

Alpine, an ITW Company
 155 Harlem Ave
 North Building, 4th Floor
 Glenview, IL 60025
 Phone: (800)755-6001
 www.alpineitw.com

11/07/2023
 ABCD Engineering, PLLC NC COA 0838

Site Information:	Page 1:
<i>Customer:</i> Carpenter Contractors of America	<i>Job Number:</i> REPAIR 76336
<i>Job Description:</i> REPAIR 76336	
<i>Address:</i>	

Job Engineering Criteria:	
<i>Design Code:</i> IRC 2015	<i>IntelliVIEW Version:</i> 21.02.01
	<i>JRef #:</i> 1XUL89790005
	<i>Design Loading (psf):</i> 55.00

This package contains general notes pages, 2 truss drawing(s) and 2 detail(s).

Item	Drawing Number	Truss
1	311.23.1458.59313	SF1
3	STRBRIBR1014	

Item	Drawing Number	Truss
2	311.23.1455.45953	SF2
4	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.

FRT-PR = ProWood 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 all load cases.

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

Max Web CSI = Maximum bending and axial Combined Stress Index for Webs for 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.

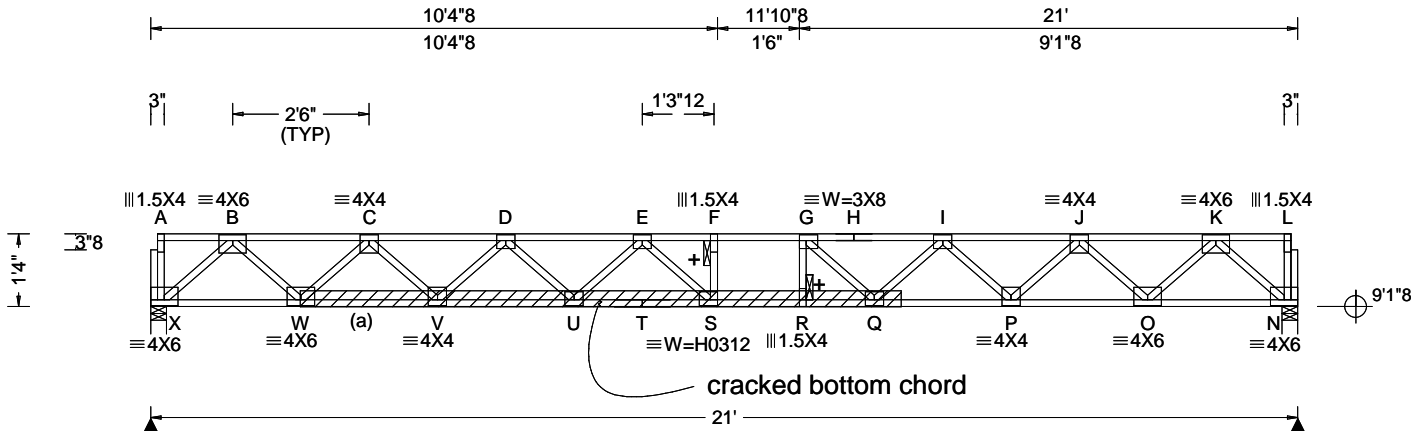
W = Width of non-hanger bearing, in inches.

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.



Loading Criteria (psf) TCLL: 40.00 TCDL: 10.00 BCLL: 0.00 BCDL: 5.00 Des Ld: 55.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.00 Spacing: 24.0 "	Wind Criteria 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	Snow Criteria (Pg,Pf in PSF) Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: IRC 2015 TPI Std: 2014 Rep Fac: Yes FT/RT:12(0)/10(0) Plate Type(s): WAVE, HS	Defl/CSI Criteria PP Deflection in loc L/defl L/# VERT(LL): 0.431 F 574 480 VERT(CL): 0.593 F 417 360 HORZ(LL): 0.071 B - - HORZ(TL): 0.098 B - - Creep Factor: 2.0 Max TC CSI: 0.818 Max BC CSI: 0.655 Max Web CSI: 0.596 VIEW Ver: 21.02.01.1216.14	▲ Maximum Reactions (lbs) Gravity Non-Gravity Loc R+ /R- /Rh /Rw /U /RL X 1142 /- /- /- /- /- N 1142 /- /- /- /- /- X Brg Wid = 3.5 Min Req = 1.5 (Truss) N Brg Wid = 3.5 Min Req = 1.5 (Truss) Bearings X & N Fcperp = 565psi. Members not listed have forces less than 375# Maximum Top Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp. B - C 0 -2077 G - H 0 -4458 C - D 0 -3554 H - I 0 -4458 D - E 0 -4463 I - J 0 -3555 E - F 0 -4792 J - K 0 -2077 F - G 0 -4795
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Lumber
Top chord: 4x2 SP #2;
Bot chord: 4x2 SP SS;
Webs: 4x2 SP #3;

Plating Notes
All plates are 3X4 except as noted.

