TrusSteel Truss Calculation Explanation

Truss Loading Information Section:

A

```
 [ALPINE][AISI 2016 - IBC][Truss Label ][Job Name]
[TCLL  20.0][TCDL  10.0][BCDL  10.0][BCLL   0.0][ASI 1.00][OC 48.0][NM 1][SOFFIT   2.0]
```

Truss Bearing Information Section:

B

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=====Bearings===[X-Loc][Y-Loc][VReact][HReact][Size] ======
[    0.26][10.00][  3690][ -449h][0.50]    [37.75][10.00][  4091][    0h][0.50]
```

Truss Chord Information Section:

C D E F G H I

EndPts	MaxT	MaxC	AXL	BND	SHR	CRIP	CSI	COMB	GLC	Length	Grade	Brace
0- 2	118	0	0.01	0.15	0.03	0.00	0.15	SB	1	27.67	54TSC4.00	Diaph
2- 5	238	-136	0.00	0.15	0.02	0.00	0.15	AB	1	27.41	54TSC4.00	Diaph
5- 6	873	-4900	0.26	0.15	0.11	0.00	0.39	AB	5	3.90	54TSC4.00	Diaph
6- 8	938	-5838	0.34	0.63	0.06	0.00	0.91	AB	5	81.89	54TSC4.00	Diaph
8-10	1022	-5573	0.29	0.58	0.05	0.00	0.86	AB	5	2.67	54TSC4.00	Diaph
10-13	895	-4717	0.30	0.61	0.10	0.00	0.89	AB	5	111.37	54TSC4.00	Diaph
13-16	929	-4575	0.37	0.60	0.08	0.00	0.97	AB	5	92.04	43TSC4.00	Diaph
16-17	1164	-5376	0.37	0.09	0.17	0.00	0.45	AB	5	1.39	43TSC4.00	Diaph
17-18	1263	-5343	0.37	0.11	0.19	0.00	0.47	AB	5	1.57	43TSC4.00	Diaph
18-20	857	-3392	0.21	0.64	0.09	0.00	0.82	AB	6	82.15	43TSC4.00	Diaph
20-22	857	-3392	0.23	0.02	0.17	0.00	0.25	AB	5	0.27	43TSC4.00	Diaph
22-24	844	-4069	0.32	0.50	0.08	0.00	0.77	AB	5	87.69	43TSC4.00	Diaph
24-25	419	-1572	0.11	0.71	0.45	0.00	0.88	SB	5	3.36	43TSC4.00	Diaph
25-27	288	0	0.02	0.93	0.08	0.00	0.93	SB	5	42.68	43TSC4.00	Diaph
27-29	5	-0	0.00	0.00	0.00	0.00	0.00	SB	5	0.92	43TSC4.00	Diaph
1- 3	0	-0	0.00	0.00	0.00	0.00	0.00	AB	1	0.75	28TSC4.00	@ 48"
3- 4	0	-0	0.00	0.09	0.16	0.00	0.17	SB	5	2.39	28TSC4.00	@ 48"
4- 7	3945	-707	0.31	0.25	0.05	0.00	0.53	AB	29	94.50	28TSC4.00	@ 48"
7- 9	5179	-721	0.50	0.10	0.07	0.00	0.51	AB	5	4.37	28TSC4.00	@ 48"
9-11	5179	-721	0.50	0.10	0.05	0.00	0.47	AB	5	30.00	28TSC4.00	@ 48"
11-12	5179	-721	0.44	0.48	0.09	0.00	0.83	AB	5	69.56	33TSC4.00	@ 48"
12-14	3842	-376	0.32	0.73	0.28	0.00	0.91	AB	5	2.44	33TSC4.00	@ 48"
14-15	3842	-376	0.32	0.73	0.42	0.00	0.91	AB	5	2.45	33TSC4.00	@ 48"
15-19	5343	-951	0.45	0.91	0.11	0.00	0.91	SB	5	162.45	33TSC4.00	@ 48"
19-21	3392	-505	0.29	0.48	0.51	0.00	0.71	AB	5	2.39	33TSC4.00	@ 48"
21-23	3392	-505	0.29	0.79	0.27	0.00	0.93	AB	5	3.79	33TSC4.00	@ 48"
23-26	0	-1	0.00	0.79	0.11	0.00	0.79	SB	5	77.92	33TSC4.00	@ 48"
26-28	0	-1	0.00	0.19	0.03	0.00	0.19	SB	5	38.25	33TSC4.00	@ 39"
28-30	0	-0	0.00	0.00	0.00	0.00	0.00	AB	19	0.75	33TSC4.00	@ 39"

Truss Web Information Section:

J K L M N O P

EndPts	MaxT	MaxC	AXL	BND	SHR	CRIP	CSI	COMB	GLC	Length	Grade	Brace
