June 15, 2021

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

Regarding: Notice of Exempt Modification – EM-CING-077-210608
AT&T Site: CT5448
Address: 239 Middle Turnpike East, Manchester, CT 06040

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") recently submitted Exempt Modification Request EM-CING-077-210608 and would like to supplement the filing with an updated Structural Analysis. The enclosed Structural Analysis Report dated May 21, 2021 and prepared by EFI Global has been updated with additional calculations that were requested by the Town of Manchester to be included in the report.

Please let me know if AT&T is able to supplement their filing with the enclosed Structural Analysis Report.

Thank you for your time and consideration.

Sincerely,

Patricia Nowak
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
pnowak@clinellc.com

Enclosures: Structural Analysis Report

STRUCTURAL ANALYSIS REPORT - REV. 7
MONOPOLE

Prepared For:

T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

Structure Rating	
Monopole:	**Pass (94.4%)**
Anchor Rods:	**Pass (90.1%)**
Base Plate:	**Pass (92.2%)**
Foundation	**Pass (81.0%)**

Sincerely,
EFI Global, Inc.
License No: PEC0001429

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED PROFESSIONAL ENGINEER

5/21/2021

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

T-Mobile Site ID: CT11365D
T-Mobile Site Name: CT365/Manchester PD_MP
AT&T Site ID: CT5448
AT&T Site Name: Manchester Central
FA Location Code: 10071105
239 E. Middle Tpk
Manchester, CT 06040

EFI Job No: 049.00421 - 2075019 May 21, 2021

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EFI Global, Inc.
1117 Perimeter Center West, Ste E500, Atlanta, GA 30338 - Tel: (470) 990-6593

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the wireless telecommunication installation on the existing monopole located at 239 East Middle Tpk, Manchester, CT 06040 for additions and alterations proposed by T-Mobile and AT&T.

The structural analysis is based on the following documentation provided to EFI Global, Inc. (EFI):

- RFDS provided by T-Mobile, dated 05/05/2020.
- Tower Mapping Report prepared by Hightower Solutions, Inc., dated 2/10/2021.
- ANSI/TIA-222-G-2005 Inspection Report prepared by Hightower Solutions, Inc., dated 2/10/2021.
- Structural Analysis Report prepared by Hudson Design Group, LLC., dated 12/10/2019.
- Construction Drawings prepared by Hudson Design Group, LLC, dated 10/28/2019.
- Structure and Foundation Design Calculations prepared by Engineered Endeavors Incorporated, dated 10/16/2002.

1.1 STRUCTURE

The structure is a 183 ft. (18) sided monopole, which is attached to the foundation with anchor bolts and a base plate. Please refer to the software output in Appendix A, for tower geometry, member sizes, and other details.

Section Length (ft)	Lap Splice (in)	Shaft Thickness (in)	Top Diameter (in)	Bottom Diameter (in)	Steel Yield Strength (ksi)
17.50	36.00	0.1875	15.50	19.42	65
36.42	46.00	0.2500	18.37	26.41	65
48.92	60.00	0.3750	25.06	35.88	65
49.08	74.00	0.4375	34.02	44.88	65
49.08	--	0.4375	42.64	53.50	65

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
163	(3) AIR32 KRD901146-1_B66A_B2A (3) AIR3246 B66 (3) APXVAARR24_43-U-NA20 (3) KRY 112 144/2 (3) Radio 4449 B71+B12 (1) IBR 1300 radio	(16) 1-5/8” (1) 9x18 HSC (2) 6x12 HSC (2) 0.2”	(1) Platform w/ Handrail

***Feedlines located inside the monopole**

Existing Configuration of AT&T Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
145	(4) CCI OPA-65R-LCUU-H8 (2) CCI OPA-65R-LCUU-H6 (3) Kathrein 80010121 (6) LGP21401 TMA (6) LGP21901 Diplexers (3) RRUS 11 B12 (3) RRUS 32 B66A (3) RRUS 32 B30 (3) Radio 4478 B5 (2) DC6-48-60-18-8C (2) CCI HPA-65R-BUU-H8 (1) CCI HPA-65R-BUU-H6 (3) RRUS 32 B2	(6) 1-5/8” (4) DC Power Cables (2) Fiber Cables	(1) Platform w/ Handrails

***Feedlines located inside the monopole**

EFI Global, Inc.
1117 Perimeter Center West, Ste E500, Atlanta, GA 30338 - Tel: (470) 990-6593

