MiTek®

RE: P241267-02 - Roof - HM Lot 178 Repair

MiTek, Inc.
16023 Swingley Ridge Rd.
Chesterfield, MO 63017
314.434.1200

Site Information:

Project Customer: Clayton Properties   Project Name: Charlotte - Craftsman
Lot/Block: 178   Subdivision: Highland Meadows
Model:
Address: 2754 SW 11th Terr
City: Lee's Summit   State: MO

General Truss Engineering Criteria & Design Loads (Individual Truss Design Drawings Show Special Loading Conditions):

Design Code: IRC2018/TPI2014

Wind Code: ASCE 7-16

Wind Speed: 115 mph

Roof Load: 45.0 psf

Mean Roof Height (feet): 35

Design Program: MiTek 20/20 8.6

Design Method: MWFRS (Envelope)/C-C hybrid Wind ASCE 7-16

Floor Load: N/A psf

Exposure Category: C

No.	Seal#	Truss Name	Date
1	I72933273	B4	4/23/25

The truss drawing(s) referenced above have been prepared by
MiTek USA, Inc. under my direct supervision based on the parameters
provided by Premier Building Supply (Springhill, KS)20300 W 207th Street.

Truss Design Engineer's Name: Delbert, Ryan

My license renewal date for the state of Missouri is December 31, 2025.

IMPORTANT NOTE: The seal on these truss component designs is a certification
that the engineer named is licensed in the jurisdiction(s) identified and that the
designs comply with ANSI/TPI 1. These designs are based upon parameters
shown (e.g., loads, supports, dimensions, shapes and design codes), which were
given to MiTek or TRENCO.   Any project specific information included is for MiTek's or
TRENCO's customers file reference purpose only, and was not taken into account in the
preparation of these designs. MiTek or TRENCO has not independently verified the
applicability of the design parameters or the designs for any particular building. Before use,
the building designer should verify applicability of design parameters and properly
incorporate these designs into the overall building design per ANSI/TPI 1, Chapter 2.

Seal: STATE OF MISSOURI — RYAN A. DELBERT — NUMBER PE-2021029156 — PROFESSIONAL ENGINEER

April 23,2025

Premier Building Supply (Springhill, KS), Spring Hills, KS - 66083,

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DAMAGED PLATES AT JOINTS 4 & 15
MAXIMUM 12" LONG BREAK IN WEB 3-17 STARTING APPROXIMATELY AT 34" BELOW JOINT3
MAXIMUM 24" LONG BREAK IN BOTTOM CHORD 16-17 STARTING APPROXIMATELY AT 30" FROM JOINT 16

ATTACH 7/16" OSB GUSSET (7/16" RATED SHEATHING 24/16 EXP 1)
TO EACH FACE OF TRUSS WITH (0.131" X 2.5" MIN.) NAILS PER THE FOLLOWING NAIL SCHEDULE:
2 X 3'S - 2 ROWS, 2 X 4'S - 3 ROWS, 2 X 6'S AND LARGER - 4 ROWS: SPACED @ 4" O.C.
NAILS TO BE DRIVEN FROM BOTH FACES. STAGGER SPACING FROM FRONT TO BACK FACE
FOR A NET 2" O.C. SPACING IN EACH COVERED TRUSS MEMBER. USE 2" MEMBER END DISTANCE.

APPLY 2 X 4 X _ SPF/DF/SP NO.2 SCAB(S) TO EACH FACE OF TRUSS CENTERED
ON DAMAGE/SPLICE. ATTACH WITH (0.131" X 3") NAILS PER THE FOLLOWING NAIL
SCHEDULE: 2 x 3'S - 1 ROW, 2 x 4'S - 2 ROWS:
SPACED @ 4" O.C. STAGGER NAIL SPACING FROM FRONT FACE AND BACK FACE
FOR A NET 2" O.C SPACING IN THE TRUSS. USE 2" MEMBER END DISTANCE.