Loading
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IRC-15 section 301.5.

Deflection
Max JT VERT DEFL: LL: 0.43" DL: 0.19". See detail DEFLCAMB1014 for camber recommendations.

End Vertical Attachment
Attach notched end vertical(s) to next end vertical using (3) qty. 10d box or (0.128"x3"min) gun nails, or (5) qty. 15-Gauge, 7/16" Crown, 2-1/2" length wire staples, through wide face; or (3) qty. 16-Gauge, 1" Crown (minimum), 1-1/2" length wire staples on each narrow face.

Additional Notes
+ 2x6 continuous strongback. See detail STRBRIBR1014 for bracing and bridging recommendations.
Deflection estimate assumes composite action with single layer of the appropriate span rated glue-nailed wood sheathing.
Truss must be installed as shown with top chord up.

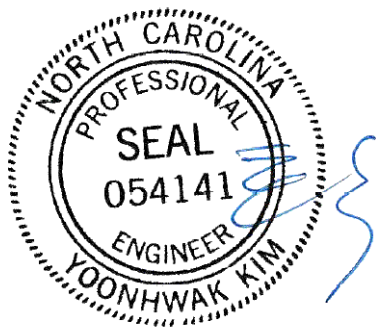
This truss is repaired for a cracked bottom chord as shown.
Repair(s) must comply with Alpine designs & specifications
Shore Truss and any supported spans in proper position as repair is being made.
(a) (2) 2X4X 11-0-0 SP #2 scab; attach scab to each face of truss centered on break with 10d common (0.148"x3.0") nails at 3' oc without splitting lumber.

Maximum Bot Chord Forces Per Ply (lbs)

Chords	Tens.Comp.	Chords	Tens. Comp.
X - W	1177	0	S - R 4795
W - V	2948	0	R - Q 4791
V - U	4139	0	Q - P 4132
U - T	4745	0	P - O 2950
T - S	4745	0	O - N 1177

Maximum Web Forces Per Ply (lbs)

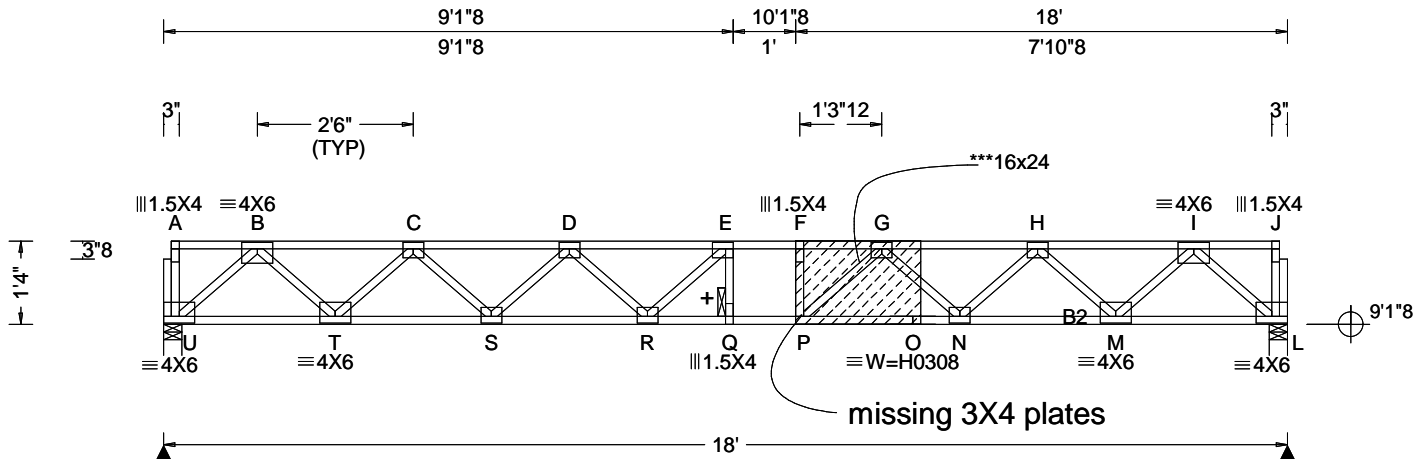
Webs	Tens.Comp.	Webs	Tens. Comp.
X - B	0 - 1600	G - Q	6 - 693
B - W	1252 0	Q - I	560 0
W - C	0 - 1211	I - P	0 - 803
C - V	843 0	P - J	842 0
V - D	0 - 814	J - O	0 - 1214
D - U	450 0	O - K	1252 0
U - E	0 - 438	K - N	0 - 1600
E - S	469 -291		



