Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

January 17, 2023

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

Re: **EM-VER-111-210813 – Cellco Partnership d/b/a Verizon Wireless**
Telecommunications Facility, 295 (aka 297) North Street, Plymouth, Connecticut

Completion of Construction

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced facility modification has been completed.

For your information and the Council's records I also wanted to inform you that on November 16, 2021, ProTerra Design Group ("ProTerra") prepared an updated Mount Analysis ("MA") reflecting a minor equipment change made by Cellco on the 295 North Street facility. More specifically, Cellco decided not to install three (3) CDMA diplexers that were included as a part of the original EM-VER-111-210813 filing.

In an effort to close out the Council's approval, attached please find the following:

1. A letter from ProTerra, dated November 21, 2022, verifying that Cellco's facility modifications were completed in accordance with the updated (November 16, 2021) MA.

2. A copy of the November 16, 2021 updated MA.

3. A letter from Tower Engineering Solutions, LLC confirming that the results of the original Structural Analysis ("SA") included in the EM-VER-111-210813 filing, remain unchanged, notwithstanding the removal of the diplexers as described in the updated MA.

If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:
Aleksey Tyurin

ProTerra
DESIGN GROUP, LLC

November 21, 2022

verizon

Verizon Wireless
20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

Attn: Alex Tyurin
Eng III - RE/Regulatory
Verizon Wireless New England - Network Engineering

RE: EM-VER-111-210813
Verizon Antenna Mount Modification Memo
Verizon Site Location: 467291
Verizon Fuze ID: 15100105
Verizon Site Name: Plymouth NW CT
Site Address: 297 North Street
Plymouth, CT 06728

Mr. Tyurin:

We have reviewed the installation of the mount modifications installed for Verizon Wireless as shown in the construction drawings prepared by ProTerra Design Group, LLC revised through November 16, 2021 and the associated Mount Structural Analysis Report provided by ProTerra Design Group, LLC and EFI Global, Inc. dated November 16, 2021.

The proposed mount modifications required are as follows:

- The dual antenna shall be mounted on an 8' long 2.5 STD pipe at each sector, a total of three (3) pipes.
- One (1) 4' long 2.0 STD pipe should be attached to the platform standoff tube to mount the OVP box.

Based upon the information available and as reviewed during our site visit, we have determined that **the mount modifications are installed in general conformance with the construction documents and the antenna mount structural analysis of record** to support the final antenna and appurtenance configuration as submitted in the Connecticut Siting Council Exempt Modification filing number **EM-VER-111-210813**. Our review shall not diminish or relieve the contractor of its closeout submittal and other responsibilities as required under the building code. We based our determination upon a site visit from ground level performed by our office after construction was complete and closeout photo documentation with tape measure dimensions provided by the contractor, Eastern Communications, Inc.

During construction and as part of the closeout review an issue with the tower flange extension above Verizon was brought to the attention of the tower owner, SBA Communications Corporation from Eastern Communications photo documentation. The tower owner ordered a tower assessment and continues to work towards rectifying the issue independently from the Verizon mount modifications noted herein.

If you have any questions or need further information, please do not hesitate to contact us at (413) 320-4918 or via email at jmoreno@proterra-design.com.

Sincerely,
ProTerra Design Group, LLC

Jesse Moreno, PE
cc: file

STATE OF CONNECTICUT
JESSE M. MORENO
No. 24389
LICENSED PROFESSIONAL ENGINEER
11-21-2022

ProTerra Design Group, LLC
4 Bay Road, Building A, Suite 200
Hadley, MA 01035

Ph:(413) 320-4918
E: info@proterra-design.com

ProTerra
DESIGN GROUP, LLC

Date: 11/16/2021

verizon

Submitted To: Verizon Wireless
118 Flanders Road – Third Floor
Westborough, MA 01581

Subject: **Mount Structural Analysis Report – Rev.2**

Verizon Wireless Designation: **Site Name:** Plymouth NW CT

Site Data: **297 North Adams Street, Plymouth, CT 06782**
Latitude 41.691330, Longitude -73.050368

We are pleased to submit this **"Mount Structural Analysis Report – Rev.2"** to determine the structural capacity of the antenna mount utilized by Verizon Wireless at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by Verizon Wireless. Under the following load case we have determined the mount to have:

Existing + Proposed Equipment **Adequate Capacity with Mods (57.0%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with TIA-222-G Standard and the 2018 Connecticut State Building Code (2015 IBC).

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

Prepared by Consulting Engineer:

11/16/2021

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057
EFI GLOBAL, INC.
PEC 0001245
1117 Perimeter Center West, Suite E500
Atlanta, GA 30338
Tel: (470) 990-6593

Reviewed By:

Proterra Design Group, LLC

1) ANALYSIS CRITERIA

The analysis was performed for the existing and proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	165’
Structure Type	Monopole
Exposure Category	B
Wind Speed	120 mph *√0.6 = 93 mph (ASD)
Ice Loading	0.75” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Configuration for Verizon

Qty	Model
6	Antel LPA-80080/6CF – Antennas
3	Antel BXA-70063-6CF – Antennas
3	Antel BXA-1850-12CF – Antennas
3	UHBA B13 RRH 4x30 – RRUs

Table 1.2 – Proposed and Final Appurtenance Configuration for Verizon

Qty	Model
6	JMA MX06FRO660-03 – Antennas*
3	MT6407-77A – Antennas
3	B2/B66A RRH-BR049 (RFV01U-D1A) – RRUs**
3	B5/B13 RRH-BR04C (RFV01U-D2A) – RRUs**
1	DB-C1-12C-24AB-0Z – Junction Box
3	JMA Dual Mount Bracket Kit 91900314

*** Dual mounted on the dual mount bracket kits.**
**** To be mounted behind antennas.**

Table 1.3 – Assumed Material Properties

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B – 46	46	58
Round HSS	A500 Gr. B – 42	42	58
Others (UNO)	A572 Gr. 50	50	65

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
RFDS	Verizon Wireless	11/03/2021
Sketch for Mount Analysis	ProTerra Design Group, LLC	11/05/2021
Mount Photographs	ProTerra Design Group, LLC	01/09/2020

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

1) The mount was built and installed in accordance with the manufacturer's specifications.
2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
3) The configuration of antennas is as specified in "1) Analysis Criteria".
4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
8) Member sizes per the mount sketch, mount photographs and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
9) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

ProTerra Design Group, LLC must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Grating Angle	25.6	Pass
Antenna Mount Pipe	32.5	Pass
Base Perimeter Pipe	20.6	Pass
Main Support Tube	53.9	Pass
Bracing Tube	22.5	Pass
Platform Base Connection Plates	57.0	Pass

Platform Mount: The existing platform mount **will have adequate** capacity for the proposed changes by Verizon, **once the proposed modifications are completed as listed below and per the Mount sketch (SK-1) prepared by ProTerra Design Group, LLC, dated 12/21/2020.** For the code specified load combinations and as a maximum, the mount members are stressed to **57.0%** of their structural capacity.

Note: The proposed modifications are-

1. **The Dual antenna should be mounted on an 8' long 2.5 STD pipe at each sector, a total of three (3) pipes.**
2. **One (1) 4' long 2.0 STD pipe should be attached to the platform standoff tube to mount the OVP box.**

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT

CLIENT: Verizon

PROJECT: Plymouth NW CT

SUBJECT: Antenna Loads -TIA 222 G Standard (chapter 16 revisions)

Tower Height	190.00	ft	Type of Mount: Platform
Basic Wind Speed, V	93	mph (=Ultimate Speed*Sqrt(0.6))	
Basic Wind Speed with Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.1041	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Design Ice Thickness, t_i		0.75	inches

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

1

Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	α	Kzmin	Ke	m
B	1200	7	0.7	0.9	0.55

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
2	0.95	DOES NOT CHANGE
Monopole		

Gust Effect Factor Gh

Structure Type	Gh	
2	1.00	DOES NOT CHANGE
Monopole		

Shielding Factor, Ka

Structure Type	Ka	
	0.90	DOES NOT CHANGE
Monopole		

Seismic Factors

Ss	0.185	
S1	0.064	
Fa	1.6	
Fv	2.4	
R	2	Truss or Pole

CLIENT: Verizon

PROJECT: Plymouth NW CT

SUBJECT: Antenna Loads -TIA 222 G Standard (chapter 16 revisions)

Rad Center **165.00** ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A_N (ft2)	***A_T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K_z	q_z (psf)	Pounds: Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load	Lateral Load (Seismic)	Vertical Load (Seismic)
Pos. 1 & Pos.4		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0	0	0	0
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				0	**0**	**0**	**0**	**0**
Pos.2	**165.00**	MT6407-77A	1	99.2	35.0	19.7	10.0	0.90	4.79	2.43	1.78	3.50	1.20	1.24	1.140	24.0	124.0	65.3	99.2	124	92	184	9	7
	165.00	B2/B66A RRH-BR049 (RFV01U-D1A)	1	84.4	15.0	N/A	10.0	0.90	-	1.04	-	1.50	-	1.20	1.140	24.0	0.0	27.0	84.4					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				63	**47**	**92**	**5**	**4**
Pos.3	**165.00**	JMA MX06FRO660-03	2	60.0	71.3	15.4	10.7	0.90	7.63	5.30	4.63	6.66	1.29	1.38	1.140	24.0	426.2	316.7	120	426	339	190	10	8
	165.00	B5/B13 RRH-BR04C (RFV01U-D2A)	1	70.3	15.0	N/A	8.1	0.90	-	0.84	-	1.85	-	1.20	1.140	24.0	0.0	21.9	70.3					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				214	**170**	**96**	**5**	**4**
Large COVP		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	88	67	32	2	1
	165.00	DB-C1-12C-24AB-0Z	1	32.0	29.5	16.5	12.6	0.90	3.38	2.58	1.79	2.34	1.20	1.20	1.140	24.0	87.6	66.9	32					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				44	**34**	**16**	**1**	**1**

* Enter N/A in the W column for front sheilded apurtanances.

** A_N is the product of H and W

*** A_T is the product of H and D

DL 406

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	Weight (lb/ft)	*** Ca	K_z	q_z (psf)	Wind Load (PLF)	Lateral Load (Seismic)	Vertical Load (Seismic)
	165.00	3.0 STD Pipe	12.00	3.50	0.00		1.20	1.140	21.6	8	-	-
	165.00	2.5 STD Pipe	12.00	2.88	0.00		1.20	1.140	21.6	6	-	-
	165.00	2.0 STD Pipe	12.00	2.38	0.00		1.20	1.140	21.6	5	-	-
	165.00	L2x2x3	12.00	2.00	2.00		2.00	1.140	21.6	7	-	-
	165.00	L2.5x2.5x3	0.00	2.50	2.50		-	-	-	-	-	-
	165.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	165.00	HSS 4x4x4	12.00	4.00	4.00		2.00	1.140	21.6	14	-	-
	165.00	6" x 3/8" Plate	12.00	6.00	0.38		2.00	1.140	21.6	22	-	-
	165.00	Tube Radial (4x4)	0.00	4.00	4.00		-	-	-	-	-	-
	165.00	Double Angle (LL2.5x2.5x3x0)	0.00	5.00	2.50		-	-	-	-	-	-
	165.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00		-	-	-	-	-	-
	165.00	Channel (Weak Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-
	165.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38		-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: Verizon

PROJECT: Plymouth NW CT

SUBJECT: Antenna Loads -TIA 222 G Standard (chapter 16 revisions)

ti (in) 1.761928 Kiz 1.1746189 reduction 0.28905

Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A_N (ft2)	*A_T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q_z (psf)	Pounds: Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos. 1 & Pos. 4		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					0	**0**	**0**
Pos.2	**165.00**	MT6407-77A	1	35.0	19.7	10.0	0.90	1.42	1.19	3.01	168.66	0.70	0.71	1.140	6.9	6.2	5.2	42.1	24.1	169	42	35	246
	165.00	B2/B66A RRH-BR049 (RFV01U-D1A)	1	15.0	15.0	10.0	0.90	-	0.70	1.38	77.47	0.70	0.70	1.140	6.9	0.0	3.0	0.0	10.8	77			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					22	**18**	**124**
Pos.3	**165.00**	JMA MX06FRO660-03	2	71.3	15.4	10.7	0.90	2.21	2.09	4.86	271.95	0.73	0.76	1.140	6.9	20.2	19.9	143.4	111.4	544	143	121	614
	165.00	B5/B13 RRH-BR04C (RFV01U-D2A)	1	15.0	15.0	8.1	0.90	-	0.65	1.25	70.20	0.70	0.70	1.140	6.9	0.0	2.8	0.0	9.2	70			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					72	**61**	**308**
Large COVP		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	31	24	147
	165.00	DB-C1-12C-24AB-0Z	1	29.5	16.5	12.6	0.90	1.21	1.12	2.62	146.78	0.70	0.70	1.140	6.9	5.3	4.9	30.6	24.2	147			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					16	**13**	**74**

* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit

** Ca will equal 1.2 for all ice load calculations

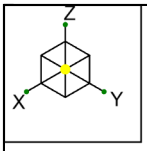
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	165.00	3.0 STD Pipe	12.00	3.50	0.00	0.47	0.20	11.33	1.20	1.140	6.2	3.5	5.7	11
	165.00	2.5 STD Pipe	12.00	2.88	0.00	0.45	0.18	9.99	1.20	1.140	6.2	3.4	5.2	10
	165.00	2.0 STD Pipe	12.00	2.38	0.00	0.44	0.16	8.92	1.20	1.140	6.2	3.3	4.8	9
	165.00	L2x2x3	12.00	2.00	2.00	0.43	0.10	5.48	1.20	1.140	6.2	3.2	5.3	5
	165.00	L2.5x2.5x3	0.00	2.50	2.50	-	-	-	-	-	-	-	-	-
	165.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	165.00	HSS 4x4x4	12.00	4.00	4.00	0.48	0.40	22.26	1.20	1.140	6.2	3.6	7.7	22
	165.00	6" x 3/8" Plate	12.00	6.00	0.38	0.53	0.32	17.81	1.20	1.140	6.2	3.9	10.2	18
	165.00	Tube Radial (4x4)	0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	165.00	Double Angle (LL2.5x2.5x3x0)	0.00	5.00	2.50	-	-	-	-	-	-	-	-	-
	165.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-	-	-	-	-	-
	165.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	165.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-	-	-	-	-	-

