



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

April 21, 2023

Paul R. Michaud, Esq.
Michaud Law Group LLC
515 Centerpoint Dr., Suite 502
Middletown, CT 06457
pmichaud@michaud.law

RE: **PETITION NO. 1487** – TRITEC Americas, LLC declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 1.97 megawatt AC solar photovoltaic electric generating facility located at 254 Putnam Road, Pomfret, Connecticut, and associated electrical interconnection.

Dear Attorney Michaud:

The Connecticut Siting Council (Council) is in receipt of your correspondence dated April 20, 2023, regarding compliance with Condition No. 4 of the Council's Declaratory Ruling issued on June 10, 2022 for the above-referenced facility. The correspondence includes the final structural design of the racking system, stamped by a Professional Engineer duly licensed in the State of Connecticut, in accordance with Condition No. 4.

Therefore, the Council acknowledges that Condition No. 4 has been satisfied. This acknowledgment applies only to the condition satisfied by the April 20, 2023 correspondence.

Please be advised that deviations from the standards established by the Council in the Declaratory Ruling are enforceable under the provisions of Connecticut General Statutes §16-50u.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MB/RDM/laf



PAUL R. MICHAUD
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Middletown, CT 06457
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Email: pmichaud@michaud.law
Web: www.michaudlaw.com

April 20, 2023

FILED BY ELECTRONIC MAIL AND US MAIL

Melanie Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **PETITION NO. 1487** – TRITEC Americas, LLC petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 1.97-megawatt AC solar photovoltaic electric generating facility located at 254 Putnam Road, Pomfret, Connecticut, and associated electrical interconnection.

Dear Attorney Bachman:

On behalf of TRITEC Americas, LLC (“Petitioner”), this letter to the Connecticut Siting Council (“Council”) is in response to Council’s Petition No. 1487 Decision dated June 10, 2022 (“Decision”), specifically Condition #4.

Enclosed – and in response to Condition #4 of the Decision – please find a copy of the final structural design for the racking system stamped by a Connecticut Professional Engineer. Petitioner believes they have satisfied the Conditions required to construct the solar panel racking system; however, Petitioner will refrain from doing so until they receive Council’s acknowledgement.

Consistent with Council requirements, Petitioner submits one electronic version, an original, and fifteen hard copies of all necessary documents.

Please feel free to contact me if you have any questions.

Very truly yours,

Paul R. Michaud



Prepared For:

Solv Inc.

Amaral



SFDC ID#
17009

1x35 FTS - Structural Calculations
254 Putnam Road – Pomfret Center, CT 06259

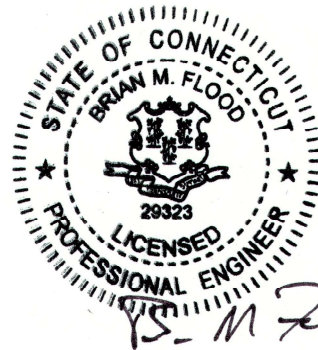


A product of Northern States Metals (NSM)

3207 Innovation Place, Youngstown, Ohio, 44509-4023

Prepared By: NZ

Checked By: JS



Rev 0



Solar FlexRack Engineering Analysis

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Solar FlexRack Engineering Analysis

Results at 45° – 1x35 (Configuration Controls Rack, Post)

Hot Rolled Code Check	33
Main Beam Code Check (HSS Member Detail)	34-35
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Customer: Solv Inc.
 SFDC ID #: 17009
 Project/Location: Amaral - Pomfret Center, CT 06259
 Date/Engineer: 01/20/23 - JS



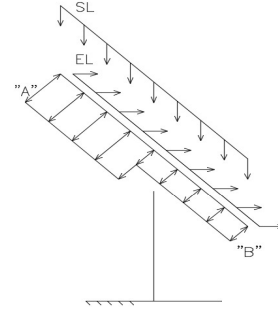
Solar Flexrack Loading Analysis

Configuration Data

Configuration:	1x35 TDP
Horiz. Length (N-S):	128.95 ft
Array Surface Area:	1008.56 ft ²
Number of Posts:	9

Design Data Summary

Module Length:	7.82 ft
Solar Panel Dead Load:	2.56 psf
Max Stow Wind Speed:	118 mph
Max Operation:	35 mph
Snow Load:	40 psf
Ground Clearance:	42.78 in
Exposure Category:	C
Building Classification:	I



Snow Load Parameters

Flat Roof Snow Load, P _f :	P _f = 0.7 * C _e * C _t * I * P _g
Sloped Roof Snow Load, P _s :	P _s = P _f * C _s
Snow Exposure Category, C _e :	0.9
Snow Thermal Factor, C _t :	1.2
Snow Importance Factor, I:	0.8
P _f :	24.19 psf
Snow Density:	19.2 pcf
Snow Height:	25.00 in

Snow Load Design

Tilt Angle	C _s	P _s psf
0 - 15	1.00	24.19
20	0.91	22.01
25	0.82	19.84
30	0.73	17.66
35	0.64	15.48
40	0.55	13.31
45	0.46	11.13

Wind Load Parameters

Exposure Coefficient, K _z :	0.85	Wind Load: q _h = 0.00256 * K _z * K _t * K _d * V ²	n:	2.9 Hz	
Topographic Factor, K _t :	1.00	q _{h,ref} :	25.72 psf	Dampening Ratio:	2.50 %
Wind Directionality Factor, K _d :	0.85	q _{h,35} :	3.77 psf	nL/V _{ref} :	0.169
				nL/V ₃₅ :	0.442

Wind Load Design

Tilt Angle	Perimeter Loading																
	Stow Position																
	Static								Inertial								
	A Distribution	B Distribution	GCp Up	GCp Dn	A*qr*GCp Up	B*qr*GCp Up	A*qr*GCp Dn	B*qr*GCp Dn	A Distribution	B Distribution	Mod. Factor	GCp Up	GCp Dn	A*qr*GCp Up	B*qr*GCp Up	A*qr*GCp Dn	B*qr*GCp Dn
0	2.00	0.00	-0.32	0.22	-16.59	0.00	11.32	0.00	1.17	0.83	0.57	-0.89	0.79	-26.82	-19.10	23.74	16.91
Tilted Position (35 mph max)																	
Tilt Angle	Static								Inertial								
	A Distribution	B Distribution	GCp Up	GCp Dn	A*qr*GCp Up	B*qr*GCp Up	A*qr*GCp Dn	B*qr*GCp Dn	A Distribution	B Distribution	Mod. Factor	GCp Up	GCp Dn	A*qr*GCp Up	B*qr*GCp Up	A*qr*GCp Dn	B*qr*GCp Dn
5	1.95	0.05	-0.48	0.44	-3.54	-0.10	3.22	0.09	1.85	0.15	0.30	-0.79	0.74	-5.48	-0.44	5.18	0.42
10	1.89	0.11	-0.65	0.55	-4.61	-0.27	3.93	0.23	1.85	0.15	0.30	-0.95	0.86	-6.63	-0.53	5.96	0.48
15	1.84	0.17	-0.60	0.72	-4.13	-0.37	4.99	0.45	2.00	0.00	0.06	-0.66	0.78	-4.96	0.00	5.90	0.00
20	1.78	0.22	-0.66	0.73	-4.41	-0.54	4.88	0.60	2.00	0.00	0.06	-0.72	0.79	-5.41	0.00	5.95	0.00
25	1.73	0.28	-0.66	0.67	-4.27	-0.68	4.37	0.70	2.00	0.00	0.06	-0.72	0.73	-5.41	0.00	5.52	0.00
30	1.67	0.33	-0.66	0.62	-4.15	-0.82	3.89	0.77	2.00	0.00	0.06	-0.72	0.68	-5.43	0.00	5.12	0.00
35	1.62	0.39	-0.66	0.73	-4.03	-0.96	4.46	1.06	2.00	0.00	0.06	-0.72	0.79	-5.45	0.00	5.99	0.00
40	1.56	0.44	-0.72	0.68	-4.23	-1.19	3.99	1.13	2.00	0.00	0.06	-0.78	0.74	-5.88	0.00	5.58	0.00
45	1.51	0.50	-0.72	0.71	-4.10	-1.35	4.01	1.32	2.00	0.00	0.06	-0.78	0.77	-5.91	0.00	5.79	0.00

Seismic Load Parameters / Design

S ₀ :	0.172	S _{D5} : S _{D5} = (2/3) * F _a * S ₁	Site Class:	D	This Base Shear Value represents the seismic effect of the panel weight on the rack. This Base Shear includes 20% of the design snow load when the flat roof snow load exceeds 30 psf per AISC. A separate term in the Risa load combination accounts for the remaining Dead Load caused by member self-weight.
S ₁ :	0.063	S _{D5} : 0.183	Seismic Design Category:	B	
Site Coefficient, F _a :	1.60	S _{D1} : S _{D1} = (2/3) * F _a * S ₁	Seismic Response Coefficient, C _s :	0.092	
Site Coefficient, F _v :	2.400	S _{D1} : 0.101	Panel Seismic Load, V = C _s * (Panel DL)		
Response Modification Coefficient, R:	2	C _u = 1.70	V =	0.235 psf	
Importance Factor, I _e :	1	T _L = 6			

Note: GCp values and A-B distributions determined from RWDI Wind Tunnel Testing. GCp values for 20° and 45° were not given in results from RWDI and are assumed to be the higher value of the two adjacent values.

Loading analysis and design in accordance with wind and snow load information obtained from ASCE 7-10 Minimum Design Loads for Building and Other Structures

Disclaimer:

The use of the topographic factor, K_t, requires project engineer to evaluate based on specific site topographic conditions.

Model Settings

Solution

Members

Number of Reported Sections	20
Number of Internal Sections	200
Member Area Load Mesh Size (in ²)	1
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ
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Plate Axis

Plate Local Axis Orientation	Nodal
------------------------------	-------

Codes

Hot Rolled Steel	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): ASD
Cold Formed Steel	AISI S100-12: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Concrete

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes
--	-----

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_s (g)	0.063
SD_1 (g)	0.101
SD_2 (g)	0.183
T_L (sec)	6

Structure Characteristics

T Z (sec)	
T X (sec)	
C _v X	0.02
C _v Exp. Z	0.75
C _v Exp. X	0.75
R Z	2
R X	2
Ω_p Z	2
Ω_p X	2
C _d Z	2
C _d X	2
ρ Z	1
ρ X	1

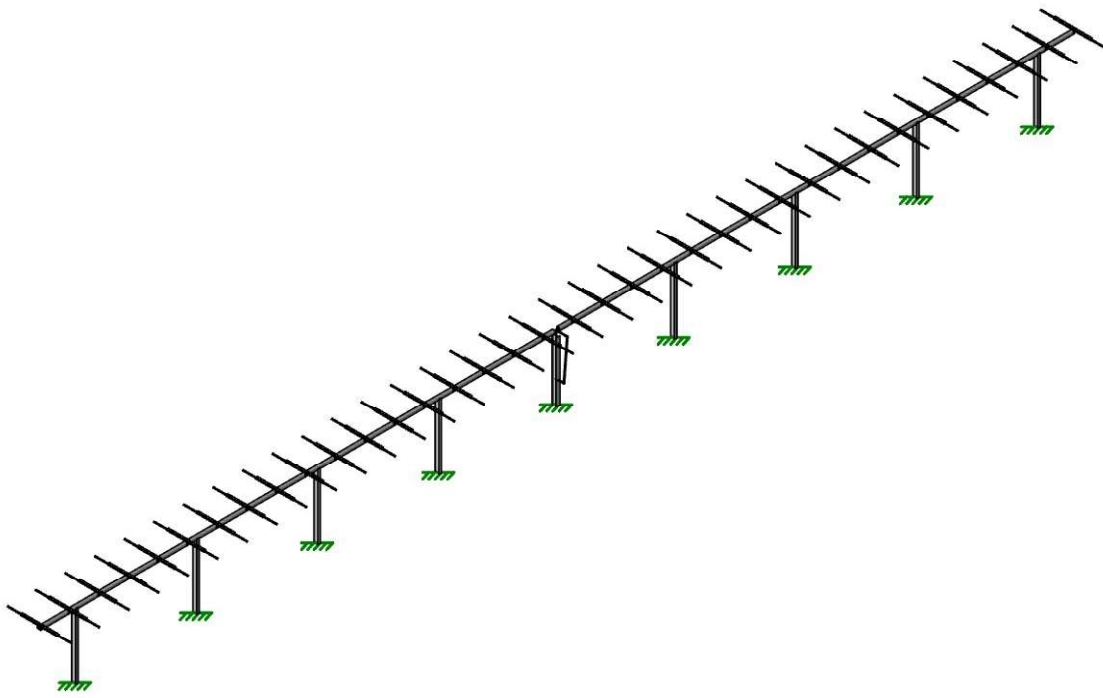
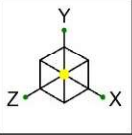


Company : Solv Inc.
 Designer : JRD
 Job Number : 17009
 Model Name : Amaral

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Load Combinations

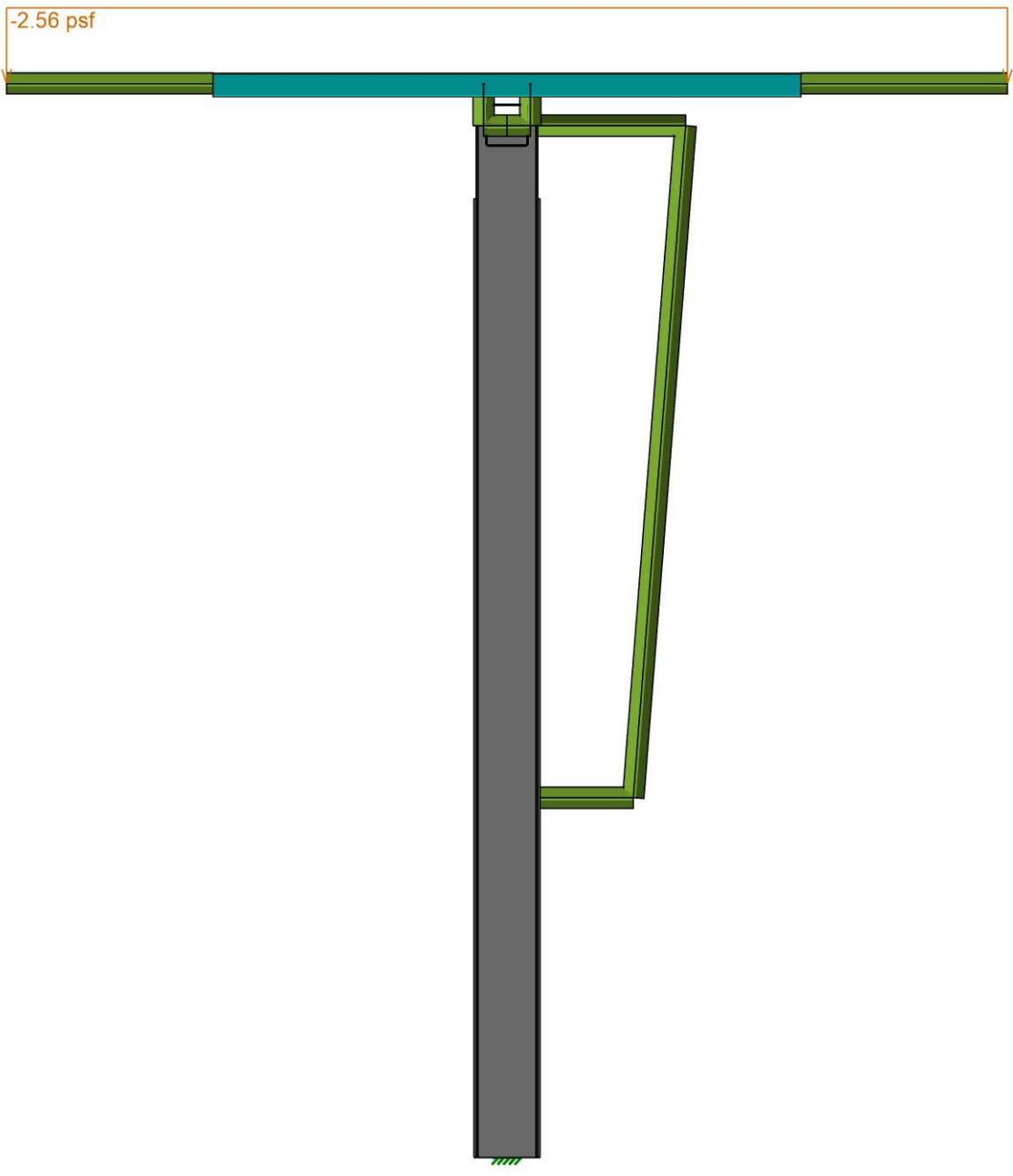
	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1		Yes	Y	DL	1						
2	IBC 16-10	Yes	Y	DL	1	SL	1				
3	IBC 16-12 (A)	Yes	Y	DL	1	WL+X	0.6	OL3	0.6		
4	IBC 16-12 (B)	Yes	Y	DL	1	WL-X	0.6	OL3	0.6		
5	IBC 16-13 (A) (static wind)	Yes	Y	DL	1	OL1	0.45	SL	0.75	OL3	0.45
6	IBC 16-13 (B) (static wind)	Yes	Y	DL	1	OL2	0.45	SL	0.75	OL3	0.45
7	Total WL + 0.25 SL	Yes	Y	DL	1	WL+X	0.45	SL	0.25		
8	Total WL + 0.25 SL	Yes	Y	DL	1	WL-X	0.45	SL	0.25		
9	IBC 16-15 (A)	Yes	Y	DL	0.6	WL+X	0.6	OL3	0.6		
10	IBC 16-15 (B)	Yes	Y	DL	0.6	WL-X	0.6	OL3	0.6		
11	Seismic										
12	IBC 16-12 C (A)	Yes	Y	DL	1	ELX	0.7			Sps*DL	0.14
13	IBC 16-12 C (B)	Yes	Y	DL	1	ELX	-0.7			Sps*DL	0.14
14	IBC 16-12 (D) (A)	Yes	Y	DL	1	ELZ	0.7			Sps*DL	0.14
15	IBC 16-12 (D) (B)	Yes	Y	DL	1	ELZ	-0.7			Sps*DL	0.14
16	IBC 16-14 (A) (A)	Yes	Y	DL	1	ELX	0.525	SL	0.75	Sps*DL	0.105
17	IBC 16-14 (A) (B)	Yes	Y	DL	1	ELX	-0.525	SL	0.75	Sps*DL	0.105
18	IBC 16-14 (B) (A)	Yes	Y	DL	1	ELZ	0.525	SL	0.75	Sps*DL	0.105
19	IBC 16-14 (B) (B)	Yes	Y	DL	1	ELZ	-0.525	SL	0.75	Sps*DL	0.105
20	IBC 16-16 (A) (A)	Yes	Y	DL	0.6	ELX	0.7			Sps*DL	-0.14
21	IBC 16-16 (A) (B)	Yes	Y	DL	0.6	ELX	-0.7			Sps*DL	-0.14
22	IBC 16-16 (B) (A)	Yes	Y	DL	0.6	ELZ	0.7			Sps*DL	-0.14
23	IBC 16-16 (B) (B)	Yes	Y	DL	0.6	ELZ	-0.7			Sps*DL	-0.14



Solv Inc.
JRD
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Amaral

SK-1
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0°- Trin...