Proposed and Final Configuration of T-Mobile Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
163	(3) AIR32 KRD901146-1_B66A_B2A*** (3) AIR6449 B41 (3) AIR3246 B66 (3) APXVAARR24_43-U-NA20*** (3) Radio 4449 B71+B85 (3) Radio 4415 B25	(16) 1-5/8” (5) 1-5/8”** (1) 9x18 HSC (3) 6X12 HSC	(1) Platform w/ Handrail + Proposed Modifications

***Feedlines located inside the monopole**

**** Future feedline entitlement considered in analysis.**

***** Reduced wind area considered per CFD analysis.**

Proposed and Final Configuration of AT&T Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
145	(4) CCI OPA-65R-LCUU-H8*** (2) CCI OPA-65R-LCUU-H6*** (3) Kathrein 80010121*** (6) LGP21401 TMA (6) LGP21901 Diplexers (3) RRUS 11 B12 (3) RRUS 32 B66A (3) RRUS 32 B30 (3) Radio 4478 B5 (2) DC6-48-60-18-8C (1) NNH4-65B-R6*** (2) NNH4-65C-R6*** (3) RRUS E2 B29 (3) RRUS 12 B2 (3) Radio 4478 B14 (3) A2 Modules (2) DC6-48-60-0-8C-EV	(6) 1-5/8” (8) DC Power Cables (2) Fiber Cables	(1) Platform w/ Handrails

***Feedlines located inside the monopole**

***** Reduced wind area considered per CFD analysis.**

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Existing Appurtenances by Others:

CARRIER	RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
Unknown	195.75	(1) Lightning Rod	(4) 7/8” (1) 1/2” (2) 0.32”	(1) Low Profile Platform
	194.25	(2) 12’ Dipole		
	189.5	(2) HPD2-18RS (2’ Dish) (2) 9” x 9” x 3.5” TMA		
	172.25	(2) 12’ Dipole		
Sprint	158.5	(6) RRH1900-4x45 (1) Junction Box	(4) 1-1/4” (2) 2.42” Flex Conduit**	(1) Ring Mount
		(3) RRH8x20 (3) RRH2x50-800		(1) Low Profile Platform
	156	(3) RFS APXVTM14*** (3) RFS APXVSPP18***		
Unknown	153.83	(1) Motorola MTI1669	(2) 0.2”	
	151.5	(1) VHLP2-23-DW1 (2’ Dish)	(1) 1/2”**	
	150.5	(1) 3’ Dish (1) VHLP2-18-DW1 (2’ Dish)	(2) 1/2”**	
Unknown	132.08	(1) 15’ Whip	(7) 1/2”	(1) Low Profile Platform
	129.42	(1) 5’-6” Whip		
	128.5	(1) Yagi		
	128.17	(1) 20’ Dipole		
	125.08	(1) Yagi		
	121.75	(1) Yagi		
Verizon	115.42	(2) RRFDC-3315-PF-48	(2) 1-1/4”**	(1) Low Profile Platform
	113	(6) HBXX-6517DS-A2M*** (6) LNX-6514DS-A1M*** (3) B25 RRH 4x30 (3) B13 RRH4x30 (3) B4 RRH2x60-4R		
Unknown	51.75	(1) GPS (1) 12” x 2.5” x 1.5” TMA	(1) 1/2” (2) 0.2”	(1) Stand Off Mount

***All feedlines are inside shaft unless otherwise noted**
****Outside Shaft**
***** Reduced wind area considered per CFD analysis.**

EFI Global, Inc.
1117 Perimeter Center West, Ste E500, Atlanta, GA 30338 - Tel: (470) 990-6593

3.0 CODES AND LOADING

The tower was analyzed per *ANSI/TIA-222-G* as referenced by the *2018 Connecticut State Building Code* with all of the adopted Addendums and Supplements. The following wind loading was used in compliance with the standard for Manchester, CT:

- Basic wind speed 105 mph without ice (W_o)
- Basic wind speed 50 mph with 1" escalating ice (W_i)
- Exposure Category B
- Topographic Category 1
- Structure Class III

The following load combinations were used with wind blowing at 0°, 30°, 45°, 60°, and 90° measured from a line normal to the face of the tower.

