-on) of the same size and structural grade as the member may be nailed to one face of the member with 10d common or box nails at 8" o.c. if only one brace is required, or may be nailed to both faces of the member if two braces are required. A minimum of 2x6 scabs are required for any member exceeding 14'-0" in length. Scab(s) must extend a minimum of 90% of the members length.
3. Any member requiring more than two braces must use perpendicular bracing or a combination of scabs and "T" braces, but must be analyzed on a case-by-case basis.

EXAMPLES





Please contact a Truswal engineer if there are any questions.



TRUSWAL SYSTEMS
4445 NORTHPARK DRIVE, SUITE 200
COLORADO SPRINGS, CO 80907
(800) 322-4045 FAX:(719) 598-8463

8/3/00

To whom it may concern:

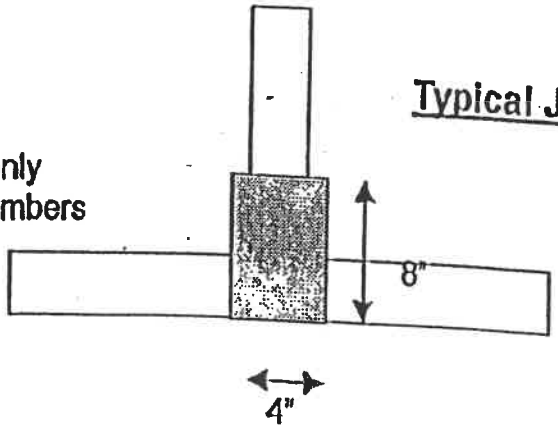
It is permissible to repair a False Frame* joint with the procedure outlined below, provided that the following statements are true:

- Ceiling loading is 10 PSF or less.
- Trusses are spaced 24" o.c. or less.
- False Frame verticals are spaced 6'-0" o.c. or less.
- No additional point loads or uniform loads are present on the false frame that would cause the loads to exceed 10 PSF for any reason.
- The joint(s) to repair does not have a support bearing directly underneath the joint.
- There is no damage to the lumber at the joint, such as excessive splits, cracks, etc.
- The joint fits tightly (within all TPI tolerances).
- All lumber in the false frame is 2x4 or 2x3.

Repair as follows:

1. Cut a ½" CDX APA Group 1 plywood (or equivalent O.S.B.) gusset, 4" wide by 8" long, or larger.
2. Apply gusset to the face of the truss at each joint with a missing plate. If one face of truss has missing plate, then gusset is required on only that face. If both faces of the joint are unplated, then the gusset is required on each face.
3. Use (3) 8d nails into each member, from each face (see detail below).

Typical Joint

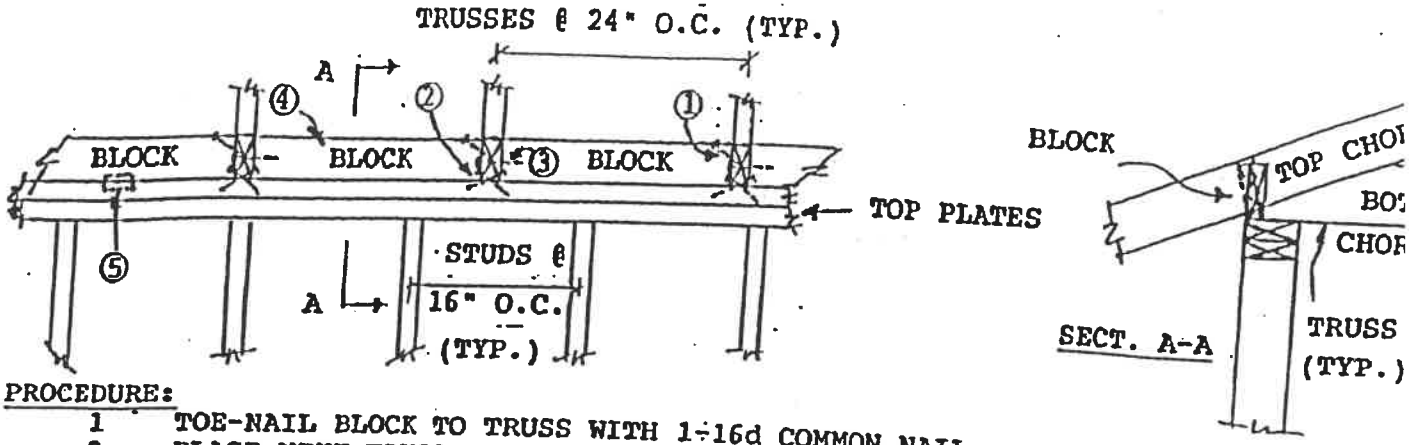


* False frame refers only To non-structural members (zero design forces).



THESE DETAILS ARE INTENDED TO SHOW MINIMUM REQUIRED CONNECTIONS RECOMMENDED BY TRUSWAL SYSTEMS. THE DETAILS DO NOT REPLACE OR SUPERSEDE ANY DETAILS SPECIFIED BY A PROJECT ENGINEER OR ARCHITECT ON A PARTICULAR PROJECT, NOR HAVE THEY BEEN ANALYZED FOR SEISMIC AND WIND FORCES ACTING ON THE CONNECTIONS FROM THE RESPONSE OF THE STRUCTURE TO SUCH LOADS. IT IS RECOMMENDED THAT THE APPROVAL OF THE PROJECT ENGINEER OR ARCHITECT BE OBTAINED BEFORE USING THESE DETAILS. BEARING REQUIREMENTS SHOWN ON SPECIFIC TRUSS DESIGNS MUST BE SATISFIED, INCLUDING CONNECTIONS FOR UPLIFT REACTIONS.

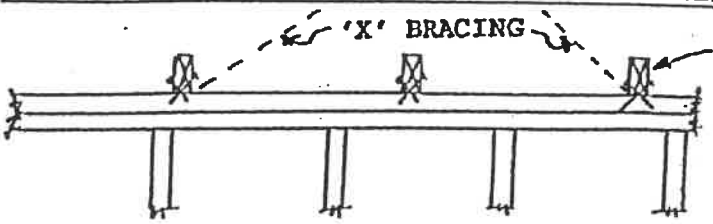
TRUSS CONNECTION TO EXTERIOR BEARING WALLS



PROCEDURE:

1. TOE-NAIL BLOCK TO TRUSS WITH 1-16d COMMON NAIL.
2. PLACE NEXT TRUSS AGAINST BLOCK AND TOE-NAIL TRUSS TO TOP PLATE WITH 2-16d COMMON NAILS.
3. END NAIL THROUGH TRUSS INTO BLOCK WITH 1-16d COMMON NAIL.
4. PLACE NEXT BLOCK AGAINST TRUSS AND REPEAT STEPS 1 THROUGH 3.
5. BLOCKS MAY BE ATTACHED TO TOP PLATE WITH SIMPSON A35F (OR EQUIV.) FRAMING ANCHORS. SEE MANUFACTURER'S CATALOG FOR DETAILS AND SPECIFICATIONS.

TRUSS CONNECTION TO INTERIOR BEARING WALLS

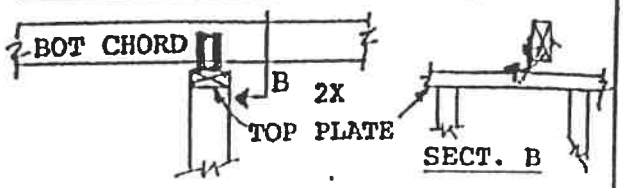


WALL MUST BE AT HEIGHT SPECIFIED ON THE DESIGN DRAWING OR MUST BE SHIMMED TO THE CORRECT HEIGHT.
USE 2-16d COMMON NAILS TOE-NAILED INTO THE TOP PLATE THROUGH EACH TRUSS.
DIAGONAL 'X' BRACING IS REQUIRED AT ENDS OF THE BUILDING (OR WALL) AND AT A MAX. OF 16' INTERVALS ALONG WALL.
'X' BRACING IS MIN. 2x3 MATERIAL WITH 2-8d NAILS EACH END.
BLOCKING SIMILAR TO EXTERIOR WALL DETAIL IS RECOMMENDED.



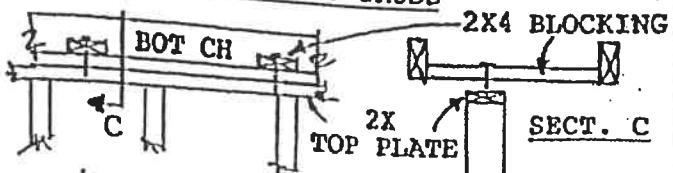
TRUSS CONNECTION TO NON-BEARING PARTITION WALLS

WALL PERPENDICULAR TO TRUSS



1-16d COMMON NAIL OR SIMPSON STC (OR EQUIV.) TRUSS CLIP

WALL PARALLEL TO TRUSS



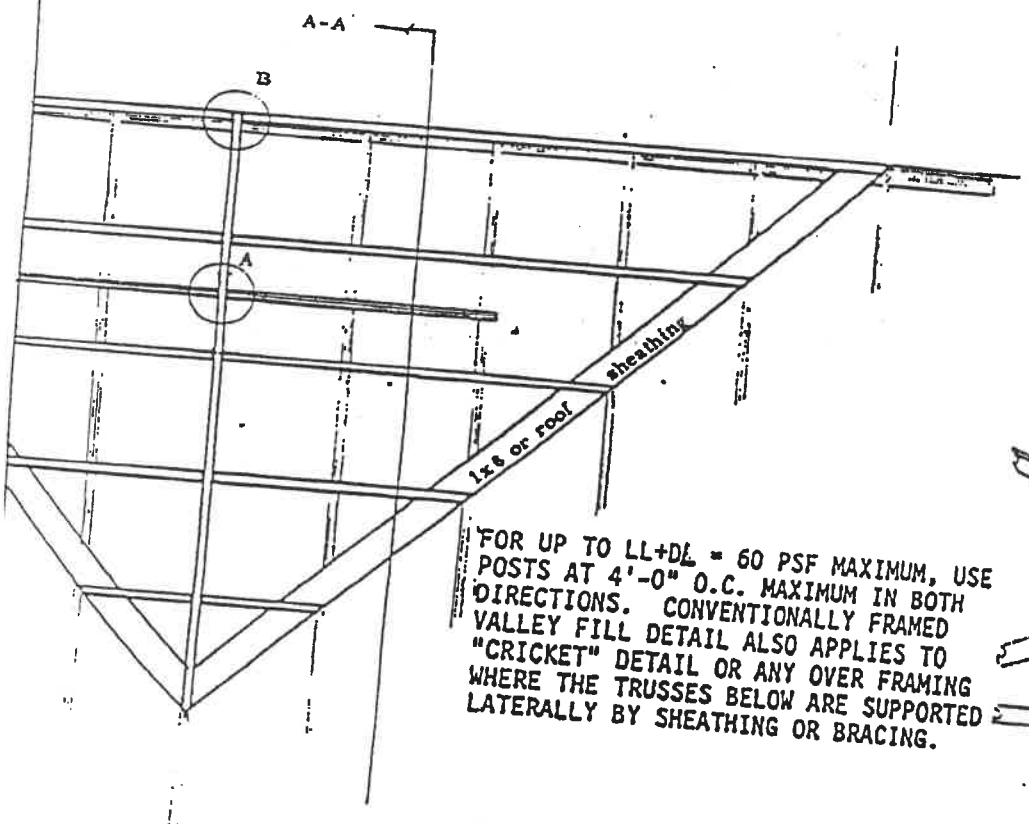
1-16d COMMON NAIL OR SIMPSON STC (OR EQUIV.) TRUSS CLIP

FILE NO. CD-1
DATE: 9/10/92
REF:
DES. BY: L.M. CK. BY:

TRUSWAL SYSTEMS

Roof LL+DL = 30 psf. maximum

VALLEY FILL TO 20'-0"



FOR UP TO LL+DL = 60 PSF MAXIMUM, USE POSTS AT 4'-0" O.C. MAXIMUM IN BOTH DIRECTIONS. CONVENTIONALLY FRAMED VALLEY FILL DETAIL ALSO APPLIES TO "CRICKET" DETAIL OR ANY OVER FRAMING WHERE THE TRUSSES BELOW ARE SUPPORTED LATERALLY BY SHEATHING OR BRACING.

Provide solid block between trusses to support ridge if necessary

FRAMING DETAILS FOR CONVENTIONAL FRAMED VALLEY FILL

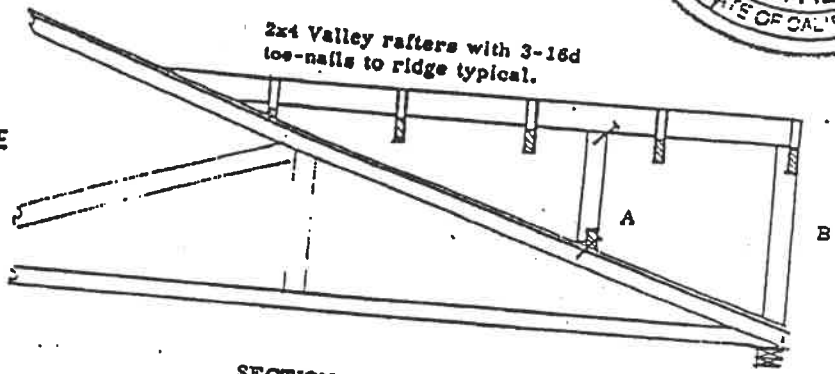
NOTES: (1) Valley rafters to be minimum 2x4 Con. Gr. Hem-Fir and not to exceed 8'-0" clear span.

(2) Nailing per UBC Except as noted.

DETAILS: (A) 2x4 post to 1/2 valley width purlin.
(B) 2x4 post to bearing, Gable End or Girder truss.

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045932
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

2x4 Valley rafters with 3-16d toe-nails to ridge typical.