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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 continuous lateral restraint (CLR), installed with diagonal bracing installed on the CLR 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: sbccomponents.com; ICC: iccsafe.org; AWC: awc.org





Loading Criteria (psf) TCCL: 40.00 TCCL: 10.00 BCLL: 0.00 BCDL: 5.00 Des Ld: 55.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.00 Spacing: 24.0 "	Wind Criteria Wind Std: NA Speed: NA mph Enclosure: NA Category: NA EXP: NA Kzt: NA Mean Height: NA ft TCCL: 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	Snow Criteria (Pg,Pf in PSF) Pg: NA Ct: NA CAT: NA Pf: NA Ce: NA Lu: NA Cs: NA Snow Duration: NA Building Code: IRC 2015 TPI Std: 2014 Rep Fac: Yes FT/RT:12(0)/10(0) Plate Type(s): WAVE, HS	Defl/CSI Criteria PP Deflection in loc L/defl L/# VERT(LL): 0.248 E 854 480 VERT(CL): 0.341 E 620 360 HORZ(LL): 0.046 B - - HORZ(TL): 0.063 B - - Creep Factor: 2.0 Max TC CSI: 0.623 Max BC CSI: 0.881 Max Web CSI: 0.485 VIEW Ver: 21.02.01.1216.14	▲ Maximum Reactions (lbs) <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Loc</th> <th colspan="3">Gravity</th> <th colspan="3">Non-Gravity</th> </tr> <tr> <th>R+</th> <th>/R-</th> <th>/Rh</th> <th>/Rw</th> <th>/U</th> <th>/RL</th> </tr> </thead> <tbody> <tr> <td>U</td> <td>977</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>L</td> <td>977</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td colspan="7">U Brg Wid = 3.5 Min Req = 1.5 (Truss)</td> </tr> <tr> <td colspan="7">L Brg Wid = 3.5 Min Req = 1.5 (Truss)</td> </tr> <tr> <td colspan="7">Bearings U & L Fcperp = 565psi.</td> </tr> <tr> <td colspan="7">Members not listed have forces less than 375#</td> </tr> <tr> <td colspan="7">Maximum Top Chord Forces Per Ply (lbs)</td> </tr> <tr> <th>Chords</th> <th colspan="2">Tens.Comp.</th> <th>Chords</th> <th colspan="2">Tens. Comp.</th> </tr> <tr> <td>B - C</td> <td>0</td> <td>-1728</td> <td>F - G</td> <td>0</td> <td>-3496</td> </tr> <tr> <td>C - D</td> <td>0</td> <td>-2867</td> <td>G - H</td> <td>0</td> <td>-2857</td> </tr> <tr> <td>D - E</td> <td>0</td> <td>-3425</td> <td>H - I</td> <td>0</td> <td>-1731</td> </tr> <tr> <td>E - F</td> <td>0</td> <td>-3503</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Maximum Bot Chord Forces Per Ply (lbs) <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Chords</th> <th colspan="2">Tens.Comp.</th> <th>Chords</th> <th colspan="2">Tens. Comp.</th> </tr> </thead> <tbody> <tr> <td>U - T</td> <td>999</td> <td>0</td> <td>P - O</td> <td>3272</td> <td>0</td> </tr> <tr> <td>T - S</td> <td>2428</td> <td>0</td> <td>O - N</td> <td>3272</td> <td>0</td> </tr> <tr> <td>S - R</td> <td>3285</td> <td>0</td> <td>N - M</td> <td>2432</td> <td>0</td> </tr> <tr> <td>R - Q</td> <td>3507</td> <td>0</td> <td>M - L</td> <td>998</td> <td>0</td> </tr> <tr> <td>Q - P</td> <td>3503</td> <td>0</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Maximum Web Forces Per Ply (lbs) <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Webs</th> <th colspan="2">Tens.Comp.</th> <th>Webs</th> <th colspan="2">Tens. Comp.</th> </tr> </thead> <tbody> <tr> <td>U - B</td> <td>0</td> <td>-1358</td> <td>G - N</td> <td>0</td> <td>-577</td> </tr> <tr> <td>B - T</td> <td>1014</td> <td>0</td> <td>N - H</td> <td>590</td> <td>0</td> </tr> <tr> <td>T - C</td> <td>0</td> <td>-974</td> <td>H - M</td> <td>0</td> <td>-975</td> </tr> <tr> <td>C - S</td> <td>611</td> <td>0</td> <td>M - I</td> <td>1020</td> <td>0</td> </tr> <tr> <td>S - D</td> <td>0</td> <td>-581</td> <td>I - L</td> <td>0</td> <td>-1357</td> </tr> <tr> <td>P - G</td> <td>531</td> <td>-60</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Loc	Gravity			Non-Gravity			R+	/R-	/Rh	/Rw	/U	/RL	U	977	-	-	-	-	-	L	977	-	-	-	-	-	U Brg Wid = 3.5 Min Req = 1.5 (Truss)							L Brg Wid = 3.5 Min Req = 1.5 (Truss)							Bearings U & L Fcperp = 565psi.							Members not listed have forces less than 375#							Maximum Top Chord Forces Per Ply (lbs)							Chords	Tens.Comp.		Chords	Tens. Comp.		B - C	0	-1728	F - G	0	-3496	C - D	0	-2867	G - H	0	-2857	D - E	0	-3425	H - I	0	-1731	E - F	0	-3503				Chords	Tens.Comp.		Chords	Tens. Comp.		U - T	999	0	P - O	3272	0	T - S	2428	0	O - N	3272	0	S - R	3285	0	N - M	2432	0	R - Q	3507	0	M - L	998	0	Q - P	3503	0				Webs	Tens.Comp.		Webs	Tens. Comp.		U - B	0	-1358	G - N	0	-577	B - T	1014	0	N - H	590	0	T - C	0	-974	H - M	0	-975	C - S	611	0	M - I	1020	0	S - D	0	-581	I - L	0	-1357	P - G	531	-60			
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Lumber
 Top chord: 4x2 SP #2;
 Bot chord: 4x2 SP SS; B2 4x2 SP #2;
 Webs: 4x2 SP #3;

