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FL REG# 278, Yoonhwak Kim, FL PE #86367
Florida Certificate of Product Approval #FL 1999
02/09/2023

Site Information:	Page 1:
Customer: W. B. Howland Company, Inc.	Job Number: 22-8690
Job Description: JBC Builders (Busscher) - Futral	
Address:	

Job Engineering Criteria:			
Design Code: FBC 7th Ed. 2020 Res.		IntelliVIEW Version: 21.02.00B through 21.02.01 JRef #: 1XN22150004	
Wind Standard: ASCE 7-16	Wind Speed (mph): 150	Design Loading (psf): 40.00, 65.00	
Building Type: Closed			

This package contains general notes pages, 5 truss drawing(s) and 5 detail(s).

Item	Drawing Number	Truss	Item	Drawing Number	Truss
1	040.23.1306.19660	A01	2	040.23.1306.21997	A02
3	040.23.1306.24223	A03	4	040.23.1306.25687	F01
5	040.23.1306.28513	F02	6	A16030ENC160118	
7	BRCLBSUB0119		8	GBLLETIN0118	
9	STRBRIBR1014		10	DEFLCAMB1014	

General Notes

Truss Design Engineer Scope of Work, Design Assumptions and Design Responsibilities:

The design responsibilities assumed in the preparation of these design drawings are those specified in ANSI/TPI 1, Chapter 2; and the National Design Standard for Metal Plate Connected Wood Truss Construction, by the Truss Plate Institute. The truss component designs conform to the applicable provisions of ANSI/TPI 1 and NDS, the National Design Specification for Wood Construction by AWC. The truss component designs are based on the specified loading and dimension information furnished by others to the Truss Design Engineer. The Truss Design Engineer has no duty to independently verify the accuracy or completeness of the information provided by others and may rely on that information without liability. The responsibility for verification of that information remains with others neither employed nor controlled by the Truss Design Engineer. The Truss Design Engineer's seal and signature on the attached drawings, or cover page listing these drawings, indicates acceptance of professional engineering responsibility solely for the truss component designs and not for the technical information furnished by others which technical information and consequences thereof remain their sole responsibility.

The suitability and use of these drawings for any particular structure is the responsibility of the Building Designer in accordance with ANSI/TPI 1 Chapter 2. The Building Designer is responsible for determining that the dimensions and loads for each truss component match those required by the plans and by the actual use of the individual component, and for ascertaining that the loads shown on the drawings meet or exceed applicable building code requirements and any additional factors required in the particular application. Truss components using metal connector plates with integral teeth shall not be placed in environments that will cause the moisture content of the wood in which plates are embedded to exceed 19% and/or cause corrosion of connector plates and other metal fasteners.

The Truss Design Engineer shall not be responsible for items beyond the specific scope of the agreed contracted work set forth herein, including but not limited to: verifying the dimensions of the truss component, calculation of any of the truss component design loads, inspection of the truss components before or after installation, the design of temporary or permanent bracing and their attachment required in the roof and/or floor systems, the design of diaphragms or shear walls, the design of load transfer connections to and from diaphragms and shear walls, the design of load transfer to the foundation, the design of connections for truss components to their bearing supports, the design of the bearing supports, installation of the truss components, observation of the truss component installation process, review of truss assembly procedures, sequencing of the truss component installation, construction means and methods, site and/or worker safety in the installation of the truss components and/or its connections.

This document may be a high quality facsimile of the original engineering document which is a digitally signed electronic file with third party authentication. A wet or embossed seal copy of this engineering document is available upon request.

Temporary Lateral Restraint and Bracing:

Temporary lateral restraint and diagonal bracing shall be installed according to the provisions of BCSI chapters B1, B2, B7 and/or B10 (Building Component Safety Information, by TPI and SBCA), or as specified by the Building Designer or other Registered Design Professional. The required locations for lateral restraint and/or bracing depicted on these drawings are only for the permanent lateral support of the truss members to reduce buckling lengths, and do not apply to and may not be relied upon for the temporary stability of the truss components during their installation.

Permanent Lateral Restraint and Bracing:

The required locations for lateral restraint or bracing depicted on these drawings are for the permanent lateral support of the truss members to reduce buckling lengths. Permanent lateral support shall be installed according to the provisions of BCSI chapters B3, B7 and/or B10, or as specified by the Building Designer or other Registered Design Professional. These drawings do not depict or specify installation/erection bracing, wind bracing, portal bracing or similar building stability bracing which are parts of the overall building design to be specified, designed and detailed by the Building Designer.

Connector Plate Information:

Alpine connector plates are made of ASTM A653 or ASTM A1063 galvanized steel with the following designations, gauges and grades: W=Wave, 20ga, grade 40; H=High Strength, 20ga, grade 60; S=Super Strength, 18ga, grade 60. Information on model code compliance is contained in the ICC Evaluation Service report ESR-1118, available on-line at www.icc-es.org.

Fire Retardant Treated Lumber:

Fire retardant treated lumber must be properly re-dried and maintained below 19% or less moisture level through all stages of construction and usage. Fire retardant treated lumber may be more brittle than untreated lumber. Special handling care must be taken to prevent breakage during all handling activities.

General Notes (continued)

Key to Terms:

Information provided on drawings reflects a summary of the pertinent information required for the truss design. Detailed information on load cases, reactions, member lengths, forces and members requiring permanent lateral support may be found in calculation sheets available upon written request.

BCDL = Bottom Chord standard design Dead Load in pounds per square foot.

BCLL = Bottom Chord standard design Live Load in pounds per square foot.

CL = Certified lumber.

Des Ld = total of TCLL, TCDL, BCLL and BCDL Design Load in pounds per square foot.

FRT = Fire Retardant Treated lumber.

FRT-DB = D-Blaze Fire Retardant Treated lumber.

FRT-DC = Dricon Fire Retardant Treated lumber.

FRT-FP = FirePRO Fire Retardant Treated lumber.

FRT-FL = FlamePRO Fire Retardant Treated lumber.

FRT-FT = FlameTech Fire Retardant Treated lumber.

FRT-PG = PYRO-GUARD Fire Retardant Treated lumber.

g = green lumber.

HORZ(LL) = maximum Horizontal panel point deflection due to Live Load, in inches.

HORZ(TL) = maximum Horizontal panel point long term deflection in inches, due to Total Load, including creep adjustment.

HPL = additional Horizontal Load added to a truss Piece in pounds per linear foot or pounds.

Ic = Incised lumber.

FJ = Finger Jointed lumber.

L/# = user specified divisor for limiting span/deflection ratio for evaluation of actual L/defl value.

L/defl = ratio of Length between bearings, in inches, divided by the vertical Deflection due to creep, in inches, at the referenced panel point. Reported as 999 if greater than or equal to 999.

Loc = Location, starting location of left end of bearing or panel point (joint) location of deflection.

Max BC CSI = Maximum bending and axial Combined Stress Index for Bottom Chords for of all load cases.

Max TC CSI = Maximum bending and axial Combined Stress Index for Top Chords for of all load cases.

Max Web CSI = Maximum bending and axial Combined Stress Index for Webs for of all load cases.

NCBCLL = Non-Concurrent Bottom Chord design Live Load in pounds per square foot.

PL = additional Load applied at a user specified angle on a truss Piece in pounds per linear foot or pounds.

PLB = additional vertical load added to a Bottom chord Piece of a truss in pounds per linear foot or pounds

PLT = additional vertical load added to a Top chord Piece of a truss in pounds per linear foot or pounds.

PP = Panel Point.

R = maximum downward design Reaction, in pounds, from all specified gravity load cases, at the indicated location (Loc).

-R = maximum upward design Reaction, in pounds, from all specified gravity load cases, at the identified location (Loc).

Rh = maximum horizontal design Reaction in either direction, in pounds, from all specified gravity load cases, at the indicated location (Loc).

RL = maximum horizontal design Reaction in either direction, in pounds, from all specified non-gravity (wind or seismic) load cases, at the indicated location (Loc).

Rw = maximum downward design Reaction, in pounds, from all specified non-gravity (wind or seismic) load cases, at the identified location (Loc).

TCDL = Top Chord standard design Dead Load in pounds per square foot.

TCLL = Top Chord standard design Live Load in pounds per square foot.

U = maximum Upward design reaction, in pounds, from all specified non-gravity (wind or seismic) load cases, at the indicated location (Loc).

VERT(CL) = maximum Vertical panel point deflection in inches due to Live Load and Creep Component of Dead Load in inches.

VERT(CTL) = maximum Vertical panel point deflection ratios due to Live Load and Creep Component of Dead Load, and maximum long term Vertical panel point deflection in inches due to Total load, including creep adjustment.

VERT(LL) = maximum Vertical panel point deflection in inches due to Live Load.

VERT(TL) = maximum Vertical panel point long term deflection in inches due to Total load, including creep adjustment.

W = Width of non-hanger bearing, in inches.

