Oregon Tech

STRUCTURAL CALCULATIONS

Stilwell Stadium Bleacher Canopy

3201 Campus Drive

Klamath Falls, OR 97601

Prepared By: Daniel K. Shenk

Reviewed By: Matthew R. Smith, PE, SE

03-11-26

Job Number: K-6428-25

Project Narrative

The scope of this project consists of a new canopy for the existing bleachers located at Stilwell Stadium. The building's structural system consists of cantilever steel columns and steel purlins. The structure is supported by conventional shallow concrete foundations.

Design Criteria

Location:	Klamath Falls, Oregon
Governing Code:	2022 Oregon Structural Specialty Code
Category II Building:	Importance Factors 1.0(E), 1.0(S) & 1.0(W)

Dead Loads

Roof:	12 psf

Live Loads

Roof:	20 psf

Snow Load:

Ground Snow Load:	P_g = 28.2 psf
Exposure Factor:	C_e = 0.9
Thermal Factor:	C_t = 1.2
Slope Factor:	C_s = 1.0
Sloped Roof Snow Load:	P_s = 22 psf

Wind Load:

Basic Design Wind Speed:	V = 98 mph
Exposure:	C

Seismic Load:

Spectral Accelerations:	S_S = 1.052 g
	S_1 = 0.397 g
Site Class:	D
Design Spectral Accelerations:	S_{D1} = 0.503 g
	S_{DS} = 0.84 g
Seismic Design Category:	D
Basic Seismic Force-Resisting System:	Ordinary Steel Cantilever Columns
Design Base Shear:	V = 37.1 K
Seismic Response Coefficient:	C_S = 0.672
Analysis Procedure:	Equivalent Lateral Force

Geotechnical Information:

Design Load-Bearing Values:	2,000 psf (Marquess and Associates)

Oregon Snow Loading

The design ground snow of any location in the state of Oregon may be determined by entering the latitude and longitude of your site into the boxes below. The tool provides the design ground snow load (pg in ASCE7*) for your site. The design ground snow load values can also be viewed on the online map. Users are strongly recommended to review the Map Usage Notes.

Ground snow loads are very sensitive to geographic location, and particularly sensitive to elevation. It is recommended that the latitude and longitude values be entered with a precision of 0.001 (about 105 yards).

* ASCE Standard (ASCE/SEI 7-10) *Minimum Design Loads for Buildings and Other Structures* published by the American Society of Civil Engineers.

Latitude - Longitude Lookup

Results

Latitude:	42.258647
Longitude:	-121.782547
Snow Load:	27.0 psf
Modeled Elevation:	4284 ft

Site Elevation versus Modeled Grid Elevation

Site elevation refers to the elevation (above sea level, in feet) of the location for which the snow load is required. The modeled grid elevation is the average elevation of the 4 km (about 2-1/2 miles) grid cell that was used in the snow load modeling. In relatively flat terrain, the two elevations will likely be the same or very similar. In sloped or mountainous terrain, the two elevations may be quite different.

The design ground snow load may be underreported for some locations where the site elevation is higher than the modeled grid elevation. Consult the Map Usage Notes if your site elevation is more than 100 ft. above the modeled grid elevation shown, or if your site is at or near the top of a hill.

Oregon Design Ground Snow Load Look Up Results

It is important that the user of this tool understand the principals and limitations of the modeling used to create it. Ground snow loads can vary dramatically over short distances due to changes in precipitation and elevation. It is critical to use good engineering judgment when interpreting and using the results reported by this tool. The user is recommended to review the online map, to gain a better understanding of the variations and range of magnitudes of the ground snow loads in the vicinity of the site location.

In remote regions at high elevation, reliable snow data was not available during the creation of the map. A site-specific case study is required to determine the design ground snow load in these areas. The ground snow load values on the map are based on extrapolation, and are not recommended for design. See the Map Usage Notes for the regions that require a site-specific case study.

It is recommended that the local building official having jurisdiction at the site be consulted for minimum design ground snow or roof snow loads.

The reported design ground snow loads must be adjusted as required by Chapter 7 of ASCE7* for site exposure, roof slope, roof configuration, etc. Only the properly adjusted loads can be used to design roof structural elements.

Oregon requires a minimum roof snow load of 20 psf (pm in ASCE7*) for all roofs, plus a 5 psf rain-on-snow surcharge for many roof types, resulting in a 25 psf minimum roof design load for most roofs. See the Map Usage Notes or *Snow Load Analysis for Oregon, Part II* for further information.

* ASCE Standard (ASCE/SEI 7-10) Minimum Design Loads for Buildings and Other Structures published by the American Society of Civil Engineers.

Design Criteria Hub Report OSSC 2022

Seismic

Latitude: 42.25865, Longitude: -121.78255

Seismic Design Category **SEE NOTE**

NOTE: Spectrum data is not available. A site-specific ground motion analysis may be required. See ASCE 7-16 Supplement 3 Section 11.4.8. User is responsible for seismic design category determination in accordance with ASCE 7-16 Section 11.6.

Type	Value	Description
S_S	1.052	Mapped spectral accelerations for short periods (0.2 s) (Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration)
S_1	0.397	Mapped spectral accelerations for a 1-second period (Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration)
F_a	1.2	Site amplification factor (0.2 s)
F_v	N/A	Site amplification factor (1.0 s)
S_{MS}	1.263	Maximum considered earthquake spectral response acceleration for short periods (0.2 s)
S_{M1}	N/A	Maximum considered earthquake spectral response acceleration for 1-second period
S_{DS}	0.84	Five-percent damped design spectral response acceleration at short periods (0.2 s)
S_{D1}	N/A	Five-percent damped design spectral response acceleration at a 1-second period
T_L	16	Transition period to constant displacement region in horizontal elastic design spectrum
PGA	0.471	MCE_G peak ground acceleration
I_e	1.00	Seismic importance factor

Query Date	Friday, September 19, 2025 at 11:27 AM
Design Code Reference Document	ASCE 7-16
Risk Category	II
Site Class	D - Default

See Section 1613.2 of the 2022 Oregon Structural Specialty Code for more information.

Wind

Latitude: 42.25865, Longitude: -121.78255

Special Wind Region Basic Design Wind Speed: 98 mph

Layer	Within
County	Klamath County
Basic Design Wind Speed Risk Category II	98
Within Special Wind Region	Yes

See Section 1609.3 of the 2022 Oregon Structural Specialty Code for more information.

MARQUESS & ASSOCIATES INC
YOUR PROFESSIONAL ENGINEERING TEAM SINCE 1957
P 541-772-7115 F 541-779-4079 1120 EAST JACKSON PO BOX 490 MEDFORD, OR 97501
EMAIL: info@marquess.com WEB: www.marquess.com

Date: April 5, 2018

To: Josh Modin, ZCS Engineering and Architecture

From: Rick Swanson, P.E., G.E.

RE: Foundation Bearing Criteria
Oregon Tech Softball Complex Renovation
Klamath Falls, Oregon
MAI Job No. 18-1086

As requested, we have prepared this foundation criteria letter for the proposed bleachers at Oregon Tech in Klamath Falls, Oregon. As part of the preparation of this letter, we met with you at the site on March 27, 2018, observed the existing site conditions in the area of the proposed bleachers, explored the subsurface soils with two exploratory test pits, and discussed the proposed construction.

The total seating capacity of the proposed bleachers is 484 seats and wheelchair spaces and there will also be a press box at the rear of the center bleacher. The bleachers will be of aluminum framing and seating and supported on concrete foundations.

The bleacher area is presently sloped towards the existing softball backstop with relatively flat grades within about 15' of the backstop. As a result, the proposed front foundation line of the bleacher seating, and possibly the center foundation line, will be on relatively flat ground, while the rear foundation lines will be on sloping ground.

Subsurface. Two test pits were dug. Test Pit 1 was dug in the southerly end of the proposed bleachers on the slope and Test Pit 2 was dug near the westerly end of the proposed bleachers on the flat ground. Test Pit 1 encountered 3.5' of weak silty sand and sandy gravel fill followed by dense sandy gravel to the depth explored (4.5'). Test Pit 2 encountered 1' of mixed granular and clay fill followed by medium dense to dense silty sand to the depth explored (6'). No groundwater was observed in the test pits during excavation.

Soil Engineering Design Criteria

We discussed the following recommendations with you on March 27, 2018:

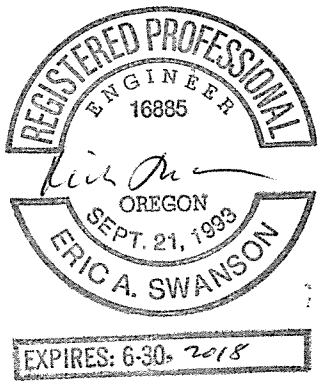
- All fill, and any other weak soil, should be removed from beneath footings. Where excavations are deeper than the proposed bottoms of footings, the footing excavations should be backfilled with structural fill, such as well-compacted ¾"-0 crushed rock. The footing excavations should be at least 0.5' wider than each side of the proposed footings.

- Structural fill materials must be compacted until hard and stable and to a relative compaction of at least 95 percent in accordance with ASTM D698, Method A. Structural fill should be placed no thicker than 8" thick loose lifts.
- Subgrade soils to be filled upon must be hard enough to enable proper compaction of structural fill. Overly weak soils should be either recompacted or removed and replaced with structural fill.
- Please feel free to call us out to evaluatc bottoms of excavations for footings prior to placing structural fill.
- Footings should bear on a minimum of 1' of structural fill underlain by firm natural dense sandy gravel or medium dense to dense silty sand. The footings may be designed for an allowable bearing pressure of 2000 psf for dead plus live loadings and this pressure may be increased by one-third for short-term loadings (wind or seismic). Lateral loads can be resisted with a friction coefficient of 0.3 and a passive pressure equal to an equivalent fluid pressure of 250 pcf.
- Footings should be deepened as necessary to provide a minimum horizontal confinement of at least 7' from toe of footing to face of nearest slope. Footings should also be deepened as necessary to comply with Code.

Please call us if you need additional foundation design criteria.

This brief letter has been prepared in accordance with generally accepted soil and foundation engineering principles and practices in this area. No other warranty, either expressed or implied, is made.

Attachments: Drawing 1, Key to Boring and Pit Logs
Drawing 2, Log of Pits 1 and 2



Client OIT
Project STILWELL STADIUM CANOPY
No. K 6428
By DAS
Date
Sheet of

STILWELL STADIUM CANOPY - CALCS

* DESIGN CRITERIA (RISK CAT. II)

- DEAD LOAD = 12 psf
- LIVE LOAD = 20 psf (2022 OSSC)
- SNOW LOAD: P_g = 27 psf (SNOWLOAD.SEAO.org)

MODELED ELEVATION = 4,284'
SITE ELEVATION = 4,435' } Δ = 151'

P_g (ADJUSTED) = 27 psf + (0.008)(151') = 28.2 psf (OSSC 1608.2.2)

FLAT ROOF SNOW LOAD, P_f = 0.7 C_e C_t I_s p_g

I_s = 1.0 (RISK II)
C_e = 0.9 (EXP. C, FULLY EXP.)
C_t = 1.2

P_f = (0.7)(0.9)(1.2)(1.0)(28.2 psf)
P_f = 21.3 psf

P_s = $C_s P_f$ = (1.0)(21.3 psf) = USE 22 psf *GOVERNS*

CODE MIN: P_m = 20 psf (I_s = 1.0) = 20 psf

⚠ NO RAIN-ON-SNOW REQ'D PER OSSC 1608.2.5, ROOF SLOPE = 2:12 > 1:12, NO CONSTRAINED RUNOFF

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DESIGN CRITERIA, CONT'D

- WIND LOADS: V = 98 mph (OSSC TABLE 1609.3, CAT. II)
  - I_w = 1.0
  - EXPOSURE = C
  - K_{zt} = 1.0 (CANOPY IS LOCATED IN BOTTOM 1/2 OF HILL)

- SEISMIC LOADS:
  - SFRS: ORDINARY STEEL CANTILEVER COLUMN (ASCE TABLE 12.2-1)
    - SEE TABLE FOOTNOTE f, PERMITTED WHERE TRIB DL < 20 psf, & h_{MAX} = 65', o.k.
  - S_{DS} = 0.84
  - I_e = 1.0
  - C_s = 0.672
  - Ω_0 = 1.25
  - C_d = 1.25

FRAME CALCS AND MODEL

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No. K6423 By DKS

Date Sheet of

WIND LOAD DEVELOPMENT

- MWFRS : ASCE 7-16 27.3.2 TO DEVELOP WIND LOADS

$$p = q_h G C_N \qquad (27.3-2)$$

$G = 0.85$

$$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2 \qquad (26.10-1)$$

$$q_z = (0.00256)(0.93)(1.0)(0.85)(0.86)(98\,mph)^2$$

$$q_z = 17.6\,psf$$

$V = 98\,mph$

$K_z = 0.98$

$K_{zt} = 1.0$

$K_d = 0.85$

$K_e = 0.86$

C_N : - ROOF SLOPE $= \tan^{-1}(2/12) = 9.5°$, INTERPOLATE

- CLEAR WIND FLOW

WIND DIRECTION, $\gamma = 0°$

		C_{NW}	C_{NL}
LOAD CASE A:	A:	-0.699	-1.1
	B:	-1.567	0

WIND DIRECTION, $\gamma = 180°$

	C_{NW}	C_{NL}
A:	1.033	1.533
B:	1.667	0.4

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WIND LOAD DEVELOPMENT, CONTINUED

$p = q_h G C_N$: SEE TABLES BELOW FOR "p" WIND PRESSURES @ VARYING LOAD CASES & WIND DIRECTION

		WIND DIRECTION, $\gamma = 0°$		WIND DIRECTION, $\gamma = 180°$	
		$P_1 C_{NW}$	$P_1 C_{NL}$	$P_1 C_{NW}$	$P_1 C_{NL}$
LOAD CASE	A:	-10.5 psf	-16.5 psf	+15.5 psf	+23.0 psf
	B:	-23.4 psf	0 psf	+25.0 psf	+6.0 psf

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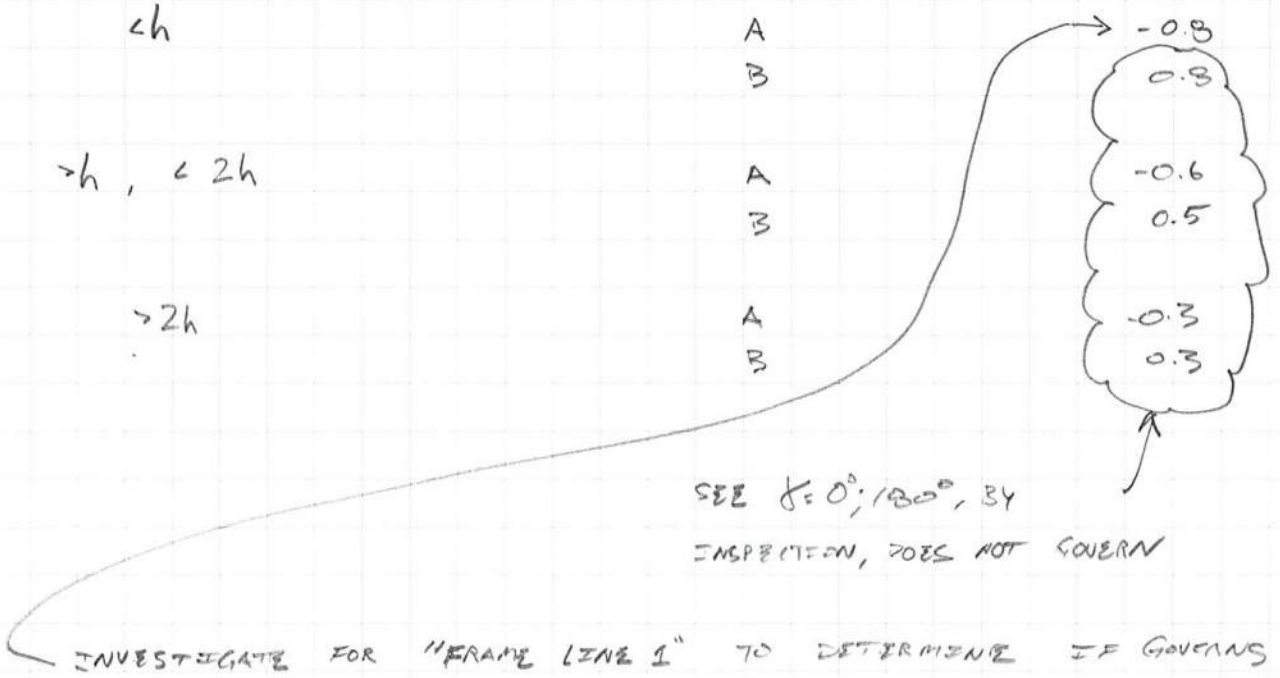
WIND LOAD DEVELOPMENT

FIG. 27.3-7 MWFRS w/ $\gamma = 90°, 270°$

$L = 32.5'$
$h = 25'$
$\theta = 9.5°$

HORIZONTAL DISTANCE FROM WINWARD EDGE	LOAD CASE	CLEAR WIND FLOW, C_N
$<h$	A	-0.8
	B	0.8
$>h, <2h$	A	-0.6
	B	0.5
$>2h$	A	-0.3
	B	0.3



SEE $\gamma = 0°; 180°$, BY INSPECTION, DOES NOT GOVERN

INVESTIGATE FOR "FRAME LINE 1" TO DETERMINE IF GOVERNS

$p = (17.6_{psf})(0.85)(-0.8) = -12 \text{ psf}$

∴ WL, $\gamma = 0°$, LOAD CASE B GOVERNS

SEISMIC LOAD DEVELOPMENT

- ANALYSIS PROCEDURE : EQUIVALENT LATERAL FORCE (ELF)

$V = C_s W$ (ASCE 7-16 12.8-1)

C_s : $T_a = C_t h_n^x$ $C_t = 0.02$, $x = 0.75$, $h = 25'$

$T_a = (0.02)(25')^{0.75}$

$T = T_a = 0.224$ s

$T_L = 16$ s

$C_s = S_{DS}/(R/I_e)$: $0.84/(1.25/1) = 0.672$

$C_{s,MAX}$: $(T \le T_L)$ $C_s = \frac{S_{D1}}{T(R/I_e)}$: $\frac{0.503}{(0.224)(\frac{1.25}{1})} = 1.796$

$C_{s,MIN}$: $0.044 S_{DS} I_e \ge 0.01$: $(0.044)(0.84)(1.0) = 0.037$

$C_{s\,MIN} < C_s < C_{s\,MAX}$, $\boxed{C_s = 0.672}$

W : $(12.5\,psf)(4{,}612\,ft^2) = 55{,}344^{k}$

$V = (0.672)(55{,}344^{k}) = \boxed{37{,}191^{k}}$

⚠ (ASCE 7-16, 12.2.5.2 - CANT. COLUMN SYSTEMS) : REQ'D AXIAL STRENGTH OF INDIVIDUAL CANT. COLUMNS, CONSIDERING ONLY LC's THAT INCLUDE SEISMIC LOAD EFFECTS, SHALL NOT EXCEED 15% OF AXIAL STRENGTH. FOUNDATIONS & ELEMENTS USED FOR OT RESISTANCE @ BASE OF COLUMN SHALL BE DESIGNED TO RESIST SEISMIC LOAD EFFECTS, INCLUDING OVERSTRENGTH OF SECTION 12.4-3

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SEISMIC LOAD DEVELOPMENT

VERTICAL SEISMIC LOAD EFFECTS (7.16, 12.4.2.2)

$E_v = 0.2 S_{DS} D$ $S_{DS} = 0.84$

$E_v = (0.2)(0.84) D$

$E_v = (0.168) D$ (.7E)

=> APPLY E_v AS $(0.168)(D)$ TO RISA MODEL

7-16, TABLE 12.3-1 : HORIZONTAL STRUCTURAL IRREGULARITIES

#5:) NON-PARALLEL SYSTEM IRREGULARITY

REF. SECTION: 12.5.3 - a.) MEMBERS & FOUNDATIONS TO BE DESIGNED TO 100% OF FORCES FOR (1) DIRECTION & 30% FROM OTHER DIRECTION.

12.7.3 - STRUCTURES THAT HAVE HORIZ. IRREG #5 SHALL BE ANALYZED W/ 3-D MODEL ✓

TABLE 12.6-1 - ELF PERMITTED FOR STRUCTURES W/ HORIZ. IRREG. #5 IF $h_n \leq 160'$ ✓

SEISMIC LOAD DEVELOPMENT

7-16, TABLE 12.3-1 : HORIZONTAL STRUCTURAL IRREGULARITIES

#3:) RE-ENTRANT CORNER IRREGULARITY

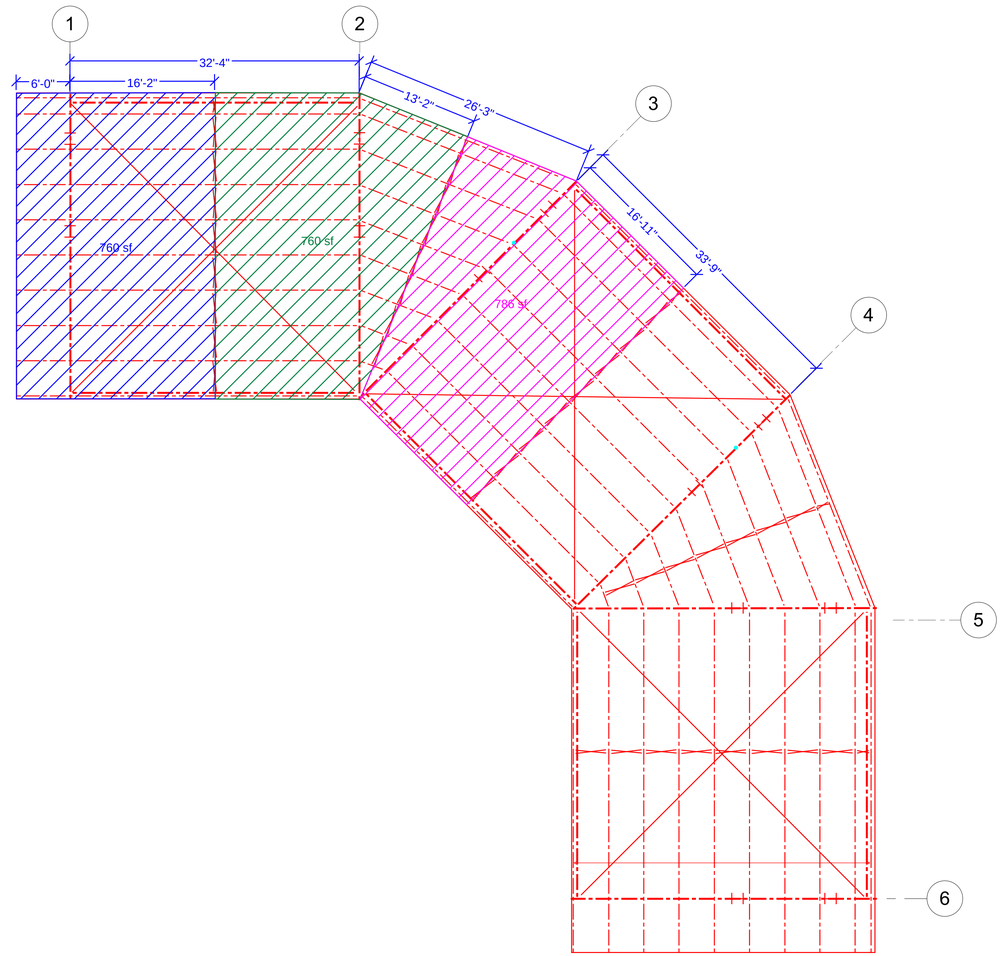
REF. SECTION: 12.3.3.4 - INCREASE IN FORCES CAUSED BY IRREGULARITIES IN SDC D w/ HORIZ. TYPE 3 IRREG.

INCREASE BY 25%: 1.) CONNECTIONS OF DIAPHRAGMS TO VERTICAL ELEMENTS & COLLECTORS

2.) COLLECTORS & THEIR CONNECTIONS, INCLUDING CONNECTIONS TO VERTICAL ELEMENTS, OF THE SFRS

KEY

	% OF MASS TO FRAME LINE	V TO FRAME LINE
TOTAL ROOF AREA = 4,612 ft²		
ROOF AREA TRIB TO FRAME LINE #1 = 760 ft²	16.5 %	6,129 LB
ROOF AREA TRIB TO FRAME LINE #2 = 760 ft²	16.5 %	6,129 LB
ROOF AREA TRIB TO FRAME LINE #3 = 786 ft²	17.0%	6,338 LB



2 S1.10 ROOF FRAMING PLAN
1/8" = 1'-0"

ONE INCH EQUALS FULL SCALE

11/11/2025 2:31:20 PM

ZCS
900 Klamath Avenue
Klamath Falls, OR 97601
541.884.7421

OREGON TECH
3201 CAMPUS CR.
KLAMATH FALLS, OR 97601

STILWELL STADIUM CANOPY

Oregon TECH
Oregon Institute of Technology

-PRELIMINARY-
NOT FOR CONSTRUCTION
EXPIRES: 06-30-26

△	DATE:	Description

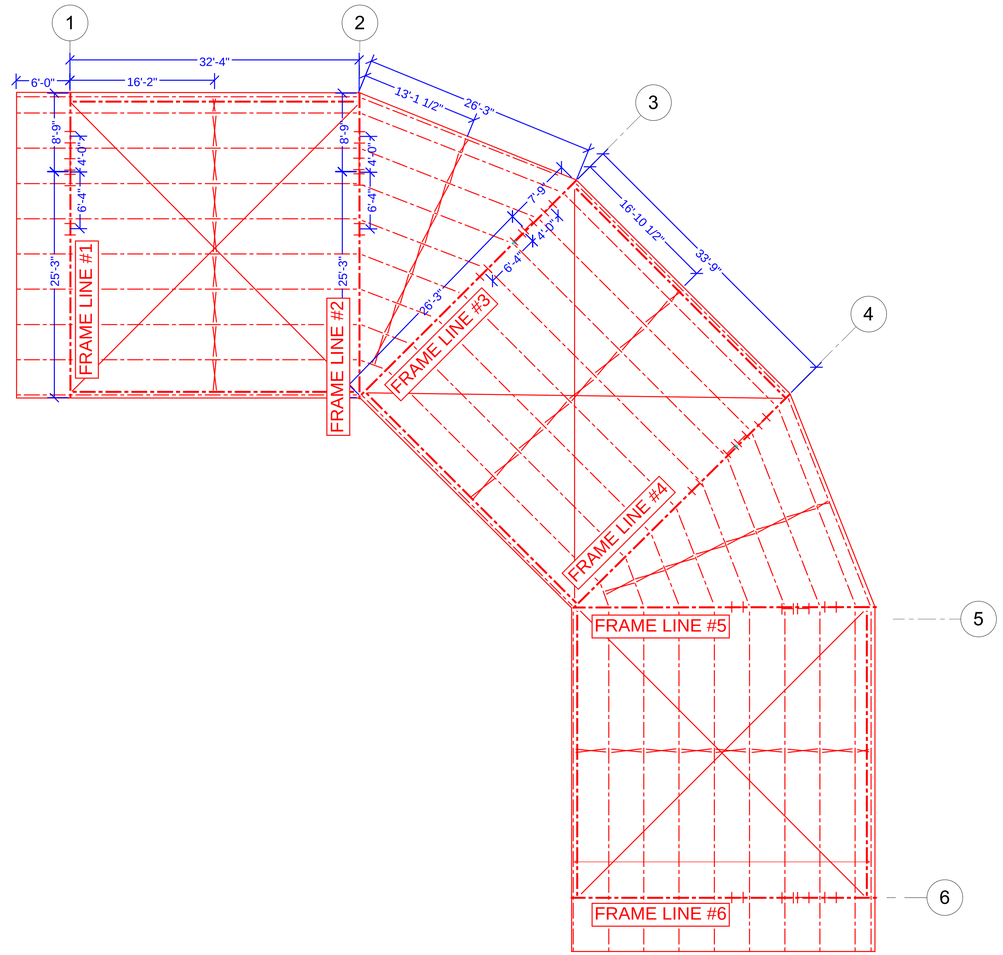
PROJECT NO.	K-6428-25
DESIGNED:	DKS
REVIEWED:	KDM
DATE:	11-14-2025

FOUNDATION AND ROOF FRAMING PLAN

S1.10

100% DESIGN DEVELOPMENT

FRAME LINE # MAP & DIMENSIONS



2 S1.10 ROOF FRAMING PLAN
1/8" = 1'-0"

ONE INCH EQUALS FULL SCALE

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STILWELL
STADIUM CANOPY

Oregon TECH
Oregon Institute of Technology

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 28, 2017
DAVID K. MILLER
EXPIRES: 06-30-26

-PRELIMINARY-
NOT FOR CONSTRUCTION

△	DATE:	Description

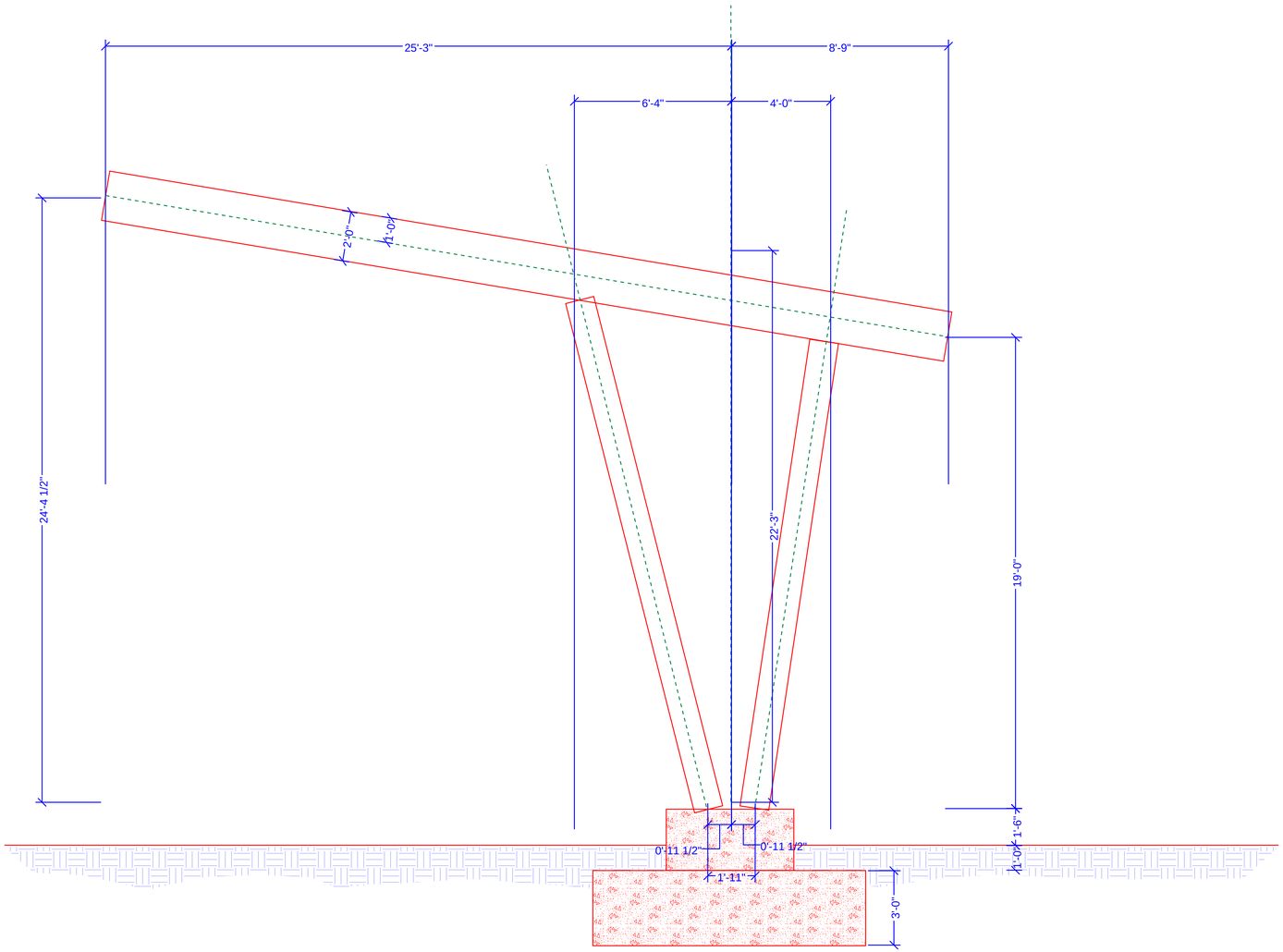
PROJECT NO.	K-6428-25
DESIGNED:	DKS
REVIEWED:	KDM
DATE:	11-14-2025

FOUNDATION AND ROOF FRAMING PLAN

S1.10

100% DESIGN DEVELOPMENT

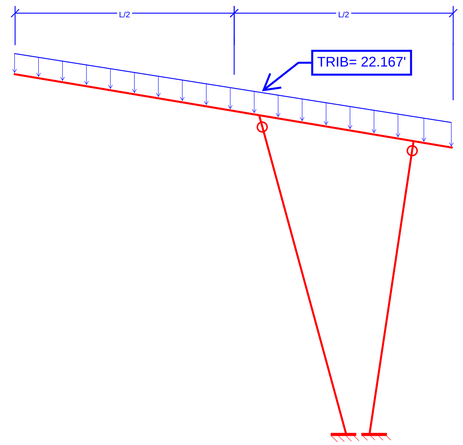
FRAME LINE: TYP. FRAME GEOMETRY



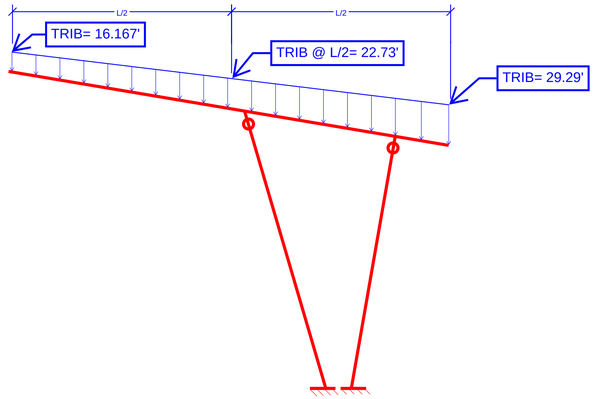
FRAME LOADING TRIBUTARIES

FRAME LINE #1=#6:

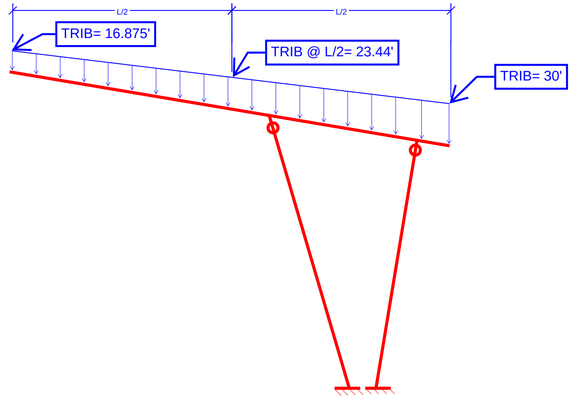
GENERAL FBD & TRIBS:

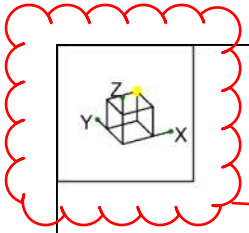


FRAME LINE #2=#5:

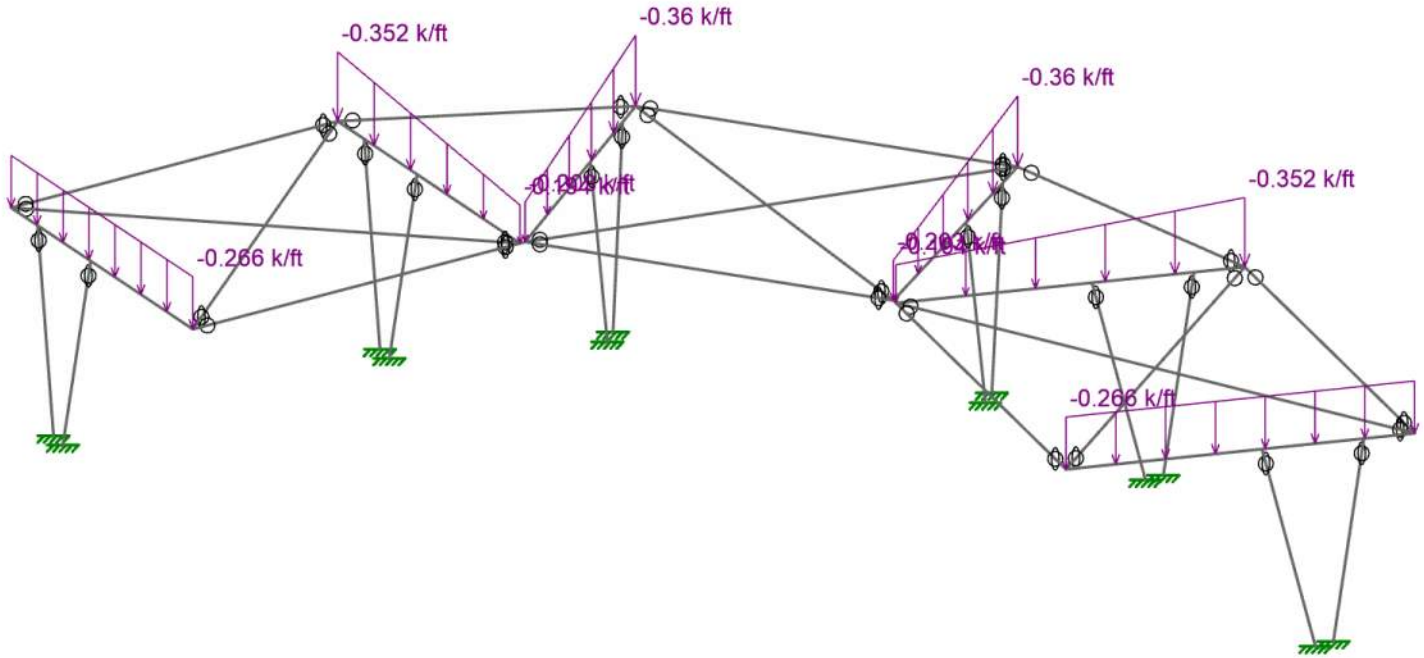


FRAME LINE #3=#4:



