

ABCD Engineering, PLLC NC COA 0838
12/09/2024

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Site Information:	Page 1:
<i>Customer:</i> Carpenter Contractors of America	<i>Job Number:</i> REPAIR 86482
<i>Job Description:</i> REPAIR 86482	
<i>Address:</i>	

Job Engineering Criteria:	
<i>Design Code:</i> IRC 2015	<i>IntelliVIEW Version:</i> 23.02.01A <i>JRef #:</i> 1Y5N89790006
<i>Wind Standard:</i> ASCE 7-10 <i>Wind Speed (mph):</i> 130	<i>Design Loading (psf):</i> 40.00
<i>Building Type:</i> Closed	

This package contains general notes pages, 1 truss drawing(s) and 0 detail(s).

Item	Drawing Number	Truss
1	344.24.1421.23833	A24

Item	Drawing Number	Truss

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.

Bearing Information:

The bearing area factor, C_b , is considered for the allowable capacity of solid sawn wood bearings supporting trusses that are located a minimum of 3" from the end of the lumber piece.

General Notes (continued)

Coated Lumber:

Coated lumber must be properly re-dried and maintained below 19% or less moisture level through all stages of construction and usage. Coated lumber has no adjustments to lumber properties. Coated lumber may be more brittle than uncoated lumber. Special handling care must be taken to prevent breakage during all handling activities. Refer to manufacturer literature, specifications, and code evaluation reports for restrictions, details, and requirements.

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.

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.

C = Coated lumber.

C-AT = AtTEK coated lumber.

C-FX = FX Lumber Guard coated lumber.

C-TE = TechWood 4400 coated lumber.

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-BF = Boraflame 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-ON = OnWood 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).

General Notes (continued)

Key to Terms (continued):

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.

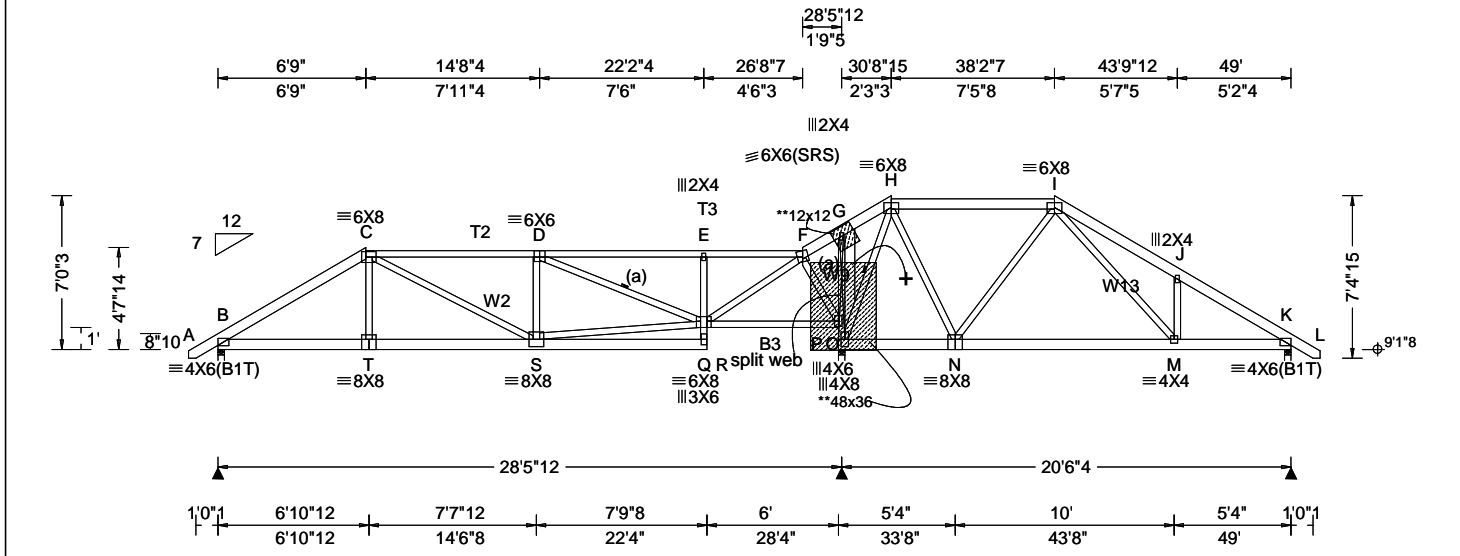
Refer to ASCE-7 for Wind and Seismic abbreviations.