2- 3	440	-461	0.12	0.00	0.00	0.00	0.00	AB	5	4.93	33C1.5x1.5	
4- 5	759	-4995	0.66	0.00	0.00	0.00	0.00	AB	5	28.02	47W1.5x2.5	
6- 7	1280	-15	0.36	0.00	0.00	0.00	0.00	AB	5	71.43	33C1.5x1.5	
8- 9	193	-66	0.09	0.00	0.00	0.00	0.00	AB	5	55.55	33C1.5x1.5	
10-12	400	-1549	0.59	0.00	0.00	0.00	0.00	AB	5	112.53	33Z1.5x2.50	T BRC
13-14	2549	-457	0.50	0.00	0.00	0.00	0.00	AB	25	106.55	33Z1.5x1.62	
15-16	791	-1940	0.63	0.00	0.00	0.00	0.00	AB	5	103.22	33Z1.5x2.50	1 CLB
18-19	575	-2513	0.81	0.00	0.00	0.00	0.00	AB	5	102.75	33Z1.5x2.50	1 CLB
20-21	990	0	0.27	0.00	0.00	0.00	0.00	AB	5	64.77	33C1.5x1.5	
23-24	3585	-534	0.88	0.00	0.00	0.00	0.00	AB	5	79.16	33W1.5x1.5	
25-26	845	-4159	0.68	0.00	0.00	0.00	0.00	AB	5	24.05	33Z1.5x2.50	
27-28	75	0	0.02	0.00	0.00	0.00	0.00	AB	20	4.97	33C1.5x1.5	

Truss Analog Node Information Section:

Q R S T U V

Node	X-Loc	Y-Loc	deflY(L)	deflY(T)	dxL	dxT	MaxShear	GLC
0	-2.00	9.53	0.00 L/999	0.00 L/999	0.00	0.00	0	0
1	0.00	10.15	0.00 L/999	0.00 L/999	0.00	0.00	0	0
2	0.06	10.56	0.00 L/999	0.00 L/999	0.00	0.00	-244	24
3	0.06	10.15	0.00 L/999	0.00 L/999	0.00	0.00	463	5
4	0.26	10.15	0.00 L/999	0.00 L/999	0.00	0.00	471	5
5	2.11	11.59	0.05 L/999	0.09 L/999	0.03	0.06	-978	5
6	2.40	11.73	0.06 L/999	0.11 L/999	0.04	0.06	-950	5
7	8.14	10.15	0.17 L/999	0.29 L/999	0.02	0.03	-180	5
8	8.50	14.78	0.17 L/999	0.30 L/999	0.08	0.13	496	4
9	8.50	10.15	0.17 L/999	0.30 L/999	0.02	0.04	-165	5
10	8.70	14.88	0.18 L/999	0.31 L/999	0.08	0.14	-843	5
11	11.00	10.15	0.18 L/999	0.32 L/999	0.03	0.05	-28	24
12	16.80	10.15	0.22 L/999	0.38 L/999	0.04	0.08	1014	5
13	17.00	19.03	0.20 L/999	0.35 L/999	0.08	0.13	634	5
14	17.00	10.15	0.23 L/999	0.39 L/999	0.04	0.08	-1527	5
15	17.20	10.15	0.23 L/999	0.41 L/999	0.05	0.08	-1519	5
16	23.86	15.60	0.25 L/999	0.43 L/999	0.04	0.07	-1469	6
17	23.96	15.55	0.24 L/999	0.42 L/999	0.04	0.07	-1463	6
18	24.09	15.55	0.24 L/999	0.42 L/999	0.04	0.07	1348	5
19	30.74	10.15	0.16 L/999	0.28 L/999	0.08	0.15	1835	5
20	30.94	15.55	0.14 L/999	0.25 L/999	0.03	0.06	1167	5
21	30.94	10.15	0.15 L/999	0.26 L/999	0.08	0.15	1843	5
22	30.96	15.55	0.14 L/999	0.24 L/999	0.03	0.06	1168	5
23	31.26	10.15	0.13 L/999	0.22 L/999	0.09	0.15	866	5
24	37.50	12.28	0.02 L/999	0.04 L/999	0.08	0.14	3106	5
25	37.75	12.16	0.01 L/999	0.01 L/999	0.09	0.15	3146	5
26	37.75	10.15	0.00 L/999	0.00 L/999	0.09	0.15	-70	21
27	40.93	10.57	0.04 L/999	0.05 L/702	0.13	0.22	-73	5
28	40.94	10.15	0.04 L/999	0.05 L/709	0.09	0.15	72	20
29	41.00	10.53	0.04 L/999	0.06 L/703	0.13	0.22	0	1
30	41.00	10.15	0.04 L/999	0.06 L/708	0.09	0.15	-0	5

W

Gravity Load Case:

```
      (a)        (b)      (c)      (d)
[STD.AUTO.LOAD][OC 48.00][ASI 1.00][NM 1]
Load case: 1  User Modified: No    (g)    (h)
(e)  40 PLF @ -2.0 to   40 @ 17.0 [y=23.2][  0%]
     40 PLF @ 17.0 to   40 @ 24.0 [y=23.2][  0%]
     40 PLF @ 24.0 to   40 @ 31.0 [y=23.2][  0%]
     40 PLF @ 31.0 to   40 @ 41.0 [y=23.2][  0%]
      8 PLF @ -2.0 to    8 @  0.0 [y= 2.4][  0%]
      8 PLF @ 38.0 to    8 @ 41.0 [y= 2.4][  0%]
     40 PLF @  0.0 to   40 @ 11.0 [y= 2.4][  0%]
     40 PLF @ 11.0 to   40 @ 38.0 [y= 2.4][  0%]
     80 PLF @ -2.0 to   80 @ 17.0 [y=25.9][100%]
     80 PLF @ 17.0 to   80 @ 24.0 [y=25.9][100%]
     80 PLF @ 24.0 to   80 @ 31.0 [y=25.9][100%]
     80 PLF @ 31.0 to   80 @ 41.0 [y=25.9][100%]
(f)  Brg.# 1 Vert.R=  3286.8 # Hor.R=     0.0#
     Brg.# 2 Vert.R=  3428.8 # Hor.R=    -0.0#
==========================================
```

Snow Load Cases:

```
[1st Unb. Load Left][OC 48.00][ASI 1.00][NM 1]
Load case: 3  User Modified: No
     0 PLF @ -2.0 to   40 @ 17.0 [y=22.2][  0%]
    40 PLF @ 17.0 to   40 @ 24.0 [y=22.2][  0%]
    40 PLF @ 24.0 to   40 @ 31.0 [y=22.2][  0%]
    40 PLF @ 31.0 to   40 @ 41.0 [y=22.2][  0%]
     8 PLF @ -2.0 to    8 @  0.0 [y= 4.4][  0%]
    20 PLF @ -2.0 to   20 @ 17.0 [y=22.2][100%]
    68 PLF @ 17.0 to   68 @ 24.0 [y=22.2][100%]
    61 PLF @ 17.0 to   61 @ 21.9 [y=22.2][100%]
    20 PLF @ 24.0 to   20 @ 31.0 [y=22.2][100%]
    68 PLF @ 31.0 to   68 @ 41.0 [y=22.2][100%]
    60 PLF @ 31.0 to   60 @ 40.7 [y=22.2][100%]
     8 PLF @ 38.0 to    8 @ 41.0 [y= 4.4][  0%]
    40 PLF @  0.0 to   40 @ 11.0 [y= 4.4][  0%]
    40 PLF @ 11.0 to   40 @ 38.0 [y= 4.4][  0%]
Brg.# 1 Vert.R=  2387.1 # Hor.R=     0.0#
Brg.# 2 Vert.R=  3448.1 # Hor.R=    -0.0#
==========================================
```

Some Snow Load Cases Have Been Deleted For Illustration Purposes

```
==========================================
```

Wind Load Cases:

```
[MWFRS ASCE Perp/L++][OC 48.00][ASI 1.00][NM 1]
Load case: 7  User Modified: No
 -21 PLF @ 24.0 to  -21 @ 31.0   [y=15.7][100%]
   2 PLF @  0.0 to    2 @ 17.0   [y=19.2][100%]
  57 PLF @ -2.0 to   57 @  0.0   [y=10.7][100%]
 -44 PLF @ 17.0 to  -44 @ 24.0   [y=15.7][100%]
 -44 PLF @ 31.0 to  -44 @ 41.0   [y=10.7][100%]
  22 PLF @ -2.0 to   22 @ 24.0   [y=22.2][  0%]
  20 PLF @ 24.0 to   20 @ 31.0   [y=22.2][  0%]
  22 PLF @ 31.0 to   22 @ 41.0   [y=22.2][  0%]
  20 PLF @  0.0 to   20 @ 41.0   [y= 4.4][  0%]
Brg.# 1 Vert.R=   737.8 # Hor.R=  -448.5#
Brg.# 2 Vert.R=   286.8 # Hor.R=    -0.0#
==========================================
```

Some Wind Load Cases Have Been Deleted For Illustration Purposes