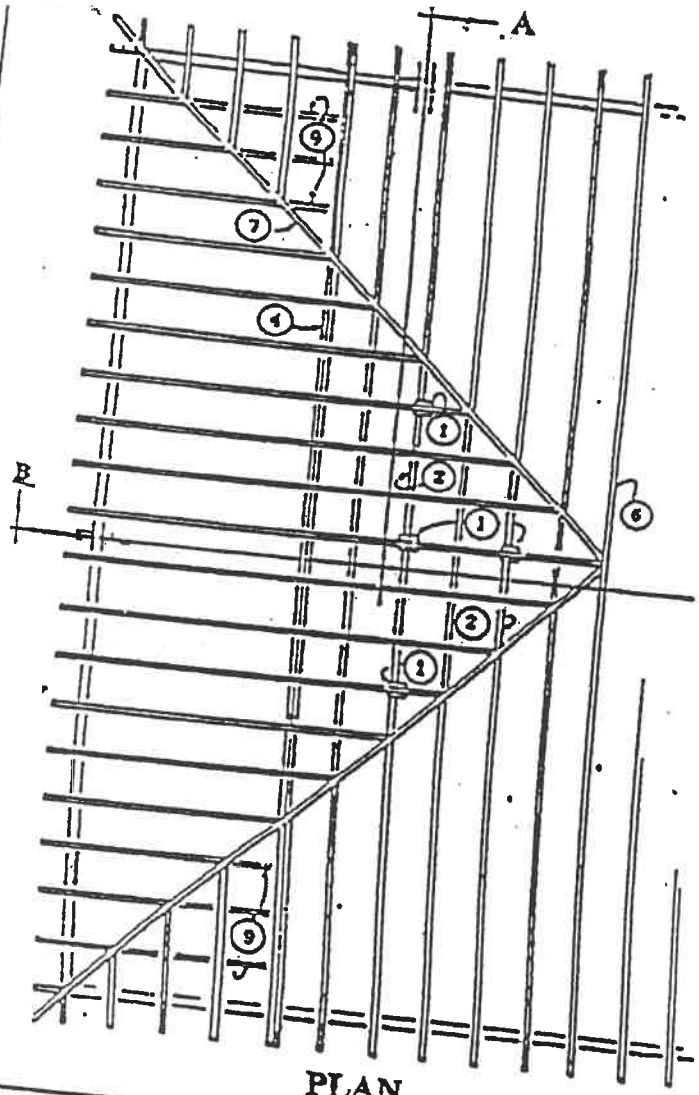
SECTION A-A

e No. VF - 20
e: 12/1/90
-S-25-1 Des. By: M Ck. By:

TRUSWAL CONNECTIONS — "W" are of prime quality galvanized sheet steel and are distinguished as follows:
Model-W1 (illustrated by profile "W1") 20 ga. with 6 teeth per sq. in., .118" x .63" long. Teeth are punched two per hole at 1.0" x .25" o.c.
Model-W2 (illustrated by profile "W2") 18 ga. with 6 teeth per sq. in., .142" x .94" long. Teeth are punched one per hole at 1.0" x .25" o.c.
Dual-Plate (illustrated by profile "W3") 20 ga. & 18 ga. with 6 teeth per sq. in., .118" x .63" long. Teeth are punched two per hole at .71" o.c. and rotated 90° from one another.

FUNCTIONAL: Plates shall be located on both faces of truss and shall be placed on duel connections unless otherwise noted, symmetrical unless otherwise noted.
DOTS INDICATE SIDE OF PLATE
** For Basic Design Values, see I.C.B.O. - ER #1697.

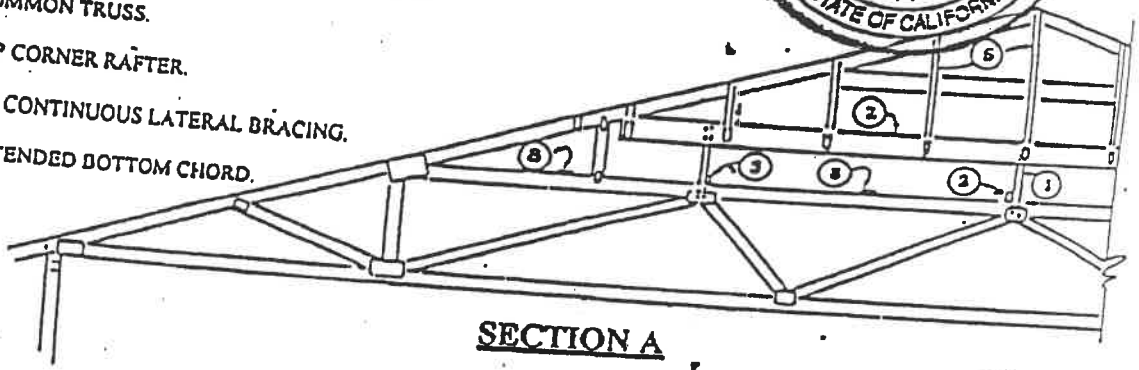
TRUSWAL SYSTEMS
ANAHEIM
DETROIT
TRUSWAL



PLAN

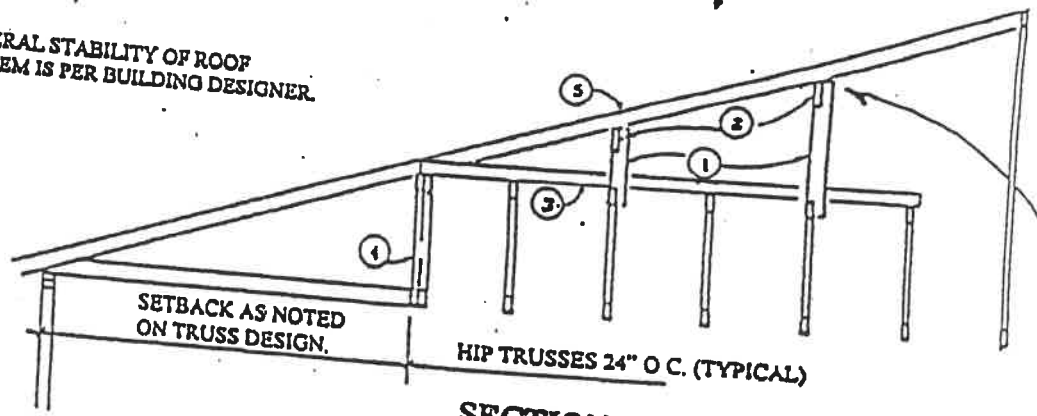
1. 2x4 POST ATTACHED TO EACH TRUSS PANEL POINT AND OVERHEAD PURLIN.
2. 2x4 #1 HF OR #2 DF PURLINS 4' - 0" O.C
3. 2x4 #1 HF OR #2 DF CONTINUOUS STIFFENER ATTACHED TO POST.
4. HIP TRUSS #1 SETBACK FROM END WALL AS NOTED ON TRUSS DESIGN.
5. EXTENDED END JACK TOP CHORD (TYPICAL)
6. COMMON TRUSS.
7. HIP CORNER RAFTER.
8. 1x4 CONTINUOUS LATERAL BRACING.
9. EXTENDED BOTTOM CHORD.

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA



SECTION A

LATERAL STABILITY OF ROOF SYSTEM IS PER BUILDING DESIGNER.



SECTION B

ADEQUATE CONNECTION BY OTHERS (TYPICAL).

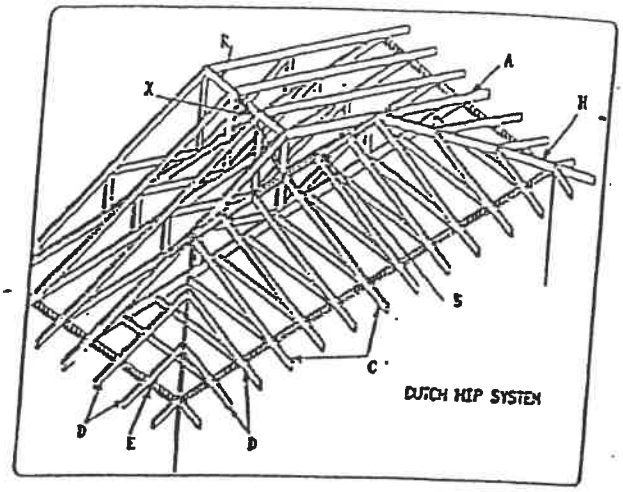
DATE

HIP FRAMING DETAIL 1/21/98

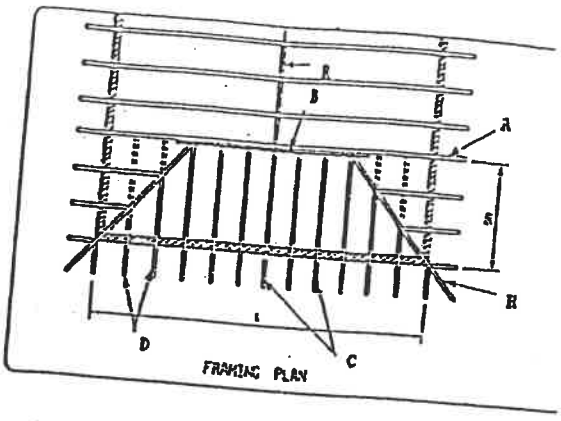
TRUSWAL SYSTEMS
TRUSWAL SYSTEMS CORPORATION

WARNING Read all notes on this sheet and give a copy of it to the Erecting Contractor.
This design is for an individual building component. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer shall ascertain that the loads utilized in the design meet or exceed the loading imposed by the local building code. It is assumed that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. The component shall not be placed in any environment that will cause the moisture content of the wood exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace the trusses in accordance with the following standards: "TRUSCOM MANUAL" by Truswal, "QUALITY CONTROL STANDARD FOR METAL PLATE CONNECTED WOOD TRUSSES" - (QSF88), "HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES" - (HIB-91) and "HIB-91 SUMMARY SHEET" by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1250 Connecticut Ave, NW, Ste 200, Washington, DC 20036.

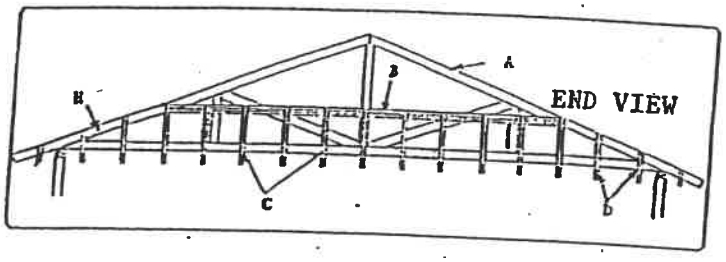
DUTCH HIPSET DETAILS



DUTCH HIP SYSTEM

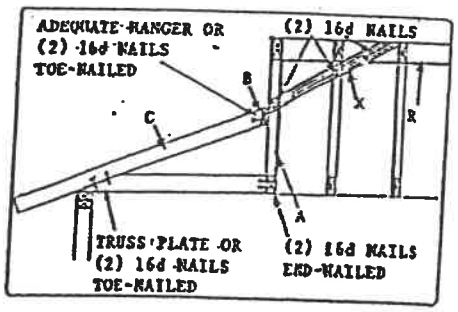


FRAMING PLAN

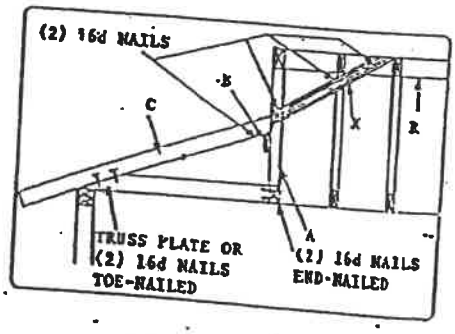


END VIEW

A - DUTCH HIP GIRDER
B - 2x NAILER (BY OTHERS)
C - END JACKS
D - CORNER JACKS
E - CORNER JACK B.C. WEDGES
H - HIP RAFTER
R - BLOCKING FOR DIAGONAL BRACE
X - DIAGONAL BRACE



JACK OPTION 1



JACK OPTION 2

DIAGONAL BRACES "X" ARE REQUIRED AT CENTERLINE AND AT 10'-0" O.C. FROM CENTERLINE.
BLOCKING "R" IS REQUIRED FOR EACH DIAGONAL BRACE "X", ATTACHED WITH (2)16d NAILS, END NAILED INTO TRUSS TOP CHORD. LOCATE BLOCKING AT TOP OF DIAGONAL BRACE, AND IN BETWEEN NEXT TRUSSES EACH DIRECTION (3 BLOCKS TOTAL). BLOCK MAY BE OFFSET FROM RIDGE, OR A DOUBLE BLOCK MAY BE USED TO PROVIDE A FLUSH FIT WITH DIAGONAL BRACE.

DUTCH HIP GIRDER, JACKS, AND HIP RAFTER REQUIRE SPECIFIC DESIGN CONSIDERATION, OR OTHER DETAILS NOT SHOWN.

