

Trenco  
818 Soundside Rd  
Edenton, NC 27932

Re: ACL  
GREAT SOUTHER HOMES/ARIEL-II

The truss drawing(s) referenced below have been prepared by Truss Engineering Co. under my direct supervision based on the parameters provided by Builders FirstSource (Apex,NC).

Pages or sheets covered by this seal: I66176869 thru I66176869

My license renewal date for the state of North Carolina is December 31, 2024.

North Carolina COA: C-0844



June 12,2024

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Gilbert, Eric

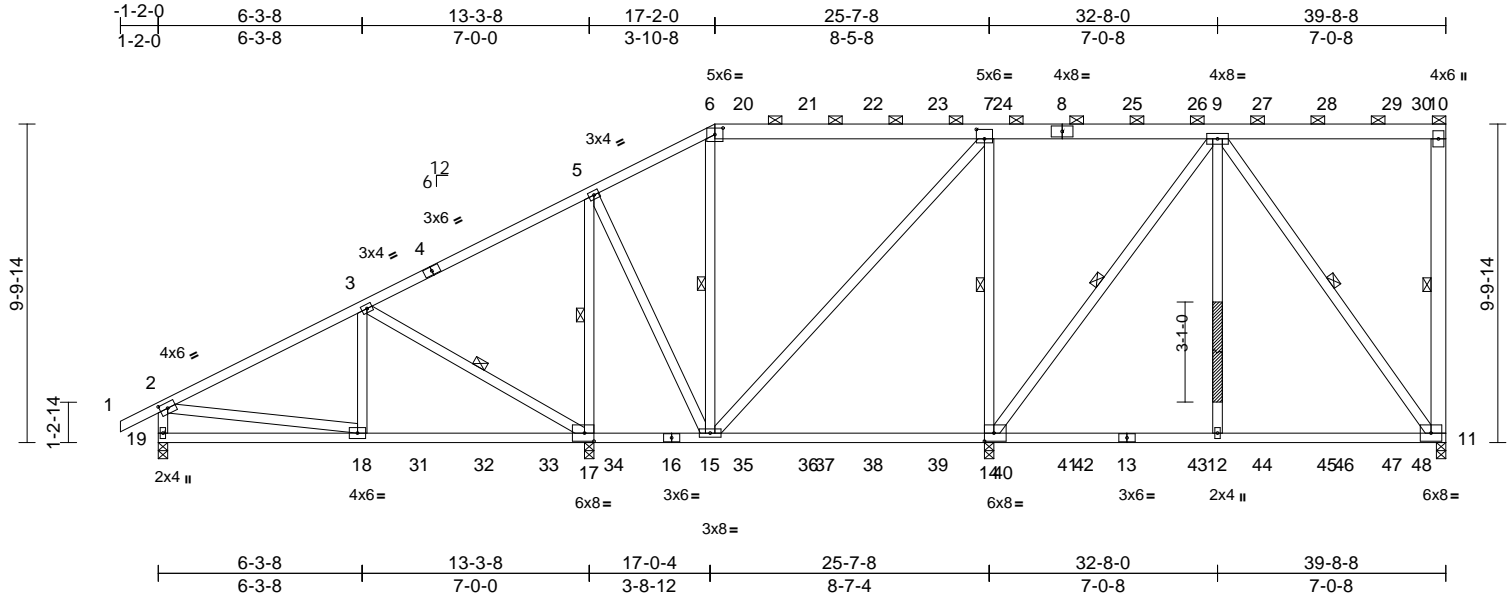
**IMPORTANT NOTE:** The seal on these truss component designs is a certification that the engineer named is licensed in the jurisdiction(s) identified and that the designs comply with ANSI/TPI 1. These designs are based upon parameters shown (e.g., loads, supports, dimensions, shapes and design codes), 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 ACL	Truss A14-1PL	Truss Type Half Hip Girder	Qty 1	Ply 1	GREAT SOUTHER HOMES/ARIEL-II Job Reference (optional)	I66176869
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Builders FirstSource (Apex, NC), Apex, NC - 27523,

Run: 8.63 S Apr 26 2024 Print: 8.630 S Apr 26 2024 MiTek Industries, Inc. Tue Jun 11 13:47:53  
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Page: 1



Scale = 1:71

Plate Offsets (X, Y): [2:0-2-15,0-2-0], [6:0-3-0,0-2-7], [7:0-3-0,0-3-8], [14:0-3-8,0-3-0], [17:0-3-8,0-3-0]

