STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950A
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

January 8, 2021

G. Scott Shepherd
Site Development Specialist II
SBA Communications Corporation
134 Flanders Road, Suite 125
Westborough, MA 01581

RE: **EM-T-MOBILE-082-201110** – T-Mobile notice of intent to modify an existing telecommunications facility located at 393 Jackson Hill Road, Middlefield, Connecticut.

Dear Mr. Shepherd:

The Connecticut Siting Council (Council) is in receipt of your correspondence of January 6, 2021 submitted in response to the Council's November 25, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

s/ Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/emr

From: Glenn Shepherd <GShepherd@sbasite.com>
Sent: Wednesday, January 6, 2021 2:48 PM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: Rick Woods <RWoods@sbasite.com>; Kri Pelletier <KPelletier@sbasite.com>; CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: [External] Council Decision on Extension Request for EM-T-MOBILE-082-201110 - Jackson Hill Road, Middlefield

Good Afternoon Lisa,

Thank you very much for granting the requested extension to remedy this Notice of Exempt Modifications.

Based upon your letter of incomplete dated, November 25, 2020, attached for your reference, it is my understanding that an electronic copy of a Mount Analysis and 5G statement is required in order to complete the notice of exempt modifications submitted 11/10/20.

As requested, please see the attached Mount Analysis for the above referenced site located at 393 Jackson Hill Rd., Middlefield, CT.

Also attached, is a revised letter describing the wireless services frequencies, including any frequency associated with 5G services.

Please let me know if there's anything else you may require to complete your review and approval and again, thank you for your cooperation.

G. Scott Shepherd
Site Development Specialist II

508.251.0720 Ext.3807 + **T**
508.366.2610 + F + **F**
508.868.6000 + C + **C**

Filed by:
G. Scott Shepherd, Site Development Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbasite.com

November 10, 2020

Melanie A. Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
393 Jackson Hill Road, Middlefield, CT 06455
Latitude: 41.517360
Longitude: -72.714167
T-Mobile Site #: CTHA512A_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 88-foot level of the existing 146-foot Monopole Tower at 339 Jackson Hill Rd., Middlefield, CT. The 146-foot tower is owned by SBA 2012 TC Assets, LLC. The property is owned by the Town of Middlefield. T-Mobile now intends to install three (3) new 1900/2100 MHz antennas and replace three (3) 600/700MHz antennas with three (3) new 600/700/2100 MHz antennas.

The new antennas would support 5G services and would be installed at the 88-foot level of the tower.

Please note: Per the Connecticut Siting Council Website: CSC COVID 19 Guidelines. *In order to prevent the spread of Coronavirus and protect the health and safety of our members and staff, as of March 18, 2020, the Connecticut Siting Council shall convert to full remote operations until March 30, 2020. Please be advised that during this time period, all hard copy filing requirements will be waived in lieu of an electronic filing. Please also be advised that the March 26, 2020 regular meeting shall be held via teleconference. The Council's website is not equipped with an on-line filing fee receipt service. Therefore, filing fees and/or direct cost charges associated with matters received electronically during the above-mentioned time period will be directly invoiced at a later date.*

Planned Modifications:

TOWER

Remove:

- Flush Mount

Remove and Replace:

- (3) RFS APXV18-206517S-C (remove) – (3) RFS APXVAARR24_43-U-NA20 (replace)

Install New:

- (3) Ericsson AIR 32 KRD901146-1_B66A_B2A - antenna
- (3) 1-5/8" Fiber
- (3) Ericsson KRY 112 144/1 – TMAs
- (3) Ericsson Radio 4449 B71+B12 –RRUs
- Platform w/Handrail (Site Pro RMQP-4096-HK)

Existing Equipment to Remain:

- (6) 1-5/8" coax

Entitlements:

- N/A

GROUND

Remove and Replace:

- (1) RBS 6201 Equipment Cabinet (remove) – (1) RBS6102 Equipment cabinet (replace)
- (1) 6201 battery cabinet (remove) – (1) 6102 battery cabinet (replace)

Install New:

- Equipment inside proposed 6102 equipment cabinet

This facility was approved by the Town of Middlefield's Planning and Zoning Commission on February 17, 1999. Special Permit approval was given with the condition that the applicant meet with town agencies, including 911 services, to determine their communications needs as related to the tower and that the applicant would further use best efforts to reserve a location which would meet such needs. No post construction stipulations were set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Middlefield's First Selectman, Edward P. Bailey, and Zoning Enforcement Officer, Jerry Russ. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Site Development Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
508.868.6000 + C
GShepherd@sbasite.com

Attachments
cc: Edward P. Bailey, First Selectman / with attachments
Town of Middlefield, 393 Jackson Hill Road, Middlefield, CT 06455
Jerry Russ, Zoning Enforcement Officer / with attachments
Town of Middlefield, 393 Jackson Hill Road, Middlefield, CT 06455

Exhibit List

Exhibit 1	Check Copy	To be invoiced at a later date per Covid guidelines
Exhibit 2	Notification Receipts	X
Exhibit 3	Property Card	X
Exhibit 4	Property Map	X
Exhibit 5	Original Zoning Approval	Town of Middlefield P&Z Commission 2/17/99
Exhibit 6	Construction Drawings	Chappell Engineering 9/17/19
Exhibit 7	Structural Analysis	TES 7/22/19
Exhibit 8	EME Report	Transcom Egineering 6/4/19

Mount Structural Analysis

SBA Site:	**CT46135-A**
T-Mobile Site Number:	**CTHA512A**
Project:	L600
Prepared For:	T-Mobile
Mount Description:	Platform w/ Handrail and Kickers Sitepro1 RMQP-4096-HK
Site Location:	421 Jackson Hill Road Middlefield, CT 06234 Middlesex County 41.517360°, -72.714167°
Design Codes:	ANSI/TIA-222-G 2018 Connecticut Building Code 2015 IBC w/ State Amendments
Analysis Load Case:	T-Mobile Final Configuration
Analysis Result:	**Adequate @ 66% Capacity**

Revision 0
January 5, 2021

GeoStructural ▪ P.O. Box 2621, Boise, ID 83701 ▪ Office: (530) 539-4787
Professional Engineers | Tower Technicians | Climbers | sUAS Mapping

1.0 Introduction

GeoStructural LLC has completed a structural analysis for proposed T-Mobile mount assembly located at the *CTHA512A communications site* in Middlesex County, CT considering the final appurtenance loading configurations listed in Section 3.0.

2.0 Analysis Procedure & Design Criteria

An elastic three-dimensional model of the structure has been analyzed pursuant to the following criteria:

- 2018 Connecticut Building Code.
- 2015 IBC – International Building Code.
- ANSI/TIA-222-G – Structural Standard for Antenna Supporting Structures and Antennas.
- ASCE 7-10 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- AISC – Steel Construction Manual.
- ANSI/AWS D1.1 – Structural Welding Code.

Wind = 125 mph (3-sec gust Ultimate ASCE 7-10 Figure 26.5-1 & IBC 2015) Wind w/o ice = 97 mph (3-sec gust Equivalent per TIA-222-G Tower Code) Wind w/ ice = 50 mph (3-sec gust Basic) with 0.75" Design Ice (Escalated with Height) [1]
Topographic Category 1; Exposure Category C Structure Class (Risk Category) II; Ground Elevation = 241 ft (NAVD 88) Gust Effect Factor = 1.0; Directionality Factor = 0.95
Seismic Design Parameters: Site Class D "Stiff Soil"; S_s = 0.181, S_1 = 0.063, S_{DS} = 0.193
Maintenance Loads[2]: L_m = 500 lb @ Worst Case Mount Pipe (Concurrent with 30 mph Wind Speed) L_v = 250 lb @ Worst Case Member Location (Center Span or Cantilever)
1. Ice loading has been ignored with Design Ice Thickness ≤ 0.25". *2. The face horizontal boom rails of T-Arm mount assemblies are not rated for rigging, hoisting or maintenance loading unless noted otherwise.*

GeoStructural has <u>not</u> conducted a site visit or independent study to verify existing structural conditions and the results of this analysis are based solely on the information provided. The following documents were obtained and/or provided:

- T-Mobile Site #: CTHA512A, Construction Drawings, Chappell, Rev-1, 09/17/19
- T-Mobile Site #: CTHA512A, RFDS, L600, 5G POPs, 09/17/20

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not accurately represented, please contact our office immediately to request an amended report.

3.0 Appurtenance Information

Table 3.1 - Proposed Final T-Mobile Appurtenance Configuration[1]

COR	(Quantity) Appurtenance Make/Model	Mount Description
88'±	(3) ERICSSON AIR32 B66A B2A	*Proposed Platform w/ Handrail and Kickers • Sitepro1 RMQP-4096-HK*
	(3) RFS APXVAALL24_43-U-NA20	
	(3) ERICSSON 4449 B71 B85 RRH	
	(3) TWIN STYLE 1B AWS TMA	

1. *Refer to antenna installation Construction Drawings (when applicable) for additional information regarding final antenna and equipment orientations.*

4.0 Structural Analysis Results

Table 4.1 – Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final T-Mobile Configuration	Standoff	24%	Adequate
	Bottom Rail	13%	
	Bracing	31%	
	Pipe2.5STD Mount Pipe	26%	
	PRK Double Angles	13%	
	Handrail	66%	
	Connection Plates	42%	
	Collar	2.56 k-ft	Adequate by Inspection[3]

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.2. 105% is an acceptable allowable stress percentage for mount components. Refer to Section 7.0 for additional member usage capacities.*
3. *By inspection the tri-collar mount assemblies of the platform and PRK kickers are adequate to support the proposed final configuration as they're designed to resist the forces required to fully develop the primary mount structural members.*

Table 4.2 – Structural Component Material Strengths

Structural Component	Nominal Strength/Material[1]
Pipe	F_y = 35 ksi (A53, Gr. B)
Tube	F_y = 46 ksi (A500, Gr. B)
Structural Shapes (L, C, W, etc.), Plate & Bar	F_y = 36 ksi (A36) & Q235
Uni-Strut (P1000, etc.)	F_y = 33 ksi (A570, Gr. 33)
Connection Bolts	A325
U-Bolts / Threaded Rod	SAE J429 Grade 2 (Substitution: ASTM A449) F_y = 57 ksi (Yield) & F_u = 74 ksi (Tension)
	SAE J429 Grade 5 (¼" to 1" Nominal ϕ) F_y = 92 ksi (Yield) & F_u = 120 ksi (Tension)
Welds	E70XX Electrodes

1. *Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.*

5.0 Conclusion & Recommendations

Based on T-Mobile's final equipment loading configuration, the proposed mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

Antennas and equipment shall be installed centered vertically on the mount front rails (limit vertical installation eccentricity) with a maximum vertical eccentricity of 12" for panels and 6" for RRHs. If this assumption is incorrect, the results of this analysis will be inaccurate and may result in a failing mount condition. This analysis accounts for the vertical eccentricities required to install all panel antennas at the same relative top tip elevation (if desired).

- Install Proposed Replacement Platform Assembly; attach to monopole shaft per manufacturer's specifications and approved Construction Drawings.
    - Sitepro1 RMQP-4096-HK, (1) total.
        - Sitepro1 RMQP + PRK1245 + HRK12.
        - 12'-6" Low Pro-Platform with Twelve 2-7/8" Antenna Mounting Pipes and Handrail.
- Install in accordance with T-Mobile network standards.

This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

Prepared by:

Jesse Drennen, PE, MLE
208.761.7986
jesse.drennen@geostructural.com

Reviewed and Approved by:

Don George, PE, SE, MLSE
208.602.6569
don.george@geostructural.com

6.0 Standard Conditions

- All data required to complete our structural analysis was furnished by our client. GeoStructural has not conducted a site visit or independent study to verify existing conditions and the results of this analysis are based solely on the information provided. It has been assumed that the tower, antenna support structure and foundation have been constructed according to the provided existing drawings, previous structural analysis reports, mapping documents, etc.