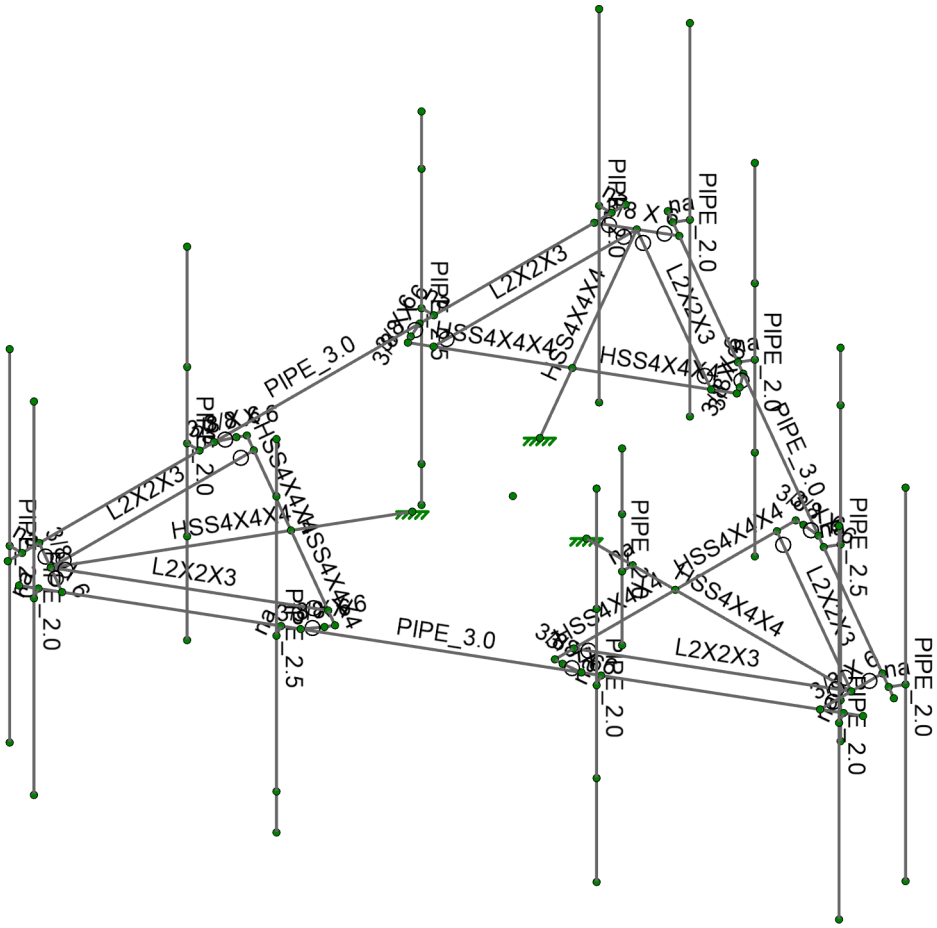
* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

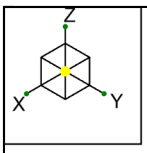
*** A_N is the area of ice built up on the LW plane

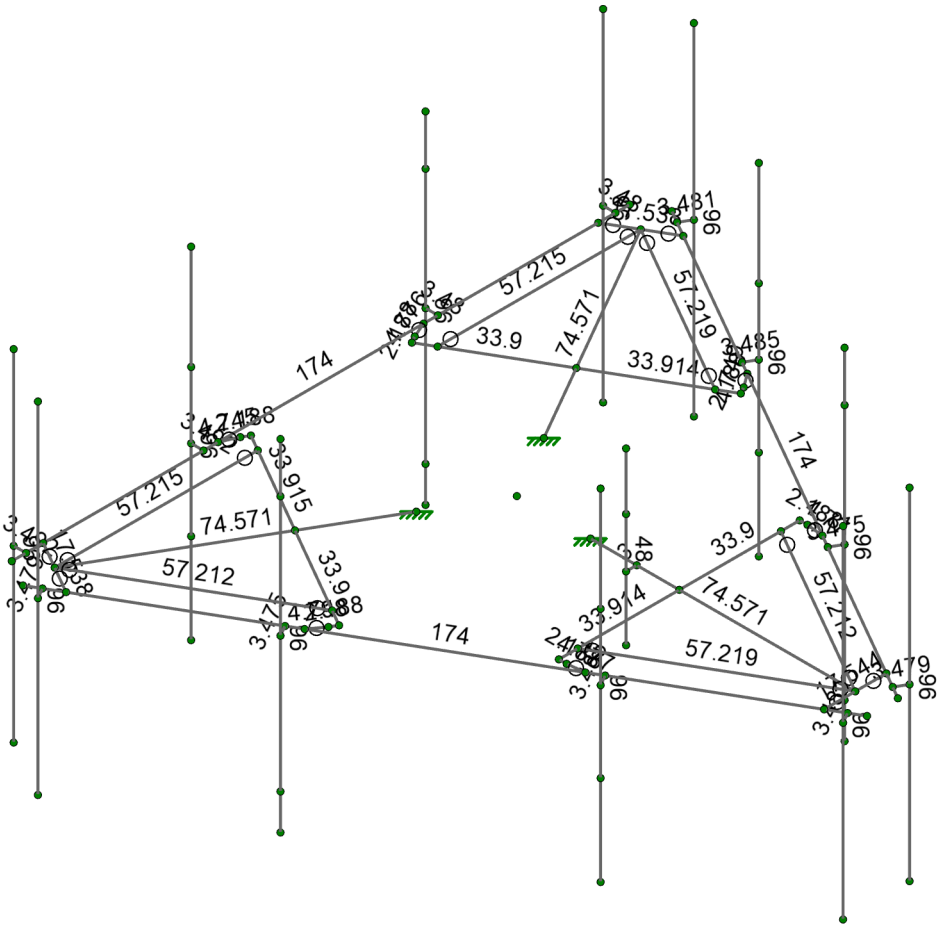
**** Ca will equal 1.2 for all ice load calculations





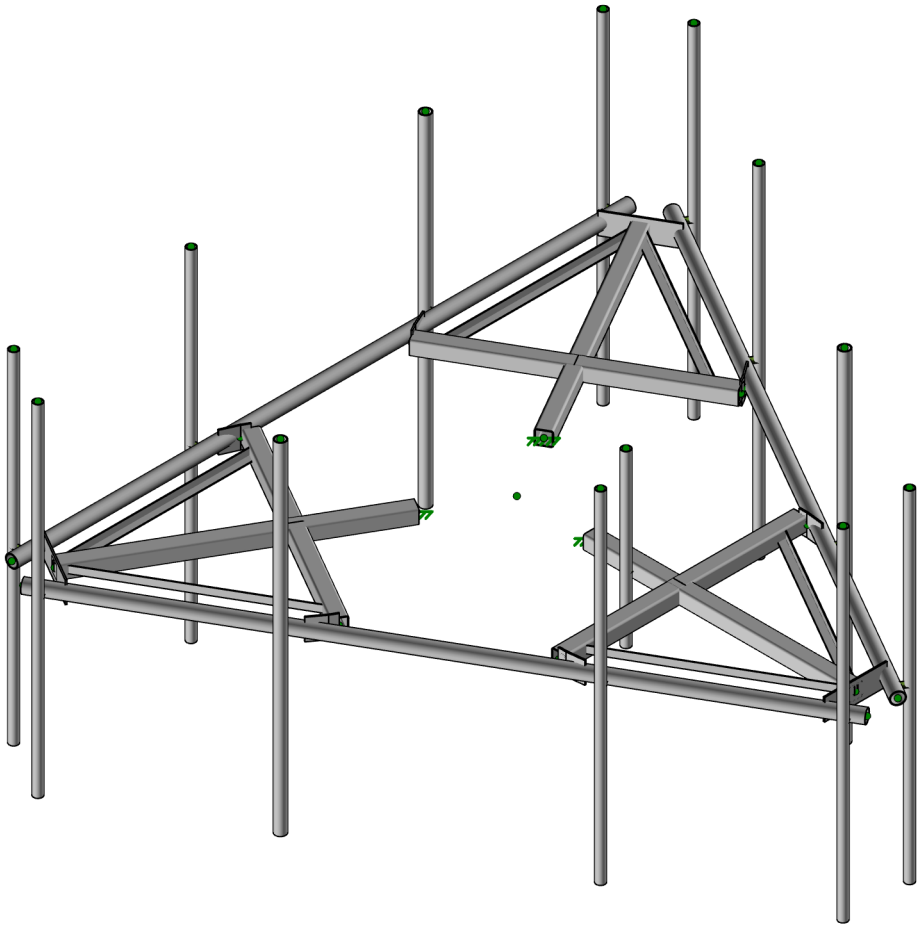
ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-1
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d





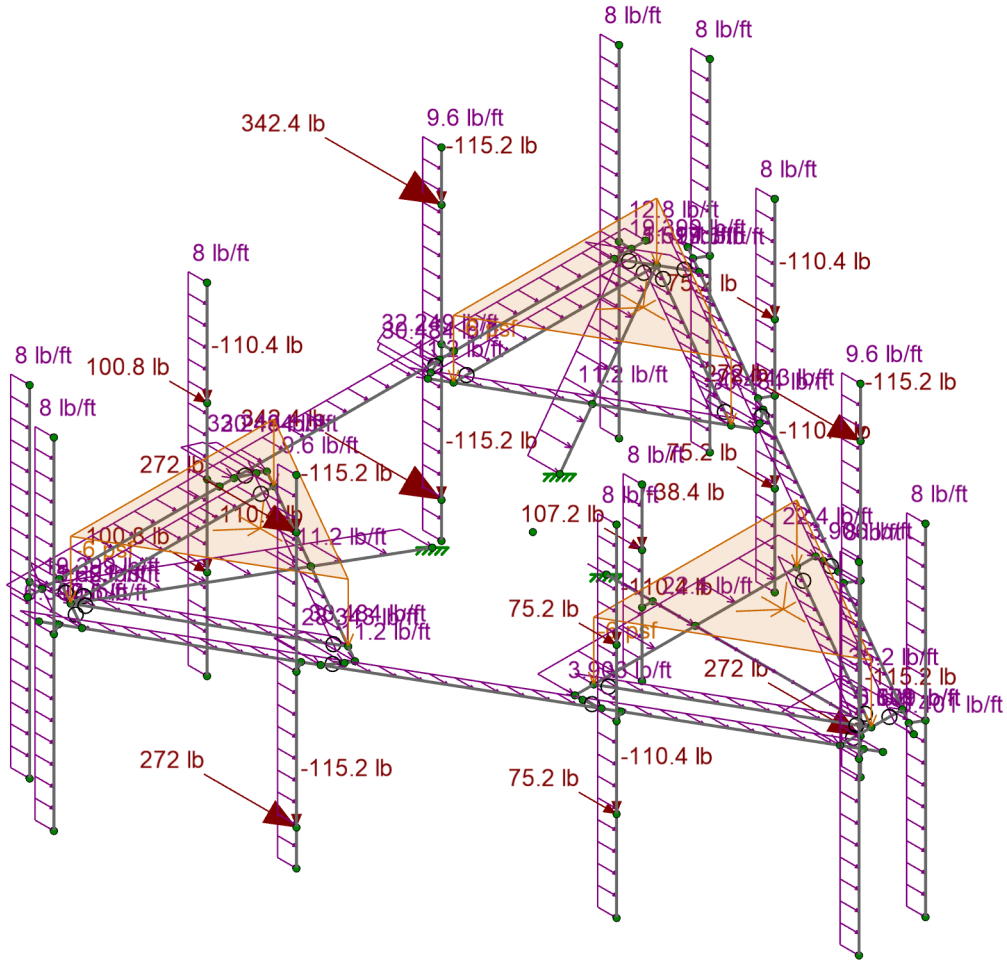
Member Length (in) Displayed

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-2
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d



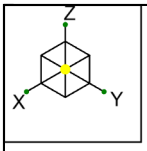
Member Length (in) Displayed

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-3
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d

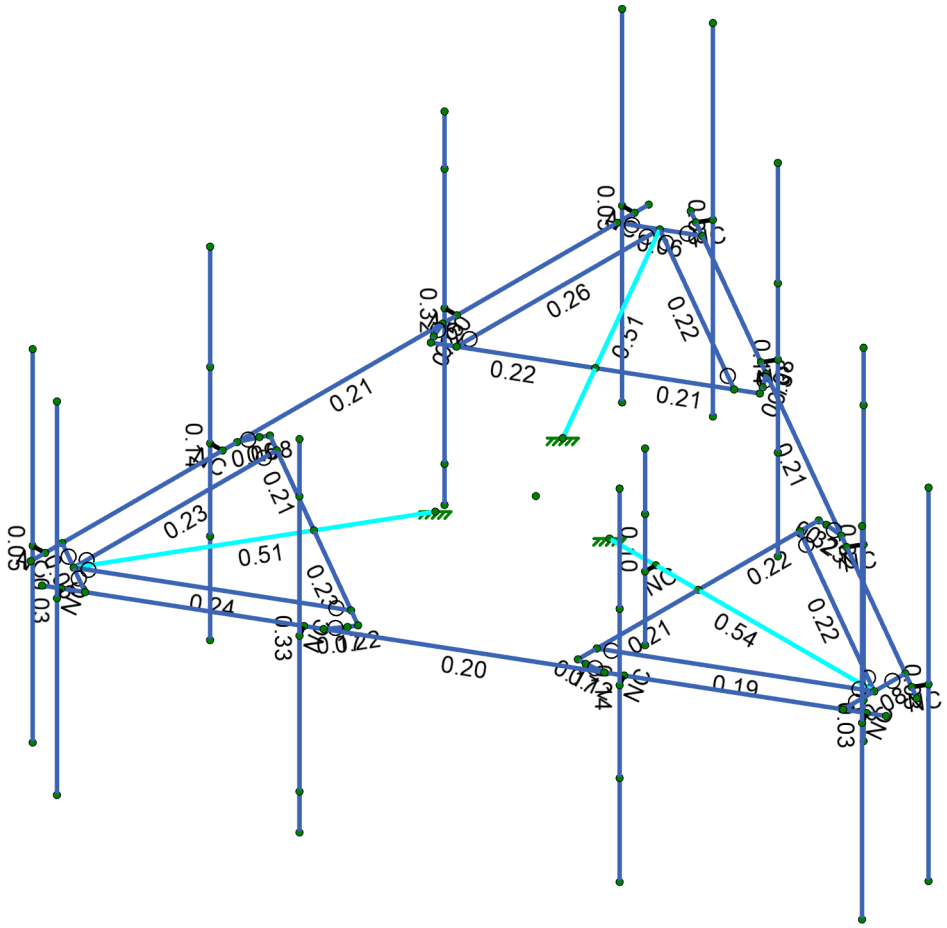


Loads: LC 1, DL + WL (NO ICE) 0 Degree

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-4
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d