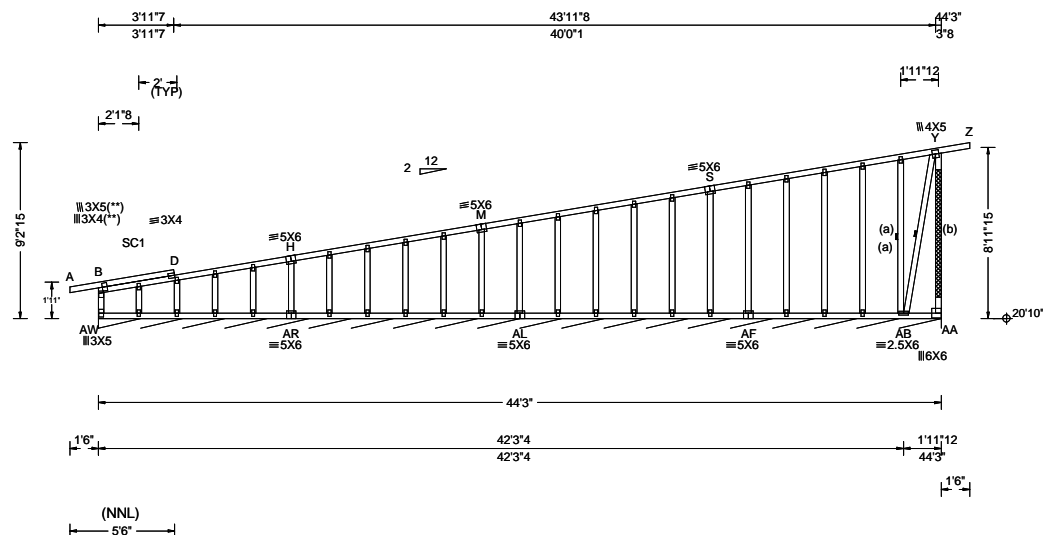
Refer to ASCE-7 for Wind and Seismic abbreviations.

Uppercase Acronyms not explained above are as defined in TPI 1.

References:

1. AWC: American Wood Council; 222 Catoctin Circle SE, Suite 201; Leesburg, VA 20175; www.awc.org.
2. ICC: International Code Council; www.iccsafe.org.
3. Alpine, a division of ITW Building Components Group Inc.: 155 Harlem Ave, North Building, 4th Floor, Glenview, IL 60025; www.alpineitw.com.
4. TPI: Truss Plate Institute, 2670 Crain Highway, Suite 203, Waldorf, MD 20601; www.tpinst.org.
5. SBCA: Wood Truss Council of America, 6300 Enterprise Lane, Madison, WI 53719; www.sbcacomponents.com.

SEQN: 122218 FROM:	GABL Qty: 2	Ply: 1 Qty: 2	Job Number: 22-8690 JBC Builders (Busscher) - Futral Truss Label: A01	Cust: R 215 JRef: 1XN22150004 T6 DrwNo: 040.23.1306.19660 SSB / YK 02/09/2023
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Loading Criteria (psf)	Wind Criteria	Snow Criteria (Pg, Pf in PSF)	Defl/CSI Criteria	▲ Maximum Reactions (lbs), or * = PLF
TCLL: 20.00 TCDL: 10.00 BCLL: 0.00 BCDL: 10.00 Des Ld: 40.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.25 Spacing: 24.0 "	Wind Std: ASCE 7-16 Speed: 150 mph Enclosure: Closed Risk Category: II EXP: C Kzt: NA Mean Height: 26.27 ft TCDL: 4.2 psf BCDL: 3.0 psf MWFRS Parallel Dist: 0 to h/2 C&C Dist a: 4.43 ft Loc. from endwall: Any GCp: 0.18 Wind Duration: 1.60	Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: FBC 7th Ed. 2020 Res. TPI Std: 2014 Rep Fac: Yes FT/RT: 20(0)/10(0) Plate Type(s): WAVE	PP Deflection in loc L/def L/# VERT(LL): -0.015 Y 999 240 VERT(CL): -0.019 Y 999 180 HORZ(LL): -0.220 K - - HORZ(TL): 0.246 K - - Creep Factor: 2.0 Max TC CSI: 0.321 Max BC CSI: 0.247 Max Web CSI: 0.963 VIEW Ver: 21.02.00B.1108.20	Gravity Non-Gravity Loc R+ / R- / Rh / Rw / U / RL AA*85 /- /- /44 /46 /15 Wind reactions based on MWFRS AA Brg Wid = 531 Min Req = - Bearing AW is a rigid surface. Members not listed have forces less than 375# Maximum Bot Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp. AR-AL 474 -575 AF-AB 475 -573 AL-AF 474 -574

Lumber

Top chord: 2x4 SP #2;
Bot chord: 2x4 SP #2;
Webs: 2x4 SP #3;
Stack Chord: SC1 2x4 SP #2;

Bracing

(a) Continuous lateral restraint equally spaced on member.
(b) (2) #3 or better scab reinforcing members. Same size & 80% length of web member. Attach one to each face w/10d Box or Gun (0.128"x3", min.) nails @ 6" oc.

Plating Notes

All plates are 2X4 except as noted.

(**) 2 plate(s) require special positioning. Refer to scaled plate plot details for special positioning requirements.

Wind

Wind loads based on MWFRS with additional C&C member design.

Left end vertical not exposed to wind pressure.

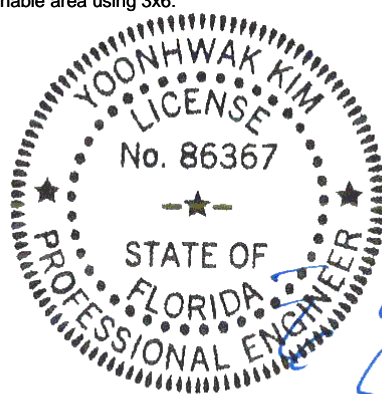
Right end vertical exposed to wind pressure.
Deflection meets L/360.

Wind loading based on both gable and hip roof types.

Additional Notes

See DWGS A16030ENC160118 & GBLLETIN0118 for gable wind bracing and other requirements.

Stacked top chord must NOT be notched or cut in area (NNL). Dropped top chord braced at 24" oc intervals. Attach stacked top chord (SC) to dropped top chord in notchable area using 3x4 tie-plates 24" oc. Center plate on stacked/dropped chord interface, plate length perpendicular to chord length. Splice top chord in notchable area using 3x6.



Maximum Web Forces Per Ply (lbs)

Webs Tens.Comp.

AB- Y 627 - 1758

Maximum Gable Forces Per Ply (lbs)

Gables Tens.Comp.

Y-AA 1805 -514

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****WARNING** READ AND FOLLOW ALL NOTES ON THIS DRAWING!**
****IMPORTANT** FURNISH THIS DRAWING TO ALL CONTRACTORS INCLUDING THE INSTALLERS**

Trusses require extreme care in fabricating, handling, shipping, installing and bracing. Refer to and follow the latest edition of BCSI (Building Component Safety Information, by TPI and SBCA) for safety practices prior to performing these functions. Installers shall provide temporary bracing per BCSI. Unless noted otherwise, top chord shall have properly attached structural sheathing and bottom chord shall have a properly attached rigid ceiling. Locations shown for permanent lateral restraint of webs shall have bracing installed per BCSI sections B3, B7, or B10, as applicable. Apply plates to each face of truss and position as shown above and on the Joint Details, unless noted otherwise. Refer to drawings 160A-Z for standard plate positions. Refer to job's General Notes page for additional information.

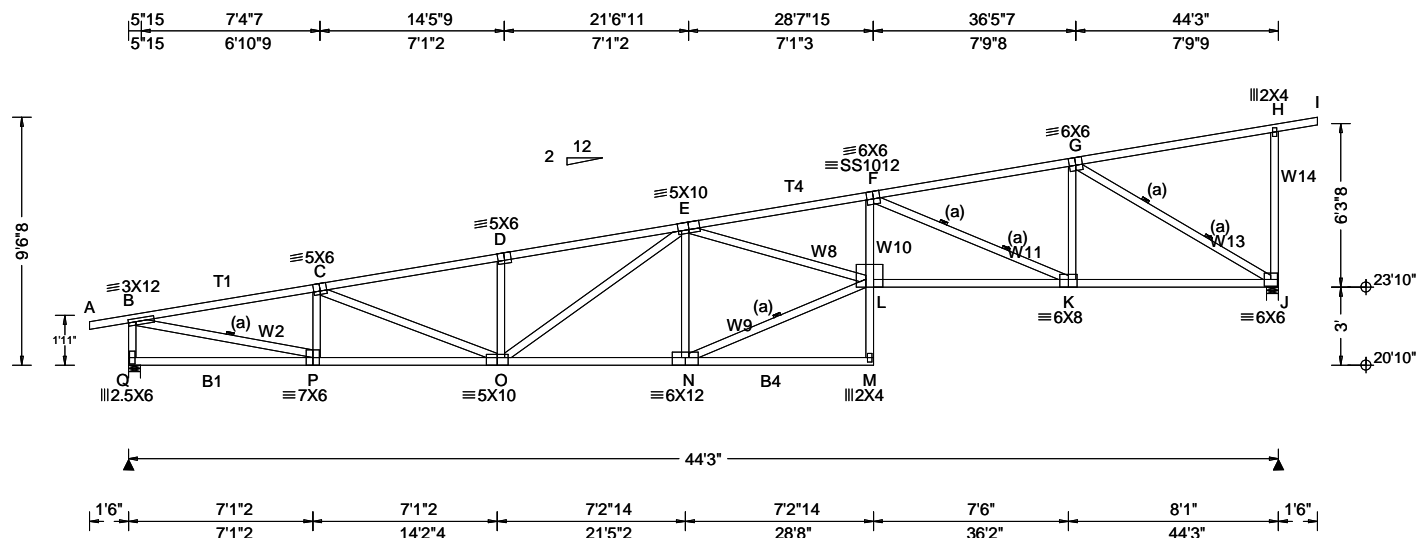
Alpine, a division of ITW Building Components Group Inc. shall not be responsible for any deviation from this drawing, any failure to build the truss in conformance with ANSI/TPI 1, or for handling, shipping, installation and bracing of trusses. A seal on this drawing or cover page listing this drawing, indicates acceptance of professional engineering responsibility solely for the design shown. The suitability and use of this drawing for any structure is the responsibility of the Building Designer per ANSI/TPI 1 Sec.2.