- The default Structure Classification is Class II in accordance with ANSI/TIA-222-G §A.2.2 & §A.15.3 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.

- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222-G §15.5 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.

- This analysis verifies the adequacy of the main components of the structure. Not all connections, welds, bolts, plates, etc. were individually detailed and analyzed. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.

- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.

- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.

- This analysis report does not constitute a maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied. If desired, GeoStructural can provide these services under a subsequent contract.

- This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If desired, GeoStructural can provide these services under a subsequent contract.

7.0 Attachments, Calculations & Software Output

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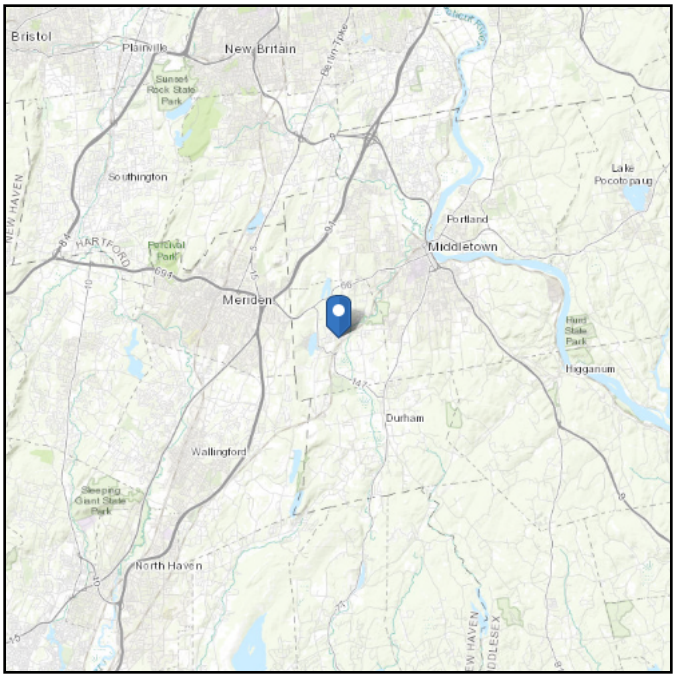
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 241.32 ft (NAVD 88)
Latitude: 41.51736
Longitude: -72.714167



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jan 05 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

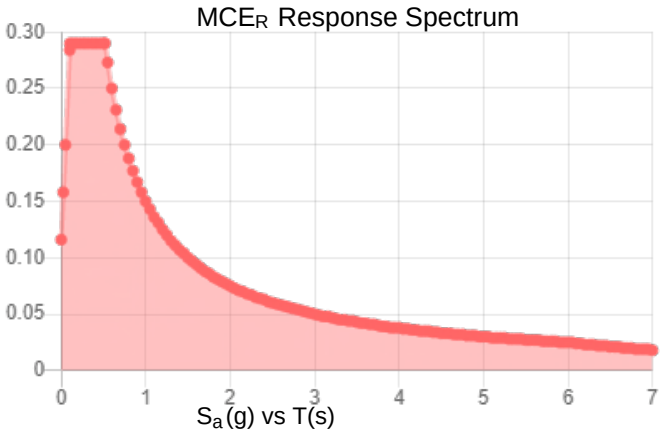
Seismic

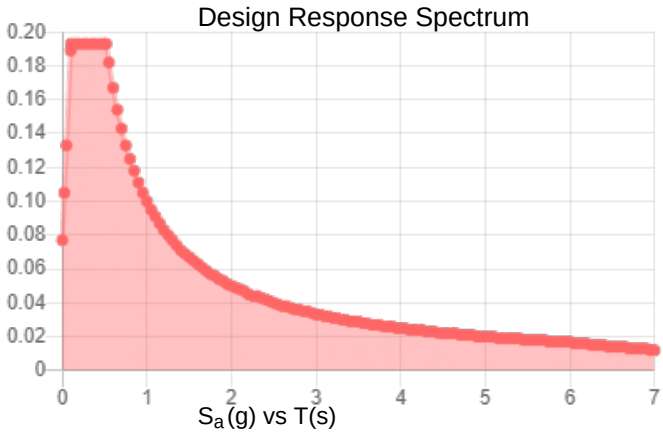
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.063	S_{D1} :	0.1
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.093
S_{MS} :	0.29	PGA_M :	0.148
S_{M1} :	0.15	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Jan 05 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Jan 05 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Distributed
1	D	DL	-1	18	9
2	Di	SL		18	60
3	Lm [500]	LL		1	
4	Lv [250]	LL		2	
5	Woz	WL		18	60
6	Wox	WL		18	60
7	Wiz	WL		18	60
8	Wix	WL		18	60
9	Ez	EL		18	
10	Ex	EL		18	

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1) 1.4D		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2) 1.2D+1.0Wo [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2) 1.2D+1.0Wo [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2) 1.2D+1.0Wo [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2) 1.2D+1.0Wo [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2) 1.2D+1.0Wo [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2) 1.2D+1.0Wo [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2) 1.2D+1.0Wo [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2) 1.2D+1.0Wo [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2) 1.2D+1.0Wo [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2) 1.2D+1.0Wo [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	2) 1.2D+1.0Wo [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	2) 1.2D+1.0Wo [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	3) 0.9D+1.0Wo [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	3) 0.9D+1.0Wo [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	3) 0.9D+1.0Wo [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	3) 0.9D+1.0Wo [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	3) 0.9D+1.0Wo [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	3) 0.9D+1.0Wo [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	3) 0.9D+1.0Wo [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	3) 0.9D+1.0Wo [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	3) 0.9D+1.0Wo [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	3) 0.9D+1.0Wo [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	3) 0.9D+1.0Wo [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	3) 0.9D+1.0Wo [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	4) 1.2D+1.0Di+1.0Wi [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	4) 1.2D+1.0Di+1.0Wi [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	4) 1.2D+1.0Di+1.0Wi [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	4) 1.2D+1.0Di+1.0Wi [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	4) 1.2D+1.0Di+1.0Wi [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	4) 1.2D+1.0Di+1.0Wi [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	4) 1.2D+1.0Di+1.0Wi [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	4) 1.2D+1.0Di+1.0Wi [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	4) 1.2D+1.0Di+1.0Wi [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	4) 1.2D+1.0Di+1.0Wi [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	4) 1.2D+1.0Di+1.0Wi [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	4) 1.2D+1.0Di+1.0Wi [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	5) 1.2D+1.5Lm+1.0WL [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	5) 1.2D+1.5Lm+1.0WL [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	5) 1.2D+1.5Lm+1.0WL [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	5) 1.2D+1.5Lm+1.0WL [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	5) 1.2D+1.5Lm+1.0WL [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	5) 1.2D+1.5Lm+1.0WL [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	5) 1.2D+1.5Lm+1.0WL [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	5) 1.2D+1.5Lm+1.0WL [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
46	5) 1.2D+1.5Lm+1.0WL [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	5) 1.2D+1.5Lm+1.0WL [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	5) 1.2D+1.5Lm+1.0WL [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	5) 1.2D+1.5Lm+1.0WL [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	6) 1.2D+1.5Lv		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	7) (1.2+0.2Sds)D+E [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	7) (1.2+0.2Sds)D+E [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	7) (1.2+0.2Sds)D+E [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	7) (1.2+0.2Sds)D+E [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	7) (1.2+0.2Sds)D+E [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	7) (1.2+0.2Sds)D+E [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	7) (1.2+0.2Sds)D+E [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	7) (1.2+0.2Sds)D+E [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	7) (1.2+0.2Sds)D+E [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	7) (1.2+0.2Sds)D+E [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	7) (1.2+0.2Sds)D+E [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	7) (1.2+0.2Sds)D+E [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	8) (0.9-0.2Sds)D+E [0deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	8) (0.9-0.2Sds)D+E [30deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	8) (0.9-0.2Sds)D+E [60deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	8) (0.9-0.2Sds)D+E [90deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	8) (0.9-0.2Sds)D+E [120deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	8) (0.9-0.2Sds)D+E [150deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	8) (0.9-0.2Sds)D+E [180deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	8) (0.9-0.2Sds)D+E [210deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	8) (0.9-0.2Sds)D+E [240deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	8) (0.9-0.2Sds)D+E [270deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	8) (0.9-0.2Sds)D+E [300deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	8) (0.9-0.2Sds)D+E [330deg]		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
75	Dead Only		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A500 Gr.B RND_1	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
8	A500 Gr.B Rect_1	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
11	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
12	Q235	29000	11154	0.3	0.65	0.49	34	1.5	58	1.2

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 Gr.33	29500	11346	0.3	0.65	0.49	33	45
2	A570 Gr.33	29500	11346	0.3	0.65	0.49	33	52
3	A607 C1 Gr.55	29500	11346	0.3	0.65	0.49	55	70
4	A570_33	29500	11346	0.3	0.65	0.49	33	52
5	A607_C1_55	29500	11346	0.3	0.65	0.49	55	70

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	PIPE_1.5	PIPE_1.5	Beam	None	A53 Gr.B	Typical	0.749	0.293	0.293	0.586
2	PIPE_2.0	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	PIPE_2.5	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	PIPE_3.0	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
5	PIPE_3.5	PIPE_3.5	Beam	None	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
6	PIPE_4.0	PIPE_4.0	Beam	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
7	PIPE_2.0X	PIPE_2.0X	Beam	None	A53 Gr.B	Typical	1.4	0.827	0.827	1.65
8	HSS2x2x3	HSS2X2X3	Beam	None	A500 Gr.B Rect	Typical	1.19	0.641	0.641	1.09
9	HSS3x3x3	HSS3X3X3	Beam	None	A500 Gr.B Rect	Typical	1.89	2.46	2.46	4.03
10	HSS4x4x3	HSS4X4X3	Beam	None	A500 Gr.B Rect	Typical	2.58	6.21	6.21	10
11	HSS4x4x4	HSS4X4X4	Beam	None	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
12	HSS5x5x4	HSS5X5X4	Beam	None	A500 Gr.B Rect	Typical	4.3	16	16	25.8
13	C3x3.5	C3X3.5	Beam	None	A36 Gr.36	Typical	1.09	0.169	1.57	0.023
14	C4x4.5	C4X4.5_HRA	Beam	None	A36 Gr.36	Typical	1.38	0.289	3.65	0.032
15	C5x6.7	C5X6.7	Beam	None	A36 Gr.36	Typical	1.97	0.47	7.48	0.055
16	L2.5x2.5x3	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	0.901	0.535	0.535	0.011
17	L2.5x2.5x4	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
18	L3x3x3	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	0.948	0.948	0.014
19	L3x3x4	L3X3X4	Beam	None	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
20	L3x3x6	L3X3X6	Beam	None	A36 Gr.36	Typical	2.11	1.75	1.75	0.101
21	L3.5x3.5x4	L3.5X3.5X4	Beam	None	A36 Gr.36	Typical	1.7	2	2	0.039
22	L4x4x4	L4X4X4	Beam	None	A36 Gr.36	Typical	1.93	3	3	0.044
23	LL2.5x2.5x3x3	LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical	1.8	2.46	1.07	0.023

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	P1000UNI	P1000UNI	Beam	None	A653 Gr.33	Typical	0.555	0.185	0.236	0.002
2	CF1	8CU1.25X057	Beam	None	A570 Gr.33	Typical	0.581	0.057	4.41	0.00063
3	CF1A	1.5CU1.25X035	Beam	None	A570_33	Typical_APP	0.131	0.022	0.052	5.4e-05