- 1.2 D + 1.6 W_0
- 0.9 D + 1.6 W_0
- 1.2 D + 1.0 D_i + 1.0 W_i

D: Dead Load of structure and appurtenances
W_0: Wind Load, without ice
W_i: Wind Load, with ice
D_i: Weight of Ice

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to EFI and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. EFI will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require EFI to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The Monopole was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

The structural monopole shaft reinforcement modifications shown in the referenced Tower Mapping Report prepared by Hightower Solutions, Inc., dated 2/10/2021, have been incorporated into our analysis. After analyzing the upgraded structure, EFI has deemed the modifications to be ineffective due to weak compressive capacity in the reinforcement plates. The added wind area of the reinforcement has been considered in this analysis.

6.0 RESULTS AND CONCLUSION

Based on structural analysis per TIA-222-G, the existing monopole is found to have **adequate** structural capacity for the proposed changes by T-Mobile and AT&T. For the code specified load combinations and as a maximum, the monopole shaft is stressed to **94.4%** of its structural capacity. The anchor rods and base plate are stressed to **90.1%** and **92.2%** of their structural capacities, respectively.

The existing base foundation is found to have **adequate** structural capacity for the proposed changes by T-Mobile and AT&T. For the code specified load combinations and as a maximum, the foundation is stressed to **81.0%** of its structural capacity.

Therefore, the proposed additions and alterations by T-Mobile and AT&T **can** be implemented as intended with the conditions outlined in this report.

Should you have any questions about this report, please contact EFI at telecom@efiglobal.com.

APPENDIX A
CALCULATIONS

Panel Antennas

TIA Design Wind Force on Appurtenances

Per section 2.6.11.2 of TIA-222-H

$$F_A = q_z G_h (EPA)_A$$

$$(EPA)_A = K_a[(EPA)_N \cos^2(\theta) + (EPA)_T \sin^2(\theta)]$$

$$(EPA)_N = \Sigma(C_a A_a)_N$$

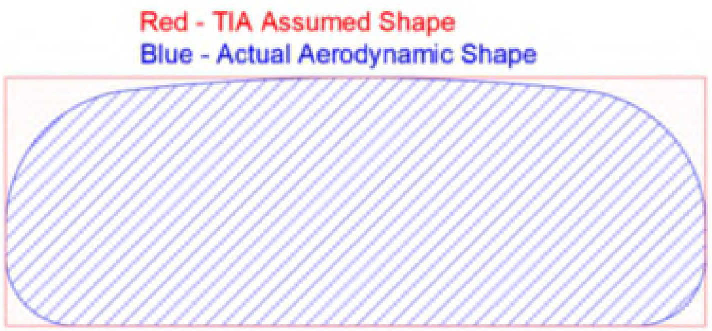
$$(EPA)_T = \Sigma(C_a A_a)_T$$

Panel Antennas

TIA Design Wind Force on Appurtenances

Per section 2.6.11.2 of TIA-222-H, in the absence of more accurate data, EPAs consist of flat and round components

- Panel Antennas are considered to be flat, Ca = force coefficient from table 2-9, Aa=projected area
- Antenna manufacturers typically design antennas to be aerodynamic
  - Wind tunnel testing
  - Whitepapers
  - Evidence points to wind load reductions from TIA prescribed values



TIA response regarding Computational Fluid Dynamics (CFD)

FAQ TIA-222

Question:

Can I use loading that is less than the values prescribed by the written TIA-222-G and claim compliance with the standard? If so, under what conditions?

Answer:

The standard provides force coefficients for basic appurtenance shapes as provided in Table 2-8 and for generic microwave antennas as provided in Annex C. ***Antennas and other discrete appurtenances with complex shapes may be idealized by the simple shapes provided in the standard or may be determined using Wind Tunnel testing, CFD computations or other rational methods that may result in lower force coefficients.*** *TIA-222-G specifically provides standard prescribed methods to calculate the Effective Projected Area of combinations of appurtenances commonly used for antennas supporting structures. These methods include the many factors not easily taken into consideration in design such as shielding, dynamic loads, etc. The intent of the Standard is not to allow the use of other methods that result in less loading than these prescribed methods.*

Antenna Manufacturer Information

Specification Sheets

Wind Load values differ in wind speed

How are the load values determined?