For more information see these web sites: Alpine: alpineitw.com; TPI: tpinst.org; SBCA: sbcacomponents.com; ICC: iccsafe.org; AWC: awc.org



155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

SEQN: 103939 FROM:	MONO Qty: 8	Job Number: 22-8690 JBC Builders (Busscher) - Futral Truss Label: A02	Cust: R 215 JRRef: 1XN22150004 T5 DrwNo: 040.23.1306.21997 SSB / YK 02/09/2023
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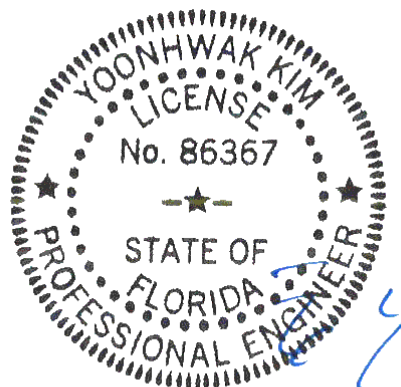


Loading Criteria (psf)	Wind Criteria	Snow Criteria (Pg, Pf in PSF)	Defl/CSI Criteria	Maximum Reactions (lbs)
TCLL: 20.00 TCDL: 10.00 BCLL: 0.00 BCDL: 10.00 Des Ld: 40.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.25 Spacing: 24.0 "	Wind Std: ASCE 7-16 Speed: 150 mph Enclosure: Closed Risk Category: II EXP: C Kzt: NA Mean Height: 26.44 ft TCDL: 4.2 psf BCDL: 3.0 psf MWFRS Parallel Dist: 0 to h/2 C&C Dist a: 4.43 ft Loc. from endwall: Any GCpi: 0.18 Wind Duration: 1.60	Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: FBC 7th Ed. 2020 Res. TPI Std: 2014 Rep Fac: Yes FT/RT: 20(0)/10(0) Plate Type(s): WAVE, 18SS	PP Deflection in loc L/defl L/# VERT(LL): 0.473 E 999 240 VERT(CL): 0.938 E 566 180 HORZ(LL): -0.104 J - - HORZ(TL): 0.199 J - - Creep Factor: 2.0 Max TC CSI: 0.878 Max BC CSI: 0.618 Max Web CSI: 0.877 VIEW Ver: 21.02.01.1216.15	Gravity Loc R+ / R- / Rh / Rw / U / RL Q 1871 - / - / - / 987 / 1020 / 603 J 1870 - / - / - / 977 / 1085 - / - Wind reactions based on MWFRS Q Brg Wid = 5.5 Min Req = 2.2 (Truss) J Brg Wid = 5.5 Min Req = 1.5 (Truss) Bearings Q & J are a rigid surface. Members not listed have forces less than 375# Maximum Top Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp. B - C 2020 - 3918 E - F 3050 - 5680 C - D 2318 - 4428 F - G 1439 - 2669 D - E 2381 - 4424

Lumber
Top chord: 2x4 SP #2; T1, T4 2x4 SP M-31;
Bot chord: 2x4 SP M-31; B1, B4 2x4 SP #2;
Webs: 2x4 SP #3; W2, W11, W13 2x4 SP #2; W8, W9, W10, W14 2x4 SP M-31;

Bracing
(a) Continuous lateral restraint equally spaced on member.

Wind
Wind loads based on MWFRS with additional C&C member design.
Left end vertical not exposed to wind pressure.
Right end vertical exposed to wind pressure.
Deflection meets L/360.
Wind loading based on both gable and hip roof types.

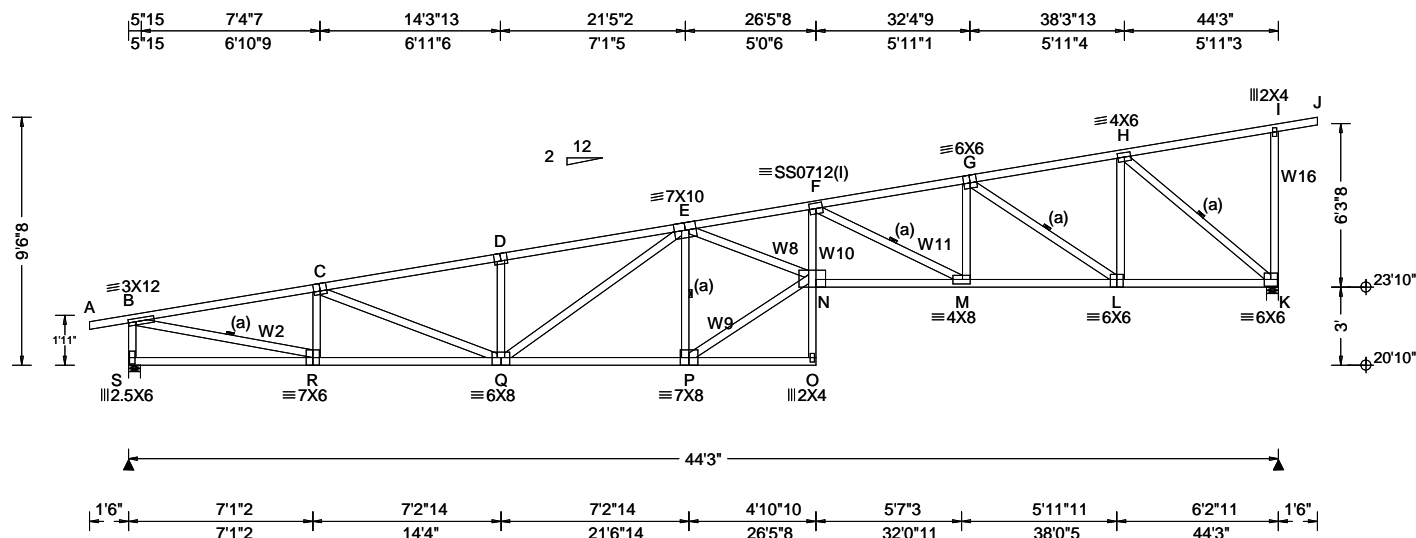


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155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

SEQN: 103945 FROM:	MONO Qty: 6	Ply: 1	Job Number: 22-8690 JBC Builders (Busscher) - Futral Truss Label: A03	Cust: R 215 JRRef: 1XN22150004 T3 DrwNo: 040.23.1306.24223 SSB / YK 02/09/2023
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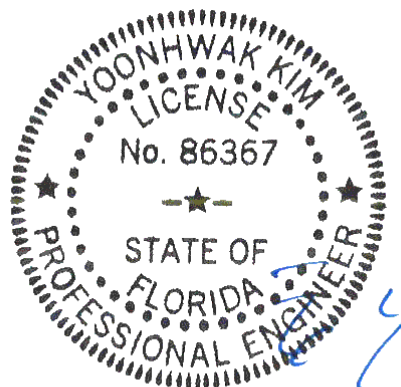
Loading Criteria (psf)	Wind Criteria	Snow Criteria (Pg, Pf in PSF)	Defl/CSI Criteria	Maximum Reactions (lbs)
TCLL: 20.00 TCDL: 10.00 BCLL: 0.00 BCDL: 10.00 Des Ld: 40.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.25 Spacing: 24.0 "	Wind Std: ASCE 7-16 Speed: 150 mph Enclosure: Closed Risk Category: II EXP: C Kzt: NA Mean Height: 26.44 ft TCDL: 4.2 psf BCDL: 3.0 psf MWFRS Parallel Dist: 0 to h/2 C&C Dist a: 4.43 ft Loc. from endwall: Any GCp: 0.18 Wind Duration: 1.60	Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: FBC 7th Ed. 2020 Res. TPI Std: 2014 Rep Fac: Yes FT/RT: 20(0)/10(0) Plate Type(s): WAVE, 18SS	PP Deflection in loc L/def L/# VERT(LL): 0.548 N 969 240 VERT(CL): 1.085 N 489 180 HORZ(LL): 0.131 K - - HORZ(TL): 0.259 K - - Creep Factor: 2.0 Max TC CSI: 0.494 Max BC CSI: 0.675 Max Web CSI: 0.882 VIEW Ver: 21.02.01.1216.15	Gravity Loc R+ / R- / Rh / Rw / U / RL S 1869 - / - / - / 987 / 1020 / 603 K 1870 - / - / - / 977 / 1085 - / - Non-Gravity Wind reactions based on MWFRS S Brg Wid = 5.5 Min Req = 1.5 (Truss) K Brg Wid = 5.5 Min Req = 1.5 (Truss) Bearings S & K are a rigid surface. Members not listed have forces less than 375# Maximum Top Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp. B - C 2019 - 3910 E - F 3827 - 7129 C - D 2321 - 4430 F - G 2172 - 4039 D - E 2386 - 4428 G - H 1104 - 1996