```
==========================================
[C&C ASCE WindHLt-+][OC 48.00][ASI 1.00][NM 1]
Load case: 24  User Modified: No
 -75 PLF @ 31.0 to  -75 @ 35.1   [y=13.6][100%]
 -63 PLF @ 21.1 to  -63 @ 24.0   [y=15.7][100%]
 -63 PLF @  2.1 to  -63 @ 17.0   [y=19.2][100%]
-128 PLF @ -2.0 to -128 @  0.0   [y=10.7][100%]
 -75 PLF @  0.0 to  -75 @  2.1   [y=11.7][100%]
 -75 PLF @ 17.0 to  -75 @ 21.1   [y=17.1][100%]
-101 PLF @ 24.0 to -101 @ 31.0   [y=15.7][100%]
 -63 PLF @ 35.1 to  -63 @ 41.0   [y=10.7][100%]
  22 PLF @ -2.0 to   22 @ 24.0   [y=22.2][  0%]
  20 PLF @ 24.0 to   20 @ 31.0   [y=22.2][  0%]
  22 PLF @ 31.0 to   22 @ 41.0   [y=22.2][  0%]
  20 PLF @  0.0 to   20 @ 41.0   [y= 4.4][  0%]
==========================================
```

Load Case Explanations:

(a) - Load case name
(b) - Truss spacing (inches)
(c) - Allowable Stress Increase - Not applicable to CFS trusses
(d) - Number of Truss Plies
(e) - Beginning and end locations of loads applied to truss
(f) - Load case truss reactions
(g) - Graphical vertical location of load
(h) - 0% indicates dead load, 100% indicates other principal loads

Content Legend:

Truss Loading Information Section:

Row A

Truss Bearing Information Section:

Row B

Truss Chord Member Information Section:

Column C = Member endpoints
Column D = Maximum tension and compression member forces from all load cases (lbs.)
Column E = Stress indexes for members
Column F = Load case number from load list "W" that produces the highest stress index
Column G = Analog length of member (in.)
Column H = Member size
Column I = Member restraint assumption used for analysis

Truss Web Member Information Section:

Column J = Member endpoints
Column K = Maximum tension and compression member forces from all load cases (lbs.)
Column L = Stress indexes for members
Column M = Load case number from load list "W" that produces the highest stress index
Column N = Analog length of member (in.)
Column O = Member size
Column P = Member restraint assumption used for analysis

Truss Analog Node Information Section:

Column Q = Analog node number
Column R = X and Y coordinates of node
Column S = Live load and total load vertical deflection of node (in.)
Column T = Live load and total load horizontal deflection of node (in.)
Column U = Maximum shear force at the node (lbs.)
Column V = Load case number from load list "W" that produces the highest shear force

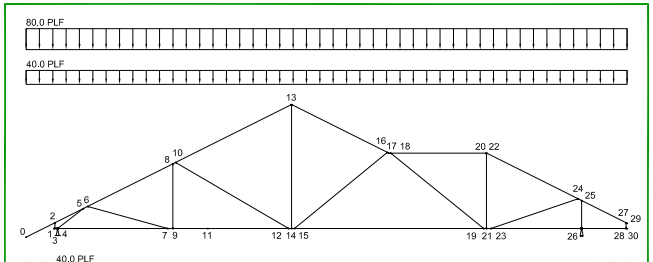
Truss Loading:

Load Case List W = This area consists of a list of load cases that are used to design the truss.

Truss Analog:

Picture X = Computer analog model of truss showing the node numbers that are referenced in the chord, web and analog information sections. Also shown in this picture is a graphical representation of the loads applied to the truss of the first gravity load case shown in the load list "W".

X



[Truss Label]
QTY= TOTAL=
TRUSS TAG NUMBER:
SEQ =
GALVANIZATION=G90
REV.
TRUSS WEIGHT = 243 LB

JOB NUMBER:
JOB NAME: TrusSteel Truss Calculation Explanation
DATE:
SCALE =
CUST:
DESIGNED BY:
CHK BY:
JREF:
GENERAL NOTES ID: TSGN-100
DRAWING NUMBER: TSGN-300

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