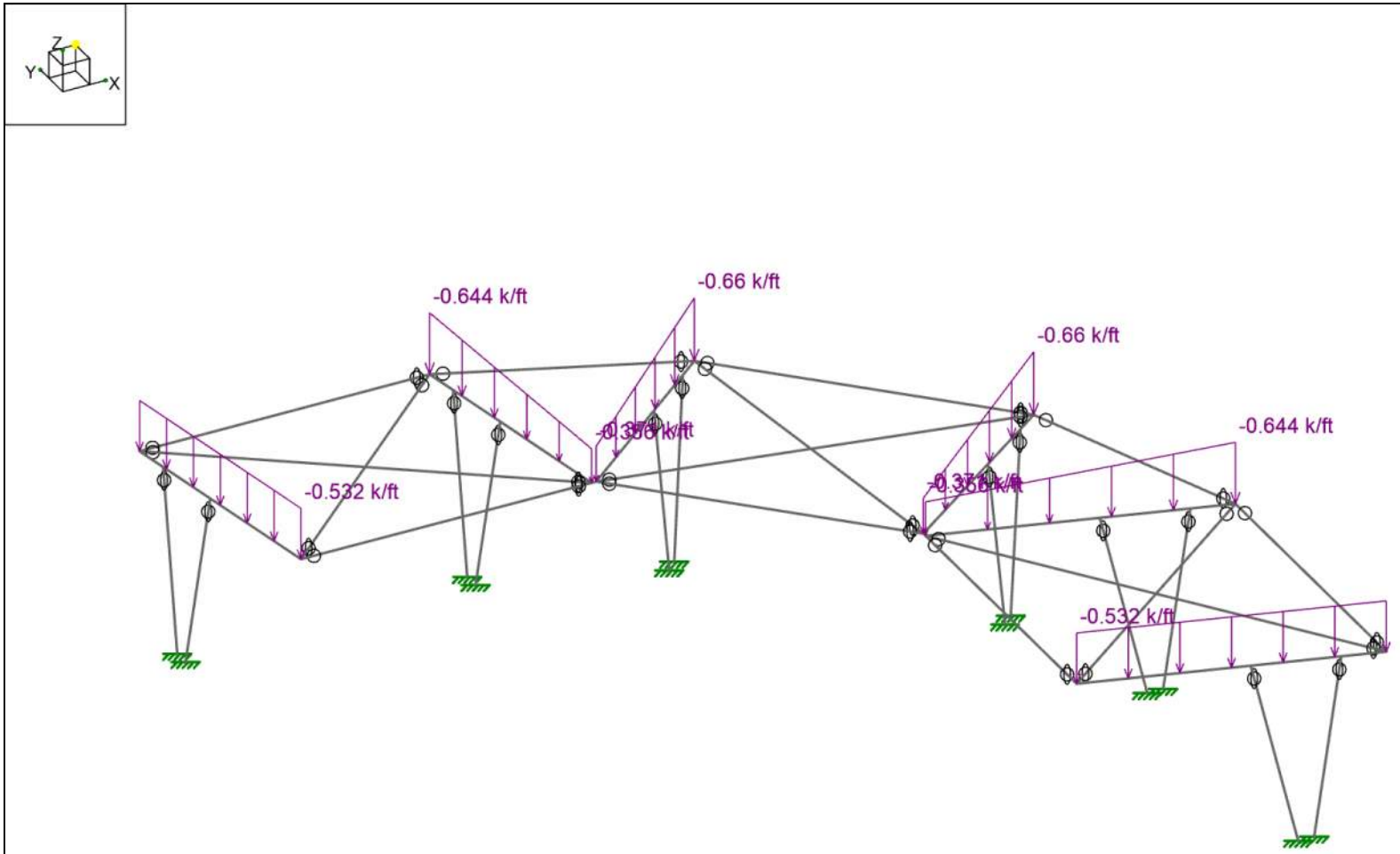


NOTE: GLOBAL AXIS IS DEFINED w/ "Z" AS THE VERTICAL AXIS



Loads: BLC 1, DL

ZCS	ZCS		SK-8
	danielshenk		Feb 10, 2026 at 08:14 PM
			Stilwell Bleacher Canopy- Full Model_Update…



Loads: BLC 2, SL

ZCS	ZCS		SK-9
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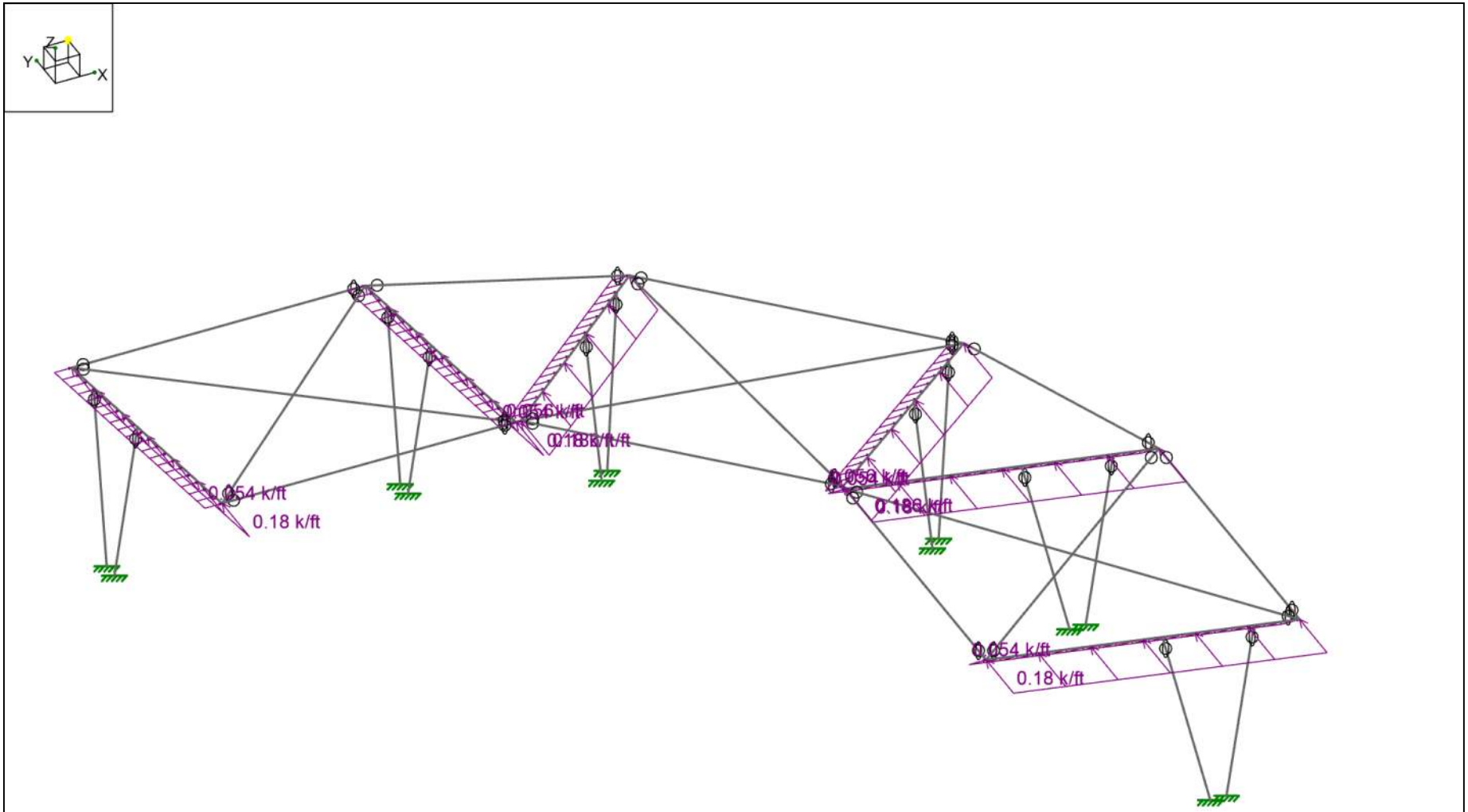

Loads: BLC 3, Eh

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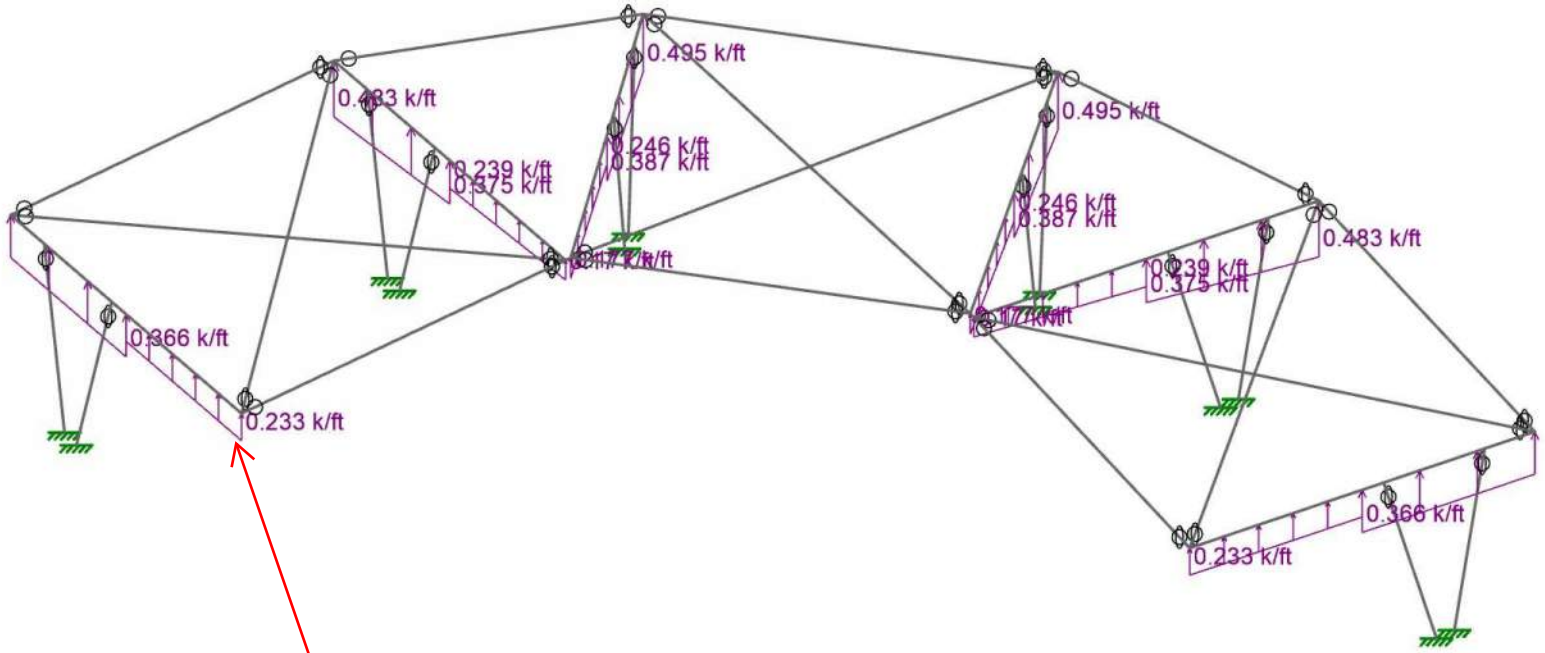
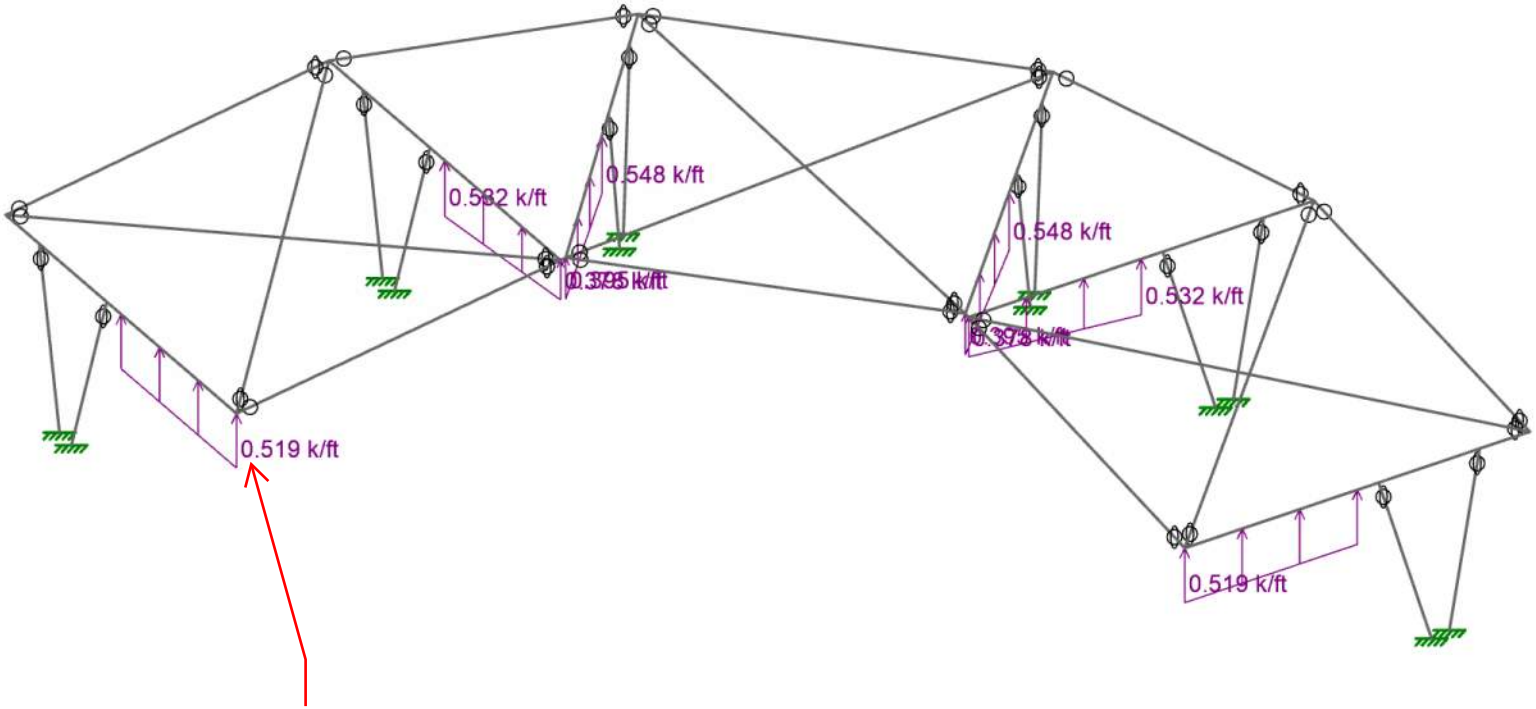


NOTE: WIND LOADS APPLIED CONSERVATIVELY WITH ASSUMED WIND DIRECTION ACTING PARALLEL TO FRAME LINE ACROSS WHOLE MODEL.

Loads: BLC 5, WL, A, 0

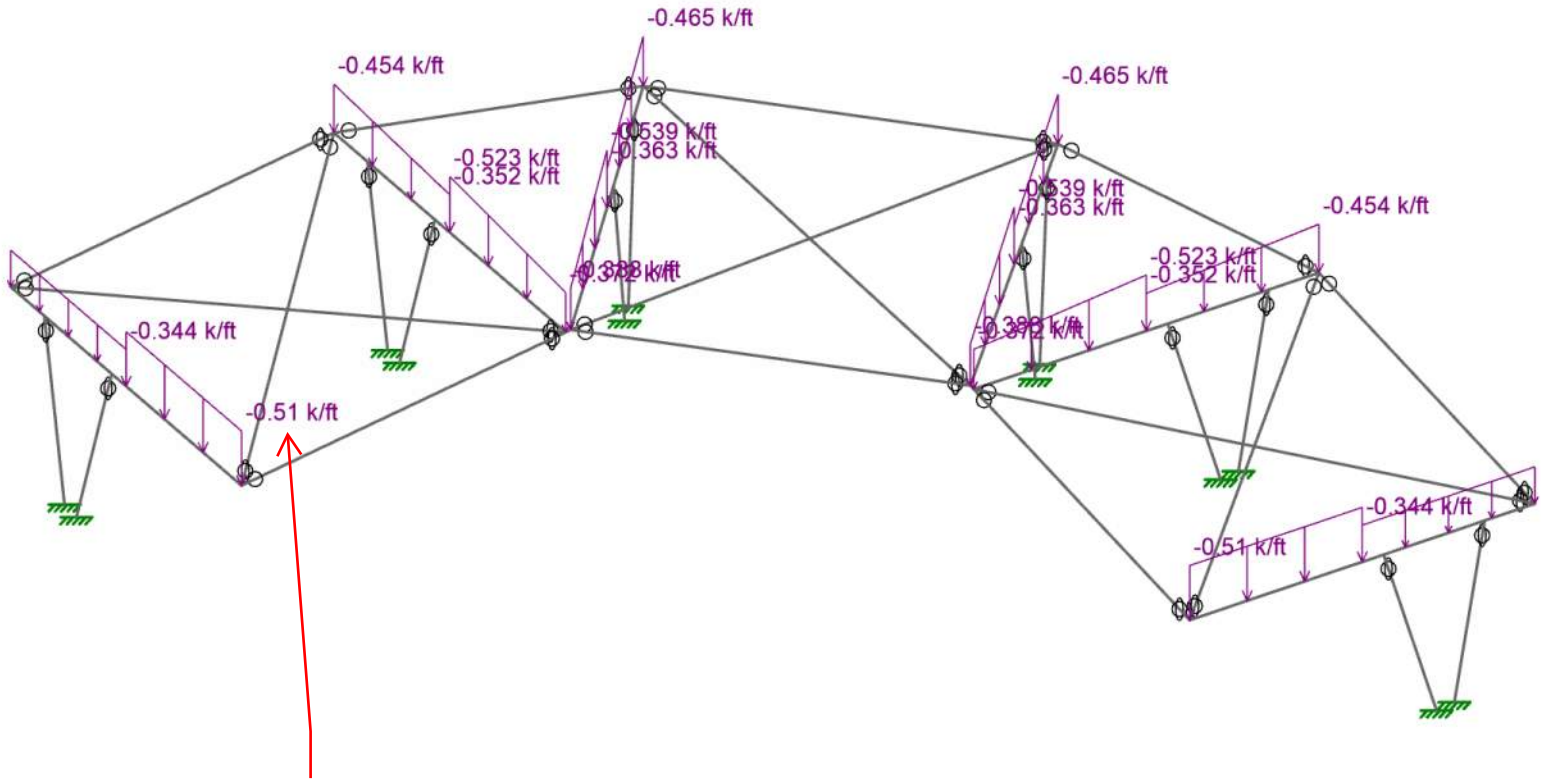
ZCS	ZCS		SK-1
	danielshenk		Feb 13, 2026 at 12:35 PM
			Stilwell Bleacher Canopy- Full Model_Updated 2…



NOTE: WIND LOADS APPLIED CONSERVATIVELY WITH ASSUMED WIND DIRECTION ACTING PARALLEL TO FRAME LINE ACROSS WHOLE MODEL.

Loads: BLC 6, WL, B, 0

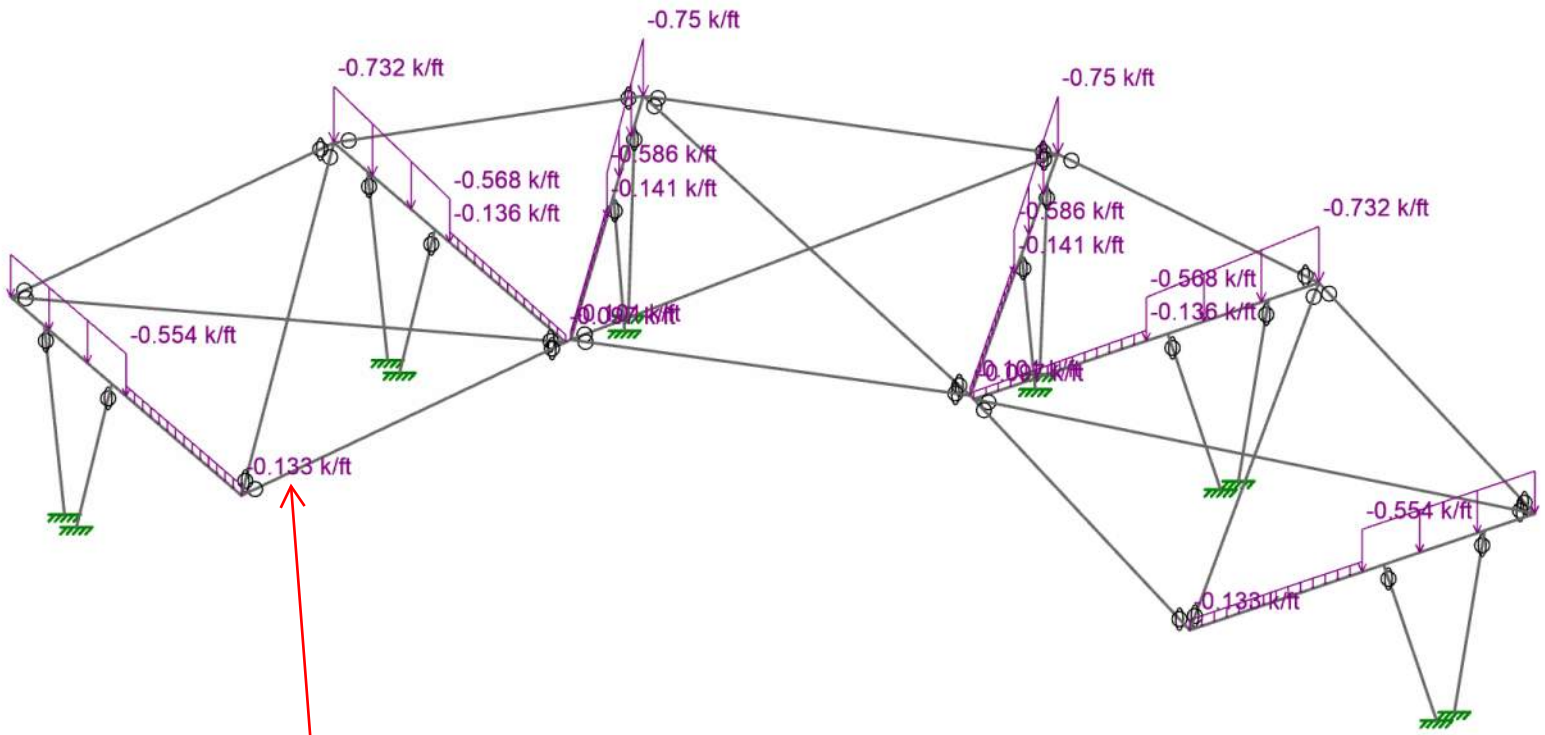
ZCS	ZCS		SK-2
	danielshenk		Feb 13, 2026 at 12:35 PM
			Stilwell Bleacher Canopy- Full Model_Updated 2…



NOTE: WIND LOADS APPLIED CONSERVATIVELY WITH ASSUMED WIND DIRECTION ACTING PARALLEL TO FRAME LINE ACROSS WHOLE MODEL.

Loads: BLC 7, WL, A, 180

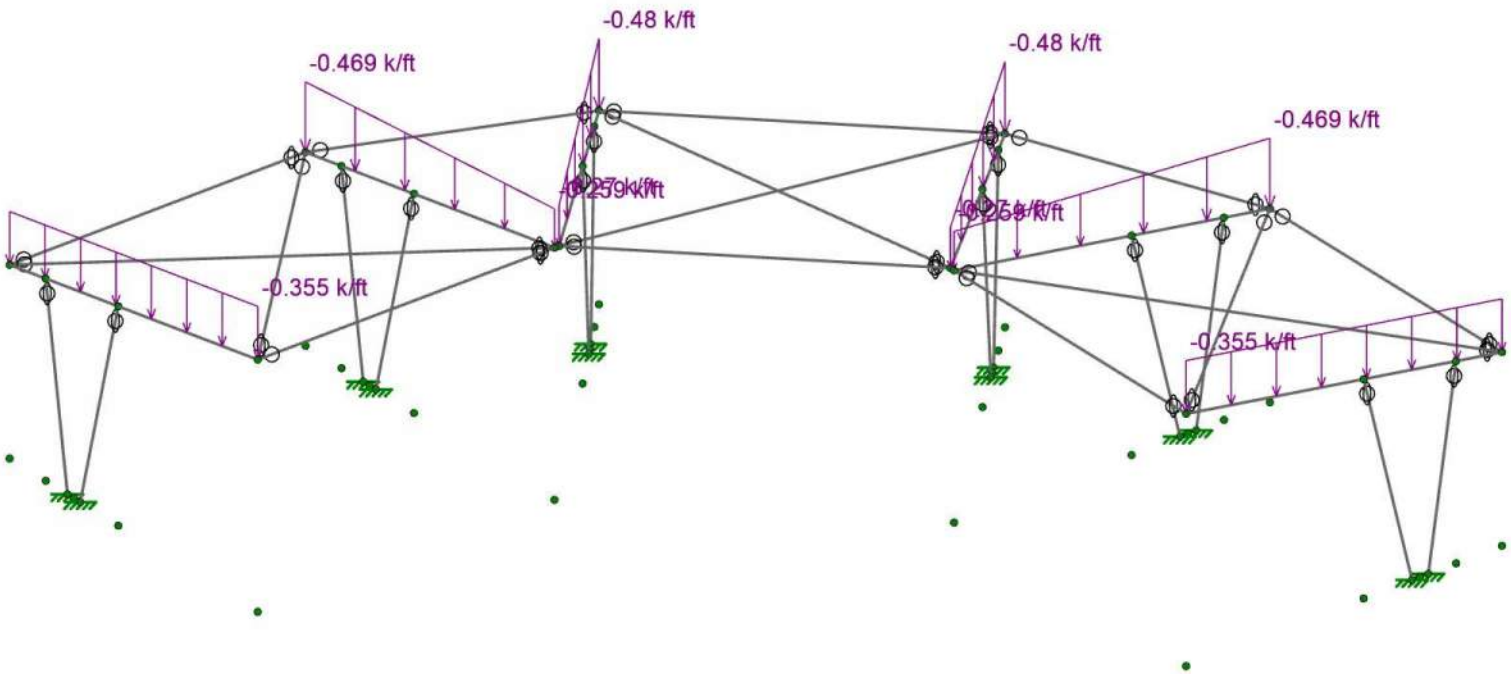
ZCS	ZCS		SK-3
	danielshenk		Feb 13, 2026 at 12:35 PM
			Stilwell Bleacher Canopy- Full Model_Updated 2…



NOTE: WIND LOADS APPLIED CONSERVATIVELY WITH ASSUMED WIND DIRECTION ACTING PARALLEL TO FRAME LINE ACROSS WHOLE MODEL.

Loads: BLC 8, WL, B, 180

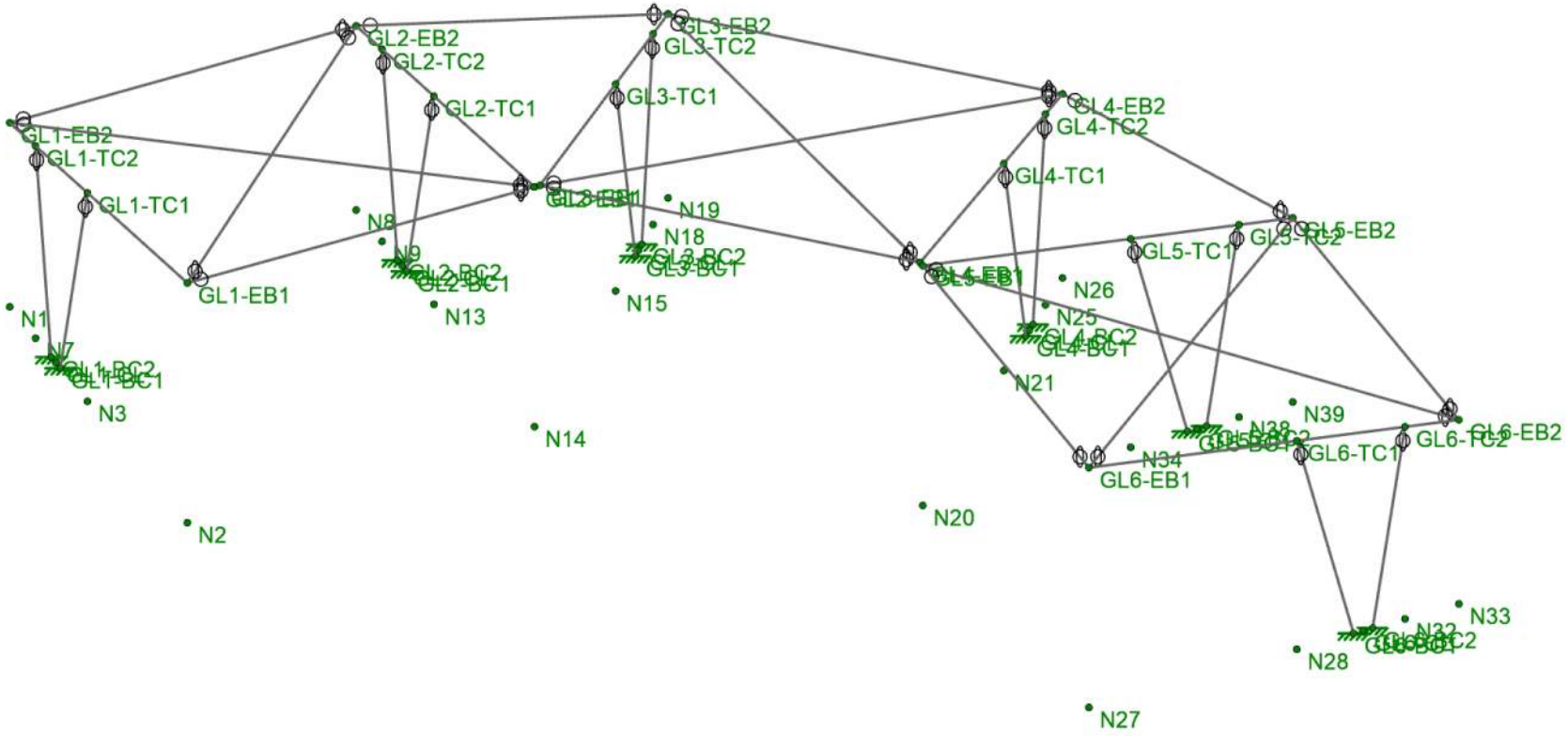
ZCS	ZCS		SK-4
	danielshenk		Feb 13, 2026 at 12:35 PM
			Stilwell Bleacher Canopy- Full Model_Updated 2…



Loads: BLC 9, WL, CODE MIN.