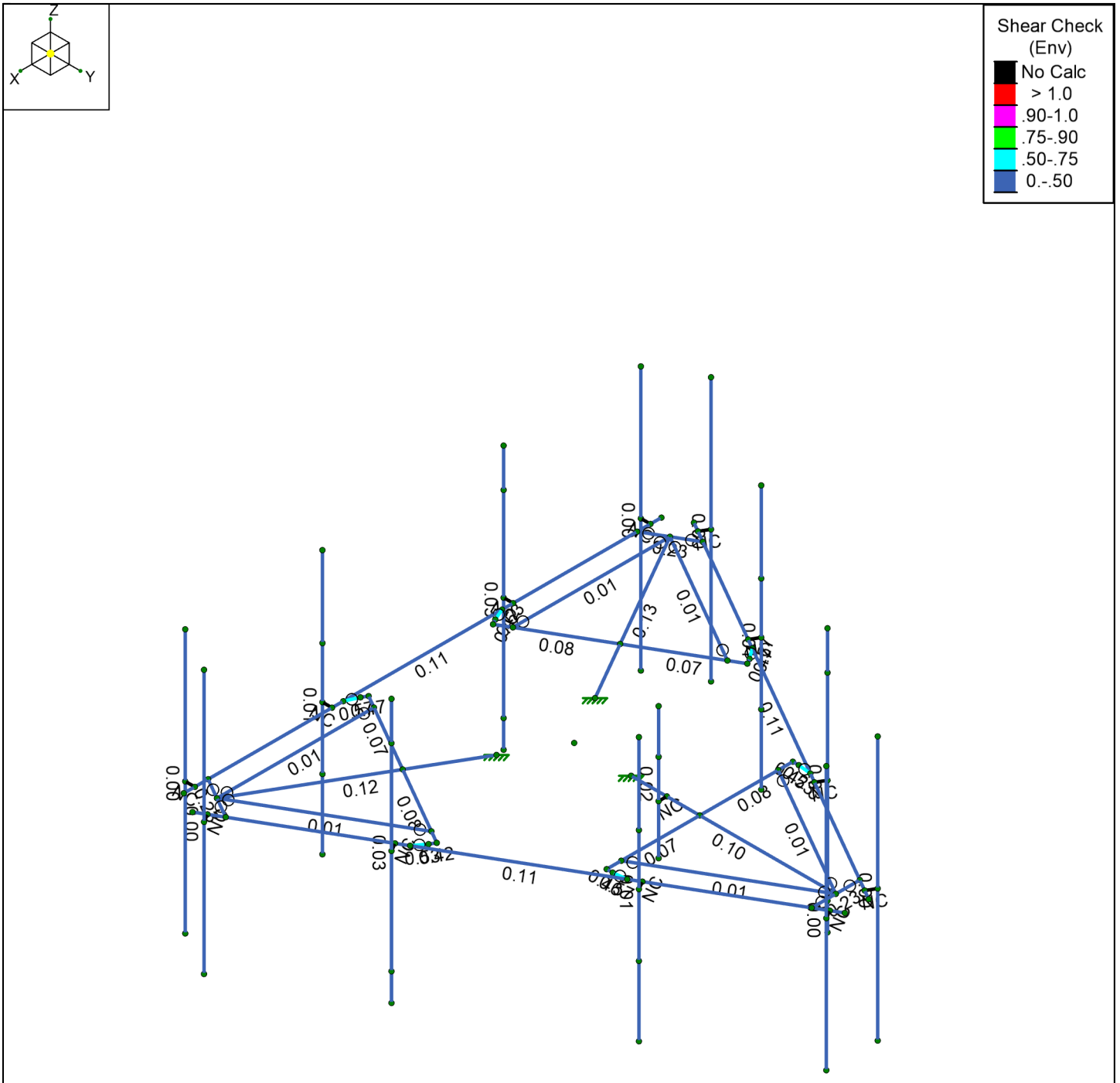


Code Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50



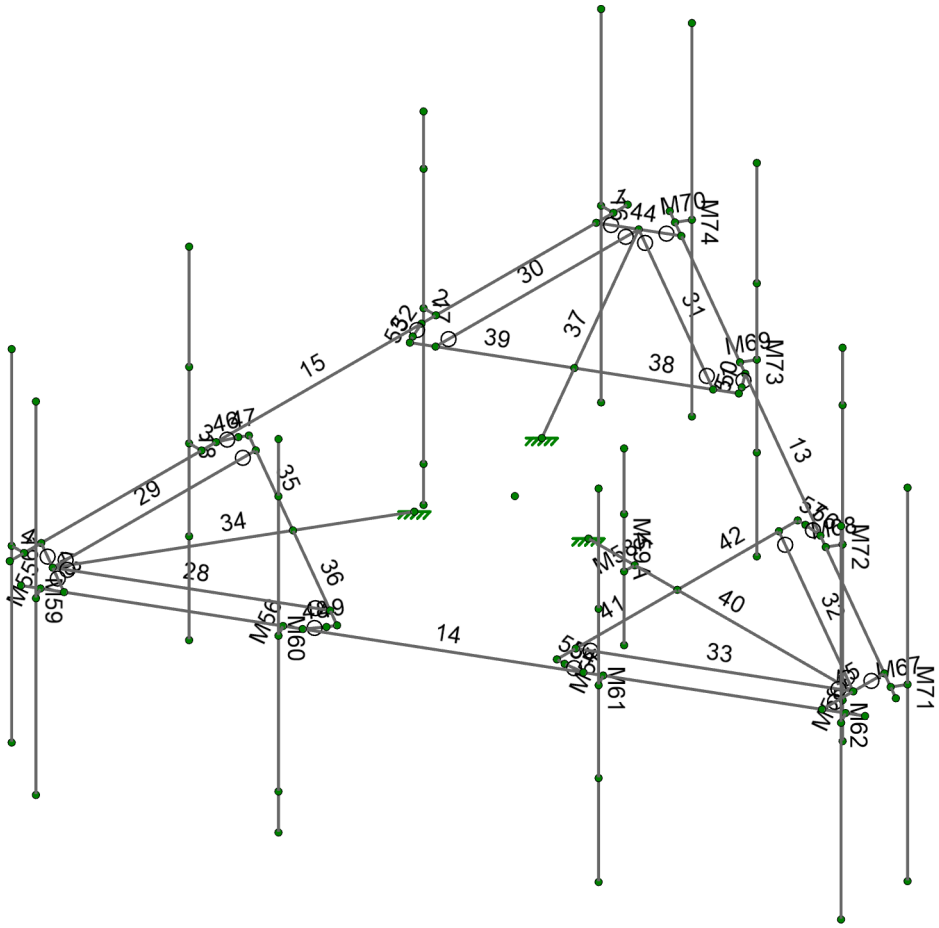
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-5
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d



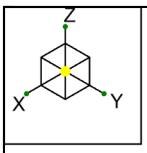
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

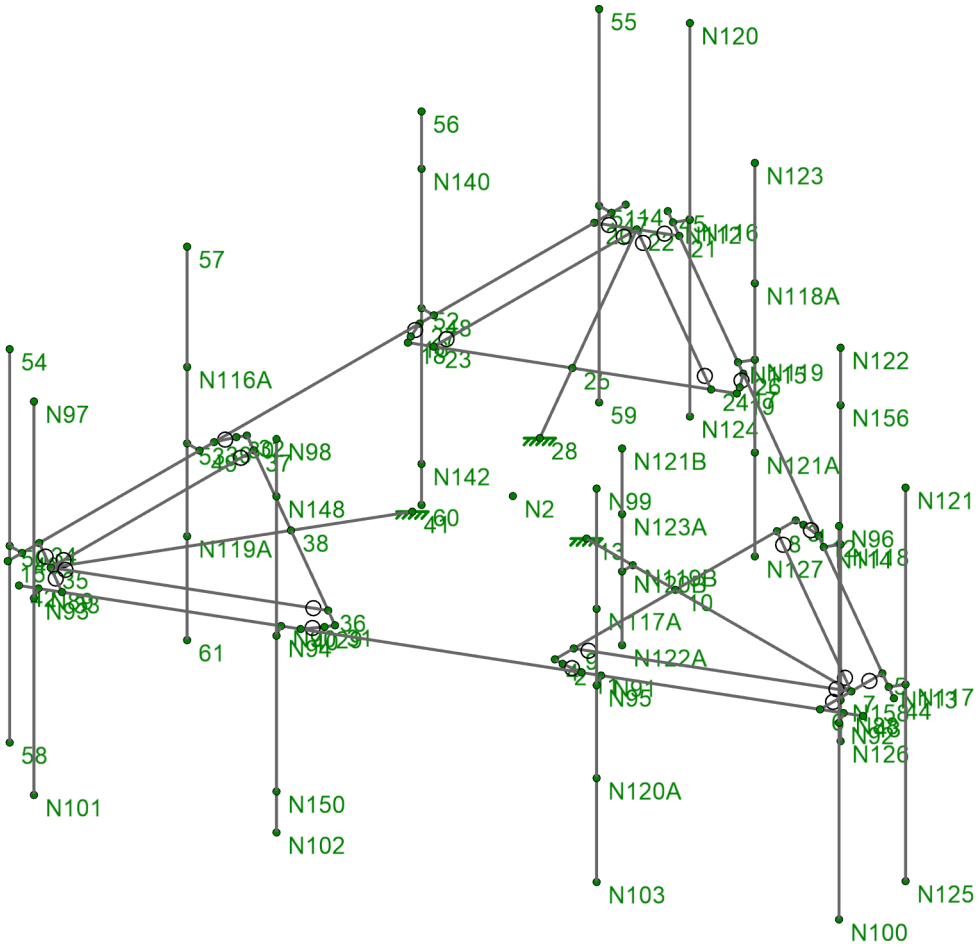
ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-6
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d



Envelope Only Solution

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-7
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d





Envelope Only Solution

ProTerra Design Group, LLC	Plymouth NW CT - Rev.2	SK-8
YT		Nov 16, 2021
049.00158 - 2078003		Plymouth NW CT - Rev.2.r3d

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
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	No
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	Z
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI NAS-01: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AF&PA NDS-05/08: ASD
Temperature	< 100F
Concrete	ACI 318-05
Masonry	ACI 530-05: ASD
Aluminum	AA ADM1-05: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Model Settings (Continued)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
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 7-05
Occupancy Cat	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	-1

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.035
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	8.5
R X	8.5
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Project Grid Lines

No Data to Print...

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	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.5	60	1.2
7	A529 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.2