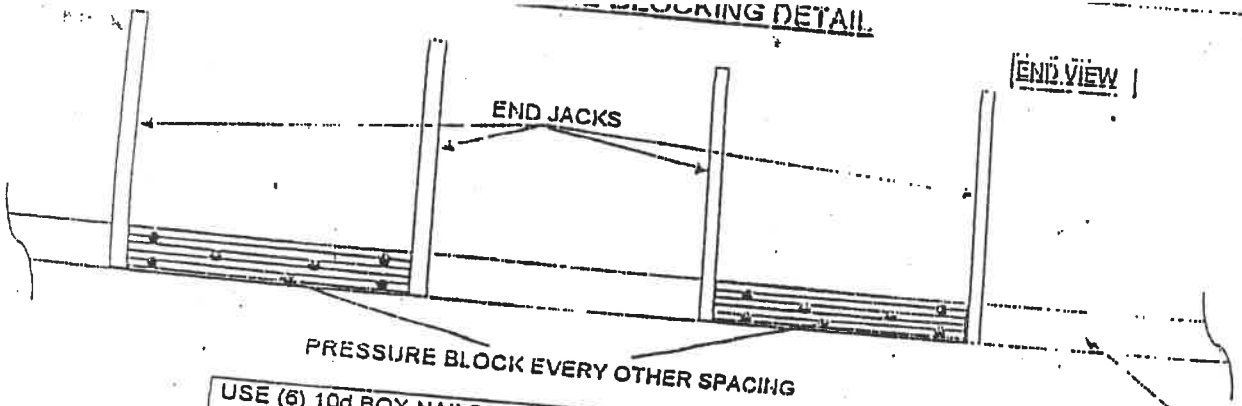
NAILING IS BASED ON AN 8'-0" MAXIMUM SETBACK AND 50 PSF MAXIMUM TOTAL LOAD, AND IS GOOD FOR ANY SPAN, ANY PITCH, AND ANY LUMBER SIZE AND GRADE. CONNECTIONS FOR WIND AND SIESMIC LOADS ON THE BUILDING MUST BE DONE BY THE BUILDING DESIGNER.

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

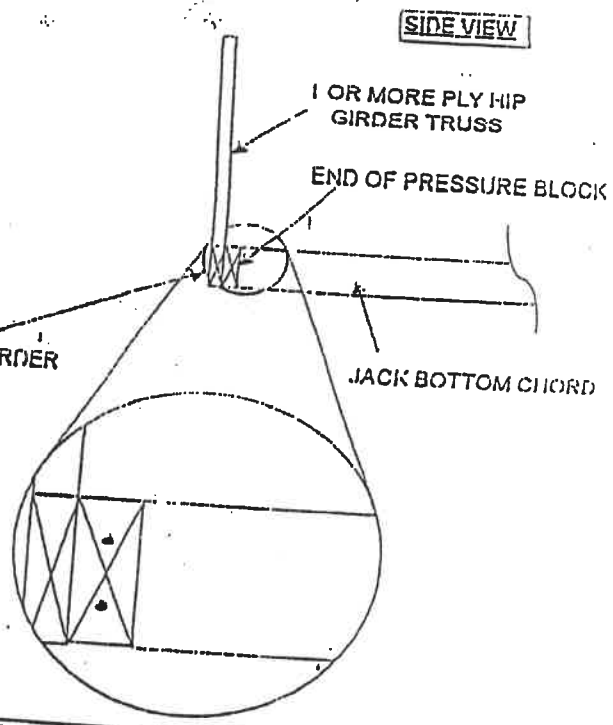
FILE NO.	DUTCH HIPSET DETAILS		
DATE:	1991		
REF.:	DES. BY: L.M.	CK. BY:	

TRUSWAL

BLOCKING DETAIL



USE (6) 10d BOX NAILS PER BLOCK AS SHOWN, TWO NAILS PLACED AT 4" FROM EACH END OF BLOCK, AND TWO NAILS EVENLY SPACED IN THE CENTER OF THE BLOCK.



USE (2) 10d BOX NAILS THROUGH BOTTOM CHORD OF END JACK INTO END OF PRESSURE BLOCK FOR 2X4, USE (3) 10d BOX NAILS FOR 2X6 LUMBER. SEE TABLE AT LEFT.

MAXIMUM SUPPORT REACTIONS*, LBS. PER JACK TRUSS

BLOCK:	2X4 (2 BOX NAILS TO BLOCK)			2X6 (3 BOX NAILS TO BLOCK)		
DURATION:	1.00	1.15	1.25	1.00	1.15	1.25
S.PINE	132	152	152	198	228	248
DF-L	112	129	140	168	193	210
HEM-FIR	105	121	131	158	182	198
S-P-F	90	104	113	135	155	169

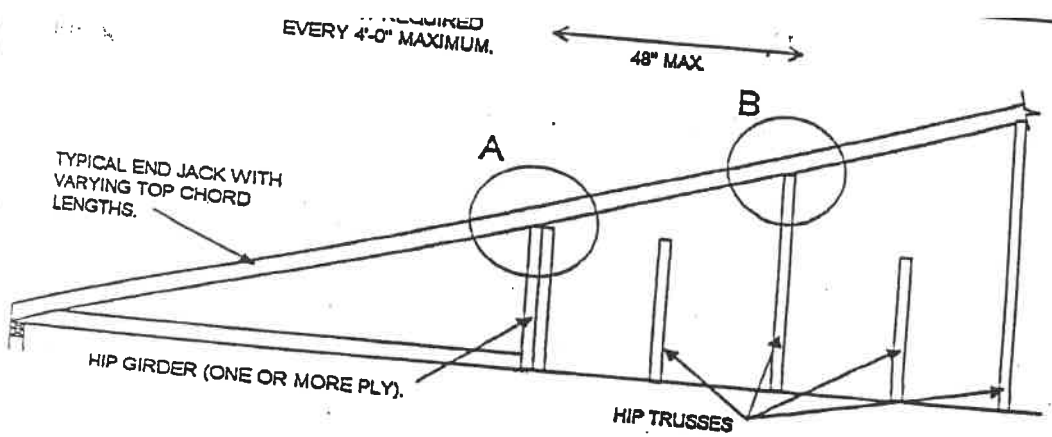
*REACTIONS ARE EITHER UPWARD OR DOWNWARD.

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

TRUSWAL SYSTEMS

THIS DETAIL IS PROVIDED AS A SUGGESTED SOLUTION TO THE APPLICATION SHOWN ONLY. IT IS NOT INTENDED TO REPLACE OR SUPERCEDE ANY SIMILAR DETAIL THAT MAY HAVE BEEN PROVIDED BY THE BUILDING DESIGNER. IT IS THE RESPONSIBILITY OF OTHERS TO VERIFY THE ADEQUACY OF THIS DETAIL IN RELATION TO ANY SPECIFIC PROJECT, AS TO ITS APPLICATION AND INTENT APPLIED TO THIS OR ANY SIMILAR ISSUE. TRUSWAL SYSTEMS ASSUMES NO RESPONSIBILITY FOR FIELD INSPECTION OR WORKMANSHIP QUALITY.

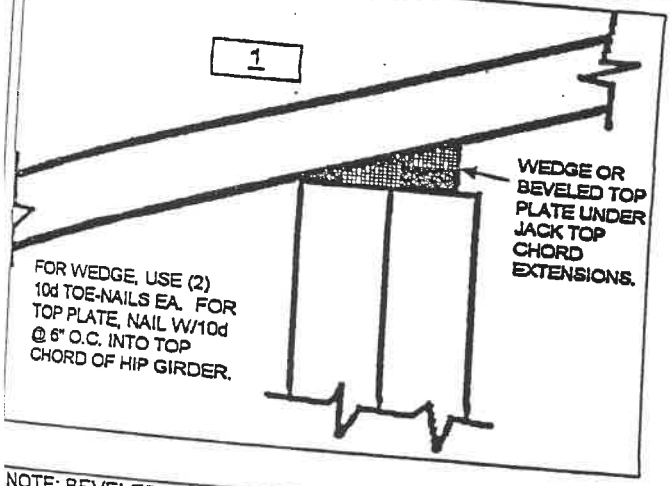
DATE:	8/31/00
REF:	PBLK-1
DES:	L.M.

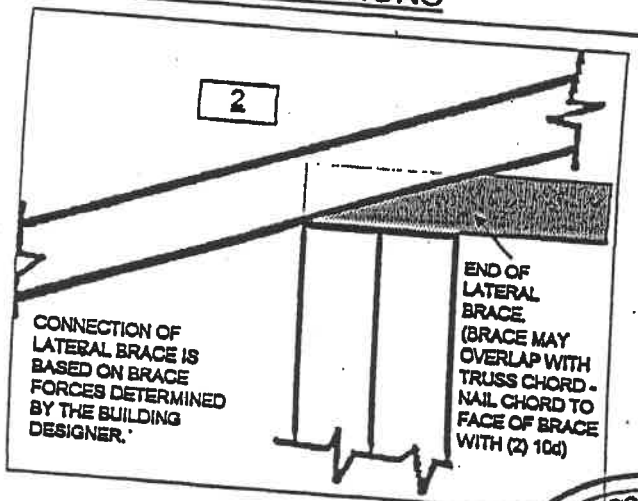


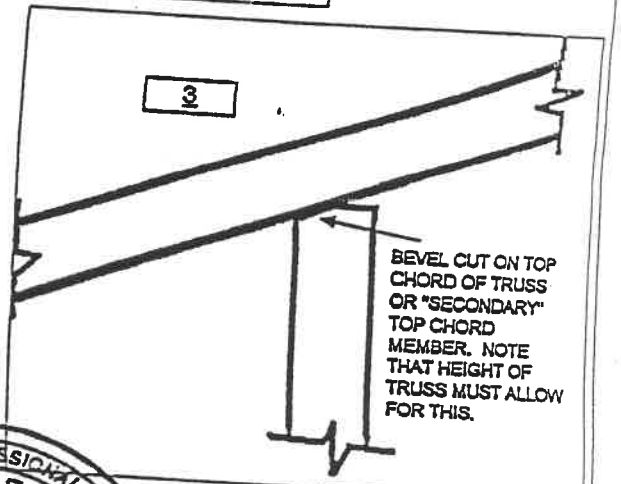
BEARING SUPPORT FOR TOP CHORDS OF END JACKS WHERE THEY CROSS SUPPORTING MEMBERS.

1. FOR REACTIONS OF 300# OR LESS THE TOP CHORD MAY BE TOE-NAILED TO THE SUPPORTING MEMBER WITH (2)10d NAILS.
2. FOR REACTIONS GREATER THAN 300#, THE DETAILS BELOW MAY BE USED TO PROVIDE ADEQUATE BEARING SUPPORT.
3. SIZE OF WEDGE, BRACE OR BEVEL CUT IS DETERMINED BY THE REQUIRED BEARING AREA (OR LENGTH) AS SHOWN ON THE INDIVIDUAL TRUSS DESIGNS.
4. FOR EACH DETAIL BELOW THE TOP CHORD MAY BE TOE-NAILED TO THE SUPPORTING MEMBER WITH (2) 10d NAILS.
5. UPLIFT REACTIONS, IF THEY EXIST, MAY REQUIRE ADDITIONAL CONNECTION CONSIDERATIONS IF THEY EXCEED THE VALUE OF THE TOE-NAIL CONNECTION.
6. OTHER OPTIONS MAY BE USED AT THE DISCRETION OF THE BUILDING DESIGNER.
7. REFER TO OTHER DETAILS FOR SPECIFICATIONS RELATING TO A HIP SYSTEM THAT ARE NOT SHOWN HERE.

DETAIL OPTIONS







NOTE: BEVELED LEDGER MAY BE USED INSTEAD OF DETAILS SHOWN ABOVE. LEDGER MAY BE ATTACHED TO EITHER FACE OF TRUSS WITH 10d NAILS. SPACING OF NAILS IS DEPENDENT ON LOADING CONDITIONS AND SHOULD BE DETERMINED BY BUILDING DESIGNER.

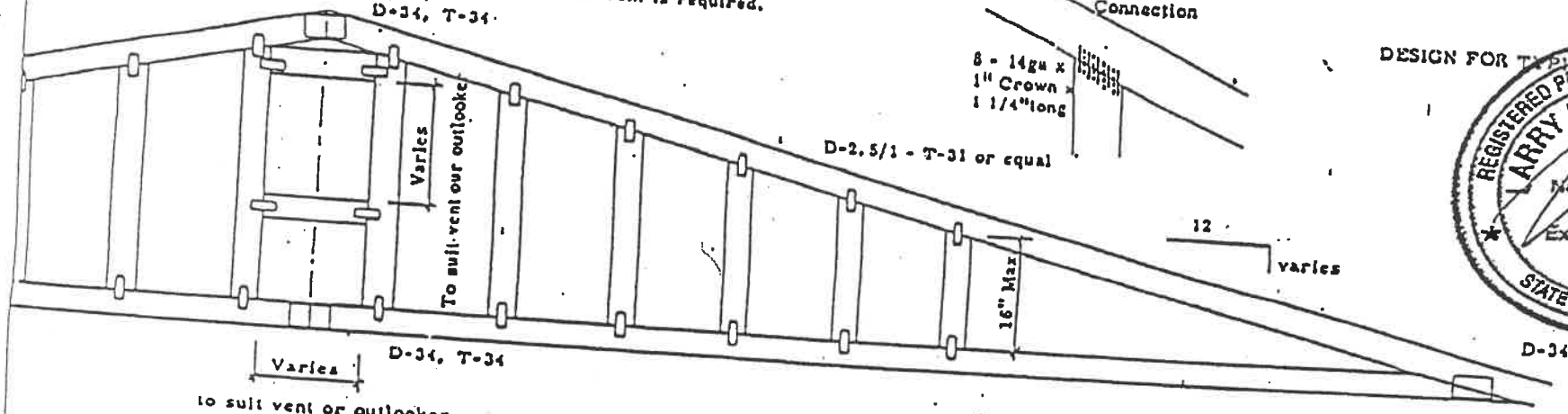
TRUSWAL SYSTEMS

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REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

DATE:	8/25/99
REF:	HJ-1
DES:	L.M.