Lumber
Top chord: 2x4 SP M-31;
Bot chord: 2x4 SP M-31;
Webs: 2x4 SP #3; W2, W10 2x4 SP #2; W8, W9, W11, W16 2x4 SP M-31;

Bracing
(a) Continuous lateral restraint equally spaced on member.

Plating Notes
All plates are 5X6 except as noted.
(l) - plates so marked were sized using 0% Fabrication Tolerance, 0 degrees Rotational Tolerance, and/or zero Positioning Tolerance.

Wind
Wind loads based on MWFRS with additional C&C member design.
Left end vertical not exposed to wind pressure.
Right end vertical exposed to wind pressure.
Deflection meets L/360.
Wind loading based on both gable and hip roof types.

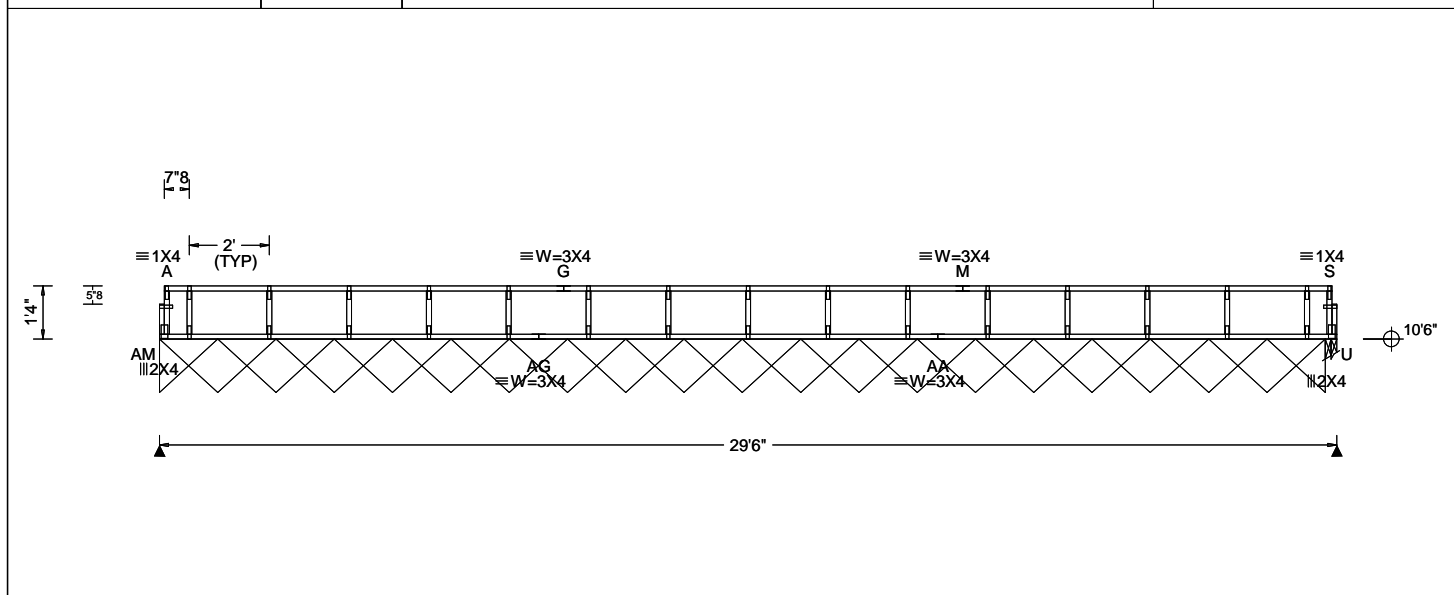


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ALPINE
AN ITW COMPANY
155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

SEQN: 103890 FROM:	SY42 Qty: 2	Ply: 1 Qty: 2	Job Number: 22-8690 JBC Builders (Busscher) - Futral Truss Label: F01	Cust: R 215 JRef: 1XN22150004 T2 DrwNo: 040.23.1306.25687 SSB / YK 02/09/2023
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Loading Criteria (psf)	Wind Criteria	Snow Criteria (Pg, Pf in PSF)	Defl/CSI Criteria	▲ Maximum Reactions (lbs), or *=PLF
TCLL: 40.00 TCDL: 15.00 BCLL: 0.00 BCDL: 10.00 Des Ld: 65.00 NCBCLL: 10.00 Soffit: 0.00 Load Duration: 1.00 Spacing: 24.0 "	Wind Std: NA Speed: NA mph Enclosure: NA Category: NA EXP: NA Kzt: NA Mean Height: NA ft TCDL: NA psf BCDL: NA psf MWFRS Parallel Dist: NA C&C Dist a: NA ft Loc. from endwall: NA I: NA GCpi: NA Wind Duration: NA	Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: FBC 7th Ed. 2020 Res. TPI Std: 2014 Rep Fac: Yes FT/RT: 20(0)/10(0) Plate Type(s): WAVE	PP Deflection in loc L/defl L/# VERT(LL): 0.000 C 999 480 VERT(CL): 0.000 C 999 360 HORZ(LL): -0.000 U - - HORZ(TL): 0.000 U - - Creep Factor: 2.0 Max TC CSI: 0.198 Max BC CSI: 0.058 Max Web CSI: 0.052 VIEW Ver: 21.02.01.1216.15	Gravity Loc R+ / R- / Rh / Rw / U / RL Non-Gravity Loc R+ / R- / Rh / Rw / U / RL AM*131 - / - / - / - / - / - U - / -9 / - / - / - / - AM Brg Wid = 350 Min Req = - U Brg Wid = 3.5 Min Req = 1.5 Bearings AM & U are a rigid surface. Members not listed have forces less than 375#

Lumber

Top chord: 4x2 SP #2;
Bot chord: 4x2 SP #2;
Webs: 4x2 SP #3;

Bracing

Sheathing is required for any longitudinal(drag) forces. All connections to be designed by the building designer.

Fasten rated sheathing to one face of this frame.

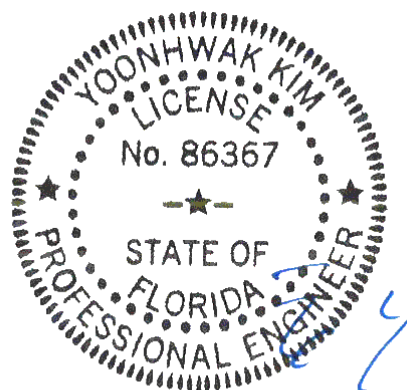
Plating Notes

All plates are 1X4 except as noted.

Additional Notes

See detail STRBRIBR1014 for bracing and bridging recommendations.

Truss must be installed as shown with top chord up.