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	47	51		RIGID	None	None	LINK	Typical
2	2	48	52		RIGID	None	None	LINK	Typical
3	3	49	53		RIGID	None	None	LINK	Typical
4	4	46	50		RIGID	None	None	LINK	Typical
5	M55	N89	N93		RIGID	None	None	LINK	Typical
6	M56	N90	N94		RIGID	None	None	LINK	Typical
7	M57	N91	N95		RIGID	None	None	LINK	Typical
8	M58	N88	N92		RIGID	None	None	LINK	Typical
9	M67	N113	N117		RIGID	None	None	LINK	Typical
10	M68	N114	N118		RIGID	None	None	LINK	Typical
11	M69	N115	N119		RIGID	None	None	LINK	Typical
12	M70	N112	N116		RIGID	None	None	LINK	Typical
13	13	44	45		PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical
14	14	42	43		PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical
15	15	14	15		PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical
16	17	56	60		PIPE_2.5	Beam	BAR	A53 Gr.B	Typical
17	M60	N98	N102		PIPE_2.5	Beam	BAR	A53 Gr.B	Typical
18	M72	N122	N126		PIPE_2.5	Beam	BAR	A53 Gr.B	Typical
19	16	55	59		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
20	18	57	61		PIPE_2.0	None	None	A53 Gr.B	Typical
21	19	54	58		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
22	M59	N97	N101		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
23	M61	N99	N103		PIPE_2.0	None	None	A53 Gr.B	Typical
24	M62	N96	N100		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
25	M71	N121	N125		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
26	M73	N123	N127		PIPE_2.0	None	None	A53 Gr.B	Typical
27	M74	N120	N124		PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
28	28	35	36	180	L2X2X3	None	None	A36 Gr.36	Typical
29	29	35	37	270	L2X2X3	None	None	A36 Gr.36	Typical
30	30	22	23		L2X2X3	None	None	A36 Gr.36	Typical
31	31	22	24	90	L2X2X3	None	None	A36 Gr.36	Typical
32	32	7	8	180	L2X2X3	None	None	A36 Gr.36	Typical
33	33	7	9	90	L2X2X3	None	None	A36 Gr.36	Typical
34	34	35	41		HSS4X4X4	None	None	A500 Gr.46	Typical
35	35	38	32		HSS4X4X4	None	None	A500 Gr.46	Typical
36	36	31	38		HSS4X4X4	None	None	A500 Gr.46	Typical
37	37	22	28		HSS4X4X4	None	None	A500 Gr.46	Typical
38	38	25	19		HSS4X4X4	None	None	A500 Gr.46	Typical
39	39	18	25		HSS4X4X4	None	None	A500 Gr.46	Typical
40	40	7	13		HSS4X4X4	None	None	A500 Gr.46	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
41	41	10	4		HSS4X4X4	None	None	A500 Gr.46	Typical
42	42	3	10		HSS4X4X4	None	None	A500 Gr.46	Typical
43	43	33	34		3/8 X 6	None	None	A36 Gr.36	Typical
44	44	21	20		3/8 X 6	None	None	A36 Gr.36	Typical
45	45	5	6		3/8 X 6	None	None	A36 Gr.36	Typical
46	46	30	39		3/8 X 6	None	None	A36 Gr.36	Typical
47	47	32	30		3/8 X 6	None	None	A36 Gr.36	Typical
48	48	29	40		3/8 X 6	None	None	A36 Gr.36	Typical
49	49	31	29		3/8 X 6	None	None	A36 Gr.36	Typical
50	50	17	26		3/8 X 6	None	None	A36 Gr.36	Typical
51	51	19	17		3/8 X 6	None	None	A36 Gr.36	Typical
52	52	16	27		3/8 X 6	None	None	A36 Gr.36	Typical
53	53	18	16		3/8 X 6	None	None	A36 Gr.36	Typical
54	54	2	11		3/8 X 6	None	None	A36 Gr.36	Typical
55	55	4	2		3/8 X 6	None	None	A36 Gr.36	Typical
56	56	1	12		3/8 X 6	None	None	A36 Gr.36	Typical
57	57	3	1		3/8 X 6	None	None	A36 Gr.36	Typical
58	M58A	N119B	N120B		RIGID	None	None	LINK	Typical
59	M59A	N121B	N122A		PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	1			Yes	** NA **	None
2	2			Yes	** NA **	None
3	3			Yes	** NA **	None
4	4			Yes	** NA **	None
5	M55			Yes	** NA **	None
6	M56			Yes	** NA **	None
7	M57			Yes	** NA **	None
8	M58			Yes	** NA **	None
9	M67			Yes	** NA **	None
10	M68			Yes	** NA **	None
11	M69			Yes	** NA **	None
12	M70			Yes	** NA **	None
13	13			Yes	N/A	None
14	14			Yes	N/A	None
15	15			Yes	N/A	None
16	17			Yes	N/A	None
17	M60			Yes	N/A	None
18	M72			Yes	N/A	None
19	16			Yes	N/A	None
20	18			Yes	** NA **	None
21	19			Yes	N/A	None
22	M59			Yes	N/A	None
23	M61			Yes	** NA **	None
24	M62			Yes	N/A	None
25	M71			Yes	N/A	None
26	M73			Yes	** NA **	None
27	M74			Yes	N/A	None
28	28	BenPIN	BenPIN	Yes	** NA **	None
29	29	BenPIN	BenPIN	Yes	** NA **	None
30	30	BenPIN	BenPIN	Yes	** NA **	None
31	31	BenPIN	BenPIN	Yes	** NA **	None
32	32	BenPIN	BenPIN	Yes	** NA **	None
33	33	BenPIN	BenPIN	Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
34	34			Yes	** NA **	None
35	35			Yes	** NA **	None
36	36			Yes	** NA **	None
37	37			Yes	** NA **	None
38	38			Yes	** NA **	None
39	39			Yes	** NA **	None
40	40			Yes	** NA **	None
41	41			Yes	** NA **	None
42	42			Yes	** NA **	None
43	43	BenPIN	BenPIN	Yes	** NA **	None
44	44	BenPIN	BenPIN	Yes	** NA **	None
45	45	BenPIN	BenPIN	Yes	** NA **	None
46	46		BenPIN	Yes	** NA **	None
47	47			Yes	** NA **	None
48	48		BenPIN	Yes	** NA **	None
49	49			Yes	** NA **	None
50	50		BenPIN	Yes	** NA **	None
51	51			Yes	** NA **	None
52	52		BenPIN	Yes	** NA **	None
53	53			Yes	** NA **	None
54	54		BenPIN	Yes	** NA **	None
55	55			Yes	** NA **	None
56	56		BenPIN	Yes	** NA **	None
57	57			Yes	** NA **	None
58	M58A			Yes	** NA **	None
59	M59A			Yes	N/A	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Function
1	13	PIPE_3.0	174	Lbyy	Lateral
2	14	PIPE_3.0	174	Lbyy	Lateral
3	15	PIPE_3.0	174	Lbyy	Lateral
4	17	PIPE_2.5	96	Lbyy	Lateral
5	M60	PIPE_2.5	96	Lbyy	Lateral
6	M72	PIPE_2.5	96	Lbyy	Lateral
7	16	PIPE_2.0	96	Lbyy	Lateral
8	18	PIPE_2.0	96		Lateral
9	19	PIPE_2.0	96		Lateral
10	M59	PIPE_2.0	96	Lbyy	Lateral
11	M61	PIPE_2.0	96		Lateral
12	M62	PIPE_2.0	96		Lateral
13	M71	PIPE_2.0	96	Lbyy	Lateral
14	M73	PIPE_2.0	96		Lateral
15	M74	PIPE_2.0	96		Lateral
16	28	L2X2X3	57.212		Lateral
17	29	L2X2X3	57.215		Lateral
18	30	L2X2X3	57.215		Lateral
19	31	L2X2X3	57.219		Lateral
20	32	L2X2X3	57.212		Lateral
21	33	L2X2X3	57.219		Lateral
22	34	HSS4X4X4	74.571		Lateral
23	35	HSS4X4X4	33.915		Lateral
24	36	HSS4X4X4	33.9		Lateral
25	37	HSS4X4X4	74.571		Lateral
26	38	HSS4X4X4	33.914		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	Function
27	39	HSS4X4X4	33.9		Lateral
28	40	HSS4X4X4	74.571		Lateral
29	41	HSS4X4X4	33.914		Lateral
30	42	HSS4X4X4	33.9		Lateral
31	43	3/8 X 6	17.538		Lateral
32	44	3/8 X 6	17.538		Lateral
33	45	3/8 X 6	17.544		Lateral
34	46	3/8 X 6	4.745		Lateral
35	47	3/8 X 6	2.188		Lateral
36	48	3/8 X 6	4.798		Lateral
37	49	3/8 X 6	2.188		Lateral
38	50	3/8 X 6	4.749		Lateral
39	51	3/8 X 6	2.188		Lateral
40	52	3/8 X 6	4.776		Lateral
41	53	3/8 X 6	2.188		Lateral
42	54	3/8 X 6	4.777		Lateral
43	55	3/8 X 6	2.188		Lateral
44	56	3/8 X 6	4.77		Lateral
45	57	3/8 X 6	2.188		Lateral
46	M59A	PIPE_2.0	48	Lbyy	Lateral

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	1	-33.906712	47.930469	0	
2	N2	0	0	0	
3	2	33.907959	47.930469	0	
4	3	-33.906712	45.742899	0	
5	4	33.907959	45.742899	0	
6	5	-8.765555	95.292751	0	
7	6	8.778371	95.292751	0	
8	7	-0.006511	95.292751	0	
9	8	-28.606997	45.742899	0	
10	9	28.608244	45.742899	0	
11	10	-0.006511	45.742899	0	
12	11	33.377887	52.67815	0	
13	12	-33.377478	52.670641	0	
14	13	-0.006511	20.721322	0	
15	14	-87.009796	-55.236939	0	
16	15	86.990589	-55.249297	0	
17	16	-24.564921	-53.322815	0	
18	17	-58.472257	5.406413	0	
19	18	-22.67043	-52.22903	0	
20	19	-56.577766	6.500198	0	
21	20	-78.149053	-55.236939	0	
22	21	-86.917891	-40.048866	0	
23	22	-82.531961	-47.64552	0	
24	23	-25.316721	-47.64552	0	
25	24	-53.927908	1.91051	0	
26	25	-39.620588	-22.870497	0	
27	26	-62.296174	2.590204	0	
28	27	-28.940062	-55.236939	0	
29	28	-17.951295	-10.359658	0	
30	29	58.4521	5.394056	0	
31	30	24.544765	-53.335173	0	
32	31	56.557608	6.487841	0	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
33	32	22.650274	-52.241388	0	
34	33	86.904971	-40.048688	0	
35	34	78.136031	-55.236939	0	
36	35	82.518938	-47.645521	0	
37	36	53.907751	1.898152	0	
38	37	25.303698	-47.645521	0	
39	38	39.607566	-22.870497	0	
40	39	28.891658	-55.236939	0	
41	40	62.315243	2.548957	0	
42	41	17.938272	-10.359658	0	
43	42	91.34149	-47.734225	0	
44	43	4.352	102.960708	0	
45	44	-4.331694	102.971164	0	
46	45	-91.342589	-47.711411	0	
47	46	82.980589	-55.236939	0	
48	47	-82.999996	-55.236939	0	
49	48	-32.999996	-55.236939	0	
50	49	32.999989	-55.236939	0	
51	50	82.980589	-58.729297	0	
52	51	-82.999996	-58.716939	0	
53	52	-32.999996	-58.716939	0	
54	53	32.999989	-58.729297	0	
55	54	82.980589	-58.729297	48	
56	55	-82.999996	-58.716939	48	
57	56	-32.999996	-58.716939	48	
58	57	32.999989	-58.729297	48	
59	58	82.980589	-58.729297	-48	
60	59	-82.999996	-58.716939	-48	
61	60	-32.999996	-58.716939	-48	
62	61	32.999989	-58.729297	-48	
63	N88	6.356022	99.487382	0	
64	N89	89.337467	-44.260898	0	
65	N90	64.341171	-0.957721	0	
66	N91	31.342719	56.200832	0	
67	N92	9.370768	101.227946	0	
68	N93	92.350259	-42.521462	0	
69	N94	67.350359	0.779635	0	
70	N95	34.361068	57.943477	0	
71	N96	9.370768	101.227946	48	
72	N97	92.350259	-42.521462	48	
73	N98	67.350359	0.779635	48	
74	N99	34.361068	57.943477	48	
75	N100	9.370768	101.227946	-48	
76	N101	92.350259	-42.521462	-48	
77	N102	67.350359	0.779635	-48	
78	N103	34.361068	57.943477	-48	
79	N112	-89.336611	-44.239214	0	
80	N113	-6.337672	99.498966	0	
81	N114	-31.341175	56.199949	0	
82	N115	-64.342709	-0.956825	0	
83	N116	-92.351357	-42.49865	0	
84	N117	-9.350463	101.238402	0	
85	N118	-34.350363	57.937305	0	
86	N119	-67.361057	0.78582	0	
87	N120	-92.351357	-42.49865	48	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
88	N121	-9.350463	101.238402	48	
89	N122	-34.350363	57.937305	48	
90	N123	-67.361057	0.78582	48	
91	N124	-92.351357	-42.49865	-48	
92	N125	-9.350463	101.238402	-48	
93	N126	-34.350363	57.937305	-48	
94	N127	-67.361057	0.78582	-48	
95	N140	-32.999996	-58.716939	34	
96	N142	-32.999996	-58.716939	-38	
97	N148	67.350359	0.779635	34	
98	N150	67.350359	0.779635	-38	
99	N156	-34.350363	57.937305	34	
100	N158	-34.350363	57.937305	-38	
101	N116A	32.999989	-58.729297	18.65	
102	N117A	34.361068	57.943477	18.65	
103	N118A	-67.361057	0.78582	18.65	
104	N119A	32.999989	-58.729297	-22.65	
105	N120A	34.361068	57.943477	-22.65	
106	N121A	-67.361057	0.78582	-22.65	
107	N119B	-0.006511	33.742899	0	
108	N120B	2.993489	33.742899	0	
109	N121B	2.993489	33.742899	30	
110	N122A	2.993489	33.742899	-18	
111	N123A	2.993489	33.742899	14	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	28	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	DEAD LOAD	None	-1	13		3
2	DEAD LOAD ICE	None		13	46	3
3	WIND LOAD (NO ICE) FRONT	None		13	46	
4	WIND LOAD (NO ICE) SIDE	None		13	46	
5	WIND LOAD (ICE) FRONT	None		13	46	
6	WIND LOAD (ICE) SIDE	None		13	46	
7	LIVE LOAD1	None		1		
8	LIVE LOAD2	None		1		
9	LIVE LOAD3	None		1		
10	MAINTENANCE LOAD 1	None		1		
11	MAINTENANCE LOAD 2	None		1		
12	MAINTENANCE LOAD 3	None		1		
13	MAINTENANCE LOAD 4	None		1		
14	BLC 1 Transient Area Loads	None			21	
15	BLC 2 Transient Area Loads	None			21	

Node Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	Z	-92
2	N119A	L	Z	-92
3	N118A	L	Z	-92
4	N121A	L	Z	-92
5	N117A	L	Z	-92
6	N120A	L	Z	-92
7	N140	L	Z	-96
8	N142	L	Z	-96
9	N156	L	Z	-96
10	N158	L	Z	-96
11	N148	L	Z	-96
12	N150	L	Z	-96
13	N123A	L	Z	-32

Node Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	Z	-124
2	N119A	L	Z	-124
3	N118A	L	Z	-124
4	N121A	L	Z	-124
5	N117A	L	Z	-124
6	N120A	L	Z	-124
7	N140	L	Z	-308
8	N142	L	Z	-308
9	N156	L	Z	-308
10	N158	L	Z	-308
11	N148	L	Z	-308
12	N150	L	Z	-308
13	N123A	L	Z	-147

Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	Y	63
2	N119A	L	Y	63
3	N118A	L	Y	47
4	N121A	L	Y	47
5	N117A	L	Y	47
6	N120A	L	Y	47
7	N140	L	Y	214
8	N142	L	Y	214
9	N156	L	Y	170
10	N158	L	Y	170
11	N148	L	Y	170
12	N150	L	Y	170
13	N123A	L	Y	67

Node Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	X	47
2	N119A	L	X	47
3	N118A	L	X	63

Node Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
4	N121A	L	X	63
5	N117A	L	X	63
6	N120A	L	X	63
7	N140	L	X	170
8	N142	L	X	170
9	N156	L	X	214
10	N158	L	X	214
11	N148	L	X	214
12	N150	L	X	214
13	N123A	L	X	88

Node Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	Y	22
2	N119A	L	Y	22
3	N118A	L	Y	18
4	N121A	L	Y	18
5	N117A	L	Y	18
6	N120A	L	Y	18
7	N140	L	Y	72
8	N142	L	Y	72
9	N156	L	Y	61
10	N158	L	Y	61
11	N148	L	Y	61
12	N150	L	Y	61
13	N123A	L	Y	24

Node Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N116A	L	X	18
2	N119A	L	X	18
3	N118A	L	X	22
4	N121A	L	X	22
5	N117A	L	X	22
6	N120A	L	X	22
7	N140	L	X	61
8	N142	L	X	61
9	N156	L	X	72
10	N158	L	X	72
11	N148	L	X	72
12	N150	L	X	72
13	N123A	L	X	31

Node Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	35	L	Z	-250

Node Loads and Enforced Displacements (BLC 8 : LIVE LOAD2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	22	L	Z	-250

Node Loads and Enforced Displacements (BLC 9 : LIVE LOAD3)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	7	L	Z	-250

Node Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD 1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	58	L	Z	-500

Node Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD 2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	61	L	Z	-500

Node Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD 3)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	60	L	Z	-500

Node Loads and Enforced Displacements (BLC 13 : MAINTENANCE LOAD 4)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	59	L	Z	-500