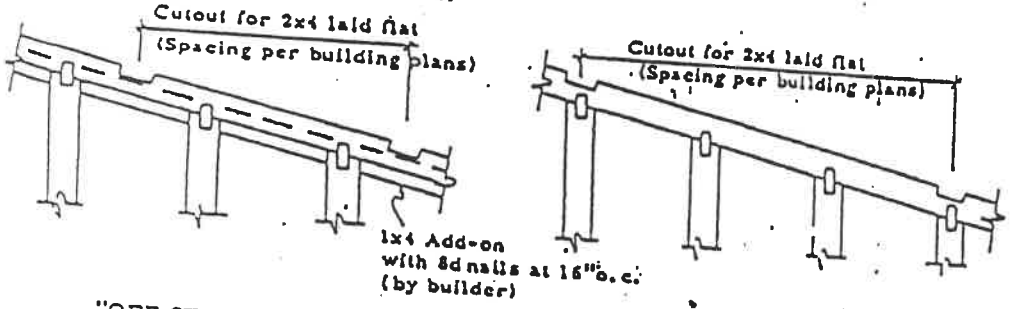
NOTE: Vent blocks may be omitted where no vent is required.



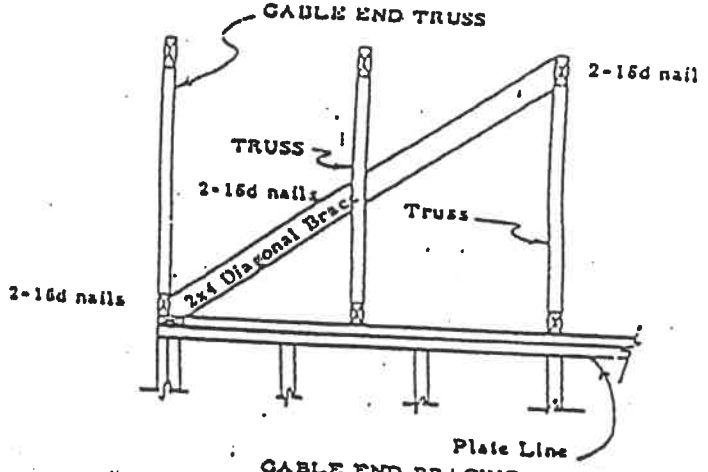
Alternate Stud Connection with Staples

DESIGN FOR TYPICAL GABLE END TRUSS

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA



DETAILS FOR 2 x 4 OUTLOOKERS



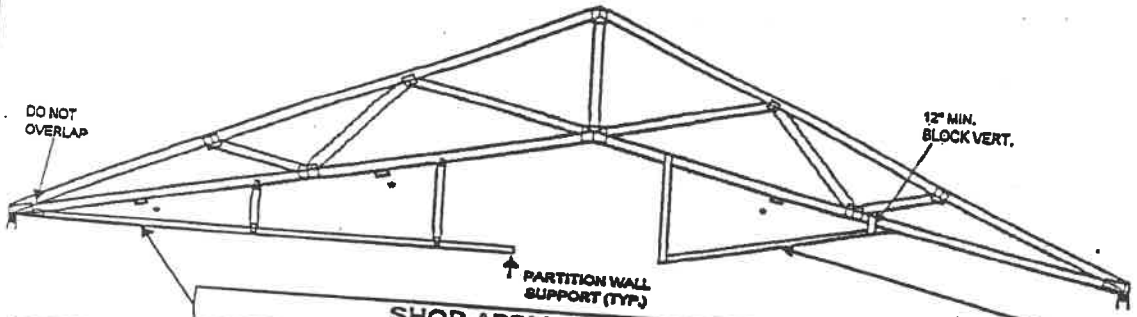
GABLE END BRACING

File No. Cable End Truss
Date: 12/4/78
Ref:
Des. By: JN Ck. By:

TRUSWAL RONEL

ANAHE
DETRO
ATLAN

...CHORD FALSE FRAME DETAILS



THIS DETAIL APPLIES TO ANY PITCH, ANY SPAN, ANY TOP CHORD LOADING AND ANY TRUSS WEB CONFIGURATION FOR 24" O.C. MAX. SPACING AND 10 PSF MAX. CEILING LOAD., WITH THE EXCEPTIONS NOTED ON THIS SHEET.

DO NOT USE THIS DETAIL FOR:

1. STRUCTURAL BEARINGS UNDER THE FALSE FRAME (NOT PARTITIONS).
2. INTERIOR BEARINGS AT ANY LOCATION ON THE TRUSS.
3. LOADS IN EXCESS OF 10 PSF CONNECTED TO THE FALSE FRAME.
4. DRAG LOADS CONNECTED TO THE FALSE FRAME.
5. TOP CHORD APPLIED FALSE FRAMES.
6. LUMBER GRADES LESS THAN SPECIFIED ON THIS DETAIL.
7. VERTICALS SPACED APART MORE THAN PANEL POINTS (IF > 6'-0").
8. FALSE FRAMES ON CANTILEVER SECTIONS OF A TRUSS.

SHOP APPLIED

- SPECIFIC TRUSS DESIGN IS SEPARATE FROM THIS DETAIL
- USE #2 OR BETTER (1450F FOR MSR) MATERIAL FOR FALSE FRAME CHORDS
- USE STANDARD OR STUD (900F FOR MSR) MATERIAL FOR FALSE FRAME WEBS
- LOCATE VERTICALS AT 6'-0" O.C. MAX., OR SEE NEXT OPTION.
- IF FALSE FRAME CHORD IS THE SAME SIZE AND GRADE AS THE STRUCTURAL CHORD, THEN VERTICALS MAY BE LOCATED WITHIN + OR - 12" OF THE PANEL POINTS ALONG THE BOTTOM CHORD (EVEN IF GREATER THAN 6'-0" O.C.).
- USE A TRUSWAL 20 GUAGE 2.5-3 MIN. PLATE AT THE HEEL CONNECTION. USE TRUSWAL 20 GUAGE 1.5-3 MIN. PLATES AT EACH END OF EACH VERTICAL WEB. ALL PLATES ARE REQUIRED ON BOTH FACES OF EACH JOINT.
- IF NEEDED, A 2X4 FALSE FRAME BOTTOM CHORD MAY BE SPLICED WITH A TRUSWAL 20 GUAGE 3-4 MIN. PLATE AT ANY CONVENIENT LOCATION, OR A TRUSWAL 20 GUAGE 5-5 MIN. PLATE AT ANY VERTICAL (JOINT SPLICE).
- * APPLY REQUIRED BRACING (SEE BELOW).
- OPTIONAL PLANT SHELF MAY BE USED (SEE PICTURE ABOVE) UP TO 24" MAX.
- FALSE FRAMES MAY BE SIMILARLY APPLIED TO FLAT BOTTOM CHORD TRUSSES (OR FLAT BOTTOM CHORD SECTIONS OF A TRUSS).

*LATERAL BRACING IS NORMALLY REQUIRED ON THE STRUCTURAL BOTTOM CHORD OF THE ORIGINAL TRUSS. SINCE MANY FACTORS AFFECT THE NUMBER OF REQUIRED BRACES, SUCH AS LUMBER SIZE AND GRADE, WIND LOADS, BEARING LOCATIONS, ETC. IT IS NOT POSSIBLE TO DEVELOP A STANDARD FOR BRACING, EXCEPT TO SAY THAT IN NO CASE MAY THE BRACING EXCEED 10'-0" O.C. FOR A SINGLE-PLY TRUSS BOTTOM CHORD. REFER TO SPECIFIC TRUSS DESIGNS TO DETERMINE THE REQUIRED BRACING FOR THE STRUCTURAL BOTTOM CHORD (MAY BE INDICATED AS BOTTOM CHORD PURLIN SPACING). BRACING SHOULD ALSO BE APPLIED TO THE FALSE FRAME CHORD AT 10'-0" O.C. IF THERE IS NO SHEATHING MATERIAL APPLIED DIRECTLY TO THE FALSE FRAME CHORD. BRACING MATERIALS AND THEIR CONNECTIONS ARE THE SOLE RESPONSIBILITY OF THE BUILDING DESIGNER PER THE LATEST VERSION OF ANSI/TPI.

FIELD APPLIED

- SPECIFIC TRUSS DESIGN IS SEPARATE FROM THIS DETAIL
- USE #2 OR BETTER (1450F FOR MSR) MATERIAL FOR FALSE FRAME CHORDS
- USE STANDARD OR STUD (900F FOR MSR) MATERIAL FOR FALSE FRAME WEBS
- LOCATE VERTICALS AT 6'-0" O.C. MAX., OR SEE NEXT OPTION.
- IF FALSE FRAME CHORD IS THE SAME SIZE AND GRADE AS THE STRUCTURAL CHORD, THEN VERTICALS MAY BE LOCATED WITHIN + OR - 12" OF THE PANEL POINTS ALONG THE BOTTOM CHORD (EVEN IF GREATER THAN 6'-0" O.C.).
- PLACE FALSE FRAME CHORD IN-PLANE WITH THE TRUSS.
- CUT VERTICALS TO LAP BOTH THE STRUCTURAL CHORD AND THE FALSE FRAME CHORD, TO BE PLACED AT EACH END IN ADDITION TO ABOVE REQ. NAILS AT EACH END OF EACH VERTICAL. (12" MIN. VERTICAL BLOCK)
- JOIN VERTICALS TO ALTERNATING FACES OF THE TRUSS WITH (3)10d OR 16d
- MAY USE A 12" LONG 7/16" PLYWOOD (OR OSB) GUSSET AND 8d NAILS @ 3" O.C. AT THE FALSE FRAME HEEL JOINT IF DESIRED.
- IF NEEDED, THE FALSE FRAME BOTTOM CHORD MAY BE SPLICED WITH A 12" LONG MIN. BLOCK SCAB, CENTERED ON THE SPLICE JOINT, ATTACHED WITH (4)10d OR 16d NAILS ON EACH SIDE OF THE SPLICE JOINT (ONE FACE ONLY).
- * APPLY REQUIRED BRACING (SEE BELOW LEFT).
- OPTIONAL PLANT SHELF MAY BE USED (SEE PICTURE ABOVE) UP TO 24" MAX.
- FALSE FRAMES MAY BE SIMILARLY APPLIED TO FLAT BOTTOM CHORD TRUSSES (OR FLAT BOTTOM CHORD SECTIONS OF A TRUSS).

NOTE: FALSE FRAME MEMBERS MAY BE CUT AND FIELD MODIFIED AS NEEDED WITHOUT THE NEED FOR REPAIR DETAILS, PROVIDED THE MODIFICATION DOES NOT INVOLVE CUTTING OR DAMAGING STRUCTURAL MEMBERS, OR CHANGING LOAD CONDITIONS OR SUPPORT CONDITIONS. BRACING REQUIREMENTS MAY CHANGE BASED ON THE NEW FRAME LOCATIONS AFTER MODIFICATION.

TRUSWAL® SYSTEMS

THIS DETAIL IS PROVIDED AS A SUGGESTED SOLUTION TO THE APPLICATION SHOWN ONLY. IT IS NOT INTENDED TO REPLACE OR SUPERCEDE ANY SIMILAR DETAIL THAT MAY HAVE BEEN PROVIDED BY THE BUILDING DESIGNER. IT IS THE RESPONSIBILITY OF OTHERS TO VERIFY THE ADEQUACY OF THIS DETAIL IN RELATION TO ANY SPECIFIC PROJECT, AS TO ITS APPLICATION AND INTENT APPLIED TO THIS OR ANY SIMILAR ISSUE. TRUSWAL SYSTEMS ASSUMES NO RESPONSIBILITY FOR FIELD INSPECTION OR WORKMANSHIP QUALITY.

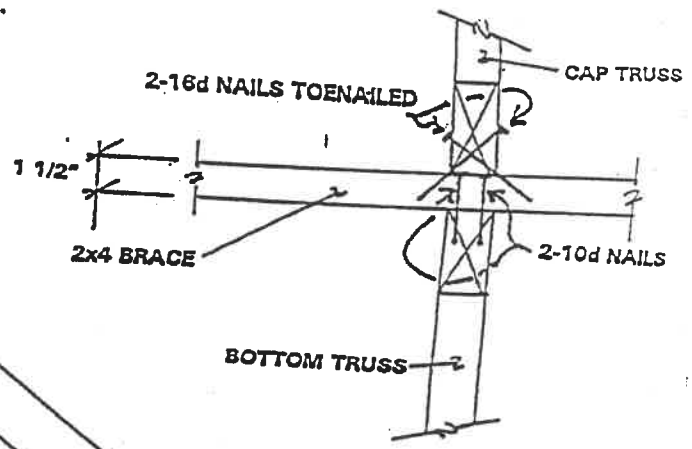
REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

DATE:	9/21/99
REF:	FF-1
DES:	L.M.

LATERAL LOADS IN LINE WITH THE CHORDS HAVE NOT BEEN CONSIDERED. THESE LOADS AND THEIR REQUIRED CONNECTIONS ARE THE RESPONSIBILITY OF THE BUILDING DESIGNER.

MAXIMUM WIND SPEED IS 85 MPH.

SECTION :



12

ANY PITCH

REFER TO THE APPROPRIATE TRUSWAL DESIGNS FOR THE REQUIRED WEB CONFIGURATION FOR BOTH THE CAP TRUSS AND THE SUPPORTING BOTTOM TRUSS.

2x4 CONTINUOUS LATERAL BRACING APPLIED AT 24"o.c.* ATTACH EACH BRACE TO THE BOTTOM TRUSS WITH 2-10d NAILS AT EACH INTERSECTION. TOE-NAIL THE CAP TRUSS TO THE BRACE WITH 1-16d NAIL FROM EACH SIDE AT EACH INTERSECTION.

*(OR PER DESIGN)

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

CHORD/WEB SIZE ARE PER THE APPROPRIATE TRUSWAL DESIGN.

