

RE: P250045-05 - Roof - Repair H3

Site Information:

Project Customer: Clayton Properties Project Name: Woodbridge - Craftsman Lot/Block: 158

Subdivision: Highland Meadows

Model:

Address: 2709 SW 12th St

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

No. Seal# Truss Name Date I72939181 H3 4/23/25 MiTek, Inc.

16023 Swingley Ridge Rd. Chesterfield, MO 63017

314.434.1200

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

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: Lu, Jie

My license renewal date for the state of Missouri is December 31, 2026.

**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.



April 24,2025

1 of 1

Qty Job Truss Truss Type Ply Roof - Repair H3 172939181 P250045-05 H3 - REPAIR 2 Hip Girder 1 Job Reference (optional) Run: 8.95 S 8.63 Sep 26 2024 Print: 8.630 S Sep 26 2024 MiTek Industries, Inc. Tue Apr 22 12:49:18 Premier Building Supply (Springhill, KS), Spring Hills, KS - 66083 Page: 1 ID:58PIRvWyxFoJ8fZwELHY5xzZlru-RfC?PsB70Hq3NSgPqnL8w3uITXbGKWrCDoi7J4zJC?f 10-11-2 5-0-6 9-8-14 15-7-9 20-8-0 5-0-6 4-8-8 1-2-3 4-8-8 5-0-6 REPAIR: REMOVE 1 1/2 " FROM TOP EDGE OF FLAT TOP CHORD 3 - 4. INSTALL (2 PLY) 2 X 6 SP NO.2 CUT TO FIT TIGHT. ATTACH PLIES WITH TWO ROWS OF (0.131 " X 3 ") NAILS SPACED 9 " O.C. LUMBER AND CONNECTOR PLATES (SHOWN DASHED) TO BE CUT CLEANLY AND ACCURATELY AND THE REMAINING PLATE(S) MUST BE FULLY EMBEDDED AND UNDISTURBED. 8-0-0 3 TRIM CORNER(S) OF NEW 2 X 6 MEMBER TO AVOID DAMAGE TO EXISTING CONNECTOR PLATES 24" X 96" 3-10-1 4x6 ı AT JOINT 3 & 4. 3x4 × 5 3-10-15 3-9-6 3-9-6 13 15 6 16 17 12 18 11 19 10 9 8 3x4 =3x4 = 3x8 -3x4 || LUS24 4x8 = LUS24 LUS24 4x8 = 1US24 LUS24 ATTACH 3/4 " PLYWOOD OR OSB GUSSET ( 23/32 " RATED SHEATHING 32/16 EXP 1 ) TO ONE FACE OF TRUSS WITH ( 0.131 " X 3.5 " ) NAILS PER THE FOLLOWING NAIL SCHEDULE: 2 X 2 - 1 ROW, 2 X 4'S - 3 ROWS, 2 X 6'S - 4 ROWS: SPACED @ 2 " O.C. INTO EACH COVERED TRUSS MEMBER, USE 2 " MEMBER END DISTANCE 9-7-10 11-0-6 15-7-9 20-8-0 Scale = 1:41.5 1-4-11 5-0-6 4-7-4 4-7-4 5-0-6 CSI DEFL I/defI L/d **PLATES** GRIP Loading (psf) Spacing 2-0-0 in (loc) TCLL (roof) 25.0 Plate Grip DOL 1.15 TC 0.86 Vert(LL) -0.09 10-12 >999 240 MT20 118/123 BC TCDI 10.0 Lumber DOL 1 15 0.70 Vert(CT) -0.1510-12 >999 180 **BCLL** 0.0 Rep Stress Incr NO WB 0.35 Horz(CT) 0.04 6 n/a **BCDL** 10.0 Code IRC2018/TPI2014 Matrix-S Weight: 186 lb FT = 20%

LUMBER

TOP CHORD 2x4 SP No.2

**BOT CHORD** 1 1/2" x 5 1/2" 2.0E Microllam® LVL \*Except\*

11-6:2x6 SPF No.2 WFBS 2x3 SPF No.2

**BRACING** 

TOP CHORD Structural wood sheathing directly applied or

4-10-9 oc purlins, except

2-0-0 oc purlins (6-0-0 max.): 3-4. Rigid ceiling directly applied or 10-0-0 oc

**BOT CHORD** bracing.

REACTIONS (size) 1=0-3-8, 6=0-3-8 Max Horiz 1=-66 (LC 17)

Max Uplift 1=-559 (LC 8), 6=-328 (LC 9)

Max Grav 1=2836 (LC 1), 6=1501 (LC 1)