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N3	N1		3/8"X6"_HRA	Beam	RECT	Q235	Typical
2	M2	N1	N14		3/8"X6"_HRA	Beam	RECT	Q235	Typical
3	M3	N4	N2		3/8"X6"_HRA	Beam	RECT	Q235	Typical
4	M4	N2	N11		3/8"X6"_HRA	Beam	RECT	Q235	Typical
5	M5	N4	N3		HSS4X4X4	Beam	None	Q235	Typical_APP
6	M6	N16	N15		LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
7	M7	N17	N18		PIPE_2.0	Beam	None	A53 Gr.B	Typical
8	M8	N27	N25	90	1/2 X 6	Beam	RECT	Q235	Typical
9	M9	N27	N26	90	1/2 X 6	Beam	RECT	Q235	Typical
10	M10	N23	N21		3/8"X6"_HRA	Beam	RECT	Q235	Typical
11	M11	N21	N34		3/8"X6"_HRA	Beam	RECT	Q235	Typical
12	M12	N24	N22		3/8"X6"_HRA	Beam	RECT	Q235	Typical
13	M13	N22	N31		3/8"X6"_HRA	Beam	RECT	Q235	Typical
14	M14	N27	N29		L2X2X4	Beam	None	Q235	Typical_APP
15	M15	N27	N28	270	L2X2X4	Beam	None	Q235	Typical_APP
16	M16	N25	N33	90	1/2 X 6	Beam	RECT	Q235	Typical
17	M17	N26	N32	90	1/2 X 6	Beam	RECT	Q235	Typical
18	M18	N24	N23		HSS4X4X4	Beam	None	Q235	Typical_APP
19	M19	N39	N37		3/8"X6"_HRA	Beam	RECT	Q235	Typical
20	M20	N37	N49		3/8"X6"_HRA	Beam	RECT	Q235	Typical
21	M21	N40	N38		3/8"X6"_HRA	Beam	RECT	Q235	Typical
22	M22	N38	N46		3/8"X6"_HRA	Beam	RECT	Q235	Typical
23	M23	N40	N39		HSS4X4X4	Beam	None	Q235	Typical_APP
24	M24	N50	N51	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
25	M25	N52	N53		PIPE_2.0	Beam	None	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
26	M26	N54	N55		PIPE_2.0	Beam	None	A53 Gr.B	Typical
27	M27	N56	N57		PIPE_3.0	Beam	None	A53 Gr.B	Typical
28	M28	N58	N59		PIPE_3.0	Beam	None	A53 Gr.B	Typical
29	M29	N60	N61		PIPE_3.0	Beam	None	A53 Gr.B	Typical
30	M30	N62	N63		RIGID	None	None	RIGID	Typical
31	M31	N65	N64		PIPE_2.5	Beam	None	A53 Gr.B	Typical
32	M32	N66	N67		RIGID	None	None	RIGID	Typical
33	M33	N69	N41	90	1/2 X 6	Beam	RECT	Q235	Typical
34	M34	N69	N42	90	1/2 X 6	Beam	RECT	Q235	Typical
35	M35	N41	N48	90	1/2 X 6	Beam	RECT	Q235	Typical
36	M36	N42	N47	90	1/2 X 6	Beam	RECT	Q235	Typical
37	M37	N7	N5	90	1/2 X 6	Beam	RECT	Q235	Typical
38	M38	N7	N6	90	1/2 X 6	Beam	RECT	Q235	Typical
39	M39	N5	N13	90	1/2 X 6	Beam	RECT	Q235	Typical
40	M40	N6	N12	90	1/2 X 6	Beam	RECT	Q235	Typical
41	M41	N69	N44		L2X2X4	Beam	None	Q235	Typical_APP
42	M42	N69	N43	270	L2X2X4	Beam	None	Q235	Typical_APP
43	M43	N7	N8		L2X2X4	Beam	None	Q235	Typical_APP
44	M44	N7	N108		HSS4X4X4	Beam	None	Q235	Typical_APP
45	M45	N19	N20	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
46	M46	N35	N36	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
47	M47	N70	N71		RIGID	None	None	RIGID	Typical
48	M48	N73	N72		RIGID	None	None	RIGID	Typical
49	M49	N75	N76		RIGID	None	None	RIGID	Typical
50	M50	N78	N77		PIPE_2.5	Beam	None	A53 Gr.B	Typical
51	M51	N79	N80		RIGID	None	None	RIGID	Typical
52	M52	N81	N82		RIGID	None	None	RIGID	Typical
53	M53	N84	N83		RIGID	None	None	RIGID	Typical
54	M54	N85	N86		RIGID	None	None	RIGID	Typical
55	M55	N88	N87		PIPE_2.5	Beam	None	A53 Gr.B	Typical
56	M56	N89	N90		RIGID	None	None	RIGID	Typical
57	M57	N91	N92		RIGID	None	None	RIGID	Typical
58	M58	N94	N93		RIGID	None	None	RIGID	Typical
59	M59	N95	N96		RIGID	None	None	RIGID	Typical
60	M60	N98	N97		PIPE_2.5	Beam	None	A53 Gr.B	Typical
61	M61	N99	N100		RIGID	None	None	RIGID	Typical
62	M62	N102	N103		RIGID	None	None	RIGID	Typical
63	M63	N105	N104		RIGID	None	None	RIGID	Typical
64	M64	N7	N107	270	L2X2X4	Beam	None	Q235	Typical_APP
65	M65	N110	N109		LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
66	M66	N27	N111		HSS4X4X4	Beam	None	Q235	Typical_APP
67	M67	N113	N112		LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
68	M68	N69	N114		HSS4X4X4	Beam	None	Q235	Typical_APP
69	M69	N115	N116		RIGID	None	None	RIGID	Typical
70	M70	N118	N117		PIPE_2.5	Beam	None	A53 Gr.B	Typical
71	M71	N119	N120		RIGID	None	None	RIGID	Typical
72	M72	N122	N123		RIGID	None	None	RIGID	Typical
73	M73	N125	N124		RIGID	None	None	RIGID	Typical
74	M74	N127	N128		RIGID	None	None	RIGID	Typical
75	M75	N130	N129		PIPE_2.5	Beam	None	A53 Gr.B	Typical
76	M76	N131	N132		RIGID	None	None	RIGID	Typical
77	M77	N133	N134		RIGID	None	None	RIGID	Typical
78	M78	N136	N135		RIGID	None	None	RIGID	Typical
79	M79	N137	N138		RIGID	None	None	RIGID	Typical
80	M80	N140	N139		PIPE_2.5	Beam	None	A53 Gr.B	Typical
81	M81	N141	N142		RIGID	None	None	RIGID	Typical
82	M82	N143	N144		RIGID	None	None	RIGID	Typical
83	M83	N146	N145		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
84	M84	N147	N148		RIGID	None	None	RIGID	Typical
85	M85	N150	N149		PIPE_2.5	Beam	None	A53 Gr.B	Typical
86	M86	N151	N152		RIGID	None	None	RIGID	Typical
87	M87	N153	N154		RIGID	None	None	RIGID	Typical
88	M88	N156	N155		RIGID	None	None	RIGID	Typical
89	M89	N157	N158		RIGID	None	None	RIGID	Typical
90	M90	N160	N159		PIPE_2.5	Beam	None	A53 Gr.B	Typical
91	M91	N161	N162		RIGID	None	None	RIGID	Typical
92	M92	N164	N165		RIGID	None	None	RIGID	Typical
93	M93	N167	N166		RIGID	None	None	RIGID	Typical
94	M94	N169	N170		RIGID	None	None	RIGID	Typical
95	M95	N172	N171		PIPE_2.5	Beam	None	A53 Gr.B	Typical
96	M96	N173	N174		RIGID	None	None	RIGID	Typical
97	M97	N175	N176		RIGID	None	None	RIGID	Typical
98	M98	N178	N177		RIGID	None	None	RIGID	Typical
99	M99	N179	N180		RIGID	None	None	RIGID	Typical
100	M100	N182	N181		PIPE_2.5	Beam	None	A53 Gr.B	Typical
101	M101	N183	N184		RIGID	None	None	RIGID	Typical
102	M102	N185	N186		RIGID	None	None	RIGID	Typical
103	M103	N188	N187		RIGID	None	None	RIGID	Typical
104	M104	N189	N190		RIGID	None	None	RIGID	Typical
105	M105	N192	N191		PIPE_2.5	Beam	None	A53 Gr.B	Typical
106	M106	N193	N194		RIGID	None	None	RIGID	Typical
107	M107	N195	N196		RIGID	None	None	RIGID	Typical
108	M108	N198	N197		RIGID	None	None	RIGID	Typical

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N15	max	0.045	17	2.803	26	0.064	20	0	74	0	4	0	22
2		min	-0.045	23	-0.054	20	-4.57	26	0	1	0	22	0	4
3	N108	max	1.253	5	0.276	8	6.149	2	0.331	32	2.559	11	0.592	23
4		min	-1.243	23	-0.138	14	-3.041	20	-0.029	14	-2.573	17	-0.63	5
5	N109	max	0.177	24	2.819	30	2.297	30	0	16	0	10	0	10
6		min	-3.977	30	-0.149	24	-0.102	24	0	10	0	16	0	16
7	N111	max	5.634	6	0.303	12	2.289	25	0.446	15	1.956	13	0.229	20
8		min	-2.952	24	-0.166	18	-3.862	7	-0.608	9	-1.947	19	-0.453	2
9	N112	max	3.973	34	2.816	34	2.295	34	0	12	0	12	0	12
10		min	-0.15	16	-0.131	16	-0.087	16	0	18	0	18	0	18
11	N114	max	3.271	16	0.283	4	1.819	16	0.485	24	0.517	9	0.456	13
12		min	-5.965	10	-0.164	50	-3.384	10	-0.6	6	-0.528	15	-0.22	43
13	Totals:	max	6.753	17	8.236	31	6.229	2						
14		min	-6.753	11	2.566	74	-6.229	20						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M45	L2.5x2.5x3	0.662	1.07	11	0.107	1.07	y	5	27.686	29.192	0.873	1.972	1.136	H2-1
2	M46	L2.5x2.5x3	0.637	1.07	3	0.108	0	z	8	27.686	29.192	0.873	1.972	1.136	H2-1
3	M24	L2.5x2.5x3	0.602	1.07	7	0.115	0	z	12	27.686	29.192	0.873	1.972	1.136	H2-1
4	M25	PIPE_2.0	0.526	1.302	5	0.347	3.906		6	6.295	32.13	1.872	1.872	3	H3-6
5	M26	PIPE_2.0	0.496	1.172	11	0.307	3.906		11	6.295	32.13	1.872	1.872	3	H3-6
6	M7	PIPE_2.0	0.455	1.302	2	0.321	3.906		2	6.295	32.13	1.872	1.872	3	H3-6
7	M19	3/8"X6"_HRA	0.316	0	5	0.417	0	y	6	67.691	68.85	0.538	8.606	1.21	H1-1b
8	M42	L2X2X4	0.306	4.359	11	0.011	0	z	42	11.646	28.886	0.653	1.474	1.5	H2-1
9	M12	3/8"X6"_HRA	0.298	0	11	0.359	0	y	9	67.691	68.85	0.538	8.606	1.195	H1-1b
10	M15	L2X2X4	0.294	4.359	7	0.01	4.359	y	8	11.646	28.886	0.653	1.474	1.5	H2-1
11	M105	PIPE_2.5	0.259	2.667	12	0.051	2.667		12	30.04	50.715	3.596	3.596	1.803	H1-1b
12	M41	L2X2X4	0.257	0	10	0.012	0	y	36	11.646	28.886	0.653	1.474	1.5	H2-1