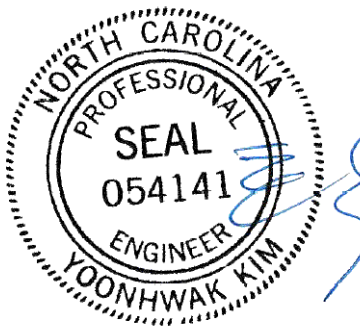
Plating Notes
 All plates are 3X4 except as noted.

Loading
 Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IRC-15 section 301.5.

End Vertical Attachment
 Attach notched end vertical(s) to next end vertical using (3) qty. 10d box or (0.128"x3"min) gun nails, or (5) qty. 15-Gauge, 7/16" Crown, 2-1/2" length wire staples, through wide face; or (3) qty. 16-Gauge, 1" Crown (minimum), 1-1/2" length wire staples on each narrow face.

Additional Notes
 + 2x6 continuous strongback. See detail STRBRIBR1014 for bracing and bridging recommendations.
 Deflection estimate assumes composite action with single layer of the appropriate span rated glue-nailed wood sheathing.
 Truss must be installed as shown with top chord up.

This truss is repaired for missing 3X4 plates as shown.
 Repair(s) must comply with Alpine designs & specifications
 Shore Truss and any supported spans in proper position as repair is being made.
 ***(2) 1/2"(NOM.) APA 32/16 EXP 1 Rated sheathing (PLYWOOD OR OSB) required. Apply one gusset to each face as shown and attach with 0.113x2.0" 6d common nails at 2" OC in each member covered without splitting lumber.