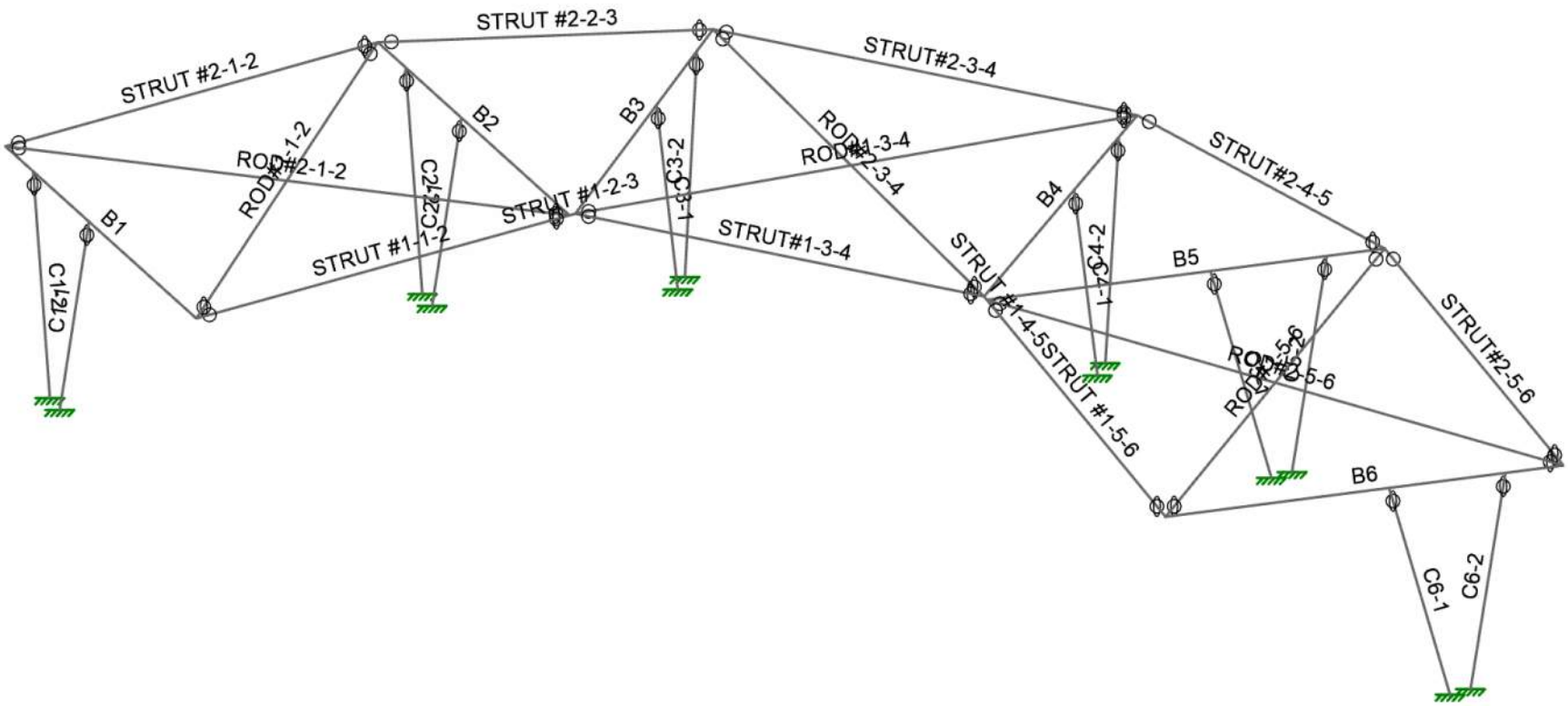
ZCS	ZCS	Stilwell Canopy	SK-1
	DKS		Mar 02, 2026 at 02:03 PM
	K-6248		Stilwell Bleacher Canopy- Full Model_Update…

STANDARD NODE LABELING DIAGRAM



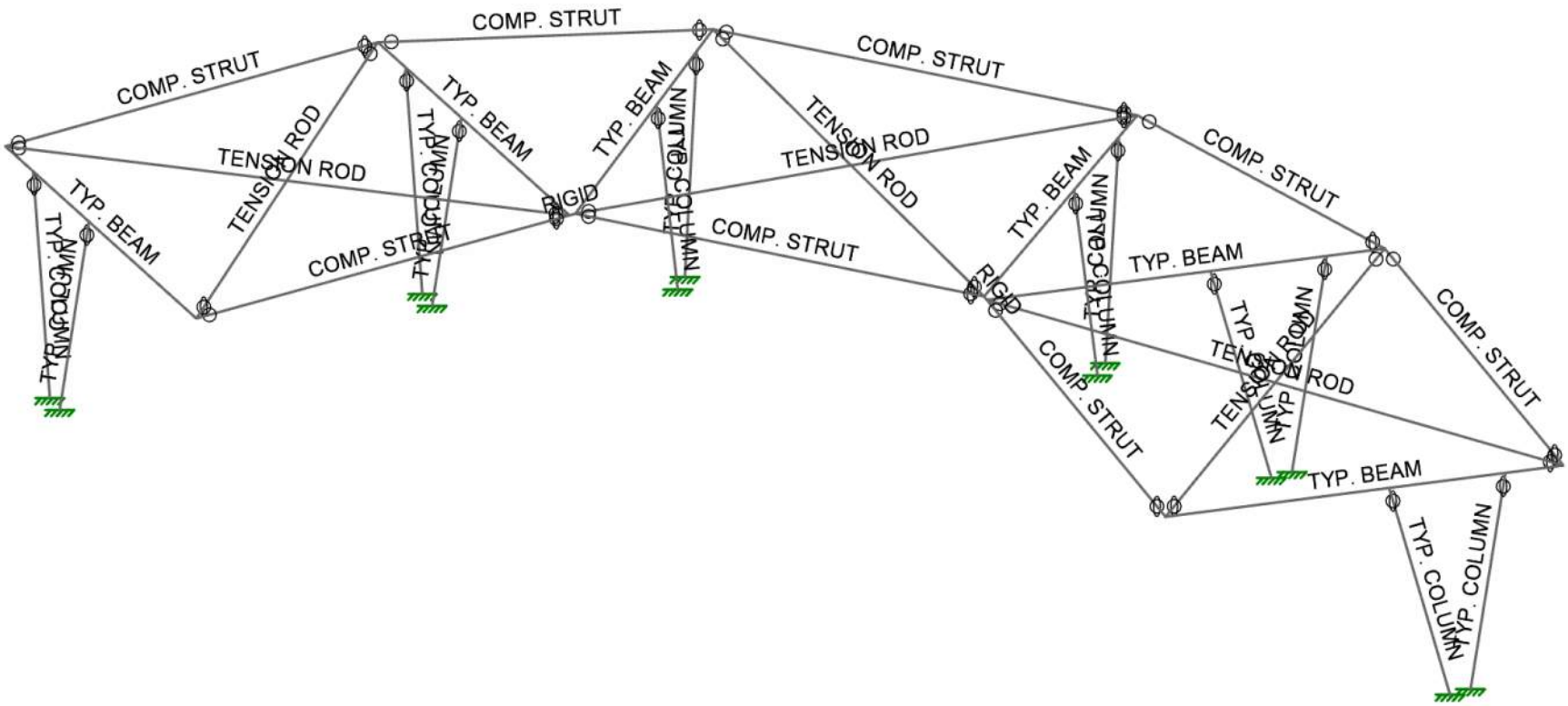
ZCS	ZCS		SK-11
	danielshenk		Feb 10, 2026 at 08:16 PM
			Stilwell Bleacher Canopy- Full Model_Update…

STANDARD MEMBER NAMING



ZCS	ZCS		SK-12
	danielshenk		Feb 10, 2026 at 08:17 PM
			Stilwell Bleacher Canopy- Full Model_Update…

STANDARD MEMBER SECTION SET



ZCS	ZCS		SK-13
	danielshenk		Feb 10, 2026 at 08:18 PM
			Stilwell Bleacher Canopy- Full Model_Update…

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
5	A500 Gr.C	29000	11154	0.3	0.65	0.527	50	1.3	62	1.2
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.25	65	1.15
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	TYP. BEAM	W24X104	Beam	Wide Flange	A992	Typical	30.7	259	3100	4.72
2	TYP. COLUMN	HP14X102	Column	Wide Flange	A572 Gr.50	Typical	30.1	380	1050	5.39
3	COMP. STRUT #1	W10X19	HBrace	Wide Flange	A992	Typical	5.62	4.29	96.3	0.233
4	COMP. STRUT #2	W10X26	HBrace	Wide Flange	A992	Typical	7.61	14.1	144	0.402
5	TENSION ROD	.5"	HBrace	BAR	A36 Gr.36	Typical	0.196	0.003	0.003	0.006

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	B1	GL1-EB1	GL1-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
2	B2	GL2-EB1	GL2-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
3	B3	GL3-EB1	GL3-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
4	B4	GL4-EB1	GL4-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
5	B5	GL5-EB1	GL5-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
6	B6	GL6-EB1	GL6-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
7	C1-1	GL1-BC1	GL1-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
8	C1-2	GL1-BC2	GL1-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
9	C2-2	GL2-BC2	GL2-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
10	C2-1	GL2-BC1	GL2-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
11	C3-2	GL3-BC2	GL3-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
12	C3-1	GL3-BC1	GL3-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
13	C4-2	GL4-BC2	GL4-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
14	C4-1	GL4-BC1	GL4-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
15	C5-1	GL5-BC1	GL5-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
16	C5-2	GL5-BC2	GL5-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
17	C6-1	GL6-BC1	GL6-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
18	C6-2	GL6-BC2	GL6-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
19	STRUT#1-3-4	GL3-EB1	GL4-EB1		COMP. STRUT #2	HBrace	Wide Flange	A992	Typical
20	STRUT#2-3-4	GL3-EB2	GL4-EB2		COMP. STRUT #2	HBrace	Wide Flange	A992	Typical
21	ROD#2-3-4	GL3-EB2	GL4-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
22	ROD#1-3-4	GL3-EB1	GL4-EB2		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
23	STRUT #2-1-2	GL1-EB2	GL2-EB2		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
24	STRUT #1-1-2	GL1-EB1	GL2-EB1		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
25	STRUT #2-2-3	GL2-EB2	GL3-EB2		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
26	STRUT#2-4-5	GL4-EB2	GL5-EB2		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
27	STRUT#2-5-6	GL5-EB2	GL6-EB2		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
28	STRUT #1-5-6	GL5-EB1	GL6-EB1		COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
29	STRUT #1-4-5	GL4-EB1	GL5-EB1		RIGID	None	None	RIGID	Typical
30	STRUT #1-2-3	GL2-EB1	GL3-EB1		RIGID	None	None	RIGID	Typical
31	ROD#2-1-2	GL1-EB2	GL2-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
32	ROD#1-1-2	GL2-EB2	GL1-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
33	ROD#2-5-6	GL5-EB1	GL6-EB2		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
34	ROD#1-5-6	GL5-EB2	GL6-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Lcomp bot [ft]	Channel Conn.	a [ft]	Function
1	B1	TYP. BEAM	34.494	Lbyy		N/A	N/A	Lateral
2	B2	TYP. BEAM	34.628	Lbyy		N/A	N/A	Lateral
3	B3	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
4	B4	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
5	B5	TYP. BEAM	34.473	Lbyy		N/A	N/A	Lateral
6	B6	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
7	C1-1	TYP. COLUMN	21.861	Lbyy		N/A	N/A	Lateral
8	C1-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Lcomp bot [ft]	Channel Conn.	a [ft]	Function
9	C2-2	TYP. COLUMN	19.796	Lbyy		N/A	N/A	Lateral
10	C2-1	TYP. COLUMN	21.852	Lbyy		N/A	N/A	Lateral
11	C3-2	TYP. COLUMN	19.64	Lbyy		N/A	N/A	Lateral
12	C3-1	TYP. COLUMN	21.711	Lbyy		N/A	N/A	Lateral
13	C4-2	TYP. COLUMN	19.659	Lbyy		N/A	N/A	Lateral
14	C4-1	TYP. COLUMN	21.725	Lbyy		N/A	N/A	Lateral
15	C5-1	TYP. COLUMN	21.863	Lbyy		N/A	N/A	Lateral
16	C5-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral
17	C6-1	TYP. COLUMN	21.863	Lbyy		N/A	N/A	Lateral
18	C6-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral
19	STRUT#1-3-4	COMP. STRUT #2	33.355	17	17	N/A	N/A	Lateral
20	STRUT#2-3-4	COMP. STRUT #2	34.614	17	17	N/A	N/A	Lateral
21	ROD#2-3-4	TENSION ROD	48.367			N/A	N/A	Lateral
22	ROD#1-3-4	TENSION ROD	48.435			N/A	N/A	Lateral
23	STRUT #2-1-2	COMP. STRUT #1	31.833	10.42	10.42	N/A	N/A	Lateral
24	STRUT #1-1-2	COMP. STRUT #1	31.83	10.42	10.42	N/A	N/A	Lateral
25	STRUT #2-2-3	COMP. STRUT #1	25.896	13.5	13.5	N/A	N/A	Lateral
26	STRUT#2-4-5	COMP. STRUT #1	25.973	13.5	13.5	N/A	N/A	Lateral
27	STRUT#2-5-6	COMP. STRUT #1	31.833	10.42	10.42	N/A	N/A	Lateral
28	STRUT #1-5-6	COMP. STRUT #1	31.837	10.42	10.42	N/A	N/A	Lateral
29	ROD#2-1-2	TENSION ROD	47.034	Lbyy		N/A	N/A	Lateral
30	ROD#1-1-2	TENSION ROD	46.938	Lbyy		N/A	N/A	Lateral
31	ROD#2-5-6	TENSION ROD	46.925	Lbyy		N/A	N/A	Lateral
32	ROD#1-5-6	TENSION ROD	46.92	Lbyy		N/A	N/A	Lateral

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.266	-0.266	0	%100
2	B6	Z	-0.266	-0.266	0	%100
3	B2	Z	-0.194	-0.352	0	%100
4	B5	Z	-0.194	-0.352	0	%100
5	B3	Z	-0.203	-0.36	0	%100
6	B4	Z	-0.203	-0.36	0	%100

Member Distributed Loads (BLC 2 : SL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.532	-0.532	0	%100
2	B6	Z	-0.532	-0.532	0	%100
3	B2	Z	-0.356	-0.644	0	%100
4	B5	Z	-0.356	-0.644	0	%100
5	B3	Z	-0.371	-0.66	0	%100
6	B4	Z	-0.371	-0.66	0	%100

Member Distributed Loads (BLC 3 : Eh)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B6	Y	0.18	0.18	0	%100
2	B5	Y	0.18	0.18	0	%100
3	B2	Y	0.18	0.18	0	%100
4	B1	Y	0.18	0.18	0	%100
5	B4	Y	0.186	0.186	0	%100
6	B3	Y	0.186	0.186	0	%100
7	B6	X	0.054	0.054	0	%100
8	B5	X	0.054	0.054	0	%100
9	B2	X	0.054	0.054	0	%100
10	B1	X	0.054	0.054	0	%100
11	B4	X	0.056	0.056	0	%100
12	B3	X	0.056	0.056	0	%100

Member Distributed Loads (BLC 5 : WL, A, 0)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	0.233	0.233	0	%50
2	B6	Z	0.233	0.233	0	%50
3	B1	Z	0.366	0.366	%50	%100

Member Distributed Loads (BLC 5 : WL, A, 0) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	B6	Z	0.366	0.366	%50	%100
5	B2	Z	0.17	0.239	0	%50
6	B2	Z	0.375	0.483	%50	%100
7	B5	Z	0.375	0.483	%50	%100
8	B5	Z	0.17	0.239	0	%50
9	B3	Z	0.177	0.246	0	%50
10	B4	Z	0.177	0.246	0	%50
11	B3	Z	0.387	0.495	%50	%100
12	B4	Z	0.387	0.495	%50	%100

Member Distributed Loads (BLC 6 : WL, B, 0)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	0.519	0.519	0	%50
2	B6	Z	0.519	0.519	0	%50
3	B2	Z	0.378	0.532	0	%50
4	B5	Z	0.378	0.532	0	%50
5	B3	Z	0.395	0.548	0	%50
6	B4	Z	0.395	0.548	0	%50

Member Distributed Loads (BLC 7 : WL, A, 180)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.51	-0.51	0	%50
2	B6	Z	-0.51	-0.51	0	%50
3	B1	Z	-0.344	-0.344	%50	%100
4	B6	Z	-0.344	-0.344	%50	%100
5	B2	Z	-0.372	-0.523	0	%50
6	B5	Z	-0.372	-0.523	0	%50
7	B2	Z	-0.352	-0.454	%50	%100
8	B5	Z	-0.352	-0.454	%50	%100
9	B3	Z	-0.388	-0.539	0	%50
10	B4	Z	-0.388	-0.539	0	%50
11	B3	Z	-0.363	-0.465	%50	%100
12	B4	Z	-0.363	-0.465	%50	%100

Member Distributed Loads (BLC 8 : WL, B, 180)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.133	-0.133	0	%50
2	B6	Z	-0.133	-0.133	0	%50
3	B1	Z	-0.554	-0.554	%50	%100
4	B6	Z	-0.554	-0.554	%50	%100
5	B2	Z	-0.097	-0.136	0	%50
6	B2	Z	-0.568	-0.732	%50	%100
7	B5	Z	-0.568	-0.732	%50	%100
8	B5	Z	-0.097	-0.136	0	%50
9	B3	Z	-0.101	-0.141	0	%50
10	B4	Z	-0.101	-0.141	0	%50
11	B3	Z	-0.586	-0.75	%50	%100
12	B4	Z	-0.586	-0.75	%50	%100

Member Distributed Loads (BLC 9 : WL, CODE MIN.)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.355	-0.355	0	%100
2	B6	Z	-0.355	-0.355	0	%100
3	B2	Z	-0.259	-0.469	0	%100
4	B5	Z	-0.259	-0.469	0	%100
5	B3	Z	-0.27	-0.48	0	%100
6	B4	Z	-0.27	-0.48	0	%100

NOTE: Ev NOT APPLIED AS INDIVIDUAL BASIC LOAD CASE, APPLIED AS % OF TRIBUTARY DEAD LOAD TO INDIVIDUAL FRAME LINE

Basic Load Cases

	BLC Description	Category	Distributed
1	DL	DL	6
2	SL	SL	6
3	Eh	EL	12
4	Ev	EL	
5	WL, A, 0	WL	12
6	WL, B, 0	WL	6
7	WL, A, 180	WL	12
8	WL, B, 180	WL	12
9	WL, CODE MIN.	WL	6

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	D+S	Yes	Y	1	1	2	1				
2	D+.7Eh(NORTH)+.7Ev	Yes	Y	1	1	3	0.7	1	0.118		
3	D+.525Eh(NORTH)+.525Ev+.75S	Yes	Y	1	1	3	0.525	1	0.088	2	0.75
4	.6D+.7Eh(NORTH)+.7Ev	Yes	Y	1	0.6	3	0.7	1	0.118		
5	D+.7Eh(1.25 DIAPHRAGM FORCE,NORTH)+.7Ev		Y	1	1	3	0.875	1	0.118		
6	D+.525Eh(1.25 DIAPHRAGM FORCE,NORTH)+.525Ev+.75S		Y	1	1	3	0.394	1	0.088	2	0.75
7	.6D+.7Eh(1.25 DIAPHRAGM FORCE,NORTH)+.7Ev		Y	1	0.6	3	0.875	1	0.118		
8	D+.7Eh(SOUTH)+.7Ev	Yes	Y	1	1	3	-0.7	1	0.118		
9	D+.525Eh(SOUTH)+.525Ev+.75S	Yes	Y	1	1	3	-0.525	1	0.088	2	0.75
10	.6D+.7Eh(SOUTH)+.7Ev	Yes	Y	1	0.6	3	-0.7	1	0.118		
11	D+.7Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.7Ev		Y	1	1	3	-0.875	1	0.118		
12	D+.525Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.525Ev+.75S		Y	1	1	3	-0.394	1	0.088	2	0.75
13	.6D+.7Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.7Ev		Y	1	0.6	3	-0.875	1	0.118		
14	D+.6W, 0°, A	Yes	Y	1	1	5	0.6				
15	D+.6W, 0°, B	Yes	Y	1	1	6	0.6				
16	D+.6W, 180°, A	Yes	Y	1	1	7	0.6				
17	D+.6W, 180°, B	Yes	Y	1	1	8	0.6				
18	D+.6W, CODE MIN	Yes	Y	1	1	9	0.6				
19	.6D+.6W, 0°, A	Yes	Y	1	0.6	5	0.6				
20	.6D+.6W, 0°, B	Yes	Y	1	0.6	6	0.6				
21	.6D+.6W, 180°, A	Yes	Y	1	0.6	7	0.6				
22	.6D+.6W, 180°, B	Yes	Y	1	0.6	8	0.6				
23	.6D+.6W, CODE MIN.	Yes	Y	1	1	9	-0.6				
24	D+.45W, 0°, A+.75S	Yes	Y	1	1	5	0.45	2	0.75		
25	D+.45W, 0°, B+.75S	Yes	Y	1	1	6	0.45	2	0.75		
26	D+.45W, 180°, A+.75S	Yes	Y	1	1	7	0.45	2	0.75		
27	D+.45W, 180°, B+.75S	Yes	Y	1	1	8	0.45	2	0.75		
28	D+.45W, CODE MIN.+.75S	Yes	Y	1	1	9	0.45	2	0.75		
29	Eh ONLY		Y	3	1						
30	Ev ONLY	Yes	Y	1	0.168						
31	Eh w/ (OMEGA,NORTH)	Yes	Y	3	1.25						
32	Eh w/ (OMEGA,SOUTH)	Yes	Y	3	-1.25						
33	D ONLY	Yes	Y	1	1						
34	S ONLY	Yes	Y	2	1						
35	W, 0°, A ONLY	Yes	Y	5	1						
36	W, 0°, B ONLY	Yes	Y	6	1						
37	W, 180°, A ONLY	Yes	Y	7	1						
38	W, 180°, B ONLY	Yes	Y	8	1						
39	W, CODE MIN.	Yes	Y	9	1						
40	W, CODE MIN. (UP)	Yes	Y	9	-1						

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	B1	W24X104	0.333	19.403	26	0.081	19.403	y	26	227.207	919.162	155.689	594.276	1.715	H1-1b
2	B2	W24X104	0.373	19.478	26	0.085	19.839	y	26	225.463	919.162	155.689	572.841	1.663	H1-1b
3	B3	W24X104	0.146	20.466	26	0.056	20.466	y	26	227.542	919.162	155.689	696.006	2.007	H1-1b
4	B4	W24X104	0.199	19.03	31	0.055	20.466	y	3	227.542	919.162	155.689	493.623	1.423	H1-1b
5	B5	W24X104	0.357	19.032	26	0.085	19.391	y	26	227.495	919.162	155.689	576.436	1.662	H1-1b
6	B6	W24X104	0.332	19.389	26	0.081	19.389	y	26	227.542	919.162	155.689	594.19	1.713	H1-1b
7	C1-1	HP14X102	0.35	0	9	0.023	21.861	y	9	604.947	901.198	186.977	407.275	1.667	H1-1b
8	C1-2	HP14X102	0.368	0	9	0.028	19.8	y	9	649.873	901.198	186.977	407.275	1.667	H1-1b
9	C2-2	HP14X102	0.337	0	9	0.028	19.796	y	31	649.942	901.198	186.977	407.275	1.667	H1-1b
10	C2-1	HP14X102	0.324	0	9	0.023	21.852	y	31	605.157	901.198	186.977	407.275	1.667	H1-1b

ALL MEMBERS CODE CHECK w/ U.C. <1.0

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
11	C3-2	HP14X102	0.386	0	31	0.031	19.64	y	9	653.293	901.198	186.977	407.275	1.667	H1-1b
12	C3-1	HP14X102	0.341	0	31	0.025	21.711	y	9	608.266	901.198	186.977	407.275	1.667	H1-1b
13	C4-2	HP14X102	0.437	0	31	0.032	19.659	y	9	652.879	901.198	186.977	407.275	1.667	H1-1b
14	C4-1	HP14X102	0.412	0	31	0.026	21.725	y	9	607.951	901.198	186.977	407.275	1.667	H1-1b
15	C5-1	HP14X102	0.346	0	9	0.013	21.863	y	26	604.912	901.198	186.977	407.275	1.667	H1-1b
16	C5-2	HP14X102	0.357	0	9	0.016	19.8	y	26	649.862	901.198	186.977	407.275	1.667	H1-1b
17	C6-1	HP14X102	0.38	0	9	0.019	21.863	y	26	604.907	901.198	186.977	407.275	1.667	H1-1b
18	C6-2	HP14X102	0.404	0	9	0.024	19.8	y	26	649.86	901.198	186.977	407.275	1.667	H1-1b
19	STRUT#1-3-4	W10X26	0.505	33.355	26	0	33.355	y	40	13.229	227.844	18.713	40.745	1	H1-1a*
20	STRUT#2-3-4	W10X26	0.091	34.614	31	0	34.614	y	40	12.284	227.844	18.713	40.745	1	H1-1b*
21	ROD#2-3-4	.5"	0.116	48.367	32	0	48.367		32	0.001	4.233	0.035	0.035	1	H1-1b*
22	ROD#1-3-4	.5"	0.108	48.435	31	0	48.435		40	0.001	4.233	0.035	0.035	1	H1-1b*
23	STRUT #2-1-2	W10X19	0.276	31.833	26	0	31.833	y	40	4.419	168.263	8.358	29.717	1	H1-1a*
24	STRUT #1-1-2	W10X19	0.519	31.83	26	0	31.83	y	40	4.42	168.263	8.358	29.717	1	H1-1a*
25	STRUT #2-2-3	W10X19	0.162	25.896	31	0	25.896	y	40	6.677	168.263	8.358	20.891	1	H1-1b*
26	STRUT#2-4-5	W10X19	0.131	25.973	31	0	25.973	y	40	6.638	168.263	8.358	20.891	1	H1-1b*
27	STRUT#2-5-6	W10X19	0.273	31.833	26	0	31.833	y	40	4.419	168.263	8.358	29.717	1	H1-1a*
28	STRUT #1-5-6	W10X19	0.629	31.837	3	0	31.837	y	40	4.418	168.263	8.358	29.717	1	H1-1a*
29	ROD#2-1-2	.5"	0.379	47.034	36	0	47.034		40	0.001	4.233	0.035	0.035	1	H1-1a*
30	ROD#1-1-2	.5"	0.661	46.938	26	0	46.938		40	0.001	4.233	0.035	0.035	1	H1-1a*
31	ROD#2-5-6	.5"	0.382	46.925	36	0	46.925		40	0.001	4.233	0.035	0.035	1	H1-1a*
32	ROD#1-5-6	.5"	0.665	46.92	26	0	46.92		40	0.001	4.233	0.035	0.035	1	H1-1a*

Member End Reactions

LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
440			J	35.615	-3.522	0.618	0	0	0
441	30	C1-1	I	1.927	-0.188	0.033	0	-0.723	-4.116
442			J	1.927	-0.188	0.033	0	0	0
443	31	C1-1	I	-0.178	3.573	-0.545	0	11.917	78.109
444			J	-0.178	3.573	-0.545	0	0	0
445	32	C1-1	I	0.13	-3.554	0.543	0	-11.862	-77.706
446			J	0.13	-3.554	0.543	0	0	0
447	33	C1-1	I	11.473	-1.127	0.2	0	-4.365	-24.627
448			J	11.473	-1.127	0.2	0	0	0
449	34	C1-1	I	22.967	-2.245	0.375	0	-8.19	-49.069
450			J	22.967	-2.245	0.375	0	0	0
451	35	C1-1	I	-10.926	0.972	-0.17	0	3.718	21.26
452			J	-10.926	0.972	-0.17	0	0	0
453	36	C1-1	I	-18.92	2.174	-0.374	0	8.166	47.531
454			J	-18.92	2.174	-0.374	0	0	0
455	37	C1-1	I	20.907	-2.169	0.386	0	-8.431	-47.425
456			J	20.907	-2.169	0.386	0	0	0
457	38	C1-1	I	8.527	-0.56	0.103	0	-2.244	-12.248
458			J	8.527	-0.56	0.103	0	0	0
459	39	C1-1	I	15.314	-1.506	0.268	0	-5.851	-32.929
460			J	15.314	-1.506	0.268	0	0	0
461	40	C1-1	I	-15.3	1.481	-0.257	0	5.615	32.387
462			J	-15.3	1.481	-0.257	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

507	30	C1-2	I	-0.327	-0.23	0.051	0	-1.009	-4.563

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
508			J	-0.327	-0.23	0.051	0	0	0
509	31	C1-2	I	0.36	4.406	-0.398	0	7.885	87.231
510			J	0.36	4.406	-0.398	0	0	0
511	32	C1-2	I	-0.308	-4.383	0.395	0	-7.825	-86.782
512			J	-0.308	-4.383	0.395	0	0	0
513	33	C1-2	I	-1.948	-1.379	0.306	0	-6.065	-27.301
514			J	-1.948	-1.379	0.306	0	0	0
515	34	C1-2	I	-3.899	-2.747	0.572	0	-11.329	-54.395
516			J	-3.899	-2.747	0.572	0	0	0
517	35	C1-2	I	0.254	1.189	-0.265	0	5.248	23.54
518			J	0.254	1.189	-0.265	0	0	0
519	36	C1-2	I	9.47	2.663	-0.583	0	11.544	52.733
520			J	9.47	2.663	-0.583	0	0	0
521	37	C1-2	I	-5.551	-2.656	0.589	0	-11.658	-52.596
522			J	-5.551	-2.656	0.589	0	0	0
523	38	C1-2	I	3.626	-0.683	0.158	0	-3.127	-13.525
524			J	3.626	-0.683	0.158	0	0	0
525	39	C1-2	I	-2.601	-1.844	0.41	0	-8.114	-36.505
526			J	-2.601	-1.844	0.41	0	0	0
527	40	C1-2	I	2.6	1.812	-0.401	0	7.939	35.886
528			J	2.6	1.812	-0.401	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

573	30	C2-2	I	-0.3	-0.164	0.054	0	-1.067	-3.252
574			J	-0.3	-0.164	0.054	0	0	0
575	31	C2-2	I	-0.032	5.506	-0.317	0	6.278	108.995

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
576			J	-0.032	5.506	-0.317	0	0	0
577	32	C2-2	I	0.141	-5.494	0.315	0	-6.228	-108.759
578			J	0.141	-5.494	0.315	0	0	0
579	33	C2-2	I	-1.795	-0.984	0.324	0	-6.406	-19.488
580			J	-1.795	-0.984	0.324	0	0	0
581	34	C2-2	I	-3.283	-1.833	0.604	0	-11.962	-36.277
582			J	-3.283	-1.833	0.604	0	0	0
583	35	C2-2	I	-0.232	0.848	-0.278	0	5.501	16.789
584			J	-0.232	0.848	-0.278	0	0	0
585	36	C2-2	I	10.394	1.866	-0.612	0	12.123	36.936
586			J	10.394	1.866	-0.612	0	0	0
587	37	C2-2	I	-5.685	-1.889	0.622	0	-12.314	-37.386
588			J	-5.685	-1.889	0.622	0	0	0
589	38	C2-2	I	4.752	-0.507	0.166	0	-3.294	-10.035
590			J	4.752	-0.507	0.166	0	0	0
591	39	C2-2	I	-2.397	-1.316	0.433	0	-8.569	-26.043
592			J	-2.397	-1.316	0.433	0	0	0
593	40	C2-2	I	2.353	1.284	-0.421	0	8.326	25.415
594			J	2.353	1.284	-0.421	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

639	30	C2-1	I	2.083	-0.135	0.038	0	-0.84	-2.944
640			J	2.083	-0.135	0.038	0	0	0
641	31	C2-1	I	0.734	4.467	-0.388	0	8.468	97.617
642			J	0.734	4.467	-0.388	0	0	0
643	32	C2-1	I	-0.844	-4.457	0.386	0	-8.428	-97.403

Member End Reactions (Continued)

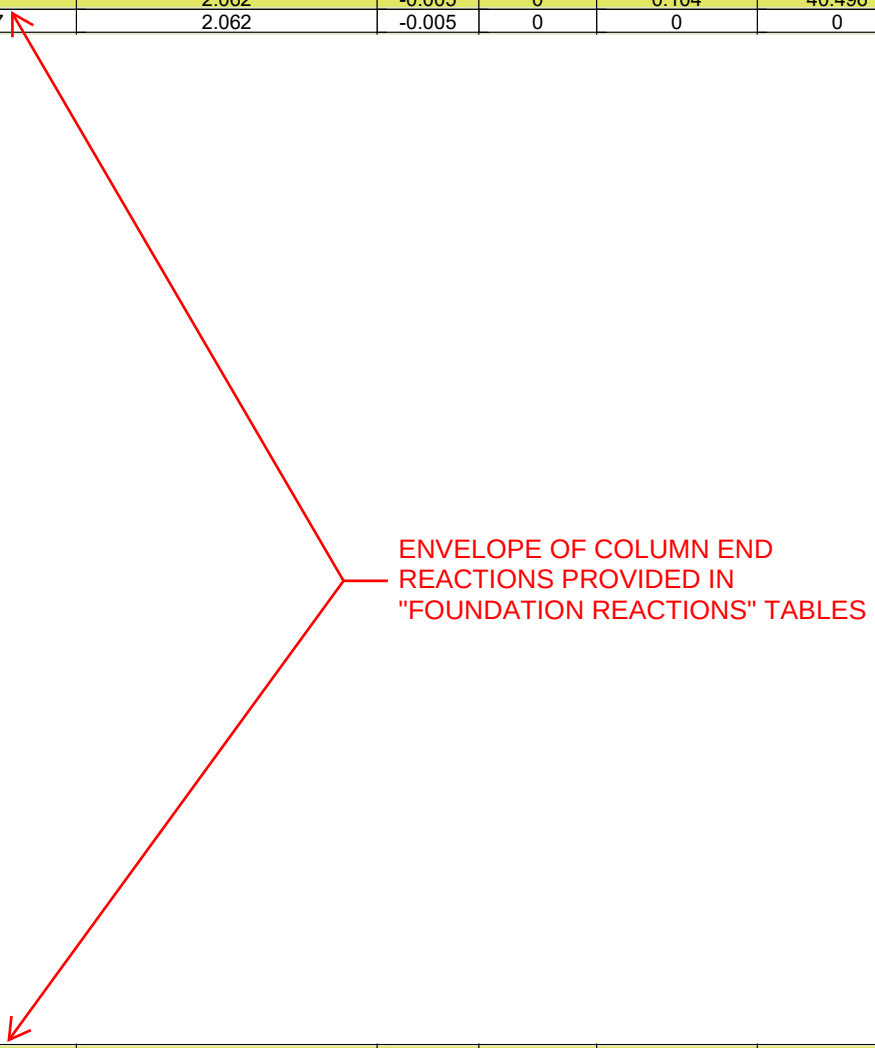
	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
644			J	-0.844	-4.457	0.386	0	0	0
645	33	C2-1	I	12.415	-0.807	0.232	0	-5.061	-17.64
646			J	12.415	-0.807	0.232	0	0	0
647	34	C2-1	I	22.734	-1.502	0.434	0	-9.479	-32.828
648			J	22.734	-1.502	0.434	0	0	0
649	35	C2-1	I	-11.789	0.697	-0.197	0	4.296	15.224
650			J	-11.789	0.697	-0.197	0	0	0
651	36	C2-1	I	-20.334	1.528	-0.434	0	9.491	33.393
652			J	-20.334	1.528	-0.434	0	0	0
653	37	C2-1	I	22.591	-1.548	0.447	0	-9.766	-33.819
654			J	22.591	-1.548	0.447	0	0	0
655	38	C2-1	I	9.25	-0.418	0.118	0	-2.58	-9.134
656			J	9.25	-0.418	0.118	0	0	0
657	39	C2-1	I	16.556	-1.079	0.31	0	-6.779	-23.573
658			J	16.556	-1.079	0.31	0	0	0
659	40	C2-1	I	-16.49	1.054	-0.298	0	6.503	23.021
660			J	-16.49	1.054	-0.298	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

705	30	C3-2	I	0.037	-0.263	0.001	0	-0.011	-5.174
706			J	0.037	-0.263	0.001	0	0	0
707	31	C3-2	I	1.285	5.025	1.36	0	-26.716	98.687
708			J	1.285	5.025	1.36	0	0	0
709	32	C3-2	I	-1.183	-5.015	-1.361	0	26.722	-98.5
710			J	-1.183	-5.015	-1.361	0	0	0
711	33	C3-2	I	0.228	-1.578	0.004	0	-0.069	-30.997

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
712			J	0.228	-1.578	0.004	0	0	0
713	34	C3-2	I	0.483	-2.933	0.007	0	-0.144	-57.6
714			J	0.483	-2.933	0.007	0	0	0
715	35	C3-2	I	-1.782	1.362	-0.003	0	0.064	26.746
716			J	-1.782	1.362	-0.003	0	0	0
717	36	C3-2	I	5.769	2.997	-0.009	0	0.168	58.868
718			J	5.769	2.997	-0.009	0	0	0
719	37	C3-2	I	-1.541	-3.027	0.007	0	-0.143	-59.455
720			J	-1.541	-3.027	0.007	0	0	0
721	38	C3-2	I	5.159	-0.812	0.001	0	-0.021	-15.943
722			J	5.159	-0.812	0.001	0	0	0
723	39	C3-2	I	0.31	-2.109	0.005	0	-0.094	-41.416
724			J	0.31	-2.109	0.005	0	0	0
725	40	C3-2	I	-0.287	2.062	-0.005	0	0.104	40.496
726			J	-0.287	2.062	-0.005	0	0	0



771	30	C3-1	I	1.463	-0.214	-0.001	0	0.022	-4.652
772			J	1.463	-0.214	-0.001	0	0	0
773	31	C3-1	I	-1.479	4.066	1.059	0	-22.995	88.28
774			J	-1.479	4.066	1.059	0	0	0
775	32	C3-1	I	1.368	-4.058	-1.059	0	22.997	-88.105
776			J	1.368	-4.058	-1.059	0	0	0
777	33	C3-1	I	8.703	-1.284	-0.006	0	0.123	-27.867
778			J	8.703	-1.284	-0.006	0	0	0
779	34	C3-1	I	15.857	-2.385	-0.009	0	0.201	-51.778

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
780			J	15.857	-2.385	-0.009	0	0	0
781	35	C3-1	I	-8.847	1.109	0.006	0	-0.126	24.068
782			J	-8.847	1.109	0.006	0	0	0
783	36	C3-1	I	-12.154	2.434	0.011	0	-0.23	52.85
784			J	-12.154	2.434	0.011	0	0	0
785	37	C3-1	I	15.127	-2.461	-0.01	0	0.212	-53.426
786			J	15.127	-2.461	-0.01	0	0	0
787	38	C3-1	I	8.229	-0.663	-0.004	0	0.091	-14.396
788			J	8.229	-0.663	-0.004	0	0	0
789	39	C3-1	I	11.591	-1.715	-0.007	0	0.16	-37.234
790			J	11.591	-1.715	-0.007	0	0	0
791	40	C3-1	I	-11.609	1.677	0.008	0	-0.182	36.412
792			J	-11.609	1.677	0.008	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

837	30	C4-2	I	0.058	-0.259	-0.001	0	0.013	-5.091
838			J	0.058	-0.259	-0.001	0	0	0
839	31	C4-2	I	-7.462	5.58	1.551	0	-30.49	109.691
840			J	-7.462	5.58	1.551	0	0	0
841	32	C4-2	I	7.482	-5.557	-1.54	0	30.284	-109.243
842			J	7.482	-5.557	-1.54	0	0	0
843	33	C4-2	I	0.351	-1.551	-0.004	0	0.083	-30.501
844			J	0.351	-1.551	-0.004	0	0	0
845	34	C4-2	I	0.709	-2.883	-0.009	0	0.169	-56.674
846			J	0.709	-2.883	-0.009	0	0	0
847	35	C4-2	I	-1.924	1.341	0.003	0	-0.051	26.368

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
848			J	-1.924	1.341	0.003	0	0	0
849	36	C4-2	I	5.625	2.971	0.006	0	-0.117	58.405
850			J	5.625	2.971	0.006	0	0	0
851	37	C4-2	I	-1.341	-2.98	-0.008	0	0.166	-58.579
852			J	-1.341	-2.98	-0.008	0	0	0
853	38	C4-2	I	5.309	-0.788	-0.002	0	0.039	-15.495
854			J	5.309	-0.788	-0.002	0	0	0
855	39	C4-2	I	0.474	-2.073	-0.006	0	0.113	-40.753
856			J	0.474	-2.073	-0.006	0	0	0
857	40	C4-2	I	-0.461	2.036	0.004	0	-0.076	40.023
858			J	-0.461	2.036	0.004	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

903	30	C4-1	I	1.439	-0.211	0.001	0	-0.021	-4.579
904			J	1.439	-0.211	0.001	0	0	0
905	31	C4-1	I	12.847	4.509	1.384	0	-30.078	97.956
906			J	12.847	4.509	1.384	0	0	0
907	32	C4-1	I	-12.862	-4.49	-1.364	0	29.635	-97.548
908			J	-12.862	-4.49	-1.364	0	0	0
909	33	C4-1	I	8.563	-1.263	0.005	0	-0.116	-27.43
910			J	8.563	-1.263	0.005	0	0	0
911	34	C4-1	I	15.598	-2.346	0.009	0	-0.187	-50.962
912			J	15.598	-2.346	0.009	0	0	0
913	35	C4-1	I	-8.684	1.092	-0.006	0	0.124	23.734
914			J	-8.684	1.092	-0.006	0	0	0
915	36	C4-1	I	-11.969	2.414	-0.012	0	0.251	52.448

Member End Reactions (Continued)