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

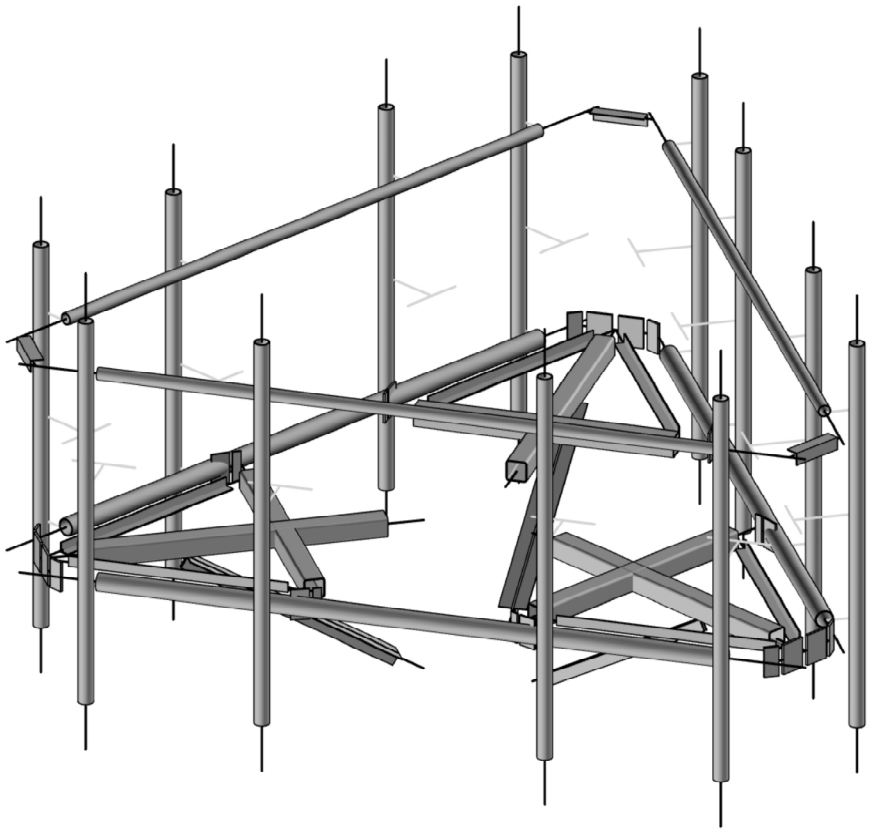
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
13	M80	PIPE_2.5	0.256	2.667	4	0.061	2.667		8	30.04	50.715	3.596	3.596	2.24	H1-1b
14	M64	L2X2X4	0.247	4.359	3	0.009	0	z	27	11.646	28.886	0.653	1.474	1.5	H2-1
15	M14	L2X2X4	0.245	0	6	0.012	0	y	33	11.646	28.886	0.653	1.474	1.5	H2-1
16	M1	3/8"X6"_HRA	0.24	0	8	0.403	0	y	10	67.691	68.85	0.538	8.606	1.183	H1-1b
17	M43	L2X2X4	0.237	0	13	0.012	0	y	29	11.646	28.886	0.653	1.474	1.5	H2-1
18	M44	HSS4X4X4	0.237	5.998	11	0.107	5.998	z	5	92.262	103.122	11.96	11.96	2.09	H1-1b
19	M100	PIPE_2.5	0.231	2.667	6	0.086	2.667		12	30.04	50.715	3.596	3.596	2.058	H1-1b
20	M60	PIPE_2.5	0.231	2.583	8	0.044	2.667		4	30.04	50.715	3.596	3.596	1.551	H1-1b
21	M85	PIPE_2.5	0.231	2.583	11	0.045	2.667		9	30.04	50.715	3.596	3.596	1.528	H1-1b
22	M21	3/8"X6"_HRA	0.223	0	13	0.367	0	y	13	67.691	68.85	0.538	8.606	1.169	H1-1b
23	M55	PIPE_2.5	0.222	2.667	13	0.08	2.667		4	30.04	50.715	3.596	3.596	2.142	H1-1b
24	M33	1/2 X 6	0.215	0	11	0.256	0	y	6	84.3	91.8	11.475	0.956	1.279	H1-1b
25	M90	PIPE_2.5	0.212	2.667	13	0.074	2.667		6	30.04	50.715	3.596	3.596	2.116	H1-1b
26	M70	PIPE_2.5	0.21	2.667	10	0.058	2.667		12	30.04	50.715	3.596	3.596	2.212	H1-1b
27	M66	HSS4X4X4	0.203	5.998	13	0.096	5.998	z	9	92.262	103.122	11.96	11.96	2.049	H1-1b
28	M68	HSS4X4X4	0.202	1.874	34	0.091	1.812	y	43	92.262	103.122	11.96	11.96	1.986	H1-1b
29	M9	1/2 X 6	0.199	0	5	0.265	0	y	9	84.3	91.8	11.475	0.956	1.284	H1-1b
30	M31	PIPE_2.5	0.192	2.667	5	0.074	2.667		9	30.04	50.715	3.596	3.596	2.136	H1-1b
31	M37	1/2 X 6	0.188	0	2	0.261	0.5	y	10	84.3	91.8	11.475	0.956	1.305	H1-1b
32	M20	3/8"X6"_HRA	0.181	0	5	0.416	0	y	12	63.5	68.85	0.538	8.606	1.673	H1-1b
33	M13	3/8"X6"_HRA	0.179	0	11	0.367	0	y	4	63.5	68.85	0.538	8.606	1.675	H1-1b
34	M95	PIPE_2.5	0.17	2.667	7	0.114	2.667		6	30.04	50.715	3.596	3.596	1.529	H1-1b
35	M75	PIPE_2.5	0.152	2.667	3	0.095	6.083		13	30.04	50.715	3.596	3.596	2.301	H1-1b
36	M50	PIPE_2.5	0.151	2.667	11	0.122	6.083		9	30.04	50.715	3.596	3.596	2.115	H1-1b
37	M2	3/8"X6"_HRA	0.149	0	7	0.4	0	y	4	63.5	68.85	0.538	8.606	1.675	H1-1b
38	M23	HSS4X4X4	0.148	2.583	35	0.081	4.79	z	11	94.949	103.122	11.96	11.96	1.359	H1-1b
39	M18	HSS4X4X4	0.145	2.583	29	0.076	4.79	z	7	94.949	103.122	11.96	11.96	1.361	H1-1b
40	M5	HSS4X4X4	0.143	2.583	26	0.066	4.79	z	3	94.949	103.122	11.96	11.96	1.36	H1-1b
41	M22	3/8"X6"_HRA	0.142	0	13	0.363	0	y	7	63.5	68.85	0.538	8.606	1.67	H1-1b
42	M34	1/2 X 6	0.133	0	9	0.262	0.5	y	13	84.3	91.8	11.475	0.956	1.28	H1-1b
43	M8	1/2 X 6	0.132	0	6	0.248	0.5	y	2	84.3	91.8	11.475	0.956	1.3	H1-1b
44	M29	PIPE_3.0	0.128	4.036	13	0.105	4.167		5	59.853	65.205	5.749	5.749	3	H1-1b
45	M65	LL2.5x2.5x3x3	0.126	4.853	30	0.007	4.853	z	10	42.67	58.32	3.954	2.55	1.136	H1-1b*
46	M67	LL2.5x2.5x3x3	0.126	4.853	34	0.008	4.853	z	12	42.67	58.32	3.954	2.55	1.136	H1-1b*
47	M27	PIPE_3.0	0.126	4.167	5	0.103	4.167		9	59.853	65.205	5.749	5.749	3	H1-1b
48	M6	LL2.5x2.5x3x3	0.126	4.853	26	0.004	4.853	y	27	42.67	58.32	3.954	2.55	1	H1-1b*
49	M28	PIPE_3.0	0.124	4.036	9	0.097	3.906		11	59.853	65.205	5.749	5.749	3	H1-1b
50	M38	1/2 X 6	0.116	0	2	0.303	0.5	y	5	84.3	91.8	11.475	0.956	1.329	H1-1b
51	M10	3/8"X6"_HRA	0.1	0	13	0.401	0	y	2	67.691	68.85	0.538	8.606	1.203	H1-1b
52	M3	3/8"X6"_HRA	0.096	0	8	0.402	0	y	5	67.691	68.85	0.538	8.606	1.167	H1-1b
53	M35	1/2 X 6	0.095	0	12	0.357	0	y	12	89.215	91.8	11.475	0.956	1.668	H1-1b
54	M16	1/2 X 6	0.084	0	8	0.333	0	y	8	89.215	91.8	11.475	0.956	1.668	H1-1b
55	M39	1/2 X 6	0.076	0	4	0.343	0	y	4	89.215	91.8	11.475	0.956	1.668	H1-1b
56	M4	3/8"X6"_HRA	0.057	0	31	0.404	0	y	11	63.5	68.85	0.538	8.606	1.671	H1-1b
57	M36	1/2 X 6	0.056	0	12	0.336	0	y	7	89.215	91.8	11.475	0.956	1.674	H1-1b
58	M17	1/2 X 6	0.048	0	10	0.348	0	y	3	89.215	91.8	11.475	0.956	1.66	H1-1b
59	M11	3/8"X6"_HRA	0.038	0	37	0.395	0	y	8	63.5	68.85	0.538	8.606	1.671	H1-1b
60	M40	1/2 X 6	0.035	0	4	0.37	0	y	11	89.215	91.8	11.475	0.956	1.671	H1-1b

Envelope AISI S100-10: ASD Member Cold Formed Steel Code Checks

No Data to Print...