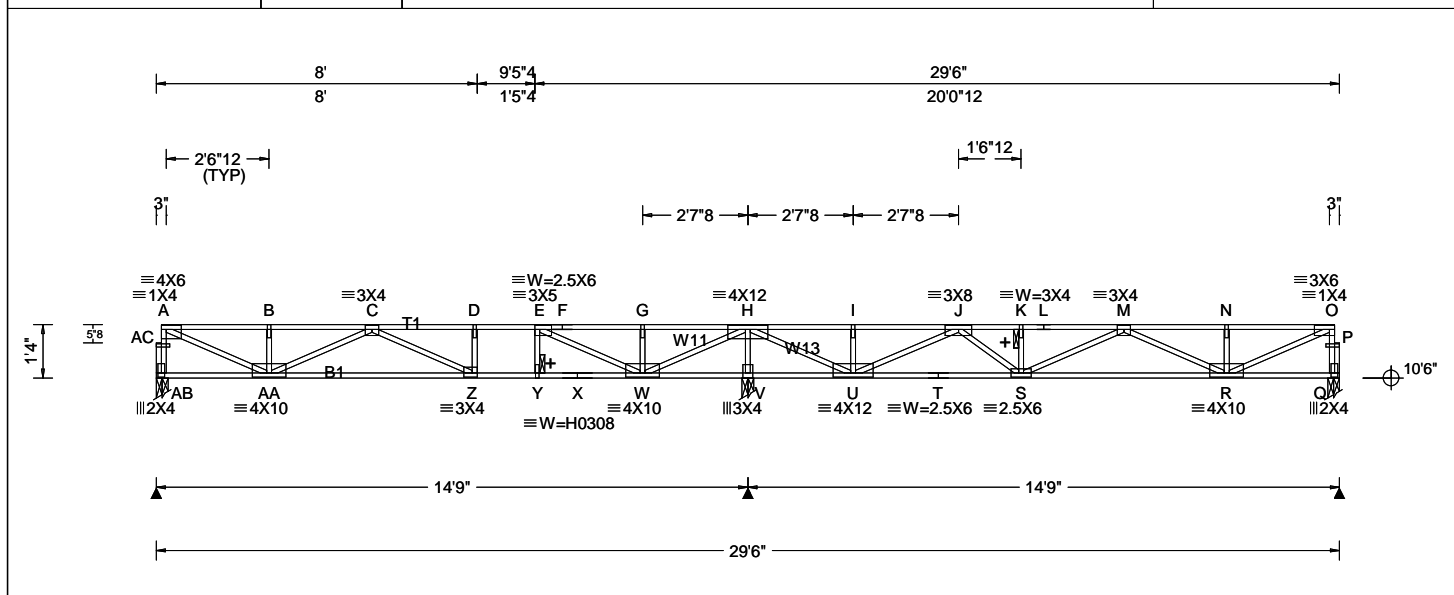


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ALPINE
AN ITW COMPANY
155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

SEQN: 103896 FROM:	SY42 Qty: 21	Ply: 1 Qty: 21	Job Number: 22-8690 JBC Builders (Busscher) - Futral Truss Label: F02	Cust: R 215 JRef: 1XN22150004 T4 DrwNo: 040.23.1306.28513 SSB / YK 02/09/2023
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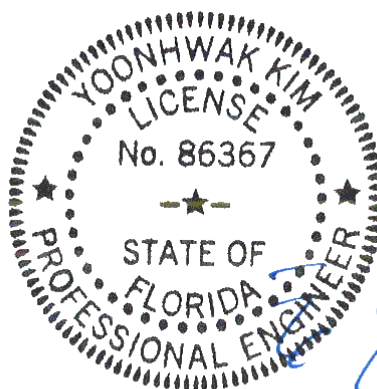


Loading Criteria (psf)	Wind Criteria	Snow Criteria (Pg,Pf in PSF)	Defl/CSI Criteria	▲ Maximum Reactions (lbs)
TCLL: 40.00 TCDL: 15.00 BCLL: 0.00 BCDL: 10.00 Des Ld: 65.00 NCBCLL: 10.00 Soffit: 0.00 Load Duration: 1.00 Spacing: 24.0 "	Wind Std: NA Speed: NA mph Enclosure: NA Category: NA EXP: NA Kzt: NA Mean Height: NA ft TCDL: NA psf BCDL: NA psf MWFRS Parallel Dist: NA C&C Dist a: NA ft Loc. from endwall: NA I: NA GCpi: NA Wind Duration: NA	Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: FBC 7th Ed. 2020 Res. TPI Std: 2014 Rep Fac: Yes FT/RT:12(0)/10(0) Plate Type(s): WAVE, HS	PP Deflection in loc L/def L/# VERT(LL): 0.225 D 776 480 VERT(CL): 0.353 D 495 360 HORZ(LL): 0.029 B - - HORZ(TL): 0.047 B - - Creep Factor: 2.0 Max TC CSI: 0.586 Max BC CSI: 0.808 Max Web CSI: 0.833 VIEW Ver: 21.02.01.1216.15	Gravity Loc R+ / R- / Rh / Rw / U / RL AB 887 -/- /- /- /- /- V 2170 -/- /- /- /- /- Q 865 -/- /- /- /- /- AB Brg Wid = 3.5 Min Req = 1.5 (Truss) V Brg Wid = 3.5 Min Req = 1.5 (Truss) Q Brg Wid = 3.5 Min Req = 1.5 (Truss) Bearings AB, V, & Q are a rigid surface. Members not listed have forces less than 375# Maximum Top Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp.

Lumber	A - B	0 - 1587	H - I	184 - 693
Top chord: 4x2 SP #2; T1 4x2 SP M-31;	B - C	0 - 1587	I - J	184 - 693
Bot chord: 4x2 SP #2; B1 4x2 SP M-31;	C - D	0 - 2180	J - K	0 - 2212
Webs: 4x2 SP #3; W11,W13 4x2 SP M-31;	D - E	0 - 2181	K - L	0 - 2212
	E - F	420 - 871	L - M	0 - 2212
Plating Notes	F - G	420 - 871	M - N	0 - 1526
	G - H	420 - 871	N - O	0 - 1526

				Maximum Bot Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp.
				AA - Z 2267 0 V - U 0 - 1571
				Z - Y 2181 0 U - T 1821 0
				Y - X 2171 0 T - S 1821 0
				X - W 2171 0 S - R 2172 0
				W - V 0 - 1571

				Maximum Web Forces Per Ply (lbs) Webs Tens.Comp. Webs Tens. Comp.
				AC-AB 0 - 880 H - U 2117 0
				A - AC 0 - 855 U - J 0 - 1332
				A - AA 1749 0 J - S 550 0
				AA - C 0 - 752 M - R 0 - 714
				C - Z 178 - 411 R - O 1682 0
				E - W 0 - 1627 O - P 0 - 823
				W - H 2038 0 P - Q 0 - 833
				H - V 0 - 2065



FL REG# 278, Yoonhwak Kim, FL PE #86367
 02/09/2023
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Gable Stud Reinforcement Detail

ASCE 7-16: 160 mph Wind Speed, 30' Mean Height, Enclosed, Exposure C, Kzt = 1.00

Or: 140 MPH Wind Speed, 30' Mean Height, Partially Enclosed, Exposure C, Kzt = 1.00

Or: 140 mph Wind Speed, 30' Mean Height, Enclosed, Exposure D, Kzt = 1.00

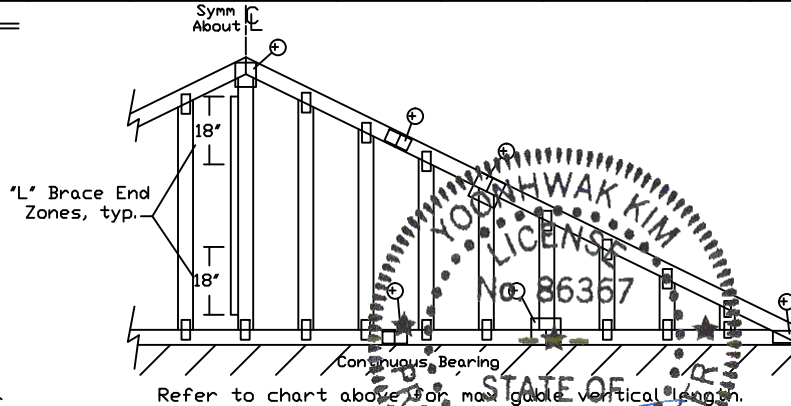
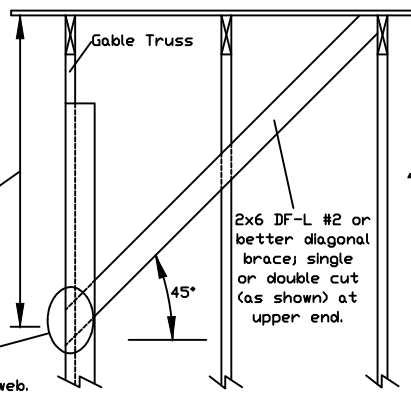
Or: 120 mph Wind Speed, 30' Mean Height, Partially Enclosed, Exposure D, Kzt = 1.00