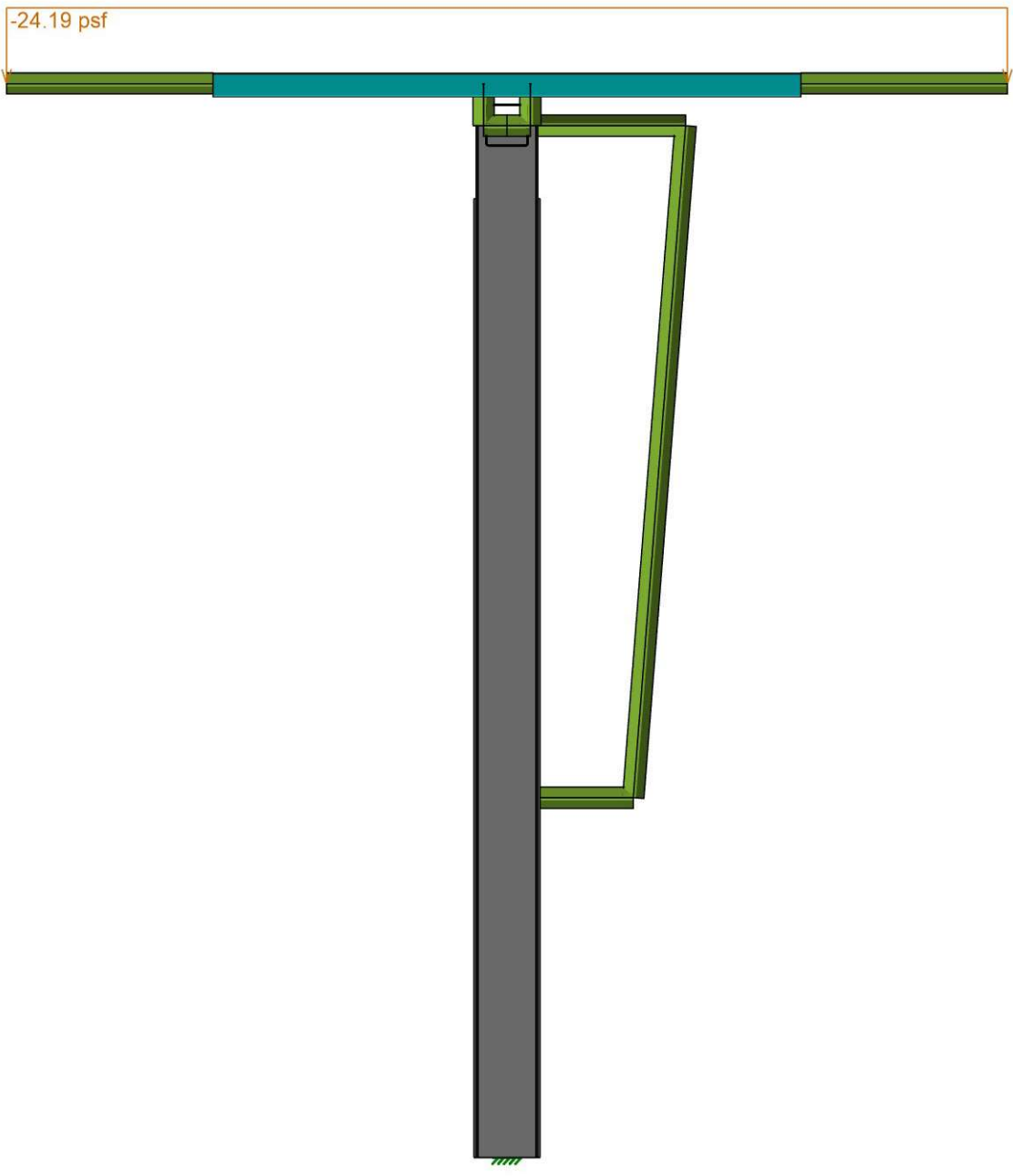


Loads: BLC 2, Solar Panels

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SK-2
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0°- Trin...



Loads: BLC 3, Snow

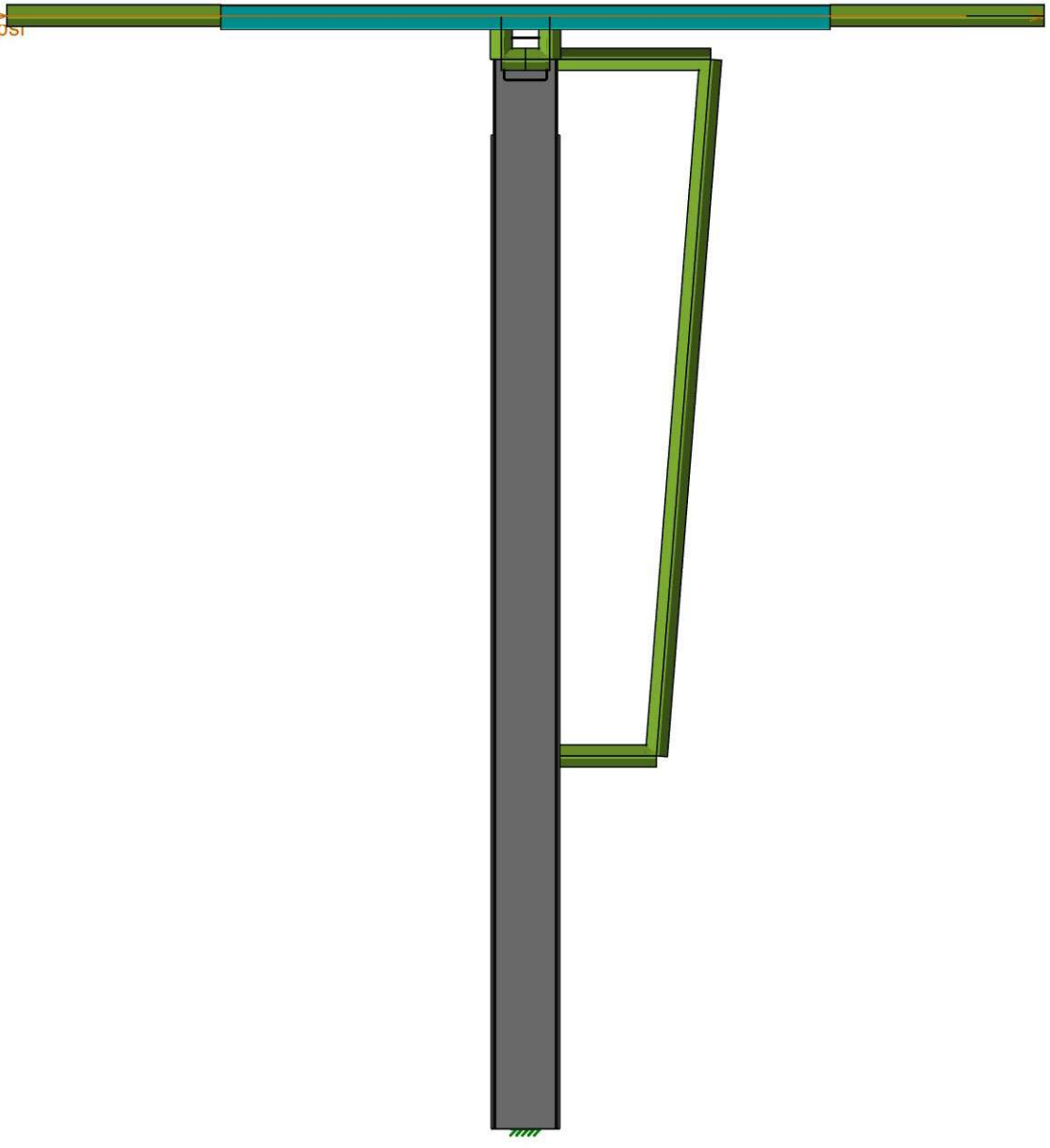
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SK-3
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0°- Trin...



0.235 psi

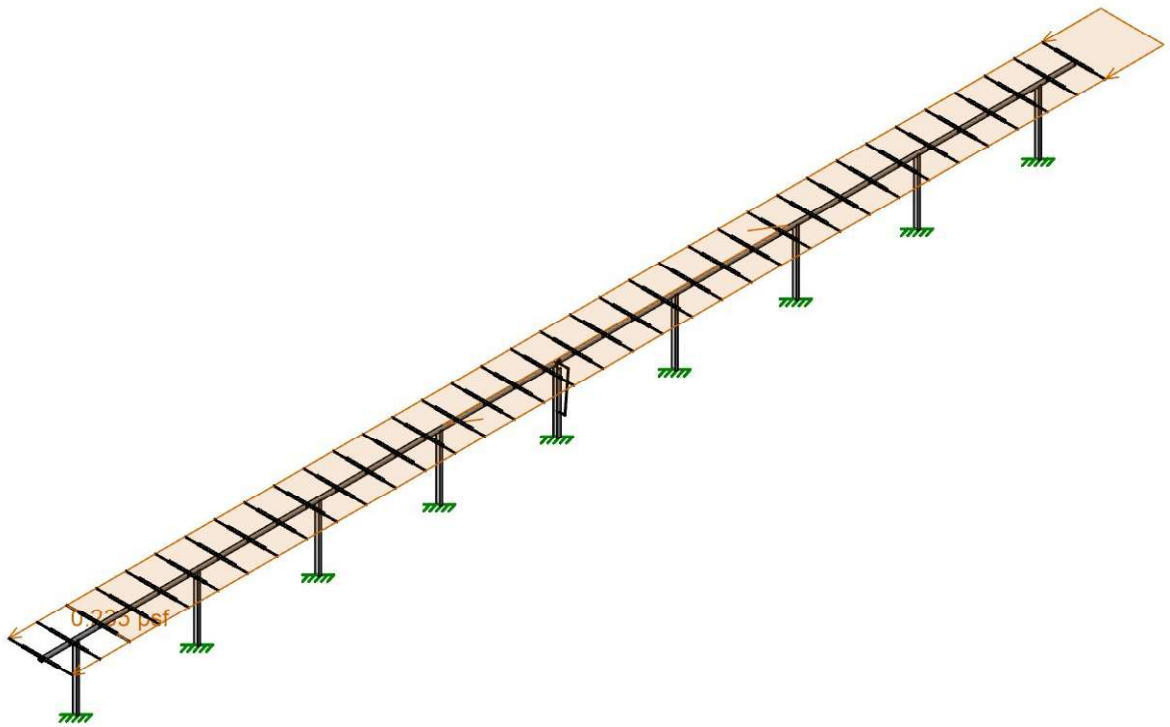
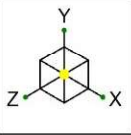


Loads: BLC 4, Seismic X

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SK-4
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0° - Trin...

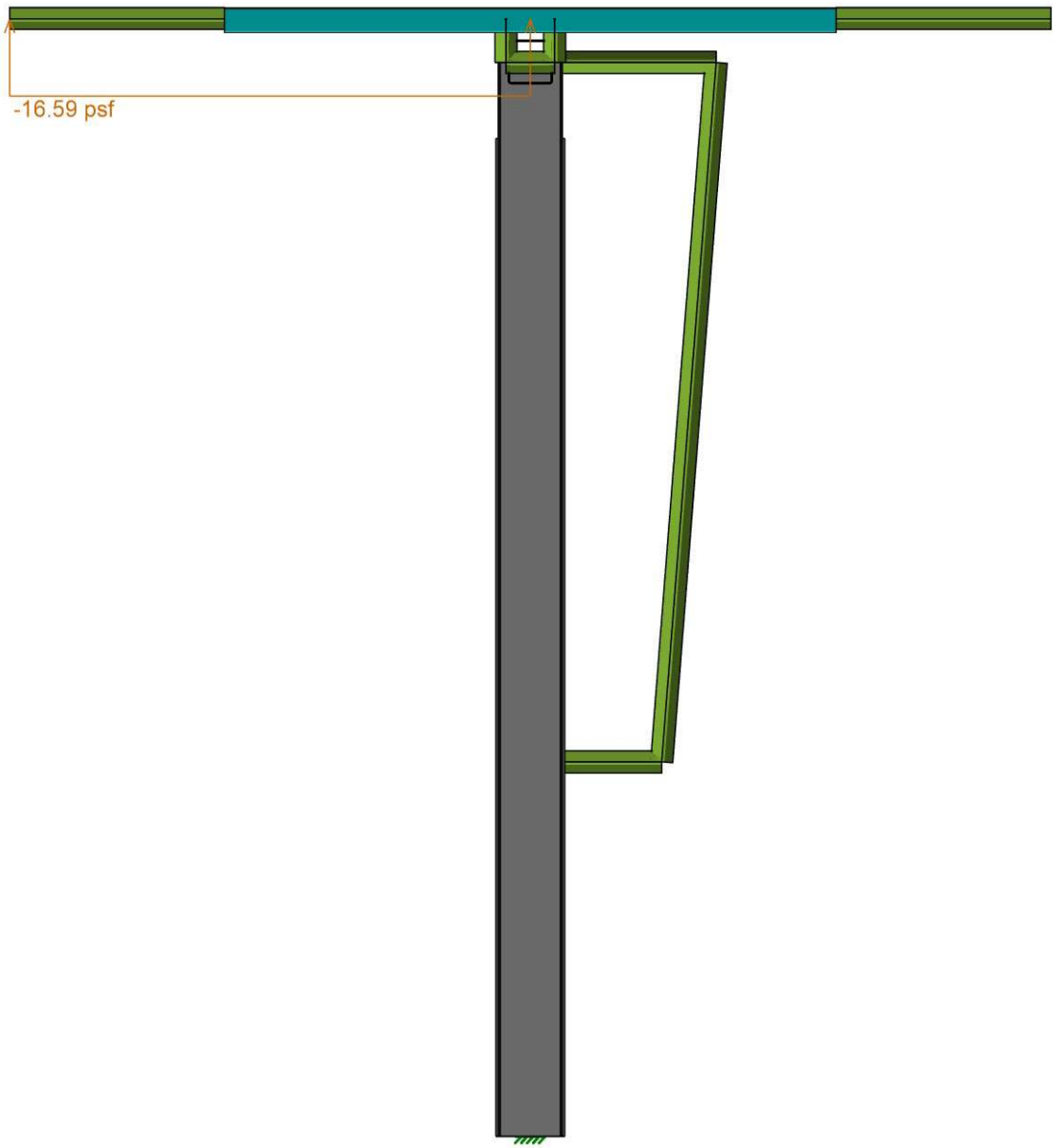
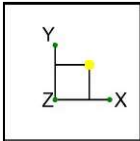


Loads: BLC 5, Seismic Z

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SK-5
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0°- Trin...