Envelope Plate Principal Stresses

No Data to Print...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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Jesse Drennen, PE		Jan 05, 2021
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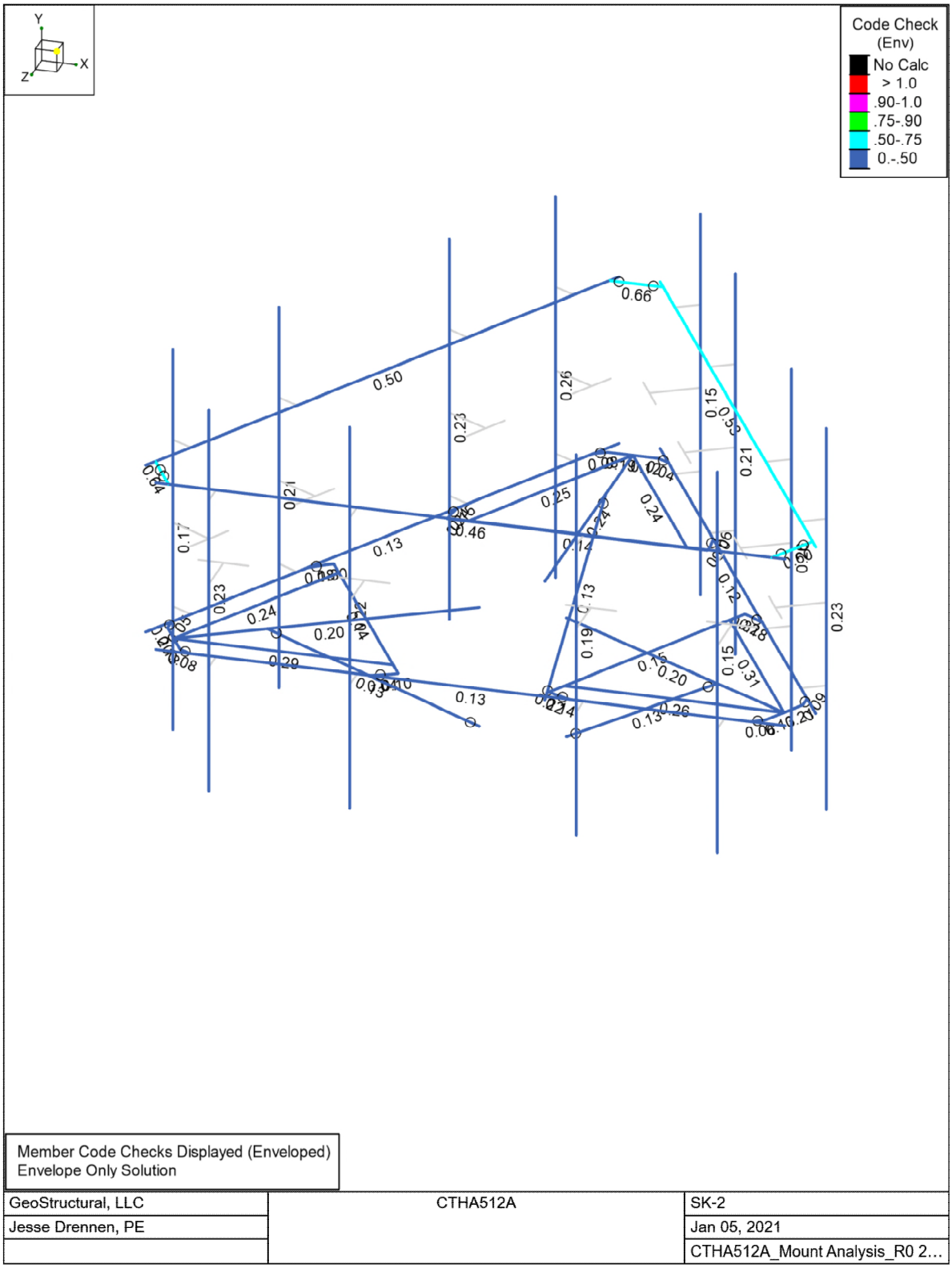
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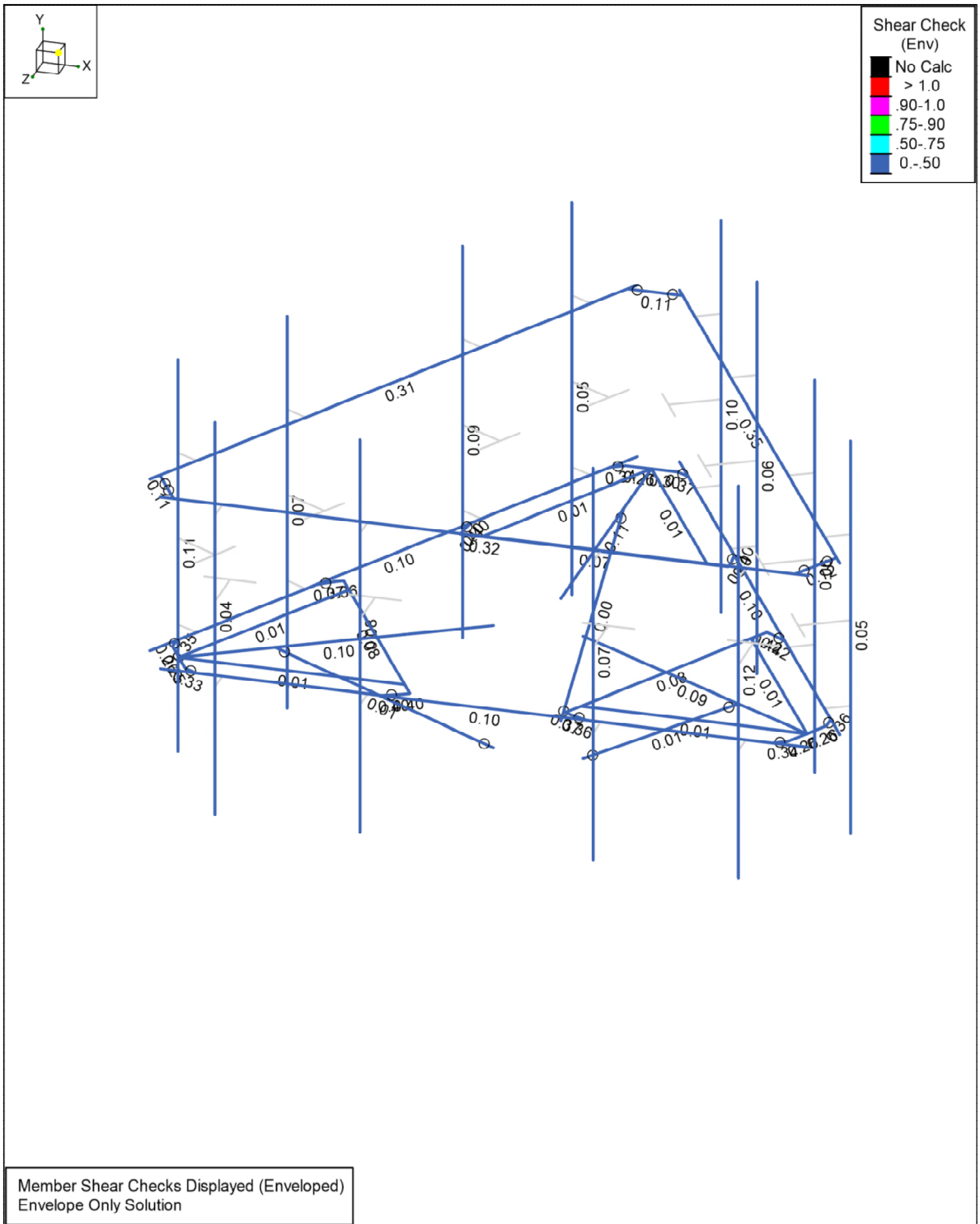
Member Code Checks Displayed (Enveloped)
Envelope Only Solution
GeoStructural, LLC
Jesse Drennen, PE
CTHA512A
SK-2
Jan 05, 2021
CTHA512A_Mount Analysis_R0 2...



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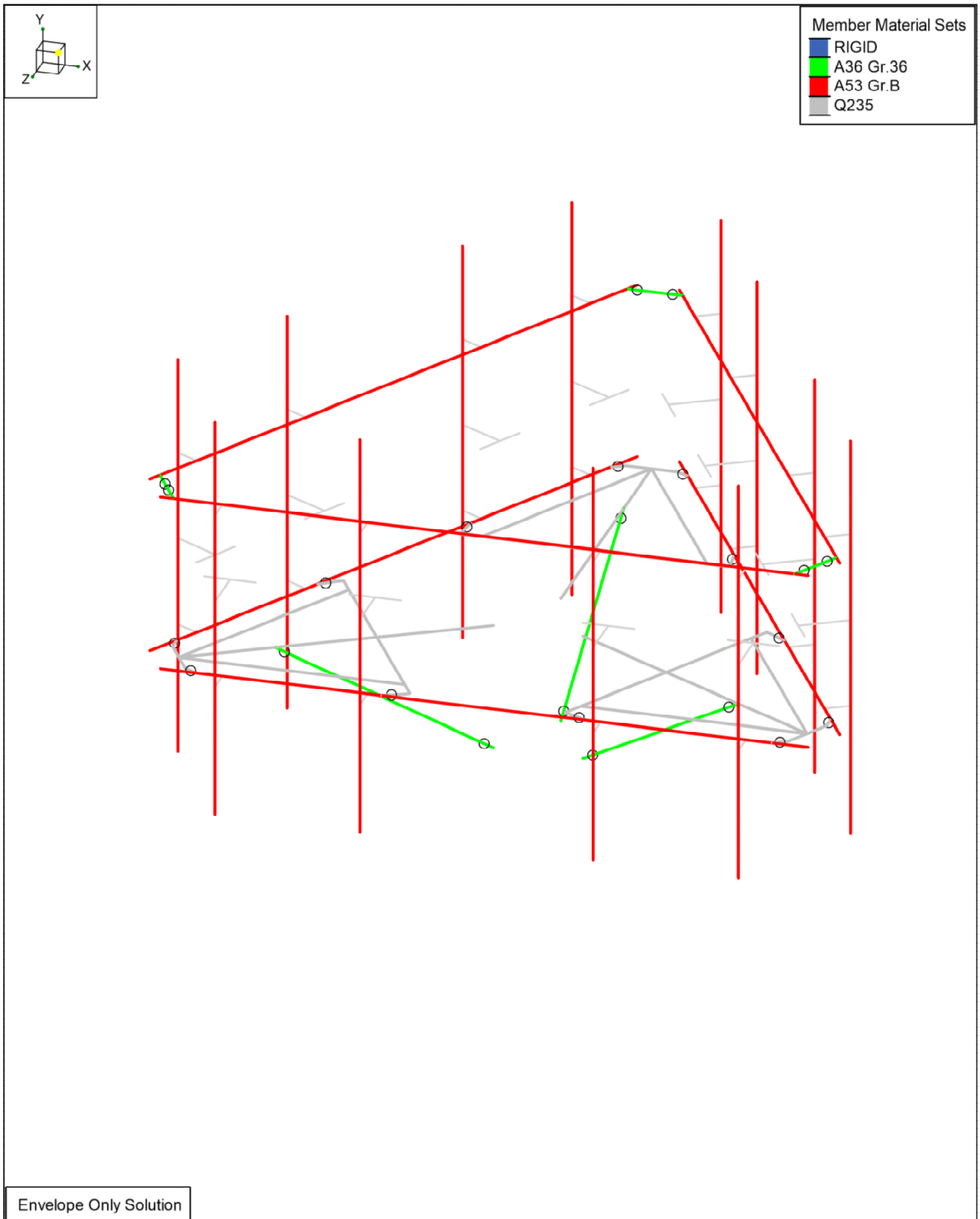

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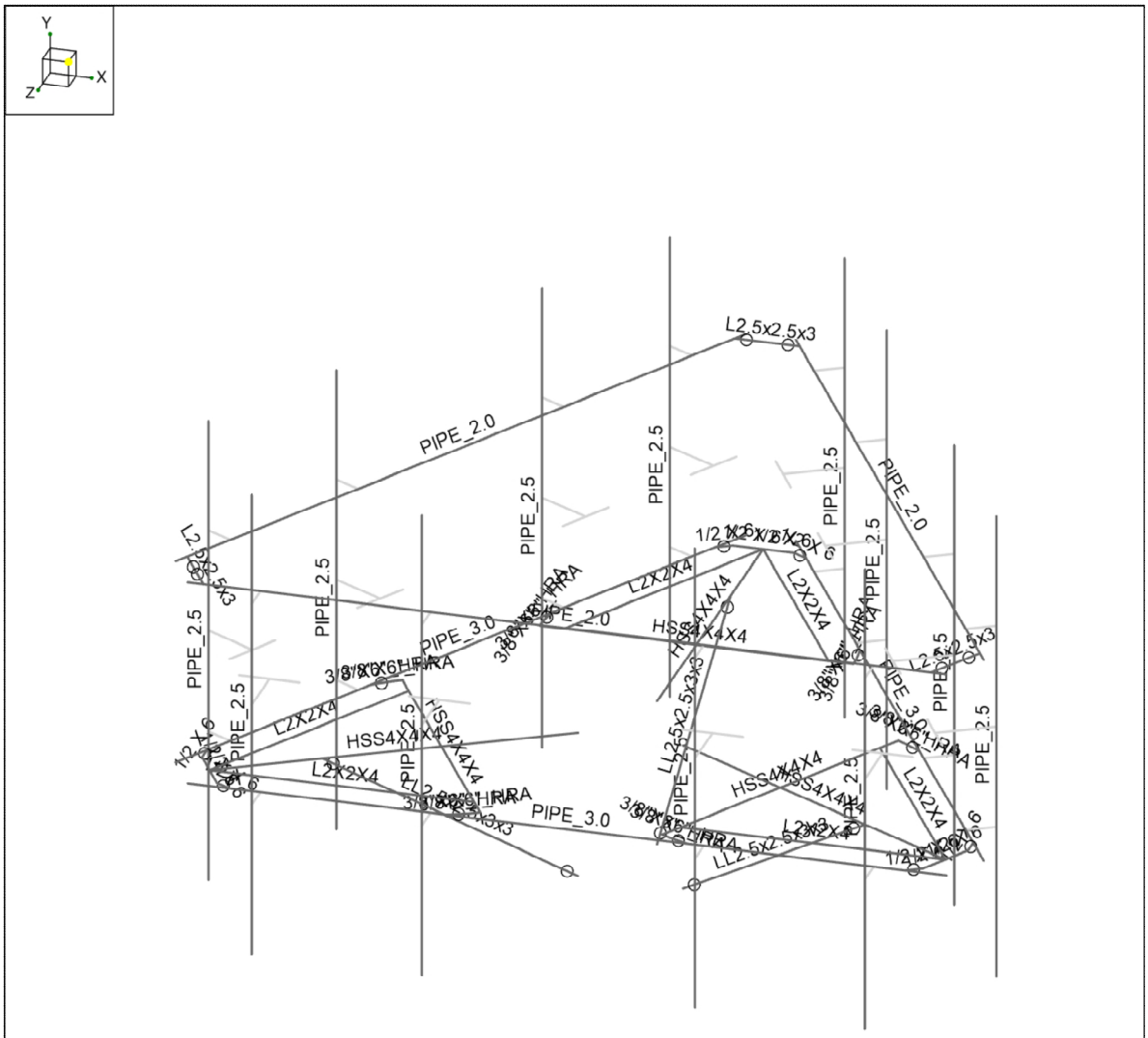