**FORCES** (lb) - Maximum Compression/Maximum

Tension

TOP CHORD 1-2=-5457/1345, 2-3=-3175/883,

3-4=-2771/825, 4-5=-2985/838,

5-6=-3279/908, 6-7=0/2

**BOT CHORD** 1-12=-1196/5027. 10-12=-1196/5027.

9-10=-671/2936, 8-9=-791/2986, 6-8=-791/2986

WFBS 3-10=-280/1222, 3-9=-625/180, 4-9=-175/712, 2-10=-2279/566,

5-9=-257/269, 2-12=-236/1574, 5-8=0/161

#### NOTES

1) 2-ply truss to be connected together with 10d (0.131"x3") nails as follows:

Top chords connected as follows: 2x4 - 1 row at 0-9-0

Bottom chords connected as follows: 2x6 - 2 rows staggered at 0-9-0 oc.

Web connected as follows: 2x3 - 1 row at 0-9-0 oc. All loads are considered equally applied to all plies, except if noted as front (F) or back (B) face in the LOAD CASE(S) section. Ply to ply connections have been provided to distribute only loads noted as (F) or (B), unless otherwise indicated.

- Unbalanced roof live loads have been considered for this design
- 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 5-0-6, Interior (1) 5-0-6 to 9-8-14, Exterior (2E) 9-8-14 to 10-11-2, Exterior(2R) 10-11-2 to 17-11-15, Interior (1) 17-11-15 to 21-7-0 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
- Provide adequate drainage to prevent water ponding.
- This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads
- Bearings are assumed to be: Joint 1 Trus Joist® LVL 2.0 E crushing capacity of 750 psi, Joint 6 SPF No.2 crushing capacity of 425 psi.
- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 559 lb uplift at joint 1 and 328 lb uplift at joint 6.
- 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.
- 10) Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.
- 11) Use Simpson Strong-Tie LUS24 (4-SD9112 Girder, 2-SD9212 Truss, Single Ply Girder) or equivalent spaced at 2-0-0 oc max. starting at 2-0-12 from the left end to 4-0-12 to connect truss(es) to back face of bottom chord.
- 12) Use Simpson Strong-Tie LUS24 (4-10d Girder, 2-10d Truss) or equivalent spaced at 2-0-0 oc max. starting at 6-0-12 from the left end to 9-6-5 to connect truss(es) to back face of bottom chord.
- 13) Fill all nail holes where hanger is in contact with lumber. LOAD CASE(S) Standard
- Dead + Roof Live (balanced): Lumber Increase=1.15, Plate Increase=1.15

Uniform Loads (lb/ft)

Vert: 1-3=-70, 3-4=-70, 4-7=-70, 1-6=-20

Concentrated Loads (lb)

Vert: 10=-224 (B), 16=-879 (B), 17=-879 (B), 18=-224 (B), 19=-224 (B)



WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 1/2/2023 BEFORE USE.

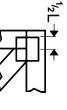
Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not

a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see ANSI/TP11 Quality Criteria, and DSB-22 available from Truss Plate Institute (www.tpinst.org) and BCSI Building Component Safety Information available from the Structural Building Component Association (www.sbcscomponents.com)

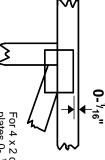


#### Symbols

## 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.



For 4 x 2 orientation, locate plates 0- <sup>1</sup>/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 × 4

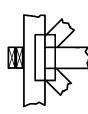
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

### 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.

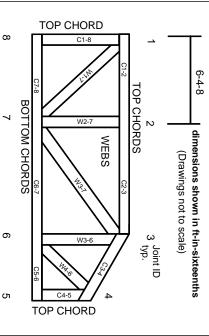
### Industry Standards:

National Design Specification for Metal Plate Connected Wood Truss Construction. Design Standard for Bracing.

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

ANSI/TPI1: DSB-22:

## **Numbering System**



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



# **General Safety Notes**

### Failure to Follow Could Cause Property Damage or Personal Injury

- Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI
- Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative Tor I bracing should be considered.

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

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- Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
- Cut members to bear tightly against each other.

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- 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.
- Design assumes trusses will be suitably protected from the environment in accord with ANSI/TPI 1.
- Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.

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

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- Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
- Plate type, size, orientation and location dimensions indicated are minimum plating requirements.
- Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
- Top chords must be sheathed or purlins provided at spacing indicated on design.
- 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.
- Do not cut or alter truss member or plate without prior approval of an engineer.
- Install and load vertically unless indicated otherwise.
- Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.
- Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.
- Design assumes manufacture in accordance with ANSI/TPI 1 Quality Criteria.
- The design does not take into account any dynamic or other loads other than those expressly stated.