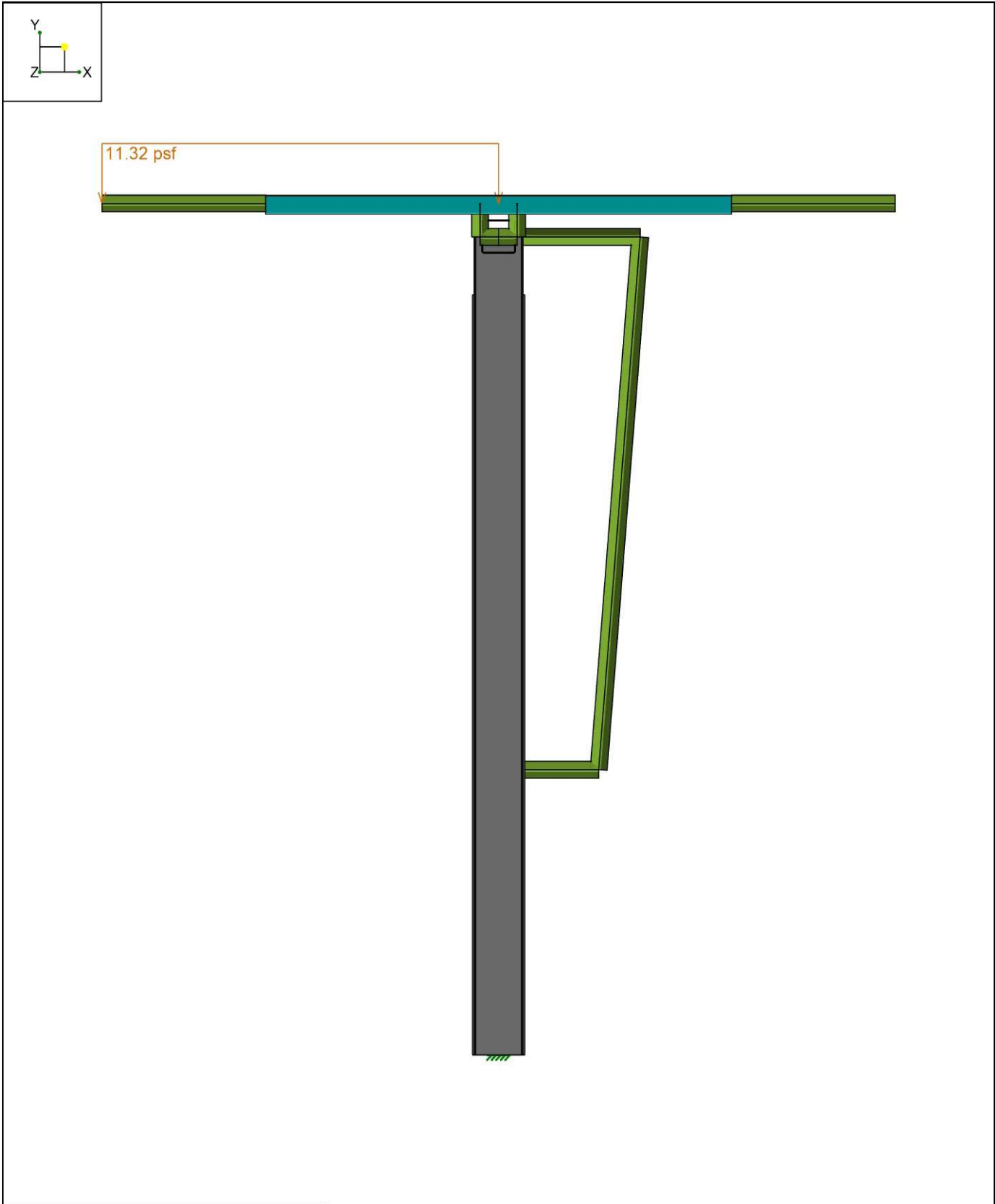


Loads: BLC 6, Wind Uplift - Static

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SK-6
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0°- Trin...



Loads: BLC 7, Wind Downforce - Static

Solv Inc.

JRD

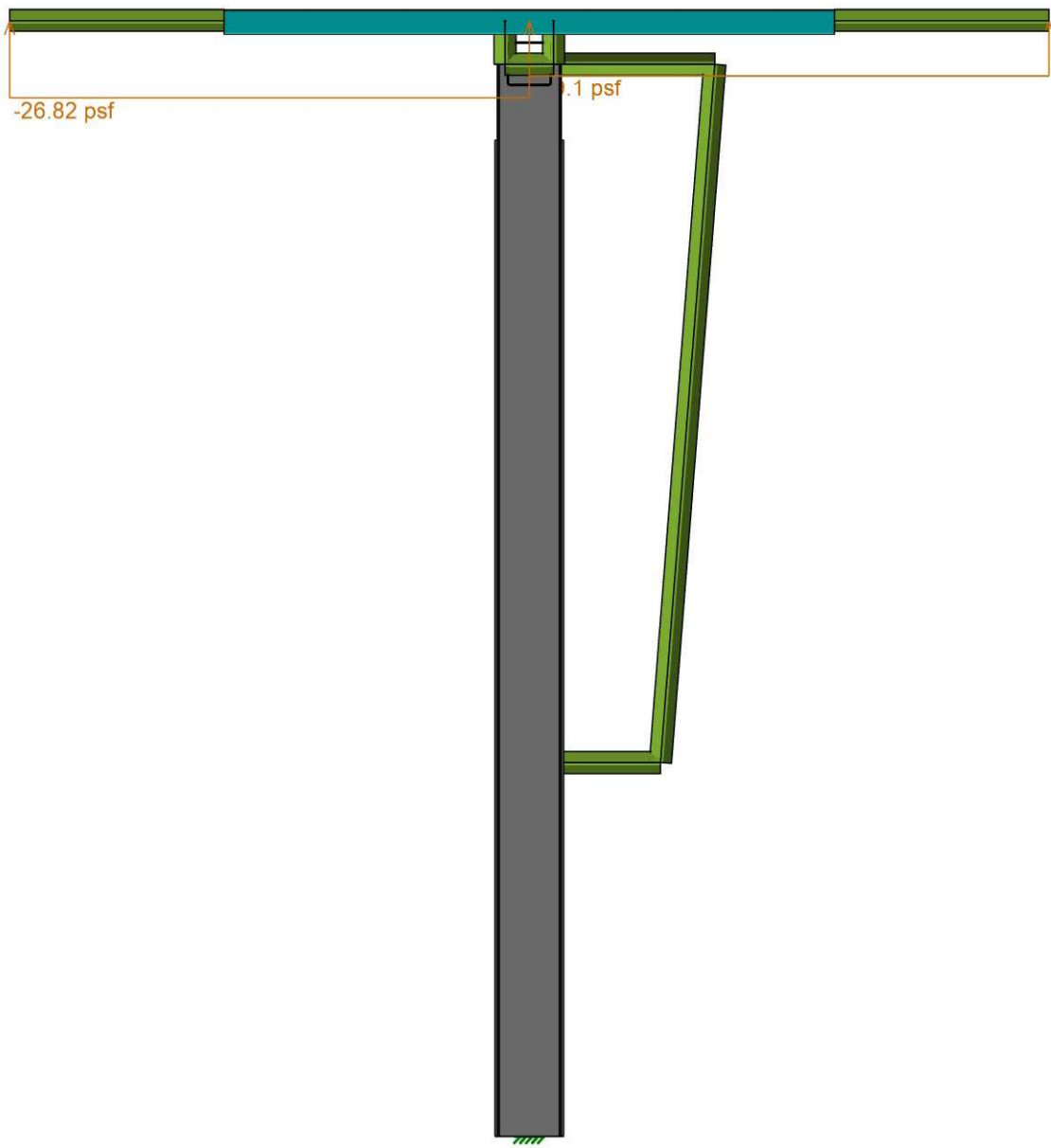
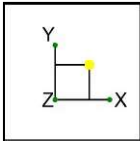
17009

Amaral

SK-7

Apr 17, 2023

23-0417 - 1x35 TDP 1.0 0°- Trin...



Loads: BLC 8, Wind Uplift - Dynamic

Solv Inc.

JRD

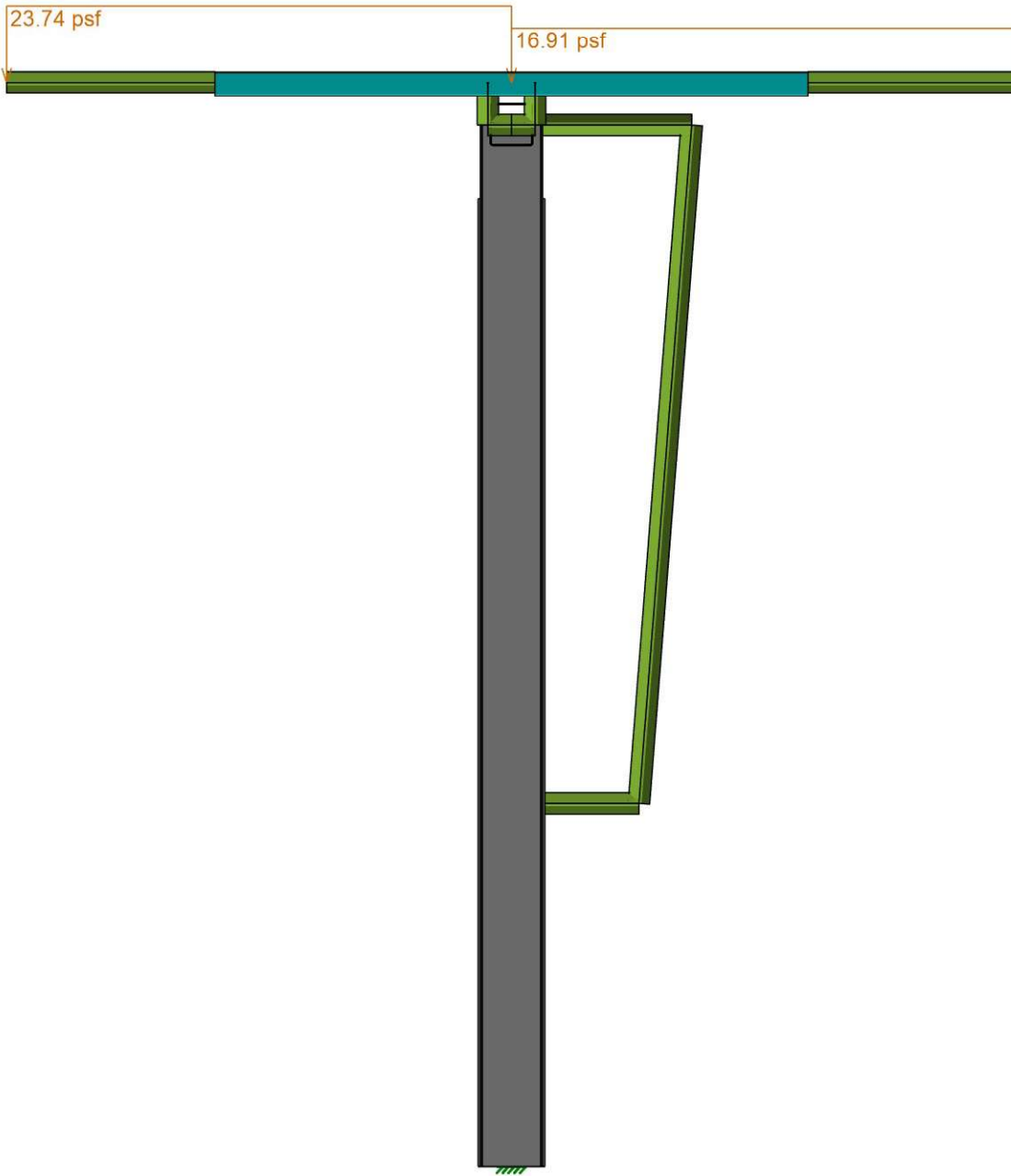
17009

Amaral

SK-8

Apr 17, 2023

23-0417 - 1x35 TDP 1.0 0°- Trin...



Loads: BLC 9, Wind Downforce - Dynamic

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SK-9
Apr 17, 2023
23-0417 - 1x35 TDP 1.0 0° - Trin...



Company : Solv Inc.
 Designer : JRD
 Job Number : 17009
 Model Name : Amatal

4/17/2023
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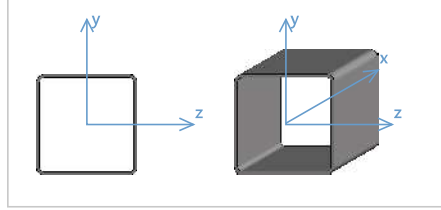
Envelope AISC 14th (360-10): ASD Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-in]	Mnzz/om [k-in]	Cb	Eqn
1	Tube 1	4X4X0.126	0.864	0	5	0.709	0	Y	5	14.136	70.15	92.515	1	H3-6
2	Tube 2	4X4X0.126	0.864	0	5	0.708	0	Y	5	14.136	70.15	92.515	1	H3-6
3	DRIVE POST	W6X20	0.253	33.632	5	0.014	90	Y	5	135.323	175.749	421.115	1	H1-1b
4	IDLER POST 2	W6X7	0.132	0	2	0.002	0	Y	12	26.494	59.947	94.678	1	H1-1b*
5	IDLER POST 7	W6X7	0.132	0	2	0.002	0	Y	12	26.494	59.947	94.678	1	H1-1b*
6	IDLER POST 3	W6X7	0.124	0	2	0.002	0	Y	12	26.494	59.947	94.678	1	H1-1b*
7	IDLER POST 6	W6X7	0.124	0	2	0.002	0	Y	12	26.494	59.947	94.678	1	H1-1b*
8	IDLER POST 5	W6X7	0.123	0	2	0.003	96.885	Y	5	26.494	59.947	94.678	1	H1-1b*
9	IDLER POST 4	W6X7	0.123	0	2	0.003	96.885	Y	5	26.494	59.947	94.678	1	H1-1b*
10	IDLER POST 8	W6X7	0.095	0	2	0.002	0	Y	13	26.494	59.947	94.678	1	H1-1b*
11	IDLER POST 1	W6X7	0.095	0	2	0.002	0	Y	13	26.494	59.947	94.678	1	H1-1b*

Detail Report: Tube 1

Unity Check: 0.864 (axial/bending)

Load Combination: LC 5: IBC 16-13 (A) (static wind)



Input Data:

Shape:	4X4X0.126	I Node:	GA
Member Type:	Beam	J Node:	VX1C
Length (in):	764.43	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

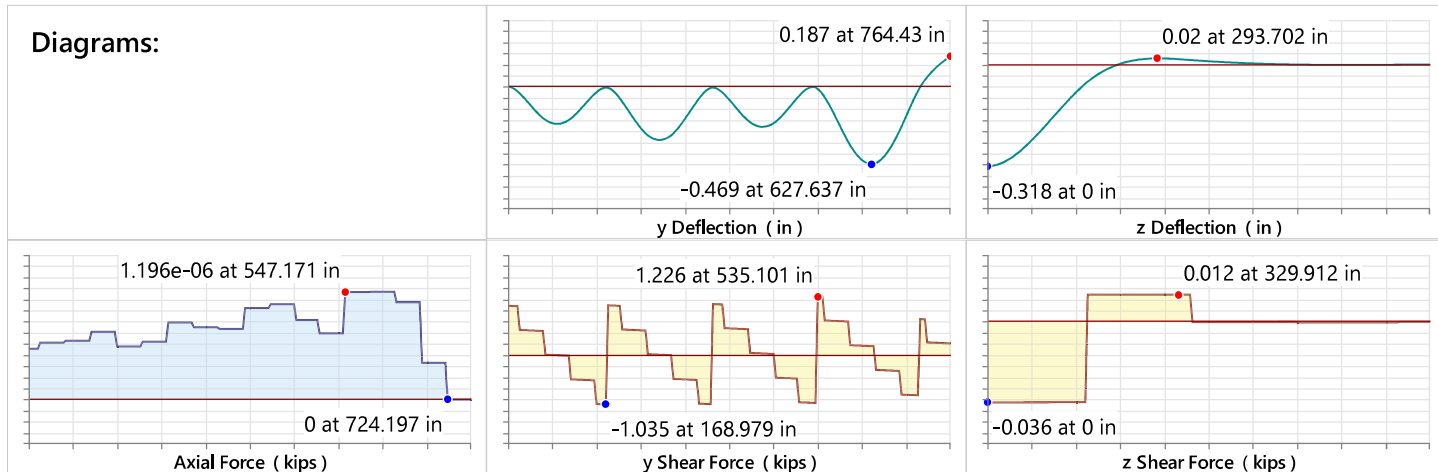
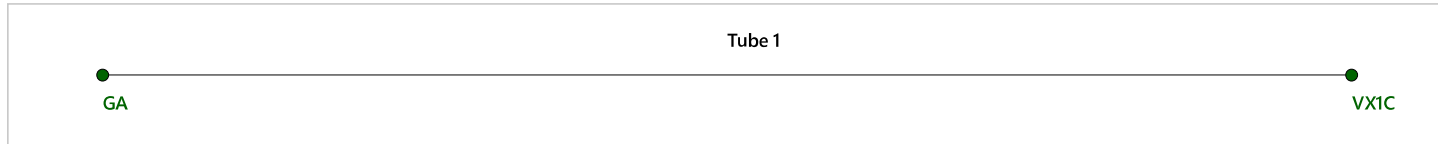
Material:	A500 Gr. 60	Therm. Coeff. ($10^{-5} F^{-1}$):	0.65	R_y :	1.5
E (ksi):	29000	Density (k/ft ³):	0.49	F_u (ksi):	70
G (ksi):	11154	F_y (ksi):	60	R_t :	1.2
Nu:	0.3				