Loading	(psf)	Spacing	2-0-0	CSI	DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP	
TCLL (roof)	20.0	Plate Grip DOL	1.15	TC	0.84	Vert(LL)	-0.19	14-15	>779	360	MT20	244/190
TCDL	10.0	Lumber DOL	1.15	BC	0.79	Vert(CT)	-0.39	14-15	>384	240		
BCLL	0.0*	Rep Stress Incr	NO	WB	0.82	Horz(CT)	-0.02	11	n/a	n/a		
BCDL	10.0	Code	IRC2015/TPI2014	Matrix-MS		Wind(LL)	0.38	14-15	>387	240	Weight: 311 lb	FT = 20%

**LUMBER**

TOP CHORD 2x4 SP No.2 \*Except\* 6-8,8-10:2x6 SP No.2

BOT CHORD 2x4 SP No.1

WEBS 2x4 SP No.3 \*Except\* 10-11:2x6 SP No.2, 7-15:2x4 SP No.2

**BRACING**

TOP CHORD Structural wood sheathing directly applied or 6-0-0 oc purlins, except end verticals, and 2-0-0 oc purlins (6-0-0 max.): 6-10.

BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

WEBS 1 Row at midpt 10-11, 6-15, 7-14, 9-14, 9-11, 5-17, 3-17

**REACTIONS** (size) 11=0-3-8, 14=0-3-8, 17=0-3-8, 19=0-3-8

Max Horiz 19=387 (LC 5)

Max Uplift 11=1303 (LC 5), 14=2125 (LC 5), 17=1148 (LC 8), 19=153 (LC 8)

Max Grav 11=1562 (LC 17), 14=2833 (LC 17), 17=2012 (LC 15), 19=666 (LC 1)

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

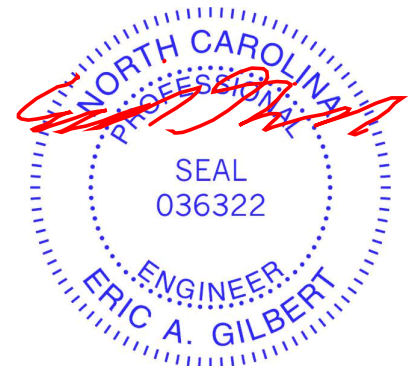
TOP CHORD 1-2=0/35, 2-3=-756/201, 3-5=-174/304, 5-6=-301/306, 6-7=-236/309, 7-9=-95/163, 9-10=-164/130, 10-11=-501/450, 2-19=-626/196

BOT CHORD 18-19=-401/161, 17-18=-367/631, 15-17=-328/158, 14-15=-164/80, 12-14=-541/599, 11-12=-541/599

WEBS 6-15=-465/349, 7-15=-290/325, 7-14=-1282/1147, 9-14=-998/662, 9-12=-390/694, 9-11=-918/753, 5-17=-1161/762, 5-15=-556/834, 3-18=-41/475, 3-17=-914/423, 2-18=-129/570

- 1) Repair Condition: web has 0-1-0 long break centered at 2-6-0 above joint 12.
- 2) Apply 37" long 2x4 SP No.2 scab to front side(s) of truss centered on damage located 2-6-0 above joint 12 with 2 row(s) of 10d (0.131"x3") nails spaced 2" o.c. from front face. Minimum 0-3-0 end distance.
- 3) N/A
- 4) Unbalanced roof live loads have been considered for this design.
- 5) Wind: ASCE 7-10; Vult=130mph (3-second gust) Vasd=103mph; TCDL=6.0psf; BCDL=6.0psf; h=32ft; Cat. II; Exp B; Enclosed; MWFRS (envelope) exterior zone; cantilever left and right exposed; end vertical left and right exposed; Lumber DOL=1.60 plate grip DOL=1.60
- 6) Provide adequate drainage to prevent water ponding.
- 7) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
- 8) \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members, with BCDL = 10.0psf.
- 9) All bearings are assumed to be SP No.1 crushing capacity of 565 psi.
- 10) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 1303 lb uplift at joint 11, 153 lb uplift at joint 19, 2125 lb uplift at joint 14 and 1148 lb uplift at joint 17.
- 11) This truss is designed in accordance with the 2015 International Residential Code sections R502.11.1 and R802.10.2 and referenced standard ANSI/TPI 1.
- 12) Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.