CODE	SPACING	DATE
UBC	24"o.c.	4-30-98

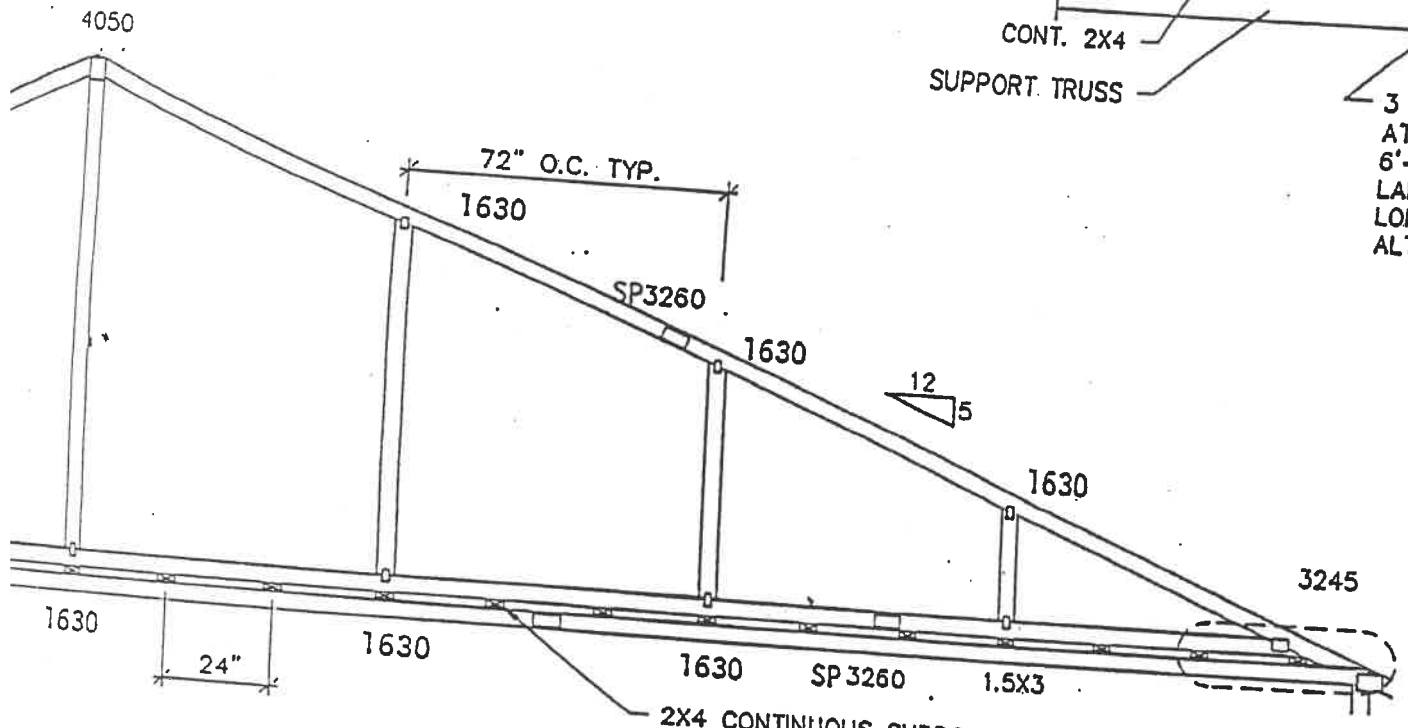
CAP CONNECTION DETAIL

CO

TRUSWAL SYSTEMS
TRUSWAL SYSTEMS CORPORATION

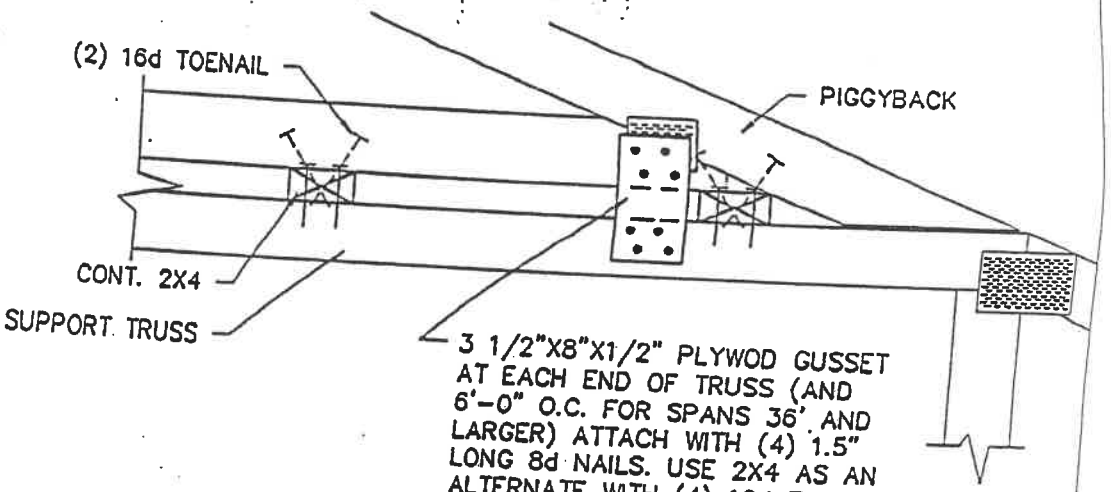
WARNING *Read all notes on this sheet and give a copy of it to the Erecting Contractor.*
This design is for an individual building component. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer shall ascertain that the loads utilized on this design meet or exceed the loading imposed by the local building code. It is assumed that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. This component shall not be placed in any environment that will cause the moisture content of the wood exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace this truss in accordance with the following standards: "TRUSCOM MANUAL" by Truswal, "QUALITY CONTROL STANDARD FOR METAL PLATE CONNECTED WOOD TRUSSES" - (QST-88), "HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES" - (HIB-91) and "HIB-91 SUMMARY SHEET" by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1250 Connecticut Ave, NW, Ste 200, Washington, DC 20036.

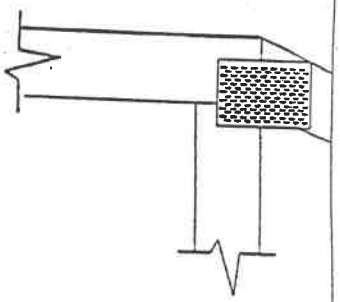
PIGGYBACK DETAIL



* REQUIRES 2X4 BRACE WHEN VERTICAL EXCEEDS 5'-0" 2 BRACES AT 10'-0" ETC.

2X4 CONTINUOUS SUPPORT BRACING. ATTACH TO THE TOP SIDE OF TOP CHORD OF TRUSS SUPPORTING PIGGYBACKS WITH (2) 10d NAILS

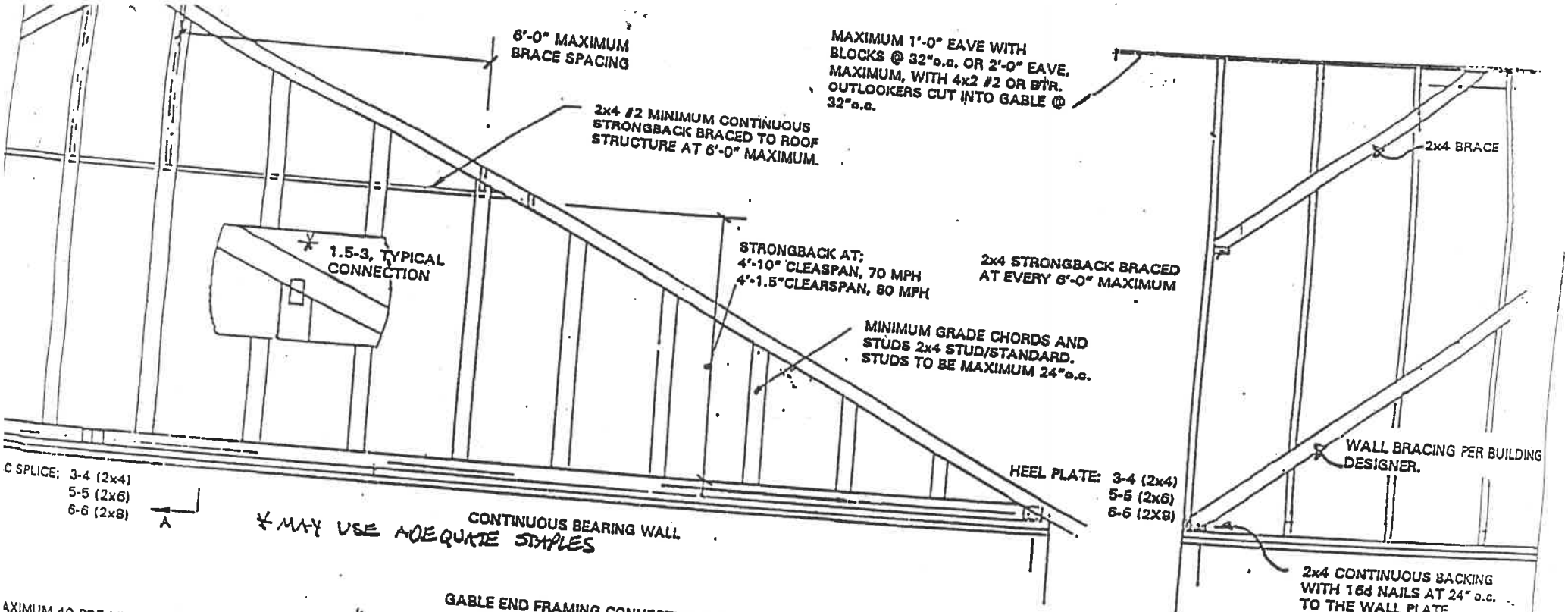




ALTERNATE SHOULDER DETAIL

REGISTERED PROFESSIONAL ENGINEER
LARRY L. MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

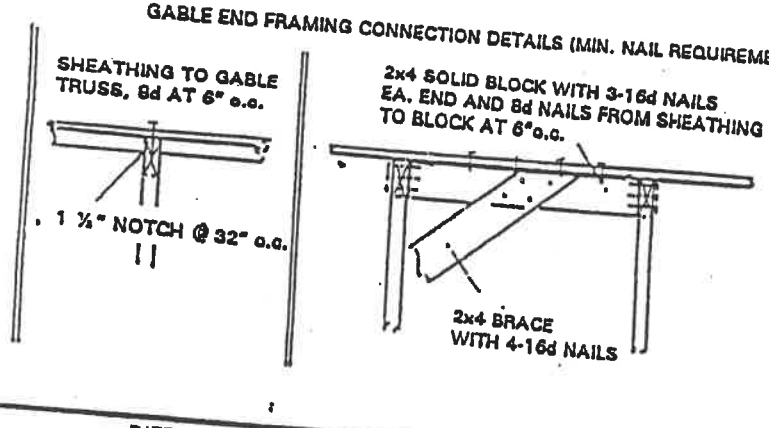
PB
1



AXIMUM 40 PSF LIVE LOAD.
MPH WIND EXPOSURE C.
SS THAN 20'-0" WALL HEIGHT.

BRACING DETAILS

GABLE END FRAMING CONNECTION DETAILS (MIN. NAIL REQUIREMENTS SHOWN)



RED PROFESSIONAL ENGINEER
MICHAEL MESSAMER
No. C045982
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

MODEL 20

CODE	SPACING	DATE
UBC	CONTINUOUS	2/11/99

GABLE DETAILS

CO

TRUSWAL SYSTEMS
TRUSWAL SYSTEMS CORPORATION

WARNING Read all notes on this sheet and give a copy of it to the Erecting Contractor.
This design is for an individual building component. It has been based on specifications provided by the component manufacturer and done in accordance with the current versions of TPI and AFPA design standards. No responsibility is assumed for dimensional accuracy. Dimensions are to be verified by the component manufacturer and/or building designer prior to fabrication. The building designer shall ascertain that the loads utilized on this design meet or exceed the loading imposed by the local building code. It is assumed that the top chord is laterally braced by the roof or floor sheathing and the bottom chord is laterally braced by a rigid sheathing material directly attached, unless otherwise noted. Bracing shown is for lateral support of components members only to reduce buckling length. This component shall not be placed in any environment that will cause the moisture content of the wood exceed 19% and/or cause connector plate corrosion. Fabricate, handle, install and brace this truss in accordance with the following standards: 'TRUSCOM MANUAL' by Truswal, 'QUALITY CONTROL STANDARD FOR METAL PLATE CONNECTED WOOD TRUSSES' - (QST-88), 'HANDLING INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES' - (HIB-91) and 'HIB-91 SUMMARY SHEET' by TPI. The Truss Plate Institute (TPI) is located at 583 D'Onofrio Drive, Madison, Wisconsin 53719. The American Forest and Paper Association (AFPA) is located at 1250 Connecticut Ave. NW, Ste 200, Washington, DC 20036.

This safety alert symbol is used to attract your attention! PERSONAL SAFETY IS INVOLVED! When you see this symbol - BECOME ALERT - HEED ITS MESSAGE.

DANGER: A DANGER designates a condition where failure to follow instructions or heed warning will most likely result in serious personal injury or death or damage to structures.

CAUTION: A CAUTION identifies safe operating practices or indicates unsafe conditions that could result in personal injury or damage to structures.

WARNING: A WARNING describes a condition where failure to follow instructions could result in severe personal injury or damage to structures.