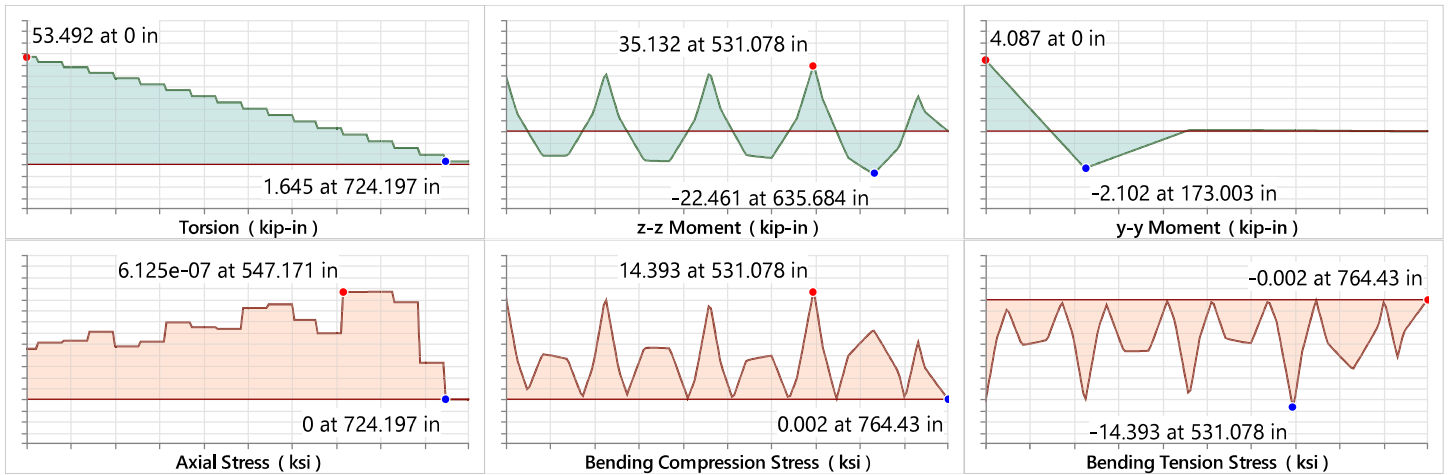
Shape Properties:

d (in):	4	I_{yy} (in ⁴):	4.889	Area (in ²):	1.952
b_f (in):	4	I_{zz} (in ⁴):	4.889	J (in ⁴):	7.326
t (in):	0.126				

Design Properties:

$L_{b\ y-y}$ (in):	228	K_{y-y} :	1	Max Defl Ratio:	L/387
$L_{b\ z-z}$ (in):	228	K_{z-z} :	1	Max Defl Location:	627.637
$L_{comp\ top}$ (in):	L_{by}	y sway:	No	Span:	4
$L_{comp\ bot}$ (in):	228	z sway:	No		
L_{torque} (in):	N/A	Function:	Lateral		
C_b :	1	Seismic DR:	None		



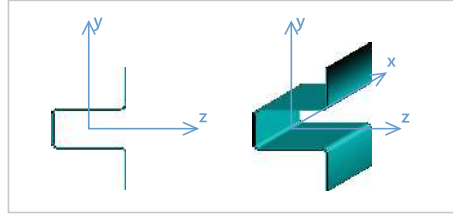


AISC 14th (360-10): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	70.15 k	-	-
Axial Compression Analysis	0.000 k	14.136 k	-	-
Flexural Analysis (Strong Axis)	29.02 k-in	92.515 k-in	-	-
Flexural Analysis (Weak Axis)	4.087 k-in	92.515 k-in	-	-
Shear Analysis (Major Axis y)	13.942 k	19.676 k	0.709	Pass
Shear Analysis (Minor Axis z)	12.946 k	19.676 k	0.658	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.864	Pass
Torsional Analysis	53.492 k-in	81.361 k-in	0.657	Pass

Detail Report: VP 34

Load Combination: LC 2: IBC 16-10



Input Data:

Shape:	V-HU-2.25X0.055X1.25	I Node:	V34B
Member Type:	Beam	J Node:	V34C
Length (in):	55.118	I Release:	Fixed
Material Type:	Cold Formed Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

Material:	A653 Grade 50	Nu:	0.3	F _y (ksi):	50
E (ksi):	29500	Therm. Coeff. (1e ⁻⁵ °F ⁻¹):	0.65	F _u (ksi):	70
G (ksi):	11346	Density (k/ft ³):	0.49		

Shape Properties:

D (in):	2.25	J (in ⁴):	0.000432	r _y (in):	N/A
B (in):	1.25	C _w (in ⁶):	0.21	x ₀ (in):	-1.446
t (in):	0.055	r _o (in):	1.875	S _{ez} (in ³):	N/A
R (in):	0.112	X _c (in):	1.274	S _{fz} (in ³):	N/A
d (in):	1.25	m (in):	0.172	S _{cz} (in ³):	N/A
I _{yy} (in ⁴):	0.308	j (in):	1.589	S _{ey} (in ³):	N/A
I _{zz} (in ⁴):	0.303	r _z (in):	N/A	S _{fy} (in ³):	N/A
Area (in ²):	0.428				

Design Properties:

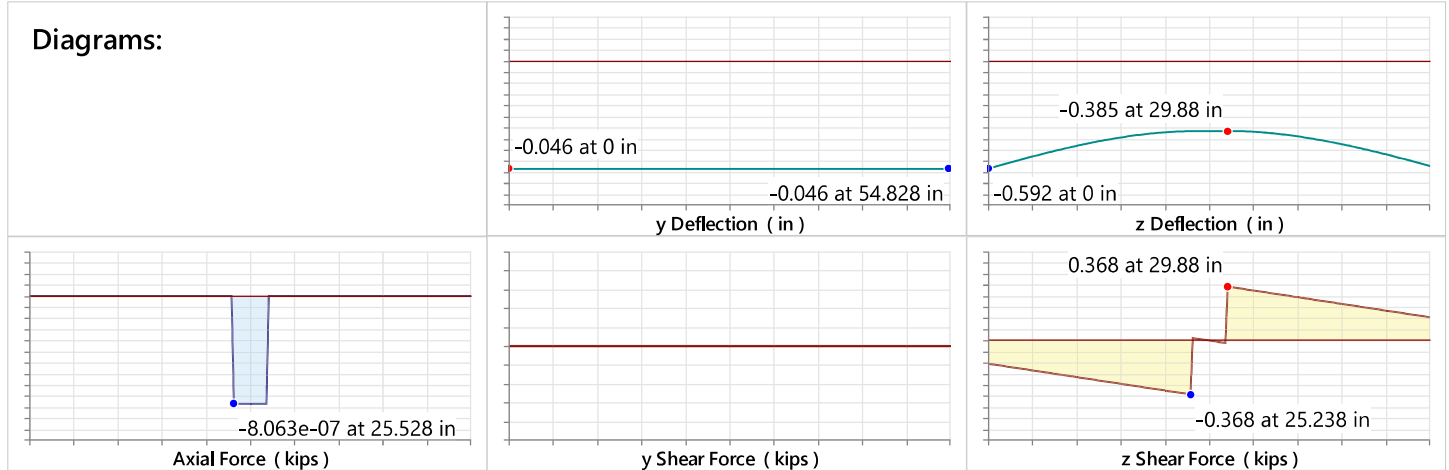
L _{b y-y} (in):	N/A	K _{y-y} :	1	Max Defl Ratio:	L/10000
L _{b z-z} (in):	N/A	K _{z-z} :	1	Max Defl Location:	0
L _{comp top} (in):	L _{b y-y}	R:	N/A	Span:	N/A
L _{comp bot} (in):	N/A	y sway:	No		
C _b :	1	z sway:	No		
C _{m y-y} :	N/A	a (in):	N/A		
C _{m z-z} :	N/A				

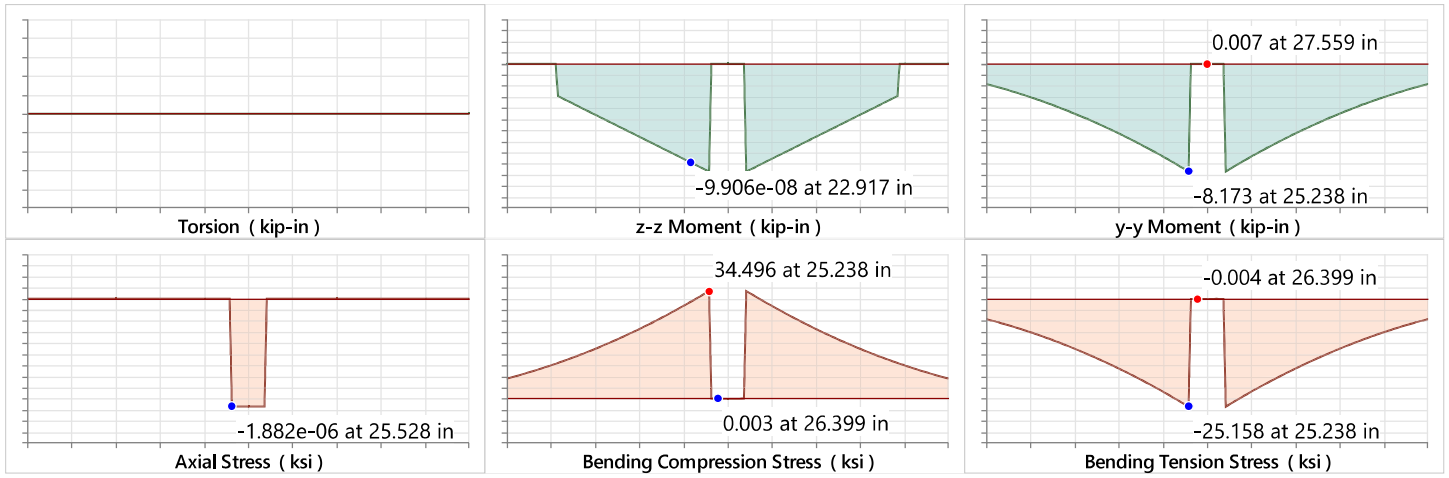
VP 34

V34B

V34C

Diagrams:





Rev. Date: 10/6/2022 10:41:24 AM
 By: NSM
 Printed: 10/6/2022 10:42:41 AM

Member Check - AISI S100-12, US, ASD

Material Type: A653 SS Grade 50/3, Fy=50 ksi

Design Parameters:

Lx	4.593 ft	Ly	4.593 ft	Lt	4.593 ft
Kx	1.0000	Ky	1.0000	Kt	1.0000
Cbx	1.0000	Cby	1.0000	ex	0.0000 in
Cmx	1.0000	Cmy	1.0000	ey	0.0000 in
Braced Flange:	None	kφ	0 k		
Red. Factor, R:	0	Lm	20.000 ft		

Entered moments include P-δ effects

Loads:	P (k)	Mx (k-in)	Vy (k)	My (k-in)	Vx (k)
Entered	0.0000	0.0000	0.0000	-8.1730	-0.3680
Applied	0.0000	0.0000	0.0000	-8.1730	-0.3680
Strength	3.5214	5.4412	0.9446	8.3624	3.9518

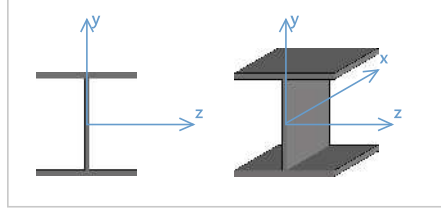
Interaction Equations

Eq. C5.2.1-1 (P, Mx, My) $0.000 + 0.000 + 0.977 = 0.977 \leq 1.0$
 Eq. C5.2.1-2 (P, Mx, My) $0.000 + 0.000 + 0.977 = 0.977 \leq 1.0$
 Eq. C3.3.1-1 (Mx, Vy) $\text{Sqrt}(0.000 + 0.000) = 0.000 \leq 1.0$
 Eq. C3.3.1-1 (My, Vx) $\text{Sqrt}(0.955 + 0.009) = 0.982 \leq 1.0$

Detail Report: DRIVE POST

Unity Check: 0.253 (axial/bending)

Load Combination: LC 5: IBC 16-13 (A) (static wind)



Input Data:

Shape:	W6X20	I Node:	D1
Member Type:	Column	J Node:	D2
Length (in):	90	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	ALLPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

Material:	A992	Therm. Coeff. ($1e^{-5} F^{-1}$):	0.65	R_y :	1.1
E (ksi):	29000	Density (k/ft ³):	0.49	F_u (ksi):	65
G (ksi):	11154	F_y (ksi):	50	R_t :	1.1
Nu:	0.3				

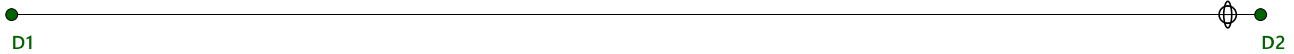
Shape Properties:

d (in):	6.2	Area (in ²):	5.87	S_w (in ⁴):	4.82
b_f (in):	6.02	Z_{yy} (in ³):	6.72	r_T (in):	1.64
t_f (in):	0.365	Z_{zz} (in ³):	14.9	J (in ⁴):	0.24
t_w (in):	0.26	C_w (in ⁶):	113	k_{det} (in):	0.875
I_{yy} (in ⁴):	13.3	W_{no} (in ²):	8.78	k_{des} (in):	0.615
I_{zz} (in ⁴):	41.4				

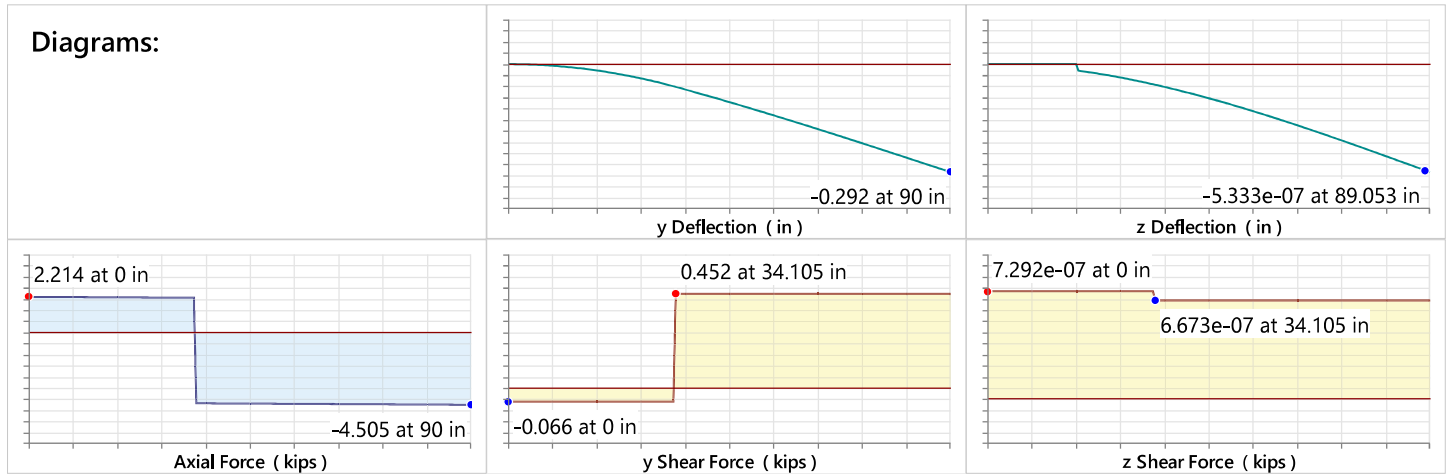
Design Properties:

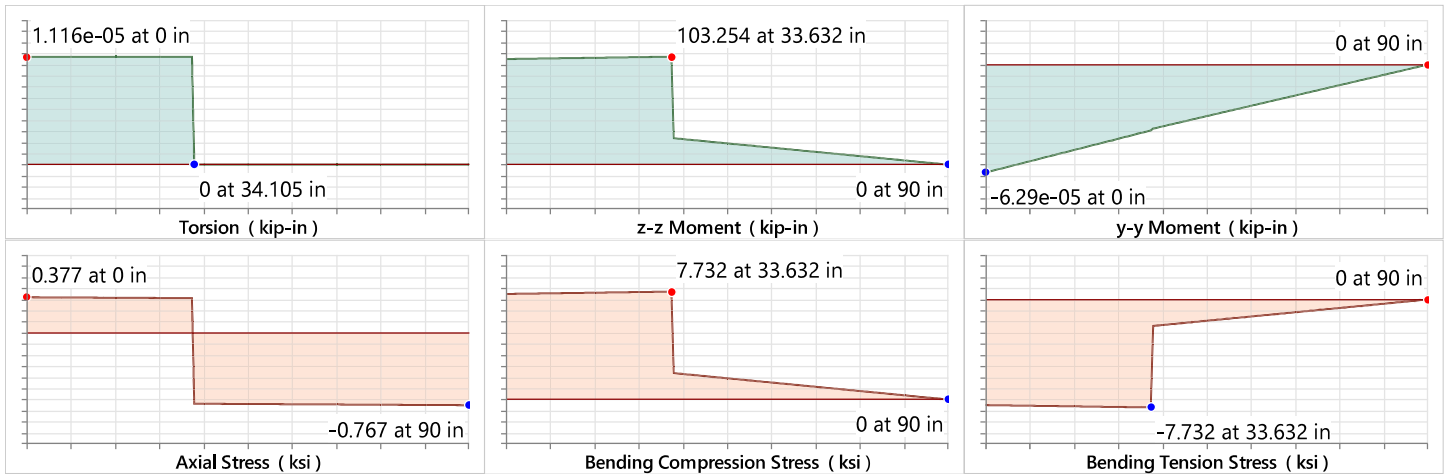
$L_{b\ y-y}$ (in):	N/A	K_{y-y} :	1	Max Defl Ratio:	L/308
$L_{b\ z-z}$ (in):	N/A	K_{z-z} :	1	Max Defl Location:	0
$L_{comp\ top}$ (in):	Lbyy	y sway:	No	Span:	N/A
$L_{comp\ bot}$ (in):	N/A	z sway:	No		
L_{torque} (in):	N/A	Function:	Lateral		
C_b :	1	Seismic DR:	None		

DRIVE POST



Diagrams:





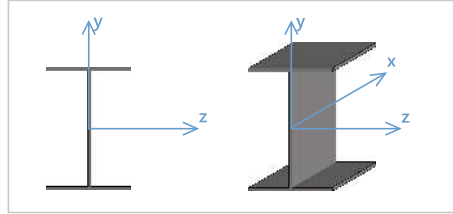
AISC 14th (360-10): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	175.749 k	-	-
Axial Compression Analysis	2.158 k	135.323 k	-	-
Flexural Analysis (Strong Axis)	103.254 k-in	421.115 k-in	-	-
Flexural Analysis (Weak Axis)	0.000 k-in	201.198 k-in	-	-
Shear Analysis (Major Axis y)	0.452 k	32.24 k	0.014	Pass
Shear Analysis (Minor Axis z)	0.000 k	78.945 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.253	Pass

