# Reading a **MiTek** Engineering Drawing



| Job | Truss | Truss Type | Qty | Ply | |
|---|---|---|---|---|---|
| **1** 1234 | **2** SHOP1 | **3** CATHEDRAL | **4** 1 | **5** 1 | **6** |

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Scale = 1:67.1

**1** Job name

**2** Truss label

**3** Truss type

**4** Truss quantity

**5** Number of plies

**6** Job description

**7** Software version

**8a** **Cumulated dimensions of top chord** – panel lengths are added together along the top chord of truss (feet-inches-sixteenths)

**8b** **Panel lengths of the top chord** – each section represents the horizontal distance between the centerline of two consecutive panel points along the top chord (feet-inches-sixteenths)

**9** Drawing scale of the truss

**10** **Top chord slope** – inches of vertical rise for each 12 inches of horizontal run

**11** **Top chord member label (if shown)** – identification label used to distinguish pieces

**12** **Truss height** – the height of the truss from the top of the bearing to the top of the top chord (trusses with multiple levels of top chord will have multiple truss height dimensions) (feet-inches-sixteenths)

**13** **Plate size, orientation and type** – plate size in inches. The two lines denotes the direction of the plate

**14** Continuous lateral bracing location

**15** Web member label (if shown)

**16** **Heel height** – the height from the top of bearing to the top of the top chord at the outside edge of the bearing (feet-inches-sixteenths)

**17** **Bottom chord slope** – inches of vertical rise for each 12 inches of horizontal run

**18** **Bearing** – a structural support, usually a wall or beam that is designated to carry the truss reaction loads to the foundation

**19a** **Cumulated dimensions of bottom chord** – panel lengths are added together along the bottom chord of truss (feet-inches-sixteenths)

**19b** **Panel lengths of the bottom chord** – each section represents the horizontal distance between the centerline of two consecutive panel points along the bottom chord (feet-inches-sixteenths)

**20** **Plate offsets (X, Y) –** this section lists any horizontal and/or vertical plate offsets (in inches) and the location they occur

**21** **Design loading** (PSF–pounds per square foot)

**22** **Spacing on center** – feet-inches-sixteenths

**23** **Design code / Design standard**

**24** **Duration of Load** for plate and lumber design and **Repetitive Use Factor**

**25** **CSI** – maximum Combined Stress Index for top chords, bottom chords and webs

**26** **Deflection-** maximum deflection expected in a member (inches), **Location** of maximum deflection, maximum **Span to deflection ratio** expected in a member

