



MiTek USA, Inc.  
16023 Swingley Ridge Rd  
Chesterfield, MO 63017  
314-434-1200

Re: 220025  
Lot 131 MN

The truss drawing(s) referenced below have been prepared by MiTek USA, Inc. under my direct supervision based on the parameters provided by Wheeler - Waverly.

Pages or sheets covered by this seal: I52289277 thru I52289279

My license renewal date for the state of Missouri is December 31, 2023.

Missouri COA: Engineering 001193



June 3, 2022

Sevier, Scott ,Engineer

**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.

Job	Truss	Truss Type	Qty	Ply	Lot 131 MN	Units: 1.0	152289277
220025	B5A	Hip	1	1		Eng: TH	
Job Reference (optional)							

Wheeler Lumber, Waverly, KS - 66871,

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Scale = 1:85.8

REPAIR: BREAK IN WEB 5-17 AT 24" FROM JOINT 5.

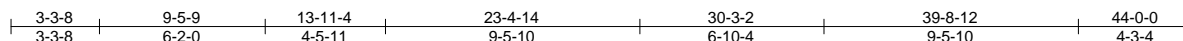
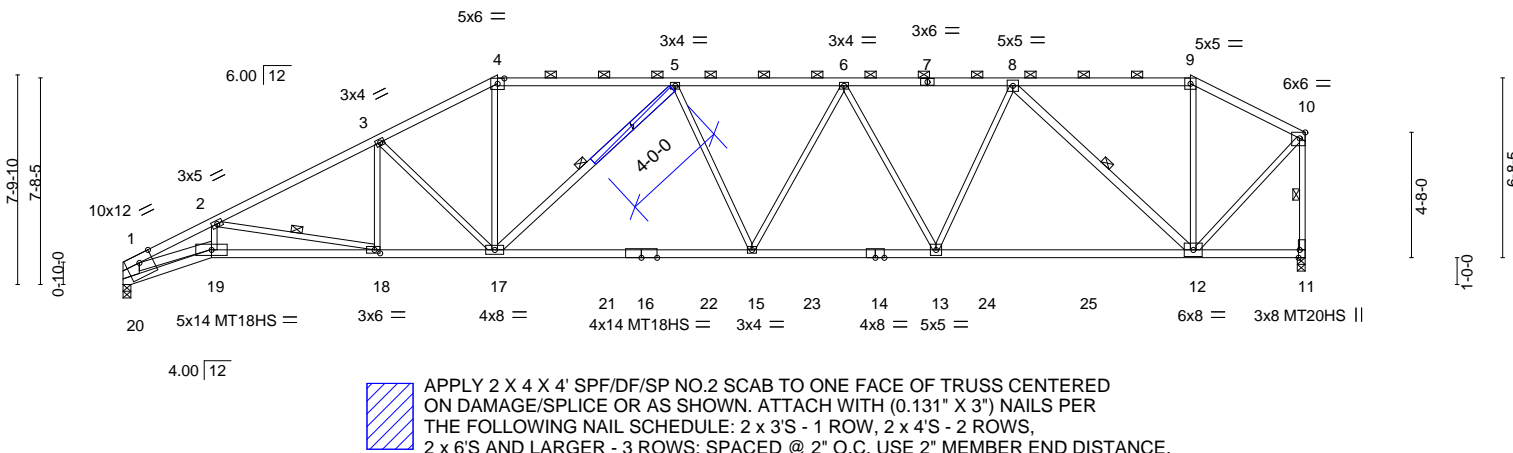


Plate Offsets (X,Y)-- [4:0-3-0,0-2-7], [10:0-2-8,Edge], [11:0-3-8,Edge], [18:0-2-8,0-1-8]							
<b>LOADING</b> (psf)	<b>SPACING-</b>	2-0-0	<b>CSI.</b>	<b>DEFL.</b>	in (loc)	l/defl	L/d
TCLL 25.0	Plate Grip DOL	1.15	TC 0.94	Vert(LL)	-0.50 15-17	>999	360
TCDL 10.0	Lumber DOL	1.15	BC 0.73	Vert(CT)	-0.88 15-17	>597	240
BCLL 0.0 *	Rep Stress Incr	YES	WB 0.96	Horz(CT)	0.28 11	n/a	n/a
BCDL 10.0	Code IRC2018/TPI2014		Matrix-S	Wind(LL)	0.22 15-17	>999	240
				<b>PLATES</b>	<b>GRIP</b>		
				MT20	197/144		
				MT20HS	148/108		
				MT18HS	197/144		
				Weight: 183 lb	FT = 10%		