Detail Report: IDLER POST 2

Unity Check: 0.132 (axial/bending)

Load Combination: LC 2: IBC 16-10



Input Data:

Shape:	W6X7	I Node:	N345
Member Type:	Column	J Node:	N346
Length (in):	96.885	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Custom
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

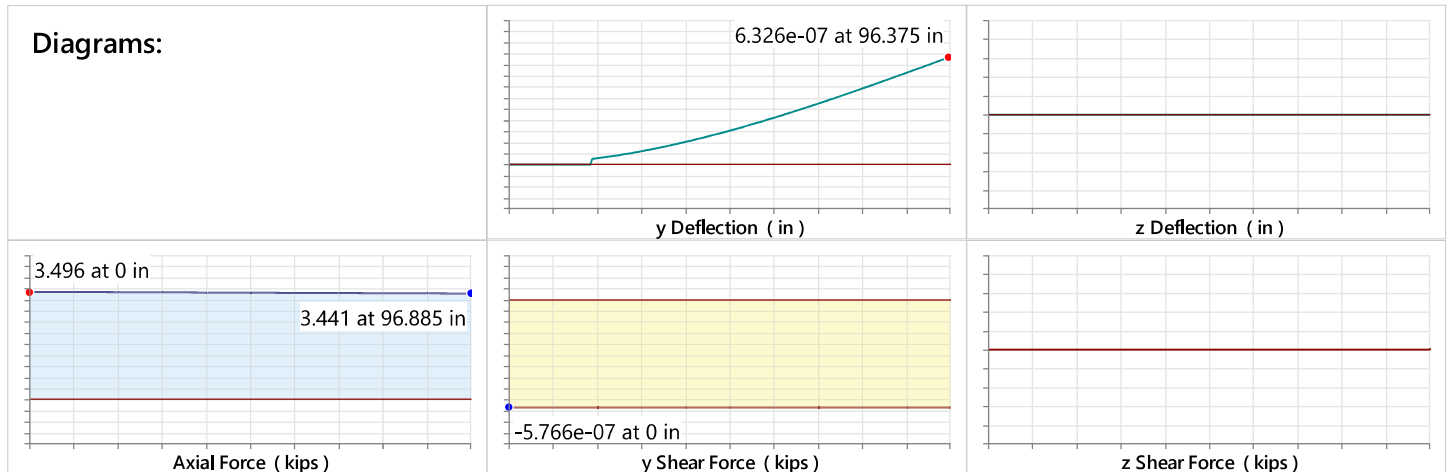
Material:	A992	Therm. Coeff. (1e ⁻⁵ °F ⁻¹):	0.65	R _y :	1.1
E (ksi):	29000	Density (k/ft ³):	0.49	F _u (ksi):	65
G (ksi):	11154	F _y (ksi):	50	R _t :	1.1
Nu:	0.3				

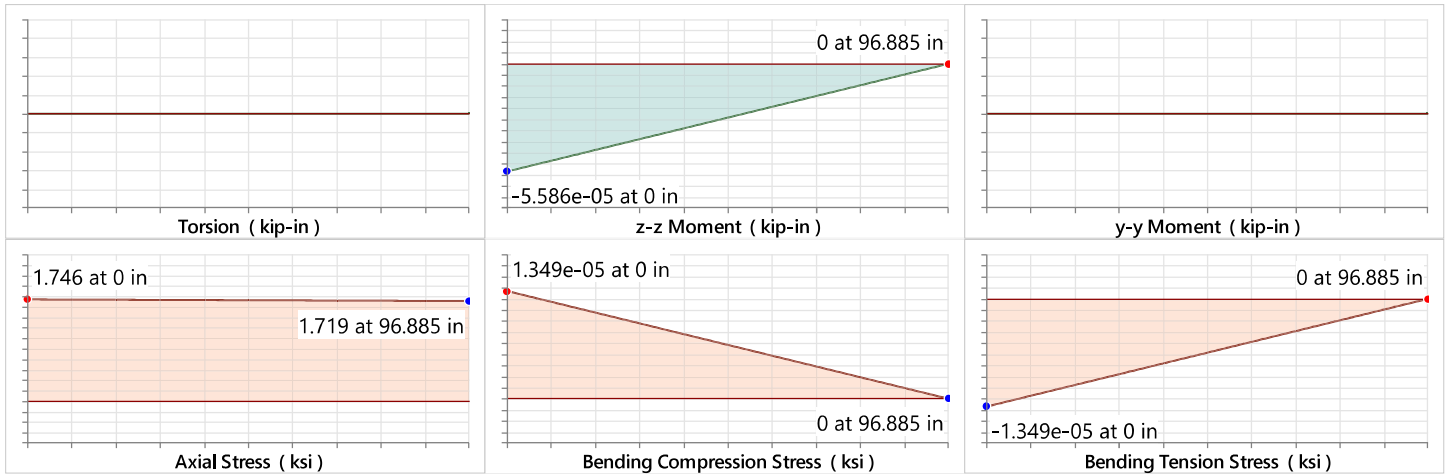
Shape Properties:

d (in):	5.772	Area (in ²):	2.002	S _w (in ⁴):	0.898
b _f (in):	3.94	Z _{yy} (in ³):	1.303	r _T (in):	1.047
t _f (in):	0.165	Z _{zz} (in ³):	4.6	J (in ⁴):	0.016
t _w (in):	0.129	C _w (in ⁶):	13.227	k _{det} (in):	0.69
I _{yy} (in ⁴):	1.683	W _{no} (in ²):	5.523	k _{des} (in):	0.46
I _{zz} (in ⁴):	11.955				

Design Properties:

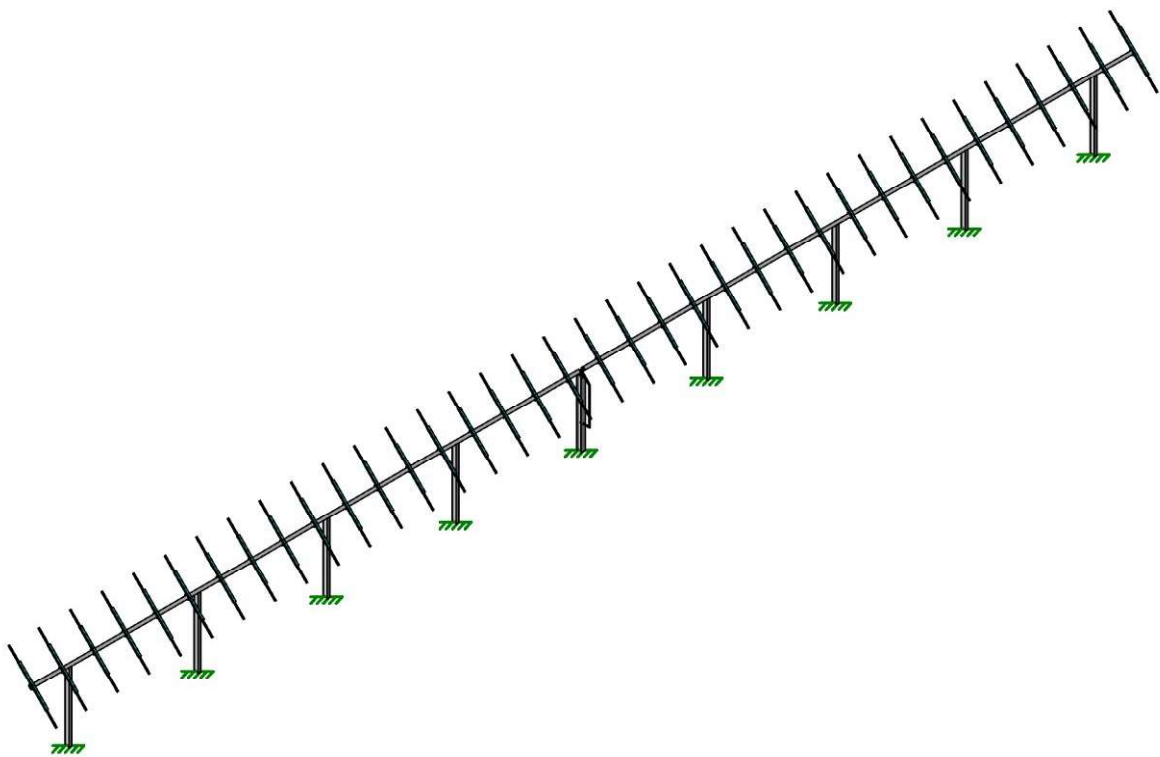
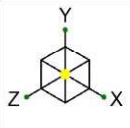
L _{b y-y} (in):	N/A	K _{y-y} :	1	Max Defl Ratio:	L/10000
L _{b z-z} (in):	N/A	K _{z-z} :	1	Max Defl Location:	0
L _{comp top} (in):	L _{b yy}	y sway:	No	Span:	N/A
L _{comp bot} (in):	N/A	z sway:	No		
L _{torque} (in):	N/A	Function:	Lateral		
C _b :	1	Seismic DR:	None		





AISC 14th (360-10): ASD Code Check

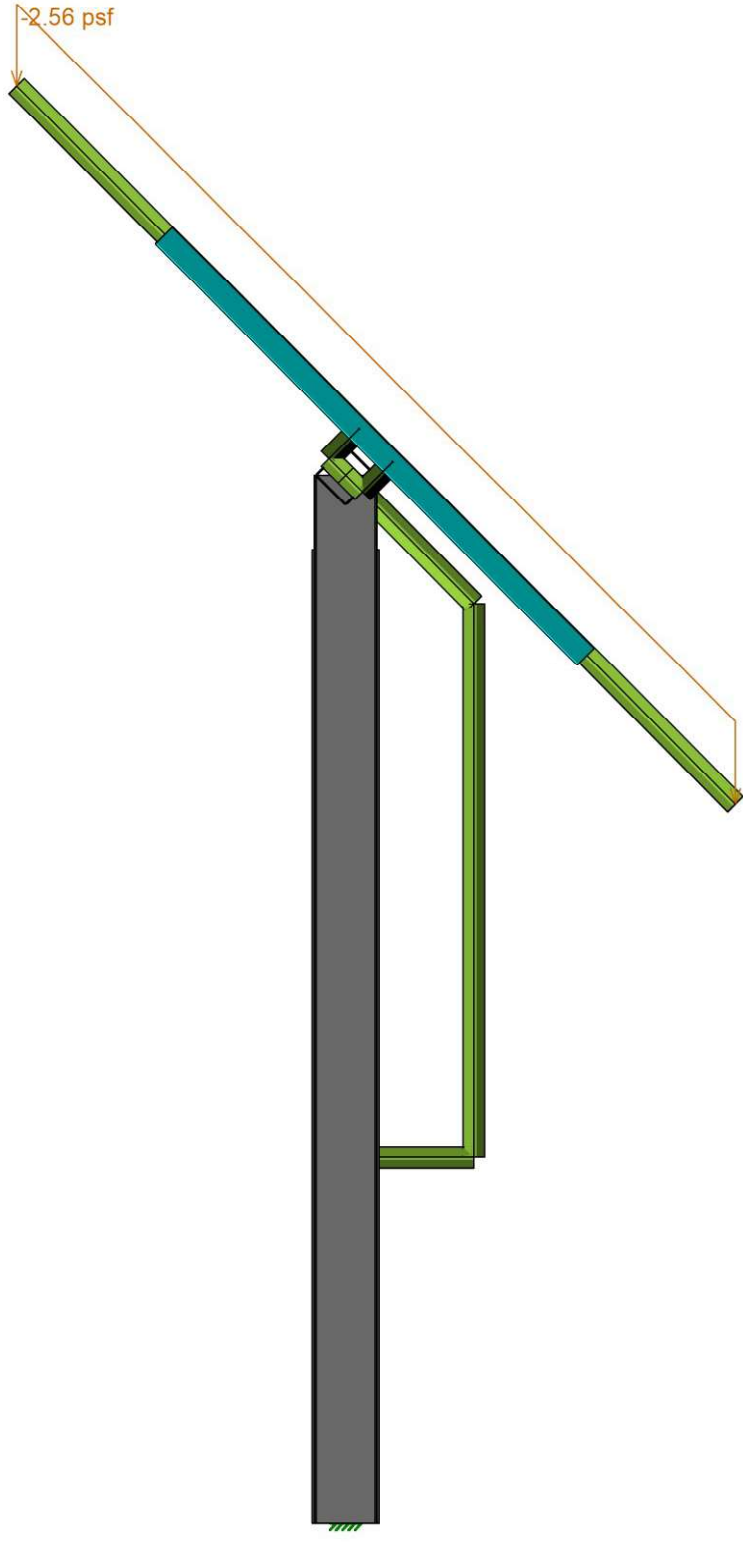
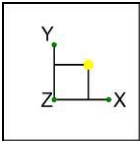
Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	59.947 k	-	-
Axial Compression Analysis	3.496 k	26.494 k	-	-
Flexural Analysis (Strong Axis)	0.000 k-in	94.678 k-in	-	-
Flexural Analysis (Weak Axis)	0.000 k-in	35.079 k-in	-	-
Shear Analysis (Major Axis y)	0.000 k	14.892 k	0.000	Pass
Shear Analysis (Minor Axis z)	0.000 k	23.357 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.132	Pass



Solv Inc.
JRD
17009

Amaral

SK-10
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

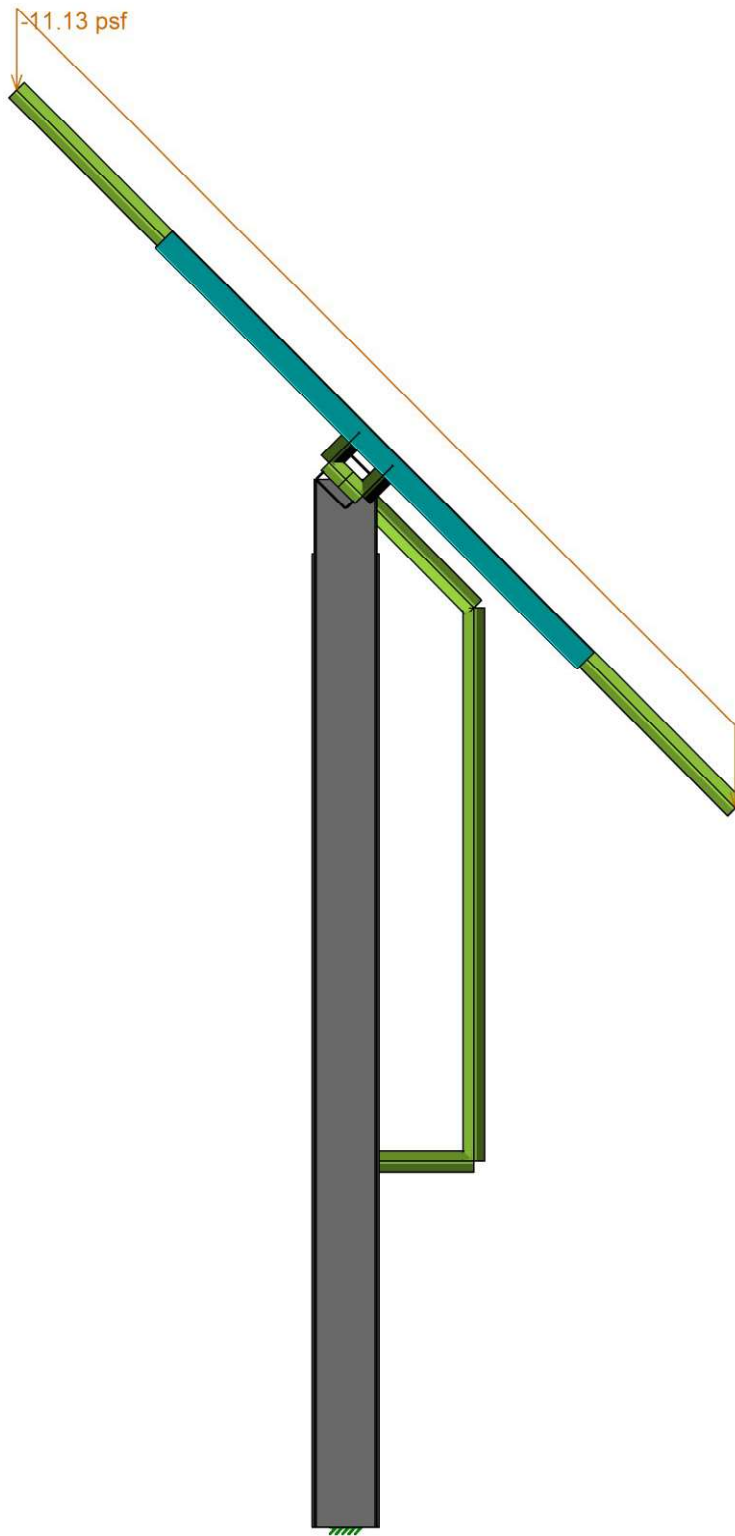
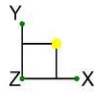


Loads: BLC 2, Solar Panels

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SK-11
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