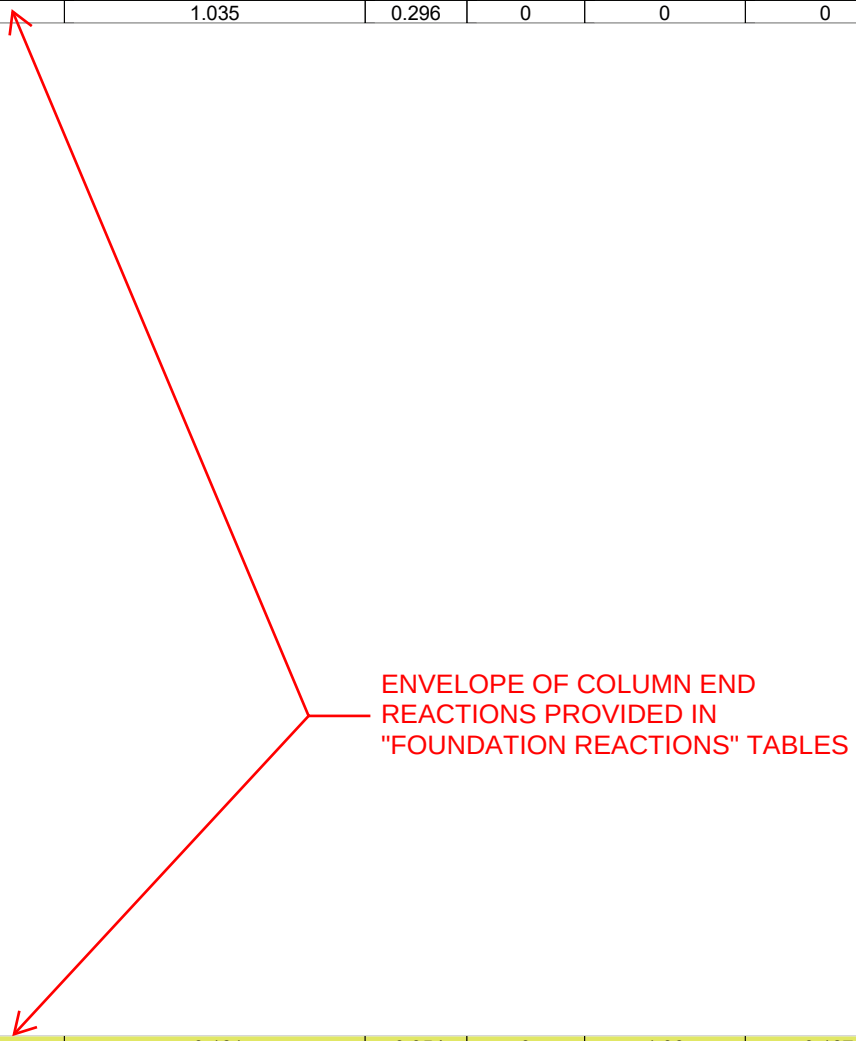
	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
916			J	-11.969	2.414	-0.012	0	0	0
917	37	C4-1	I	14.894	-2.424	0.009	0	-0.203	-52.654
918			J	14.894	-2.424	0.009	0	0	0
919	38	C4-1	I	8.068	-0.644	0.003	0	-0.074	-13.998
920			J	8.068	-0.644	0.003	0	0	0
921	39	C4-1	I	11.404	-1.687	0.007	0	-0.15	-36.649
922			J	11.404	-1.687	0.007	0	0	0
923	40	C4-1	I	-11.404	1.657	-0.009	0	0.185	35.996
924			J	-11.404	1.657	-0.009	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

969	30	C5-1	I	2.067	-0.132	-0.038	0	0.834	-2.884
970			J	2.067	-0.132	-0.038	0	0	0
971	31	C5-1	I	-13.22	1.169	2.237	0	-48.899	25.553
972			J	-13.22	1.169	2.237	0	0	0
973	32	C5-1	I	13.116	-1.165	-2.262	0	49.461	-25.47
974			J	13.116	-1.165	-2.262	0	0	0
975	33	C5-1	I	12.319	-0.791	-0.23	0	5.03	-17.283
976			J	12.319	-0.791	-0.23	0	0	0
977	34	C5-1	I	22.558	-1.471	-0.431	0	9.42	-32.159
978			J	22.558	-1.471	-0.431	0	0	0
979	35	C5-1	I	-11.697	0.682	0.195	0	-4.272	14.913
980			J	-11.697	0.682	0.195	0	0	0
981	36	C5-1	I	-20.231	1.509	0.434	0	-9.482	32.999
982			J	-20.231	1.509	0.434	0	0	0
983	37	C5-1	I	22.428	-1.518	-0.444	0	9.715	-33.193

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
984			J	22.428	-1.518	-0.444	0	0	0
985	38	C5-1	I	9.15	-0.403	-0.116	0	2.541	-8.8
986			J	9.15	-0.403	-0.116	0	0	0
987	39	C5-1	I	16.429	-1.056	-0.308	0	6.737	-23.096
988			J	16.429	-1.056	-0.308	0	0	0
989	40	C5-1	I	-16.376	1.035	0.296	0	-6.479	22.625
990			J	-16.376	1.035	0.296	0	0	0



1035	30	C5-2	I	-0.289	-0.161	-0.054	0	1.06	-3.187
1036			J	-0.289	-0.161	-0.054	0	0	0
1037	31	C5-2	I	8.082	1.431	2.599	0	-51.453	28.331
1038			J	8.082	1.431	2.599	0	0	0
1039	32	C5-2	I	-8.032	-1.426	-2.609	0	51.667	-28.242
1040			J	-8.032	-1.426	-2.609	0	0	0
1041	33	C5-2	I	-1.731	-0.965	-0.322	0	6.366	-19.099
1042			J	-1.731	-0.965	-0.322	0	0	0
1043	34	C5-2	I	-3.167	-1.795	-0.6	0	11.884	-35.547
1044			J	-3.167	-1.795	-0.6	0	0	0
1045	35	C5-2	I	-0.285	0.831	0.275	0	-5.45	16.45
1046			J	-0.285	0.831	0.275	0	0	0
1047	36	C5-2	I	10.298	1.844	0.61	0	-12.075	36.511
1048			J	10.298	1.844	0.61	0	0	0
1049	37	C5-2	I	-5.568	-1.854	-0.619	0	12.249	-36.704
1050			J	-5.568	-1.854	-0.619	0	0	0
1051	38	C5-2	I	4.795	-0.488	-0.164	0	3.239	-9.668

Member End Reactions (Continued)

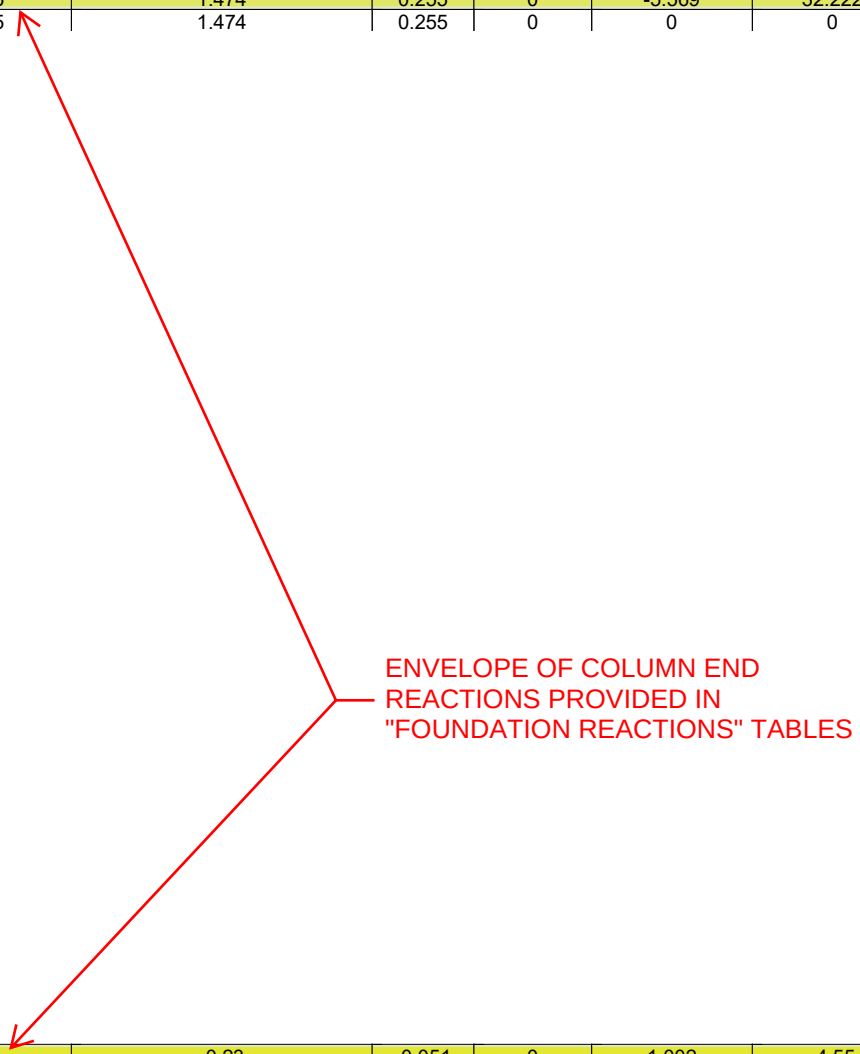
	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
1052			J	4.795	-0.488	-0.164	0	0	0
1053	39	C5-2	I	-2.312	-1.289	-0.43	0	8.515	-25.522
1054			J	-2.312	-1.289	-0.43	0	0	0
1055	40	C5-2	I	2.278	1.262	0.417	0	-8.265	24.983
1056			J	2.278	1.262	0.417	0	0	0

ENVELOPE OF COLUMN END REACTIONS PROVIDED IN "FOUNDATION REACTIONS" TABLES

1101	30	C6-1	I	1.924	-0.188	-0.033	0	0.715	-4.104
1102			J	1.924	-0.188	-0.033	0	0	0
1103	31	C6-1	I	-0.06	1.004	2.304	0	-50.378	21.948
1104			J	-0.06	1.004	2.304	0	0	0
1105	32	C6-1	I	0.086	-1.001	-2.299	0	50.272	-21.88
1106			J	0.086	-1.001	-2.299	0	0	0
1107	33	C6-1	I	11.455	-1.123	-0.198	0	4.32	-24.557
1108			J	11.455	-1.123	-0.198	0	0	0
1109	34	C6-1	I	22.93	-2.238	-0.371	0	8.104	-48.936
1110			J	22.93	-2.238	-0.371	0	0	0
1111	35	C6-1	I	-10.907	0.967	0.168	0	-3.682	21.134
1112			J	-10.907	0.967	0.168	0	0	0
1113	36	C6-1	I	-18.89	2.166	0.372	0	-8.124	47.362
1114			J	-18.89	2.166	0.372	0	0	0
1115	37	C6-1	I	20.874	-2.164	-0.382	0	8.354	-47.313
1116			J	20.874	-2.164	-0.382	0	0	0
1117	38	C6-1	I	8.511	-0.556	-0.101	0	2.2	-12.155
1118			J	8.511	-0.556	-0.101	0	0	0
1119	39	C6-1	I	15.29	-1.502	-0.265	0	5.792	-32.836

Member End Reactions (Continued)

	LC	Member Label	Member End	Axial[k]	y Shear[k]	z Shear[k]	Torque[k-ft]	y-y Moment[k-ft]	z-z Moment[k-ft]
1120			J	15.29	-1.502	-0.265	0	0	0
1121	40	C6-1	I	-15.275	1.474	0.255	0	-5.569	32.222
1122			J	-15.275	1.474	0.255	0	0	0



1167	30	C6-2	I	-0.325	-0.23	-0.051	0	1.002	-4.55
1168			J	-0.325	-0.23	-0.051	0	0	0
1169	31	C6-2	I	0.091	1.238	2.634	0	-52.157	24.51
1170			J	0.091	1.238	2.634	0	0	0
1171	32	C6-2	I	-0.105	-1.234	-2.629	0	52.045	-24.437
1172			J	-0.105	-1.234	-2.629	0	0	0
1173	33	C6-2	I	-1.936	-1.375	-0.304	0	6.019	-27.225
1174			J	-1.936	-1.375	-0.304	0	0	0
1175	34	C6-2	I	-3.875	-2.74	-0.568	0	11.242	-54.251
1176			J	-3.875	-2.74	-0.568	0	0	0
1177	35	C6-2	I	0.242	1.182	0.262	0	-5.194	23.402
1178			J	0.242	1.182	0.262	0	0	0
1179	36	C6-2	I	9.445	2.654	0.58	0	-11.484	52.548
1180			J	9.445	2.654	0.58	0	0	0
1181	37	C6-2	I	-5.528	-2.65	-0.585	0	11.584	-52.476
1182			J	-5.528	-2.65	-0.585	0	0	0
1183	38	C6-2	I	3.633	-0.678	-0.155	0	3.072	-13.421
1184			J	3.633	-0.678	-0.155	0	0	0
1185	39	C6-2	I	-2.584	-1.839	-0.407	0	8.053	-36.404
1186			J	-2.584	-1.839	-0.407	0	0	0
1187	40	C6-2	I	2.582	1.803	0.397	0	-7.87	35.704

Node Displacements

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1	1	N1	0	0	0	0	0	0
2	1	N2	0	0	0	0	0	0
3	1	N3	0	0	0	0	0	0
4	1	GL1-BC1	0	0	0	0	0	0
5	1	GL1-CL	0	0	0	0	0	0
6	1	GL1-BC2	0	0	0	0	0	0
7	1	N7	0	0	0	0	0	0
8	1	N8	0	0	0	0	0	0
9	1	N9	0	0	0	0	0	0
10	1	GL2-BC2	0	0	0	0	0	0
11	1	GL2-CL	0	0	0	0	0	0
12	1	GL2-BC1	0	0	0	0	0	0
13	1	N13	0	0	0	0	0	0
14	1	N14	0	0	0	0	0	0
15	1	N15	0	0	0	0	0	0
16	1	GL3-BC1	0	0	0	0	0	0
17	1	GL3-BC2	0	0	0	0	0	0
18	1	N18	0	0	0	0	0	0
19	1	N19	0	0	0	0	0	0
20	1	N20	0	0	0	0	0	0
21	1	N21	0	0	0	0	0	0
22	1	GL4-BC1	0	0	0	0	0	0
23	1	GL4-CL	0	0	0	0	0	0
24	1	GL4-BC2	0	0	0	0	0	0
25	1	N25	0	0	0	0	0	0
26	1	N26	0	0	0	0	0	0
27	1	N27	0	0	0	0		
28	1	N28	0	0	0	0		
29	1	GL6-BC1	0	0	0	0		
30	1	GL6-CL	0	0	0	0		
31	1	GL6-BC2	0	0	0	0		
32	1	N32	0	0	0	0	0	0
33	1	N33	0	0	0	0	0	0
34	1	N34	0	0	0	0	0	0
35	1	GL5-BC1	0	0	0	0	0	0
36	1	GL5-CL	0	0	0	0	0	0
37	1	GL5-BC2	0	0	0	0	0	0
38	1	N38	0	0	0	0	0	0
39	1	N39	0	0	0	0	0	0
40	1	GL3-CL	0	0	0	0	0	0
41	1	GL1-EB2	-0.534	-0.742	0.259	2.377e-3	5.58e-4	1.378e-3
42	1	GL2-EB2	-0.538	-0.509	0.17	1.499e-3	-3.294e-4	1.157e-3
43	1	GL3-EB2	-0.562	-0.566	0.255	4.243e-3	4.825e-4	-3.856e-4
44	1	GL4-EB2	-0.554	-0.557	0.255	-4.765e-4	-4.192e-3	3.762e-4
45	1	GL6-EB2	-0.74	-0.531	0.259	1.737e-3	-2.37e-3	-1.757e-3
46	1	GL5-EB2	-0.499	-0.534	0.166	3.08e-4	-1.466e-3	-1.14e-3
47	1	GL1-EB1	-0.731	-1.026	-1.45	5.795e-3	0	-1.972e-3
48	1	GL3-EB1	-0.736	-0.748	-1.25	5.323e-3	-6.651e-4	-8.667e-4
49	1	GL4-EB1	-0.734	-0.727	-1.22	6.397e-4	-5.232e-3	8.501e-4
50	1	GL6-EB1	-1.024	-0.721	-1.444	2.29e-3	-5.778e-3	1.559e-3
51	1	GL6-TC1	-0.82	-0.398	-0.215	2.03e-3	-3.863e-3	0
52	1	GL6-TC2	-0.763	-0.45	0.118	1.79e-3	-2.403e-3	-1.443e-3
53	1	GL1-TC1	-0.402	-0.822	-0.215	3.873e-3	2.626e-4	-3.952e-4
54	1	GL1-TC2	-0.453	-0.765	0.119	2.41e-3	5.052e-4	1.061e-3
55	1	GL2-TC1	-0.464	-0.563	-0.152	3.086e-3	-5.999e-4	-4.737e-4
56	1	GL2-TC2	-0.478	-0.523	0.082	1.54e-3	-3.804e-4	8.498e-4
57	1	GL3-TC1	-0.602	-0.64	-0.227	4.825e-3	-9.47e-5	-4.633e-4
58	1	GL3-TC2	-0.571	-0.587	0.125	4.257e-3	4.667e-4	-3.932e-4
59	1	GL4-TC1	-0.628	-0.596	-0.223	9.306e-5	-4.762e-3	4.563e-4

END OF BEAM DEFLECTION UNDER D+S LOAD COMBO

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
60	1	GL4-TC2	-0.575	-0.566	0.123	-4.594e-4	-4.208e-3	3.845e-4
61	1	GL5-TC1	-0.552	-0.461	0.149	5.768e-4	-3.035e-3	4.728e-4
62	1	GL5-TC2	-0.513	-0.475	0.08	3.587e-4	-1.506e-3	-8.36e-4
63	1	GL2-EB1	-0.736	-0.743	-1.254	5.323e-3	-6.651e-4	-8.667e-4
64	1	GL5-EB1	-0.729	-0.727	-1.224	6.397e-4	-5.232e-3	8.501e-4
65	2	N1	0	0	0	0	0	0
66	2	N2	0	0	0	0	0	0
67	2	N3	0	0	0	0	0	0
68	2	GL1-BC1	0	0	0	0	0	0
69	2	GL1-CL	0	0	0	0	0	0
70	2	GL1-BC2	0	0	0	0	0	0
71	2	N7	0	0	0	0	0	0
72	2	N8	0	0	0	0	0	0
73	2	N9	0	0	0	0	0	0
74	2	GL2-BC2	0	0	0	0	0	0
75	2	GL2-CL	0	0	0	0	0	0
76	2	GL2-BC1	0	0	0	0	0	0
77	2	N13	0	0	0	0	0	0
78	2	N14	0	0	0			0
79	2	N15	0	0	0			0
80	2	GL3-BC1	0	0	0			0
81	2	GL3-BC2	0	0	0			0
82	2	N18	0	0	0			0
83	2	N19	0	0	0	0	0	0
84	2	N20	0	0	0	0	0	0
85	2	N21	0	0	0	0	0	0
86	2	GL4-BC1	0	0	0	0	0	0
87	2	GL4-CL	0	0	0	0	0	0
88	2	GL4-BC2	0	0	0	0	0	0
89	2	N25	0	0	0	0	0	0
90	2	N26	0	0	0	0	0	0
91	2	N27	0	0	0	0	0	0
92	2	N28	0	0	0	0	0	0
93	2	GL6-BC1	0	0	0	0	0	0
94	2	GL6-CL	0	0	0	0	0	0
95	2	GL6-BC2	0	0	0	0	0	0
96	2	N32	0	0	0	0	0	0
97	2	N33	0	0	0	0	0	0
98	2	N34	0	0	0	0	0	0
99	2	GL5-BC1	0	0	0	0	0	0
100	2	GL5-CL	0	0	0	0	0	0
101	2	GL5-BC2	0	0	0	0	0	0
102	2	N38	0	0	0	0	0	0
103	2	N39	0	0	0	0	0	0
104	2	GL3-CL	0	0	0	0	0	0
105	2	GL1-EB2	-0.135	0.194	-0.077	-7.871e-4	4.74e-4	1.55e-3
106	2	GL2-EB2	-0.137	0.376	-0.146	-1.462e-3	7.51e-4	9.881e-4
107	2	GL3-EB2	-0.121	0.42	-0.074	-3.88e-4	7.809e-4	-1.535e-4
108	2	GL4-EB2	-0.071	0.474	-0.098	-5.828e-4	1.004e-3	-9.628e-4
109	2	GL6-EB2	-0.122	0.494	0.04	-4.e-3	-3.45e-4	-1.224e-3
110	2	GL5-EB2	-0.028	0.492	0.008	4.449e-4	-7.345e-5	-1.693e-3
111	2	GL1-EB1	-0.071	0.211	0.018	2.603e-4	0	-1.296e-3
112	2	GL3-EB1	-0.073	0.432	0.175	-1.5e-4	5.85e-4	-1.291e-5
113	2	GL4-EB1	-0.046	0.468	-0.026	1.03e-3	3.753e-6	1.816e-3
114	2	GL6-EB1	-0.185	0.474	-0.34	-3.263e-3	-1.454e-3	3.194e-3
115	2	GL6-TC1	-0.135	0.76	-0.038	-3.796e-3	-8.305e-4	0
116	2	GL6-TC2	-0.126	0.604	0.02	-3.983e-3	-3.558e-4	-1.122e-3
117	2	GL1-TC1	0.074	0.215	0.048	-3.286e-4	2.775e-4	3.699e-4
118	2	GL1-TC2	-0.042	0.202	-0.03	-7.77e-4	4.442e-4	1.371e-3
119	2	GL2-TC1	-0.009	0.417	0.097	-9.275e-4	5.887e-4	9.816e-6
120	2	GL2-TC2	-0.074	0.391	-0.059	-1.45e-3	7.236e-4	8.23e-4
121	2	GL3-TC1	-0.121	0.449	0.057	-2.409e-4	6.511e-4	-1.04e-4
122	2	GL3-TC2	-0.121	0.428	-0.035	-3.871e-4	7.726e-4	-1.852e-4
123	2	GL4-TC1	-0.148	0.595	0.07	-5.603e-5	5.464e-4	-6.011e-4
124	2	GL4-TC2	-0.095	0.513	-0.043	-5.796e-4	9.975e-4	-9.772e-4
125	2	GL5-TC1	-0.031	0.715	-0.01	6.312e-4	-1.484e-4	-5.744e-4
126	2	GL5-TC2	-0.029	0.586	0.003	4.612e-4	-8.654e-5	-1.595e-3
127	2	GL2-EB1	-0.073	0.432	0.178	-1.5e-4	5.85e-4	-1.291e-5

END OF BEAM DEFLECTION UNDER D+S LOAD COMBO

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1216	25	GL5-EB1	-0.669	-0.668	-1.123	5.817e-4	-4.8e-3	7.882e-4
1217	28	N1	0	0	0	0	0	0
1218	28	N2	0	0	0	0	0	0
1219	28	N3	0	0	0	0	0	0
1220	28	GL1-BC1	0	0	0	0	0	0
1221	28	GL1-CL	0	0	0	0	0	0
1222	28	GL1-BC2	0	0	0	0	0	0
1223	28	N7	0	0	0	0	0	0
1224	28	N8	0	0	0	0	0	0
1225	28	N9	0	0	0	0	0	0
1226	28	GL2-BC2	0	0	0	0	0	0
1227	28	GL2-CL	0	0	0	0	0	0
1228	28	GL2-BC1	0	0	0	0	0	0
1229	28	N13	0	0	0	0	0	0
1230	28	N14	0	0	0	0	0	0
1231	28	N15	0	0	0	0	0	0
1232	28	GL3-BC1	0	0	0	0	0	0
1233	28	GL3-BC2	0	0	0	0	0	0
1234	28	N18	0	0	0	0	0	0
1235	28	N19	0	0	0	0	0	0
1236	28	N20	0	0	0	0	0	0
1237	28	N21	0	0	0	0	0	0
1238	28	GL4-BC1	0	0	0	0	0	0
1239	28	GL4-CL	0	0	0	0	0	0
1240	28	GL4-BC2	0	0	0	0	0	0
1241	28	N25	0	0	0	0	0	0
1242	28	N26	0	0	0	0	0	0
1243	28	N27	0	0	0			
1244	28	N28	0	0	0			
1245	28	GL6-BC1	0	0	0			
1246	28	GL6-CL	0	0	0			
1247	28	GL6-BC2	0	0	0	0	0	0
1248	28	N32	0	0	0	0	0	0
1249	28	N33	0	0	0	0	0	0
1250	28	N34	0	0	0	0	0	0
1251	28	GL5-BC1	0	0	0	0	0	0
1252	28	GL5-CL	0	0	0	0	0	0
1253	28	GL5-BC2	0	0	0	0	0	0
1254	28	N38	0	0	0	0	0	0
1255	28	N39	0	0	0	0	0	0
1256	28	GL3-CL	0	0	0	0	0	0
1257	28	GL1-EB2	0.09	0.783	-0.29	-2.801e-3	4.801e-4	1.851e-3
1258	28	GL2-EB2	0.089	0.978	-0.362	-3.504e-3	1.529e-3	1.003e-3
1259	28	GL3-EB2	0.131	1.091	-0.288	-3.308e-3	1.07e-3	-2.535e-5
1260	28	GL4-EB2	0.216	1.18	-0.33	-7.126e-4	4.374e-3	-1.915e-3
1261	28	GL6-EB2	0.22	1.199	-0.081	-8.045e-3	7.871e-4	-1.012e-3
1262	28	GL5-EB2	0.255	1.198	-0.088	6.264e-4	7.652e-4	-2.176e-3
1263	28	GL1-EB1	0.325	0.981	0.889	-2.967e-3	0	-1.032e-3
1264	28	GL3-EB1	0.324	1.225	1.084	-3.571e-3	1.451e-3	5.318e-4
1265	28	GL4-EB1	0.37	1.276	0.709	1.424e-3	3.25e-3	2.608e-3
1266	28	GL6-EB1	0.276	1.283	-0.25	-7.113e-3	8.328e-4	4.583e-3
1267	28	GL6-TC1	0.244	1.576	0.06	-7.876e-3	8.074e-4	0
1268	28	GL6-TC2	0.223	1.339	-0.035	-8.047e-3	7.876e-4	-1.025e-3
1269	28	GL1-TC1	0.373	0.867	0.213	-2.873e-3	3.204e-4	8.924e-4
1270	28	GL1-TC2	0.202	0.811	-0.124	-2.803e-3	4.602e-4	1.731e-3
1271	28	GL2-TC1	0.265	1.083	-0.266	-3.549e-3	1.414e-3	3.068e-4
1272	28	GL2-TC2	0.161	1.013	-0.154	-3.507e-3	1.512e-3	9.015e-4
1273	28	GL3-TC1	0.157	1.188	0.24	-3.417e-3	1.203e-3	9.893e-5
1274	28	GL3-TC2	0.138	1.118	-0.138	-3.315e-3	1.065e-3	-7.695e-5
1275	28	GL4-TC1	0.126	1.415	0.261	-1.401e-4	3.922e-3	-1.335e-3
1276	28	GL4-TC2	0.186	1.254	-0.152	-7.178e-4	4.372e-3	-1.948e-3
1277	28	GL5-TC1	0.283	1.53	0.075	7.733e-4	1.611e-3	-1.294e-3
1278	28	GL5-TC2	0.263	1.321	-0.043	6.241e-4	7.67e-4	-2.189e-3
1279	28	GL2-EB1	0.324	1.221	1.093	-3.571e-3	1.451e-3	5.318e-4
1280	28	GL5-EB1	0.385	1.276	0.7	1.424e-3	3.25e-3	2.608e-3
1281	29	N1	0	0	0	0	0	0
1282	29	N2	0	0	0	0	0	0
1283	29	N3	0	0	0	0	0	0

DRIFT VALUES UNDER 1.0Eh (NORTH) COMBO

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1284	29	GL1-BC1	0	0	0	0	0	0
1285	29	GL1-CL	0	0	0	0	0	0
1286	29	GL1-BC2	0	0	0	0	0	0
1287	29	N7	0	0	0	0	0	0
1288	29	N8	0	0	0	0	0	0
1289	29	N9	0	0	0	0	0	0
1290	29	GL2-BC2	0	0	0	0	0	0
1291	29	GL2-CL	0	0	0	0	0	0
1292	29	GL2-BC1	0	0	0	0	0	0
1293	29	N13	0	0	0	0	0	0
1294	29	N14	0	0	0	0	0	0
1295	29	N15	0	0	0	0	0	0
1296	29	GL3-BC1	0	0	0	0	0	0
1297	29	GL3-BC2	0	0	0	0	0	0
1298	29	N18	0	0	0	0	0	0
1299	29	N19	0	0	0	0	0	0
1300	29	N20	0	0	0	0	0	0
1301	29	N21	0	0	0	0	0	0
1302	29	GL4-BC1	0	0	0	0	0	0
1303	29	GL4-CL	0	0	0	0	0	0
1304	29	GL4-BC2	0	0	0	0	0	0
1305	29	N25	0	0	0	0	0	0
1306	29	N26	0	0	0	0	0	0
1307	29	N27	0	0	0	0	0	0
1308	29	N28	0	0	0	0	0	0
1309	29	GL6-BC1	0	0	0	0	0	0
1310	29	GL6-CL	0	0	0	0	0	0
1311	29	GL6-BC2	0	0	0	0	0	0
1312	29	N32	0	0	0	0	0	0
1313	29	N33	0	0	0	0	0	0
1314	29	N34	0	0	0	0	0	0
1315	29	GL5-BC1	0	0	0	0	0	0
1316	29	GL5-CL	0	0	0	0	0	0
1317	29	GL5-BC2	0	0	0	0	0	0
1318	29	N38	0	0	0	0	0	0
1319	29	N39	0	0	0	0	0	0
1320	29	GL3-CL	0	0	0	0	0	0
1321	29	GL1-EB2	-0.089	-0.779	0.288	2.787e-3	-4.799e-4	-1.855e-3
1322	29	GL2-EB2	-0.087	-0.976	0.362	3.498e-3	-1.518e-3	-1.011e-3
1323	29	GL3-EB2	-0.13	-1.09	0.288	3.297e-3	-1.074e-3	2.59e-5
1324	29	GL4-EB2	-0.213	-1.177	0.329	7.09e-4	-4.357e-3	1.82e-3
1325	29	GL6-EB2	-0.219	-1.196	0.081	8.003e-3	-7.845e-4	1.021e-3
1326	29	GL5-EB2	-0.255	-1.195	-0.088	-5.921e-4	-7.633e-4	2.303e-3
1327	29	GL1-EB1	-0.324	-0.975	-0.883	2.942e-3	0	1.027e-3
1328	29	GL3-EB1	-0.323	-1.221	-1.078	3.542e-3	-1.44e-3	-5.375e-4
1329	29	GL4-EB1	-0.368	-1.27	-0.705	-1.418e-3	-3.231e-3	-2.652e-3
1330	29	GL6-EB1	-0.275	-1.277	-0.25	7.068e-3	-8.344e-4	-4.589e-3
1331	29	GL6-TC1	-0.243	-1.573	-0.06	7.833e-3	-8.061e-4	0
1332	29	GL6-TC2	-0.227	-1.336	0.035	8.005e-3	-7.849e-4	1.032e-3
1333	29	GL1-TC1	-0.371	-0.863	-0.212	2.856e-3	-3.195e-4	-8.915e-4
1334	29	GL1-TC2	-0.201	-0.807	0.123	2.789e-3	-4.595e-4	-1.732e-3
1335	29	GL2-TC1	-0.263	-1.081	-0.265	3.535e-3	-1.402e-3	-3.082e-4
1336	29	GL2-TC2	-0.16	-1.011	0.154	3.501e-3	-1.501e-3	-9.072e-4
1337	29	GL3-TC1	-0.156	-1.187	-0.24	3.399e-3	-1.202e-3	-9.983e-5
1338	29	GL3-TC2	-0.137	-1.117	0.138	3.304e-3	-1.07e-3	7.821e-5
1339	29	GL4-TC1	-0.133	-1.402	-0.26	1.473e-4	-3.896e-3	1.323e-3
1340	29	GL4-TC2	-0.187	-1.247	0.151	7.137e-4	-4.355e-3	1.85e-3
1341	29	GL5-TC1	-0.282	-1.547	-0.074	-7.591e-4	-1.603e-3	1.302e-3
1342	29	GL5-TC2	-0.262	-1.326	0.043	-5.889e-4	-7.651e-4	2.323e-3
1343	29	GL2-EB1	-0.323	-1.218	-1.086	3.542e-3	-1.44e-3	-5.375e-4
1344	29	GL5-EB1	-0.384	-1.27	-0.697	-1.418e-3	-3.231e-3	-2.652e-3
1345	30	N1	0	0	0	0	0	0
1346	30	N2	0	0	0	0	0	0
1347	30	N3	0	0	0	0	0	0
1348	30	GL1-BC1	0	0	0	0	0	0
1349	30	GL1-CL	0	0	0	0	0	0
1350	30	GL1-BC2	0	0	0	0	0	0
1351	30	N7	0	0	0	0	0	0

DRIFT VALUES UNDER 1.0Eh (SOUTH) COMBO

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1352	30	N8	0	0	0	0	0	0
1353	30	N9	0	0	0	0	0	0
1354	30	GL2-BC2	0	0	0	0	0	0
1355	30	GL2-CL	0	0	0	0	0	0
1356	30	GL2-BC1	0	0	0	0	0	0
1357	30	N13	0	0	0	0	0	0
1358	30	N14	0	0	0	0	0	0
1359	30	N15	0	0	0	0	0	0
1360	30	GL3-BC1	0	0	0	0	0	0
1361	30	GL3-BC2	0	0	0	0	0	0
1362	30	N18	0	0	0	0	0	0
1363	30	N19	0	0	0	0	0	0
1364	30	N20	0	0	0	0	0	0
1365	30	N21	0	0	0	0	0	0
1366	30	GL4-BC1	0	0	0	0	0	0
1367	30	GL4-CL	0	0	0	0	0	0
1368	30	GL4-BC2	0	0	0	0	0	0
1369	30	N25	0	0	0	0	0	0
1370	30	N26	0	0	0	0	0	0
1371	30	N27	0	0	0	0	0	0
1372	30	N28	0	0	0	0	0	0
1373	30	GL6-BC1	0	0	0	0	0	0
1374	30	GL6-CL	0	0	0	0	0	0
1375	30	GL6-BC2	0	0	0	0	0	0
1376	30	N32	0	0	0	0	0	0
1377	30	N33	0	0	0	0	0	0
1378	30	N34	0	0	0	0	0	0
1379	30	GL5-BC1	0	0	0	0	0	0
1380	30	GL5-CL	0	0	0	0	0	0
1381	30	GL5-BC2	0	0	0	0	0	0
1382	30	N38	0	0	0	0	0	0
1383	30	N39	0	0	0	0	0	0
1384	30	GL3-CL	0	0	0	0	0	0
1385	30	GL1-EB2	-0.185	-0.246	0.086	7.872e-4	1.996e-4	4.936e-4
1386	30	GL2-EB2	-0.186	-0.176	0.059	5.167e-4	-1.131e-4	4.161e-4
1387	30	GL3-EB2	-0.194	-0.196	0.088	1.477e-3	1.764e-4	-1.314e-4
1388	30	GL4-EB2	-0.192	-0.193	0.088	-1.743e-4	-1.459e-3	1.28e-4
1389	30	GL6-EB2	-0.245	-0.184	0.086	5.841e-4	-7.85e-4	-6.227e-4
1390	30	GL5-EB2	-0.173	-0.185	0.057	1.057e-4	-5.053e-4	-4.102e-4
1391	30	GL1-EB1	-0.254	-0.34	-0.481	1.925e-3	0	-7.052e-4
1392	30	GL3-EB1	-0.255	-0.26	-0.436	1.861e-3	-2.342e-4	-3.14e-4
1393	30	GL4-EB1	-0.254	-0.252	-0.426	2.254e-4	-1.829e-3	3.08e-4
1394	30	GL6-EB1	-0.339	-0.25	-0.479	7.818e-4	-1.919e-3	5.639e-4
1395	30	GL6-TC1	-0.272	-0.135	-0.071	6.879e-4	-1.282e-3	0
1396	30	GL6-TC2	-0.253	-0.154	0.039	6.023e-4	-7.961e-4	-5.134e-4
1397	30	GL1-TC1	-0.137	-0.272	-0.071	1.285e-3	9.498e-5	-1.349e-4
1398	30	GL1-TC2	-0.156	-0.254	0.039	7.983e-4	1.813e-4	3.833e-4
1399	30	GL2-TC1	-0.158	-0.195	-0.053	1.075e-3	-2.091e-4	-1.628e-4
1400	30	GL2-TC2	-0.164	-0.181	0.028	5.308e-4	-1.309e-4	3.09e-4
1401	30	GL3-TC1	-0.208	-0.222	-0.079	1.684e-3	-2.874e-5	-1.597e-4
1402	30	GL3-TC2	-0.198	-0.203	0.043	1.482e-3	1.709e-4	-1.341e-4
1403	30	GL4-TC1	-0.218	-0.206	-0.077	2.824e-5	-1.662e-3	1.572e-4
1404	30	GL4-TC2	-0.199	-0.196	0.043	-1.683e-4	-1.465e-3	1.31e-4
1405	30	GL5-TC1	-0.191	-0.157	-0.052	2.012e-4	-1.057e-3	1.625e-4
1406	30	GL5-TC2	-0.177	-0.163	0.028	1.234e-4	-5.194e-4	-3.041e-4
1407	30	GL2-EB1	-0.255	-0.258	-0.438	1.861e-3	-2.342e-4	-3.14e-4
1408	30	GL5-EB1	-0.253	-0.252	-0.427	2.254e-4	-1.829e-3	3.08e-4
1409	31	N1	0	0	0	0	0	0
1410	31	N2	0	0	0	0	0	0
1411	31	N3	0	0	0	0	0	0
1412	31	GL1-BC1	0	0	0	0	0	0
1413	31	GL1-CL	0	0	0	0	0	0
1414	31	GL1-BC2	0	0	0	0	0	0
1415	31	N7	0	0	0	0	0	0
1416	31	N8	0	0	0	0	0	0
1417	31	N9	0	0	0	0		
1418	31	GL2-BC2	0	0	0	0		
1419	31	GL2-CL	0	0	0	0		