Max Gable Vertical Length	2x4 Gable Vertical		Brace Grade	No Braces	(1) 1x4 "L" Brace *		(1) 2x4 "L" Brace *		(2) 2x4 "L" Brace **		(1) 2x6 "L" Brace *		(2) 2x6 "L" Brace **	
	Spacing	Species			Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
24" O.C.		SPF HF	#1 / #2	3' 8"	6' 3"	6' 6"	7' 5"	7' 8"	8' 9"	9' 2"	11' 7"	12' 0"	13' 9"	14' 0"
			#3	3' 6"	5' 5"	5' 9"	7' 2"	7' 7"	8' 8"	9' 1"	11' 3"	11' 11"	13' 7"	14' 0"
			Stud	3' 6"	5' 4"	5' 8"	7' 2"	7' 7"	8' 8"	9' 1"	11' 2"	11' 11"	13' 7"	14' 0"
			Standard	3' 6"	4' 7"	4' 11"	6' 2"	6' 7"	8' 4"	8' 11"	9' 8"	10' 4"	13' 1"	14' 0"
		SP DFL	#1	3' 10"	6' 4"	6' 7"	7' 6"	7' 9"	8' 11"	9' 3"	11' 9"	12' 2"	13' 11"	14' 0"
			#2	3' 8"	6' 1"	6' 6"	7' 5"	7' 8"	8' 9"	9' 2"	11' 7"	12' 0"	13' 9"	14' 0"
			#3	3' 7"	4' 10"	5' 2"	6' 5"	6' 11"	8' 9"	9' 1"	10' 1"	10' 10"	13' 8"	14' 0"
			Stud	3' 7"	4' 10"	5' 2"	6' 5"	6' 11"	8' 9"	9' 1"	10' 1"	10' 10"	13' 8"	14' 0"
		Standard	3' 3"	4' 3"	4' 7"	5' 8"	6' 1"	7' 9"	8' 3"	8' 11"	9' 7"	12' 2"	13' 0"	
			#1 / #2	4' 2"	7' 2"	7' 5"	8' 5"	8' 9"	10' 1"	10' 6"	13' 3"	13' 9"	14' 0"	14' 0"
			#3	4' 0"	6' 7"	7' 5"	8' 4"	8' 8"	9' 11"	10' 4"	13' 1"	13' 7"	14' 0"	14' 0"
			Stud	4' 0"	6' 7"	7' 0"	8' 4"	8' 8"	9' 11"	10' 4"	13' 1"	13' 7"	14' 0"	14' 0"
16" O.C.		SPF HF	Standard	4' 0"	5' 8"	6' 0"	7' 6"	8' 0"	9' 11"	10' 4"	11' 10"	12' 8"	14' 0"	14' 0"
			#1	4' 5"	7' 3"	7' 6"	8' 7"	8' 11"	10' 2"	10' 7"	13' 5"	13' 11"	14' 0"	14' 0"
			#2	4' 2"	7' 2"	7' 5"	8' 5"	8' 9"	10' 1"	10' 6"	13' 3"	13' 9"	14' 0"	14' 0"
			#3	4' 1"	5' 11"	6' 4"	7' 11"	8' 5"	10' 0"	10' 5"	12' 5"	13' 3"	14' 0"	14' 0"
		SP DFL	Stud	4' 1"	5' 11"	6' 4"	7' 11"	8' 5"	10' 0"	10' 5"	12' 5"	13' 3"	14' 0"	14' 0"
			Standard	4' 0"	5' 3"	5' 7"	7' 0"	7' 6"	9' 5"	10' 2"	11' 0"	11' 9"	14' 0"	14' 0"
			#1 / #2	4' 8"	7' 11"	8' 2"	9' 4"	9' 8"	10' 1"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			#3	4' 5"	7' 7"	8' 1"	9' 2"	9' 6"	10' 11"	11' 5"	14' 0"	14' 0"	14' 0"	14' 0"
		Standard	4' 5"	6' 6"	6' 11"	8' 8"	9' 3"	10' 11"	11' 5"	13' 7"	14' 0"	14' 0"	14' 0"	14' 0"
			#1	4' 10"	8' 0"	8' 3"	9' 5"	9' 9"	11' 2"	11' 8"	14' 0"	14' 0"	14' 0"	14' 0"
			#2	4' 8"	7' 11"	8' 2"	9' 4"	9' 8"	11' 1"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			#3	4' 6"	6' 10"	7' 3"	9' 1"	9' 7"	11' 0"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
12" O.C.		SPF HF	Stud	4' 6"	6' 10"	7' 3"	9' 1"	9' 7"	11' 0"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			Standard	4' 5"	6' 1"	6' 5"	8' 1"	8' 7"	10' 11"	11' 5"	12' 8"	13' 7"	14' 0"	14' 0"
			#1 / #2	4' 8"	7' 11"	8' 2"	9' 4"	9' 8"	10' 1"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			#3	4' 5"	7' 7"	8' 1"	9' 2"	9' 6"	10' 11"	11' 5"	14' 0"	14' 0"	14' 0"	14' 0"
		SP DFL	Stud	4' 5"	6' 6"	6' 11"	8' 8"	9' 3"	10' 11"	11' 5"	13' 7"	14' 0"	14' 0"	14' 0"
			Standard	4' 5"	6' 6"	6' 11"	8' 8"	9' 3"	10' 11"	11' 5"	13' 7"	14' 0"	14' 0"	14' 0"
			#1	4' 10"	8' 0"	8' 3"	9' 5"	9' 9"	11' 2"	11' 8"	14' 0"	14' 0"	14' 0"	14' 0"
			#2	4' 8"	7' 11"	8' 2"	9' 4"	9' 8"	11' 1"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
		Standard	#3	4' 6"	6' 10"	7' 3"	9' 1"	9' 7"	11' 0"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			Stud	4' 6"	6' 10"	7' 3"	9' 1"	9' 7"	11' 0"	11' 6"	14' 0"	14' 0"	14' 0"	14' 0"
			Standard	4' 5"	6' 1"	6' 5"	8' 1"	8' 7"	10' 11"	11' 5"	12' 8"	13' 7"	14' 0"	14' 0"

Diagonal brace option: vertical length may be doubled when diagonal brace is used. Connect diagonal brace for 690# at each end. Max web total length is 14'.

Vertical length shown in table above.

Connect diagonal at midpoint of vertical web.



Bracing Group Species and Grades:

Group A:			
Spruce-Pine-Fir		Hem-Fir	
#1 / #2	Standard	#2	Stud
#3	Stud	#3	Standard
Douglas Fir-Larch		Southern Pine***	
#3		#3	
Stud		Stud	
Standard		Standard	

Group B:			
Hem-Fir			
#1 & Btr			
#1			
Douglas Fir-Larch		Southern Pine***	
#1		#1	
#2		#2	

1x4 Braces shall be SRB (Stress-Rated Board).

***For 1x4 So. Pine use only Industrial 55 or Industrial 45 Stress-Rated Boards. Group B values may be used with these grades.

Gable Truss Detail Notes:

Wind Load deflection criterion is L/240.

Provide uplift connections for 135 plf over continuous bearing (5 psf TC Dead Load).

Gable end supports load from 4' 0" outlookers with 2' 0" overhang, or 12' plywood overhang.

Attach 'L' braces with 10d (0.128"x3.0" min) nails.

* For (1) 'L' brace: space nails at 2' o.c. in 18' end zones and 4' o.c. between zones.

**For (2) 'L' braces: space nails at 3' o.c. in 18' end zones and 6' o.c. between zones.

'L' bracing must be a minimum of 80% of web member length.

Gable Vertical Plate Sizes

Vertical Length	No Splice
Less than 4' 0"	2X4
Greater than 4' 0", but less than 12' 0"	4X4

+ Refer to common truss design for peak, splice, and heel plates.

Refer to the Building Designer for conditions not addressed by this detail.

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155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

Yoonhwak Kim, FL PE #86367

MAX. TOT. LD. 60 PSF

MAX. SPACING 24.0"

REF ASCE7-16-GAB16030

DATE 01/26/2018

DRWG A16030ENC160118

CLR Reinforcing Member Substitution

This detail is to be used when a Continuous Lateral Restraint (CLR) is specified on a truss design but an alternative web reinforcement method is desired.

Notes:

This detail is only applicable for changing the specified CLR shown on single ply sealed designs to T-reinforcement or L-reinforcement or scab reinforcement.

Alternative reinforcement specified in chart below may be conservative. For minimum alternative reinforcement, re-run design with appropriate reinforcement type.

Use scabs instead of L- or T- reinforcement on webs with intersecting truss joints, such as K-web joints, that may interfere with proper application along the narrow face of the web.

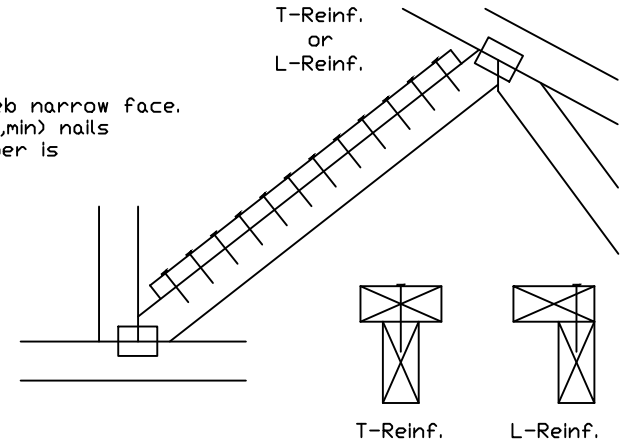
Web Member Size	Specified CLR Restraint	Alternative Reinforcement T- or L- Reinf.	Scab Reinf.
2x3 or 2x4	1 row	2x4	1-2x4
2x3 or 2x4	2 rows	2x6	2-2x4
2x6	1 row	2x4	1-2x6
2x6	2 rows	2x6	2-2x4(✕)
2x8	1 row	2x6	1-2x8
2x8	2 rows	2x6	2-2x6(✕)

T-reinforcement, L-reinforcement, or scab reinforcement to be same species and grade or better than web member unless specified otherwise on Engineer's sealed design.