Envelope Only Solution

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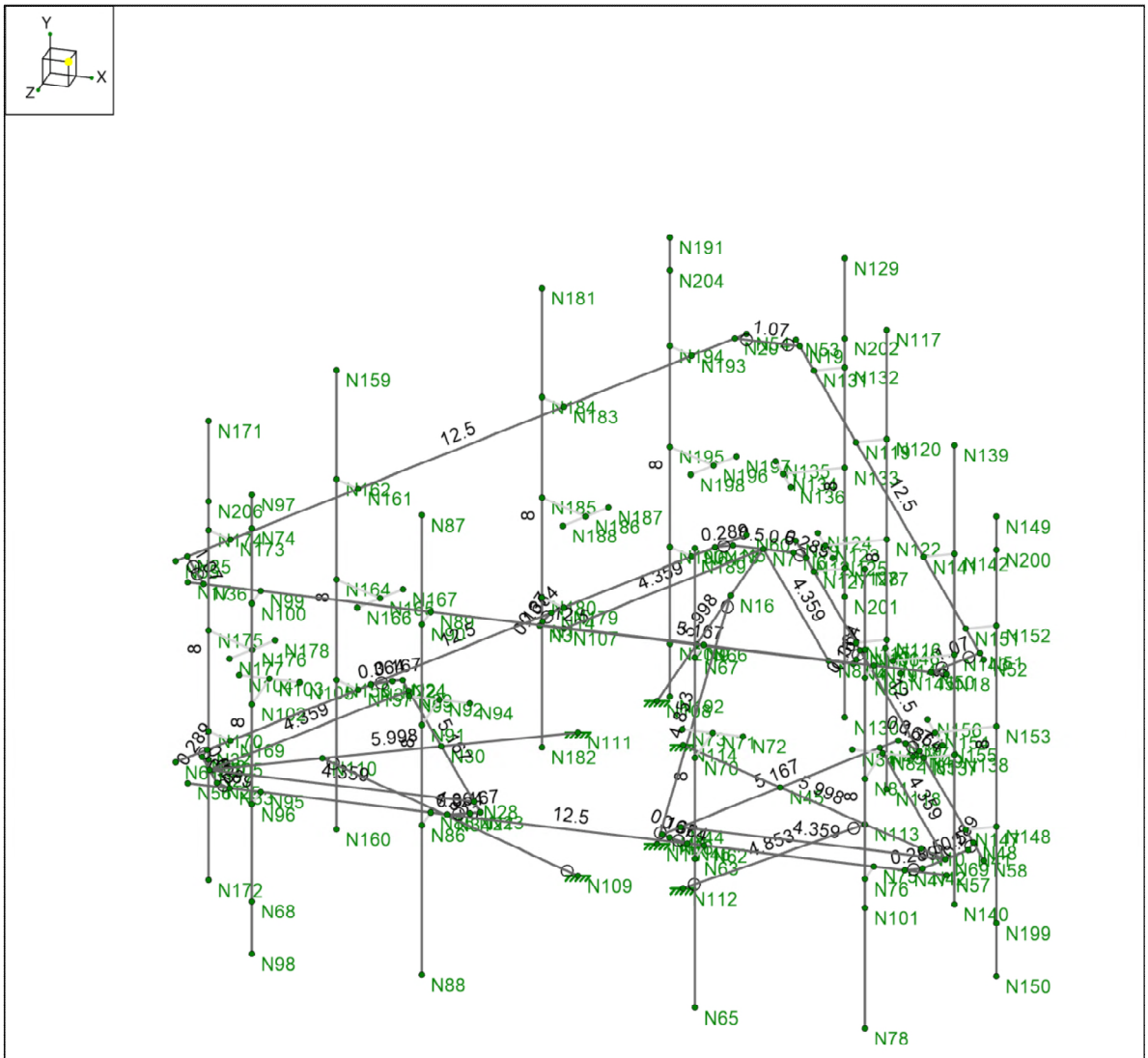

Member Length (ft) Displayed
Envelope Only Solution

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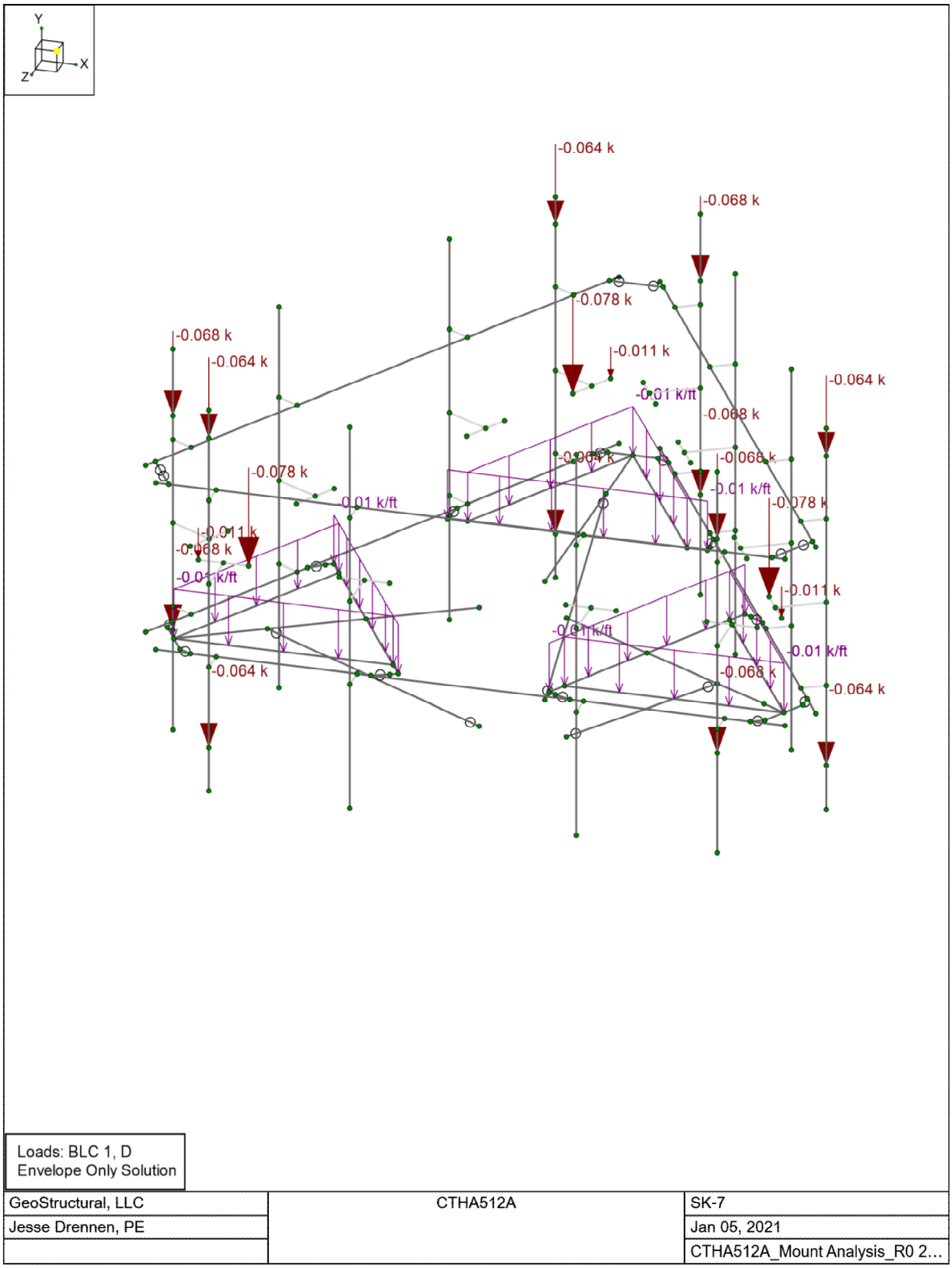

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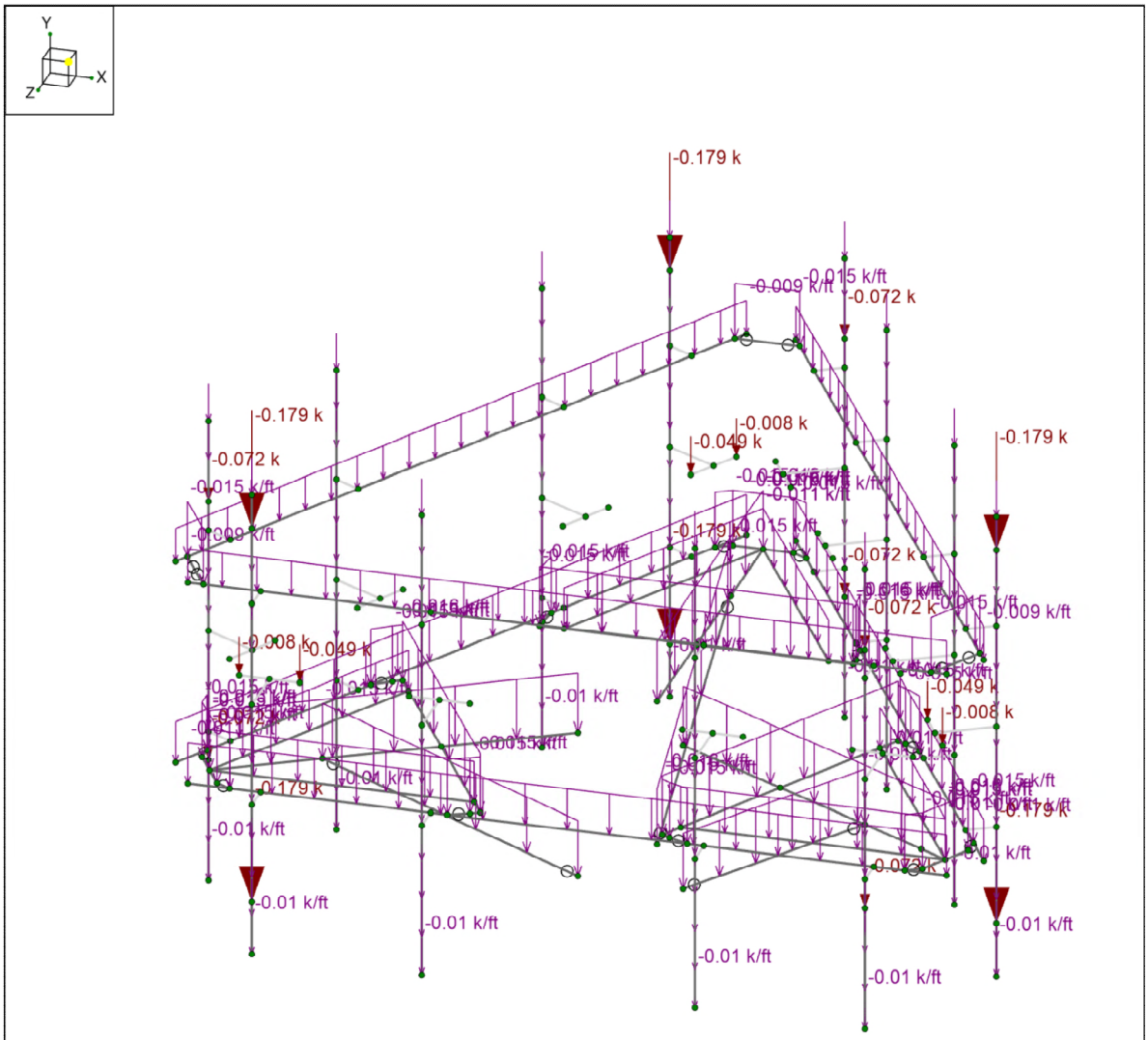