HIB-91 Summary Sheet

COMMENTARY and RECOMMENDATIONS for HANDLING, INSTALLING & BRACING METAL PLATE CONNECTED WOOD TRUSSES ©

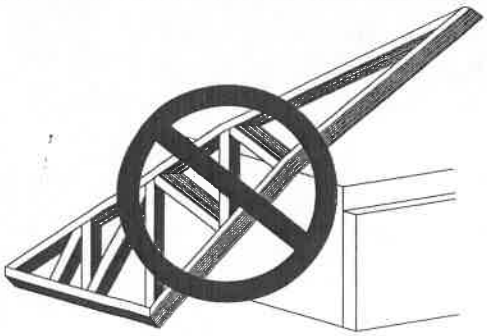
TRUSS PLATE INSTITUTE
583 D'Onofrio Dr., Suite 200
Madison, Wisconsin 53719
(608) 833-5900

It is the responsibility of the installer (builder, building contractor, licensed contractor, erector or erection contractor) to properly receive, unload, store, handle, install and brace metal plate connected wood trusses to protect life and property. The installer must exercise the same high degree of safety awareness as with any other structural material. TPI does not intend these recommendations to be interpreted as superior to the project Architect's or Engineer's design specification for handling, installing and bracing wood trusses for a particular roof or floor. These recommendations are based upon the collective experience of leading technical personnel in the wood truss industry, but must, due to the nature of responsibilities involved, be presented as a guide for the use of a qualified building designer or installer. Thus, the Truss Plate Institute, Inc. expressly disclaims any responsibility for damages arising from the use, application or reliance on the recommendations and information contained herein by building designers, installers, and others. Copyright © by Truss Plate Institute, Inc. All rights reserved. This document or any part thereof must not be reproduced in any form without written permission of the publisher. Printed in the United States of America.

CAUTION: The builder, building contractor, licensed contractor, erector or erection contractor is advised to obtain and read the entire booklet "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses, HIB-91" from the Truss Plate Institute.

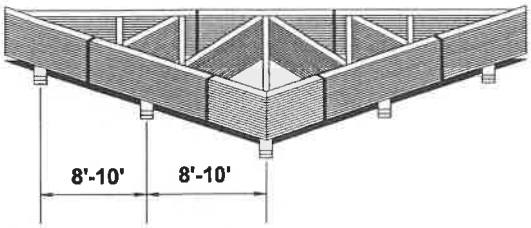
CAUTION: All temporary bracing should be no less than 2x4 grade marked lumber. All connections should be made with minimum of 2-16d nails. All trusses assumed 2' on-center or less. All multi-ply trusses should be connected together in accordance with design drawings prior to installation.

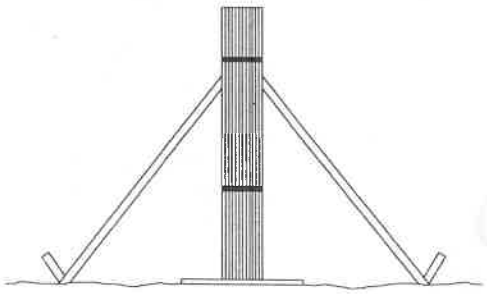
TRUSS STORAGE



CAUTION: Trusses should not be unloaded on rough terrain or uneven surfaces which could cause damage to the truss.







CAUTION: Trusses stored horizontally should be supported on blocking to prevent excessive lateral bending and lessen moisture gain.

CAUTION: Trusses stored vertically should be braced to prevent toppling or tipping.

WARNING: Do not break banding until installation begins. Care should be exercised in banding removal to avoid shifting of individual trusses.

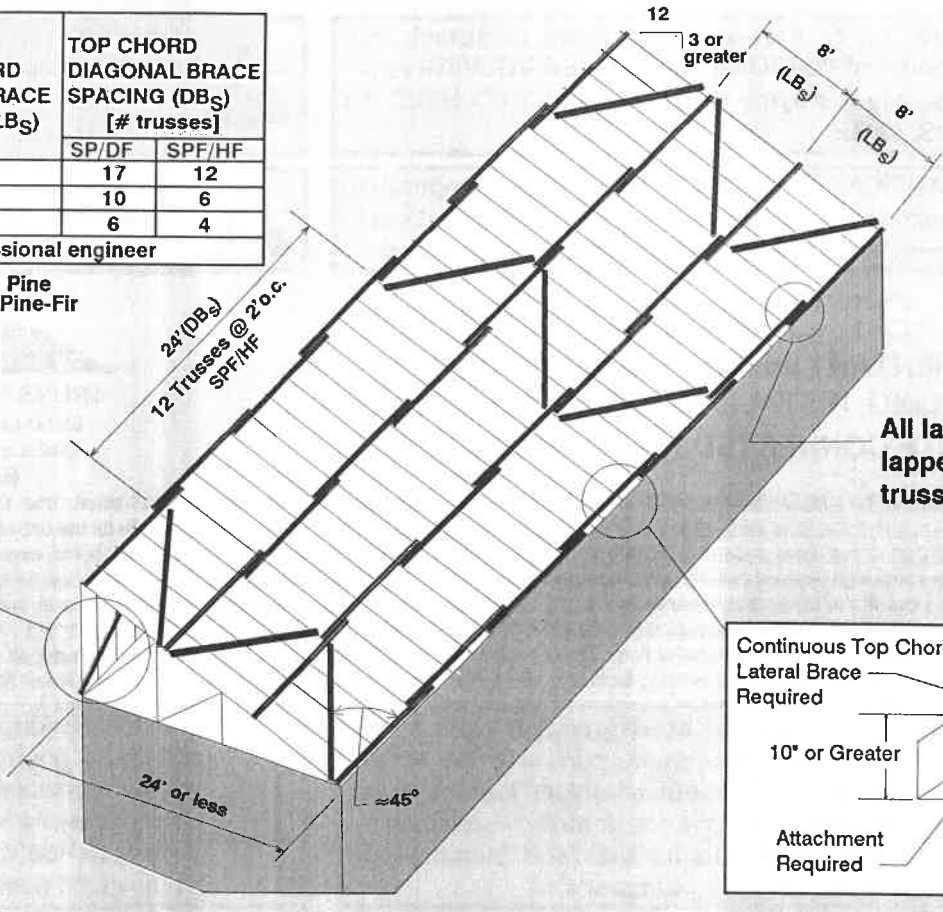
DANGER: Do not store bundles upright unless properly braced. Do not break bands until bundles are placed in a stable horizontal position.

WARNING: Do not lift bundled trusses by the bands. Do not use damaged trusses.

DANGER: Walking on trusses which are lying flat is extremely dangerous and should be strictly prohibited.

SPAN	MINIMUM PITCH	TOP CHORD LATERAL BRACE SPACING(LB_S)	TOP CHORD DIAGONAL BRACE SPACING (DB_S) [# trusses]	
			SP/DF	SPF/HF
Up to 24'	3/12	8'	17	12
Over 24' - 42'	3/12	7'	10	6
Over 42' - 54'	3/12	6'	6	4
Over 54'	See a registered professional engineer			

DF - Douglas Fir-Larch
HF - Hem-Fir
SP - Southern Pine
SPF - Spruce-Pine-Fir



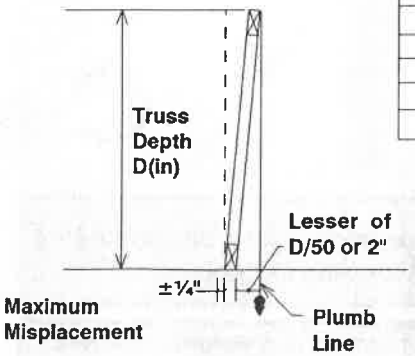
Top chords that are laterally braced can buckle together and cause collapse if there is no diagonal bracing. Diagonal bracing should be nailed to the underside of the top chord when purlins are attached to the topside of the top chord.

MONO TRUSS

WARNING: Failure to follow these recommendations could result in severe personal injury or damage to trusses or buildings.

INSTALLATION TOLERANCES

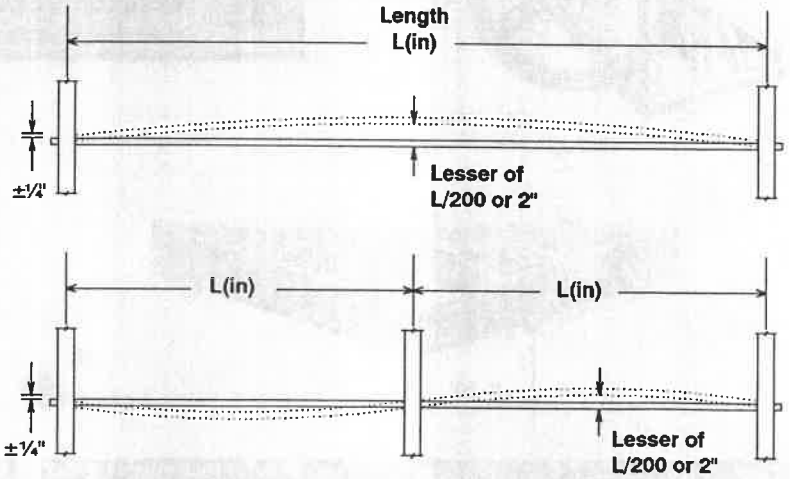
PLUMB



D(in)	D/50	D(ft)
12"	1/4"	1'
24"	1/2"	2'
36"	3/4"	3'
48"	1"	4'
60"	1-1/4"	5'
72"	1-1/2"	6'
84"	1-3/4"	7'
96"	2"	8'
108"	2"	9'

OUT-OF-PLUMB INSTALLATION TOLERANCES.

BOW



L(in)	L/200	L(ft)
50"	1/4"	4.2'
100"	1/2"	8.3'
150"	3/4"	12.5'

L(in)	L/200	L(ft)
200"	1"	16.7'
250"	1-1/4"	20.8'
300"	1-1/2"	25.0'

OUT-OF-PLANE INSTALLATION TOLERANCES.

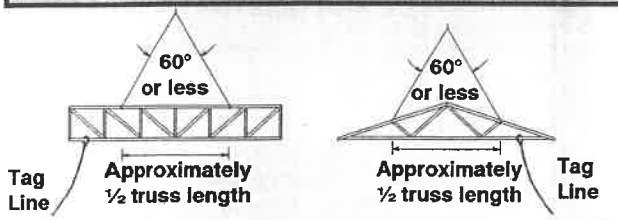
WARNING: Do not cut trusses.

DANGER: Under no circumstances should construction loads of any description be placed on unbraced trusses.

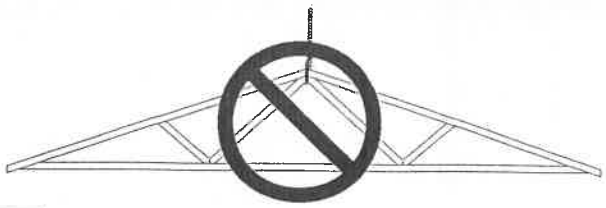
WARNING: Do not attach cables, chains, or hooks to the web members.

WARNING: Do not lift single trusses with spans greater than 30' by the peak.

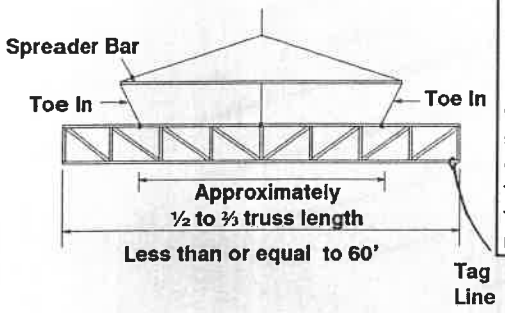
MECHANICAL INSTALLATION

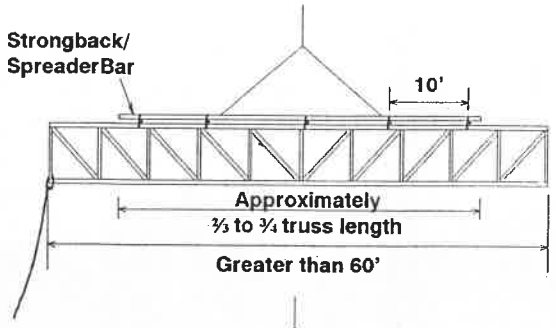


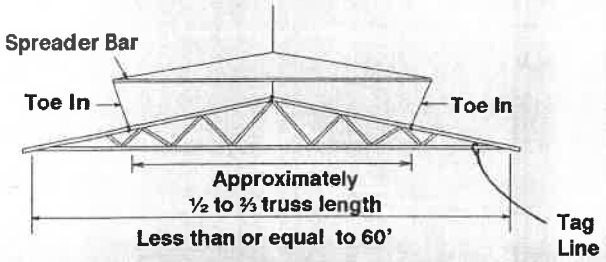
Truss spans less than 30'.

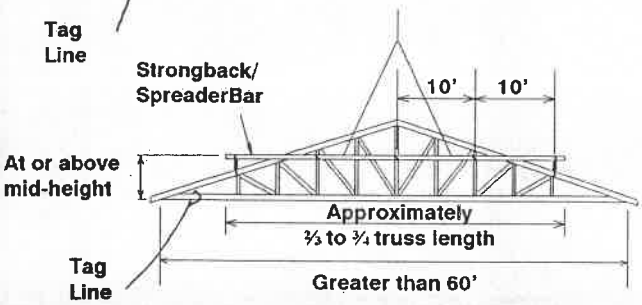


Lifting devices should be connected to the truss top chord with a closed-loop attachment utilizing materials such as slings, chains, cables, nylon strapping, etc. of sufficient strength to carry the weight of the truss. Each truss should be set in proper position per the building designer's framing plan and held with the lifting device until the ends of the truss are securely fastened and temporary bracing is installed.