(✕) Center scab on wide face of web. Apply (1) scab to each face of web.

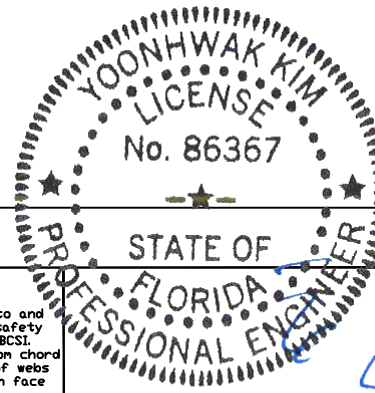
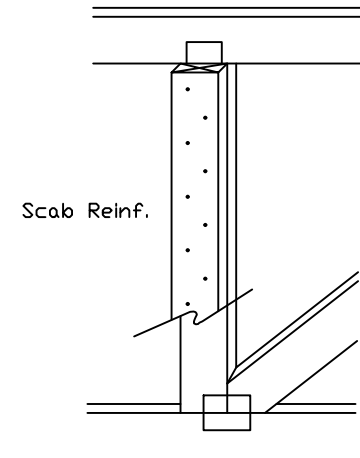
T-Reinforcement or L-Reinforcement:

Apply to either side of web narrow face. Attach with 10d (0.128"x3.0",min) nails at 6" o.c. Reinforcing member is a minimum 80% of web member length.



Scab Reinforcement:

Apply scab(s) to wide face of web. No more than (1) scab per face. Attach with 10d (0.128"x3.0",min) nails at 6" o.c. Reinforcing member is a minimum 80% of web member length.



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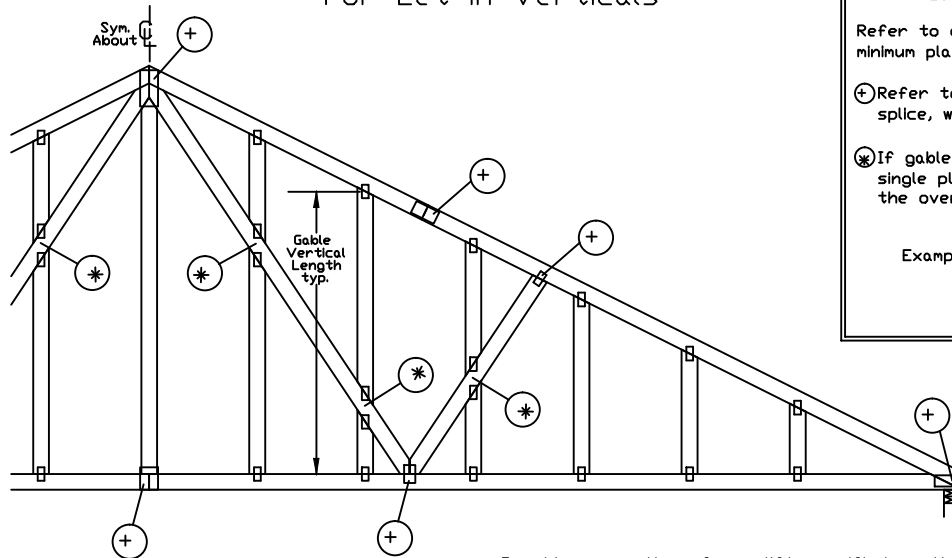


155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025

TC LL	PSF	REF	CLR Subst.
TC DL	PSF	DATE	01/02/19
BC DL	PSF	DRWG	BRCLBSUB0119
BC LL	PSF		
TOT. LD.	PSF		
DUR. FAC.			
SPACING			

02/09/2023 Yoonhwak Kim, FL PE #86367

Gable Detail For Let-in Verticals

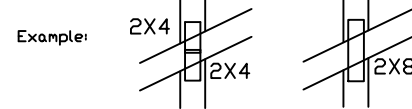


Gable Truss Plate Sizes

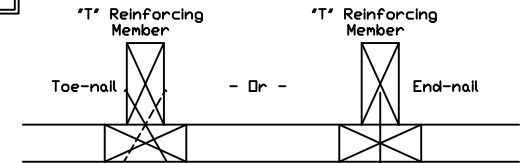
Refer to appropriate Alpine gable detail for minimum plate sizes for vertical studs.

(+) Refer to Engineered truss design for peak, splice, web, and heel plates.

(X) If gable vertical plates overlap, use a single plate that covers the total area of the overlapped plates to span the web.



'T' Reinforcement Attachment Detail



To convert from 'L' to 'T' reinforcing members, multiply 'T' increase by length (based on appropriate Alpine gable detail).

Maximum allowable 'T' reinforced gable vertical length is 14' from top to bottom chord.

'T' reinforcing member material must match size, specie, and grade of the 'L' reinforcing member.

Web Length Increase w/ 'T' Brace

'T' Reinf. Mbr. Size	'T' Increase
2x4	30 %
2x6	20 %

Example:

ASCE 7-10 Wind Speed = 120 mph

Mean Roof Height = 30 ft, Kzt = 1.00

Gable Vertical = 24' o.c. SP #3

'T' Reinforcing Member Size = 2x4

'T' Brace Increase (From Above) = 30% = 1.30

(1) 2x4 'L' Brace Length = 8' 7"

Maximum 'T' Reinforced Gable Vertical Length
1.30 x 8' 7" = 11' 2"

Provide connections for uplift specified on the engineered truss design.

Attach each 'T' reinforcing member with

End Driven Nails:

10d Common (0.148"x3",min) Nails at 4' o.c. plus
(4) nails in the top and bottom chords.

Toenailed Nails:

10d Common (0.148"x3",min) Toenails at 4' o.c. plus
(4) toenails in the top and bottom chords.

This detail to be used with the appropriate Alpine gable detail for ASCE wind load.

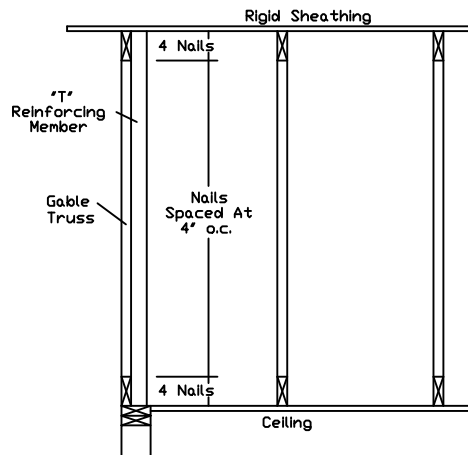
ASCE 7-05 Gable Detail Drawings

A13015051014, A12015051014, A11015051014, A10015051014, A14015051014,
A13030051014, A12030051014, A11030051014, A10030051014, A14030051014

ASCE 7-10 & ASCE 7-16 Gable Detail Drawings

A11515ENC100118, A12015ENC100118, A14015ENC100118, A10015ENC100118,
A18015ENC100118, A20015ENC100118, A20015END100118, A20015P100118,
A11530ENC100118, A12030ENC100118, A14030ENC100118, A10030ENC100118,
A18030ENC100118, A20030ENC100118, A20030END100118, A20030P100118,
S11515ENC100118, S12015ENC100118, S14015ENC100118, S16015ENC100118,
S18015ENC100118, S20015ENC100118, S20015END100118, S20015P100118,
S11530ENC100118, S12030ENC100118, S14030ENC100118, S16030ENC100118,
S18030ENC100118, S20030ENC100118, S20030END100118, S20030P100118

See appropriate Alpine gable detail for maximum unreinforced gable vertical length.



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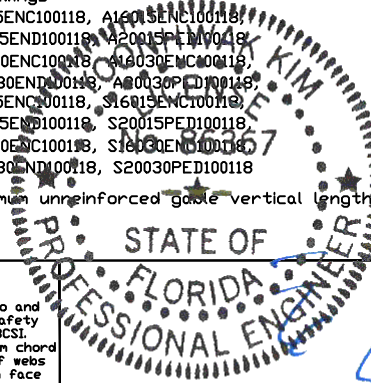
Alpine, a division of ITW Building Components Group Inc. shall not be responsible for any deviation from this drawing, any failure to build the truss in conformance with ANSI/TPI 1, or for handling, shipping, installation & bracing of trusses.