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	13	Z	-11	-11	0	%100
2	14	Z	-11	-11	0	%100
3	15	Z	-11	-11	0	%100
4	17	Z	-10	-10	0	%100
5	M60	Z	-10	-10	0	%100
6	M72	Z	-10	-10	0	%100
7	16	Z	-9	-9	0	%100
8	18	Z	-9	-9	0	%100
9	19	Z	-9	-9	0	%100
10	M59	Z	-9	-9	0	%100
11	M61	Z	-9	-9	0	%100
12	M62	Z	-9	-9	0	%100
13	M71	Z	-9	-9	0	%100
14	M73	Z	-9	-9	0	%100
15	M74	Z	-9	-9	0	%100
16	M59A	Z	-9	-9	0	%100
17	28	Z	-5	-5	0	%100
18	29	Z	-5	-5	0	%100
19	30	Z	-5	-5	0	%100

Member Distributed Loads (BLC 2 : DEAD LOAD ICE) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
20	31	Z	-5	-5	0	%100
21	32	Z	-5	-5	0	%100
22	33	Z	-5	-5	0	%100
23	34	Z	-22	-22	0	%100
24	35	Z	-22	-22	0	%100
25	36	Z	-22	-22	0	%100
26	37	Z	-22	-22	0	%100
27	38	Z	-22	-22	0	%100
28	39	Z	-22	-22	0	%100
29	40	Z	-22	-22	0	%100
30	41	Z	-22	-22	0	%100
31	42	Z	-22	-22	0	%100
32	43	Z	-18	-18	0	%100
33	44	Z	-18	-18	0	%100
34	45	Z	-18	-18	0	%100
35	46	Z	-18	-18	0	%100
36	47	Z	-18	-18	0	%100
37	48	Z	-18	-18	0	%100
38	49	Z	-18	-18	0	%100
39	50	Z	-18	-18	0	%100
40	51	Z	-18	-18	0	%100
41	52	Z	-18	-18	0	%100
42	53	Z	-18	-18	0	%100
43	54	Z	-18	-18	0	%100
44	55	Z	-18	-18	0	%100
45	56	Z	-18	-18	0	%100
46	57	Z	-18	-18	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	13	PY	8	8	0	%100
2	14	PY	8	8	0	%100
3	15	PY	8	8	0	%100
4	17	PY	6	6	0	%100
5	M60	PY	6	6	0	%100
6	M72	PY	6	6	0	%100
7	16	PY	5	5	0	%100
8	18	PY	5	5	0	%100
9	19	PY	5	5	0	%100
10	M59	PY	5	5	0	%100
11	M61	PY	5	5	0	%100
12	M62	PY	5	5	0	%100
13	M71	PY	5	5	0	%100
14	M73	PY	5	5	0	%100
15	M74	PY	5	5	0	%100
16	M59A	PY	5	5	0	%100
17	28	PY	7	7	0	%100
18	29	PY	7	7	0	%100
19	30	PY	7	7	0	%100
20	31	PY	7	7	0	%100
21	32	PY	7	7	0	%100
22	33	PY	7	7	0	%100
23	34	PY	14	14	0	%100
24	35	PY	14	14	0	%100
25	36	PY	14	14	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
26	37	PY	14	14	0	%100
27	38	PY	14	14	0	%100
28	39	PY	14	14	0	%100
29	40	PY	14	14	0	%100
30	41	PY	14	14	0	%100
31	42	PY	14	14	0	%100
32	43	PY	22	22	0	%100
33	44	PY	22	22	0	%100
34	45	PY	22	22	0	%100
35	46	PY	22	22	0	%100
36	47	PY	22	22	0	%100
37	48	PY	22	22	0	%100
38	49	PY	22	22	0	%100
39	50	PY	22	22	0	%100
40	51	PY	22	22	0	%100
41	52	PY	22	22	0	%100
42	53	PY	22	22	0	%100
43	54	PY	22	22	0	%100
44	55	PY	22	22	0	%100
45	56	PY	22	22	0	%100
46	57	PY	22	22	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	13	PX	8	8	0	%100
2	14	PX	8	8	0	%100
3	15	PX	8	8	0	%100
4	17	PX	6	6	0	%100
5	M60	PX	6	6	0	%100
6	M72	PX	6	6	0	%100
7	16	PX	5	5	0	%100
8	18	PX	5	5	0	%100
9	19	PX	5	5	0	%100
10	M59	PX	5	5	0	%100
11	M61	PX	5	5	0	%100
12	M62	PX	5	5	0	%100
13	M71	PX	5	5	0	%100
14	M73	PX	5	5	0	%100
15	M74	PX	5	5	0	%100
16	M59A	PX	5	5	0	%100
17	28	PX	7	7	0	%100
18	29	PX	7	7	0	%100
19	30	PX	7	7	0	%100
20	31	PX	7	7	0	%100
21	32	PX	7	7	0	%100
22	33	PX	7	7	0	%100
23	34	PX	14	14	0	%100
24	35	PX	14	14	0	%100
25	36	PX	14	14	0	%100
26	37	PX	14	14	0	%100
27	38	PX	14	14	0	%100
28	39	PX	14	14	0	%100
29	40	PX	14	14	0	%100
30	41	PX	14	14	0	%100
31	42	PX	14	14	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
32	43	PX	22	22	0	%100
33	44	PX	22	22	0	%100
34	45	PX	22	22	0	%100
35	46	PX	22	22	0	%100
36	47	PX	22	22	0	%100
37	48	PX	22	22	0	%100
38	49	PX	22	22	0	%100
39	50	PX	22	22	0	%100
40	51	PX	22	22	0	%100
41	52	PX	22	22	0	%100
42	53	PX	22	22	0	%100
43	54	PX	22	22	0	%100
44	55	PX	22	22	0	%100
45	56	PX	22	22	0	%100
46	57	PX	22	22	0	%100

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	13	PY	5.7	5.7	0	%100
2	14	PY	5.7	5.7	0	%100
3	15	PY	5.7	5.7	0	%100
4	17	PY	5.2	5.2	0	%100
5	M60	PY	5.2	5.2	0	%100
6	M72	PY	5.2	5.2	0	%100
7	16	PY	4.8	4.8	0	%100
8	18	PY	4.8	4.8	0	%100
9	19	PY	4.8	4.8	0	%100
10	M59	PY	4.8	4.8	0	%100
11	M61	PY	4.8	4.8	0	%100
12	M62	PY	4.8	4.8	0	%100
13	M71	PY	4.8	4.8	0	%100
14	M73	PY	4.8	4.8	0	%100
15	M74	PY	4.8	4.8	0	%100
16	M59A	PY	4.8	4.8	0	%100
17	28	PY	5.3	5.3	0	%100
18	29	PY	5.3	5.3	0	%100
19	30	PY	5.3	5.3	0	%100
20	31	PY	5.3	5.3	0	%100
21	32	PY	5.3	5.3	0	%100
22	33	PY	5.3	5.3	0	%100
23	34	PY	7.7	7.7	0	%100
24	35	PY	7.7	7.7	0	%100
25	36	PY	7.7	7.7	0	%100
26	37	PY	7.7	7.7	0	%100
27	38	PY	7.7	7.7	0	%100
28	39	PY	7.7	7.7	0	%100
29	40	PY	7.7	7.7	0	%100
30	41	PY	7.7	7.7	0	%100
31	42	PY	7.7	7.7	0	%100
32	43	PY	10.2	10.2	0	%100
33	44	PY	10.2	10.2	0	%100
34	45	PY	10.2	10.2	0	%100
35	46	PY	10.2	10.2	0	%100
36	47	PY	10.2	10.2	0	%100
37	48	PY	10.2	10.2	0	%100

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
38	49	PY	10.2	10.2	0	%100
39	50	PY	10.2	10.2	0	%100
40	51	PY	10.2	10.2	0	%100
41	52	PY	10.2	10.2	0	%100
42	53	PY	10.2	10.2	0	%100
43	54	PY	10.2	10.2	0	%100
44	55	PY	10.2	10.2	0	%100
45	56	PY	10.2	10.2	0	%100
46	57	PY	10.2	10.2	0	%100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	13	PX	5.7	5.7	0	%100
2	14	PX	5.7	5.7	0	%100
3	15	PX	5.7	5.7	0	%100
4	17	PX	5.2	5.2	0	%100
5	M60	PX	5.2	5.2	0	%100
6	M72	PX	5.2	5.2	0	%100
7	16	PX	4.8	4.8	0	%100
8	18	PX	4.8	4.8	0	%100
9	19	PX	4.8	4.8	0	%100
10	M59	PX	4.8	4.8	0	%100
11	M61	PX	4.8	4.8	0	%100
12	M62	PX	4.8	4.8	0	%100
13	M71	PX	4.8	4.8	0	%100
14	M73	PX	4.8	4.8	0	%100
15	M74	PX	4.8	4.8	0	%100
16	M59A	PX	4.8	4.8	0	%100
17	28	PX	5.3	5.3	0	%100
18	29	PX	5.3	5.3	0	%100
19	30	PX	5.3	5.3	0	%100
20	31	PX	5.3	5.3	0	%100
21	32	PX	5.3	5.3	0	%100
22	33	PX	5.3	5.3	0	%100
23	34	PX	7.7	7.7	0	%100
24	35	PX	7.7	7.7	0	%100
25	36	PX	7.7	7.7	0	%100
26	37	PX	7.7	7.7	0	%100
27	38	PX	7.7	7.7	0	%100
28	39	PX	7.7	7.7	0	%100
29	40	PX	7.7	7.7	0	%100
30	41	PX	7.7	7.7	0	%100
31	42	PX	7.7	7.7	0	%100
32	43	PX	10.2	10.2	0	%100
33	44	PX	10.2	10.2	0	%100
34	45	PX	10.2	10.2	0	%100
35	46	PX	10.2	10.2	0	%100
36	47	PX	10.2	10.2	0	%100
37	48	PX	10.2	10.2	0	%100
38	49	PX	10.2	10.2	0	%100
39	50	PX	10.2	10.2	0	%100
40	51	PX	10.2	10.2	0	%100
41	52	PX	10.2	10.2	0	%100
42	53	PX	10.2	10.2	0	%100
43	54	PX	10.2	10.2	0	%100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
44	55	PX	10.2	10.2	0	%100
45	56	PX	10.2	10.2	0	%100
46	57	PX	10.2	10.2	0	%100

Member Distributed Loads (BLC 14 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	40	Z	-6.241	-6.241	14.094	36.793
2	41	Z	-5.373	-5.373	0.264	12.264
3	42	Z	-5.37	-5.37	21.639	33.639
4	28	Z	-0.704	-2.796	0	28.606
5	28	Z	-2.796	-4.889	28.606	57.212
6	29	Z	-0.704	-2.797	0	28.608
7	29	Z	-2.797	-4.889	28.608	57.215
8	34	Z	-6.24	-6.24	14.095	36.794
9	35	Z	-5.371	-5.371	0.263	12.263
10	36	Z	-5.37	-5.37	21.639	33.639
11	30	Z	-0.704	-2.797	0	28.608
12	30	Z	-2.797	-4.889	28.608	57.215
13	31	Z	-0.705	-2.797	0	28.609
14	31	Z	-2.797	-4.89	28.609	57.219
15	37	Z	-6.242	-6.242	14.094	36.794
16	38	Z	-5.372	-5.372	0.264	12.264
17	39	Z	-5.371	-5.371	21.638	33.638
18	32	Z	-0.704	-2.796	0	28.606
19	32	Z	-2.796	-4.889	28.606	57.212
20	33	Z	-0.704	-2.797	0	28.609
21	33	Z	-2.797	-4.89	28.609	57.219

Member Distributed Loads (BLC 15 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	28	Z	-1.158	-4.597	0	28.606
2	28	Z	-4.597	-8.037	28.606	57.212
3	29	Z	-1.158	-4.598	0	28.608
4	29	Z	-4.598	-8.038	28.608	57.215
5	34	Z	-10.259	-10.259	14.095	36.794
6	35	Z	-8.83	-8.83	0.263	12.263
7	36	Z	-8.828	-8.828	21.639	33.639
8	30	Z	-1.158	-4.598	0	28.608
9	30	Z	-4.598	-8.038	28.608	57.215
10	31	Z	-1.158	-4.599	0	28.609
11	31	Z	-4.599	-8.04	28.609	57.219
12	37	Z	-10.262	-10.262	14.094	36.794
13	38	Z	-8.832	-8.832	0.264	12.264
14	39	Z	-8.83	-8.83	21.638	33.638
15	32	Z	-1.158	-4.597	0	28.606
16	32	Z	-4.597	-8.037	28.606	57.212
17	33	Z	-1.158	-4.599	0	28.609
18	33	Z	-4.599	-8.04	28.609	57.219
19	40	Z	-10.26	-10.26	14.094	36.793
20	41	Z	-8.833	-8.833	0.264	12.264
21	42	Z	-8.828	-8.828	21.639	33.639

Member Area Loads (BLC 1 : DEAD LOAD)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	35	37	36	36	Z	Two Way	-5
2	23	22	24	24	Z	Two Way	-5
3	9	8	7	7	Z	Two Way	-5

Member Area Loads (BLC 2 : DEAD LOAD ICE)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	35	37	36	36	Z	Two Way	-8.22
2	23	22	24	24	Z	Two Way	-8.22
3	9	8	7	7	Z	Two Way	-8.22