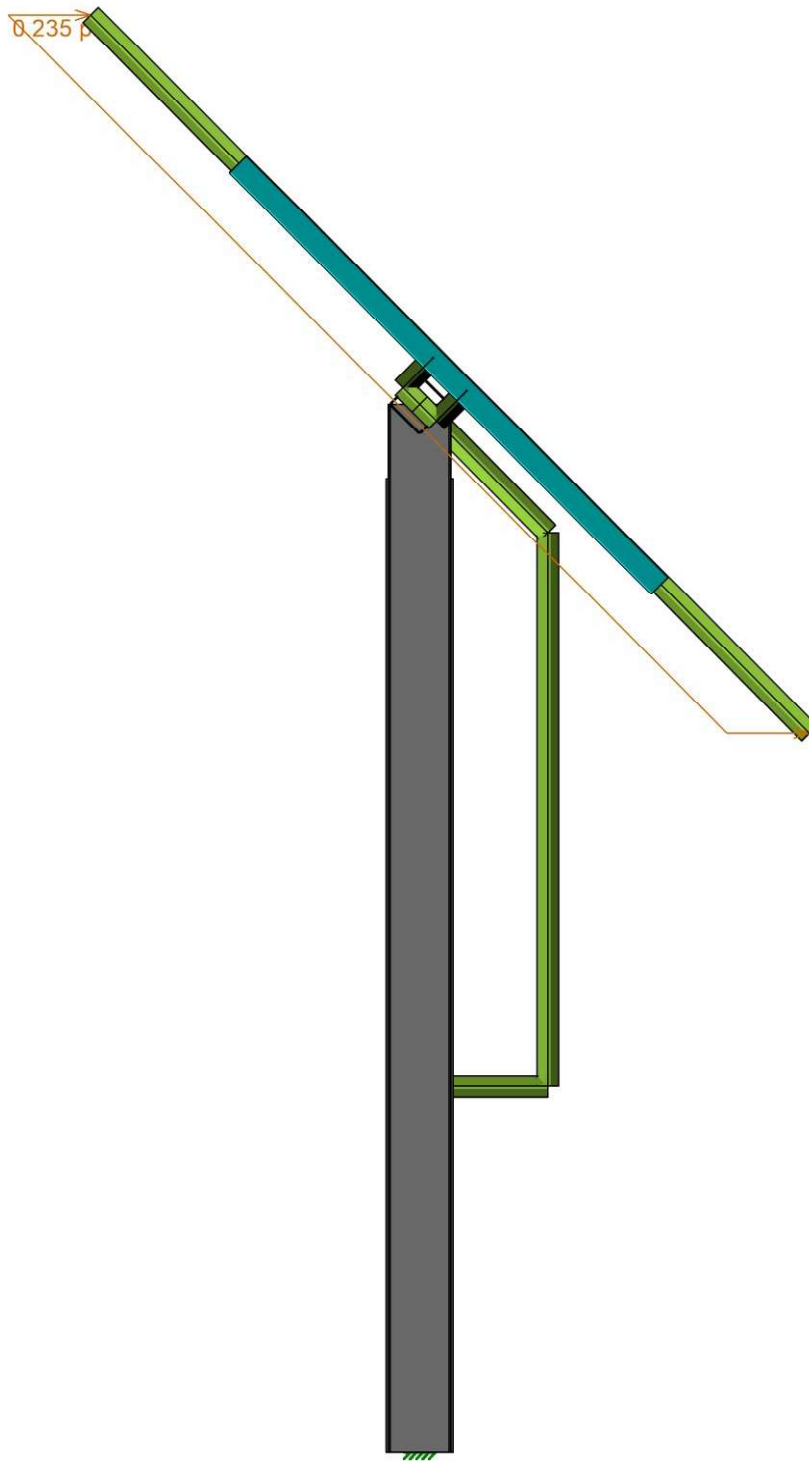
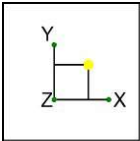


Loads: BLC 3, Snow

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17009

Amaral

SK-12
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

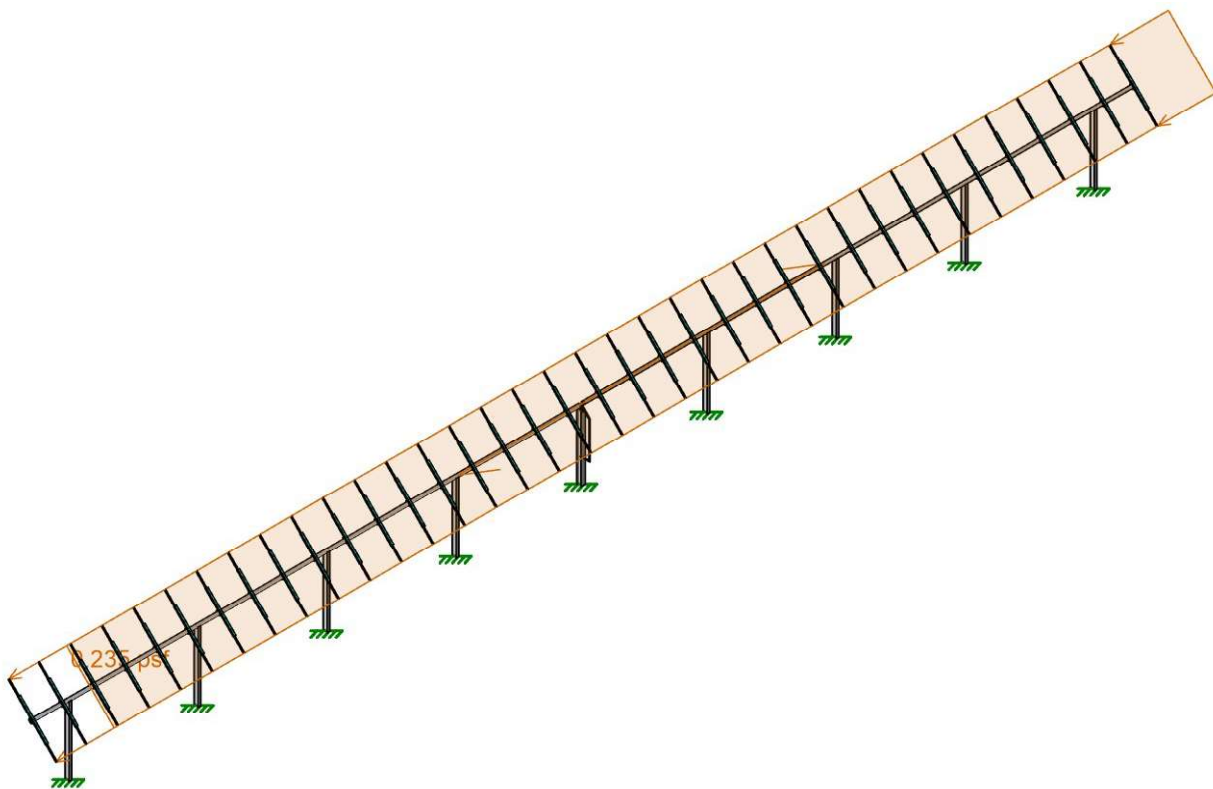
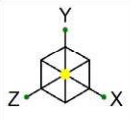


Loads: BLC 4, Seismic X

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17009

Amaral

SK-13
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

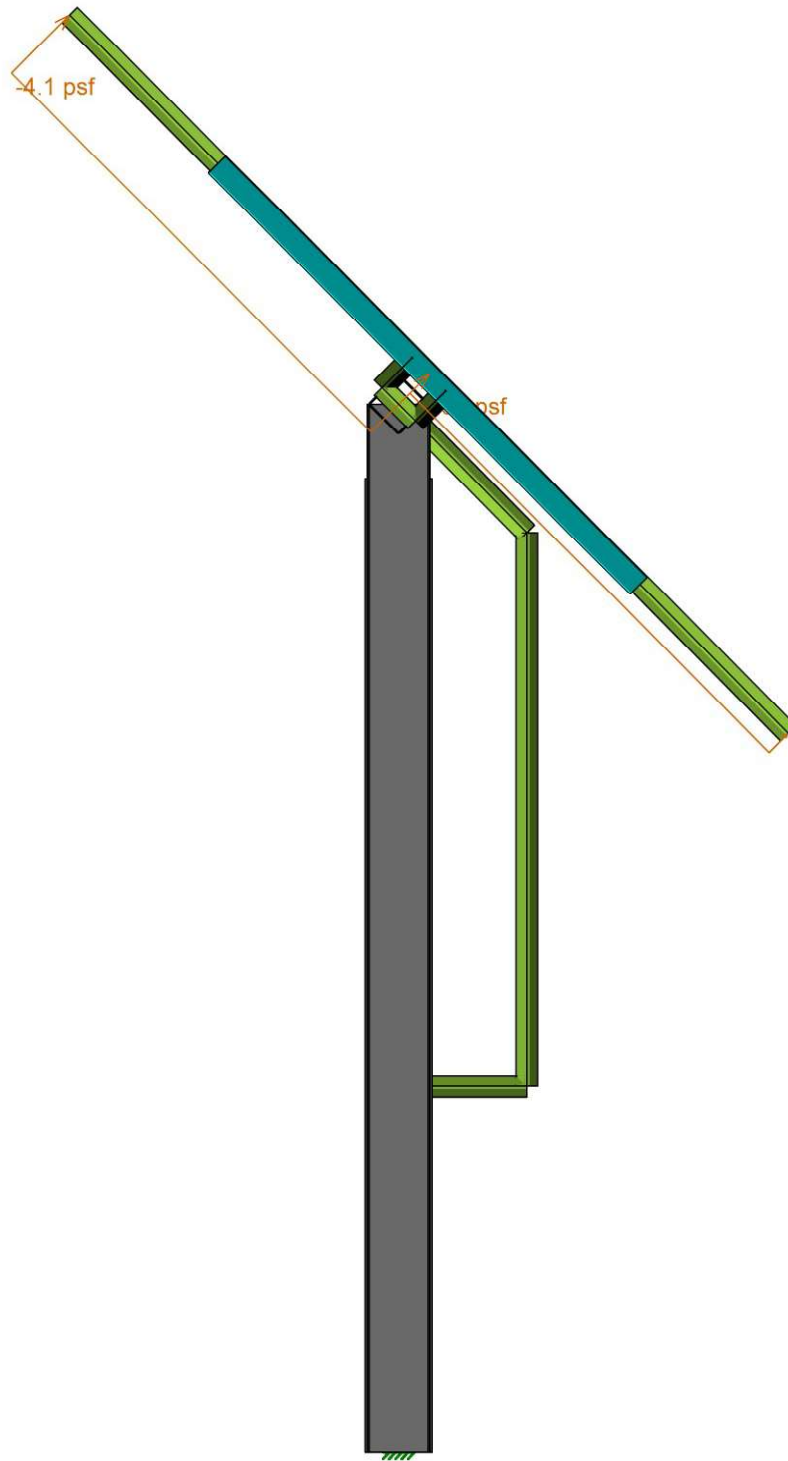
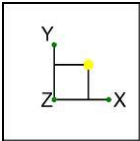


Loads: BLC 5, Seismic Z

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SK-14
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

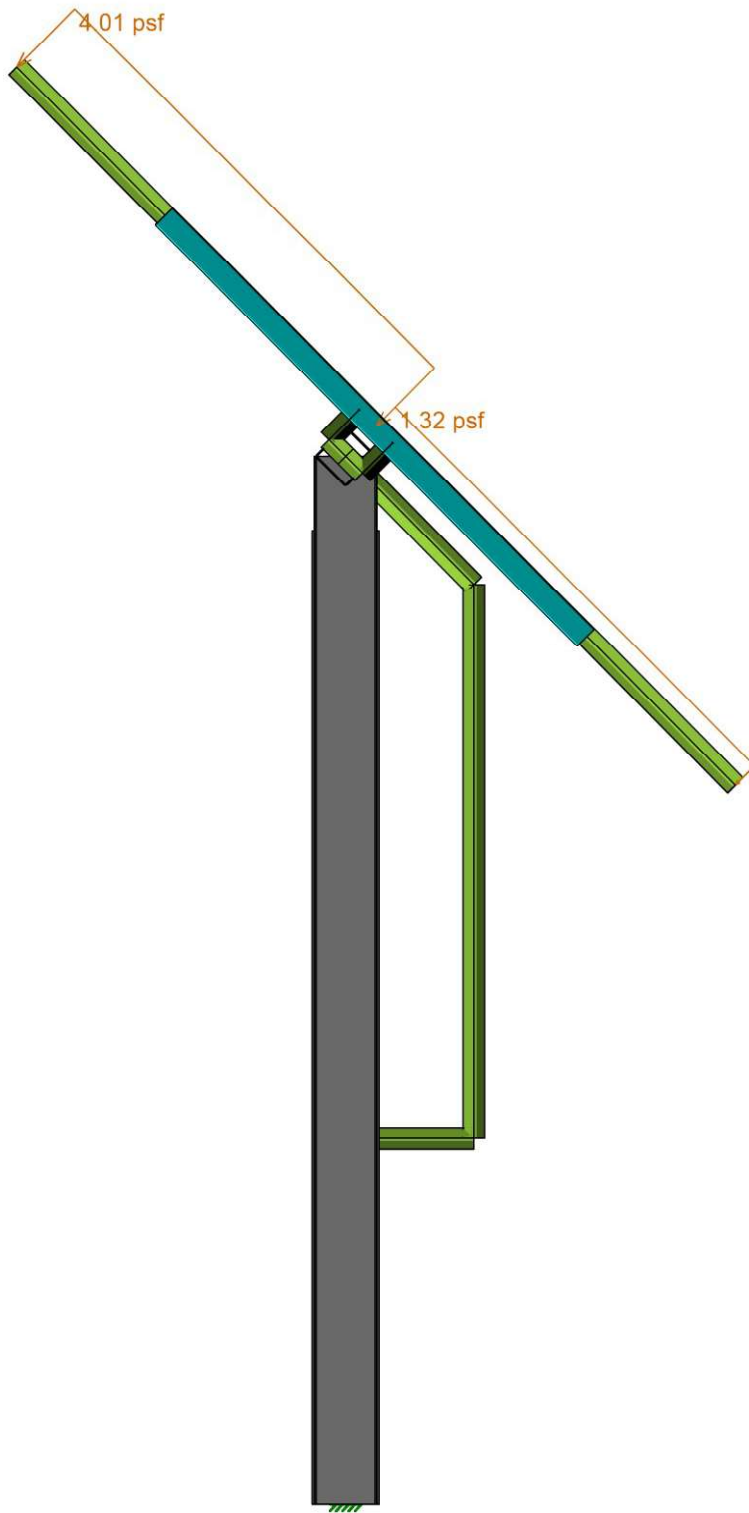
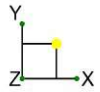


Loads: BLC 6, Wind Uplift - Static

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17009

Amaral

SK-15
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

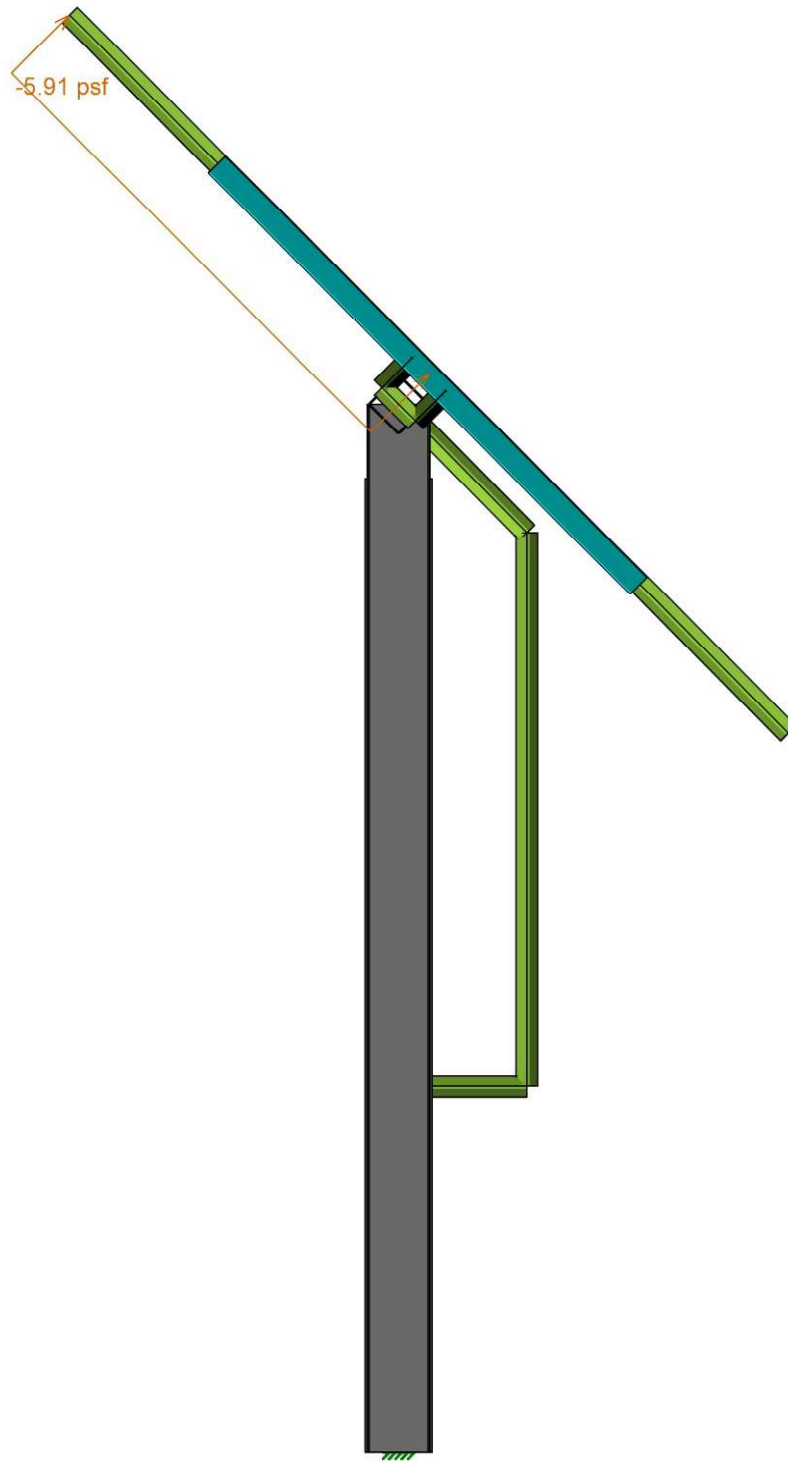
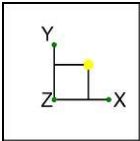


Loads: BLC 7, Wind Downforce - Static

Solv Inc.
JRD
17009

Amaral

SK-16
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...