#### LUMBER-

TOP CHORD 2x4 SPF No.2 \*Except\*  
4-7: 2x4 SPF 2100F 1.8E  
BOT CHORD 2x4 SPF 2100F 1.8E \*Except\*  
19-20: 2x4 SPF No.2  
WEBS 2x3 SPF No.2 \*Except\*  
5-17,8-12: 2x4 SPF No.2, 1-20: 2x8 SP DSS  
1-19: 2x4 SPF 2100F 1.8E

#### BRACING-

TOP CHORD Structural wood sheathing directly applied, except end verticals, and 2-0-0 oc purlins (2-10-14 max.): 4-9.  
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing, Except: 8-10-14 oc bracing: 18-19  
9-10-15 oc bracing: 15-17.  
WEBS 1 Row at midpt 2-18, 5-17, 8-12, 10-11

#### REACTIONS.

(size) 20=0-3-8, 11=0-3-8  
Max Horz 20=232(LC 5)  
Max Uplift 20=173(LC 8), 11=236(LC 5)  
Max Grav 20=2075(LC 2), 11=2108(LC 2)

#### FORCES. (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

TOP CHORD 1-2=-5549/662, 2-3=-4088/473, 3-4=-3536/467, 4-5=-3098/433, 5-6=-3628/525,  
6-8=-3142/451, 8-9=-1269/217, 9-10=-1451/223, 1-20=-2061/246, 10-11=-2100/245  
BOT CHORD 19-20=-252/296, 18-19=-780/4861, 17-18=-552/3611, 15-17=-613/3603, 13-15=-584/3476,  
12-13=-477/2711  
WEBS 2-19=-70/690, 2-18=-1276/333, 3-18=-16/411, 3-17=-698/232, 4-17=-95/1272,  
5-17=-815/259, 6-15=-14/333, 6-13=-728/174, 8-13=-62/1063, 8-12=-2008/379,  
9-12=0/381, 1-19=-551/4698, 10-12=-243/1873

#### NOTES-

- 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=25ft; Cat. II; Exp C; Enclosed; MWFRS (envelope) gable end zone; cantilever left and right exposed; end vertical left and right exposed; Lumber DOL=1.60 plate grip DOL=1.60
- Provide adequate drainage to prevent water ponding.
- All plates are MT20 plates unless otherwise indicated.
- This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
- \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-6-0 tall by 2-0-0 wide will fit between the bottom chord and any other members, with BCDL = 10.0psf.
- Bearing at joint(s) 20 considers parallel to grain value using ANSI/TPI 1 angle to grain formula. Building designer should verify capacity of bearing surface.
- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 173 lb uplift at joint 20 and 236 lb uplift at joint 11.
- 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.
- Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.



June 3,2022

**WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 5/19/2020 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/TPI1 Quality Criteria, DSB-89 and BCSI Building Component Safety Information** available from Truss Plate Institute, 2670 Crain Highway, Suite 203 Waldorf, MD 20601



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Chesterfield, MO 63017

Job	Truss	Truss Type	Qty	Ply	Lot 131 MN	Units: 1.0	I52289278
220025	B6A	Hip	1	1		Eng: TH	