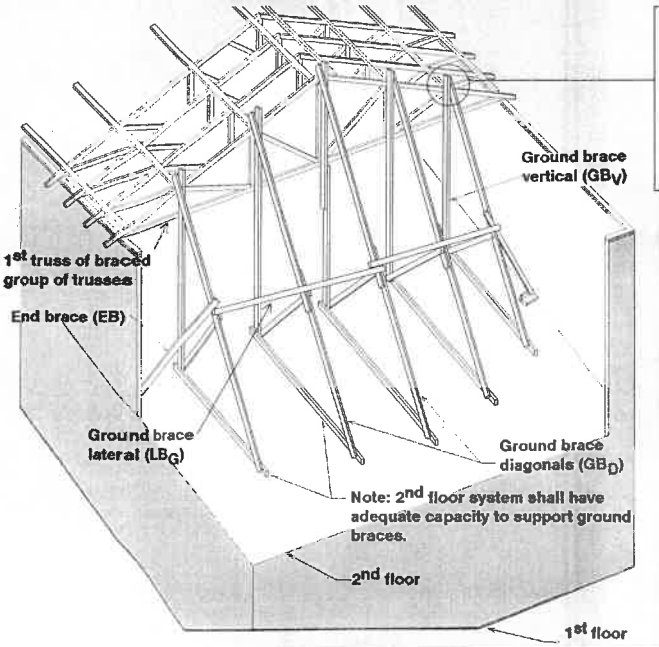


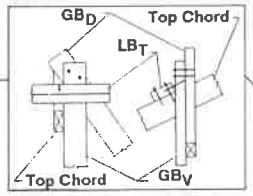




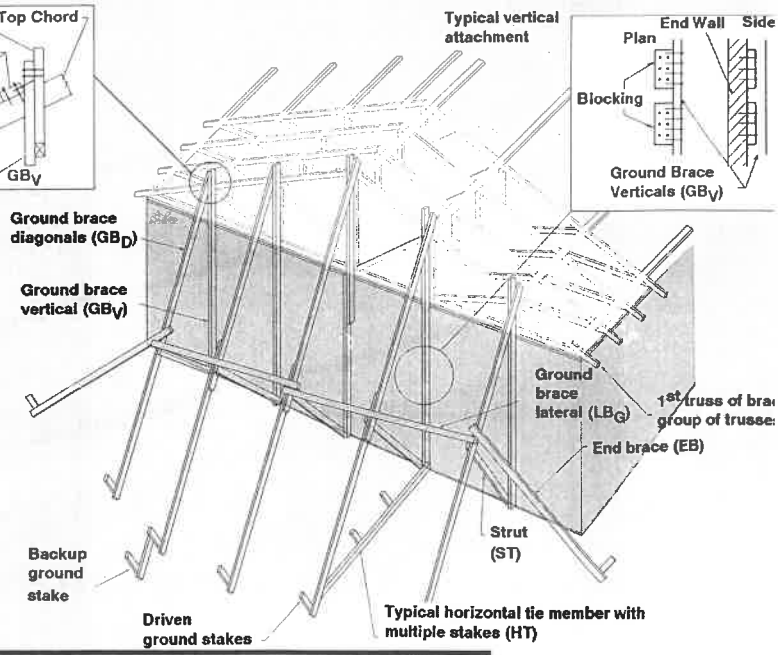
CAUTION: Temporary bracing shown in this summary sheet is adequate for the installation of trusses with similar configurations. Consult a registered professional engineer if a different bracing arrangement is desired. The engineer may design bracing in accordance with TPI's *Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses, DSB-89*, and in some cases determine that a wider spacing is possible.

GROUND BRACING:BUILDING INTERIOR





GROUND BRACING: BUILDING EXTERIOR



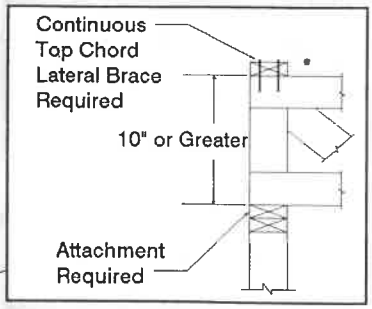
CAUTION: Ground bracing required for all installations.

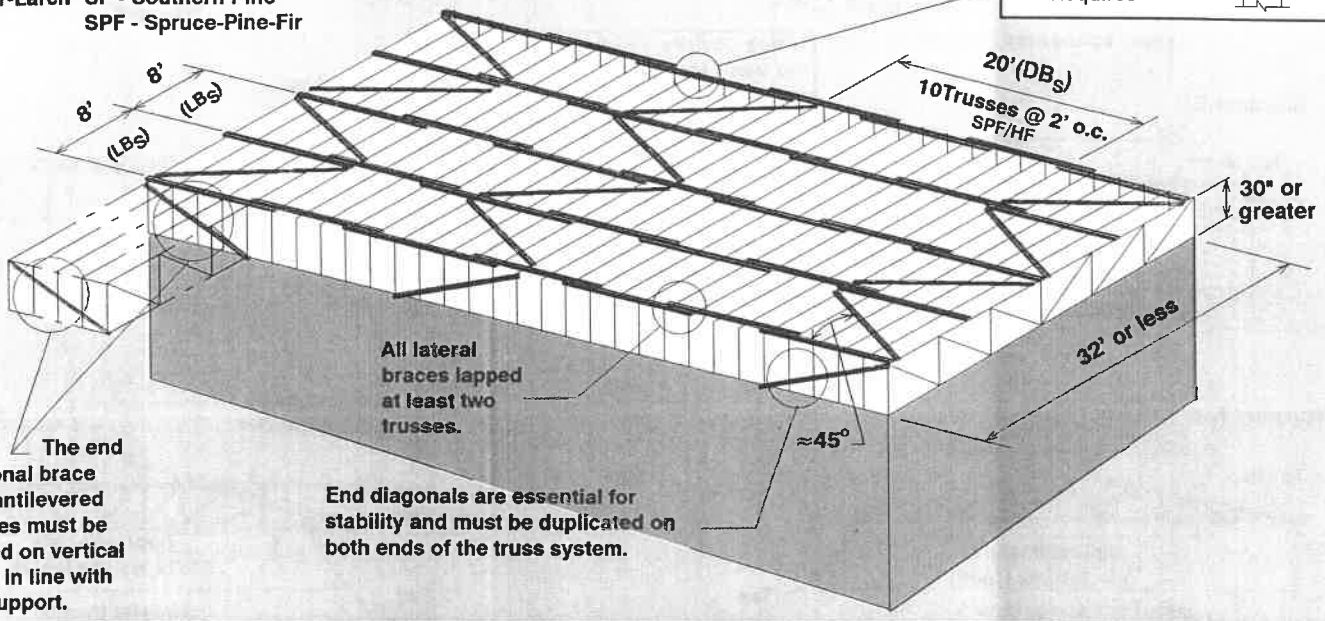
SPAN	MINIMUM DEPTH	TOP CHORD LATERAL BRACE SPACING(LB_S)	TOP CHORD DIAGONAL BRACE SPACING (DB_S) [# trusses]	
			SP/DF	SPF/HF
Up to 32'	30"	8'	16	10
Over 32' - 48'	42"	6'	6	4
Over 48' - 60'	48"	5'	4	2
Over 60'	See a registered professional engineer			

DF - Douglas Fir-Larch SP - Southern Pine
HF - Hem-Fir SPF - Spruce-Pine-Fir

2x4/2x6 PARALLEL CHORD TRUSS

Top chords that are laterally braced can buckle together and cause collapse if there is no diagonal bracing. Diagonal bracing should be nailed to the underside of the top chord when purlins are attached to the topside of the top chord.

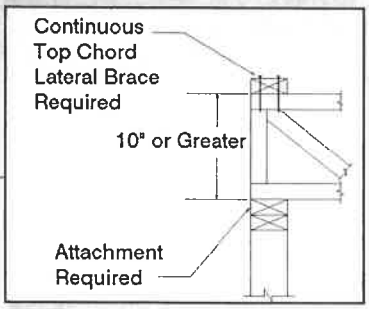


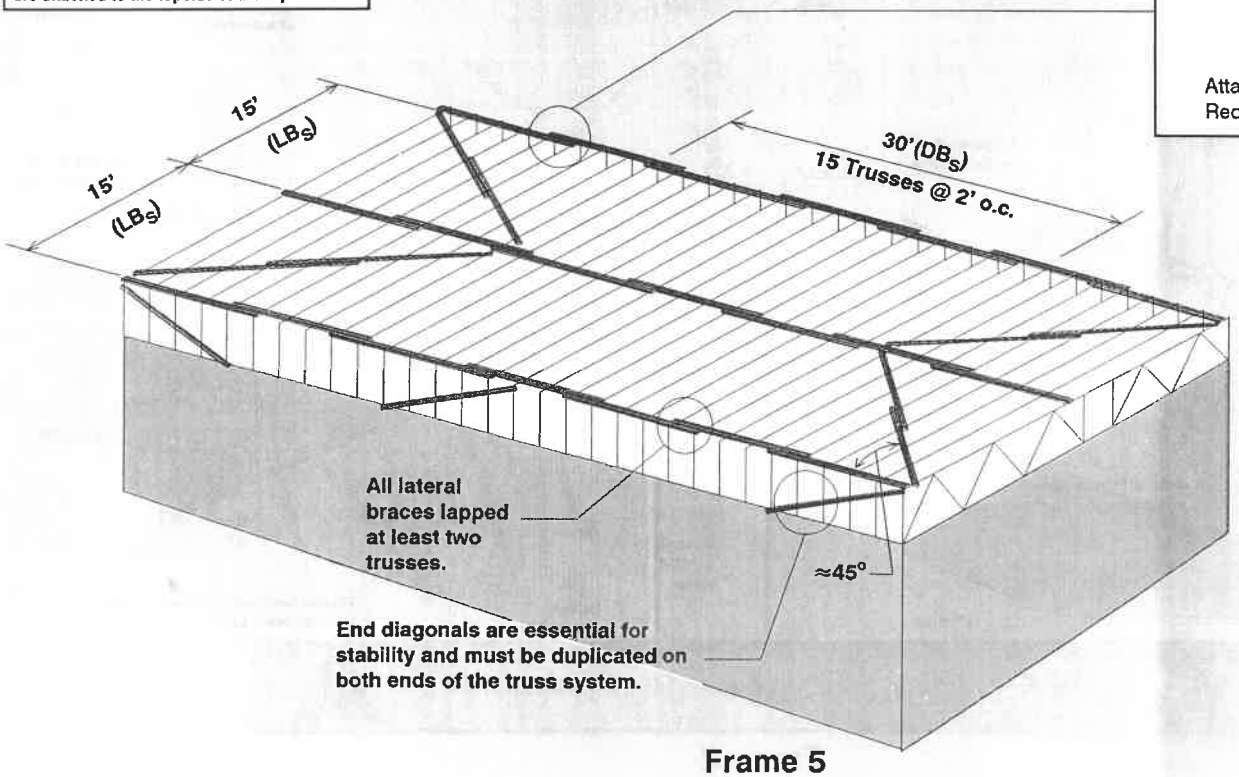


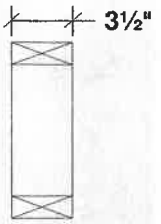
WARNING: Failure to follow these recommendations could result in severe personal injury or damage to trusses or buildings.

4x2 PARALLEL CHORD TRUSS:TOP CHORD

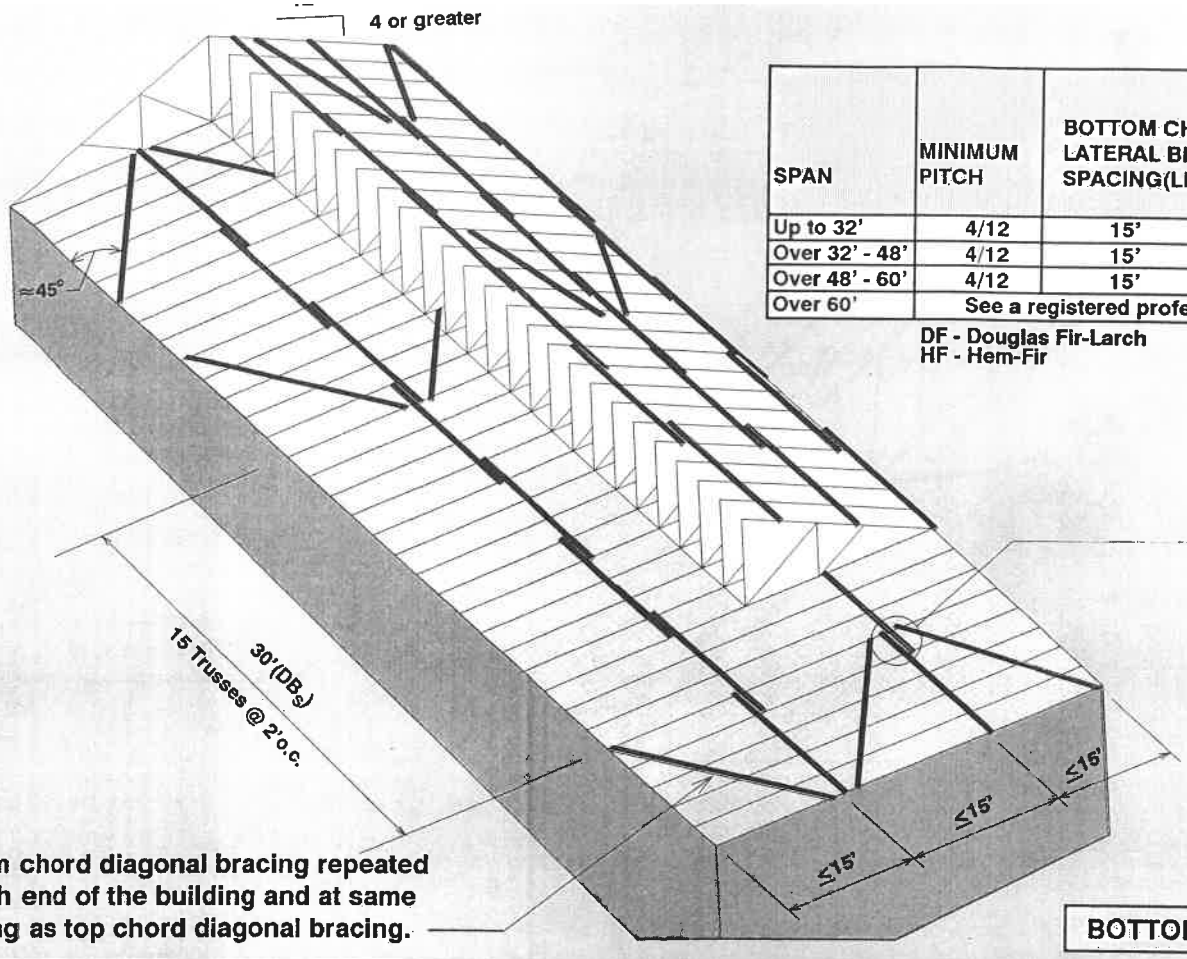
Top chords that are laterally braced can buckle together and cause collapse if there is no diagonal bracing. Diagonal bracing should be nailed to the underside of the top chord when purlins are attached to the topside of the top chord.