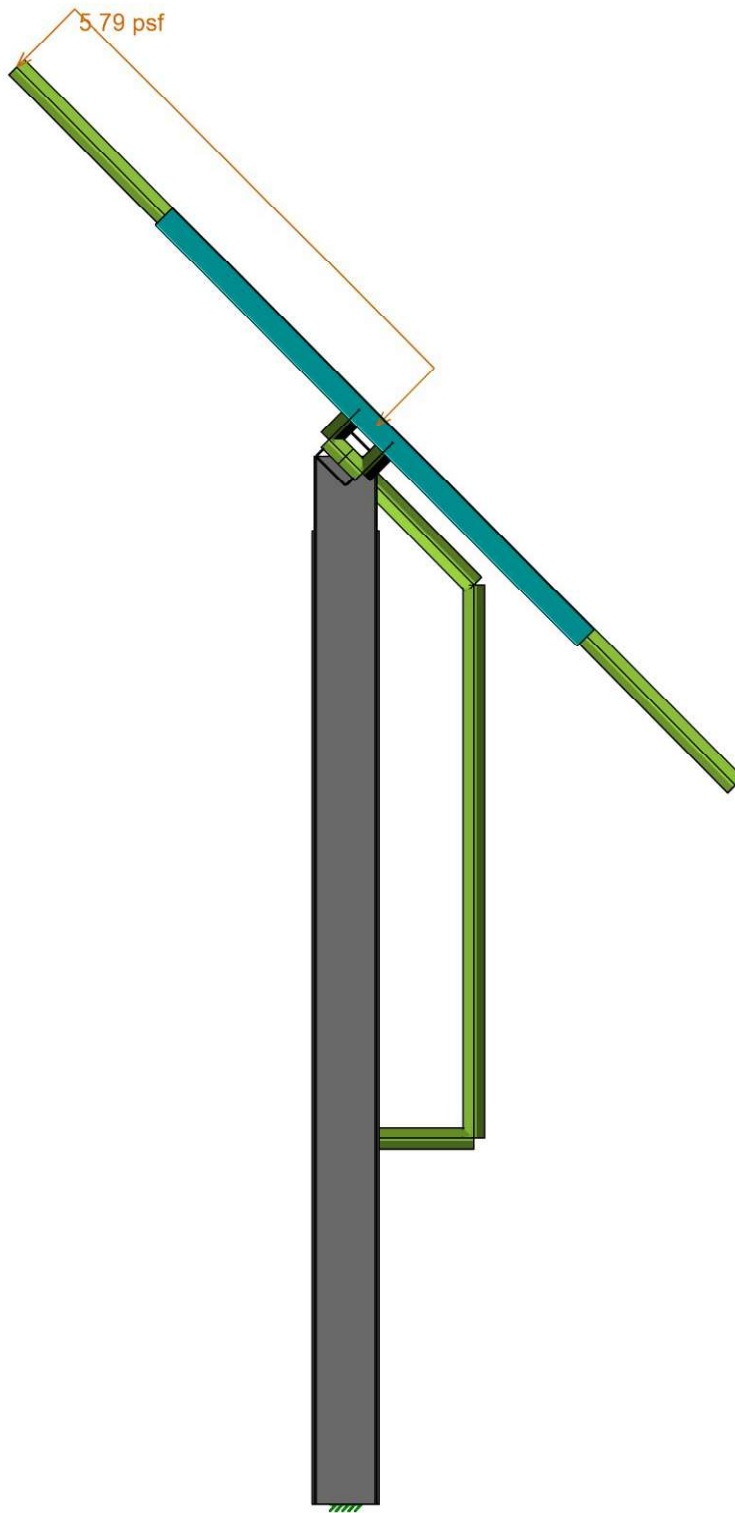
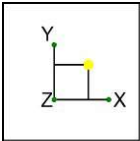


Loads: BLC 8, Wind Uplift - Dynamic

Solv Inc.
JRD
17009

Amaral

SK-17
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...



Loads: BLC 9, Wind Downforce - Dynamic

Solv Inc.
JRD
17009

Amaral

SK-18
Apr 18, 2023
23-0417 - 1x35 TDP 1.0 55°- Trina...



Company : Solv Inc.
 Designer : JRD
 Job Number : 17009
 Model Name : Amatal

4/18/2023
 8:32:15 AM
 Checked By : NZ

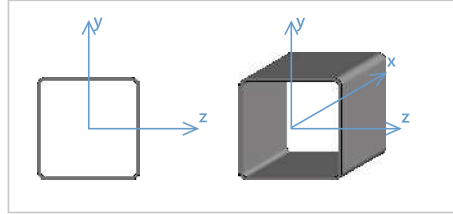
Envelope AISC 14th (360-10): ASD Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-in]	Mnzz/om [k-in]	Cb	Eqn
1	Tube 1	4X4X0.126	0	2	0.323	0	z	5	14.136	70.15	92.515	92.515	1	H3-6
2	Tube 2	4X4X0.126	0	2	0.323	0	z	5	14.136	70.15	92.515	92.515	1	H3-6
3	IDLER POST 2	W6X7	0	4	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
4	IDLER POST 7	W6X7	0	4	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
5	DRIVE POST	W6X20	0	18	0.005	90	Y	4	135.323	175.749	201.198	421.115	1	H1-1b
6	IDLER POST 3	W6X7	0	4	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
7	IDLER POST 6	W6X7	0	4	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
8	IDLER POST 5	W6X7	0	3	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
9	IDLER POST 4	W6X7	0	3	0.01	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
10	IDLER POST 1	W6X7	0	4	0.008	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b
11	IDLER POST 8	W6X7	0	4	0.008	96.885	Y	3	26.494	59.947	35.079	94.678	1	H1-1b

Detail Report: Tube 1

Unity Check: 0.466 (axial/bending)

Load Combination: LC 2: IBC 16-10



Input Data:

Shape:	4X4X0.126	I Node:	GA
Member Type:	Beam	J Node:	VX1C
Length (in):	764.43	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

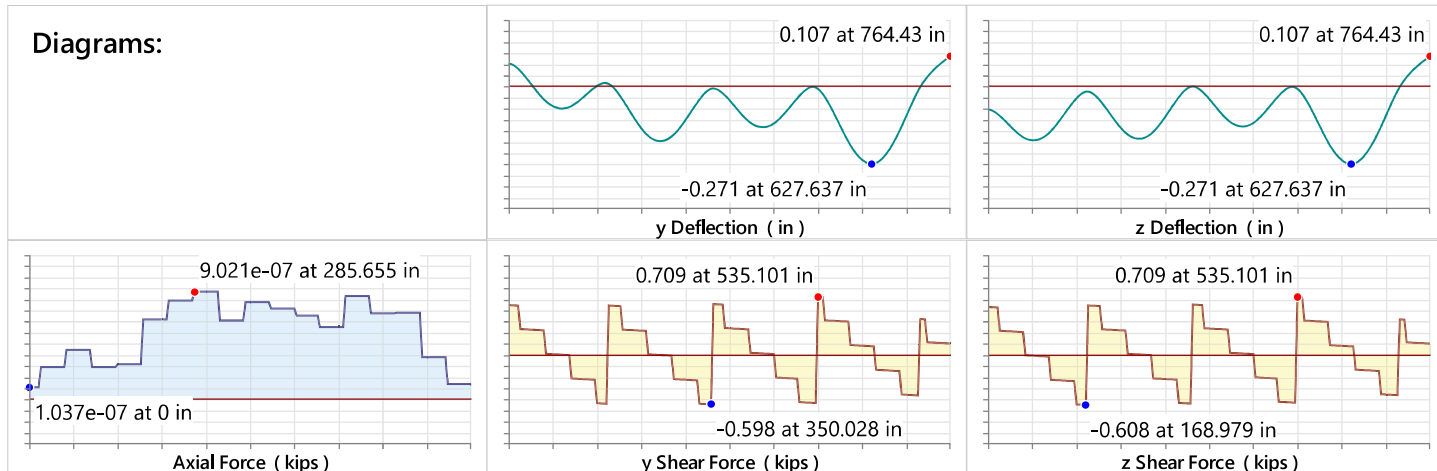
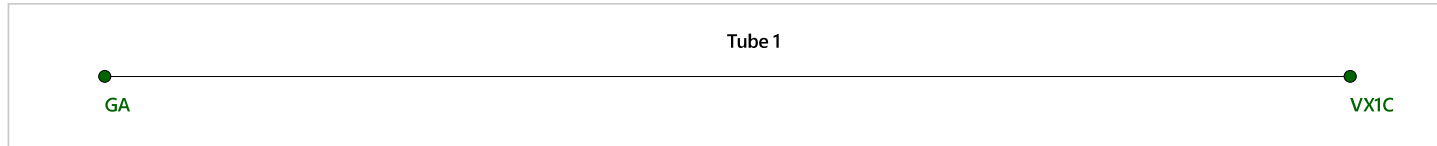
Material:	A500 Gr. 60	Therm. Coeff. (1e ⁵ °F ⁻¹):	0.65	R _y :	1.5
E (ksi):	29000	Density (k/ft ³):	0.49	F _u (ksi):	70
G (ksi):	11154	F _y (ksi):	60	R _t :	1.2
Nu:	0.3				

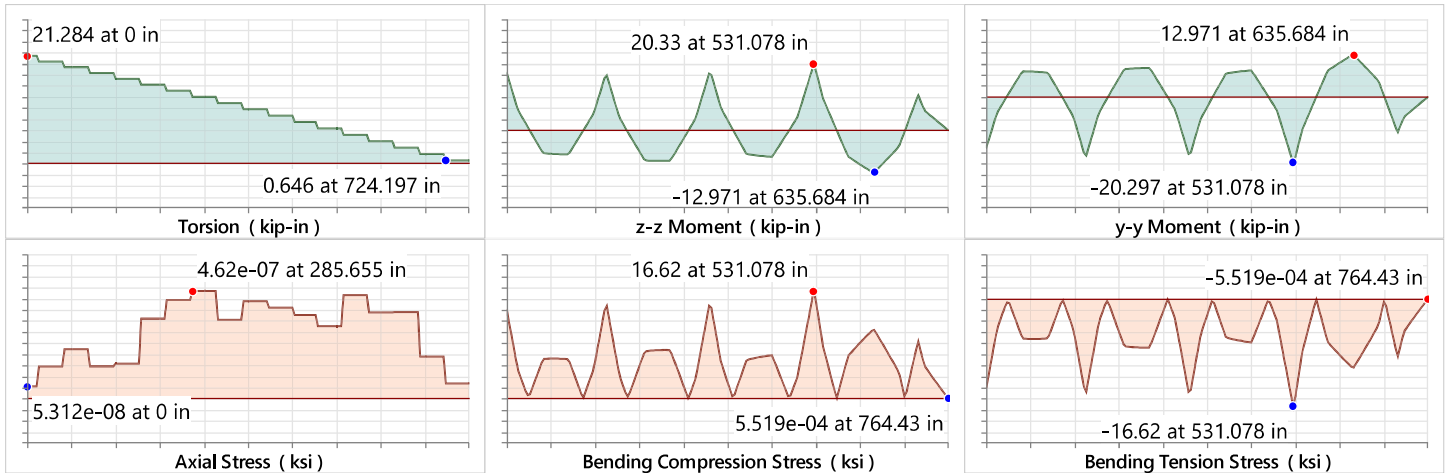
Shape Properties:

d (in):	4	I _{yy} (in ⁴):	4.889	Area (in ²):	1.952
b _f (in):	4	I _{zz} (in ⁴):	4.889	J (in ⁴):	7.326
t (in):	0.126				

Design Properties:

L _{b y-y} (in):	228	K _{y-y} :	1	Max Defl Ratio:	L/670
L _{b z-z} (in):	228	K _{z-z} :	1	Max Defl Location:	627.637
L _{comp top} (in):	L _{by}	y sway:	No	Span:	4
L _{comp bot} (in):	228	z sway:	No		
L _{torque} (in):	N/A	Function:	Lateral		
C _b :	1	Seismic DR:	None		





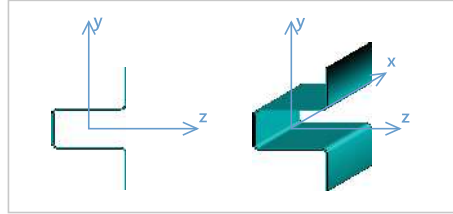
AISC 14th (360-10): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	70.15 k	-	-
Axial Compression Analysis	0.000 k	14.136 k	-	-
Flexural Analysis (Strong Axis)	17.809 k-in	92.515 k-in	-	-
Flexural Analysis (Weak Axis)	15.739 k-in	92.515 k-in	-	-
Shear Analysis (Major Axis y)	5.743 k	19.676 k	0.292	Pass
Shear Analysis (Minor Axis z)	5.725 k	19.676 k	0.291	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.466	Pass
Torsional Analysis	21.284 k-in	81.361 k-in	0.262	Pass

Detail Report: VP 18

Unity Check: 0.464 (axial/bending)

Load Combination: LC 2: IBC 16-10



Input Data:

Shape:	V-HU-2.25X0.055X1.25	I Node:	V18B
Member Type:	Beam	J Node:	V18C
Length (in):	55.118	I Release:	Fixed
Material Type:	Cold Formed Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

Material:	A653 Grade 50	Nu:	0.3	F _y (ksi):	50
E (ksi):	29500	Therm. Coeff. (1e ⁻⁵ °F ⁻¹):	0.65	F _u (ksi):	70
G (ksi):	11346	Density (k/ft ³):	0.49		

Shape Properties:

D (in):	2.25	J (in ⁴):	0.000432	r _y (in):	N/A
B (in):	1.25	C _w (in ⁶):	0.21	x ₀ (in):	-1.446
t (in):	0.055	r _o (in):	1.875	S _{ez} (in ³):	N/A
R (in):	0.112	X _c (in):	1.274	S _{fz} (in ³):	N/A
d (in):	1.25	m (in):	0.172	S _{cz} (in ³):	N/A
I _{yy} (in ⁴):	0.308	j (in):	1.589	S _{ey} (in ³):	N/A
I _{zz} (in ⁴):	0.303	r _z (in):	N/A	S _{fy} (in ³):	N/A
Area (in ²):	0.428				

Design Properties:

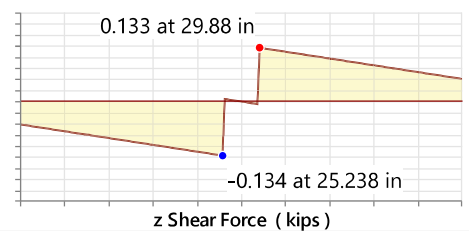
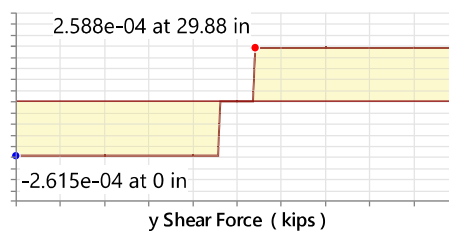
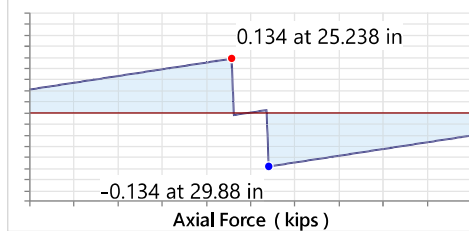
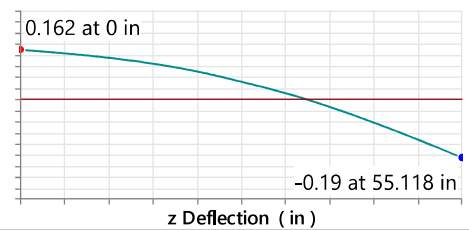
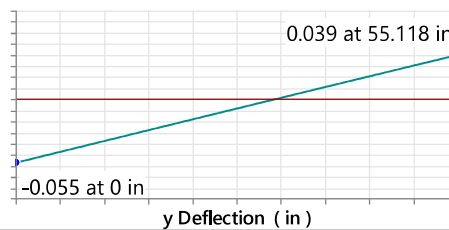
L _{b y-y} (in):	N/A	K _{y-y} :	1	Max Defl Ratio:	L/10000
L _{b z-z} (in):	N/A	K _{z-z} :	1	Max Defl Location:	0
L _{comp top} (in):	L _{b y-y}	R:	N/A	Span:	N/A
L _{comp bot} (in):	N/A	y sway:	No		
C _b :	1	z sway:	No		
C _{m y-y} :	N/A	a (in):	N/A		
C _{m z-z} :	N/A				