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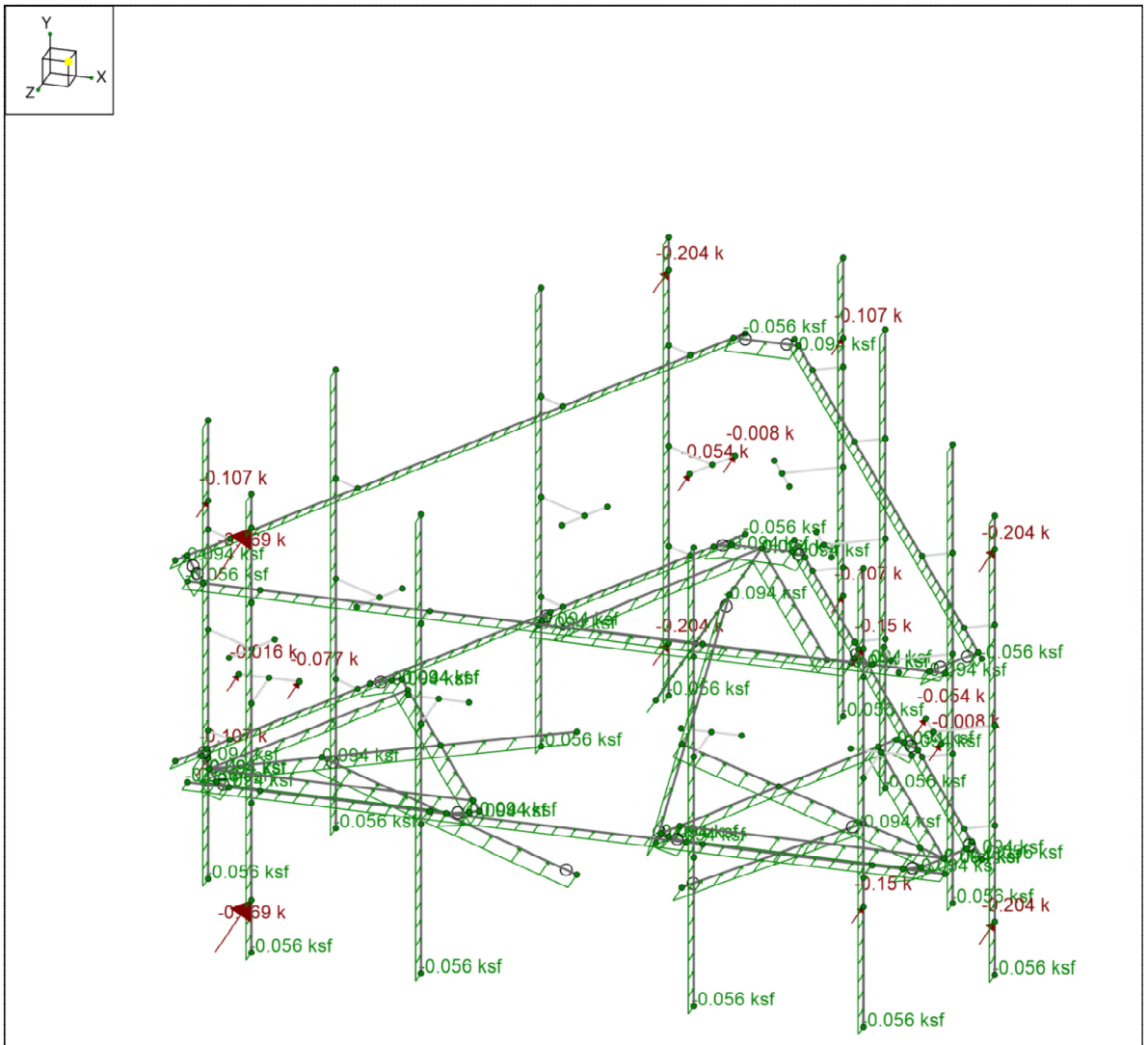

Loads: BLC 5, Woz
Envelope Only Solution

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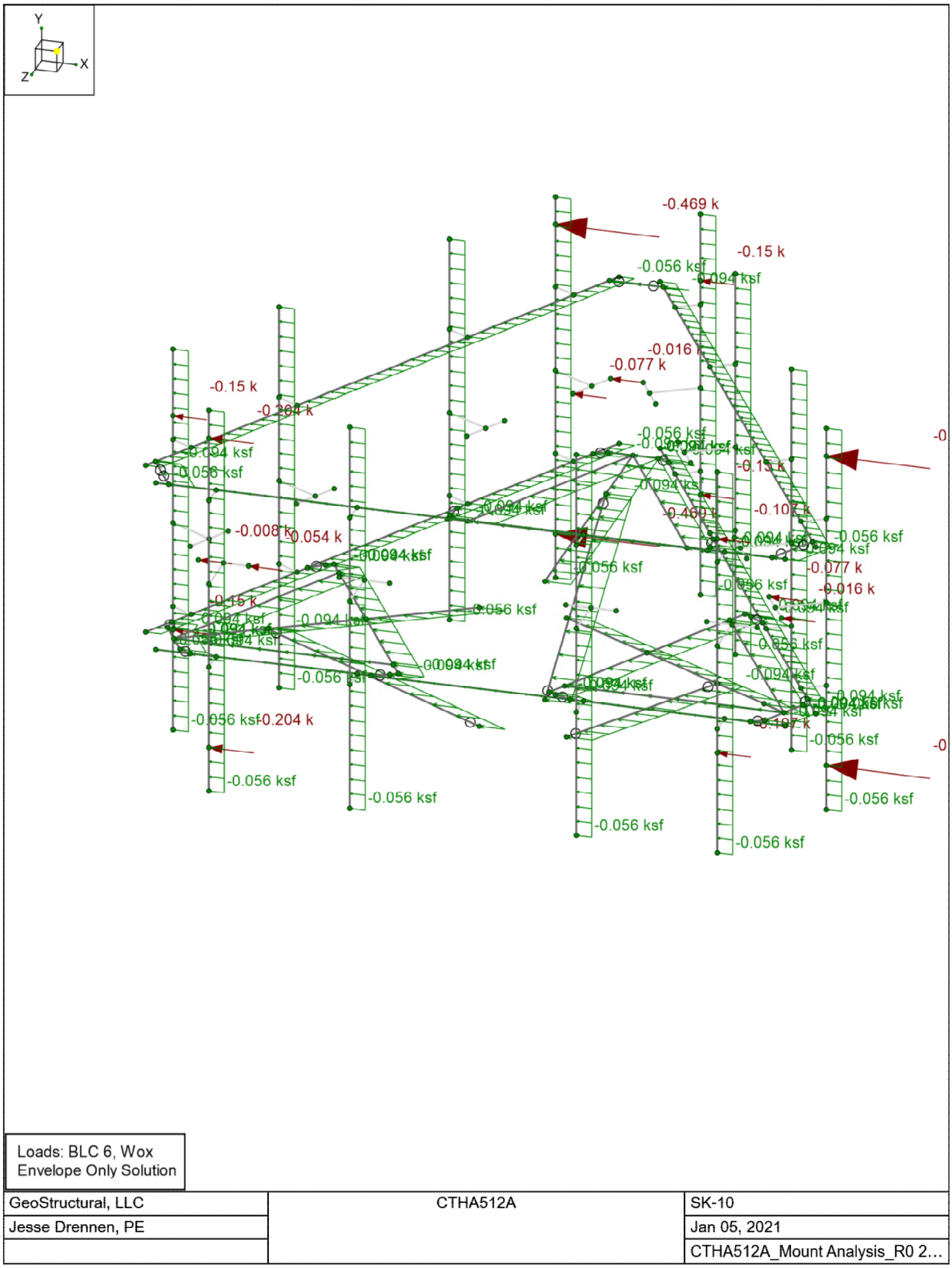

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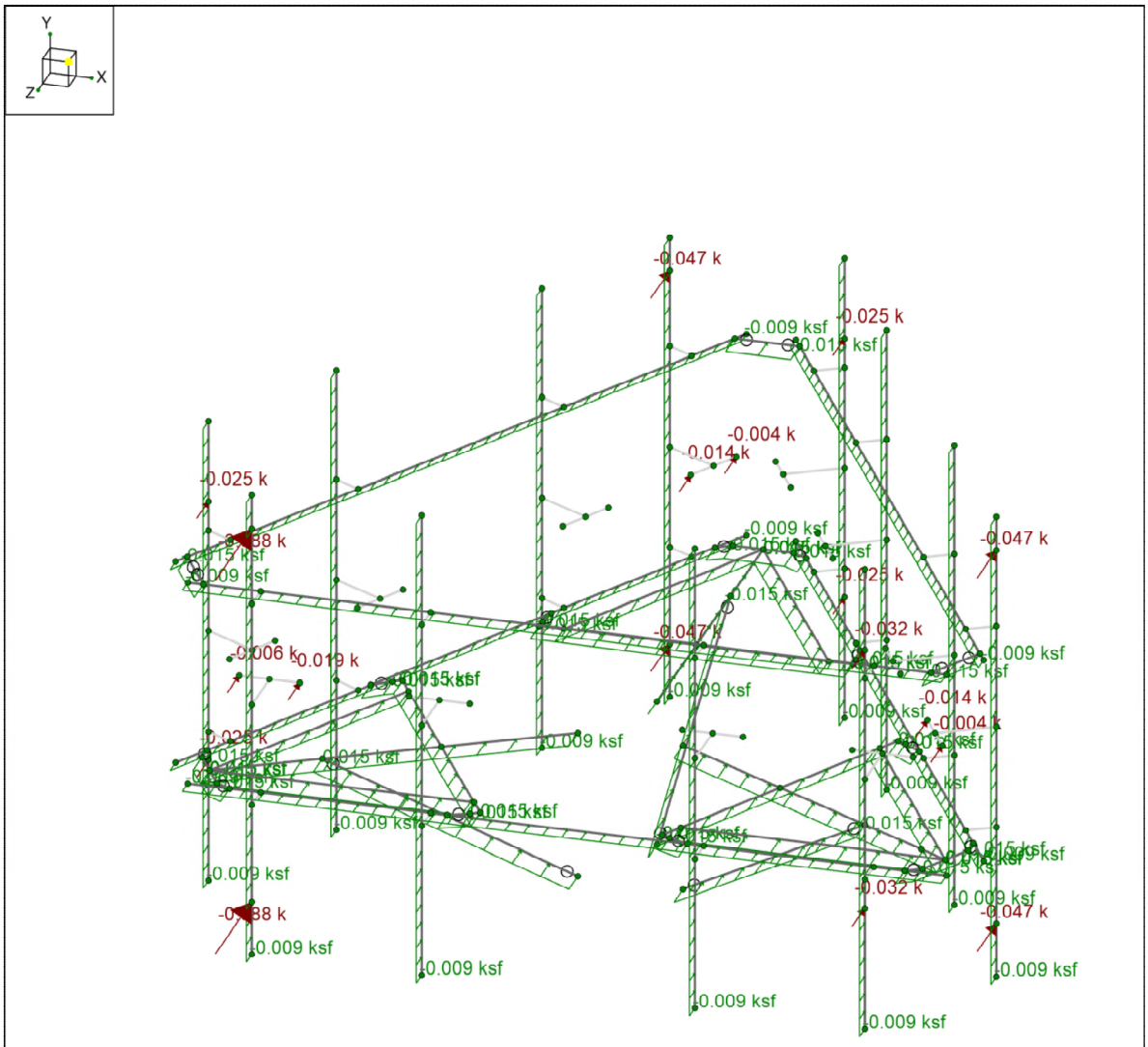