Wind Load (@100mph), Front / Side / Rear	842N / 421.0N / 842N (189.4lbf / 94.7lbf / 189.4lbf)

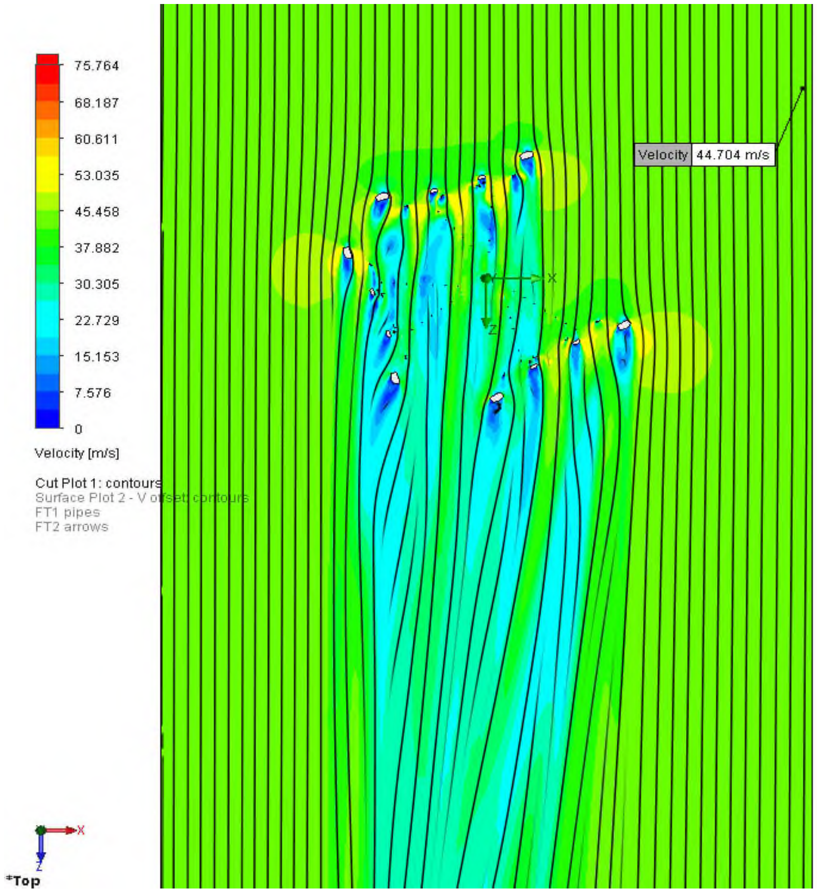
Wind Loading, maximum	1791.0 N @ 150 km/h 402.6 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	208 (925), 98 (435), 212 (943)

Software Decision

CFD Software

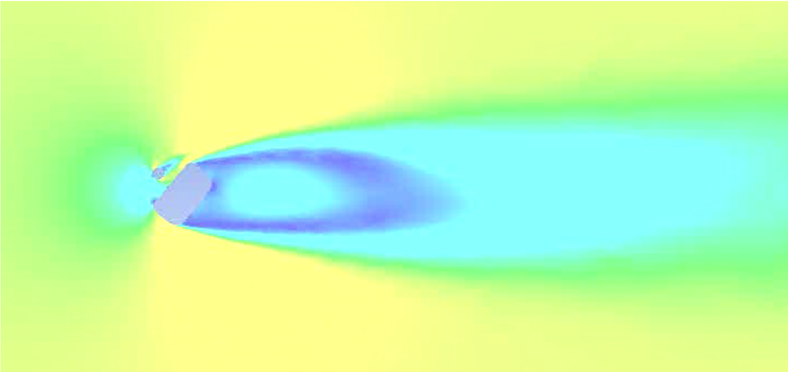
- ANSYS
- Reviewed additionally:
  - Autodesk Robot
  - Solidworks Flow



CFD Process

CFD Benchmarking

- Software within ANSYS – CFX vs. Fluent (using version 19.2 currently)
- Compared CFX results to known wind tunnel testing results
- Enclosure Dimensions – wind tunnel and real world
- Fluid model
- Reviewed antenna tilt
- 0-180 degree wind directions simulated
- Adjustment factor
- Antenna with mount pipe



CFD Process

CFD Procedure/Software

- Obtain additional dimensional information from Antenna Manufacturer (3D file, 2D cross section file, 2D drawing with radius of curvature details)