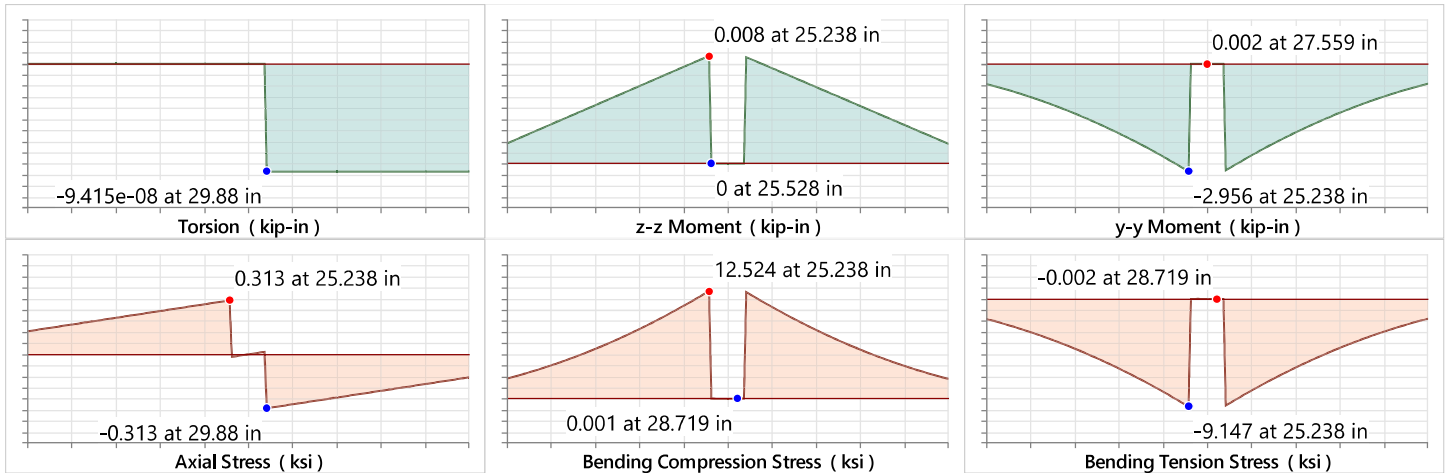
VP 18

V18B

V18C

Diagrams:





AISI S100-12: ASD Code Check

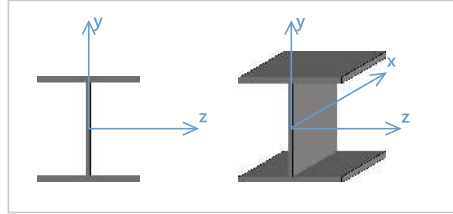
Max Bending Loc:	25.238 in	Cm (y-y):	0.85	Ae (Fy):	0.373 in ²
Equation:	C5.2.1-3	Cm (z-z):	0.6	Ae (Fn):	0.428 in ²
Gov Φ Equation:	C3.1.1	Cb:	1	Iy eff:	0.308 in ⁴
R (D6.1.1)	Not Used	KL/r (y-y):	64.983	Sy eff (L):	0.237 in ³
Max Shear Loc:	25.238 in	KL/r (z-z):		Sy eff (R):	0.325 in ³
Max Defl Ratio:	L/10000	L Comp Flange:	55.118 in	Iz eff:	0.247 in ⁴
Location:	0 in	L Torque:	55.118 in	Sz eff (T):	0.142 in ³
Span:	N/A			Sz eff (B):	0.13 in ³

Limit State	Required	Available	Unity Check	Result
Axial Tension Analysis	-	12.829 k	-	-
Axial Compression Analysis	-	2.992 k	-	-
Flexural Analysis (Strong Axis)	-	3.903 k-in	-	-
Flexural Analysis (Weak Axis)	-	7.094 k-in	-	-
Shear Analysis (Major Axis y)	-	0.945 k	-	-
Shear Analysis (Minor Axis z)	-	3.952 k	0.034	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.464	Pass

Detail Report: DRIVE POST

Unity Check: 0.164 (axial/bending)

Load Combination: LC 18: IBC 16-14 (B) (A)



Input Data:

Shape:	W6X20	I Node:	D1
Member Type:	Column	J Node:	D2
Length (in):	90	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	ALLPIN
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

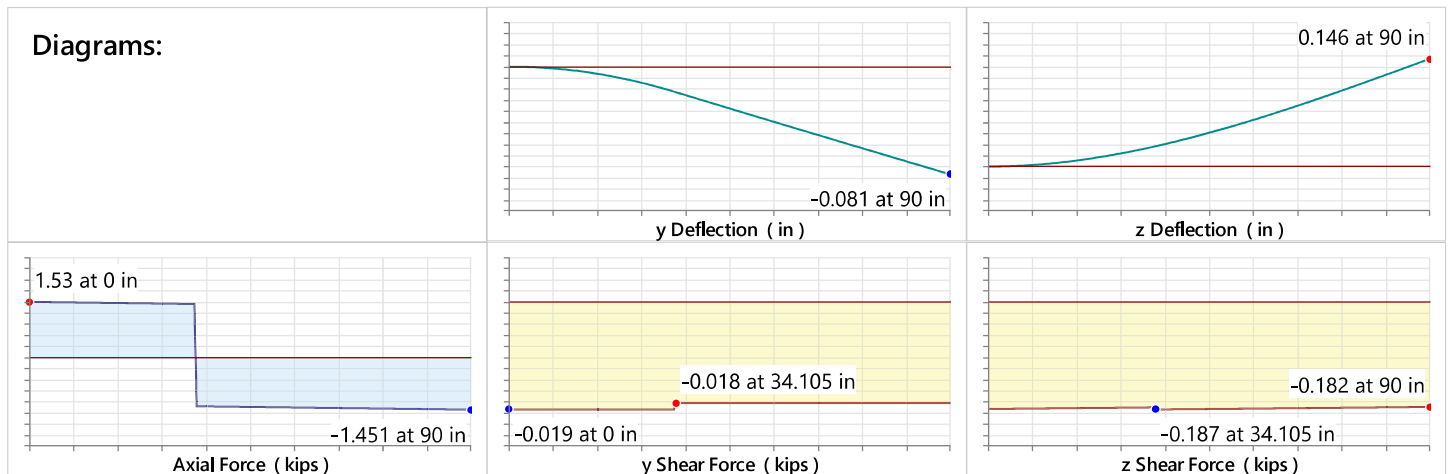
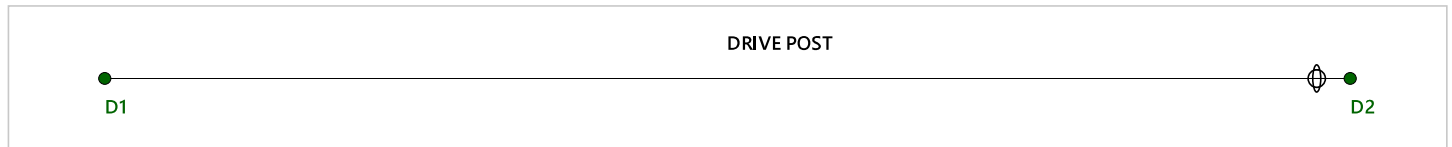
Material:	A992	Therm. Coeff. (1e ⁻⁵ F ⁻¹):	0.65	R _y :	1.1
E (ksi):	29000	Density (k/ft ³):	0.49	F _u (ksi):	65
G (ksi):	11154	F _y (ksi):	50	R _t :	1.1
Nu:	0.3				

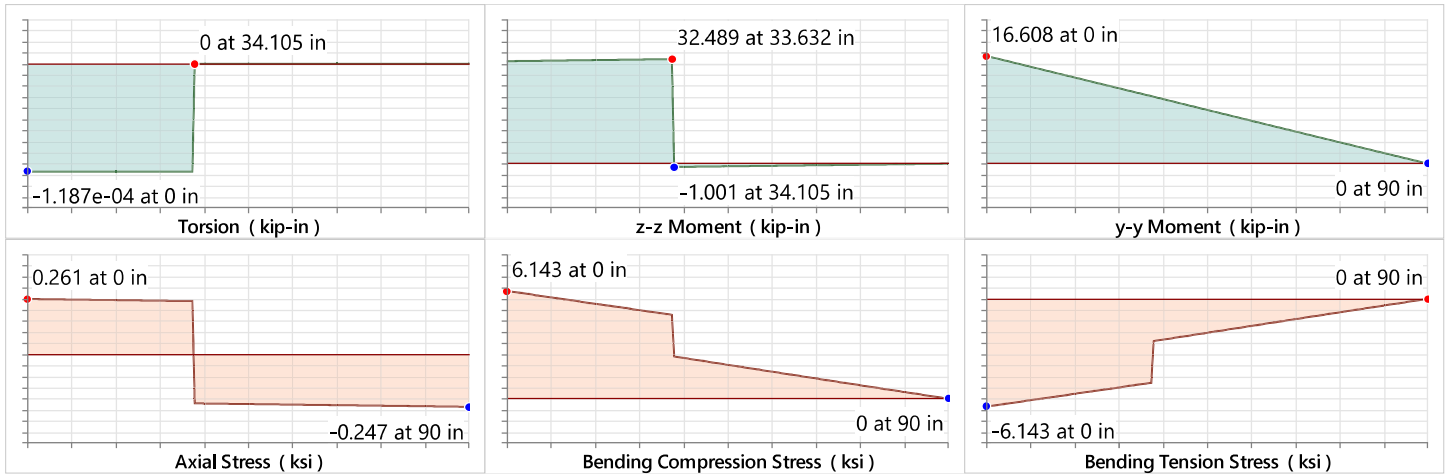
Shape Properties:

d (in):	6.2	Area (in ²):	5.87	S _w (in ⁴):	4.82
b _f (in):	6.02	Z _{yy} (in ³):	6.72	r _T (in):	1.64
t _f (in):	0.365	Z _{zz} (in ³):	14.9	J (in ⁴):	0.24
t _w (in):	0.26	C _w (in ⁶):	113	k _{det} (in):	0.875
I _{yy} (in ⁴):	13.3	W _{no} (in ²):	8.78	k _{des} (in):	0.615
I _{zz} (in ⁴):	41.4				

Design Properties:

L _{b y-y} (in):	N/A	K _{y-y} :	1	Max Defl Ratio:	L/618
L _{b z-z} (in):	N/A	K _{z-z} :	1	Max Defl Location:	0
L _{comp top} (in):	L _{b yy}	y sway:	No	Span:	N/A
L _{comp bot} (in):	N/A	z sway:	No		
L _{torque} (in):	N/A	Function:	Lateral		
C _b :	1	Seismic DR:	None		





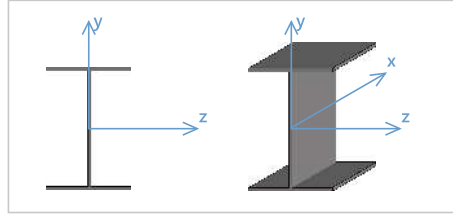
AISC 14th (360-10): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	175.749 k	-	-
Axial Compression Analysis	1.53 k	135.323 k	-	-
Flexural Analysis (Strong Axis)	31.848 k-in	421.115 k-in	-	-
Flexural Analysis (Weak Axis)	16.608 k-in	201.198 k-in	-	-
Shear Analysis (Major Axis y)	0.018 k	32.24 k	0.001	Pass
Shear Analysis (Minor Axis z)	0.187 k	78.945 k	0.002	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.164	Pass

Detail Report: IDLER POST 2

Unity Check: 0.166 (axial/bending)

Load Combination: LC 4: IBC 16-12 (B)



Input Data:

Shape:	W6X7	I Node:	N345
Member Type:	Column	J Node:	N346
Length (in):	96.885	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Custom
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	191	J Offset (in):	N/A

Material Properties:

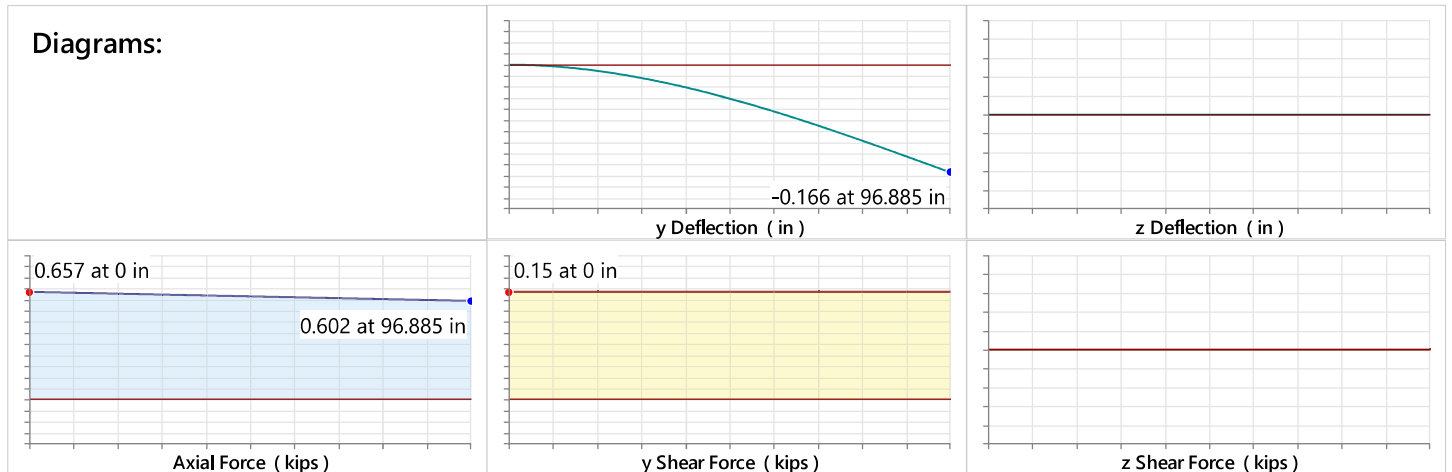
Material:	A992	Therm. Coeff. (1e ⁻⁵ F ⁻¹):	0.65	R _y :	1.1
E (ksi):	29000	Density (k/ft ³):	0.49	F _u (ksi):	65
G (ksi):	11154	F _y (ksi):	50	R _t :	1.1
Nu:	0.3				

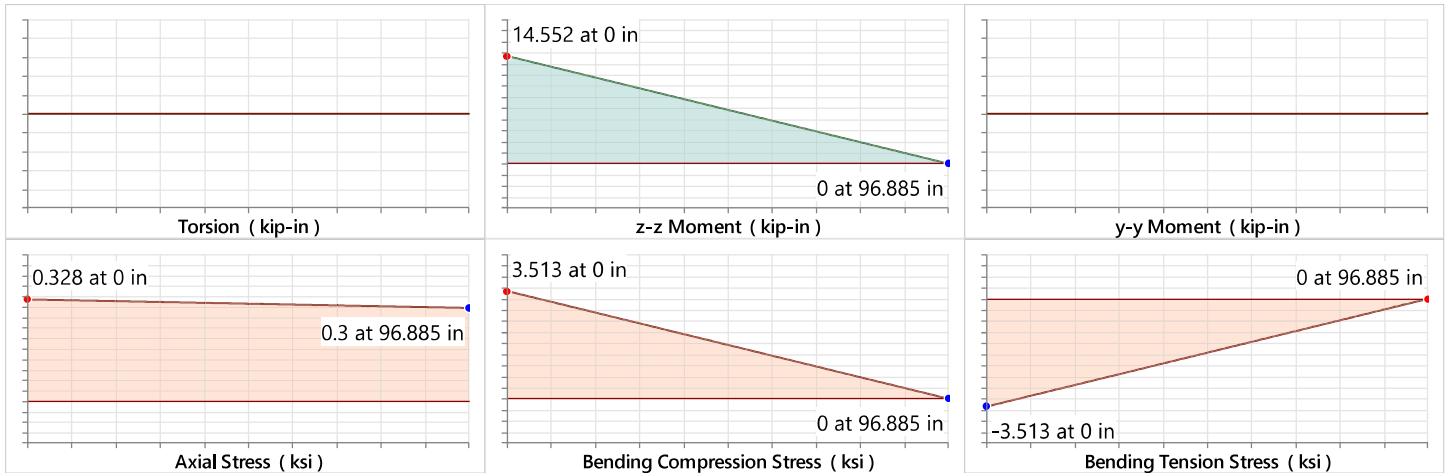
Shape Properties:

d (in):	5.772	Area (in ²):	2.002	S _w (in ⁴):	0.898
b _f (in):	3.94	Z _{yy} (in ³):	1.303	r _T (in):	1.047
t _f (in):	0.165	Z _{zz} (in ³):	4.6	J (in ⁴):	0.016
t _w (in):	0.129	C _w (in ⁶):	13.227	k _{det} (in):	0.69
I _{yy} (in ⁴):	1.683	W _{no} (in ²):	5.523	k _{des} (in):	0.46
I _{zz} (in ⁴):	11.955				

Design Properties:

L _{b y-y} (in):	N/A	K _{y-y} :	1	Max Defl Ratio:	L/583
L _{b z-z} (in):	N/A	K _{z-z} :	1	Max Defl Location:	0
L _{comp top} (in):	L _{b yy}	y sway:	No	Span:	N/A
L _{comp bot} (in):	N/A	z sway:	No		
L _{torque} (in):	N/A	Function:	Lateral		
C _b :	1	Seismic DR:	None		





AISC 14th (360-10): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	0.000 k	59.947 k	-	-
Axial Compression Analysis	0.657 k	26.494 k	-	-
Flexural Analysis (Strong Axis)	14.552 k-in	94.678 k-in	-	-
Flexural Analysis (Weak Axis)	0.000 k-in	35.079 k-in	-	-
Shear Analysis (Major Axis y)	0.15 k	14.892 k	0.01	Pass
Shear Analysis (Minor Axis z)	0.000 k	23.357 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.166	Pass