Scale = 1:72.6

Plate Offsets (X, Y): [1:Edge,0-3-0], [10:Edge,0-0-0]

Loading	(psf)	Spacing	2-0-0	CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL (roof)	25.0	Plate Grip DOL	1.15	TC	0.97	Vert(LL)	-0.19	16-17	>999	240	MT20	244/190
TCDL	10.0	Lumber DOL	1.15	BC	0.86	Vert(CT)	-0.39	16-17	>600	180		
BCLL	0.0	Rep Stress Incr	YES	WB	0.77	Horz(CT)	0.03	10	n/a	n/a		
BCDL	10.0	Code	IRC2018/TPI2014	Matrix-S							Weight: 198 lb	FT = 20%

LUMBER
TOP CHORD   2x4 SP No.2
BOT CHORD   2x4 SP No.2
WEBS   2x3 SPF No.2 *Except* 14-4,17-1:2x4 SP
                    No.2
SLIDER   Right 2x4 SP No.2 -- 3-0-11
BRACING
TOP CHORD   Structural wood sheathing directly applied,
                    except end verticals.
BOT CHORD   Rigid ceiling directly applied or 10-0-0 oc
                    bracing,   Except:
                    6-0-0 oc bracing: 14-16.
WEBS   1 Row at midpt   4-14, 6-14, 3-17
REACTIONS (size)   10= Mechanical, 14=0-5-8,
                    17=0-5-8
                    Max Horiz 17=-275 (LC 10)
                    Max Uplift 10=-148 (LC 13), 14=-337 (LC 13),
                    17=-128 (LC 12)
                    Max Grav 10=745 (LC 26), 14=2183 (LC 1),
                    17=749 (LC 25)

FORCES   (lb) - Maximum Compression/Maximum
                    Tension
TOP CHORD   1-3=-649/223, 3-4=-749/281, 4-5=0/627,
                    5-6=-83/676, 6-7=-489/203, 7-8=-874/275,
                    8-10=-1034/231, 1-17=-506/203
BOT CHORD   16-17=-211/747, 14-16=-209/292,
                    12-14=0/356, 11-12=0/451, 10-11=-103/804
WEBS   3-16=-565/365, 4-16=-246/861,
                    4-14=-1205/180, 6-14=-970/282, 6-12=0/332,
                    7-12=-227/33, 7-11=-119/500, 8-11=-313/225,
                    3-17=-294/86, 5-14=-402/256

2) Wind: ASCE 7-16; Vult=115mph (3-second gust)
    Vasd=91mph; TCDL=6.0psf; BCDL=6.0psf; h=35ft;
    Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope)
    exterior zone and C-C Exterior(2E) 0-1-12 to 5-1-12,
    Interior (1) 5-1-12 to 15-8-0, Exterior(2R) 15-8-0 to
    20-8-0, Interior (1) 20-8-0 to 29-8-0, Exterior(2R) 29-8-0
    to 34-9-9, Interior (1) 34-9-9 to 40-0-0 zone; cantilever
    left and right exposed ; end vertical left and right
    exposed;C-C for members and forces & MWFRS for
    reactions shown; Lumber DOL=1.60 plate grip
    DOL=1.60
3) Provide adequate drainage to prevent water ponding.
4) This truss has been designed for a 10.0 psf bottom
    chord live load nonconcurrent with any other live loads.
5) Bearings are assumed to be: Joint 17 SP No.2 crushing
    capacity of 565 psi, Joint 14 SP No.2 crushing capacity
    of 565 psi.
6) Refer to girder(s) for truss to truss connections.
7) Provide mechanical connection (by others) of truss to
    bearing plate capable of withstanding 148 lb uplift at
    joint 10, 337 lb uplift at joint 14 and 128 lb uplift at joint
    17.
8) This truss is designed in accordance with the 2018
    International Residential Code sections R502.11.1 and
    R802.10.2 and referenced standard ANSI/TPI 1.