Trusses must have lumber oriented in the horizontal direction to use this brace spacing.



SPAN	MINIMUM PITCH	BOTTOM CHORD LATERAL BRACE SPACING(LB_S)	BOTTOM CHORD DIAGONAL BRACE SPACING (DB_S) [# trusses]	
			SP/DF	SPF/HF
Up to 32'	4/12	15'	20	15
Over 32' - 48'	4/12	15'	10	7
Over 48' - 60'	4/12	15'	6	4
Over 60'	See a registered professional engineer			

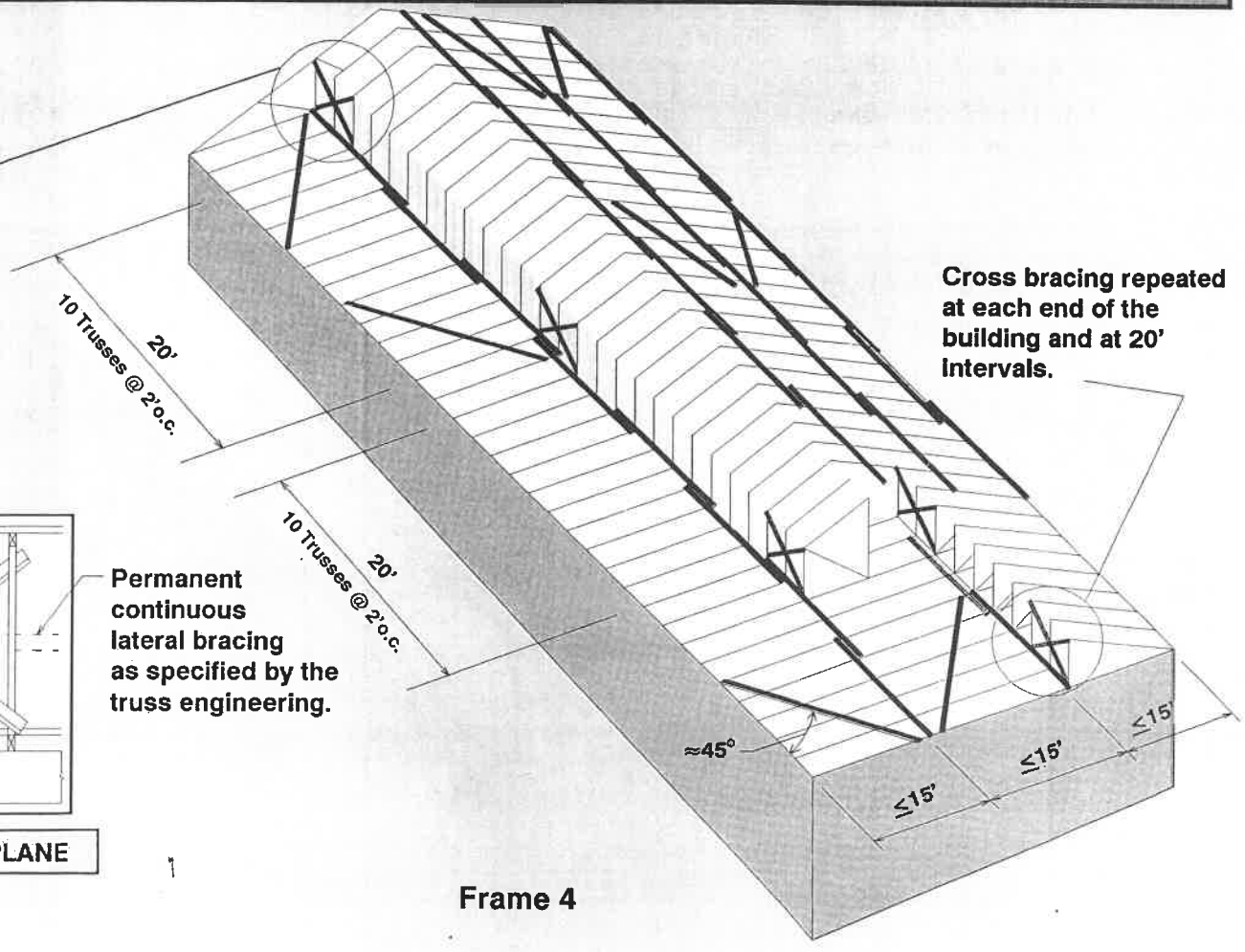
DF - Douglas Fir-Larch
HF - Hem-Fir
SP - Southern Pine
SPF - Spruce-Pine-Fir

All lateral braces lapped at least 2 trusses.

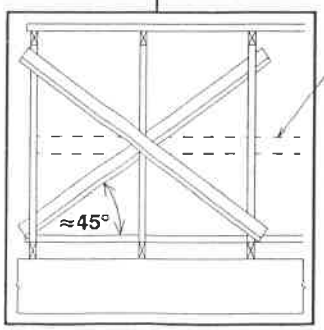
Bottom chord diagonal bracing repeated at each end of the building and at same spacing as top chord diagonal bracing.

BOTTOM CHORD PLANE

WARNING: Failure to follow these recommendations could result in severe personal injury or damage to trusses or buildings.



Cross bracing repeated at each end of the building and at 20' intervals.

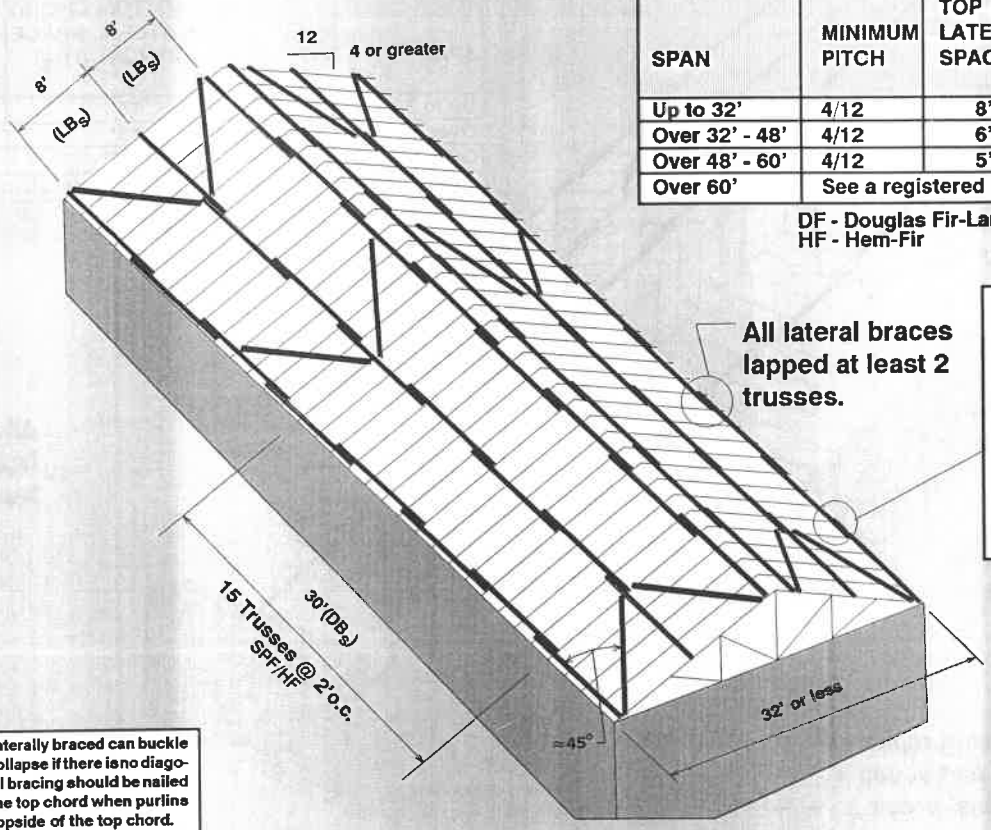


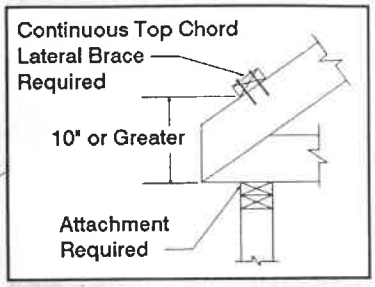
Permanent continuous lateral bracing as specified by the truss engineering.

WEB MEMBER PLANE

SPAN	MINIMUM PITCH	TOP CHORD LATERAL BRACE SPACING(LB_S)	TOP CHORD DIAGONAL BRACE SPACING (DB_S) [# trusses]	
			SP/DF	SPF/HF
Up to 32'	4/12	8'	20	15
Over 32' - 48'	4/12	6'	10	7
Over 48' - 60'	4/12	5'	6	4
Over 60'	See a registered professional engineer			

DF - Douglas Fir-Larch
HF - Hem-Fir
SP - Southern Pine
SPF - Spruce-Pine-Fir





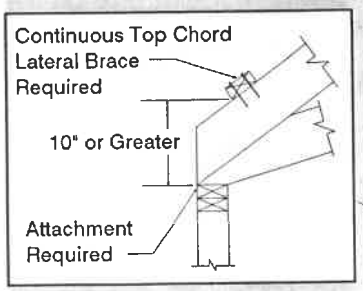
Top chords that are laterally braced can buckle together and cause collapse if there is no diagonal bracing. Diagonal bracing should be nailed to the underside of the top chord when purlins are attached to the topside of the top chord.

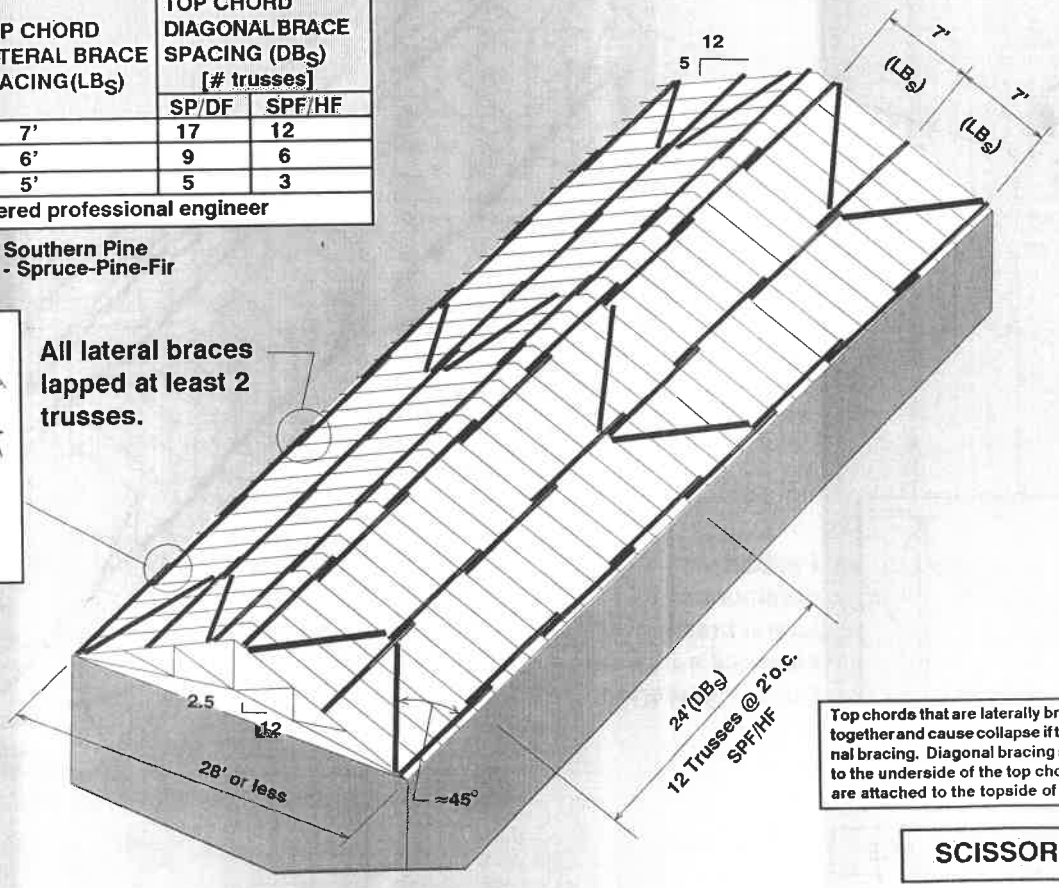
PITCHED TRUSS

WARNING: Failure to follow these recommendations could result in severe personal injury or damage to trusses or buildings.

SPAN	MINIMUM PITCH DIFFERENCE	TOP CHORD LATERAL BRACE SPACING(LB_S)	TOP CHORD DIAGONAL BRACE SPACING (DB_S) [# trusses]	
			SP/DF	SPF/HF
Up to 28'	2.5	7'	17	12
Over 28' - 42'	3.0	6'	9	6
Over 42' - 60'	3.0	5'	5	3
Over 60'	See a registered professional engineer			

DF - Douglas Fir-Larch
HF - Hem-Fir
SP - Southern Pine
SPF - Spruce-Pine-Fir





Top chords that are laterally braced can buckle together and cause collapse if there is no diagonal bracing. Diagonal bracing should be nailed to the underside of the top chord when purlins are attached to the topside of the top chord.

SCISSORS TRUSS