Wheeler Lumber, Waverly, KS - 66871,

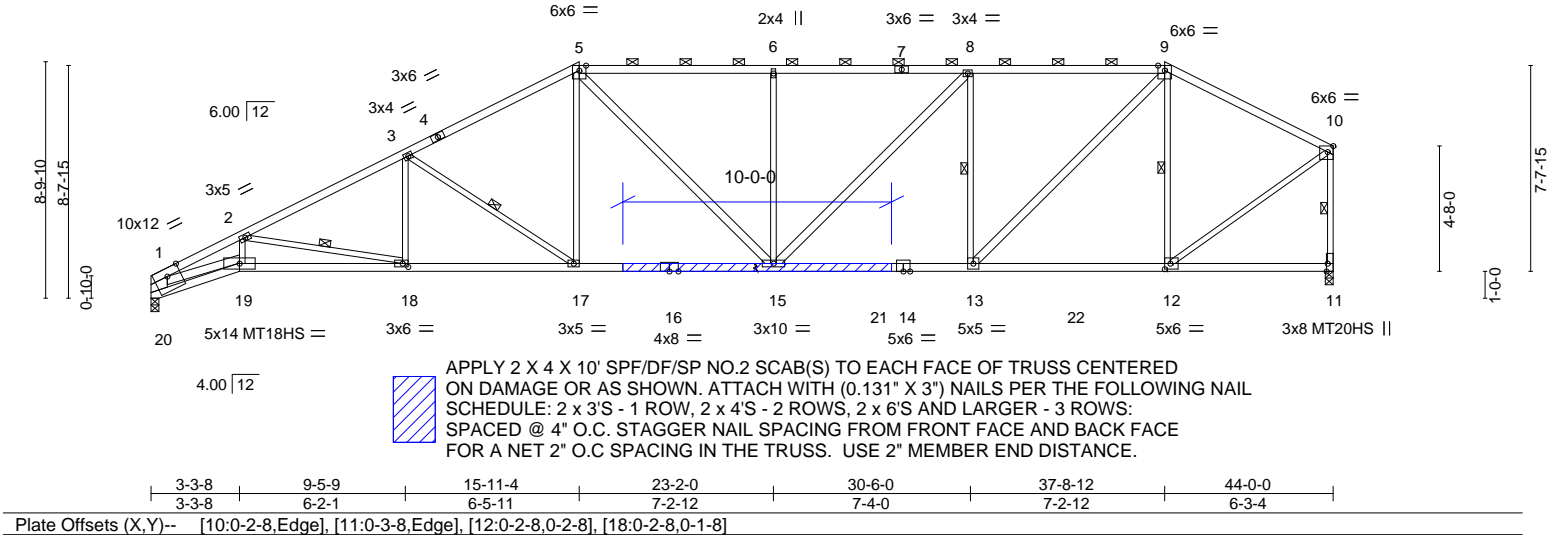
8.430 s Aug 16 2021 MiTek Industries, Inc. Wed Jun 1 15:58:26 2022 Page 1

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Scale = 1:85.8

REPAIR: BREAK IN THE BOTTOM CHORD 6" TO THE LEFT OF JOINT 15.



<b>LOADING</b> (psf)	<b>SPACING-</b> 2-0-0	<b>CSI.</b>	<b>DEFL.</b> in (loc) l/defl L/d	<b>PLATES</b>	<b>GRIP</b>
TCLL 25.0	Plate Grip DOL 1.15	TC 0.84	Vert(LL) -0.35 15-17 >999 360	MT20	197/144
TCDL 10.0	Lumber DOL 1.15	BC 0.97	Vert(CT) -0.61 15-17 >862 240	MT20HS	148/108
BCLL 0.0 *	Rep Stress Incr YES	WB 0.77	Horz(CT) 0.26 11 n/a n/a	MT18HS	197/144
BCDL 10.0	Code IRC2018/TPI2014	Matrix-S	Wind(LL) 0.20 15-17 >999 240	Weight: 191 lb	FT = 10%

**LUMBER-**

TOP CHORD 2x4 SPF No.2 \*Except\*  
5-7,7-9: 2x4 SPF 2100F 1.8E

BOT CHORD 2x4 SPF No.2 \*Except\*  
16-19,11-14: 2x4 SPF 2100F 1.8E

WEBS 2x3 SPF No.2 \*Except\*  
5-15,8-15,9-13: 2x4 SPF No.2, 1-20: 2x8 SP DSS  
1-19: 2x4 SPF 2100F 1.8E

**BRACING-**

TOP CHORD Structural wood sheathing directly applied, except end verticals, and 2-0-0 oc purlins (3-10-0 max.): 5-9.

BOT CHORD Rigid ceiling directly applied or 2-2-0 oc bracing.