**27** **Span to deflection ratios** – input allowables

**28** **MiTek plate allowables (PSI) / estimated truss weight / fabrication tolerance**

**29** **Lumber requirements**

**30** **Required bracing** for all members

**31** **Reaction** (pounds), **Bearing size -** input and minimum required (if shown)

**32** **Maximum Uplift** and/or **Maximum Horizontal Reaction** if applicable and **Maximum Gravity** if shown

**33** **Maximum member forces** - Tension (+), Compression (-)

**34** Notes
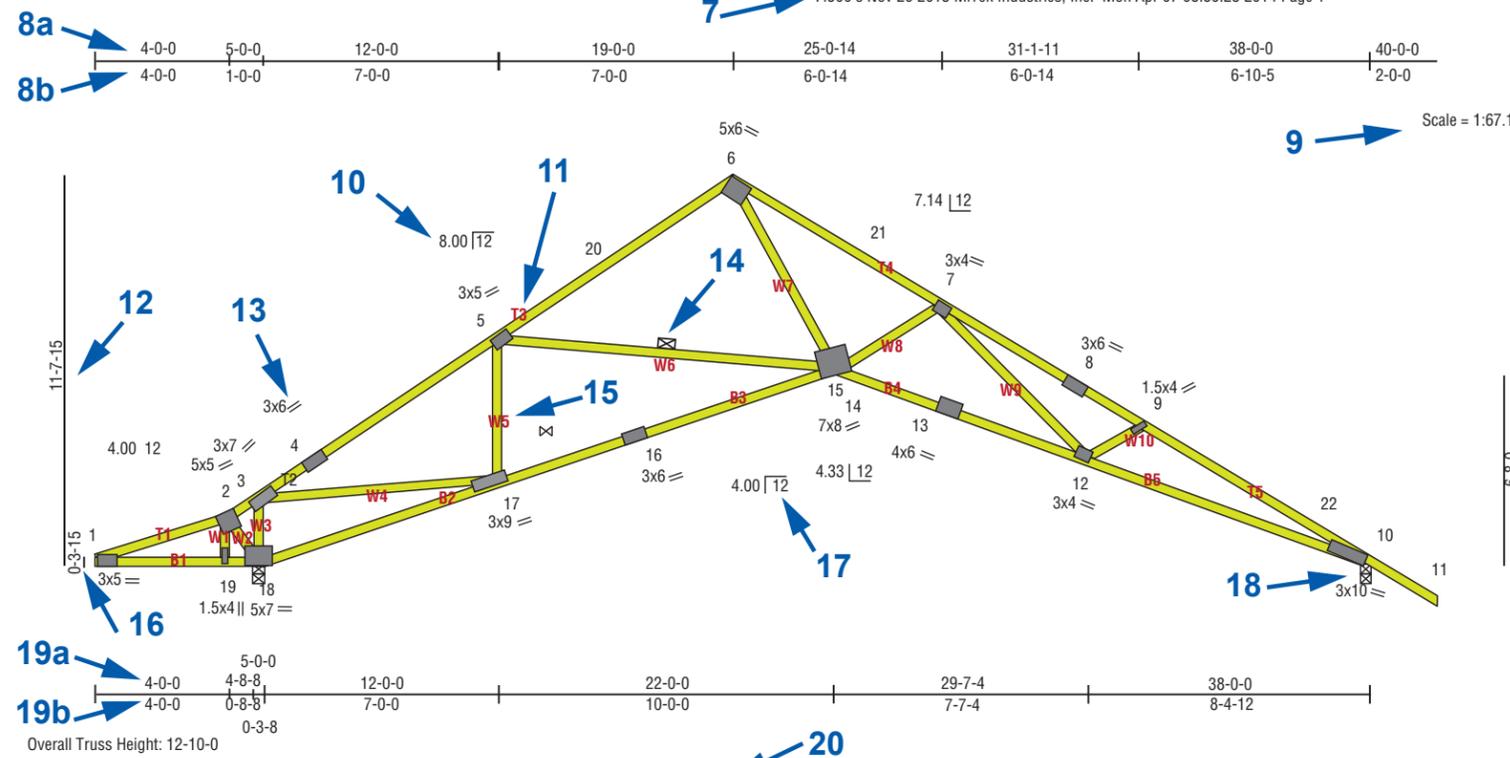
**35** Additional loads / load cases

Overall Truss Height: 12-10-0

Plate Offsets (X, Y): [6:0-3-7,0-2-8], [10:0-1-2,0-0-5], [13:0-3-0,0-0-0], [17:0-2-12,0-1-3], [18:0-5-4,0-2-3]

| LOADING (psf) | | SPACING 2-0-0 | | CSI | | DEFL | In | (loc) | l/defl | L/d | PLATES | GRIP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TCLL | 20.0 | Plates Increase 1.15 | | TC | 0.84 | Vert(LL) | -0.40 | 12-14 | >996 | 240 | MT20 | 244/190 |
| TCDL | 10.0 | **22** Lumber Increase 1.15 **24** | | TC | | **26** Vert(TL) | -1.16 | 15-17 | >341 | 180 | | |
| BCLL | 0.0 **21** | Rep Stress Incr YES | **25** | BC | 1.00 | Horz(TL) | 0.74 | 10 | n/a | n/a | | |
| BCDL | 10.0 | **23** Code IBC2006/TPI2002 | | WB | 0.85 | | | | | | | |
| | | | | | (Matrix) | | | | | | Weight: 193 lb FT = 20% | |

**LUMBER** **29**
TOP CHORD  2x4 SP No.2 *Except*
    T5: 2x4 SP No.1
BOT CHORD  2x4 SP  No.2 *Except*
    B5: 2x4 SP No.1
WEBS  2x4 SP  No.3 *Except*  **31**
    W7: 2x4 SP No.2

**BRACING** **30**
TOP CHORD  Structural wood sheathing directly applied or 2-2-0 oc purlins.
BOT CHORD  Rigid ceiling directly  applied or 1-4-12 oc bracing.
WEBS  1 row at midpoint  5-15

MiTeck recommends that Stabilizers and required cross bracing be installed during truss erection. in accordance with Stabilizer Installation guide.

REACTIONS  (lbs/size) 18=1740/0-3-8 (min. 0-2-1), 10=1417/0-3-8 (min. 0-1-8)
  Max Horz  18=-196(LC 7)  **32**
  Max Uplift 18=-63(LC 9), 10=-30(LC9)

FORCES (lb) -  Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD  1-2=-196/456, 2-3=-245/545, 3-4=-2012/0, 4-5=1896/0, 5-20=-1899/0, 6-20=-1770/0, 6-21=-3060/0, 7-8=-4287/0, 8-9=-4379/0,
  9-22=-4595/0, 10-22=-4699/0  **33**
BOT CHORD  1-19=-394/201, 18-19=-402/211, 17-18=-511/288, 16-17=-511/288, 16-17=0/1658, 15-16=0/1693, 14-15=0/2999, 13-14=0/336, 12-13=0/3318, 10-12=0/4180
WEBS  3-18=-1603/163, 3-17=-23/2049, 5-17=-372/127, 6-15=0/2474, 7-14=-624/141, 7-12=-26/842, 9-12=-271/129

NOTES  **34**
1)  Unbalanced roof live loads have been considered for this design.
2)  Wind: ASCE 7-05; 90mph; TCDL=6.0psf, BCDL=6.0psf; h=25ft; B=45ft; L=38ft; eave=5ft; Cat. II; Exp B; enclosed; MWFRS (all heights) and C-C Exterior(2) 0-0-0 to 4-0-0, Interior (1) 4-0-0
  19-0-0, Exterior(2) 19-0-0 to 22-9-10 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)  This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
4)  *This truss has been designed for a live load of 20.0 psf 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.
5)  Bearing at joint(s) 10 considers parallel to grain value using ANSI/TPI 1 angle to grain formula. Building designer should verify capacity of bearing surface.
6)  Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 63 lb uplift at joint 18 and 30 lb uplift at joint 10.
7)  This truss is designed to accordance with the 2006 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
8)  "Semi-rigid pitchbreaks including heels" Member end fixity model was used in the analysis and design of this truss.

LOAD CASE(S) Standard  **35**