END OF BEAM DEFLECTION UNDER DEAD ONLY

Node Displacements (Continued)

	LC	Node Label	X [in]	Y [in]	Z [in]	X Rotation [rad]	Y Rotation [rad]	Z Rotation [rad]
1420	31	GL2-BC1	0	0	0	0	0	0
1421	31	N13	0	0	0	0	0	0
1422	31	N14	0	0	0	0	0	0
1423	31	N15	0	0	0	0	0	0
1424	31	GL3-BC1	0	0	0	0	0	0
1425	31	GL3-BC2	0	0	0	0	0	0
1426	31	N18	0	0	0	0	0	0
1427	31	N19	0	0	0	0	0	0
1428	31	N20	0	0	0	0	0	0
1429	31	N21	0	0	0	0	0	0
1430	31	GL4-BC1	0	0	0	0	0	0
1431	31	GL4-CL	0	0	0	0	0	0
1432	31	GL4-BC2	0	0	0	0	0	0
1433	31	N25	0	0	0	0	0	0
1434	31	N26	0	0	0	0	0	0
1435	31	N27	0	0	0	0	0	0
1436	31	N28	0	0	0	0	0	0
1437	31	GL6-BC1	0	0	0	0	0	0
1438	31	GL6-CL	0	0	0	0	0	0
1439	31	GL6-BC2	0	0	0	0	0	0
1440	31	N32	0	0	0	0	0	0
1441	31	N33	0	0	0	0	0	0
1442	31	N34	0	0	0	0	0	0
1443	31	GL5-BC1	0	0	0	0	0	0
1444	31	GL5-CL	0	0	0	0	0	0
1445	31	GL5-BC2	0	0	0	0	0	0
1446	31	N38	0	0	0	0	0	0
1447	31	N39	0	0	0	0	0	0
1448	31	GL3-CL	0	0	0	0	0	0
1449	31	GL1-EB2	-0.344	-0.49	0.171	1.568e-3	3.653e-4	9.053e-4
1450	31	GL2-EB2	-0.346	-0.328	0.109	9.643e-4	-2.092e-4	7.61e-4
1451	31	GL3-EB2	-0.361	-0.364	0.164	2.732e-3	3.129e-4	-2.456e-4
1452	31	GL4-EB2	-0.356	-0.358	0.164	-3.091e-4	-2.699e-3	2.396e-4
1453	31	GL6-EB2	-0.489	-0.342	0.171	1.086e-3	-1.563e-3	-1.144e-3
1454	31	GL5-EB2	-0.321	-0.344	0.107	1.954e-4	-9.428e-4	-7.5e-4
1455	31	GL1-EB1	-0.47	-0.678	-0.961	3.845e-3	0	-1.288e-3
1456	31	GL3-EB1	-0.474	-0.482	-0.805	3.428e-3	-4.291e-4	-5.646e-4
1457	31	GL4-EB1	-0.472	-0.468	-0.786	4.127e-4	-3.37e-3	5.538e-4
1458	31	GL6-EB1	-0.677	-0.464	-0.957	1.447e-3	-3.833e-3	1.026e-3
1459	31	GL6-TC1	-0.541	-0.254	0.142	1.276e-3	-2.558e-3	0
1460	31	GL6-TC2	-0.504	-0.289	0.078	1.119e-3	-1.586e-3	-9.416e-4
1461	31	GL1-TC1	-0.256	-0.543	-0.142	2.564e-3	1.729e-4	-2.5e-4
1462	31	GL1-TC2	-0.291	-0.505	0.078	1.59e-3	3.312e-4	7.008e-4
1463	31	GL2-TC1	-0.296	-0.362	-0.098	1.988e-3	-3.857e-4	-3.029e-4
1464	31	GL2-TC2	-0.307	-0.337	0.052	9.904e-4	-2.421e-4	5.625e-4
1465	31	GL3-TC1	-0.387	-0.412	-0.146	3.108e-3	-6.007e-5	-2.964e-4
1466	31	GL3-TC2	-0.367	-0.378	0.08	2.741e-3	3.027e-4	-2.505e-4
1467	31	GL4-TC1	-0.404	-0.383	-0.144	5.901e-5	-3.067e-3	2.92e-4
1468	31	GL4-TC2	-0.37	-0.364	0.079	-2.98e-4	-2.71e-3	2.45e-4
1469	31	GL5-TC1	-0.355	-0.295	-0.096	3.708e-4	-1.955e-3	3.025e-4
1470	31	GL5-TC2	-0.33	-0.305	0.051	2.282e-4	-9.689e-4	-5.532e-4
1471	31	GL2-EB1	-0.474	-0.478	-0.808	3.428e-3	-4.291e-4	-5.646e-4
1472	31	GL5-EB1	-0.469	-0.468	-0.788	4.127e-4	-3.37e-3	5.538e-4
1473	32	N1	0	0	0	0	0	0
1474	32	N2	0	0	0	0	0	0
1475	32	N3	0	0	0	0	0	0
1476	32	GL1-BC1	0	0	0	0	0	0
1477	32	GL1-CL	0	0	0	0	0	0
1478	32	GL1-BC2	0	0	0	0	0	0
1479	32	N7	0	0	0	0	0	0
1480	32	N8	0	0	0	0	0	0
1481	32	N9	0	0	0	0	0	0
1482	32	GL2-BC2	0	0	0	0	0	0
1483	32	GL2-CL	0	0	0	0	0	0
1484	32	GL2-BC1	0	0	0	0	0	0
1485	32	N13	0	0	0	0	0	0
1486	32	N14	0	0	0	0	0	0
1487	32	N15	0	0	0	0	0	0

END OF BEAM DEFLECTION UNDER SNOW ONLY

Client OIT Project STILWELL STADIUM CANOPY

No. 16428 By DAS

Date Sheet of

DRIFT CHECKS

=> OSSC 1604.3 - DEFLECTION LIMITS

NOTE i: FOR CANT. MEMBERS 2x LENGTH
ROOF MEMBERS, "NOT SUPPORTING CEILING"

DL+SL DEFLECTION LIMIT: L/120 : $L = \frac{(20.5')(12''/1')(2)}{120} = 4.1''$

ACTUAL DEFLECTION = 1.45" < 4.1" ✓

SL DEFLECTION LIMIT: L/180 : $L = \frac{(20.5')(12''/1')(2)}{180} = 2.73''$

ACTUAL DEFLECTION: 0.961" < 2.73" ✓

DRIFT CHECKS - SEISMIC : CHECK DRIFT W/ 1.0 (E) ; APPLY C_d FACTOR

(12.8-15) $\delta_x = \frac{C_d \delta_{xe}}{I_e}$,

δ = (1.25)*(1.576")/(1.0) = 1.97" < 5.64", o.k.

TABLE 12.12-1 ALLOWABLE STORY DRIFT: $0.02 h_{sx}$

$h_{sx} = h_{AVG} = 23.5'$

$\Delta_a = (0.02)(23.5')(12''/1')$

$\Delta_a = 5.64''$

Client OIT
Project STILWELL STADIUM CANOPY
No. K6429
By DKS
Date
Sheet of

DRIFT CHECKS - SEISMIC, CONTINUED

- STRUCTURAL SEPERATION @ EDGE OF CANOPY → LIGHTPOLE

LIGHTPOLE DEFLECTION FROM MFR. = 17.1" @ 60' HEIGHT UNDER WL

INTERPOLATE @ 24' ROOF HEIGHT = $\left(\frac{24'}{60'}\right)(17.1") = 6.84"$

$S_{MT} = \sqrt{(S_{M1})^2 + (S_{M2})^2} = \sqrt{(6.84")^2 + (1.576")^2} =$ 7.0"

∴ PROVIDE MIN. 12" SEPERATION

Envelope Member End Reactions for Beam to Column Connection

			Axial		y-Shear		z-Shear
C1-1							
	J	max	38.136	24	1.197	4	0.723
		min	-4.479	19	-4.345	9	-0.165
C1-2							
	J	max	4.514	19	1.484	4	1.019
		min	-7.375	24	-5.332	9	-0.17
C2-2							
	J	max	5.185	19	2.396	4	1.076
		min	-6.873	24	-4.731	9	-0.179
C2-1							
	J	max	39.723	24	1.938	4	0.777
		min	-4.789	19	-3.859	9	-0.128
C3-2							
	J	max	3.679	15	1.698	4	0.774
		min	-0.941	18	-5.944	9	-0.767
C3-1							
	J	max	27.38	24	1.369	4	0.595
		min	-2.071	19	-4.825	9	-0.606
C4-2							
	J	max	4.589	8	2.032	4	0.874
		min	-3.968	4	-6.131	9	-0.879
C4-1							
	J	max	26.938	24	1.635	4	0.79
		min	-2.053	19	-4.975	9	-0.773
C5-1							
	J	max	39.42	24	0.441	19	1.106
		min	-4.778	19	-2.611	24	-1.546
C5-2							
	J	max	5.161	19	0.54	19	1.24
		min	-7.584	9	-3.187	24	-1.907
C6-1							
	J	max	38.075	24	0.64	19	1.163
		min	-4.473	19	-3.814	24	-1.506
C6-2							
	J	max	4.507	19	0.785	19	1.27
		min	-7.335	24	-4.67	24	-1.875

Max. Comp=	**39.723**	**6.131**	**1.907**
Max. Tension=	**-7.584**		

MAX. FACTORED ENVELOPE END REACTIONS FOR COLUMNS, DESIGN CONNECTION FOR THESE FORCES

TYP. COLUMN TO BEAM CONNECTION

→ CHECK / SIZE BOLTS @ END PLATE CONNECTION

FACTORED LOADS: TENSION = -7.584 k
Y-SHEAR = 6.131 k
Z-SHEAR = 1.907 k

TENSION PER BOLT : -7.584 k /(4) = -1.896 k

SHEAR PER BOLT : $\sqrt{\left(\frac{6.131^{k}}{4}\right)^2 + \left(\frac{1.907^{k}}{4}\right)^2} = 1.605^{k}$

* USE P.T. A325 BOLTS
RCSC 4.2 - P.T. REQ'D WHERE SUBJECT TO LOAD REVERSAL

SHEAR (J3-1) $\Omega = 2.0$ $R_N = F_N A_b$ $A_b = \frac{(\pi)(1")^2}{4} = 0.785\,in^2$

$= (54\,ksi)(0.785\,in^2) = \frac{42.4^{k}}{\Omega=2} = 21.2^{k}$ ✓

TENSION (J3-1) $R_N = F_N A_b$

$= (90\,ksi)(0.785\,in^2) = \frac{70.65^{k}}{\Omega=2.0} = 35.3^{k}$ ✓

(COMBINED TENSION : SHEAR (J3-2)) $R_N = F'_{nt} A_b$

$F'_{nt} = 1.3 F_{nt} - \frac{\Omega F_{nt}}{F_{nv}} f_{rv} \le F_{nt}$, $(1.3)(90\,ksi) - \frac{(2)(90\,ksi)}{(54\,ksi)}\left[\frac{1.605^{k}}{0.785\,in^2}\right] = 110\,ksi$

∴ DOES NOT GOVERN

TYP. COLUMN TO BEAM CONNECTION

=> CHECK SHEAR IN BEAM WEB TO DETERMINE IF STIFFENER PLATE REQ'D

AISC SIMPLIFIED WEB LOCAL YIELDING (Pg. 9-23)

ASD

$$\frac{R_N}{\Omega} = 2\left(R_1/\Omega\right) + l_b\left(R_2/\Omega\right) \quad (9\text{-}47b)$$

$\Omega = 1.5$

TABLE 9-4: $R_1/\Omega = 52.1^k$

$R_2/\Omega = 16.7^k$

$l_b = k = k_{des}$ PER AISC SPEC J10.2 = 1.25"

$$\frac{R_N}{\Omega} = (2)(52.1^k) + (1.25)(16.7^k)$$

$\frac{R_N}{\Omega} = 125^k >$ DEMAND $= 39.723^k$ ✓

AISC SIMPLIFIED WEB LOCAL CRIPPLING: (Pg. 9-23)

$$\frac{R_N}{\Omega} = 2\left[R_3/\Omega + l_b\left(R_4/\Omega\right)\right] \quad 9\text{-}50b$$

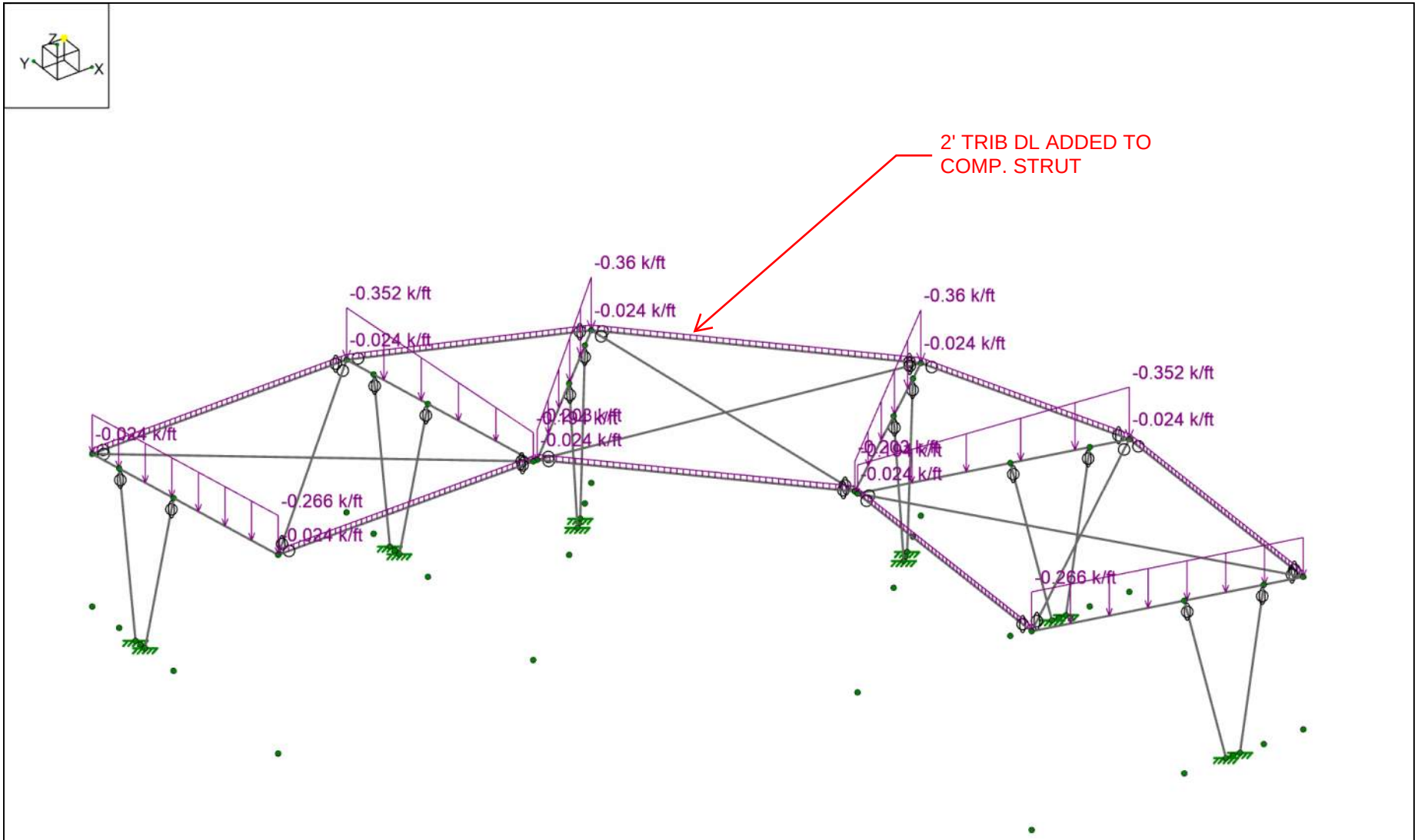
$\frac{R_3}{\Omega} = 73.7^k$

$\frac{R_4}{\Omega} = 5.0^k$

$$\frac{R_N}{\Omega} = (2)\left[73.7^k + (1.25)(5.0^k)\right]$$

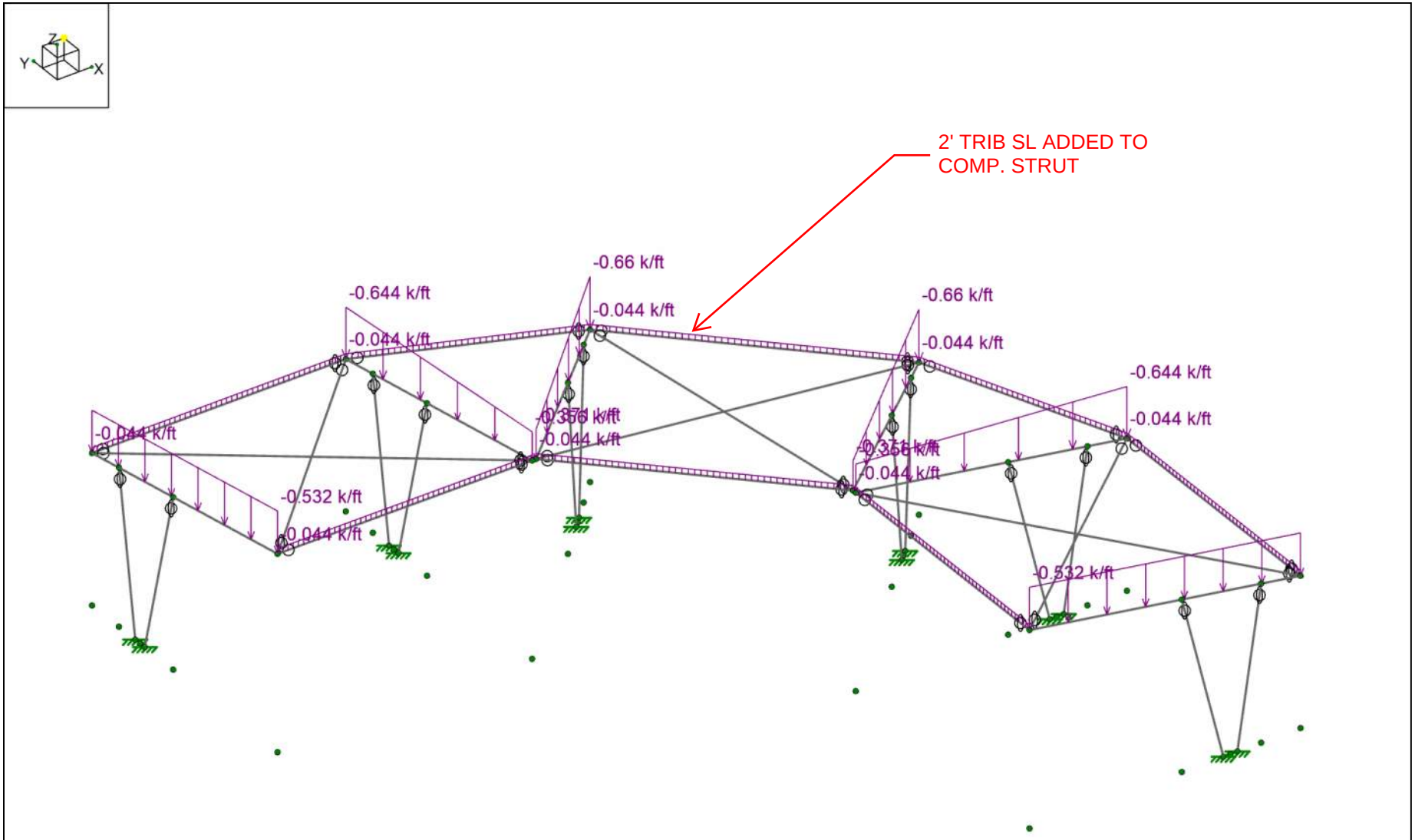
$\frac{R_N}{\Omega} = 79.95^k >$ DEMAND $= 39.723^k$ ✓

DIAPHRAGM CHECKS



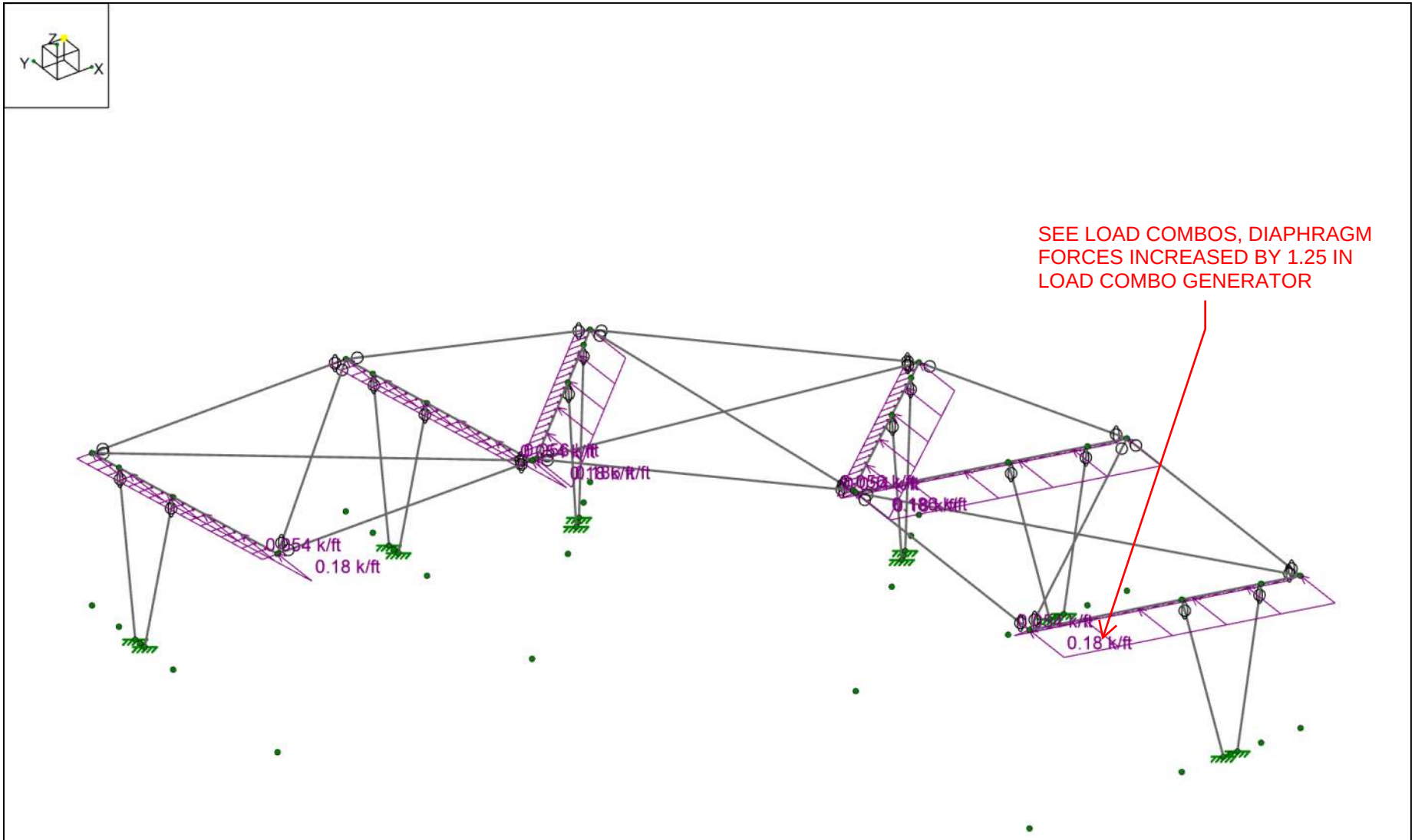
Loads: BLC 1, DL

ZCS	ZCS	Stilwell Canopy	SK-1
	DKS		Feb 19, 2026 at 03:22 PM
	K-6248		Stilwell Bleacher Canopy- Full Model_Update…



Loads: BLC 2, SL

ZCS	ZCS	Stilwell Canopy	SK-2
	DKS		Feb 19, 2026 at 03:23 PM
	K-6248		Stilwell Bleacher Canopy- Full Model_Update…



Loads: BLC 3, Eh

ZCS	ZCS	Stilwell Canopy	SK-3
	DKS		Feb 19, 2026 at 03:23 PM
	K-6248		Stilwell Bleacher Canopy- Full Model_Update…

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
5	A500 Gr.C	29000	11154	0.3	0.65	0.527	50	1.3	62	1.2
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.25	65	1.15
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	TYP. BEAM	W24X104	Beam	Wide Flange	A992	Typical	30.7	259	3100	4.72
2	TYP. COLUMN	HP14X102	Column	Wide Flange	A572 Gr.50	Typical	30.1	380	1050	5.39
3	COMP. STRUT #1	W10X19	HBrace	Wide Flange	A992	Typical	5.62	4.29	96.3	0.233
4	COMP. STRUT #2	W10X26	HBrace	Wide Flange	A992	Typical	7.61	14.1	144	0.402
5	TENSION ROD	.5"	HBrace	BAR	A36 Gr.36	Typical	0.196	0.003	0.003	0.006

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	B1	GL1-EB1	GL1-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
2	B2	GL2-EB1	GL2-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
3	B3	GL3-EB1	GL3-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
4	B4	GL4-EB1	GL4-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
5	B5	GL5-EB1	GL5-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
6	B6	GL6-EB1	GL6-EB2		TYP. BEAM	Beam	Wide Flange	A992	Typical
7	C1-1	GL1-BC1	GL1-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
8	C1-2	GL1-BC2	GL1-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
9	C2-2	GL2-BC2	GL2-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
10	C2-1	GL2-BC1	GL2-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
11	C3-2	GL3-BC2	GL3-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
12	C3-1	GL3-BC1	GL3-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
13	C4-2	GL4-BC2	GL4-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
14	C4-1	GL4-BC1	GL4-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
15	C5-1	GL5-BC1	GL5-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
16	C5-2	GL5-BC2	GL5-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
17	C6-1	GL6-BC1	GL6-TC1	180	TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
18	C6-2	GL6-BC2	GL6-TC2		TYP. COLUMN	Column	Wide Flange	A572 Gr.50	Typical
19	STRUT#1-3-4	GL3-EB1	GL4-EB1	350.83	COMP. STRUT #2	HBrace	Wide Flange	A992	Typical
20	STRUT#2-3-4	GL3-EB2	GL4-EB2	350.83	COMP. STRUT #2	HBrace	Wide Flange	A992	Typical
21	ROD#2-3-4	GL3-EB2	GL4-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
22	ROD#1-3-4	GL3-EB1	GL4-EB2		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
23	STRUT #2-1-2	GL1-EB2	GL2-EB2	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
24	STRUT #1-1-2	GL1-EB1	GL2-EB1	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
25	STRUT #2-2-3	GL2-EB2	GL3-EB2	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
26	STRUT#2-4-5	GL4-EB2	GL5-EB2	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
27	STRUT#2-5-6	GL5-EB2	GL6-EB2	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
28	STRUT #1-5-6	GL5-EB1	GL6-EB1	350.83	COMP. STRUT #1	HBrace	Wide Flange	A992	Typical
29	STRUT #1-4-5	GL4-EB1	GL5-EB1		RIGID	None	None	RIGID	Typical
30	STRUT #1-2-3	GL2-EB1	GL3-EB1		RIGID	None	None	RIGID	Typical
31	ROD#2-1-2	GL1-EB2	GL2-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
32	ROD#1-1-2	GL2-EB2	GL1-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
33	ROD#2-5-6	GL5-EB1	GL6-EB2		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical
34	ROD#1-5-6	GL5-EB2	GL6-EB1		TENSION ROD	HBrace	BAR	A36 Gr.36	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Lcomp bot [ft]	Channel Conn.	a [ft]	Function
1	B1	TYP. BEAM	34.494	Lbyy		N/A	N/A	Lateral
2	B2	TYP. BEAM	34.628	Lbyy		N/A	N/A	Lateral
3	B3	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
4	B4	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
5	B5	TYP. BEAM	34.473	Lbyy		N/A	N/A	Lateral
6	B6	TYP. BEAM	34.469	Lbyy		N/A	N/A	Lateral
7	C1-1	TYP. COLUMN	21.861	Lbyy		N/A	N/A	Lateral
8	C1-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Lcomp bot [ft]	Channel Conn.	a [ft]	Function
9	C2-2	TYP. COLUMN	19.796	Lbyy		N/A	N/A	Lateral
10	C2-1	TYP. COLUMN	21.852	Lbyy		N/A	N/A	Lateral
11	C3-2	TYP. COLUMN	19.64	Lbyy		N/A	N/A	Lateral
12	C3-1	TYP. COLUMN	21.711	Lbyy		N/A	N/A	Lateral
13	C4-2	TYP. COLUMN	19.659	Lbyy		N/A	N/A	Lateral
14	C4-1	TYP. COLUMN	21.725	Lbyy		N/A	N/A	Lateral
15	C5-1	TYP. COLUMN	21.863	Lbyy		N/A	N/A	Lateral
16	C5-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral
17	C6-1	TYP. COLUMN	21.863	Lbyy		N/A	N/A	Lateral
18	C6-2	TYP. COLUMN	19.8	Lbyy		N/A	N/A	Lateral
19	STRUT#1-3-4	COMP. STRUT #2	33.355	17	17	N/A	N/A	Lateral
20	STRUT#2-3-4	COMP. STRUT #2	34.614	17	17	N/A	N/A	Lateral
21	ROD#2-3-4	TENSION ROD	48.367			N/A	N/A	Lateral
22	ROD#1-3-4	TENSION ROD	48.435			N/A	N/A	Lateral
23	STRUT #2-1-2	COMP. STRUT #1	31.833	10.42	10.42	N/A	N/A	Lateral
24	STRUT #1-1-2	COMP. STRUT #1	31.83	10.42	10.42	N/A	N/A	Lateral
25	STRUT #2-2-3	COMP. STRUT #1	25.896	13.5	13.5	N/A	N/A	Lateral
26	STRUT#2-4-5	COMP. STRUT #1	25.973	13.5	13.5	N/A	N/A	Lateral
27	STRUT#2-5-6	COMP. STRUT #1	31.833	10.42	10.42	N/A	N/A	Lateral
28	STRUT #1-5-6	COMP. STRUT #1	31.837	10.42	10.42	N/A	N/A	Lateral
29	ROD#2-1-2	TENSION ROD	47.034	Lbyy		N/A	N/A	Lateral
30	ROD#1-1-2	TENSION ROD	46.938	Lbyy		N/A	N/A	Lateral
31	ROD#2-5-6	TENSION ROD	46.925	Lbyy		N/A	N/A	Lateral
32	ROD#1-5-6	TENSION ROD	46.92	Lbyy		N/A	N/A	Lateral

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.266	-0.266	0	%100
2	B6	Z	-0.266	-0.266	0	%100
3	B2	Z	-0.194	-0.352	0	%100
4	B5	Z	-0.194	-0.352	0	%100
5	B3	Z	-0.203	-0.36	0	%100
6	B4	Z	-0.203	-0.36	0	%100
7	STRUT #2-1-2	Z	-0.024	-0.024	0	%100
8	STRUT #1-1-2	Z	-0.024	-0.024	0	%100
9	STRUT #2-2-3	Z	-0.024	-0.024	0	%100
10	STRUT#2-3-4	Z	-0.024	-0.024	0	%100
11	STRUT#1-3-4	Z	-0.024	-0.024	0	%100
12	STRUT#2-4-5	Z	-0.024	-0.024	0	%100
13	STRUT #1-5-6	Z	-0.024	-0.024	0	%100
14	STRUT#2-5-6	Z	-0.024	-0.024	0	%100

Member Distributed Loads (BLC 2 : SL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.532	-0.532	0	%100
2	B6	Z	-0.532	-0.532	0	%100
3	B2	Z	-0.356	-0.644	0	%100
4	B5	Z	-0.356	-0.644	0	%100
5	B3	Z	-0.371	-0.66	0	%100
6	B4	Z	-0.371	-0.66	0	%100
7	STRUT #2-1-2	Z	-0.044	-0.044	0	%100
8	STRUT #1-1-2	Z	-0.044	-0.044	0	%100
9	STRUT #2-2-3	Z	-0.044	-0.044	0	%100
10	STRUT#1-3-4	Z	-0.044	-0.044	0	%100
11	STRUT#2-3-4	Z	-0.044	-0.044	0	%100
12	STRUT #1-5-6	Z	-0.044	-0.044	0	%100
13	STRUT#2-4-5	Z	-0.044	-0.044	0	%100
14	STRUT#2-5-6	Z	-0.044	-0.044	0	%100

Member Distributed Loads (BLC 3 : Eh)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B6	Y	0.18	0.18	0	%100
2	B5	Y	0.18	0.18	0	%100
3	B2	Y	0.18	0.18	0	%100
4	B1	Y	0.18	0.18	0	%100

Member Distributed Loads (BLC 3 : Eh) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
5	B4	Y	0.186	0.186	0	%100
6	B3	Y	0.186	0.186	0	%100
7	B6	X	0.054	0.054	0	%100
8	B5	X	0.054	0.054	0	%100
9	B2	X	0.054	0.054	0	%100
10	B1	X	0.054	0.054	0	%100
11	B4	X	0.056	0.056	0	%100
12	B3	X	0.056	0.056	0	%100

Member Distributed Loads (BLC 5 : WL, A, 0)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	0.233	0.233	0	%50
2	B6	Z	0.233	0.233	0	%50
3	B1	Z	0.366	0.366	%50	%100
4	B6	Z	0.366	0.366	%50	%100
5	B2	Z	0.17	0.239	0	%50
6	B2	Z	0.375	0.483	%50	%100
7	B5	Z	0.375	0.483	%50	%100
8	B5	Z	0.17	0.239	0	%50
9	B3	Z	0.177	0.246	0	%50
10	B4	Z	0.177	0.246	0	%50
11	B3	Z	0.387	0.495	%50	%100
12	B4	Z	0.387	0.495	%50	%100

Member Distributed Loads (BLC 6 : WL, B, 0)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	0.519	0.519	0	%50
2	B6	Z	0.519	0.519	0	%50
3	B2	Z	0.378	0.532	0	%50
4	B5	Z	0.378	0.532	0	%50
5	B3	Z	0.395	0.548	0	%50
6	B4	Z	0.395	0.548	0	%50

Member Distributed Loads (BLC 7 : WL, A, 180)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.51	-0.51	0	%50
2	B6	Z	-0.51	-0.51	0	%50
3	B1	Z	-0.344	-0.344	%50	%100
4	B6	Z	-0.344	-0.344	%50	%100
5	B2	Z	-0.372	-0.523	0	%50
6	B5	Z	-0.372	-0.523	0	%50
7	B2	Z	-0.352	-0.454	%50	%100
8	B5	Z	-0.352	-0.454	%50	%100
9	B3	Z	-0.388	-0.539	0	%50
10	B4	Z	-0.388	-0.539	0	%50
11	B3	Z	-0.363	-0.465	%50	%100
12	B4	Z	-0.363	-0.465	%50	%100

Member Distributed Loads (BLC 8 : WL, B, 180)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	B1	Z	-0.133	-0.133	0	%50
2	B6	Z	-0.133	-0.133	0	%50
3	B1	Z	-0.554	-0.554	%50	%100
4	B6	Z	-0.554	-0.554	%50	%100
5	B2	Z	-0.097	-0.136	0	%50
6	B2	Z	-0.568	-0.732	%50	%100
7	B5	Z	-0.568	-0.732	%50	%100
8	B5	Z	-0.097	-0.136	0	%50
9	B3	Z	-0.101	-0.141	0	%50
10	B4	Z	-0.101	-0.141	0	%50
11	B3	Z	-0.586	-0.75	%50	%100
12	B4	Z	-0.586	-0.75	%50	%100

Basic Load Cases

	BLC Description	Category	Distributed
1	DL	DL	14
2	SL	SL	14
3	Eh	EL	12
4	Ev	EL	
5	WL, A, 0	WL	12
6	WL, B, 0	WL	6
7	WL, A, 180	WL	12
8	WL, B, 180	WL	12