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

References:

1. AWC: American Wood Council; 222 Catocin 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: 175619 / FROM: REL	SPEC Ply: 1 Qty: 1	Job Number: REPAIR 86482 REPAIR 86482 Truss Label: A24	Cust: R 8979 JRef: 1Y5N89790006 T4 DrwNo: 344.24.1421.23833 / DF 10/21/2024
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Loading Criteria (psf) TCCL: 20.00 TCDL: 10.00 BCCL: 0.00 BCDL: 10.00 Des Ld: 40.00 NCBCLL: 10.00 Soffit: 2.00 Load Duration: 1.15 Spacing: 24.0 "	Wind Criteria Wind Std: ASCE 7-10 Speed: 130 mph Enclosure: Closed Risk Category: II EXP: B Kzt: NA Mean Height: 15.00 ft TCDL: 5.0 psf BCDL: 5.0 psf MWFRS Parallel Dist: 0 to h/2 C&C Dist a: 4.90 ft Loc. from endwall: Any GCp: 0.18 Wind Duration: 1.60	Snow Criteria (Pg,Pf in PSF) Pg: 10.0 Ct: 1.1 CAT: II Pf: 7.7 Ce: 1.0 Lu: - Cs: 1.00 Snow Duration: 1.15 Building Code: IRC 2015 TPI Std: 2014 Rep Fac: Varies by Ld Case FT/RT:20(0)/10(0) Plate Type(s): WAVE	Defl/CSI Criteria PP Deflection in loc L/defl L/# VERT(LL): 0.093 D 999 360 VERT(CL): 0.191 D 999 240 HORZ(LL): 0.024 C - - HORZ(TL): 0.049 C - - Creep Factor: 2.0 Max TC CSI: 0.623 Max BC CSI: 0.908 Max Web CSI: 0.869 VIEW Ver: 23.02.01A.1204.17	▲ Maximum Reactions (lbs) Gravity Loc R+ / R- / Rh / Rw / U / RL Non-Gravity B 1190 - / - / /657 /311 /146 O 2141 - / - / /1100 /426 - / K 987 - / - / /522 /226 - / Wind reactions based on C&C B Brg Wid = 3.5 Min Req = 1.5 (Truss) O Brg Wid = 3.5 Min Req = 2.5 (Truss) K Brg Wid = 3.5 Min Req = 1.5 (Truss) Bearings B, O, & K Fcperp = 565psi. Members not listed have forces less than 375# Maximum Top Chord Forces Per Ply (lbs) Chords Tens.Comp. Chords Tens. Comp.
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Lumber
Top chord: 2x6 SP #2; T2,T3 2x4 SP SS;
Bot chord: 2x6 SP #2; B3 2x4 SP #2;
Webs: 2x4 SP #3; W2,W9,W13 2x4 SP #2;

Bracing
(a) 1X4 #3SRB or better continuous lateral restraint to be equally spaced. Attach with (2) 8d Box or Gun nails(0.113"x2.5",min.). Restraint material to be supplied and attached at both ends to a suitable support by erection contractor.
(a) or scab reinforcement may be used in lieu of CLR restraint. substitute (1) scab for (1) CLR and (2) scabs for (2) CLR'S where shown. Scab reinforcement to be same size, species, grade, and 80% length of web member. Attach with 0.128x3" gun nails @ 6" oc.

Loading
Truss passed check for 20 psf additional bottom chord live load in areas with 42"-high x 24"-wide clearance.
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IRC-15 section 301.5.
Live loads applied in combination per ASCE 7 sec. 2.4.1 use 0.75 factor for multiple live loads.
Truss designed for unbalanced snow loads.
Truss supports 400# mech unit; unit centered at 38-8-0; supported by BC; unit width 4-0-0; supported by 2 trusses.

Wind
Member design based on both MWFRS and C&C.

Additional Notes
WARNING: Furnish a copy of this DWG to the installation contractor. Special care must be taken during handling, shipping and installation of trusses. See "WARNING" note below.
Top Chord overhang(s) may be field trimmed.
This truss is repaired for a split web as shown.
Shore Truss and any supported spans in proper position as repair is being made.

B - C	425	-1816	F - G	408	-31
C - D	564	-2151	H - I	199	-501
D - E	526	-1641	I - J	341	-1455
E - F	531	-1666	J - K	249	-1518

Maximum Bot Chord Forces Per Ply (lbs)
Chords Tens.Comp. Chords Tens. Comp.
B - T 1535 -254 N - M 715 -43
T - S 1539 -252 M - K 1231 -132

Maximum Web Forces Per Ply (lbs)
Webs Tens.Comp. Webs Tens. Comp.
C - S 698 -174 P - O 375 -1205
S - D 201 -446 O - H 75 -1160
S - Q 2100 -392 H - N 920 -70
D - Q 51 -569 N - I 121 -453
E - Q 155 -383 I - M 783 -121
Q - F 1754 -352 M - J 147 -419
F - P 321 -995

+ Field applied 2X6 SPF #2 (OR BETTER) new member. Cut to fit tight in plane of truss.
Note 1 new member(s).

***(1) NEW 1/2"X(SIZE SHOWN) TRIMMED TO FIT APA RATED 32/16 EXP 1 SHEATHING (PLYWOOD OR OSB) ATTACH ONE GUSSET TO ONE FACE OF THE TRUSS WITH 0.113"x2.0" NAILS SPACED 1.5" OC. STAGGERED THROUGHOUT ALL MEMBERS, WITHOUT SPLITTING THE LUMBER.



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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