Software	Description
ANSYS SpaceClaim	Software used for refining antenna model geometry
ANSYS Workbench	Software used to manage CFD analysis process
ANSYS Meshing	Software used to create meshes within the enclosures
ANSYS CFX	Software used to perform the CFD analysis
ANSYS CFD-Post	Software used to view results from ANSYS CFX
Crown CFD EPA Calculator	Supplemental tool used to analyze CFX data, generate EPA graphs, and determine antenna EPA values

CFD Process

EPA Tool

Import From CSV | Generate Report

CFD EPA Calculator

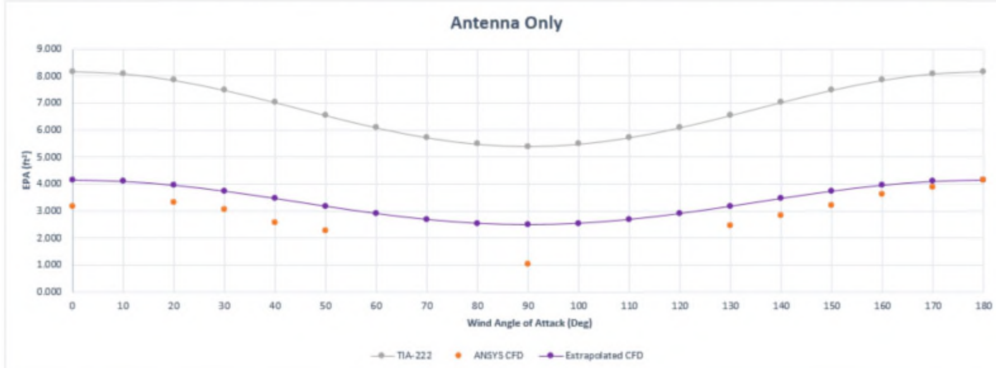
Engineer Information	
Prepared By:	
Checked By:	
Engineer of Record:	
EOR Title:	Project Engineer

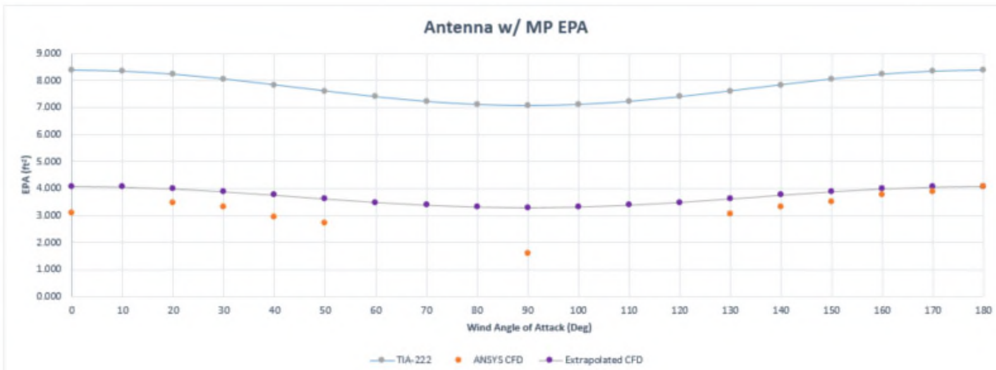
Antenna Information	
Manufacturer:	Commscope
Model:	SBNH-1D6565B
Height (in):	72.7
Width (in):	11.9
Depth (in):	7.1
Weight (lbs):	47.4
Pipe Information	
Diameter (in):	2.375
Thickness (in):	0.154
Length (in):	84.7
Parameters	
Windspeed (mph):	90
Calibration Factor:	1.1

Total Projected Area		
degree	Antenna w/ MP (ft^2)	Antenna (ft^2)
0	6.27	6.07
90	5.04	3.64

CFD Results		
Degree	Antenna w/ MP Force (lb)	Antenna Force (lb)
0	58	60
10		
20	65	63
30	63	58
40	56	49
50	51	43
60		
70		
80		
90	30	20
100		
110		
120		
130	58	47
140	63	54
150	66	60
160	71	69
170		
180		

Results															
Configuration	C_aA_a Front (ft^2)					C_aA_a Side (ft^2)					Weight (lbs)				
Ice Thickness	0	0.5	1	2	4	0	0.5	1	2	4	0	0.5	1	2	4
Antenna	4.16	4.57	4.98	5.85	7.69	2.49	2.88	3.27	4.09	5.84	47.40	97.91	154.55	287.03	634.20
Antenna w/ MP	4.09	4.49	4.89	5.71	7.47	3.30	3.68	4.06	4.87	6.59	73.21	136.26	210.15	391.86	900.68