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL + WL (NO ICE) 0 Degree	Yes	Y	1	1.2			3	1.6		
2	DL + WL (NO ICE) 30 Degree	Yes	Y	1	1.2			3	1.386	4	0.8
3	DL + WL (NO ICE) 60 Degree	Yes	Y	1	1.2			3	0.8	4	1.386
4	DL + WL (NO ICE) 90 Degree	Yes	Y	1	1.2					4	1.6
5	DL + WL (NO ICE) 120 Degree	Yes	Y	1	1.2			3	-0.8	4	1.386
6	DL + WL (NO ICE) 150 Degree	Yes	Y	1	1.2			3	-1.386	4	0.8
7	DL + WL (NO ICE) 180 Degree	Yes	Y	1	1.2			3	-1.6		
8	DL + WL (NO ICE) 210 Degree	Yes	Y	1	1.2			3	-1.386	4	-0.8
9	DL + WL (NO ICE) 240 Degree	Yes	Y	1	1.2			3	-0.8	4	-1.386
10	DL + WL (NO ICE) 270 Degree	Yes	Y	1	1.2					4	-1.6
11	DL + WL (NO ICE) 300 Degree	Yes	Y	1	1.2			3	0.8	4	-1.386
12	DL + WL (NO ICE) 330 Degree	Yes	Y	1	1.2			3	1.386	4	-0.8
13	DL + DL ICE + WL (ICE) 0 Degree	Yes	Y	1	1.2	2	1	5	1		
14	DL + DL ICE + WL (ICE) 30 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	0.5
15	DL + DL ICE + WL (ICE) 60 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	0.866
16	DL + DL ICE + WL (ICE) 90 Degree	Yes	Y	1	1.2	2	1			6	1
17	DL + DL ICE + WL (ICE) 120 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	0.866
18	DL + DL ICE + WL (ICE) 150 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	0.5
19	DL + DL ICE + WL (ICE) 180 Degree	Yes	Y	1	1.2	2	1	5	-1		
20	DL + DL ICE + WL (ICE) 210 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	-0.5
21	DL + DL ICE + WL (ICE) 240 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	-0.866
22	DL + DL ICE + WL (ICE) 270 Degree	Yes	Y	1	1.2	2	1			6	-1
23	DL + DL ICE + WL (ICE) 300 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	-0.866
24	DL + DL ICE + WL (ICE) 330 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	-0.5
25	DEAD LOAD + LIVE LOAD1	Yes	Y	1	1.2					7	1.5
26	DEAD LOAD + LIVE LOAD2	Yes	Y	1	1.2					8	1.5
27	DEAD LOAD + LIVE LOAD3	Yes	Y	1	1.2					9	1.5
28	DL + MAIN L1+30MPH WL FRONT	Yes	Y	1	1.2	10	1.5	3	0.104		
29	DL + MAIN L2+30MPH WL FRONT	Yes	Y	1	1.2	11	1.5	3	0.104		
30	DL + MAIN L3+30MPH WL FRONT	Yes	Y	1	1.2	12	1.5	3	0.104		
31	DL + MAIN L4+30MPH WL FRONT	Yes	Y	1	1.2	13	1.5	3	0.104		
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y	1	1.2	10	1.5	4	0.104		
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y	1	1.2	11	1.5	4	0.104		
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y	1	1.2	12	1.5	4	0.104		
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y	1	1.2	13	1.5	4	0.104		
36	DL + MAIN L1+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	10	1.5	3	-0.104		
37	DL + MAIN L2+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	11	1.5	3	-0.104		
38	DL + MAIN L3+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	12	1.5	3	-0.104		
39	DL + MAIN L4+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	13	1.5	3	-0.104		
40	DL + MAIN L1+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	10	1.5	4	-0.104		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
41	DL + MAIN L2+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	11	1.5	4	-0.104		
42	DL + MAIN L3+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	12	1.5	4	-0.104		
43	DL + MAIN L4+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	13	1.5	4	-0.104		

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	13	max	1157.776	10	1963.591	7	3002.823	19	8.212	20	0.287	22	1.518	4
2		min	-1154.65	4	-1958.414	1	925.585	29	2.579	32	-0.127	34	-1.515	10
3	28	max	1733.784	9	1520.064	8	2762.632	15	-1.311	36	6.761	15	0.93	1
4		min	-1741.606	3	-1519.05	2	938.339	40	-4.273	14	2.226	40	-0.932	7
5	41	max	1897.052	11	1235.046	6	2766.734	23	-1.271	39	-2.252	35	0.721	7
6		min	-1890.597	5	-1237.707	12	939.244	35	-3.897	28	-7.086	23	-0.714	1
7	Totals:	max	4620.918	10	4476.256	7	8509.574	14						
8		min	-4620.918	4	-4476.256	1	3057.618	8						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	1	max	0.024	4	0.016	3	-0.067	42	-3.238e-3	31	-1.204e-3	11	6.18e-3	10
2		min	-0.024	10	-0.015	9	-0.268	17	-1.052e-2	19	-8.954e-3	17	-6.281e-3	4
3	N2	max	0	43	0	43	0	43	0	43	0	43	0	43
4		min	0	1	0	1	0	1	0	1	0	1	0	1
5	2	max	0.021	4	0.015	11	-0.064	29	-3.226e-3	28	7.914e-3	21	3.294e-3	11
6		min	-0.02	10	-0.015	5	-0.22	20	-1.038e-2	19	1.25e-3	3	-3.319e-3	5
7	3	max	0.017	4	0.016	3	-0.06	42	-3.211e-3	31	-8.193e-4	42	6.258e-4	8
8		min	-0.017	10	-0.015	9	-0.245	17	-1.043e-2	19	-4.684e-3	17	-6.391e-4	2
9	4	max	0.017	4	0.015	11	-0.057	33	-3.2e-3	28	3.198e-3	21	5.096e-4	12
10		min	-0.017	10	-0.015	5	-0.197	20	-1.03e-2	19	7.279e-4	33	-5.141e-4	6
11	5	max	0.04	4	0.026	3	-0.187	31	-3.993e-3	11	-1.58e-3	11	1.436e-3	4
12		min	-0.04	10	-0.026	9	-0.624	19	-1.88e-2	17	-1.949e-2	17	-1.42e-3	10
13	6	max	0.04	4	0.018	12	-0.186	28	-4.198e-3	3	1.806e-2	21	6.168e-4	7
14		min	-0.04	10	-0.018	6	-0.606	19	-1.961e-2	21	1.884e-3	3	-6.095e-4	1
15	7	max	0.04	4	0.002	1	-0.19	28	-3.196e-3	28	3.513e-4	35	4.158e-4	10
16		min	-0.04	10	-0.002	7	-0.615	19	-1.041e-2	19	-1.049e-3	16	-4.291e-4	4
17	8	max	0.017	4	0.013	3	-0.055	42	-3.128e-3	31	-7.779e-4	42	5.659e-4	8
18		min	-0.017	10	-0.013	9	-0.22	17	-1.014e-2	19	-4.536e-3	17	-5.796e-4	2
19	9	max	0.017	4	0.012	11	-0.053	29	-3.118e-3	28	3.05e-3	21	4.562e-4	12
20		min	-0.017	10	-0.012	5	-0.18	20	-1.003e-2	19	6.864e-4	33	-4.602e-4	6
21	10	max	0.017	4	0.001	1	-0.041	28	-2.678e-3	28	2.458e-4	42	6.072e-4	10
22		min	-0.017	10	-0.001	7	-0.132	19	-8.594e-3	19	-6.398e-4	15	-6.163e-4	4
23	11	max	0.043	5	0.012	11	-0.079	29	-3.244e-3	3	1.988e-2	21	3.063e-4	1
24		min	-0.043	11	-0.012	5	-0.266	20	-1.653e-2	21	2.329e-3	3	-3.044e-4	7
25	12	max	0.072	4	0.013	2	-0.082	42	-3.196e-3	11	-1.977e-3	11	6.589e-4	9
26		min	-0.071	10	-0.013	8	-0.314	18	-1.773e-2	17	-2.e-2	17	-6.746e-4	3
27	13	max	0	4	0	1	0	29	0	32	0	34	0	10
28		min	0	10	0	7	0	19	0	20	0	22	0	4
29	14	max	0.02	9	0.051	5	-0.205	40	2.64e-2	13	-1.651e-3	41	2.062e-3	12
30		min	-0.02	3	-0.051	11	-0.824	35	3.032e-3	7	-1.128e-2	35	-2.052e-3	6
31	15	max	0.02	9	0.049	10	-0.205	35	2.544e-2	13	1.138e-2	40	1.267e-3	10
32		min	-0.02	3	-0.049	4	-0.824	40	3.41e-3	7	1.758e-3	34	-1.261e-3	4
33	16	max	0.019	11	0.018	1	-0.08	7	1.302e-2	13	-2.523e-4	29	3.984e-3	7
34		min	-0.02	5	-0.017	6	-0.268	13	2.723e-3	7	-5.754e-3	39	-4.119e-3	1
35	17	max	0.027	4	0.027	3	-0.058	42	3.07e-3	43	-3.697e-3	11	2.704e-3	9
36		min	-0.026	10	-0.026	9	-0.217	16	-1.904e-3	5	-1.284e-2	16	-2.793e-3	3

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
37	18	max	0.02	11	0.015	12	-0.072	7	9.257e-3	14	-1.941e-3	41	8.392e-4	12
38		min	-0.02	5	-0.015	6	-0.245	13	2.801e-3	7	-6.883e-3	35	-8.482e-4	6
39	19	max	0.029	4	0.023	3	-0.045	42	3.696e-3	31	-3.522e-3	40	1.435e-3	10
40		min	-0.028	10	-0.022	9	-0.194	16	4.88e-4	36	-1.042e-2	16	-1.454e-3	4
41	20	max	0.02	9	0.038	4	-0.186	40	2.637e-2	13	-1.644e-3	41	2.082e-3	12
42		min	-0.02	3	-0.038	10	-0.724	35	3.023e-3	7	-1.117e-2	35	-2.071e-3	6
43	21	max	0.006	1	0.048	4	-0.188	40	4.201e-3	43	-4.551e-3	11	7.135e-4	12
44		min	-0.006	6	-0.047	10	-0.664	35	-5.835e-3	17	-2.588e-2	17	-7.222e-4	6
45	22	max	0.019	10	0.038	4	-0.187	40	9.353e-3	31	-2.414e-3	41	8.291e-4	10
46		min	-0.02	4	-0.037	10	-0.693	35	1.465e-3	36	-9.483e-3	35	-8.44e-4	4
47	23	max	0.017	10	0.012	12	-0.066	7	8.986e-3	14	-1.86e-3	41	8.256e-4	12
48		min	-0.017	4	-0.012	6	-0.22	13	2.731e-3	7	-6.801e-3	35	-8.343e-4	6
49	24	max	0.022	4	0.019	3	-0.047	42	3.668e-3	31	-3.413e-3	40	1.35e-3	10
50		min	-0.022	10	-0.019	9	-0.178	16	4.842e-4	36	-1.012e-2	16	-1.368e-3	4
51	25	max	0.004	8	0.009	2	-0.042	40	5.022e-3	31	-2.191e-3	41	5.829e-4	10
52		min	-0.004	2	-0.009	8	-0.13	15	1.379e-3	36	-7.091e-3	35	-5.941e-4	4
53	26	max	0.024	5	0.04	3	-0.079	41	8.547e-4	43	-3.907e-3	11	8.315e-4	10
54		min	-0.023	11	-0.039	9	-0.262	16	-8.954e-3	17	-2.413e-2	17	-8.459e-4	4
55	27	max	0.02	9	0.049	1	-0.097	25	2.627e-2	13	-1.596e-5	41	1.659e-4	7
56		min	-0.02	3	-0.048	7	-0.313	14	2.967e-3	7	-6.907e-3	35	-1.601e-4	1
57	28	max	0	3	0	2	0	40	0	14	0	40	0	7
58		min	0	9	0	8	0	15	0	36	0	15	0	1
59	29	max	0.031	4	0.022	11	-0.062	33	3.025e-3	32	1.354e-2	21	3.158e-3	2
60		min	-0.031	10	-0.023	5	-0.268	21	-2.599e-3	21	3.725e-3	3	-3.223e-3	8
61	30	max	0.021	9	0.014	2	-0.075	6	1.201e-2	13	5.764e-3	36	2.479e-4	18
62		min	-0.021	3	-0.014	8	-0.243	29	2.735e-3	7	2.919e-4	30	-2.504e-4	24
63	31	max	0.032	4	0.022	10	-0.048	33	3.614e-3	28	1.134e-2	22	1.535e-3	10
64		min	-0.032	10	-0.022	4	-0.245	21	3.836e-4	8	3.596e-3	35	-1.537e-3	4
65	32	max	0.021	9	0.014	2	-0.068	6	8.01e-3	29	7.284e-3	22	8.743e-4	8
66		min	-0.021	3	-0.014	8	-0.228	29	2.658e-3	6	1.989e-3	34	-8.915e-4	2
67	33	max	0.017	8	0.041	10	-0.19	35	4.084e-3	32	2.606e-2	21	2.072e-3	9
68		min	-0.017	2	-0.041	4	-0.665	40	-7.63e-3	21	4.219e-3	3	-2.054e-3	3
69	34	max	0.02	9	0.037	10	-0.185	35	2.541e-2	13	1.127e-2	40	1.284e-3	10
70		min	-0.02	3	-0.037	4	-0.723	40	3.401e-3	7	1.751e-3	34	-1.278e-3	4
71	35	max	0.019	10	0.037	10	-0.187	35	9.222e-3	28	9.557e-3	40	8.694e-4	10
72		min	-0.019	4	-0.037	4	-0.693	40	1.327e-3	39	2.493e-3	34	-8.747e-4	4
73	36	max	0.024	4	0.017	10	-0.05	33	3.584e-3	28	1.101e-2	22	1.464e-3	10
74		min	-0.024	10	-0.017	4	-0.22	21	3.888e-4	39	3.486e-3	35	-1.466e-3	4
75	37	max	0.017	9	0.012	2	-0.062	6	7.805e-3	29	7.127e-3	22	8.421e-4	8
76		min	-0.017	3	-0.012	8	-0.2	29	2.585e-3	6	1.91e-3	34	-8.589e-4	2
77	38	max	0.003	12	0.006	12	-0.042	35	4.944e-3	28	7.717e-3	22	5.741e-4	10
78		min	-0.003	6	-0.006	6	-0.13	23	1.293e-3	39	2.243e-3	34	-5.773e-4	4
79	39	max	0.02	9	0.018	2	-0.091	6	2.546e-2	13	6.825e-3	40	4.625e-4	8
80		min	-0.02	3	-0.018	8	-0.272	29	3.306e-3	7	-4.628e-5	34	-4.821e-4	2
81	40	max	0.045	3	0.028	12	-0.083	34	8.849e-4	32	2.54e-2	21	5.738e-4	11
82		min	-0.045	9	-0.028	6	-0.314	22	-8.579e-3	21	3.681e-3	3	-5.787e-4	5
83	41	max	0	5	0	12	0	35	0	28	0	23	0	1
84		min	0	11	0	6	0	23	0	39	0	35	0	7
85	42	max	0.033	9	0.048	10	-0.208	35	4.086e-3	32	2.61e-2	21	2.06e-3	9
86		min	-0.033	2	-0.048	4	-0.757	40	-7.626e-3	21	4.23e-3	3	-2.041e-3	3
87	43	max	0.04	4	0.02	12	-0.209	28	-4.209e-3	3	1.807e-2	21	6.088e-4	7
88		min	-0.039	10	-0.021	6	-0.677	19	-1.964e-2	21	1.888e-3	3	-6.015e-4	1
89	44	max	0.029	4	0.031	3	-0.209	31	-4.004e-3	11	-1.584e-3	11	1.416e-3	4
90		min	-0.029	10	-0.031	9	-0.683	20	-1.884e-2	17	-1.95e-2	17	-1.4e-3	10
91	45	max	0.011	12	0.05	4	-0.207	40	4.202e-3	43	-4.562e-3	11	6.944e-4	12