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	D+S		Y	1	1	2	1				
2	D+.7Eh(NORTH)+.7Ev		Y	1	1	3	0.7	4	0.118		
3	D+.525Eh(NORTH)+.525Ev+.75S		Y	1	1	3	0.525	4	0.088	2	0.75
4	.6D+.7Eh(NORTH)+.7Ev		Y	1	0.6	3	0.7	1	0.118		
5	D+.7Eh(1.25 DIAPHRAGM FORCE,NORTH)+.7Ev	Yes	Y	1	1	3	0.875	4	0.118		
6	D+.525Eh(1.25 DIAPHRAGM FORCE,NORTH)+.525Ev+.75S	Yes	Y	1	1	3	0.394	4	0.088	2	0.75
7	.6D+.7Eh(1.25 DIAPHRAGM FORCE,NORTH)+.7Ev	Yes	Y	1	0.6	3	0.875	1	0.118		
8	D+.7Eh(SOUTH)+.7Ev		Y	1	1	3	-0.7	4	0.118		
9	D+.525Eh(SOUTH)+.525Ev+.75S		Y	1	1	3	-0.525	4	0.088	2	0.75
10	.6D+.7Eh(SOUTH)+.7Ev		Y	1	0.6	3	-0.7	1	0.118		
11	D+.7Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.7Ev	Yes	Y	1	1	3	-0.875	4	0.118		
12	D+.525Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.525Ev+.75S	Yes	Y	1	1	3	-0.394	4	0.088	2	0.75
13	.6D+.7Eh(1.25 DIAPHRAGM FORCE,SOUTH)+.7Ev	Yes	Y	1	0.6	3	-0.875	1	0.118		
14	D+.6W, 0°, A		Y	1	1	5	0.6				
15	D+.6W, 0°, B		Y	1	1	6	0.6				
16	D+.6W, 180°, A		Y	1	1	7	0.6				
17	D+.6W, 180°, B		Y	1	1	8	0.6				
18	.6D+.6W, 0°, A		Y	1	0.6	5	0.6				
19	.6D+.6W, 0°, B		Y	1	0.6	6	0.6				
20	.6D+.6W, 180°, A		Y	1	0.6	7	0.6				
21	.6D+.6W, 180°, B		Y	1	0.6	8	0.6				
22	D+.45W, 0°, A+.75S		Y	1	1	5	0.45	2	0.75		
23	D+.45W, 0°, B+.75S		Y	1	1	6	0.45	2	0.75		
24	D+.45W, 180°, A+.75S		Y	1	1	7	0.45	2	0.75		
25	D+.45W, 180°, B+.75S		Y	1	1	8	0.45	2	0.75		
26	Eh ONLY		Y	3	1						
27	Ev ONLY		Y	1	0.168						
28	Eh w/ (OMEGA,NORTH)		Y	3	1.25						
29	Eh w/ (OMEGA,SOUTH)		Y	3	-1.25						
30	D ONLY		Y	1	1						
31	S ONLY		Y	2	1						
32	W, 0°, A ONLY		Y	5	1						
33	W, 0°, B ONLY		Y	6	1						
34	W, 180°, A ONLY		Y	7	1						
35	W, 180°, B ONLY		Y	8	1						

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	B1	W24X104	0.292	19.044	6	0.068	19.403	y	12	227.207	919.162	155.689	578.184	1.669	H1-1b
2	B2	W24X104	0.33	19.478	6	0.069	19.839	y	12	225.463	919.162	155.689	554.99	1.611	H1-1b
3	B3	W24X104	0.152	20.466	12	0.048	20.466	y	12	227.542	919.162	155.689	636.753	1.836	H1-1b
4	B4	W24X104	0.197	20.107	6	0.053	20.466	y	6	227.542	919.162	155.689	603.424	1.74	H1-1b
5	B5	W24X104	0.348	19.032	12	0.08	19.391	y	12	227.495	919.162	155.689	551.277	1.59	H1-1b
6	B6	W24X104	0.299	19.389	6	0.067	19.389	y	12	227.542	919.162	155.689	578.282	1.667	H1-1b
7	C1-1	HP14X102	0.332	0	12	0.021	21.861	y	12	604.947	901.198	186.977	407.275	1.667	H1-1b
8	C1-2	HP14X102	0.35	0	12	0.026	19.8	y	12	649.873	901.198	186.977	407.275	1.667	H1-1b
9	C2-2	HP14X102	0.31	0	12	0.025	19.796	y	11	649.942	901.198	186.977	407.275	1.667	H1-1b
10	C2-1	HP14X102	0.3	0	12	0.02	21.852	y	11	605.157	901.198	186.977	407.275	1.667	H1-1b
11	C3-2	HP14X102	0.353	0	11	0.029	19.64	y	12	653.293	901.198	186.977	407.275	1.667	H1-1b
12	C3-1	HP14X102	0.322	0	11	0.023	21.711	y	12	608.266	901.198	186.977	407.275	1.667	H1-1b
13	C4-2	HP14X102	0.39	0	11	0.029	19.659	y	12	652.879	901.198	186.977	407.275	1.667	H1-1b
14	C4-1	HP14X102	0.354	0	11	0.024	21.725	y	12	607.951	901.198	186.977	407.275	1.667	H1-1b
15	C5-1	HP14X102	0.325	0	11	0.012	21.863	y	12	604.912	901.198	186.977	407.275	1.667	H1-1b
16	C5-2	HP14X102	0.335	0	11	0.015	19.8	y	12	649.862	901.198	186.977	407.275	1.667	H1-1b

Envelope AISC 16TH (360-22): ASD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
17	C6-1	HP14X102	0.354	0	12	0.017	21.863	y	12	604.907	901.198	186.977	407.275	1.667	H1-1b
18	C6-2	HP14X102	0.376	0	12	0.021	19.8	y	12	649.86	901.198	186.977	407.275	1.667	H1-1b
19	STRUT#1-3-4	W10X26	0.673	16.677	6	0.018	33.355	y	6	13.229	227.844	18.713	40.745	1	H1-1a
20	STRUT#2-3-4	W10X26	0.309	17.307	6	0.018	34.614	y	6	12.284	227.844	18.713	40.745	1	H1-1b
21	ROD#2-3-4	.5"	0.077	48.367	13	0	48.367		13	0.001	4.233	0.035	0.035	1	H1-1b*
22	ROD#1-3-4	.5"	0.08	48.435	5	0	48.435		13	0.001	4.233	0.035	0.035	1	H1-1b*
23	STRUT #2-1-2	W10X19	0.59	15.917	6	0.018	31.833	y	12	4.419	168.263	8.358	29.717	1	H1-1a
24	STRUT #1-1-2	W10X19	0.821	15.915	6	0.018	31.83	y	12	4.42	168.263	8.358	29.717	1	H1-1a
25	STRUT #2-2-3	W10X19	0.369	12.948	6	0.014	25.896	y	12	6.677	168.263	8.358	20.891	1	H1-1b
26	STRUT#2-4-5	W10X19	0.363	12.986	6	0.014	25.973	y	6	6.638	168.263	8.358	20.891	1	H1-1b
27	STRUT#2-5-6	W10X19	0.574	15.916	6	0.018	31.833	y	12	4.419	168.263	8.358	29.717	1	H1-1a
28	STRUT #1-5-6	W10X19	0.933	15.919	6	0.018	31.837	y	12	4.418	168.263	8.358	29.717	1	H1-1a
29	ROD#2-1-2	.5"	0	47.034	13	0	47.034		13	0.001	4.233	0.035	0.035	1	H1-1a
30	ROD#1-1-2	.5"	0.548	46.938	12	0	46.938		13	0.001	4.233	0.035	0.035	1	H1-1a*
31	ROD#2-5-6	.5"	0	46.925	13	0	46.925		13	0.001	4.233	0.035	0.035	1	H1-1a
32	ROD#1-5-6	.5"	0.567	46.92	12	0	46.92		13	0.001	4.233	0.035	0.035	1	H1-1a*

ALL DIAPHRAGM ELEMENTS CODE CHECK w/ U.C. <1.0

Envelope Member End Reactions (Continued)

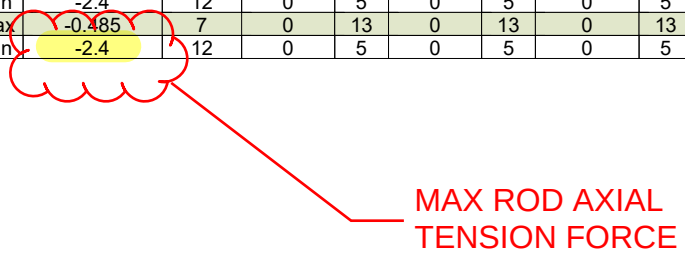
	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
73	STRUT#1-3-4	I	max	5.857	6	0.938	12	0.151	6	0	13	0	13	0	13
74			min	0.773	13	0.284	13	0.046	7	0	5	0	5	0	5
75		J	max	5.857	6	-0.284	7	-0.046	13	0	13	0	13	0	13
76			min	0.773	13	-0.938	6	-0.151	12	0	5	0	5	0	5
77	STRUT#2-3-4	I	max	0.992	5	0.974	12	0.157	6	0	13	0	13	0	13
78			min	-0.457	13	0.294	7	0.048	13	0	5	0	5	0	5
79		J	max	0.992	5	-0.294	13	-0.048	7	0	13	0	13	0	13
80			min	-0.457	13	-0.974	6	-0.157	12	0	5	0	5	0	5
81	ROD#2-3-4	I	max	0	7	0	7	0	13	0	13	0	13	0	13
82			min	-0.326	13	0	13	0	5	0	5	0	5	0	5
83		J	max	0	7	0	7	0	13	0	13	0	13	0	13
84			min	-0.326	13	0	13	0	5	0	5	0	5	0	5
85	ROD#1-3-4	I	max	0	13	0	13	0	13	0	13	0	13	0	13
86			min	-0.34	5	0	5	0	5	0	5	0	5	0	5
87		J	max	0	13	0	13	0	13	0	13	0	13	0	13
88			min	-0.34	5	0	5	0	5	0	5	0	5	0	5
89	STRUT #2-1-2	I	max	1.126	6	0.896	12	0.145	12	0	13	0	13	0	13
90			min	-0.085	13	0.271	7	0.044	7	0	5	0	5	0	5
91		J	max	1.126	6	-0.271	13	-0.044	13	0	13	0	13	0	13
92			min	-0.085	13	-0.896	6	-0.145	6	0	5	0	5	0	5
93	STRUT #1-1-2	I	max	2.146	6	0.896	12	0.145	6	0	13	0	13	0	13
94			min	-0.04	13	0.271	7	0.044	13	0	5	0	5	0	5
95		J	max	2.146	6	-0.271	13	-0.044	7	0	13	0	13	0	13
96			min	-0.04	13	-0.896	6	-0.145	12	0	5	0	5	0	5
97	STRUT #2-2-3	I	max	0.964	5	0.729	6	0.118	12	0	13	0	13	0	13
98			min	-0.654	13	0.22	7	0.036	13	0	5	0	5	0	5
99		J	max	0.964	5	-0.22	13	-0.036	7	0	13	0	13	0	13
100			min	-0.654	13	-0.729	12	-0.118	6	0	5	0	5	0	5
101	STRUT#2-4-5	I	max	0.794	5	0.731	12	0.118	6	0	13	0	13	0	13
102			min	-0.49	13	0.221	7	0.036	13	0	5	0	5	0	5
103		J	max	0.794	5	-0.221	13	-0.036	7	0	13	0	13	0	13
104			min	-0.49	13	-0.731	6	-0.118	12	0	5	0	5	0	5
105	STRUT#2-5-6	I	max	1.054	6	0.896	12	0.145	12	0	13	0	13	0	13
106			min	0.044	13	0.271	7	0.044	7	0	5	0	5	0	5
107		J	max	1.054	6	-0.271	13	-0.044	13	0	13	0	13	0	13
108			min	0.044	13	-0.896	6	-0.145	6	0	5	0	5	0	5
109	STRUT #1-5-6	I	max	2.641	6	0.896	12	0.145	12	0	13	0	13	0	13
110			min	-1.103	13	0.271	7	0.044	7	0	5	0	5	0	5
111		J	max	2.641	6	-0.271	13	-0.044	13	0	13	0	13	0	13
112			min	-1.103	13	-0.896	6	-0.145	6	0	5	0	5	0	5
113	STRUT #1-4-5	I	max	4.405	5	2.702	7	1.702	7	1.647	11	3.247	13	1.785	7
114			min	-2.81	13	-4.511	11	-6.866	12	-1.017	7	-3.614	5	-2.327	11
115		J	max	4.405	5	2.702	7	1.702	7	1.647	11	0.832	13	0.749	6
116			min	-2.81	13	-4.511	11	-6.866	12	-1.017	7	-4.497	6	-0.139	13
117	STRUT #1-2-3	I	max	2.98	6	2.681	6	5.903	6	0.096	13	4.245	13	1.154	5

MAX STRUT #1
AXIAL FORCE

MAX STRUT #2
AXIAL FORCE

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-ft]	LC	y-y Moment[k-ft]	LC	z-z Moment[k-ft]	LC
118			min	-0.725	13	0.45	13	0.353	13	-1.106	6	-6.954	5	-0.704	13
119		J	max	2.98	6	2.681	6	5.903	6	0.096	13	4.422	13	0.538	7
120			min	-0.725	13	0.45	13	0.353	13	-1.106	6	-5.25	5	-1.008	11
121	ROD#2-1-2	I	max	0	13	0	13	0	13	0	13	0	13	0	13
122			min	0	5	0	5	0	5	0	5	0	5	0	5
123		J	max	0	13	0	13	0	13	0	13	0	13	0	13
124			min	0	5	0	5	0	5	0	5	0	5	0	5
125	ROD#1-1-2	I	max	-0.599	7	0	13	0	13	0	13	0	13	0	13
126			min	-2.321	12	0	5	0	5	0	5	0	5	0	5
127		J	max	-0.599	7	0	13	0	13	0	13	0	13	0	13
128			min	-2.321	12	0	5	0	5	0	5	0	5	0	5
129	ROD#2-5-6	I	max	0	13	0	13	0	13	0	13	0	13	0	13
130			min	0	5	0	5	0	5	0	5	0	5	0	5
131		J	max	0	13	0	13	0	13	0	13	0	13	0	13
132			min	0	5	0	5	0	5	0	5	0	5	0	5
133	ROD#1-5-6	I	max	-0.485	7	0	13	0	13	0	13	0	13	0	13
134			min	-2.4	12	0	5	0	5	0	5	0	5	0	5
135		J	max	-0.485	7	0	13	0	13	0	13	0	13	0	13
136			min	-2.4	12	0	5	0	5	0	5	0	5	0	5



Client OIT
Project STILWELL STADIUM CANOPY
No. K-6428
By DKS
Date
Sheet of

DIAPHRAGM CHECKS

STRUT #1 OCCURS @ "FRONT" OF CANOPY

- MAX. "STRUT #1" FACTORED AXIAL R_{UN} TO RESOLVE = 5.857 K

=> CHECK MIN. (4) 1/2" ϕ A307 THROUGH BOLTS

(J3-1) $R_N = F_N A_b$

$A_b = \frac{(\pi)(1/2")^2}{4} = 0.196 in^2$

$F_N = 27 ksi$

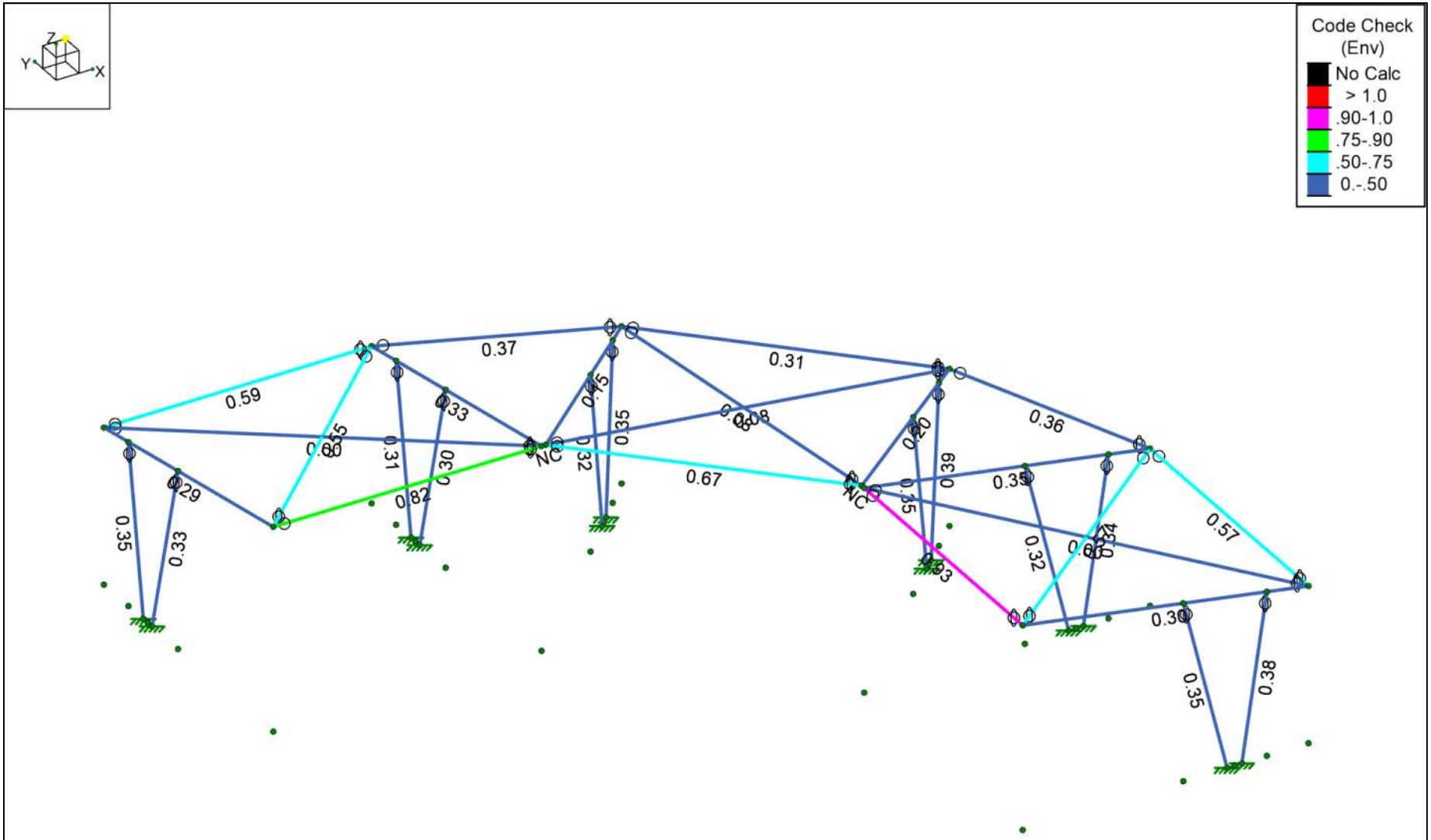
$R_N = (27 ksi)(0.196 in^2)((4 \text{ BOLTS}))$

$\Omega = 2.0$ $R_N = \frac{21.17 K}{\Omega = 2.0} = 10.6 K > 5.857 K$

- MAX STRUT #2 FACTORED AXIAL R_{UN} TO RESOLVE = 2.146 K

=> CHECK (2) 1/2" ϕ A307 BOLTS

$\frac{R_N}{\Omega} = \frac{(27 ksi)(0.196 in^2)(2 \text{ BOLTS})}{\Omega = 2.0} = 5.3 K > 2.146 K$ ✓



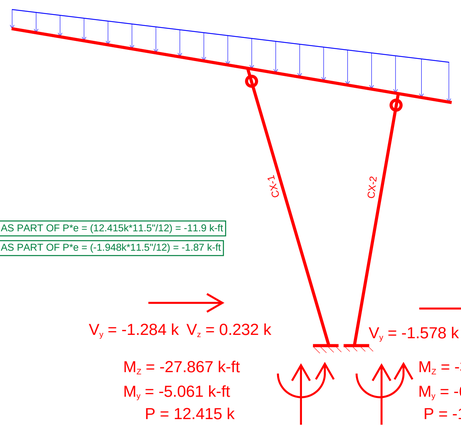
Member Code Checks Displayed (Enveloped)

ZCS	ZCS	Stilwell Canopy	SK-4
	DKS		Feb 19, 2026 at 03:27 PM
	K-6248		Stilwell Bleacher Canopy- Full Model_Update…

FOUNDATIONS

ENVELOPE REACTIONS FOR FOUNDATION CEHCKS

DEAD LOADS:

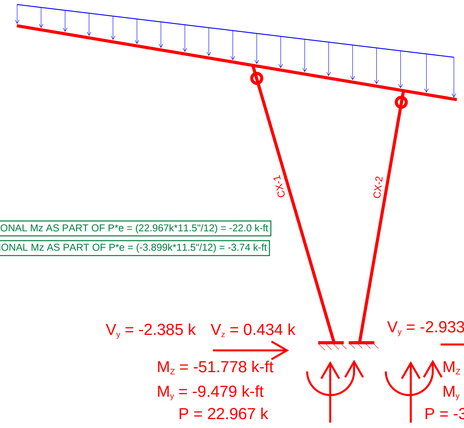


ADDITIONAL Mz AS PART OF P*e = (12.415k*11.5"/12) = -11.9 k-ft
ADDITIONAL Mz AS PART OF P*e = (-1.948k*11.5"/12) = -1.87 k-ft

V_y = -1.284 k V_z = 0.232 k
M_z = -27.867 k-ft
M_y = -5.061 k-ft
P = 12.415 k

V_y = -1.578 k V_z = 0.324 k
M_z = -30.997 k-ft
M_y = -6.406 k-ft
P = -1.948 k

SNOW LOADS:

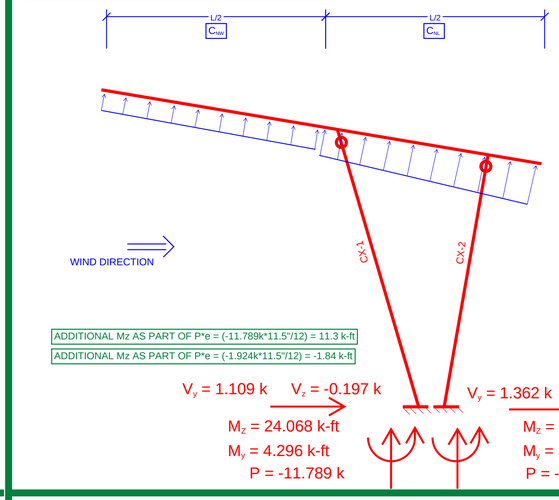


ADDITIONAL Mz AS PART OF P*e = (22.967k*11.5"/12) = -22.0 k-ft
ADDITIONAL Mz AS PART OF P*e = (-3.899k*11.5"/12) = -3.74 k-ft

V_y = -2.385 k V_z = 0.434 k
M_z = -51.778 k-ft
M_y = -9.479 k-ft
P = 22.967 k

V_y = -2.933 k V_z = 0.604 k
M_z = -57.6 k-ft
M_y = -11.962 k-ft
P = -3.899 k

WIND LOADS, γ=0°, LOAD CASE "A":

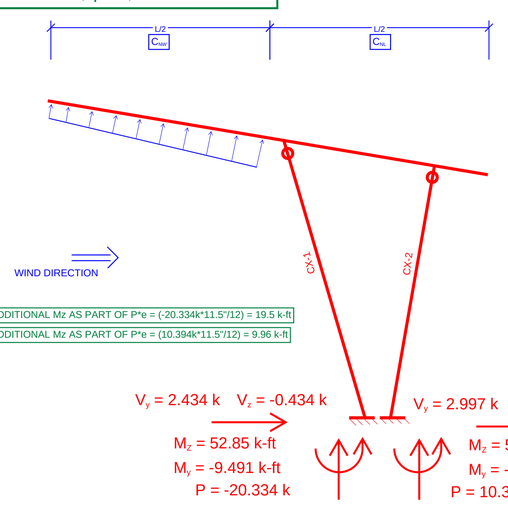


ADDITIONAL Mz AS PART OF P*e = (-11.789k*11.5"/12) = 11.3 k-ft
ADDITIONAL Mz AS PART OF P*e = (-1.924k*11.5"/12) = -1.84 k-ft

V_y = 1.109 k V_z = -0.197 k
M_z = 24.068 k-ft
M_y = 4.296 k-ft
P = -11.789 k

V_y = 1.362 k V_z = -0.278 k
M_z = 26.746 k-ft
M_y = 5.501 k-ft
P = -1.924 k

WIND LOADS, γ=0°, LOAD CASE "B":

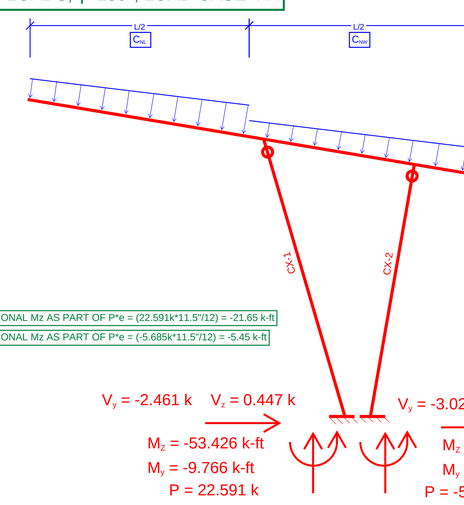


ADDITIONAL Mz AS PART OF P*e = (-20.334k*11.5"/12) = 19.5 k-ft
ADDITIONAL Mz AS PART OF P*e = (10.394k*11.5"/12) = 9.96 k-ft

V_y = 2.434 k V_z = -0.434 k
M_z = 52.85 k-ft
M_y = -9.491 k-ft
P = -20.334 k

V_y = 2.997 k V_z = -0.612 k
M_z = 58.868 k-ft
M_y = -12.075 k-ft
P = 10.394 k

WIND LOADS, γ=180°, LOAD CASE "A":

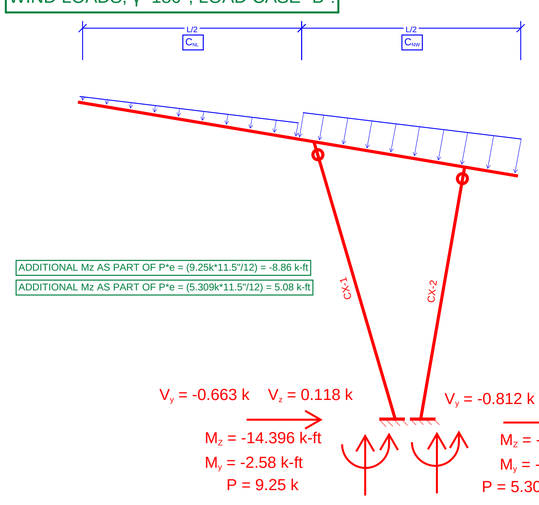


ADDITIONAL Mz AS PART OF P*e = (22.591k*11.5"/12) = -21.65 k-ft
ADDITIONAL Mz AS PART OF P*e = (-5.685k*11.5"/12) = -5.45 k-ft

V_y = -2.461 k V_z = 0.447 k
M_z = -53.426 k-ft
M_y = -9.766 k-ft
P = 22.591 k

V_y = -3.027 k V_z = 0.622 k
M_z = -59.455 k-ft
M_y = -12.314 k-ft
P = -5.685 k

WIND LOADS, γ=180°, LOAD CASE "B":

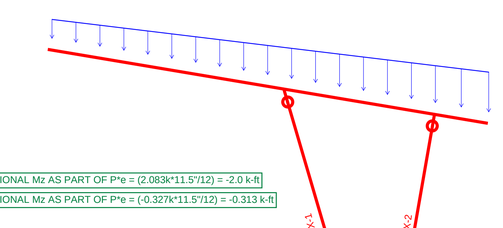


ADDITIONAL Mz AS PART OF P*e = (9.25k*11.5"/12) = -8.86 k-ft
ADDITIONAL Mz AS PART OF P*e = (5.309k*11.5"/12) = 5.08 k-ft

V_y = -0.663 k V_z = 0.118 k
M_z = -14.396 k-ft
M_y = -2.58 k-ft
P = 9.25 k

V_y = -0.812 k V_z = 0.166 k
M_z = -15.943 k-ft
M_y = -3.294 k-ft
P = 5.309 k

Ev SEISMIC LOADS

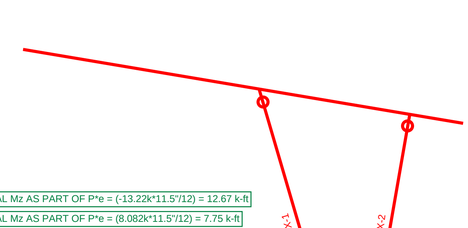


ADDITIONAL Mz AS PART OF P*e = (2.083k*11.5"/12) = -2.0 k-ft
ADDITIONAL Mz AS PART OF P*e = (-0.327k*11.5"/12) = -0.313 k-ft

V_y = -0.214 k V_z = 0.038 k
M_z = -4.652 k-ft
M_y = -0.84 k-ft
P = 2.083 k

V_y = -0.263 k V_z = 0.054 k
M_z = -5.174 k-ft
M_y = -1.067 k-ft
P = -0.327 k

(NORTH) Eh WITH OMEGA LOADS

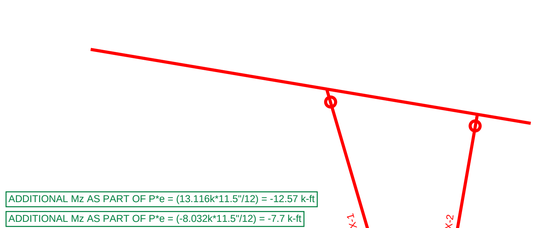


ADDITIONAL Mz AS PART OF P*e = (-13.22k*11.5"/12) = 12.67 k-ft
ADDITIONAL Mz AS PART OF P*e = (8.082k*11.5"/12) = 7.75 k-ft

V_y = 4.509 k V_z = 2.304 k
M_z = 97.956 k-ft
M_y = -50.378 k-ft
P = -13.22 k

V_y = 5.58 k V_z = 2.634 k
M_z = 109.691 k-ft
M_y = -52.157 k-ft
P = 8.082 k

(SOUTH) Eh WITH OMEGA LOADS



ADDITIONAL Mz AS PART OF P*e = (13.116k*11.5"/12) = -12.57 k-ft
ADDITIONAL Mz AS PART OF P*e = (-8.032k*11.5"/12) = -7.7 k-ft

V_y = -4.49 k V_z = -2.299 k
M_z = -97.548 k-ft
M_y = 50.272 k-ft
P = 13.116 k

V_y = -5.557 k V_z = -2.629 k
M_z = -109.243 k-ft
M_y = 52.045 k-ft
P = -8.032 k

General Footing

DESCRIPTION: Envelope Frame Line (WL_0°_B | NORTH Eh w/ OMEGA)

Code References

Governing Code : IBC 2021
Referenced Design Standard(s) : ACI 318-19
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	=	4.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Footing base depth below soil surface	=	4.0 ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

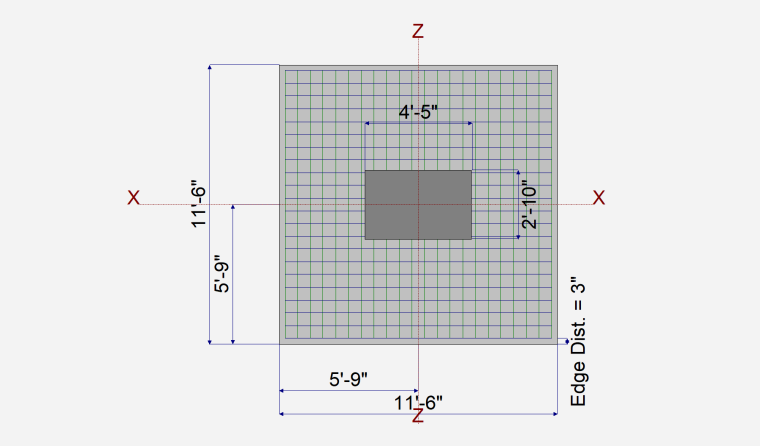
Width parallel to X-X Axis	=	11.50 ft
Length parallel to Z-Z Axis	=	11.50 ft
Footing Thickness	=	36.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	53.0 in
pz : parallel to Z-Z Axis	=	34.0 in
Height	=	33.0 in

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Bottom Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

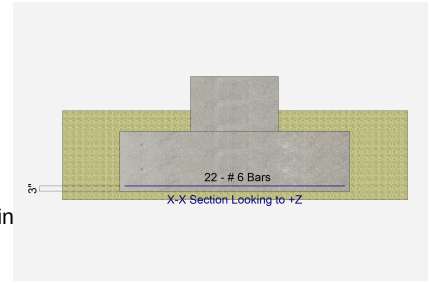
Number of Bars	=	22.0
Reinforcing Bar Size	=	# 6

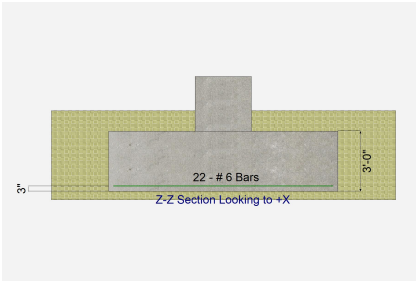
Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	# 6

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in





Top Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	6

Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	6

Rebar Centerline to Edge of Concrete...

at Top of footing	=	3.0 in

General Footing

DESCRIPTION: Envelope Frame Line (WL_0°_B | NORTH Eh w/ OMEGA)

Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	10.467	0.000	0.000	19.068	-9.940	-5.138	0.000 k
OB : Overburden	=	0.000	0.000	0.000	0.000	0.000	0.000	0.000 ksf
M-xx	=	-11.467	0.000	0.000	-21.411	-21.566	-102.535	0.000 k-ft
M-zz	=	-72.634	0.000	0.000	-135.118	141.178	228.067	0.000 k-ft
V-x	=	-3.418	0.000	0.000	-5.318	5.431	10.089	0.000 k
V-z	=	0.556	0.000	0.000	1.038	-1.046	4.938	0.000 k

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9195	Soil Bearing	1.839 ksf	2.0 ksf	+D+S about Z-Z axis
PASS	3.212	Overturning - X-X	99.335 k-ft	319.034 k-ft	+0.60D+0.70E
PASS	1.596	Overturning - Z-Z	220.936 k-ft	352.613 k-ft	+0.60D+0.70E
PASS	6.082	Sliding - X-X	8.736 k	53.130 k	+D+S
PASS	9.496	Sliding - Z-Z	3.790 k	35.992 k	+0.60D+0.70E
PASS	8.668	Uplift	-5.964 k	51.694 k	+0.60D+0.60W
PASS	0.03803	Z Flexure (+X) Bot Tens	4.665 k-ft/ft	122.654 k-ft/ft	+0.90D+E
PASS	0.08338	Z Flexure (-X) Bot Tens	10.227 k-ft/ft	122.654 k-ft/ft	+1.20D+1.60S
PASS	0.924	Min Steel X Flexure Bottom	0.778 in2/ft	0.842 in2/ft	n/a
PASS	0.01961	X Flexure (+Z) Bot Tens	2.405 k-ft/ft	122.654 k-ft/ft	+1.20D+1.60S
PASS	0.03551	X Flexure (-Z) Bot Tens	4.355 k-ft/ft	122.654 k-ft/ft	+1.20D+1.60S+0.50W
PASS	0.924	Min Steel Z Flexure Bottom	0.778 in2/ft	0.842 in2/ft	n/a
PASS	0.03317	Z Flexure (+X) Top Tens	4.069 k-ft/ft	122.654 k-ft/ft	+1.20D+1.60S
PASS	0.02493	Z Flexure (-X) Top Tens	3.058 k-ft/ft	122.654 k-ft/ft	+0.90D+E
PASS	0.924	Min Steel X Flexure Top	0.778 in2/ft	0.842 in2/ft	n/a
PASS	0.01409	X Flexure (+Z) Top Tens	1.728 k-ft/ft	122.654 k-ft/ft	+0.90D+E
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.924	Min Steel Z Flexure Top	0.778 in2/ft	0.842 in2/ft	n/a
PASS	0.03622	1-way Shear (+X)	1.767 psi	48.791 psi	+0.90D+E
PASS	0.07763	1-way Shear (-X)	3.788 psi	48.791 psi	+1.20D+1.60S
PASS	0.02008	1-way Shear (+Z)	0.9796 psi	48.791 psi	+1.20D+1.60S
PASS	0.04043	1-way Shear (-Z)	1.972 psi	48.791 psi	+1.20D+1.60S+0.50W
PASS	0.01928	2-way Punching	3.659 psi	189.737 psi	+1.20D+1.60S

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	2.0	n/a	-1.152	0.6838	0.6192	n/a	n/a	0.342
X-X, +D+S	2.0	n/a	-2.704	0.8883	0.7030	n/a	n/a	0.444
X-X, +D+0.750S	2.0	n/a	-2.371	0.8371	0.6821	n/a	n/a	0.419
X-X, +D+0.60W	2.666	n/a	-3.714	0.7033	0.5094	n/a	n/a	0.264
X-X, +D+0.450W	2.666	n/a	-3.038	0.6984	0.5369	n/a	n/a	0.262
X-X, +D+0.750S+0.450W	2.666	n/a	-4.034	0.8518	0.5998	n/a	n/a	0.320
X-X, +0.60D+0.60W	2.666	n/a	-5.645	0.4298	0.2618	n/a	n/a	0.161
X-X, +D+0.70E	2.666	n/a	-8.746	0.8593	0.3893	n/a	n/a	0.322
X-X, +D+0.750S+0.5250E	2.666	n/a	-7.215	0.9688	0.5096	n/a	n/a	0.363
X-X, +0.60D+0.70E	2.666	n/a	-14.186	0.5858	0.1416	n/a	n/a	0.220
Z-Z, D Only	2.0	-12.854	n/a	n/a	n/a	1.012	0.2910	0.506
Z-Z, +D+S	2.0	-29.421	n/a	n/a	n/a	1.839	0.0	0.920
Z-Z, +D+0.750S	2.0	-25.869	n/a	n/a	n/a	1.612	0.0	0.806
Z-Z, +D+0.60W	2.666	1.669	n/a	n/a	n/a	0.5628	0.6499	0.244
Z-Z, +D+0.450W	2.666	-2.160	n/a	n/a	n/a	0.6751	0.5602	0.253
Z-Z, +D+0.750S+0.450W	2.666	-17.375	n/a	n/a	n/a	1.269	0.1830	0.476
Z-Z, +0.60D+0.60W	2.666	12.614	n/a	n/a	n/a	0.1580	0.5335	0.200
Z-Z, +D+0.70E	2.666	15.693	n/a	n/a	n/a	0.2026	1.046	0.392
Z-Z, +D+0.750S+0.5250E	2.666	-8.147	n/a	n/a	n/a	0.9984	0.480	0.375
Z-Z, +0.60D+0.70E	2.666	36.147	n/a	n/a	n/a	0.0	1.011	0.379