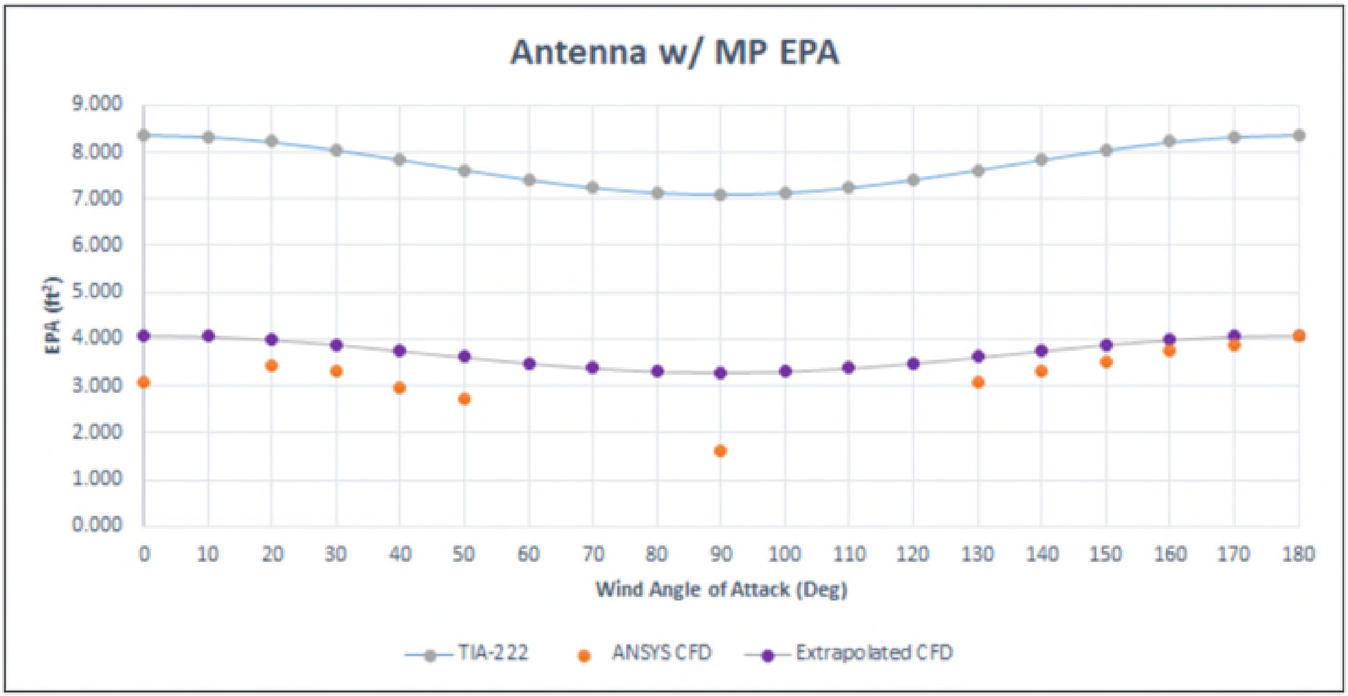




CFD Process

EPA Tool

- **TIA-222 and tnx →$(EPA)_A = K_a\,[(EPA)_N \cos^2(\theta) + (EPA)_T \sin^2(\theta)]$**
- **Extrapolate CFD results to follow the TIA trigonometric formula**