LOAD CASE(S) Standard

April 23,2025

NOTES
1) Unbalanced roof live loads have been considered for
    this design.

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16023 Swingley Ridge Rd.
Chesterfield, MO 63017
314.434.1200 / MiTek-US.com

Symbols

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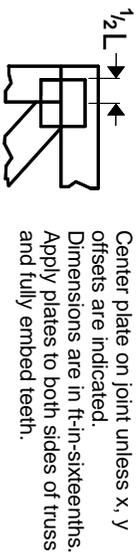
Center plate on joint unless x, y offsets are indicated.
Dimensions are in ft-in-sixteenths.
Apply plates to both sides of truss and fully embed teeth.

½L
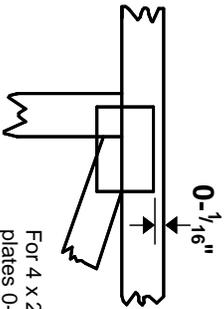
0-¹⁄₁₆"

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

=

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

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

PLATE SIZE

4 X 4

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

LATERAL BRACING LOCATION

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

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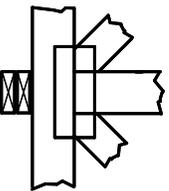
Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number/letter where bearings occur. Min size shown is for crushing only.

Industry Standards:

ANSI/TPI1: National Design Specification for Metal Plate Connected Wood Truss Construction.

DSB-22: Design Standard for Bracing.

BCSI: Building Component Safety Information, Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.

Numbering System

6-4-8 dimensions shown in ft-in-sixteenths
(Drawings not to scale)

3 Joint ID typ.

TOP CHORD

TOP CHORDS

WEBS

BOTTOM CHORDS

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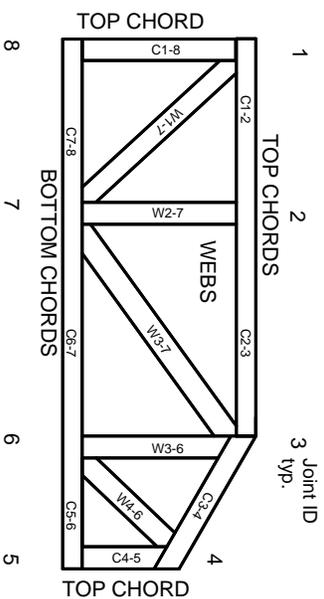
JOINTS ARE GENERALLY NUMBERED/LETTERED CLOCKWISE AROUND THE TRUSS STARTING AT THE JOINT FARTHEST TO THE LEFT.

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

Product Code Approvals

ICC-ES Reports:

ESR-1988, ESR-2362, ESR-2685, ESR-3282
ESR-4722, ESL-1388

Design General Notes

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

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

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⚠ General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI.

2. Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative T or I bracing should be considered.

3. Never exceed the design loading shown and never stack materials on inadequately braced trusses.

4. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.

5. Cut members to bear tightly against each other.

6. Place plates on each face of truss at each joint and embed fully. Knots and wane at joint locations are regulated by ANSI/TPI 1.

7. Design assumes trusses will be suitably protected from the environment in accord with ANSI/TPI 1.

8. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.

9. Unless expressly noted, this design is not applicable for use with fire retardant, preservative treated, or green lumber.

10. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.

11. Plate type, size, orientation and location dimensions indicated are minimum plating requirements.

12. Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.

13. Top chords must be sheathed or purlins provided at spacing indicated on design.

14. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.

15. Connections not shown are the responsibility of others.

16. Do not cut or alter truss member or plate without prior approval of an engineer.

17. Install and load vertically unless indicated otherwise.

18. Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.

19. Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.

20. Design assumes manufacture in accordance with ANSI/TPI 1 Quality Criteria.

21. The design does not take into account any dynamic or other loads other than those expressly stated.

MiTek Engineering Reference Sheet: MII-7473 rev. 1/2/2023