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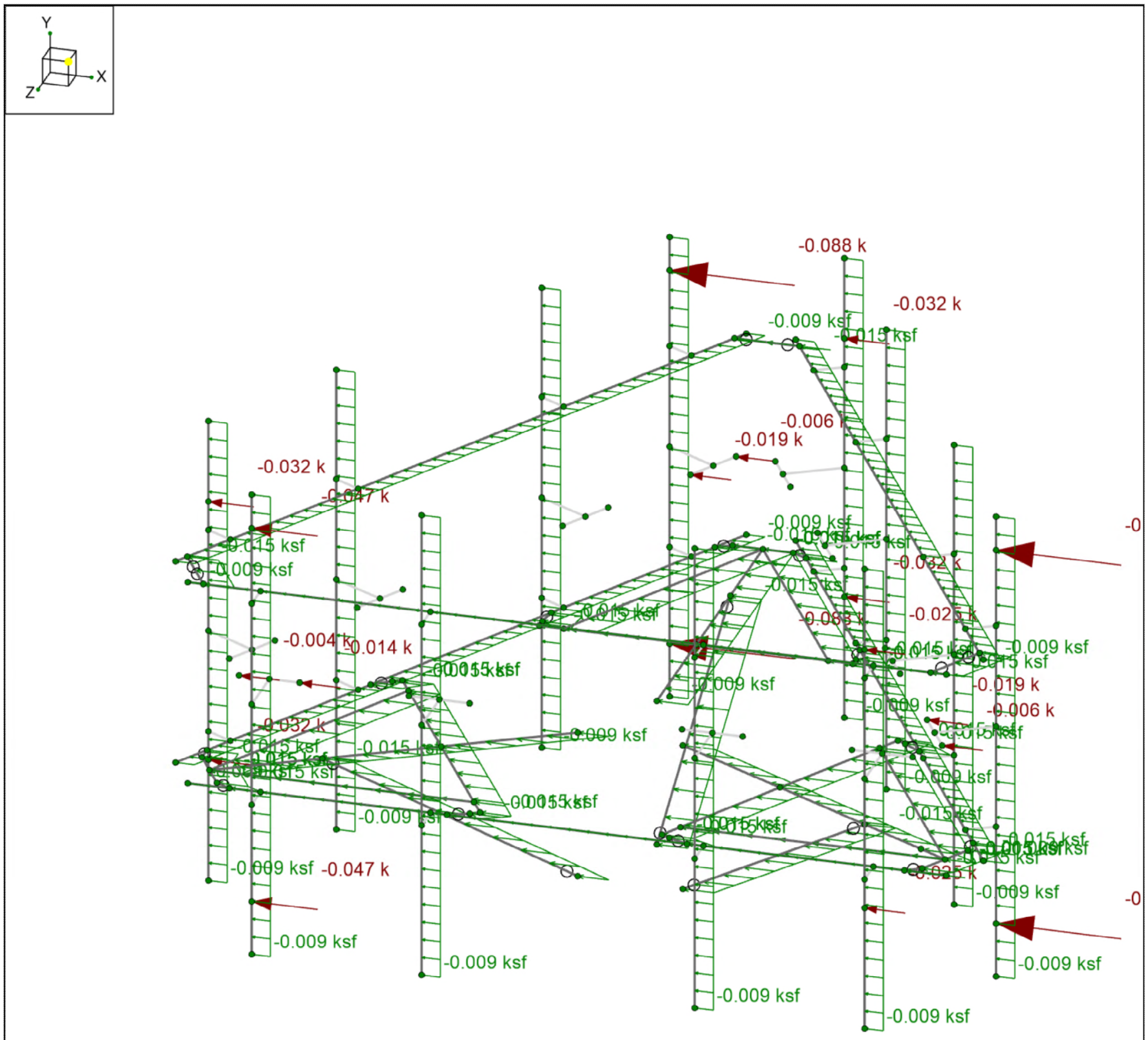

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Envelope Only Solution

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Jesse Drennen, PE		Jan 05, 2021
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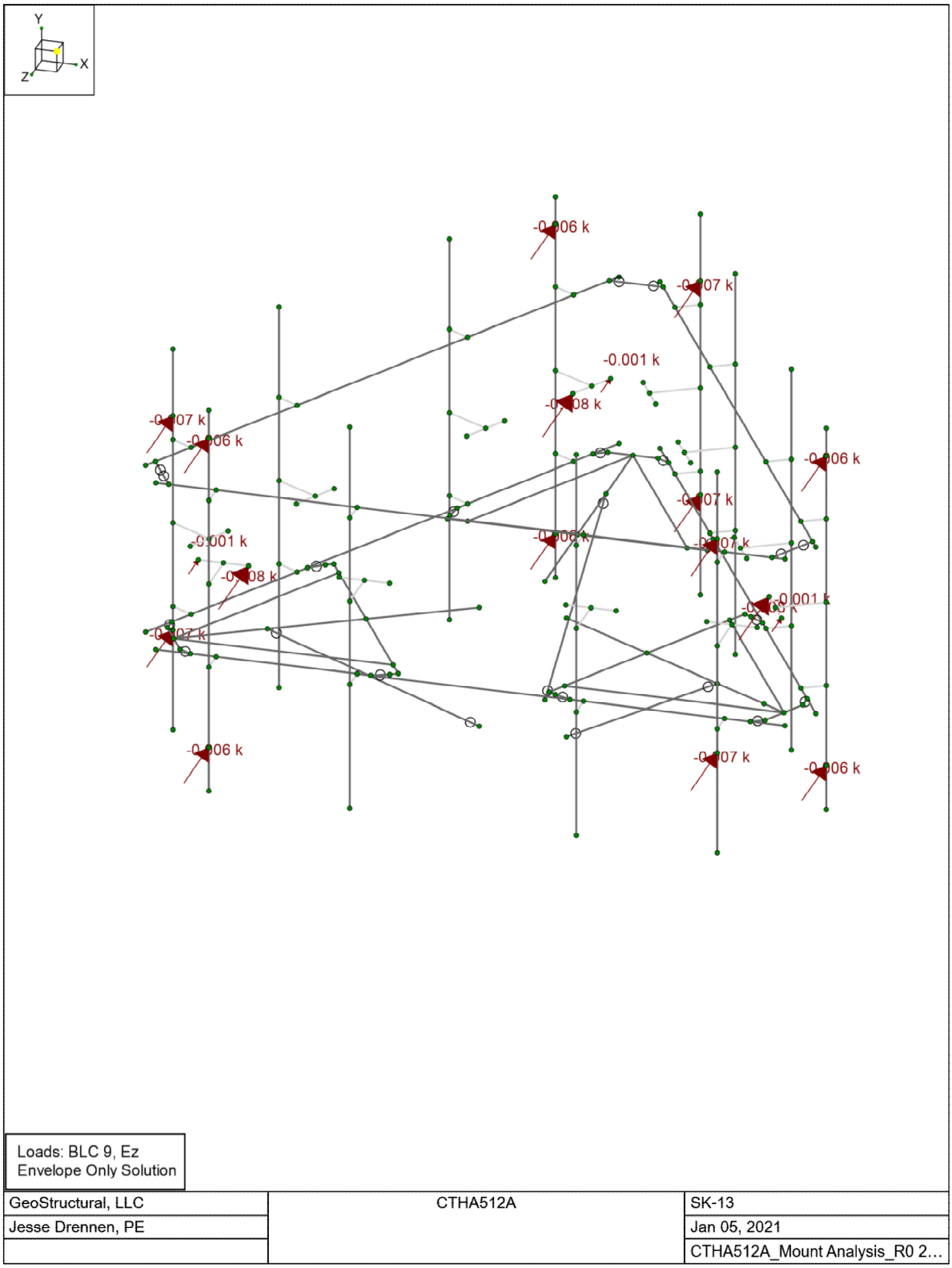
Y
X
Z
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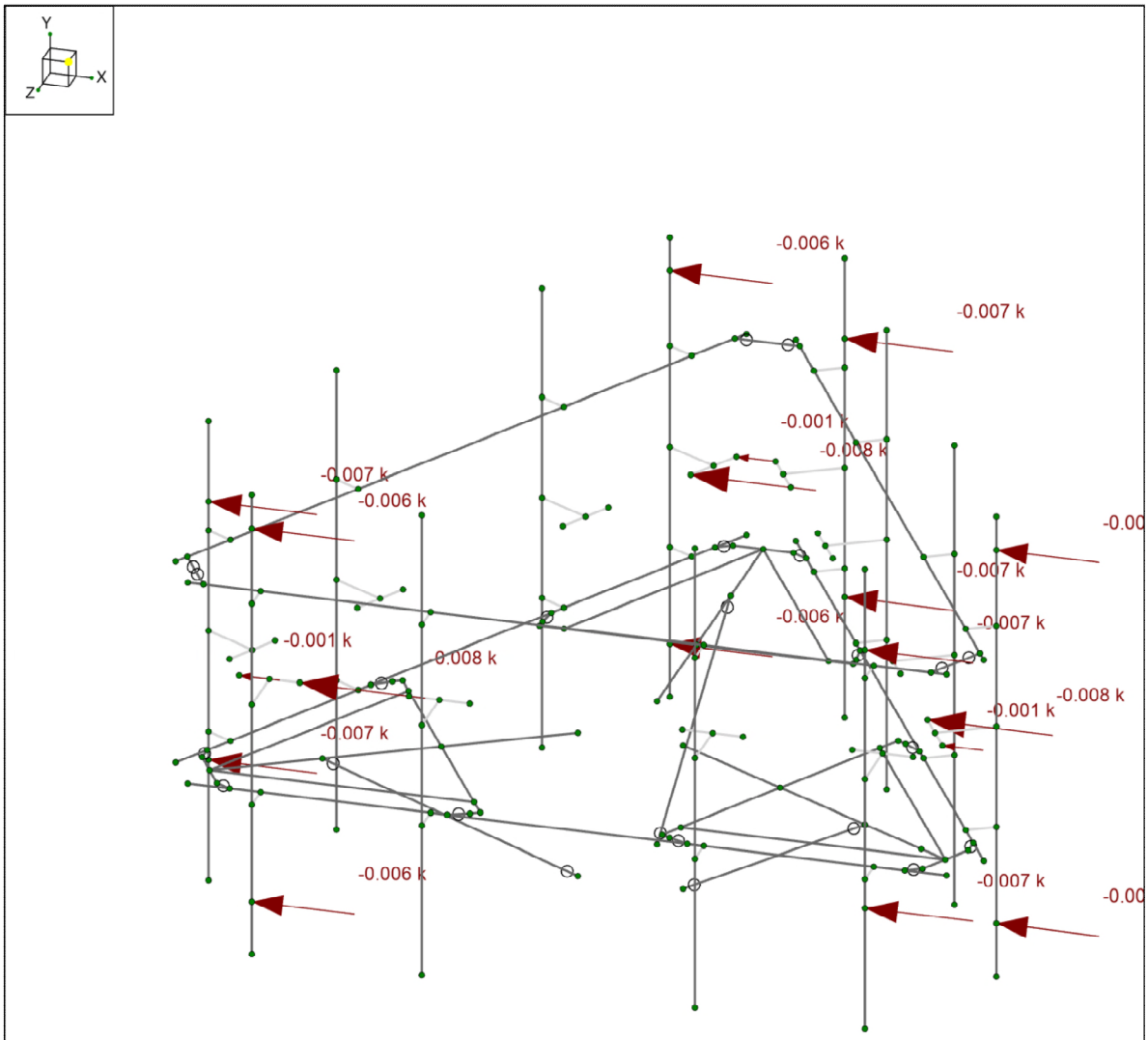
-0.006 k
Loads: BLC 9, Ez
Envelope Only Solution
GeoStructural, LLC
Jesse Drennen, PE
CTHA512A
SK-13
Jan 05, 2021
CTHA512A_Mount Analysis_R0 2...



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