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
92		min	-0.012	6	-0.049	10	-0.756	35	-5.83e-3	17	-2.592e-2	17	-7.031e-4	6
93	46	max	0.02	9	0.044	10	-0.196	35	2.544e-2	13	1.138e-2	40	1.267e-3	10
94		min	-0.02	3	-0.044	4	-0.778	40	3.41e-3	7	1.758e-3	34	-1.261e-3	4
95	47	max	0.02	9	0.045	4	-0.197	40	2.64e-2	13	-1.651e-3	41	2.062e-3	12
96		min	-0.02	3	-0.044	10	-0.779	35	3.032e-3	7	-1.128e-2	35	-2.052e-3	6
97	48	max	0.02	9	0.05	1	-0.101	36	2.649e-2	13	-3.449e-4	41	1.069e-4	11
98		min	-0.02	3	-0.049	7	-0.336	14	2.951e-3	7	-7.472e-3	35	-1.184e-4	5
99	49	max	0.02	9	0.016	2	-0.097	39	2.557e-2	13	7.42e-3	40	4.731e-4	8
100		min	-0.02	3	-0.016	8	-0.285	29	3.343e-3	7	3.132e-4	34	-4.915e-4	2
101	50	max	0.024	9	0.044	10	-0.23	6	2.544e-2	13	1.138e-2	40	1.267e-3	10
102		min	-0.024	3	-0.044	4	-0.843	28	3.41e-3	7	1.758e-3	34	-1.261e-3	4
103	51	max	0.023	10	0.045	4	-0.232	8	2.64e-2	13	-1.651e-3	41	2.062e-3	12
104		min	-0.023	4	-0.044	10	-0.843	31	3.032e-3	7	-1.128e-2	35	-2.052e-3	6
105	52	max	0.02	9	0.05	1	-0.115	7	2.649e-2	13	-3.449e-4	41	1.069e-4	11
106		min	-0.02	3	-0.049	7	-0.428	13	2.951e-3	7	-7.472e-3	35	-1.184e-4	5
107	53	max	0.021	9	0.016	2	-0.111	7	2.557e-2	13	7.42e-3	40	4.731e-4	8
108		min	-0.022	3	-0.016	8	-0.37	13	3.343e-3	7	3.132e-4	34	-4.915e-4	2
109	54	max	0.546	36	-0.197	7	-0.23	6	2.499e-2	13	1.141e-2	32	1.267e-3	10
110		min	0.084	30	-1.201	14	-0.843	28	4.257e-3	7	1.728e-3	42	-1.261e-3	4
111	55	max	-0.08	29	-0.168	7	-0.232	8	2.594e-2	13	-1.623e-3	33	2.062e-3	12
112		min	-0.541	35	-1.249	24	-0.843	31	3.879e-3	7	-1.132e-2	43	-2.052e-3	6
113	56	max	0.063	4	-0.411	10	-0.115	7	2.577e-2	19	2.891e-3	4	1.069e-4	11
114		min	-0.368	43	-1.228	18	-0.428	13	8.28e-3	1	-7.781e-3	43	-1.184e-4	5
115	57	max	0.359	32	-0.256	7	-0.111	7	2.492e-2	13	7.527e-3	32	4.731e-4	8
116		min	0.013	42	-1.2	13	-0.371	13	5.401e-3	7	2.19e-4	42	-4.915e-4	2
117	58	max	-0.084	34	1.243	13	-0.23	6	2.59e-2	13	1.077e-2	40	1.267e-3	10
118		min	-0.525	40	0.131	7	-0.844	28	2.563e-3	7	1.615e-3	4	-1.261e-3	4
119	59	max	0.521	35	1.286	13	-0.232	8	2.685e-2	13	-1.489e-3	10	2.062e-3	12
120		min	0.079	41	0.124	7	-0.845	31	2.185e-3	7	-1.068e-2	35	-2.052e-3	6
121	60	max	0.371	35	1.335	13	-0.115	7	2.8e-2	13	4.642e-3	10	1.069e-4	11
122		min	-0.126	10	-0.184	7	-0.428	13	-4.83e-3	7	-8.481e-3	4	-1.184e-4	5
123	61	max	-0.011	34	1.258	13	-0.111	7	2.632e-2	13	7.543e-3	40	4.731e-4	8
124		min	-0.36	40	0.044	7	-0.371	13	7.168e-4	7	-4.287e-4	4	-4.915e-4	2
125	N88	max	0.04	4	0.019	12	-0.198	28	-4.208e-3	3	1.807e-2	21	6.088e-4	7
126		min	-0.039	10	-0.019	6	-0.645	19	-1.964e-2	21	1.888e-3	3	-6.015e-4	1
127	N89	max	0.026	9	0.045	10	-0.2	35	4.086e-3	32	2.61e-2	21	2.06e-3	9
128		min	-0.026	2	-0.045	4	-0.715	40	-7.626e-3	21	4.23e-3	3	-2.041e-3	3
129	N90	max	0.044	3	0.029	12	-0.09	34	1.399e-3	32	2.576e-2	21	6.391e-4	11
130		min	-0.044	9	-0.029	6	-0.336	22	-8.395e-3	21	3.763e-3	3	-6.45e-4	5
131	N91	max	0.044	5	0.012	11	-0.085	28	-3.439e-3	3	1.964e-2	21	1.762e-4	1
132		min	-0.043	11	-0.012	5	-0.285	20	-1.718e-2	21	2.26e-3	3	-1.735e-4	7
133	N92	max	0.04	4	0.017	12	-0.231	32	-4.208e-3	3	1.807e-2	21	6.088e-4	7
134		min	-0.039	10	-0.018	6	-0.732	20	-1.964e-2	21	1.888e-3	3	-6.015e-4	1
135	N93	max	0.022	8	0.05	10	-0.228	35	4.086e-3	32	2.61e-2	21	2.06e-3	9
136		min	-0.022	2	-0.05	4	-0.751	40	-7.626e-3	21	4.23e-3	3	-2.041e-3	3
137	N94	max	0.045	3	0.031	12	-0.117	3	1.399e-3	32	2.576e-2	21	6.391e-4	11
138		min	-0.045	9	-0.031	6	-0.428	21	-8.395e-3	21	3.763e-3	3	-6.45e-4	5
139	N95	max	0.044	5	0.012	11	-0.115	33	-3.439e-3	3	1.964e-2	21	1.762e-4	1
140		min	-0.044	11	-0.012	5	-0.374	21	-1.718e-2	21	2.26e-3	3	-1.735e-4	7
141	N96	max	0.842	19	0.947	23	-0.231	32	-4.437e-3	4	1.769e-2	20	6.088e-4	7
142		min	0.155	3	0.201	4	-0.733	20	-1.969e-2	23	2.622e-3	3	-6.015e-4	1
143	N97	max	1.24	21	0.377	22	-0.228	35	4.088e-3	32	2.572e-2	20	2.06e-3	9
144		min	0.208	3	-0.199	32	-0.751	40	-7.596e-3	23	4.965e-3	3	-2.041e-3	3
145	N98	max	1.219	17	0.43	24	-0.117	3	1.737e-3	6	2.564e-2	17	6.391e-4	11
146		min	0.322	12	-0.07	36	-0.429	21	-8.999e-3	24	5.972e-3	12	-6.45e-4	5

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
147	N99	max	0.927	19	0.835	23	-0.115	33	-3.656e-3	5	1.92e-2	19	1.762e-4	1
148		min	0.197	2	0.166	4	-0.374	21	-1.736e-2	23	4.042e-3	3	-1.735e-4	7
149	N100	max	-0.027	3	-0.189	2	-0.231	32	-3.784e-3	3	1.847e-2	21	6.088e-4	7
150		min	-0.898	21	-0.957	20	-0.733	20	-1.996e-2	20	1.156e-3	3	-6.015e-4	1
151	N101	max	-0.198	3	0.194	28	-0.228	35	4.083e-3	32	2.648e-2	21	2.06e-3	9
152		min	-1.265	21	-0.374	19	-0.751	40	-7.976e-3	20	3.496e-3	3	-2.041e-3	3
153	N102	max	0.119	4	0.189	2	-0.117	3	5.008e-3	2	2.72e-2	22	6.391e-4	11
154		min	-1.295	22	-0.452	19	-0.429	21	-1.043e-2	8	-3.695e-3	4	-6.45e-4	5
155	N103	max	0.02	4	-0.113	2	-0.115	33	-1.987e-3	2	2.033e-2	22	1.762e-4	1
156		min	-0.981	22	-0.843	20	-0.374	21	-1.771e-2	20	-1.301e-5	3	-1.735e-4	7
157	N112	max	0.009	12	0.049	4	-0.198	40	4.202e-3	43	-4.562e-3	11	6.945e-4	12
158		min	-0.009	6	-0.048	10	-0.714	35	-5.83e-3	17	-2.592e-2	17	-7.032e-4	6
159	N113	max	0.034	4	0.029	3	-0.199	31	-4.004e-3	11	-1.585e-3	11	1.416e-3	4
160		min	-0.034	10	-0.029	9	-0.656	19	-1.884e-2	17	-1.95e-2	17	-1.4e-3	10
161	N114	max	0.074	4	0.012	2	-0.088	43	-3.348e-3	11	-1.875e-3	11	4.967e-4	9
162		min	-0.073	10	-0.012	8	-0.337	18	-1.814e-2	17	-2.002e-2	17	-5.128e-4	3
163	N115	max	0.021	5	0.041	3	-0.086	41	1.398e-3	43	-4.047e-3	11	7.457e-4	10
164		min	-0.021	11	-0.041	9	-0.281	16	-8.415e-3	17	-2.458e-2	17	-7.573e-4	4
165	N116	max	0.008	12	0.05	4	-0.227	40	4.202e-3	43	-4.562e-3	11	6.945e-4	12
166		min	-0.008	6	-0.049	10	-0.75	35	-5.83e-3	17	-2.592e-2	17	-7.032e-4	6
167	N117	max	0.032	4	0.025	3	-0.232	31	-4.004e-3	11	-1.585e-3	11	1.416e-3	4
168		min	-0.031	10	-0.025	9	-0.747	18	-1.884e-2	17	-1.95e-2	17	-1.4e-3	10
169	N118	max	0.075	4	0.014	2	-0.118	42	-3.348e-3	11	-1.875e-3	11	4.967e-4	9
170		min	-0.074	10	-0.013	8	-0.429	17	-1.814e-2	17	-2.002e-2	17	-5.128e-4	3
171	N119	max	0.023	5	0.043	3	-0.112	11	1.398e-3	43	-4.047e-3	11	7.457e-4	10
172		min	-0.022	11	-0.042	9	-0.37	17	-8.415e-3	17	-2.458e-2	17	-7.573e-4	4
173	N120	max	-0.24	11	0.291	16	-0.227	40	4.205e-3	43	-5.297e-3	11	6.945e-4	12
174		min	-1.229	17	-0.205	43	-0.75	35	-5.822e-3	15	-2.555e-2	18	-7.032e-4	6
175	N121	max	-0.129	11	0.909	15	-0.232	31	-4.26e-3	10	-2.318e-3	11	1.416e-3	4
176		min	-0.912	18	0.181	10	-0.747	18	-1.886e-2	15	-1.912e-2	18	-1.4e-3	10
177	N122	max	-0.186	3	0.895	14	-0.118	42	-1.538e-3	8	-3.942e-3	3	4.967e-4	9
178		min	-0.957	21	0.11	8	-0.429	17	-1.882e-2	14	-1.989e-2	21	-5.128e-4	3
179	N123	max	-0.287	11	0.422	15	-0.112	11	1.401e-3	43	-5.832e-3	11	7.457e-4	10
180		min	-1.157	18	-0.07	43	-0.37	17	-8.569e-3	14	-2.414e-2	19	-7.573e-4	4
181	N124	max	1.26	17	0.201	31	-0.227	40	4.199e-3	43	-3.827e-3	11	6.945e-4	12
182		min	0.198	11	-0.29	19	-0.75	35	-6.191e-3	18	-2.63e-2	17	-7.032e-4	6
183	N125	max	0.965	17	-0.189	12	-0.232	31	-3.579e-3	11	-8.521e-4	11	1.416e-3	4
184		min	0.023	11	-0.916	18	-0.747	18	-1.916e-2	18	-1.99e-2	17	-1.4e-3	10
185	N126	max	1.032	16	0.021	12	-0.118	42	1.704e-3	12	5.556e-3	10	4.967e-4	9
186		min	-0.243	10	-0.909	19	-0.429	17	-1.922e-2	19	-2.15e-2	16	-5.128e-4	3
187	N127	max	1.209	17	0.07	31	-0.112	11	1.468e-3	31	-1.757e-3	10	7.457e-4	10
188		min	0.083	11	-0.428	19	-0.37	17	-9.01e-3	18	-2.525e-2	16	-7.573e-4	4
189	N140	max	0.022	4	-0.289	9	-0.115	7	2.576e-2	19	2.88e-3	4	1.069e-4	11
190		min	-0.259	43	-0.868	18	-0.428	13	8.29e-3	1	-7.78e-3	43	-1.184e-4	5
191	N142	max	0.293	35	1.055	13	-0.115	7	2.8e-2	13	4.638e-3	10	1.069e-4	11
192		min	-0.08	10	-0.135	7	-0.428	13	-4.826e-3	7	-8.477e-3	4	-1.184e-4	5
193	N148	max	0.86	17	0.305	24	-0.117	3	1.728e-3	6	2.564e-2	17	6.391e-4	11
194		min	0.238	12	-0.049	36	-0.429	21	-8.993e-3	24	5.977e-3	12	-6.45e-4	5
195	N150	max	0.082	4	0.139	2	-0.117	3	5.004e-3	2	2.719e-2	22	6.391e-4	11
196		min	-1.023	22	-0.356	19	-0.429	21	-1.042e-2	8	-3.691e-3	4	-6.45e-4	5
197	N156	max	-0.131	3	0.631	14	-0.118	42	-1.547e-3	8	-3.951e-3	3	4.967e-4	9
198		min	-0.678	21	0.088	9	-0.429	17	-1.882e-2	14	-1.988e-2	21	-5.128e-4	3
199	N158	max	0.817	16	0.004	12	-0.118	42	1.7e-3	12	5.552e-3	10	4.967e-4	9
200		min	-0.188	10	-0.717	19	-0.429	17	-1.922e-2	19	-2.15e-2	16	-5.128e-4	3
201	N116A	max	0.139	36	-0.099	7	-0.111	7	2.502e-2	13	7.513e-3	32	4.731e-4	8