**NOTES**



June 12, 2024

Continued on page 2

**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/TPI 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.sbcacomponents.com)



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Page: 2

13) Hanger(s) or other connection device(s) shall be provided sufficient to support concentrated load(s) 224 lb down and 132 lb up at 6-0-12, 172 lb down and 180 lb up at 18-0-12, 172 lb down and 180 lb up at 20-0-12, 172 lb down and 180 lb up at 22-0-12, 172 lb down and 180 lb up at 24-0-12, 172 lb down and 180 lb up at 26-0-12, 172 lb down and 180 lb up at 28-0-12, 172 lb down and 180 lb up at 30-0-12, 172 lb down and 180 lb up at 32-0-12, 172 lb down and 180 lb up at 34-0-12, 172 lb down and 180 lb up at 36-0-12, and 172 lb down and 180 lb up at 38-0-12, and 179 lb down and 181 lb up at 38-11-12 on top chord, and 130 lb down and 49 lb up at 6-0-12, 85 lb down and 38 lb up at 8-0-12, 99 lb down and 52 lb up at 10-0-12, 165 lb down and 127 lb up at 12-0-12, 129 lb down and 106 lb up at 14-0-12, 141 lb down and 132 lb up at 16-0-12, 135 lb down and 132 lb up at 18-0-12, 135 lb down and 132 lb up at 20-0-12, 135 lb down and 132 lb up at 22-0-12, 135 lb down and 132 lb up at 24-0-12, 135 lb down and 132 lb up at 26-0-12, 135 lb down and 132 lb up at 28-0-12, 135 lb down and 132 lb up at 30-0-12, 135 lb down and 132 lb up at 32-0-12, 135 lb down and 132 lb up at 34-0-12, 135 lb down and 132 lb up at 36-0-12, and 135 lb down and 132 lb up at 38-0-12, and 138 lb down and 129 lb up at 38-11-12 on bottom chord. The design/selection of such connection device(s) is the responsibility of others.

14) In the LOAD CASE(S) section, loads applied to the face of the truss are noted as front (F) or back (B).

**LOAD CASE(S)** Standard

1) Dead + Roof Live (balanced): Lumber Increase=1.15, Plate Increase=1.15

Uniform Loads (lb/ft)

Vert: 1-2=-60, 2-6=-60, 6-10=-60, 11-19=-20

Concentrated Loads (lb)

Vert: 8=-105 (F), 16=-58 (F), 3=-184 (F), 18=-100 (F), 13=-38 (F), 20=-105 (F), 21=-105 (F), 22=-105 (F), 23=-105 (F), 24=-105 (F), 25=-105 (F), 26=-105 (F), 27=-105 (F), 28=-105 (F), 29=-105 (F), 30=-120 (F), 31=-54 (F), 32=-55 (F), 33=-127 (F), 34=-58 (F), 35=-38 (F), 36=-38 (F), 38=-38 (F), 39=-38 (F), 40=-38 (F), 41=-38 (F), 43=-38 (F), 44=-38 (F), 45=-38 (F), 47=-38 (F), 48=-43 (F)

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

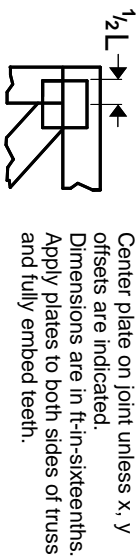
Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall 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/TP1 Quality Criteria and DSB-22** available from Truss Plate Institute ([www.tpinst.org](http://www.tpinst.org)) and **BCSI Building Component Safety Information** available from the Structural Building Component Association ([www.sbcacomponents.com](http://www.sbcacomponents.com))



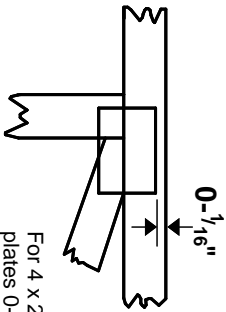
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# Symbols

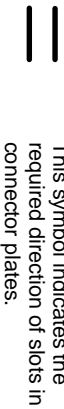
## PLATE LOCATION AND ORIENTATION



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.



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

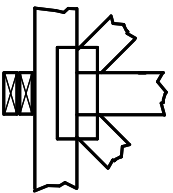
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

## 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.

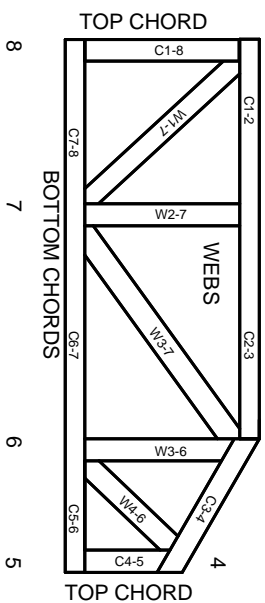
## Industry Standards:

ANSI/TP1: 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



1 TOP CHORDS  
2 Joint ID typ.



**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/TP1 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 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.

**MITek**

ENGINEERING BY  
**TRENGO**  
A MITek Affiliate

MITek Engineering Reference Sheet: MIL-7473 rev. 1/2/2023