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For more information see this Job's general notes page and these web sites: 09/2023
ALPINE: www.alpineitw.com; TPI: www.tpinet.org; SBCA: www.sbcacomponents.com; ICC: www.iccsafe.org



155 Harlem Ave
North Building, 4th Floor
Glenview, IL 60025



REF LET-IN VERT

DATE 01/02/2018

DRWG GBLLETIN0118

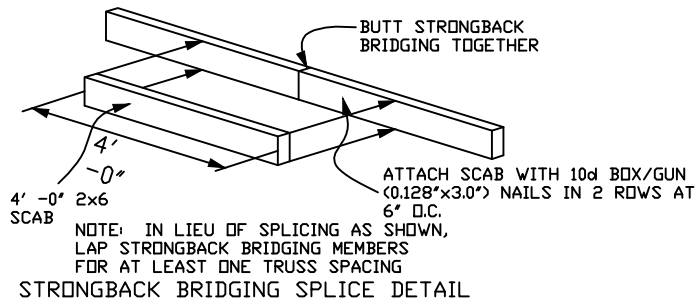
MAX. TOT. LD. 60 PSF

DUR. FAC. ANY

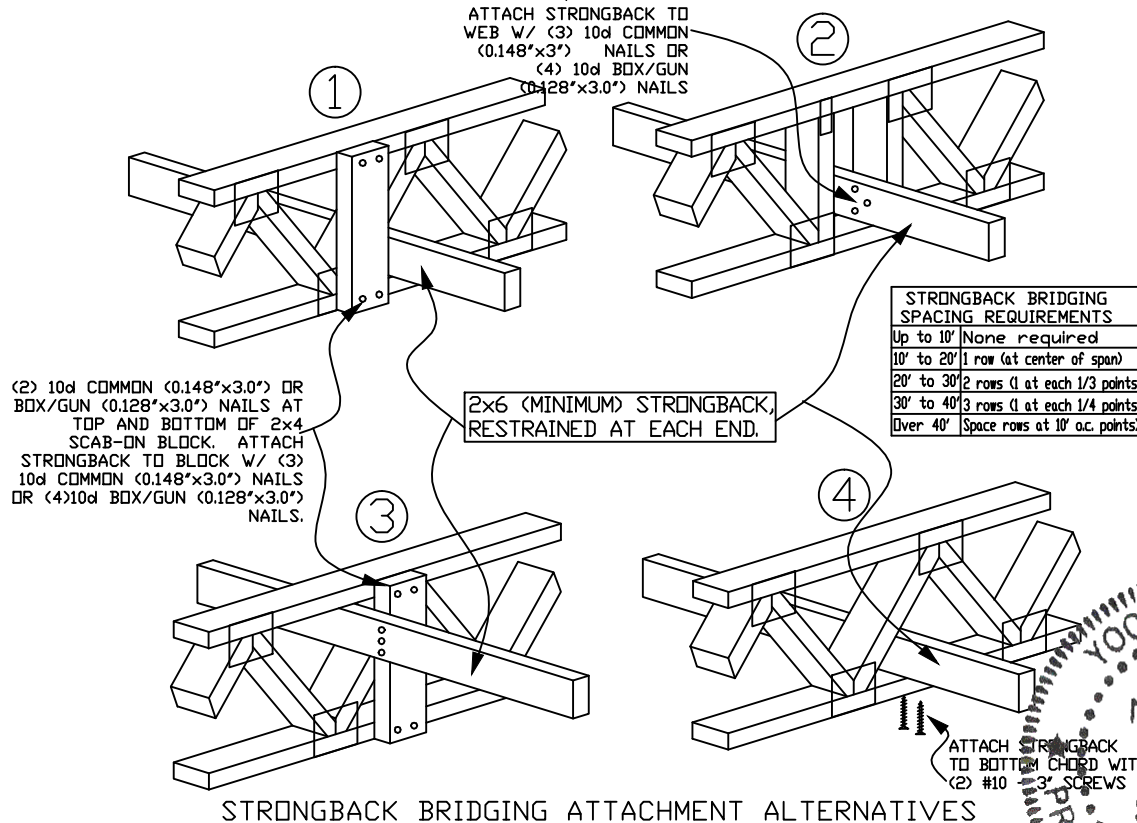
MAX. SPACING 24.0"

Yoonhwak Kim, FL PE #86367

STRONGBACK BRIDGING RECOMMENDATIONS



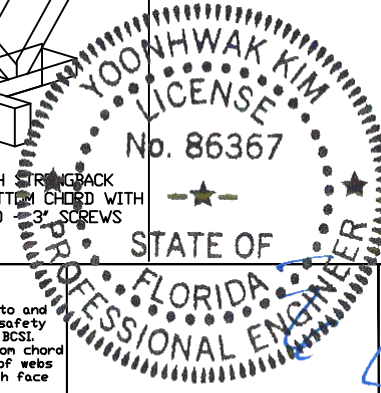
NOTE: Details 1 and 2 are the preferred attachment methods



- All scab-on blocks shall be a minimum 2x4 "stress graded lumber."
- All strongback bridging and bracing shall be a minimum 2x6 "stress graded lumber."
- The purpose of strongback bridging is to develop load sharing between individual trusses, resulting in an overall increase in the stiffness of the floor system. 2x6 strongback bridging, positioned as shown in details, is recommended at 10' - 0" o.c. (max.)
- The terms "bridging" and "bracing" are sometimes mistakenly used interchangeably. "Bracing" is an important structural requirement of any floor or roof system. Refer to the Truss Design Drawing (TDD) for the bracing requirements for each individual truss component. "Bridging," particularly "strongback bridging" is a recommendation for a truss system to help control vibration. In addition to aiding in the distribution of point loads between adjacent truss, strongback bridging serves to reduce "bounce" or residual vibration resulting from moving point loads, such as footsteps.

The performance of all floor systems are enhanced by the installation of strongback bridging and therefore is strongly recommended by Alpine.

For additional information regarding strongback bridging, refer to BCSI (Building Component Safety Information).



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ALPINE: www.alpineitw.com TPI: www.tpinet.org SBCA: www.sbcacomponents.com ICC: www.iccsafe.org

TC LL	PSF	REF	STRONGBACK
TC DL	PSF	DATE	10/01/14
BC DL	PSF	DRWG	STRBRIBR1014
BC LL	PSF		
TOT. LD.	PSF		
DUR. FAC.	1.00		
SPACING			

Commentary: Deflection and Camber

Camber may be built into trusses to compensate for the vertical deflection that results from the application of loads. Providing camber has the following advantages:

- Helps to ensure level ceilings and floors after dead loads are applied.
- Facilitates drainage to avoid ponding on flat or low slope roofs.
- Compensates for different deflection characteristics between adjacent trusses.
- Improves appearance of garage door headers and other long spans that can appear to "sag."
- Avoids "dips" in roof ridgelines at the transition from the gable to adjacent clear span trusses.

In accordance with ANSI/TPI 1 the Building Designer, through the Construction Documents, shall provide the location, direction, and magnitude of all loads attributable to ponding that may occur due to the design of the roof drainage system. The Building Designer shall also specify any dead load, live load, and in-service creep deflection criteria for flat or low-slope roofs subject to ponding loads.

The amount of camber is dependent on the truss type, span, loading, application, etceteras.

More restrictive limits for allowable deflection and slenderness ratio (L/D) may be required to help control vibration.

The following tables are provided as guidelines for limiting deflection and estimating camber. Conditions or codes may exist that require exceeding these recommendations, or past experience may warrant using more stringent limitations.

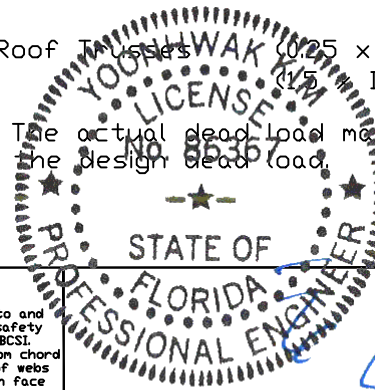
L = Span of Truss (inches)
D = Depth of Truss at Deflection Point (inches)

Recommended Truss Deflection Limits

Truss Type	L/D	Deflection Limits	
		Live Load	Total Load
Pitched Roof Trusses	24	L/240 (vertical)	L/180 (vertical)
Floor of Room-In-Attic Trusses	24	L/360 (vertical)	L/240 (vertical)
Flat or Shallow Pitched Roof Trusses	24	L/360 (vertical)	L/240 (vertical)
Residential Floor Trusses	24	L/360 (vertical)	L/240 (vertical)
Commercial Floor Trusses	20	L/480 (vertical)	L/240 (vertical)
Scissors Trusses	24	0.75" (horizontal)	1.25" (horizontal)

Truss Type	Recommended Camber
Pitched Trusses	1.00 x Deflection from Actual Dead Load
Sloping Parallel Chord Trusses	1.5 x Vertical Deflection from Actual Dead Load
Floor Trusses	(0.25 x Deflection from Live Load) + Actual Dead Load
Flat Roof Trusses	(0.25 x Deflection from Live Load) + Design Dead Load Deflection

Note: The actual dead load may be considerably less than the design dead load.



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Yoonhwak Kim, FL PE #86367

REF	DEFLEC/CAMB
DATE	10/01/14
DRWG	DEFLCAMB1014