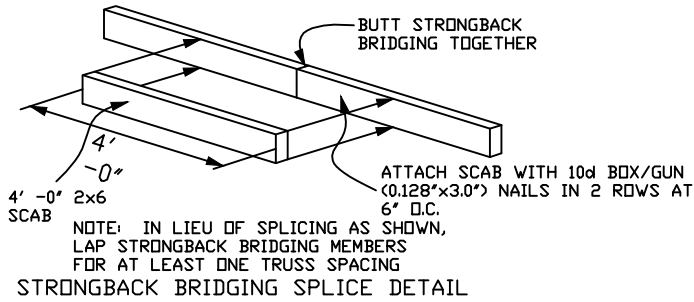


11/07/2023
 ABCD Engineering, PLLC NC COA 0838

****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 continuous lateral restraint (CLR), installed with diagonal bracing installed on the CLR 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

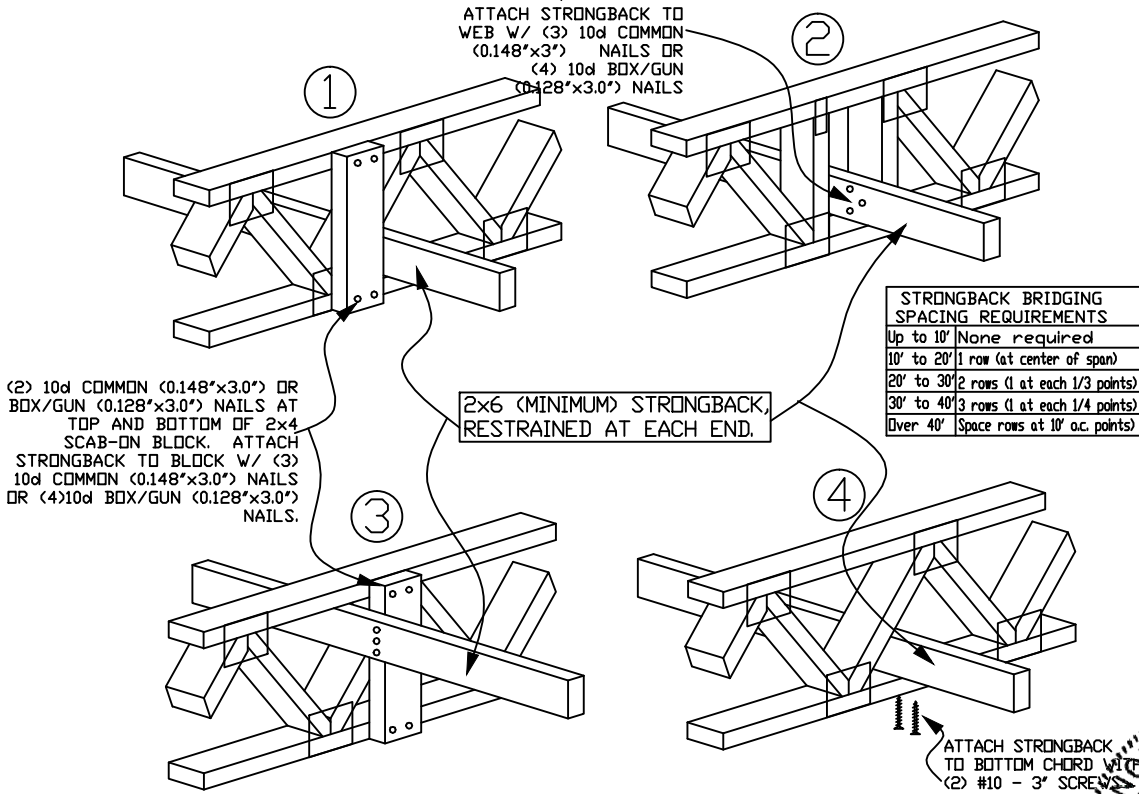


STRONGBACK BRIDGING RECOMMENDATIONS



- ▶ 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.)

NOTE: Details 1 and 2 are the preferred attachment methods



- ▶ 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).



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

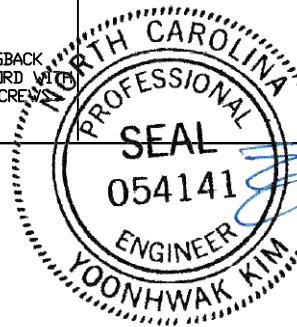
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For more information see this Job's general notes page and these web sites:
ALPINE: www.alpineitw.com TPI: www.tpinet.org SBCA: www.sbcacomponents.com ICC: www.iccsafe.org



ABCD Engineering, PLLC NC COA 0838

EC LL	PSF	REF	STRONGBACK
EC 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) + (1.5 x Design Dead Load Deflection)

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



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