DESCRIPTION: Envelope Frame Line (WL_0°_B | NORTH Eh w/ OMEGA)

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D Only	11.467 k-ft	498.598 k-ft	43.481	OK
X-X, +D+S	32.878 k-ft	614.21 k-ft	18.681	OK
X-X, +D+0.750S	27.525 k-ft	585.30 k-ft	21.264	OK
X-X, +D+0.60W	62.308 k-ft	498.598 k-ft	8.002	OK
X-X, +D+0.450W	49.598 k-ft	498.598 k-ft	10.053	OK
X-X, +D+0.750S+0.450W	65.656 k-ft	585.30 k-ft	8.915	OK
X-X, +0.60D+0.60W	57.722 k-ft	299.159 k-ft	5.183	OK
X-X, +D+0.70E	103.922 k-ft	518.47 k-ft	4.989	OK
X-X, +D+0.750S+0.5250E	96.866 k-ft	600.21 k-ft	6.196	OK
X-X, +0.60D+0.70E	99.335 k-ft	319.034 k-ft	3.212	OK
Z-Z, D Only	92.288 k-ft	495.401 k-ft	5.368	OK
Z-Z, +D+S	257.984 k-ft	605.04 k-ft	2.345	OK
Z-Z, +D+0.750S	216.560 k-ft	577.63 k-ft	2.667	OK
Z-Z, +D+0.60W	137.737 k-ft	587.69 k-ft	4.267	OK
Z-Z, +D+0.450W	118.007 k-ft	572.98 k-ft	4.855	OK
Z-Z, +D+0.750S+0.450W	242.280 k-ft	655.21 k-ft	2.704	OK
Z-Z, +0.60D+0.60W	137.737 k-ft	352.613 k-ft	2.560	OK
Z-Z, +D+0.70E	220.936 k-ft	587.69 k-ft	2.660	OK
Z-Z, +D+0.750S+0.5250E	232.070 k-ft	727.82 k-ft	3.136	OK
Z-Z, +0.60D+0.70E	220.936 k-ft	352.613 k-ft	1.596	OK

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
X-X, D Only	-3.418 k	47.409 k	13.871	OK
X-X, +D+S	-8.736 k	53.130 k	6.082	OK
X-X, +D+0.750S	-7.407 k	51.70 k	6.980	OK
X-X, +D+0.60W	-0.1594 k	45.620 k	286.20	OK
X-X, +D+0.450W	-0.9741 k	46.068 k	47.295	OK
X-X, +D+0.750S+0.450W	-4.963 k	50.358 k	10.148	OK
X-X, +0.60D+0.60W	1.208 k	35.281 k	29.211	OK
X-X, +D+0.70E	3.644 k	46.331 k	12.713	OK
X-X, +D+0.750S+0.5250E	-2.110 k	50.891 k	24.121	OK
X-X, +0.60D+0.70E	5.012 k	35.992 k	7.182	OK
Z-Z, D Only	0.5560 k	47.409 k	85.269	OK
Z-Z, +D+S	1.594 k	53.130 k	33.331	OK
Z-Z, +D+0.750S	1.335 k	51.70 k	38.741	OK
Z-Z, +D+0.60W	-0.07160 k	45.620 k	637.15	OK
Z-Z, +D+0.70E	4.013 k	46.331 k	11.546	OK
Z-Z, +D+0.750S+0.5250E	3.927 k	50.891 k	12.959	OK
Z-Z, +0.60D+0.70E	3.790 k	35.992 k	9.496	OK
Z-Z, +D+0.450W	0.08530 k	46.068 k	540.07	OK
Z-Z, +D+0.750S+0.450W	0.8638 k	50.358 k	58.298	OK
Z-Z, +0.60D+0.60W	-0.2940 k	35.281 k	120.005	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.078	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.40D	1.720	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D	0.9242	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D	1.475	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50S	1.387	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50S	2.366	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50W	0.1890	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50W	1.504	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+1.60S	2.405	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+1.60S	4.326	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+1.60S+0.50W	1.670	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+1.60S+0.50W	4.355	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+W	1.534	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50S+W	2.425	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +0.90D+W	1.165	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.20S+E	3.522	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +0.90D+E	2.797	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.40D	3.475	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D	2.978	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK

General Footing

DESCRIPTION: Envelope Frame Line (WL_0°_B | NORTH Eh w/ OMEGA)

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z, +1.20D+0.50S	5.059	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.50W	1.048	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.50W	0.08309	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+1.60S	10.227	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+1.60S+0.50W	7.774	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+W	1.542	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.50S+W	1.199	-X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.50S+W	0.3655	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +0.90D+W	1.886	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.20S+E	3.534	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +0.90D+E	4.665	+X	Bottom	0.7776	ACI 7.6.1.1	0.8417	122.654	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.20D+W	0.5462	+Z	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.50S+W	0.08354	+Z	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +0.90D+W	0.7773	+Z	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +1.20D+0.20S+E	1.311	+Z	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
X-X, +0.90D+E	1.728	+Z	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.40D	1.605	+X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D	1.376	+X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.50S	2.553	+X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+1.60S	4.069	+X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+1.60S+0.50W	3.540	+X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+W	0.8823	-X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +0.90D+W	1.627	-X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +1.20D+0.20S+E	2.057	-X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK
Z-Z, +0.90D+E	3.058	-X	Top	0.7776	ACI 7.6.1.1	0.8417	122.654	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.27 psi	0.66 psi	1.27 psi	48.79 psi	0.03	OK
+1.20D	1.09 psi	0.57 psi	1.09 psi	48.79 psi	0.02	OK
+1.20D+0.50S	1.85 psi	1.04 psi	1.85 psi	48.79 psi	0.04	OK
+1.20D+0.50W	0.37 psi	0.00 psi	0.37 psi	48.79 psi	0.01	OK
+1.20D+1.60S	3.79 psi	1.33 psi	3.79 psi	48.79 psi	0.08	OK
+1.20D+1.60S+0.50W	2.84 psi	1.33 psi	2.84 psi	48.79 psi	0.06	OK
+1.20D+W	0.35 psi	0.57 psi	0.57 psi	48.79 psi	0.01	OK
+1.20D+0.50S+W	0.41 psi	0.10 psi	0.41 psi	48.79 psi	0.01	OK
+0.90D+W	0.62 psi	0.71 psi	0.71 psi	48.79 psi	0.01	OK
+1.20D+0.20S+E	0.82 psi	1.30 psi	1.30 psi	48.79 psi	0.03	OK
+0.90D+E	1.00 psi	1.77 psi	1.77 psi	48.79 psi	0.04	OK

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.77 psi	0.45 psi	0.77 psi	48.79 psi	0.02	OK
+1.20D	0.66 psi	0.38 psi	0.66 psi	48.79 psi	0.01	OK
+1.20D+0.50S	1.06 psi	0.57 psi	1.06 psi	48.79 psi	0.02	OK
+1.20D+0.50W	0.69 psi	0.04 psi	0.69 psi	48.79 psi	0.01	OK
+1.20D+1.60S	1.94 psi	0.98 psi	1.94 psi	48.79 psi	0.04	OK
+1.20D+1.60S+0.50W	1.97 psi	0.64 psi	1.97 psi	48.79 psi	0.04	OK
+1.20D+W	0.73 psi	0.30 psi	0.73 psi	48.79 psi	0.01	OK
+1.20D+0.50S+W	1.13 psi	0.12 psi	1.13 psi	48.79 psi	0.02	OK
+0.90D+W	0.57 psi	0.40 psi	0.57 psi	48.79 psi	0.01	OK
+1.20D+0.20S+E	1.68 psi	0.72 psi	1.68 psi	48.79 psi	0.03	OK
+0.90D+E	1.36 psi	0.89 psi	1.36 psi	48.79 psi	0.03	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	1.37 psi	189.74 psi	0.01	OK
+1.20D	1.18 psi	189.74 psi	0.01	OK
+1.20D+0.50S	1.84 psi	189.74 psi	0.01	OK
+1.20D+0.50W	0.83 psi	189.74 psi	0.00	OK
+1.20D+1.60S	3.66 psi	189.74 psi	0.02	OK
+1.20D+1.60S+0.50W	2.99 psi	189.74 psi	0.02	OK
+1.20D+W	0.48 psi	189.74 psi	0.00	OK

General Footing

DESCRIPTION: Envelope Frame Line (WL_180°_A | SOUTH Eh w/ OMEGA)

Code References

Governing Code : IBC 2021
Referenced Design Standard(s) : ACI 318-19
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	=	4.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Footing base depth below soil surface	=	4.0 ft
Allow press. increase per foot of depth	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

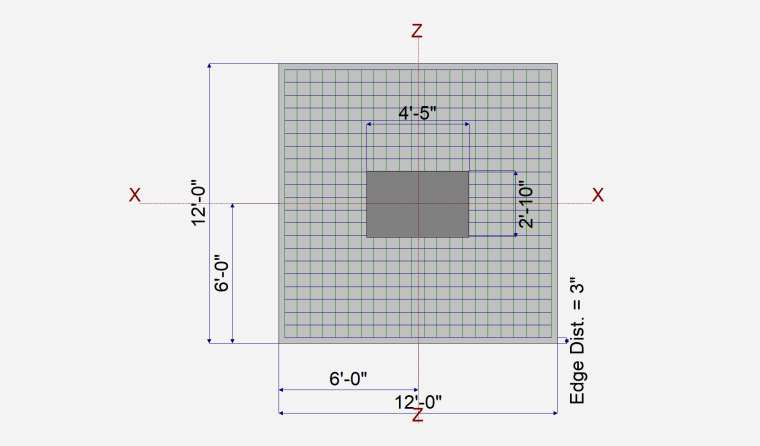
Width parallel to X-X Axis	=	12.0 ft
Length parallel to Z-Z Axis	=	12.0 ft
Footing Thickness	=	36.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	53.0 in
pz : parallel to Z-Z Axis	=	34.0 in
Height	=	33.0 in

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Bottom Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

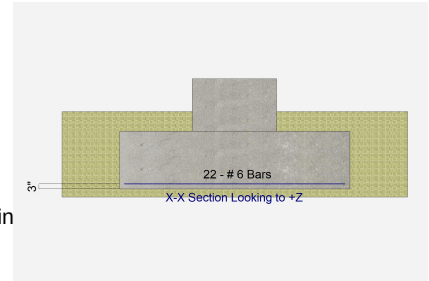
Number of Bars	=	22.0
Reinforcing Bar Size	=	# 6

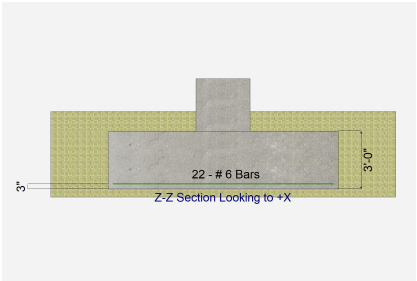
Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	# 6

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in





Top Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	6

Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	22.0
Reinforcing Bar Size	=	6

Rebar Centerline to Edge of Concrete...

at Top of footing	=	3.0 in

General Footing

DESCRIPTION: Envelope Frame Line (WL_180°_A | SOUTH Eh w/ OMEGA)

Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	10.467	0.000	0.000	19.068	16.906	6.840	0.000 k
OB : Overburden	=	0.000	0.000	0.000	0.000	0.000	0.000	0.000 ksf
M-xx	=	-11.467	0.000	0.000	-21.411	-22.080	102.317	0.000 k-ft
M-zz	=	-72.634	0.000	0.000	-135.118	-139.981	-239.200	0.000 k-ft
V-x	=	-3.418	0.000	0.000	-5.318	-5.488	-10.524	0.000 k
V-z	=	0.556	0.000	0.000	1.038	1.069	-4.928	0.000 k

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8736	Soil Bearing	2.329 ksf	2.666 ksf	+D+0.750S+0.5250E about Z-Z axis
PASS	5.285	Overturning - X-X	73.540 k-ft	388.661 k-ft	+0.60D+0.70E
PASS	1.365	Overturning - Z-Z	265.172 k-ft	361.945 k-ft	+0.60D+0.70E
PASS	4.302	Sliding - X-X	12.932 k	55.636 k	+D+0.750S+0.5250E
PASS	13.029	Sliding - Z-Z	3.116 k	40.597 k	+0.60D+0.70E
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.03996	Z Flexure (+X) Bot Tens	0 k-ft/ft	117.637 k-ft/ft	+1.20D+0.20S+E
PASS	0.1091	Z Flexure (-X) Bot Tens	12.839 k-ft/ft	117.637 k-ft/ft	+1.20D+1.60S+0.50W
PASS	0.964	Min Steel X Flexure Bottom	0.778 in2/ft	0.807 in2/ft	n/a
PASS	0.03117	X Flexure (+Z) Bot Tens	3.667 k-ft/ft	117.637 k-ft/ft	+1.20D+0.20S+E
PASS	0.04448	X Flexure (-Z) Bot Tens	5.232 k-ft/ft	117.637 k-ft/ft	+1.20D+1.60S+0.50W
PASS	0.964	Min Steel Z Flexure Bottom	0.778 in2/ft	0.807 in2/ft	n/a
PASS	0.03996	Z Flexure (+X) Top Tens	4.70 k-ft/ft	117.637 k-ft/ft	+1.20D+0.20S+E
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.964	Min Steel X Flexure Top	0.778 in2/ft	0.807 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.003276	X Flexure (-Z) Top Tens	0.3853 k-ft/ft	117.637 k-ft/ft	+0.90D+E
PASS	0.964	Min Steel Z Flexure Top	0.778 in2/ft	0.807 in2/ft	n/a
PASS	0.03708	1-way Shear (+X)	1.784 psi	48.104 psi	+1.20D+1.60S
PASS	0.1175	1-way Shear (-X)	5.651 psi	48.104 psi	+0.90D+E
PASS	0.03508	1-way Shear (+Z)	1.688 psi	48.104 psi	+1.20D+0.20S+E
PASS	0.04853	1-way Shear (-Z)	2.335 psi	48.104 psi	+1.20D+1.60S+0.50W
PASS	0.02404	2-way Punching	4.561 psi	189.737 psi	+1.20D+1.60S+0.50W

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location Bottom, -Z	Top, +Z	Left, -X	Right, +X	Actual / Allow Ratio
X-X, D Only	2.0	n/a	-1.072	0.6712	0.6144	n/a	n/a	0.336
X-X, +D+S	2.0	n/a	-2.549	0.8567	0.6937	n/a	n/a	0.428
X-X, +D+0.750S	2.0	n/a	-2.229	0.8103	0.6739	n/a	n/a	0.405
X-X, +D+0.60W	2.666	n/a	-2.083	0.7745	0.6519	n/a	n/a	0.291
X-X, +D+0.450W	2.666	n/a	-1.850	0.7487	0.6425	n/a	n/a	0.281
X-X, +D+0.750S+0.450W	2.666	n/a	-2.833	0.8878	0.7020	n/a	n/a	0.333
X-X, +0.60D+0.60W	2.666	n/a	-2.653	0.5060	0.4062	n/a	n/a	0.190
X-X, +D+0.70E	2.666	n/a	5.364	0.5264	0.8256	n/a	n/a	0.310
X-X, +D+0.750S+0.5250E	2.666	n/a	2.063	0.7018	0.8323	n/a	n/a	0.312
X-X, +0.60D+0.70E	2.666	n/a	9.315	0.2580	0.5799	n/a	n/a	0.218
Z-Z, D Only	2.0	-11.965	n/a	n/a	n/a	0.960	0.3255	0.480
Z-Z, +D+S	2.0	-27.733	n/a	n/a	n/a	1.672	0.0	0.836
Z-Z, +D+0.750S	2.0	-24.319	n/a	n/a	n/a	1.487	0.0	0.744
Z-Z, +D+0.60W	2.666	-22.808	n/a	n/a	n/a	1.384	0.04219	0.519
Z-Z, +D+0.450W	2.666	-20.303	n/a	n/a	n/a	1.278	0.1130	0.479
Z-Z, +D+0.750S+0.450W	2.666	-30.795	n/a	n/a	n/a	1.841	0.0	0.691
Z-Z, +0.60D+0.60W	2.666	-28.921	n/a	n/a	n/a	1.011	0.0	0.379
Z-Z, +D+0.70E	2.666	-37.238	n/a	n/a	n/a	1.854	0.0	0.695
Z-Z, +D+0.750S+0.5250E	2.666	-40.623	n/a	n/a	n/a	2.329	0.0	0.874
Z-Z, +0.60D+0.70E	2.666	-52.749	n/a	n/a	n/a	2.063	0.0	0.774

General Footing

DESCRIPTION: Envelope Frame Line (WL_180°_A | SOUTH Eh w/ OMEGA)

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D Only	11.467 k-ft	558.56 k-ft	48.710	OK
X-X, +D+S	32.878 k-ft	678.94 k-ft	20.650	OK
X-X, +D+0.750S	27.525 k-ft	648.84 k-ft	23.573	OK
X-X, +D+0.60W	24.715 k-ft	623.11 k-ft	25.212	OK
X-X, +D+0.450W	21.403 k-ft	606.97 k-ft	28.359	OK
X-X, +D+0.750S+0.450W	37.461 k-ft	697.25 k-ft	18.613	OK
X-X, +0.60D+0.60W	20.128 k-ft	399.685 k-ft	19.857	OK
X-X, +D+0.70E	74.819 k-ft	615.39 k-ft	8.225	OK
X-X, +D+0.750S+0.5250E	61.390 k-ft	705.12 k-ft	11.486	OK
X-X, +0.60D+0.70E	73.540 k-ft	388.661 k-ft	5.285	OK
Z-Z, D Only	92.288 k-ft	555.36 k-ft	6.018	OK
Z-Z, +D+S	257.984 k-ft	669.77 k-ft	2.596	OK
Z-Z, +D+0.750S	216.560 k-ft	641.17 k-ft	2.961	OK
Z-Z, +D+0.60W	195.210 k-ft	616.22 k-ft	3.157	OK
Z-Z, +D+0.450W	169.479 k-ft	601.01 k-ft	3.546	OK
Z-Z, +D+0.750S+0.450W	293.752 k-ft	686.81 k-ft	2.338	OK
Z-Z, +0.60D+0.60W	158.295 k-ft	394.079 k-ft	2.490	OK
Z-Z, +D+0.70E	302.087 k-ft	584.09 k-ft	1.934	OK
Z-Z, +D+0.750S+0.5250E	373.909 k-ft	662.71 k-ft	1.772	OK
Z-Z, +0.60D+0.70E	265.172 k-ft	361.945 k-ft	1.365	OK

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
X-X, D Only	-3.418 k	50.268 k	14.707	OK
X-X, +D+S	-8.736 k	55.989 k	6.409	OK
X-X, +D+0.750S	-7.407 k	54.558 k	7.366	OK
X-X, +D+0.60W	-6.711 k	53.311 k	7.944	OK
X-X, +D+0.450W	-5.888 k	52.550 k	8.926	OK
X-X, +D+0.750S+0.450W	-9.876 k	56.841 k	5.755	OK
X-X, +0.60D+0.60W	-5.344 k	42.204 k	7.898	OK
X-X, +D+0.70E	-10.785 k	51.705 k	4.794	OK
X-X, +D+0.750S+0.5250E	-12.932 k	55.636 k	4.302	OK
X-X, +0.60D+0.70E	-9.418 k	40.597 k	4.311	OK
Z-Z, D Only	0.5560 k	50.268 k	90.410	OK
Z-Z, +D+S	1.594 k	55.989 k	35.125	OK
Z-Z, +D+0.750S	1.335 k	54.558 k	40.883	OK
Z-Z, +D+0.60W	1.197 k	53.311 k	44.522	OK
Z-Z, +D+0.70E	-2.894 k	51.705 k	17.869	OK
Z-Z, +D+0.750S+0.5250E	-1.253 k	55.636 k	44.413	OK
Z-Z, +0.60D+0.70E	-3.116 k	40.597 k	13.029	OK
Z-Z, +D+0.450W	1.037 k	52.550 k	50.673	OK
Z-Z, +D+0.750S+0.450W	1.816 k	56.841 k	31.308	OK
Z-Z, +0.60D+0.60W	0.9750 k	42.204 k	43.286	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	1.123	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.40D	1.753	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D	0.9627	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D	1.502	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50S	1.448	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50S	2.407	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50W	1.363	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50W	2.335	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+1.60S	2.516	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+1.60S	4.399	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+1.60S+0.50W	2.916	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+1.60S+0.50W	5.232	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+W	1.763	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+W	3.168	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50S+W	2.248	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.50S+W	4.074	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +0.90D+W	1.522	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +0.90D+W	2.793	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +1.20D+0.20S+E	3.667	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK

DESCRIPTION: Envelope Frame Line (WL_180°_A | SOUTH Eh w/ OMEGA)

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.20D+0.20S+E	0.3523	-Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
X-X, +0.90D+E	3.232	+Z	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.40D	3.529	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D	3.025	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50S	5.133	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50W	5.136	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+1.60S	10.070	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+1.60S+0.50W	12.839	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+W	7.272	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50S+W	9.647	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +0.90D+W	6.632	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.20S+E	12.241	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +0.90D+E	12.067	-X	Bottom	0.7776	ACI 7.6.1.1	0.8067	117.637	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +0.90D+E	0.3853	-Z	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.40D	1.561	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D	1.338	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50S	2.494	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50W	2.606	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+1.60S	4.463	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+1.60S+0.50W	4.691	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+W	3.823	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.50S+W	4.470	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +0.90D+W	3.262	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +1.20D+0.20S+E	4.70	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK
Z-Z, +0.90D+E	3.525	+X	Top	0.7776	ACI 7.6.1.1	0.8067	117.637	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.49 psi	0.74 psi	1.49 psi	48.10 psi	0.03	OK
+1.20D	1.27 psi	0.63 psi	1.27 psi	48.10 psi	0.03	OK
+1.20D+0.50S	2.17 psi	1.17 psi	2.17 psi	48.10 psi	0.05	OK
+1.20D+0.50W	2.17 psi	1.21 psi	2.17 psi	48.10 psi	0.05	OK
+1.20D+1.60S	4.28 psi	1.78 psi	4.28 psi	48.10 psi	0.09	OK
+1.20D+1.60S+0.50W	5.51 psi	1.78 psi	5.51 psi	48.10 psi	0.11	OK
+1.20D+W	3.08 psi	1.74 psi	3.08 psi	48.10 psi	0.06	OK
+1.20D+0.50S+W	4.11 psi	1.78 psi	4.11 psi	48.10 psi	0.09	OK
+0.90D+W	2.82 psi	1.34 psi	2.82 psi	48.10 psi	0.06	OK
+1.20D+0.20S+E	5.45 psi	1.78 psi	5.45 psi	48.10 psi	0.11	OK
+0.90D+E	5.65 psi	1.34 psi	5.65 psi	48.10 psi	0.12	OK

One Way Shear Z

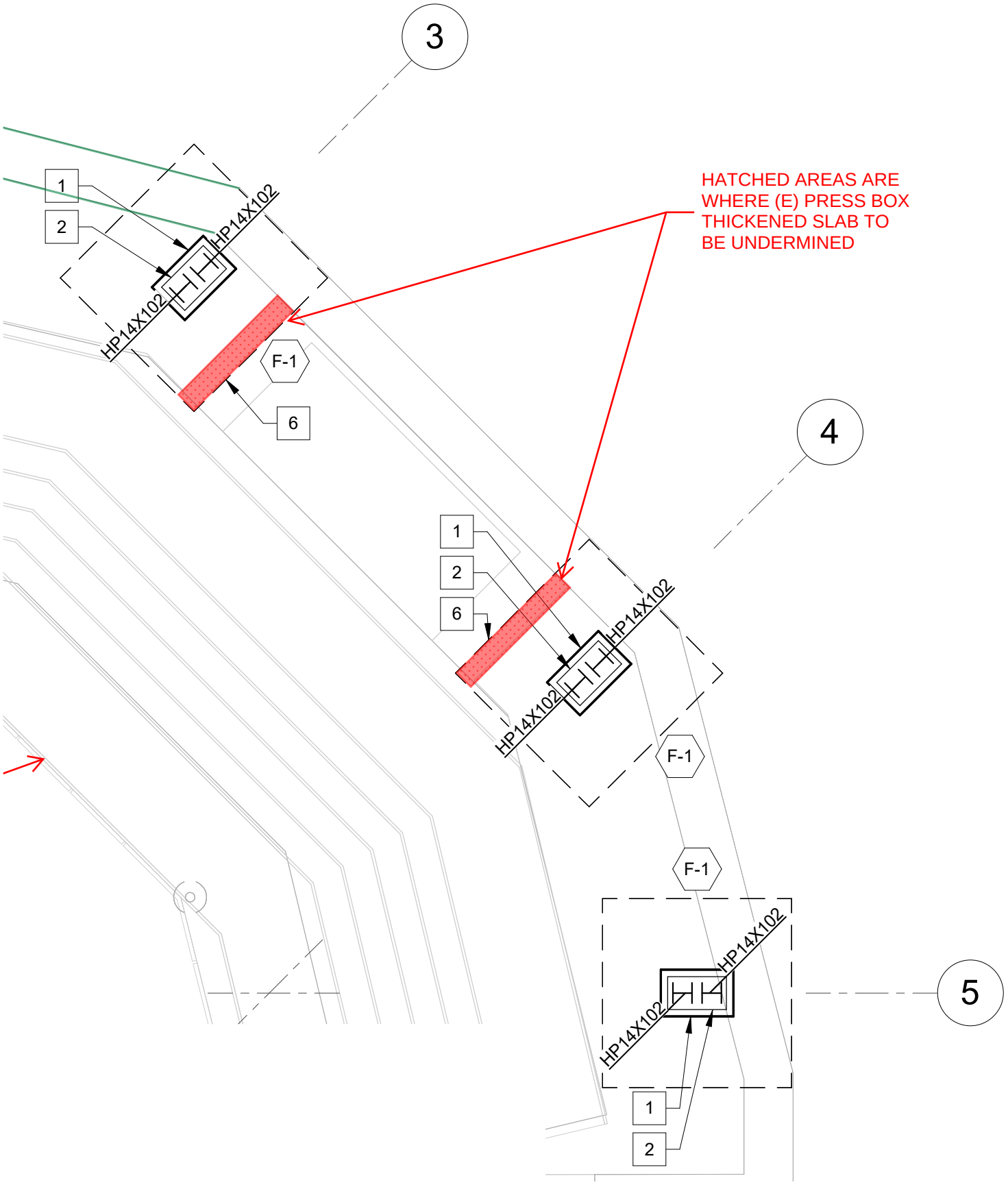
Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.78 psi	0.47 psi	0.78 psi	48.10 psi	0.02	OK
+1.20D	0.67 psi	0.40 psi	0.67 psi	48.10 psi	0.01	OK
+1.20D+0.50S	1.07 psi	0.60 psi	1.07 psi	48.10 psi	0.02	OK
+1.20D+0.50W	1.04 psi	0.56 psi	1.04 psi	48.10 psi	0.02	OK
+1.20D+1.60S	1.96 psi	1.03 psi	1.96 psi	48.10 psi	0.04	OK
+1.20D+1.60S+0.50W	2.34 psi	1.19 psi	2.34 psi	48.10 psi	0.05	OK
+1.20D+W	1.41 psi	0.72 psi	1.41 psi	48.10 psi	0.03	OK
+1.20D+0.50S+W	1.82 psi	0.92 psi	1.82 psi	48.10 psi	0.04	OK
+0.90D+W	1.25 psi	0.62 psi	1.25 psi	48.10 psi	0.03	OK
+1.20D+0.20S+E	0.05 psi	1.69 psi	1.69 psi	48.10 psi	0.04	OK
+0.90D+E	0.28 psi	1.51 psi	1.51 psi	48.10 psi	0.03	OK

Two-Way "Punching" Shear

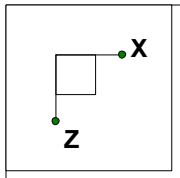
All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	1.41 psi	189.74 psi	0.01	OK
+1.20D	1.21 psi	189.74 psi	0.01	OK
+1.20D+0.50S	1.90 psi	189.74 psi	0.01	OK
+1.20D+0.50W	1.82 psi	189.74 psi	0.01	OK
+1.20D+1.60S	3.55 psi	189.74 psi	0.02	OK
+1.20D+1.60S+0.50W	4.56 psi	189.74 psi	0.02	OK
+1.20D+W	2.43 psi	189.74 psi	0.01	OK

(E) FOOTING UNDERMINING AT GL-3 & GL-4

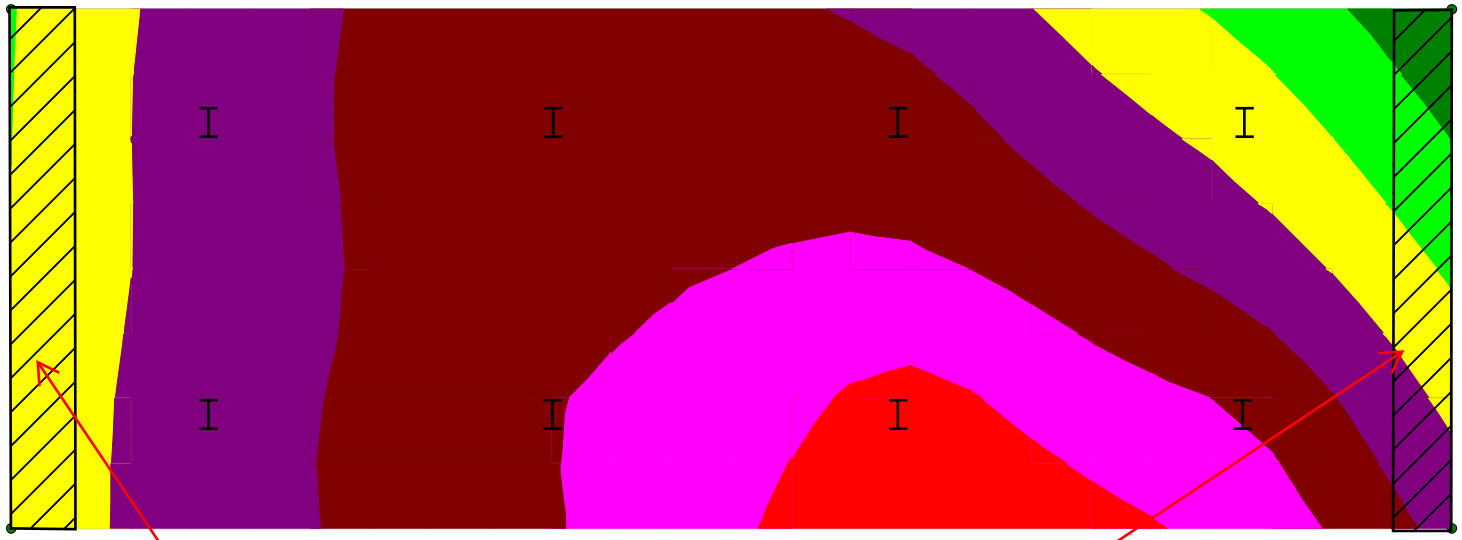


PRESS BOX MAT SLAB @ GL-3 / GL-4 FOOTING INTERACTION



FOR "FRAME LINE #3/4" VERIFY SOIL PRESSURES ARE NOT EXCEEDED
FROM OVERBURDEN OF (E) MATT SLAB THE SUPPORTS PRESS BOX.

SEE BELOW, PROVIDE MINIMUM OF 150 PSF OF RESIDUAL CAPACITY.



HATCHED AREA
REPRESENTS EXTENTS OF
(N) COLUMN FOOTING
BELOW MATT SLAB

Results for LC 3, DL+LL

Taylor & Syfan Consulting Engineers	O'Farrell CS Pressbox	SK - 10
ADM/KAM		Sept 27, 2018 at 11:33 AM
18839		18846 - Press Box Model +Platform v2 BTD.r3d

PEDESTAL DESIGN

- TRY 2'-10" x 4'-5" PEDESTAL DIMS.

ACI 318-19, CH.10.1, PEDESTALS INCLUDED IN CH.10

ACI 10.6 - MIN. LONG. REINFORCEMENT SHALL BE $0.01 A_g$

* NOTE: PEDESTAL IS PART OF SFRS & FOUNDATION, THEREFORE CANNOT REDUCE A_s (MIN.)

$A_{s(MIN)} = (0.01)(34")(53") = 18.02 in^2 / 0.44 in^2/BAR = (42)$ #6 BARS

ACI 10.7.6.2.1 - BOTTOM TIE SHALL BE LOCATED NOT MORE THAN 1/2 OF THE TIE OR HOOP SPACING ABOVE T.O.F

ACI 10.7.6.2.2 - TOP TIE SHALL NOT BE LOCATED MORE THAN 1/2 OF THE TIE OR HOOP SPACING.