WEBS 1 Row at midpt 2-18, 3-17, 8-13, 9-12, 10-11

**REACTIONS.** (size) 20=0-3-8, 11=0-3-8  
Max Horz 20=245(LC 5)  
Max Uplift 20=193(LC 8), 11=186(LC 4)  
Max Grav 20=2076(LC 2), 11=2115(LC 2)

**FORCES.** (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

TOP CHORD 1-2=-5531/644, 2-3=-4110/402, 3-5=-3310/402, 5-6=-3182/450, 6-8=-3180/449, 8-9=-2742/384, 9-10=-1793/239, 1-20=-2060/258, 10-11=-2032/217

BOT CHORD 19-20=-263/318, 18-19=-726/4844, 17-18=-502/3635, 15-17=-421/2880, 13-15=-422/2740, 12-13=-220/1557

WEBS 2-19=-73/677, 2-18=-1233/334, 3-18=0/484, 3-17=-895/271, 5-17=-68/781, 5-15=-198/597, 6-15=-570/229, 8-15=-94/643, 8-13=-1012/295, 9-13=-289/1731, 9-12=-875/223, 1-19=-530/4670, 10-12=-223/1889

- NOTES-**
- 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=25ft; Cat. II; Exp C; Enclosed; MWFRS (envelope) gable end zone; cantilever left and right exposed; end vertical left and right exposed; Lumber DOL=1.60 plate grip DOL=1.60
  - Provide adequate drainage to prevent water ponding.
  - All plates are MT20 plates unless otherwise indicated.
  - This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
  - \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-6-0 tall by 2-0-0 wide will fit between the bottom chord and any other members, with BCDL = 10.0psf.
  - Bearing at joint(s) 20 considers parallel to grain value using ANSI/TPI 1 angle to grain formula. Building designer should verify capacity of bearing surface.
  - Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 193 lb uplift at joint 20 and 186 lb uplift at joint 11.
  - 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.
  - Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.



June 3,2022

**WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 5/19/2020 BEFORE USE.**

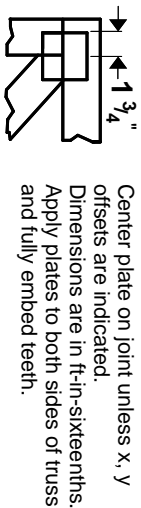
Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall 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/TPI1 Quality Criteria, DSB-89 and BCSI Building Component Safety Information** available from Truss Plate Institute, 2670 Crain Highway, Suite 203 Waldorf, MD 20601

**MiTek**

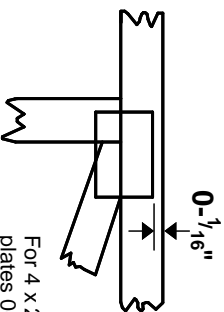
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Chesterfield, MO 63017

## Symbols

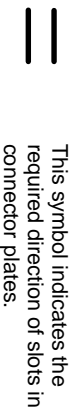
### PLATE LOCATION AND ORIENTATION



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- 1/16\" from outside edge of truss.



\* Plate location details available in **MiTek 20/20** software or upon request.

### PLATE SIZE

4 X 4

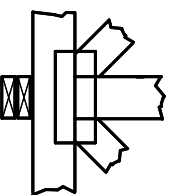
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

### 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



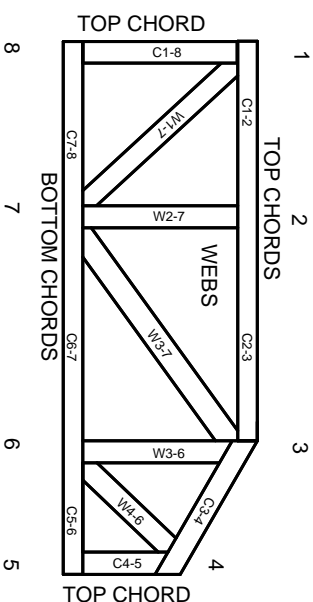
Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number where bearings occur. Min size shown is for crushing only.

### Industry Standards:

ANSI/TP1: National Design Specification for Metal Plate Connected Wood Truss Construction.  
DSB-89: Building Component Safety Information, Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

## Numbering System

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



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-1311, ESR-1352, ESR1988  
ER-3907, ESR-2362, ESR-1397, ESR-3282

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

Lumber design values are in accordance with ANSI/TP1 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. 5/19/2020



## 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 Tor 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/TP1 1.
7. Design assumes trusses will be suitably protected from the environment in accord with ANSI/TP1 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/TP1 1 Quality Criteria.
21. The design does not take into account any dynamic or other loads other than those expressly stated.