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
202		min	0.006	30	-0.468	13	-0.371	13	5.207e-3	7	2.315e-4	42	-4.915e-4	2
203	N117A	max	0.364	18	0.326	23	-0.115	33	-3.681e-3	4	1.923e-2	20	1.762e-4	1
204		min	0.076	1	0.058	4	-0.374	21	-1.729e-2	23	3.874e-3	3	-1.735e-4	7
205	N118A	max	-0.117	11	0.171	15	-0.112	11	1.4e-3	43	-5.664e-3	11	7.457e-4	10
206		min	-0.448	18	-0.029	43	-0.37	17	-8.496e-3	15	-2.418e-2	18	-7.573e-4	4
207	N119A	max	-0.006	34	0.592	13	-0.111	7	2.625e-2	13	7.536e-3	40	4.731e-4	8
208		min	-0.168	40	0.025	7	-0.371	13	8.413e-4	7	-3.043e-4	4	-4.915e-4	2
209	N120A	max	0.021	4	-0.061	2	-0.115	33	-2.095e-3	2	2.027e-2	22	1.762e-4	1
210		min	-0.466	22	-0.394	20	-0.374	21	-1.765e-2	20	9.478e-5	3	-1.735e-4	7
211	N121A	max	0.57	17	0.033	31	-0.112	11	1.46e-3	31	-1.877e-3	11	7.457e-4	10
212		min	0.037	11	-0.202	19	-0.37	17	-8.948e-3	18	-2.518e-2	16	-7.573e-4	4
213	N119B	max	0.007	4	0	1	-0.013	32	-1.786e-3	32	1.388e-4	34	7.698e-4	10
214		min	-0.007	10	0	7	-0.042	20	-5.69e-3	20	-3.136e-4	22	-7.733e-4	4
215	N120B	max	0.007	4	0.002	10	-0.013	40	-1.786e-3	32	1.388e-4	34	7.698e-4	10
216		min	-0.007	10	-0.002	4	-0.041	18	-5.69e-3	20	-3.136e-4	22	-7.733e-4	4
217	N121B	max	0.038	4	0.178	13	-0.013	40	-1.098e-3	7	1.219e-3	4	7.698e-4	10
218		min	-0.039	10	0.037	7	-0.042	18	-5.98e-3	13	-1.244e-3	10	-7.733e-4	4
219	N122A	max	0.008	16	-0.032	43	-0.013	40	-1.784e-3	28	1.359e-4	34	7.698e-4	10
220		min	-0.006	10	-0.103	17	-0.041	18	-5.716e-3	19	-3.04e-4	15	-7.733e-4	4
221	N123A	max	0.019	4	0.082	24	-0.013	40	-1.13e-3	7	1.188e-3	4	7.698e-4	10
222		min	-0.019	10	0.019	6	-0.042	18	-5.96e-3	13	-1.213e-3	10	-7.733e-4	4

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	13	PIPE_3.0	0.206	114.188	23	0.113	58		17	21265.925	65205	5.749	5.749	2.387	H1-1b
2	14	PIPE_3.0	0.204	114.188	15	0.113	58		21	21265.925	65205	5.749	5.749	2.189	H1-1b
3	15	PIPE_3.0	0.206	114.188	19	0.113	58		13	21265.925	65205	5.749	5.749	2.221	H1-1b
4	17	PIPE_2.5	0.324	48	7	0.025	48		7	30038.461	50715	3.596	3.596	1.493	H1-1b
5	M60	PIPE_2.5	0.325	48	4	0.025	48		4	30038.461	50715	3.596	3.596	1.481	H1-1b
6	M72	PIPE_2.5	0.325	48	10	0.025	48		10	30038.461	50715	3.596	3.596	1.481	H1-1b
7	16	PIPE_2.0	0.047	48	39	0.003	48		9	14916.096	32130	1.872	1.872	1.559	H1-1b
8	18	PIPE_2.0	0.14	48	7	0.014	48		7	14916.096	32130	1.872	1.872	1.817	H1-1b
9	19	PIPE_2.0	0.047	48	36	0.003	48		5	14916.096	32130	1.872	1.872	1.559	H1-1b
10	M59	PIPE_2.0	0.035	48	5	0.003	48		5	14916.096	32130	1.872	1.872	1.563	H1-1b
11	M61	PIPE_2.0	0.139	48	10	0.014	48		4	14916.096	32130	1.872	1.872	1.856	H1-1b
12	M62	PIPE_2.0	0.035	48	2	0.003	48		2	14916.096	32130	1.872	1.872	1.562	H1-1b
13	M71	PIPE_2.0	0.035	48	12	0.003	48		12	14916.096	32130	1.872	1.872	1.562	H1-1b
14	M73	PIPE_2.0	0.138	48	10	0.014	48		10	14916.096	32130	1.872	1.872	1.856	H1-1b
15	M74	PIPE_2.0	0.035	48	9	0.003	48		9	14916.096	32130	1.872	1.872	1.563	H1-1b
16	28	L2X2X3	0.245	28.606	4	0.01	57.212	z	21	7540.618	23392.8	0.558	1.069	1.169	H2-1
17	29	L2X2X3	0.23	29.204	6	0.011	57.215	y	24	7539.678	23392.8	0.558	1.065	1.149	H2-1
18	30	L2X2X3	0.256	29.204	8	0.01	57.215	z	13	7539.678	23392.8	0.558	1.065	1.149	H2-1
19	31	L2X2X3	0.218	28.609	10	0.011	57.219	y	16	7538.738	23392.8	0.558	1.069	1.169	H2-1
20	32	L2X2X3	0.216	28.606	12	0.01	57.212	z	16	7540.618	23392.8	0.558	1.13	1.5	H2-1
21	33	L2X2X3	0.193	28.609	2	0.011	57.219	y	21	7538.738	23392.8	0.558	1.13	1.5	H2-1
22	34	HSS4X4X4	0.512	74.571	13	0.125	74.571	z	29	118697.265	139518	16.181	16.181	3	H1-1b
23	35	HSS4X4X4	0.209	0	13	0.074	0	z	23	134931.223	139518	16.181	16.181	1.086	H1-1b
24	36	HSS4X4X4	0.225	33.9	21	0.08	33.9	z	23	134935.078	139518	16.181	16.181	1.068	H1-1b
25	37	HSS4X4X4	0.513	74.571	13	0.128	74.571	z	30	118697.265	139518	16.181	16.181	3	H1-1b
26	38	HSS4X4X4	0.21	0	17	0.074	0	z	15	134931.283	139518	16.181	16.181	1.023	H1-1b
27	39	HSS4X4X4	0.223	33.9	13	0.079	33.9	z	14	134935.017	139518	16.181	16.181	1.03	H1-1b
28	40	HSS4X4X4	0.539	74.571	22	0.099	74.571	z	22	118697.265	139518	16.181	16.181	3	H1-1b
29	41	HSS4X4X4	0.207	0	21	0.074	0	z	20	134931.253	139518	16.181	16.181	1.131	H1-1b
30	42	HSS4X4X4	0.223	33.9	17	0.08	33.9	z	18	134935.048	139518	16.181	16.181	1.058	H1-1b
31	43	3/8 X 6	0.06	8.769	7	0.227	8.952	y	13	19366.284	72900	9.113	0.57	1.709	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
32	44	3/8 X 6	0.06	8.769	3	0.226	8.769	y	17	19366.738	72900	9.113	0.57	2.303	H1-1b
33	45	3/8 X 6	0.082	8.589	3	0.226	8.772	y	21	19352.941	72900	9.113	0.57	1.336	H1-1b
34	46	3/8 X 6	0.065	0	1	0.57	0	y	13	65759.937	72900	9.113	0.57	1.669	H1-1b
35	47	3/8 X 6	0.082	0	23	0.469	2.188	y	13	71198.626	72900	9.113	0.57	1.139	H1-1b
36	48	3/8 X 6	0.166	0	9	0.533	0	y	21	65610.87	72900	9.113	0.57	1.669	H1-1b
37	49	3/8 X 6	0.218	0	8	0.42	2.188	y	21	71198.626	72900	9.113	0.57	1.134	H1-1b
38	50	3/8 X 6	0.075	0	2	0.568	4.749	y	17	65747.799	72900	9.113	0.57	1.669	H1-1b
39	51	3/8 X 6	0.129	0	2	0.467	2.188	y	17	71198.626	72900	9.113	0.57	1.139	H1-1b
40	52	3/8 X 6	0.201	0	1	0.534	0	y	13	65673.468	72900	9.113	0.57	1.669	H1-1b
41	53	3/8 X 6	0.253	0	1	0.422	0	y	13	71198.626	72900	9.113	0.57	1.134	H1-1b
42	54	3/8 X 6	0.116	0	10	0.567	0	y	21	65668.839	72900	9.113	0.57	1.669	H1-1b
43	55	3/8 X 6	0.165	0	5	0.464	2.188	y	21	71198.626	72900	9.113	0.57	1.142	H1-1b
44	56	3/8 X 6	0.23	0	4	0.533	0	y	17	65690.078	72900	9.113	0.57	1.669	H1-1b
45	57	3/8 X 6	0.316	0	4	0.421	0	y	17	71198.626	72900	9.113	0.57	1.135	H1-1b
46	M59A	PIPE_2.0	0.102	30	10	0.017	30		10	26521.424	32130	1.872	1.872	2.403	H1-1b

TES

Tower Engineering Solutions, LLC

January 13, 2023

Mark Luther
SBA Communications

Re: 195 ft. Monopole
SBA Site Number: CT01497-S
SBA Site Name: Plymouth 2 CT
Carrier Name: Verizon (App#: 128227-4)
Site Address: 297 North Street, Plymouth, Connecticut
TES Job #: 137855

Dear Mr. Mark,

This letter will summarize the results of our engineering determination on the adequacy of the above-referenced structure to safely support the proposed antenna and equipment changes as noted below.

The following information was provided by SBA for use in the determination:

- Drawing by Fred A. Nudd Corporation, Project #7109, on November, 1999.
- Foundation Fred A. Nudd Corporation, Project #7109, on November 10, 1999.
- Report by Jaworski Geotech, INC., Project #99338G, on November 8, 1999.
- Veriozn mount analysis

Our Engineering determination was based on a comparison of the antenna and equipment loading used the recent structural analysis by TES (Project No. 109960 dated 07/15/2021). There are No changes in MA results between the most recent ProTerra Design Group 11-16-21 MA & the previous 5-4-21 MA.

Current analysis criteria (Per TIA-222-H and 2018 IBC):

1. V_{ult} = 120 mph (3-Sec. Gust) Wind Speed is based on ASCE/SEI 7-16 as per TIA-222-H
2. Exposure Category B/C
3. Structure Class II
4. Topographic Category 1
5. Crest Height of 0 ft.

Loading Configuration Used in the Previous Analysis by TES:

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	196.0	3	RFS APXVSPP18-C-A20 - Panel	T-arm w/ working platform	(4) 1 1/4"	Sprint
2		3	RFS APXVTM14-C-I20 - Panel			
3		3	ALU 1900MHz RRH			
4		3	ALU 800 MHz RRH			
5		3	ALU TD-RRH8x20-25			
6		3	ALU 800MHz Filter			
7		4	RFS ACU-A20-N			
8	175.0	3	EMS RR90-17-02DP	(3) T-Arms w/ Working Platforms + Support Rail Kit (MS-HR35-18) +T-Arm Kit (MS-TAW-350RO)	(12) 1 5/8" Coax (1) 1 5/8" Fiber	T-Mobile
9		3	RFS APXVAARR24_43-U-NA20			
10		3	Ericsson KRY 112 144/1			
11		3	Ericsson KRY 112 489/2			
12		6	Allen Telecom FE15501P77/75			
13		3	Ericsson Radio 4449 B71+B12			
-	165.0	3	Antel BXA-70063-6CF_2 - Panel	Low Profile Platform	(18) 1 5/8"	Verizon
-		3	Antel BXA-171085-8BF_2 - Panel			
-		6	Antel LPA-80080/6CF - Panel			
20	70.0	1	Lucent 407577689 Gps	Stand Off	(1) 1/2" Coax	Sprint

Revised Loading Configuration:

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
14	165.0	6	JMA Wireless - MX06FRO660-03 - Panel	Modified Low Profile Platform with (6) JMA 91900314, (3) SP219-96H and (1) BBPM-K1	(6) 1 5/8" (1) 1 5/8" Hybrid	Verizon
15		3	Samsung - MT6407-77A - Panel			
16		3	Samsung B5/B13 RRHBR04C			
17		3	Samsung B2/B66A RRHBR049			
18		1	Raycap RVZDC-6627-PF-48			

Based on the comparison, that there are No changes in Verizon MA results between the most recent 11-16-21 MA & the previous 5-4-21 MA.

Assumptions:

1. Original structure and foundation were constructed in accordance with the original design and specifications and are in good condition.
2. The foundation was designed to support the original foundation reactions.

Conclusion

It is our opinion that the tower and foundations can safely support the proposed addition of Veriozn equipment.

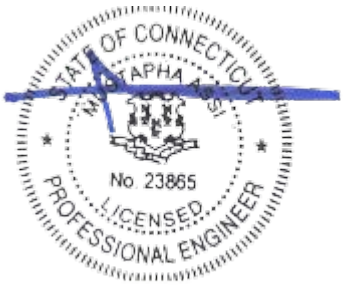
This PE Letter determination is based on the information and assumptions outlined above. Deviation from the information and assumptions will invalidate the determination and require further review.

If you have any questions, please do not hesitate to call.

Sincerely,

Tawfeeq Alajaj
Structural Engineering

Exp. 01/31/2024



01/13/2023