ACI 10.7.6.1.5 - IF A.B. ARE PLACED IN TOP OF PEDESTAL, BOLTS SHALL BE ENCLOSED BY TRANS. REINF. THAT SURROUNDS MIN. (4) LONG. BARS. THE TRANS. REINF. SHALL BE DISTRIBUTED WITHIN 5" OF THE TOP OF COLUMN & CONSIST OF MIN. (2) #4 BARS

Client OIT | Project STILWELL STADIUM
No. K-6428 | By DKS
Date | Sheet | of

PEDESTAL DESIGN

REBAR DEVELOPMENT LENGTHS:

FOR #6 HOOKED BARS:

ACI 25.4.3, GREATER OF: a.) $\left(\frac{f_y \psi_e \psi_r \psi_o \psi_c}{55 \lambda \sqrt{f'_c}}\right) d_b^{1.5}$

$\psi_e = 1.0$
$\psi_r = 1.0$, $S \geq 6d_b$
$\psi_o = 1.0$, SIDE COVER $\geq 2.5"$
$\psi_c = 4{,}000/15{,}000 + 0.6 = 0.867$

b.) $8d_b : (8)(0.75") = 6"$

c.) $6"$

a) $\frac{(60{,}000\ psi)(1.0)(1.0)(0.867)}{(55)(1)(\sqrt{4{,}000})}(0.75")^{1.5} = 9.7"$

USE (42) #6 VERTS, PROVIDE STD. HOOK @ EA. END

$l_{ext} = 12d_b : (12)(0.75") = 9"$

Client OIT
Project STILWELL STADIUM
No. K6428
By DKS
Date
Sheet of

PEDESTAL DESIGN

TIES FOR PEDESTAL: ACI 25.7.2 - TIES

25.7.2.1 - SPACING a.) CLR SPACING (4/3) dagg

b.) MAX CENTER-TO-CENTER:

a) $16 d_b$: (16)(0.75") = 12"

b.) $48 d_b$: (48)(0.5") = 24"

c. = 34"

ACI 18.13.2.2 - COLUMNS (PEDESTALS) SHALL HAVE FULLY DEVELOPED LONG. REINFORCEMENT FROM COLUMN -> FOOTING

ACI 18.13.2.3 - LONG. REINF. SHALL HAVE 90° HOOKS @ BOTTOM OF FOOTING w/ HOOKS ORIENTED TO THE CENTER

Envelope (FACTORED) Member End Reactions for Anchorage Calcs

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-f	LC	y-y Mome	LC	z-z Momei	LC
25	C1-1	I	max	38.136	24	1.197	4	0.723	9	0	25	3.606	4	26.176	4
26			min	-4.479	19	-4.345	9	-0.165	4	0	1	-15.802	9	-94.985	9
37	C2-1	I	max	39.723	24	1.938	4	0.777	24	0	25	2.799	19	42.349	4
38			min	-4.789	19	-3.859	9	-0.128	19	0	1	-16.977	24	-84.318	9
45	C3-1	I	max	27.38	24	1.369	4	0.595	2	0	25	13.162	8	29.729	4
46			min	-2.071	19	-4.825	9	-0.606	8	0	1	-12.914	2	-104.757	9
53	C4-1	I	max	26.938	24	1.635	4	0.79	2	0	25	16.79	8	35.53	4
54			min	-2.053	19	-4.975	9	-0.773	8	0	1	-17.168	2	-108.089	9
57	C5-1	I	max	39.42	24	0.441	19	1.106	4	0	25	33.789	9	9.651	19
58			min	-4.778	19	-2.611	24	-1.546	9	0	1	-24.176	4	-57.075	24
65	C6-1	I	max	38.075	24	0.64	19	1.163	4	0	25	32.917	8	13.984	19
66			min	-4.473	19	-3.814	24	-1.506	8	0	1	-25.421	4	-83.386	24

Column #1 Max Rxns:

Max P=	39.723	**Max Y-shear=**	1.938	**Max Z-shear=**	1.163
Min P=	-4.789	**Min Y-shear=**	-4.975	**Min Z-shear=**	-1.546

Max Y-Y Moment=	33.789	**Max Z-Z Moment=**	42.349
Min Y-Y Moment=	-25.421	**Min Z-Z Moment=**	-108.089

	Member	Member End		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-f	LC	y-y Mome	LC	z-z Momei	LC
29	C1-2	I	max	4.514	19	1.484	4	1.019	24	0	25	3.376	19	29.378	4
30			min	-7.375	24	-5.332	9	-0.17	19	0	1	-20.181	24	-105.572	9
33	C2-2	I	max	5.185	19	2.396	4	1.076	24	0	25	3.545	19	47.435	4
34			min	-6.873	24	-4.731	9	-0.179	19	0	1	-21.292	24	-93.656	9
41	C3-2	I	max	3.679	15	1.698	4	0.774	2	0	25	15.057	8	33.346	4
42			min	-0.941	18	-5.944	9	-0.767	8	0	1	-15.196	2	-116.741	9
49	C4-2	I	max	4.589	8	2.032	4	0.874	2	0	25	17.272	8	39.941	4
50			min	-3.968	4	-6.131	9	-0.879	8	0	1	-17.183	2	-120.531	9
61	C5-2	I	max	5.161	19	0.54	19	1.24	4	0	25	37.768	9	10.701	19
62			min	-7.584	9	-3.187	24	-1.907	9	0	1	-24.551	4	-63.095	24
69	C6-2	I	max	4.507	19	0.785	19	1.27	4	0	25	37.135	9	15.536	19
70			min	-7.335	24	-4.67	24	-1.875	9	0	1	-25.144	4	-92.459	24

Column #2 Max Rxns:

Max P=	5.185	**Max Y-shear=**	2.396	**Max Z-shear=**	1.27
Min P=	-7.584	**Min Y-shear=**	-6.131	**Min Z-shear=**	-1.907

Max Y-Y Moment=	37.768	**Max Z-Z Moment=**	47.435
Min Y-Y Moment=	-25.144	**Min Z-Z Moment=**	-120.531

COMBINED Max Rxns:

Max P=	44.908	**Max Y-shear=**	4.334	**Max Z-shear=**	2.433
Min P=	-12.373	**Min Y-shear=**	-11.106	**Min Z-shear=**	-3.453

Max Y-Y Moment=	71.557	**Max Z-Z Moment=**	89.784
Min Y-Y Moment=	-50.565	**Min Z-Z Moment=**	-228.62

Company:	ZCS	Date:	11/3/2025
Engineer:	DKS	Page:	1
Project:	Stilwell Bleacher Canopy		
Address:			
Phone:			
E-mail:			

1.Project information

Project description:
Location:
Design name: Col #2 (Tension)

Comment:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-19
Units: Imperial units

Anchor Information:
Anchor type: Cast-in-place
Material: F1554 Grade 55
Diameter (inch): 1.250
Effective Embedment depth, h_{ef} (inch): 16.000
Anchor category: -
Anchor ductility: Yes
h_{min} (inch): 18.00
C_{min} (inch): 1.65
S_{min} (inch): 5.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 54.00
State: Cracked
Compressive strength, f'_c (psi): 4000
$\Psi_{c,V}$: 1.0
Reinforcement condition: A tension, A shear
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: Yes
Ignore concrete breakout in tension: Yes
Ignore concrete breakout in shear: Yes
Ignore 6do requirement: Yes
Build-up grout pad: Yes

Base Plate
Length x Width x Thickness (inch): 24.00 x 21.50 x 2.00
Yield stress: 36000 psi

Profile type/size: 14X102

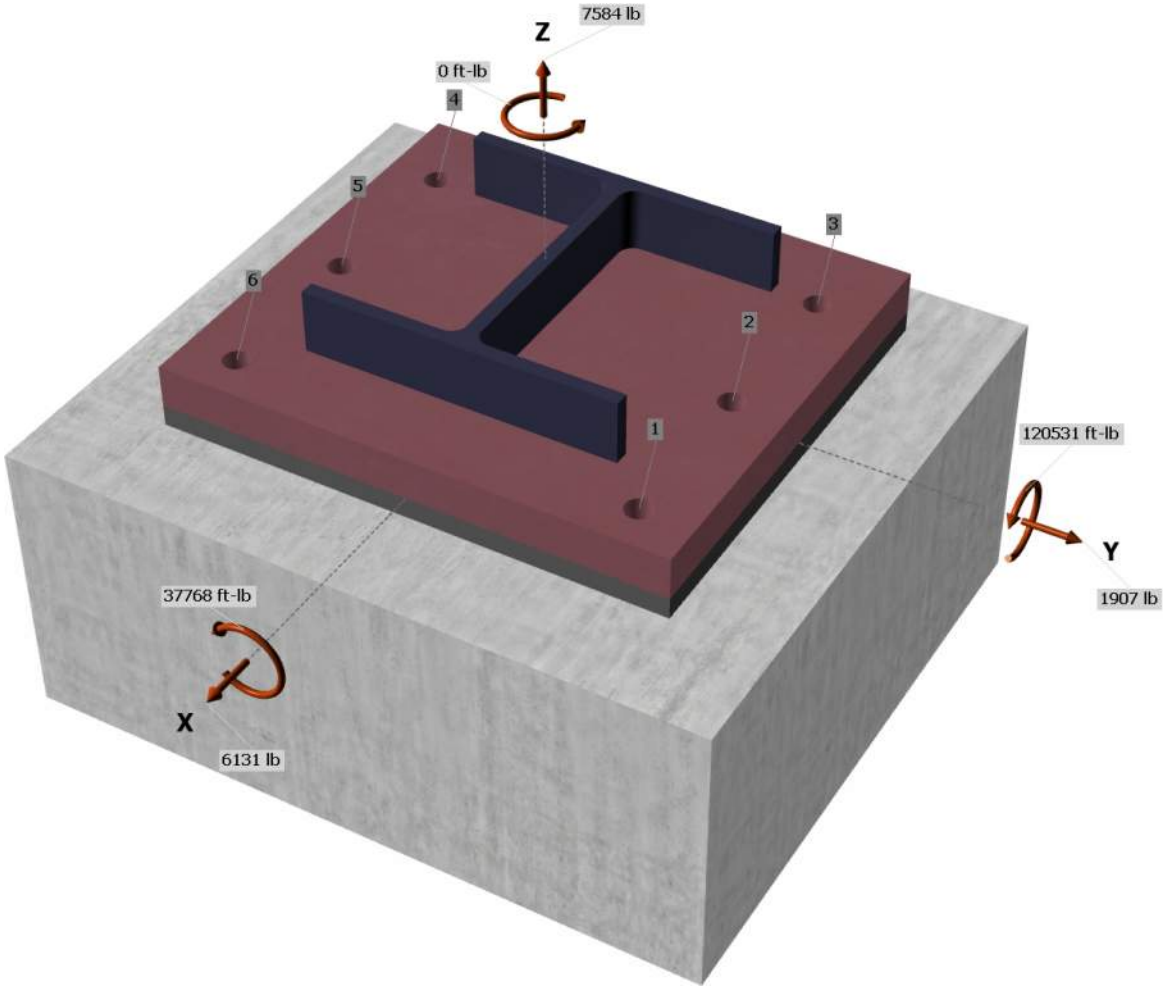
Recommended Anchor
Anchor Name: Heavy Hex Bolt - 1 1/4"Ø Heavy Hex Bolt, F1554 Gr. 55

Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: Yes
Anchors subjected to sustained tension: Not applicable
Ductility section for tension: 17.10.5.2 not applicable
Ductility section for shear: 17.10.6.2 not applicable
Ω_0 factor: not set
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: No

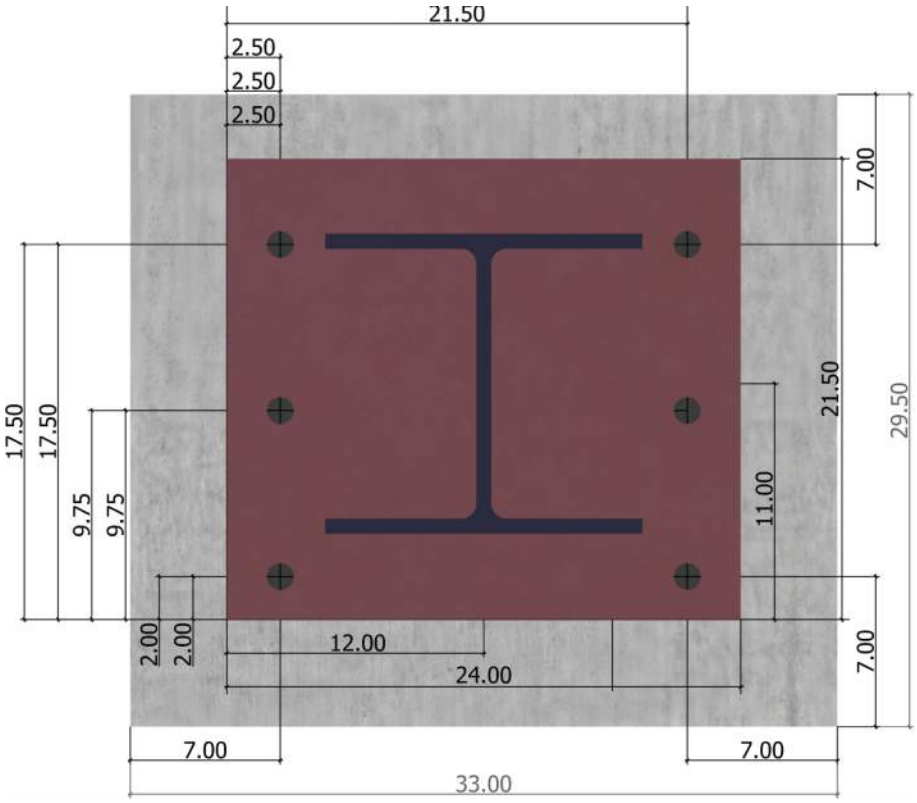
Strength level loads:

N_{ua} [lb]:	7584
V_{uax} [lb]:	6131
V_{uay} [lb]:	1907
M_{ux} [ft-lb]:	37768
M_{uy} [ft-lb]:	120531
M_{uz} [ft-lb]:	0

<Figure 1>



<Figure 2>

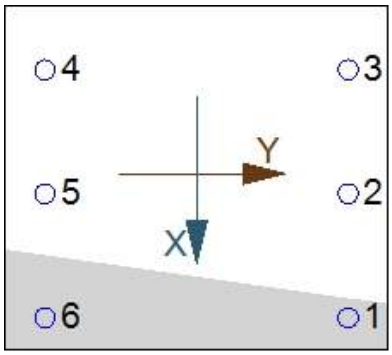


3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	0.0	1050.8	294.2	1091.2
2	20068.0	1050.8	317.8	1097.8
3	43911.8	1050.8	341.5	1104.9
4	35610.8	992.9	341.5	1049.9
5	11767.0	992.9	317.8	1042.5
6	0.0	992.9	294.2	1035.5
Sum	111357.6	6131.0	1907.0	6421.9

Maximum concrete compression strain (‰): 0.57
Maximum concrete compression stress (psi): 2479
Resultant tension force (lb): 111358
Resultant compression force (lb): 103774
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 1.42
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 1.66
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.35
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.11

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
72675	0.75	54506

5. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$0.75\phi N_{pn} = 0.75\phi\Psi_{c,P}N_p = 0.75\phi\Psi_{c,P}8A_{brg}f'_c$ (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)

$\Psi_{c,P}$	A_{brg} (in^2)	f'_c (psi)	ϕ	$0.75\phi N_{pn}$ (lb)
1.0	2.24	4000	0.70	37582

ANCHOR PLATE PROVIDED AT BOTTOM OF FTG, PULLOUT CHECK o.k. BY INSPECTION

6. Steel Strength of Anchor in Shear (Sec. 17.7.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
43605	0.8	0.65	22675

7. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$\phi V_{cpg} = \phi k_{cp}N_{cbg} = \phi k_{cp}(A_{Nc}/A_{Nco})\Psi_{ec,N}\Psi_{ed,N}\Psi_{c,N}\Psi_{cp,N}N_b$ (Sec. 17.5.1.2 & Eq. 17.7.3.1b)

k_{cp}	A_{Nc} (in^2)	A_{Nco} (in^2)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cpg} (lb)
2.0	973.50	361.00	0.953	0.921	1.000	1.000	21938	0.70	72698

8. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, øN_n (lb)	Ratio	Status
Steel	43912	54506	0.81	Pass
Pullout	**43912**	**37582**	**1.17**	**Fail (Governs)**

Shear	Factored Load, V_{ua} (lb)	Design Strength, øV_n (lb)	Ratio	Status
Steel	1105	22675	0.05	Pass
Pryout	**6421**	**72698**	**0.09**	**Pass (Governs)**

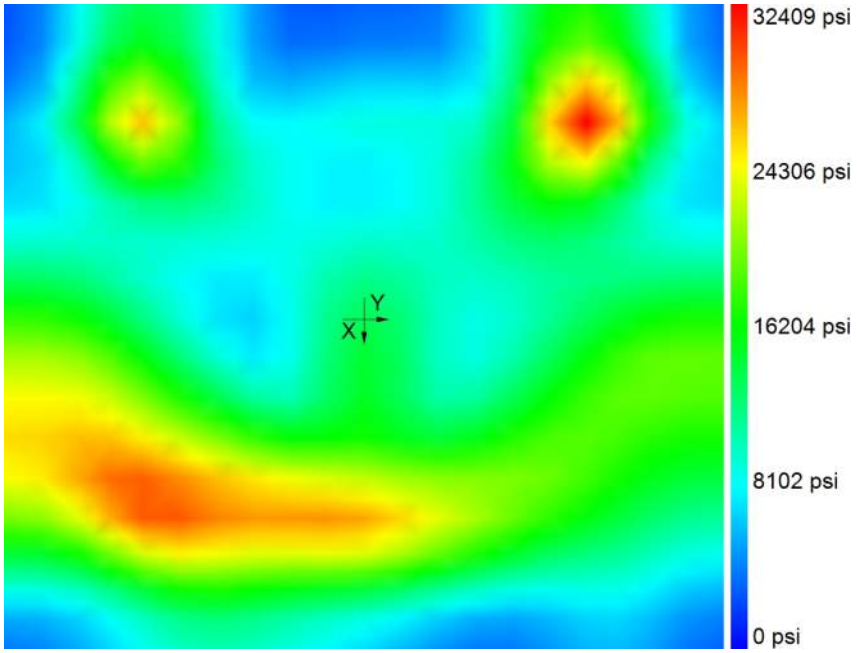
Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Utilization Ratio	Permissible	Status
Sec. 17.8.3	1.17	0.09	104.7%	1.0	Fail

FAIL! Selected anchor type and embedment do not meet the selected design criteria.

Base Plate Thickness

Steel	**36000 psi**
Maximum stress	**32409 psi**
Calculated plate thickness	**1.607 inch**

Stress distribution



For ACI and CSA design methods, maximum base plate stress is limited to 0.9 times yield stress.
For ETAG and EN-1992-4 design method, maximum base plate stress is limited to yield stress divide by 1.5.
Plate stress is derived using Von Mises theory.

$$\sigma_{xx} = \frac{F_{xx}}{t} + \frac{6M_{xx}}{t^2} \text{ (@ bottom) or } \sigma_{xx} = \frac{F_{xx}}{t} - \frac{6M_{xx}}{t^2} \text{ (@ top)}$$

$$\sigma_{yy} = \frac{F_{yy}}{t} + \frac{6M_{yy}}{t^2} \text{ (@bottom) or } \sigma_{yy} = \frac{F_{yy}}{t} - \frac{6M_{yy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xy} = \frac{F_{xy}}{t} + \frac{6M_{xy}}{t^2} \text{ (@bottom) or } \sigma_{xy} = \frac{F_{xy}}{t} - \frac{6M_{xy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xz} = \frac{V_x}{t}$$

$$\sigma_{yz} = \frac{V_y}{t}$$

$\sigma_{xx}, \sigma_{yy}, \sigma_{xy}$ as follows:

$$S_1 = \frac{\sigma_{xx} + \sigma_{yy}}{2} + \sqrt{(\frac{\sigma_{xx} - \sigma_{yy}}{2})^2 + \sigma_{xy}^2}$$

$$S_2 = \frac{\sigma_{xx} + \sigma_{yy}}{2} - \sqrt{(\frac{\sigma_{xx} - \sigma_{yy}}{2})^2 + \sigma_{xy}^2}$$

$$S_3 = 0$$

$$\sigma_{Von\,Mises} = \sqrt{\frac{(S_1 - S_2)^2 + (S_1 - S_3)^2 + (S_2 - S_3)^2}{2}}$$

9. Warnings

- Calculated concrete compression stress exceeds the permissible bearing stress of Φ 0.85f'c per ACI 318 Section 22.8.3.

- Minimum spacing and edge distance requirement of 6da per ACI 318 Table 17.9.2(a) for torqued cast-in-place anchor is waived per designer option.\n
- Concrete breakout strength in tension has not been evaluated against applied tension load(s) per designer option. Refer to ACI 318 Section 17.5.2.1 for conditions where calculations of the concrete breakout strength may not be required.

- Concrete breakout strength in shear has not been evaluated against applied shear load(s) per designer option. Refer to ACI 318 Section 17.5.2.1 for conditions where calculations of the concrete breakout strength may not be required.

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.

- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.

- Designer must exercise own judgement to determine if this design is suitable.

10. Design result for all load combinations

Seismic design: Yes
Anchors subjected to sustained tension: Yes

	N_{ua} (lb)	V_{uax} (lb)	V_{uay} (lb)	M_{ux} (lb)	M_{uy} (lb)	M_{uz} (lb)	N ratio	V ratio	Utilization Ratio
U = 1.4(D + F)	2082	0	2157	-53350	0	0	-	-	-
U = 1.2(D + F) + 1.6(L) + 0.5(Lr or S or R)	1784	0	1849	-45728	0	0	-	-	-
U = 1.2D + 1.6(Lr or S or R) + 1.0L	1784	0	1849	-45728	0	0	-	-	-
U = 1.2D + 1.6(Lr or S or R) + 0.5W	4554	0	3909	-98750	0	0	-	-	-
U = 1.2D + 1.0W + 1.0L + 0.5(Lr or S or R)	7323	0	5969	-151771	0	0	-	-	-
U = 1.2D + 1.0E + 1.0L + 0.2S	3448	0	7481	-173376	0	0	-	-	-
U = 0.9D + 1.0W	6877	0	5507	-140339	0	0	-	-	-
U = 0.9D + 1.0E	2454	0	6445	-147804	0	0	-	-	-

PURLIN CHECKS

Client OIT Project STILWELL STADIUM CANOPY

No. K6428 By DKS

Date Sheet of

SECONDARY FRAMING CALCS

C & C WIND LOADS (7-16) 01.30, PART IV - OPEN BUILDINGS

(EQ. 30.7-1) $p = q_h G C_N$ $G = 0.85$

$q_h = 0.00256\, K_z K_{zt} K_d K_e V^2$

$V = 98$ mph
$K_z = 0.98$
$K_{zt} = 1.0$
$K_d = 0.85$
$K_e = 0.86$

$q_h = (0.00256)(0.98)(1.0)(0.85)(0.86)(98\text{mph})^2$

$q_h = 17.6$ psf

"C_N" - CLEAR WIND FLOW, $\theta = 9.5°$

a: "10% OF LEAST HORIZONTAL DIM. OR 0.4h

$a = (0.1)(32.5') = 3.25'$, USE $a = 3.25'$
$= (0.4)(23') = 9.2'$

EFFECTIVE WIND AREA: $A_e = \frac{1}{3} L^2 = (1/3)(34')^2 = 385\,ft^2 > 4a^2 = 42.25\,ft^2$

ZONE 1=2=3: C_N, INTERPOLATE = +1.65
= -1.53

"UPLIFT": $p = (17.6\text{psf})(0.85)(-1.53) = -22.9$ psf
"DOWN": $p = (17.6\text{psf})(0.85)(1.65) = +24.7$ psf

Client OIT Project STILWELL STADIUM CANOPY

No. K-6428 By DKS

Date Sheet of

SECONDARY FRAMING CALCS

* CHECK WORST-CASE SPAN FROM GL. 3 → GL. 4

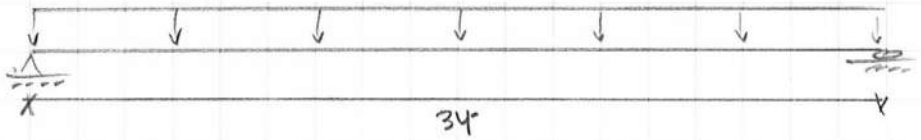
TRIB = 4'

DL = 12 psf

SL = 22 psf

C&C WL (UPLIFT) = -22.9 psf

C&C WL (DOWN) = 24.7 psf



W IN PLF FOR "DOWN" LOADS

D+S : $(12psf)(4') + (4')(22psf) = 136$ plf

D+0.6W : $(12psf)(4') + (24.7psf)(4')(0.6) = 107$ plf

GOVERNS D+0.45W+.75S : $(12psf)(4') + (24.6psf)(4')(0.45) + (22psf)(4')(0.75) = 158$ plf

W IN PLF FOR "UPLIFT" LOADS

0.6D + 0.6W : $(12psf)(4')(0.6) + (-22.9psf)(4')(0.6) = -26$ plf

∴ SEE ATTACHED RISA, USE W10x26, BRACE @ MID-SPAN

DEFLECTIONS:

D+S LIMIT : L/120 : $(34')(12''/')/120 = 3.4'' > 0.967''$ ✓ o.k.

SL ONLY LIMIT : L/180 : $(34')(12''/')/180 = 2.26'' > 0.626''$ ✓ o.k.

D+S "Z" DEFLECTION = $3.4'' > 1.594''$ ✓ o.k.

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By DKS
Date
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SECONDARY FRAMING CALCS

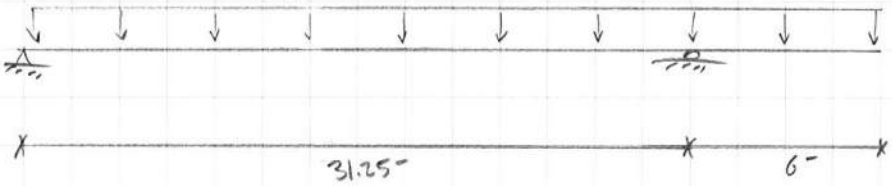
* CHECK END BAY W/ CANTILEVER

a = 3.25'

$A_c = (1/3)(32.5')^2 = 352\ ft^2 > 4a^2 = 42\ ft^2$

=> USE SAME C_N FROM INITIAL DEVELOPMENT

DL = 12 psf
SL = 22 psf
TRIB = 2'
C+C WIND (UPLIFT) = -22.9 psf
C+C WIND (DOWN) = 24.7 psf



D+S "Z" DEFLECTION: 3.125" > 1.037" ✓

∴ SEE ATTACHED RISA, USE W10x26, BRACE @ 1/2 POINTS

DEFLECTIONS (MAIN SPAN): D+S LIMIT: L/120 : (31.25')(12"/1') /120 = 3.125" > 0.629" ✓

SL ONLY LIMIT: L/180 : (31.25')(12"/1') /180 = 2.08" > 0.407" ✓

DEFLECTIONS (CANT): D+S LIMIT: L/120 : (6')(12"/1')(2) /120 = 1.2" > 0.496" ✓

SL ONLY LIMIT: L/180 : (6')(12"/1')(2)/180 = 0.8" > 0.227" ✓

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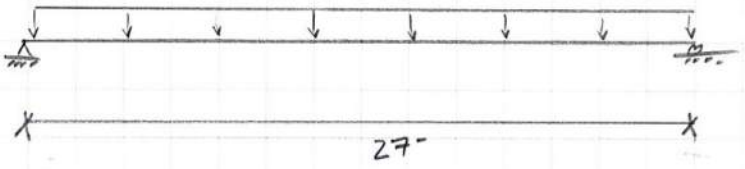
* CHECK PURLIN FOR GL-2 → GL-3 ; GL-4 → GL-5

$A_e = (1/3)(27')^2 = 243\ ft^2 > A_{trib} = 42\ ft^2$

=> USE SAME C_N FROM INITIAL DEVELOPMENT

DL = 12 psf
SL = 22 psf
C&C WIND (UPLIFT) = -22.9 psf
C&C WIND (DOWN) = 24.7 psf

TRIB = 4'

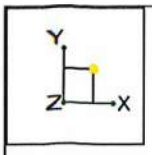


∴ SEE ATTACHED RISA, USE W10x22 BRACE @ MID-SPAN

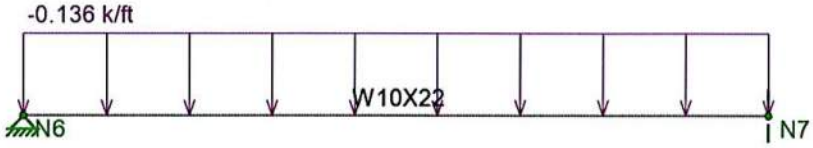
DEFLECTIONS: D+S LIMIT: L/120 : (27')(12"/')/120 = 2.7" > 0.496"

SL ONLY LIMIT: L/180 : (27')(12"/')/180 = 1.8" > 0.304"

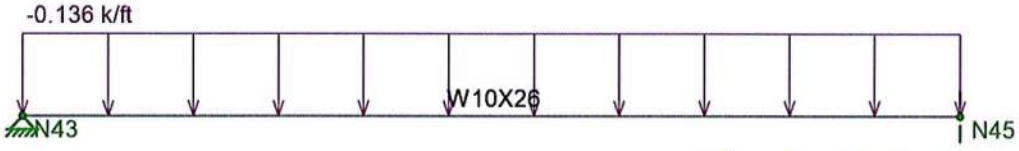
D+S 'Z' DEFLECTION = 2.7" > 0.784" ✓



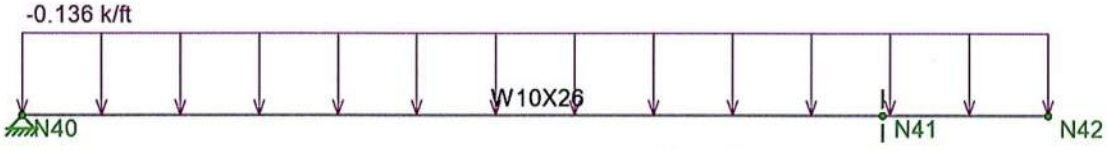
* BEAMS MODELED W/ 9.2° OF ROTATION ABOUT LONGITUDINAL AXES



∘ GL-2 → GL-3



∘ GL-3 → GL-4



∘ GL-1 → GL-2

Loads: LC 2, D+S

ZCS	ZCS	Stilwell Purlin	SK-1
	DKS		Feb 24, 2026 at 05:55 PM
	K-6428-25		Stilwell Purlin 2.24.26.r3d

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N40	0	0	0	
2	N41	31.25	0	0	
3	N42	37.25	0	0	
4	N43	0	20	0	
5	N45	34	20	0	
6	N6	0	40	0	
7	N7	27	40	0	

BRACED @ 1/2 POINTS

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Lcomp bot [ft]	Channel Conn.	a [ft]	Function
1	GL1 -GL2	W10X26	37.25	15.625	15.625	N/A	N/A	Gravity
2	GL3 - GL4	W10X26	34	17	17	N/A	N/A	Gravity
3	GL2 - GL3	W10X22	27	13.5	13.5	N/A	N/A	Gravity

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	GL1 -GL2	Y	-0.048	-0.048	0	%100
2	GL3 - GL4	Y	-0.048	-0.048	0	%100
3	GL2 - GL3	Y	-0.048	-0.048	0	%100

Member Distributed Loads (BLC 2 : SL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	GL1 -GL2	Y	-0.088	-0.088	0	%100
2	GL3 - GL4	Y	-0.088	-0.088	0	%100
3	GL2 - GL3	Y	-0.088	-0.088	0	%100

Member Distributed Loads (BLC 3 : WL (Uplift))

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	GL1 -GL2	Y	0.092	0.092	0	%100
2	GL3 - GL4	Y	0.092	0.092	0	%100
3	GL2 - GL3	Y	0.092	0.092	0	%100

Member Distributed Loads (BLC 4 : WL (Down))

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	GL1 -GL2	Y	-0.098	-0.098	0	%100
2	GL3 - GL4	Y	-0.098	-0.098	0	%100
3	GL2 - GL3	Y	-0.098	-0.098	0	%100

Basic Load Cases

	BLC Description	Category	Distributed
1	DL	None	3
2	SL	None	3
3	WL (Uplift)	None	3
4	WL (Down)	None	3
5	WL (On Fascia)	None	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	D	Yes	Y	1	1						
2	D+S	Yes	Y	1	1	2	1				
3	D+.6W (Uplift)	Yes	Y	1	1	3	0.6	5	0.6		
4	D+.45W (Uplift)+.75S	Yes	Y	1	1	3	0.45	2	0.75	5	0.45
5	.6D+.6W (Uplift)	Yes	Y	1	0.6	3	0.6	5	0.6		
6	D+.6W (Down)	Yes	Y	1	1	4	0.6	5	0.6		
7	D+.45W (Down)+.75S	Yes	Y	1	1	4	0.45	2	0.75	5	0.45
8	.6D+.6W (Down)	Yes	Y	1	0.6	4	0.6	5	0.6		
9	SL Only	Yes	Y	2	1						
10	WL Only (Down)		Y	4	1						

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
11	WL Only (Uplift)		Y	3	1						
12	WL Only (Fascia)		Y	3	1						

Beam Deflections

	LC	Member Label	Span	Location [ft]	y' [in]	(n) L'/y' Ratio
1	1	GL1 -GL2	1	15.521	-0.222	1689
2			2	37.25	0.124	1162
3	1	GL3 - GL4	1	17	-0.341	1195
4	1	GL2 - GL3	1	13.5	-0.166	1956
5	2	GL1 -GL2	1	15.521	-0.629	596
6			2	37.25	0.351	410
7	2	GL3 - GL4	1	17	-0.967	422
8	2	GL2 - GL3	1	13.5	-0.469	690
9	3	GL1 -GL2	1	31.042	0.001	NC
10			2	37.25	-0.019	7747
11	3	GL3 - GL4	1	17	0.051	7972
12	3	GL2 - GL3	1	27	0	NC
13	4	GL1 -GL2	1	15.521	-0.336	1117
14			2	37.25	0.187	768
15	4	GL3 - GL4	1	17	-0.516	790
16	4	GL2 - GL3	1	13.5	-0.25	1293
17	5	GL1 -GL2	1	15.521	0.122	3071
18			2	37.25	-0.068	2112
19	5	GL3 - GL4	1	17	0.188	2174
20	5	GL2 - GL3	1	13.5	0.091	3557
21	6	GL1 -GL2	1	15.521	-0.494	759
22			2	37.25	0.276	522
23	6	GL3 - GL4	1	17	-0.759	537
24	6	GL2 - GL3	1	13.5	-0.368	879
25	7	GL1 -GL2	1	15.521	-0.731	513
26			2	37.25	0.408	352
27	7	GL3 - GL4	1	17	-1.124	363
28	7	GL2 - GL3	1	13.5	-0.545	594
29	8	GL1 -GL2	1	15.521	-0.405	925
30			2	37.25	0.226	636
31	8	GL3 - GL4	1	17	-0.623	655
32	8	GL2 - GL3	1	13.5	-0.302	1072
33	9	GL1 -GL2	1	15.521	-0.407	921
34			2	37.25	0.227	633
35	9	GL3 - GL4	1	17	-0.626	652
36	9	GL2 - GL3	1	13.5	-0.304	1067

Client OIT
Project STILWELL STADIUM CANOPY
No. K-6428
By DKS
Date
Sheet of

SECONDARY FRAMING CALCS

MAX UPLIFT R_{xN} OCCURS @ GL-1 → GL-2 PURLIN @ CANT.

(0.6D + 0.6W) UPLIFT $R_{xN} = 586^{lb}$

⇒ CHECK (2) 1/2" ϕ A307 BOLTS

(J3-1) $R_N = F_N A_b$ $A_b = \frac{(\pi)(1/2")^2}{4} = 0.196\ in^2$

$F_N = 45^{ksi}$

$R_N = (45^{ksi})(0.196\ in^2)(2\ BOLTS)$

$\Omega = 2.0$ $R_N = \frac{17,640^{lb}}{2} = 8,820^{lb} > 586^{lb}$ ✓

DRIFT/ DEFLECTION INFO FOR LIGHTPOLE & NET POLES

LIGHTPOLE DEFLECTION UNDER WIND LOADING

SHEET PROVIDED FOR REFERENCE FOR DRIFT CALCS. SEE CALC PAGE 50

60' High Mast
04/03/2020 9:36 am

WIND ANALYSIS

SECTION	SEGMENT	LENGTH (FT)	AVG DIA (IN)	AREA (SQ FT)	PRESSURE (PSF)	FORCE (LBS)	CD
1	1	1.50	15.82	1.98	9.25	18.30	0.45
1	2	1.50	15.59	1.95	9.25	18.03	0.45
1	3	1.50	15.36	1.92	9.25	17.77	0.45
1	4	1.50	15.13	1.89	9.25	17.51	0.45
1	5	1.50	14.91	1.86	9.25	17.24	0.45
1	6	1.50	14.68	1.83	9.25	16.98	0.45
1	7	1.50	14.45	1.81	9.25	16.72	0.45
1	8	1.50	14.22	1.78	9.25	16.45	0.45
1	9	1.50	14.00	1.75	9.25	16.19	0.45
1	10	1.50	13.77	1.72	9.25	15.93	0.45
2	1	4.50	13.75	5.16	9.30	47.93	0.45
2	2	4.50	13.06	4.90	9.76	47.83	0.45
2	3	4.50	12.38	4.64	10.16	47.16	0.45
2	4	4.50	11.70	4.39	10.50	46.06	0.45
2	5	4.50	11.01	4.13	10.81	44.63	0.45
2	6	4.50	10.33	3.87	11.13	43.09	0.45
2	7	4.50	9.64	3.62	12.44	44.99	0.49
2	8	4.50	8.96	3.36	13.97	46.94	0.54
2	9	4.50	8.28	3.10	15.78	48.97	0.60
2	10	4.50	7.59	2.85	17.96	51.12	0.67

PRESSURE ON LUMINAIRES, HOOD, AND LOWERING RING = 27.32 PSF
TOTAL WIND FORCE ON POLE = 639.84 LBS
WIND FORCE ON L
DEFLECTION AT TOP OF POLE = 17.1 INCHES

DESIGN LOADS AT BASE

AXIAL LOAD = 2000.8 LBS
MOMENT = 54357.6 FT-LBS
TORQUE = 0.0 FT-LBS
SHEAR = 1152.4 LBS

BEACON ATHLETICS

Contact: Elliot Hansen - Project Manager / CAD Designer
Email: ellioth@beaconathletics.com
8233 Forsythia Ste 120 Middleton, WI 53562
Ph: 800 / 747 - 5985 Fax: 608 / 836 - 0724
www.beaconathletics.com

NET POLES/ BACKSTOP NET ALLOWABLE ENCROACHMENT

SHEET PROVIDED AS PART OF GENERAL DESIGN/ GEOMETRY LAYOUT

ZCS ENGINEERING, INC.

☒ NO EXCEPTIONS TAKEN

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Reviewed only for general conformance with the project requirements indicated in contract documents and for consistency with the project design concept. This review does not relieve the contractor from responsibility for errors or omissions in designs for which the contractor is responsible for compliance with all requirements of the contract documents, and for the safe and successful construction of the work. This review does not consider the means, methods, techniques, sequences, and operations of construction, or safety, precautions or programs incidental thereto, which are the sole responsibility of the contractor.

BY JDM DATE 09-11-18

FIELD TURF

OREGON INSTITUTE OF TECHNOLOGY

KLAMATH FALLS, OR

Beacon Quote No: N5988

Beacon Project No: 0298568

GENERAL NOTES

1.Maintain a minimum clear distance of 36" in front and in back of net to avoid damage. Repeated rubbing and pinching of the net against obstructions including but not limited to walls, light poles and fencing will cause tearing and net failure.

2.If the bottom of the net will be near the top of a chain link fence, care should be taken to protect the net from the top loops of the chain link fabric. Beacon Athletics recommends installing fence cap or slit drain tile along the top of the fence to cover the loops.

3.Provide Owner/end user with copy of drawings detailing cable and net installation for future net removal, storage and reinstallation.

ABBREVIATIONS

BOT	BOTTOM
CONC	CONCRETE
CL	CENTER LINE
CLR	CLEAR
DIA	DIAMETER
EA.	EACH
F.F.G.	FINISHED FIELD GRADE
GALV	GALVANIZED
O.C.	ON CENTER
SIM	SIMILAR
SS	STAINLESS STEEL
T.O.F.	TOP OF FOOTING
TYP	TYPICAL
ZP	ZINC PLATED

SHEET INDEX

DRAWING TITLE: **TITLE SHEET**

CUSTOMER NAME: FIELDTURF
PROJECT NAME: OREGON INSTITUTE OF TECHNOLOGY
PROJECT LOCATION: KLAMATH FALLS, OR

DRAWN BY: CG
DRAWN DATE: 07/24/2018
PROJECT NO: 0298568
DRAWING NO: N5988-SD-1