CFD Process

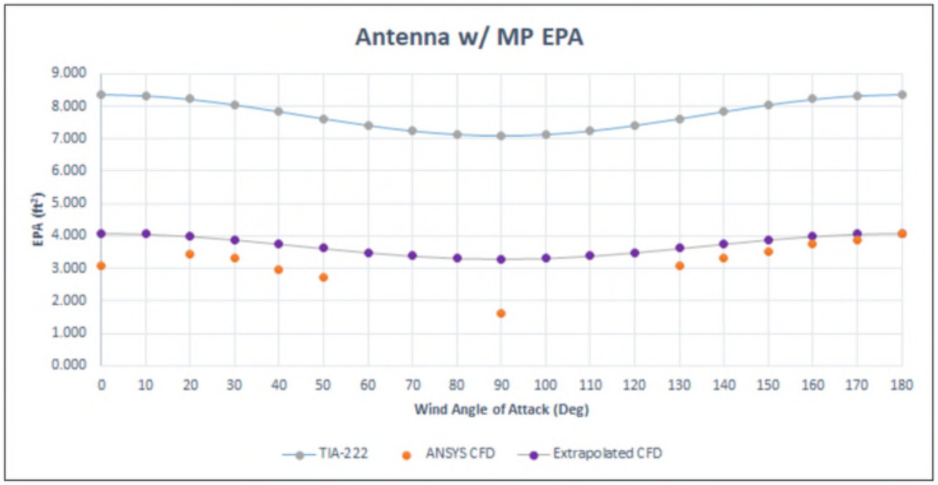
EPA Tool

- $EPA)_A curve = K_a * [(EPA)_N \cos^2(\theta) + (EPA)_T \sin^2(\theta)]$
  TIA-222 section 2.6.11.2

- $PAcurve = [(PA)_N \cos^2(\theta) + (PA)_T \sin^2(\theta)]$
  created from PAs at 0º and 90º

- ANSYS CFD EPA= CFDdragforce/(.00256*V^2)
  ANSYS CFD EPA points are back calculated from CFDdragforce values using the force equation from TIA-222 2.6.11.2

- Extrapolation factor(EF) = ANSYS CFD EPA/PA
  determined at all degrees a CFD point exists



- Extrapolated CFD EPA curve = MaxEF * $[(PA)_N \cos^2(\theta) + (PA)_T \sin^2(\theta)]$

CFD Process

Report

Date: **3/11/2019**

Subject:	**Computational Fluid Dynamics Analysis Report**
Antenna Manufacturer:	**Commscope**
Model Number:	**SBNH-1D6565B**
Antenna Height:	**72.7 in.**
Antenna Width:	**11.9 in.**
Antenna Depth:	**7.1 in.**

Based on our analysis, using the procedure outlined in *ENG-PRC-10367 Antenna EPA Determination using Computational Fluid Dynamics*, we have determined the EPA and weight of the antenna to be the following values:

Table 1 – Antenna EPA for tnxTower Input

	C_aA_a Front (ft^2)					C_aA_a Side (ft^2)				
	No Ice	1/2" Ice	1" Ice	2" Ice	4" Ice	No Ice	1/2" Ice	1" Ice	2" Ice	4" Ice
Antenna	4.16	4.57	4.98	5.85	7.69	2.49	2.88	3.27	4.09	5.84
Antenna with Mount Pipe	4.09	4.49	4.89	5.71	7.47	3.3	3.68	4.06	4.87	6.59

Table 2 – Antenna Weight for tnxTower Input

	Weight (lbs)				
	No Ice	1/2" Ice	1" Ice	2" Ice	4" Ice
Antenna	47.4	97.91	154.55	287.03	634.2
Antenna with Mount Pipe	73.21	136.26	210.15	391.86	900.68

CFD analysis prepared by:

Respectfully Submitted by:

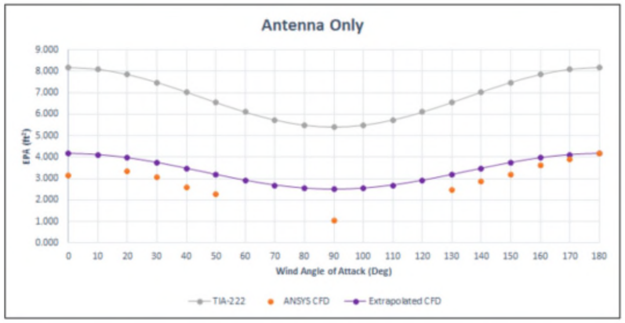


Figure 1 – EPA Graph for Antenna

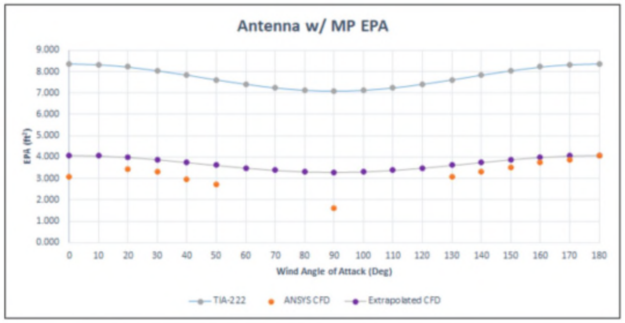


Figure 2 – EPA Graph for Antenna with Mount Pipe

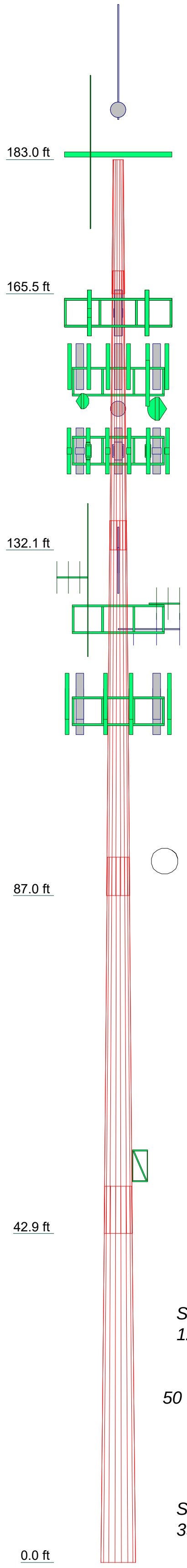
tnxTower Input

- tnxTower Database will need updated with new EPA values
- Proposing to update the existing antenna model number entry with the new EPA , and create a new entry corresponding to the TIA calculated EPA and tag with“_TIA” at the end

Table 1 – Antenna EPA for tnxTower Input

	C_aA_a Front (ft^2)					C_aA_a Side (ft^2)				
	No Ice	**1/2” Ice**	**1” Ice**	**2” Ice**	**4” Ice**	**No Ice**	**1/2” Ice**	**1” Ice**	**2” Ice**	**4” Ice**
Antenna	4.16	4.57	4.98	5.85	7.69	2.49	2.88	3.27	4.09	5.84
Antenna with Mount Pipe	4.09	4.49	4.89	5.71	7.47	3.3	3.68	4.06	4.87	6.59

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	17.5000	18	0.1875	3.0000	15.5000	19.4200	A572-65	0.6
2	36.4200	18	0.2500	3.8300	18.3730	26.4100	A572-65	2.2
3	48.9200	18	0.3750	5.0000	25.0648	35.8800	A572-65	6.0
4	49.0800	18	0.4375	6.1700	34.0246	44.8800	A572-65	9.0
5	49.0800	18	0.4375		42.6403	53.5000	A572-65	11.0
								28.8



ALL REACTIONS
ARE FACTORED

AXIAL
175 K

SHEAR
12 K

MOME
2014 ki

TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL
65 K

SHEAR
39 K

MOME
5266 ki

TORQUE 2 kip-ft
REACTIONS - 105 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
Lightning Rod w/ Pipe Extension	189.75
HPD2-18RS	189.5
HPD2-18RS	189.5
24' 4-Bay Dipole	184
9" x 9" x 3.5" TMA	184
9" x 9" x 3.5" TMA	184
14' Low Profile Platform	184
24' 4-Bay Dipole	184
AIR 32 B2a/B66Aa w/ Mount Pipe	163
Ericsson AIR6449 B41 w/ Mount Pipe	163
Ericsson AIR6449 B41 w/ Mount Pipe	163
Ericsson AIR6449 B41 w/ Mount Pipe	163
AIR 3246 B66 w/ Mount Pipe	163
AIR 3246 B66 w/ Mount Pipe	163
AIR 3246 B66 w/ Mount Pipe	163
APXVAARR24_43-U-NA20 w/ Mount Pipe	163
APXVAARR24_43-U-NA20 w/ Mount Pipe	163
APXVAARR24_43-U-NA20 w/ Mount Pipe	163
Radio 4449 B71+B85_T-Mobile	163
Radio 4449 B71+B85_T-Mobile	163
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AIR 32 B2a/B66Aa w/ Mount Pipe	163
Ring Mount	159
APXVTM14-C-120 w/ Mount Pipe	154
APXVTM14-C-120 w/ Mount Pipe	154
APXVTM14-C-120 w/ Mount Pipe	154
RRH2X50-800	154
RRH2X50-800	154
RRH2X50-800	154
TD-RRH8x20	154
TD-RRH8x20	154
TD-RRH8x20	154
(2) PCS 1900MHz 4x45W-65MHz	154
(2) PCS 1900MHz 4x45W-65MHz	154
(2) PCS 1900MHz 4x45W-65MHz	154
18" x 18" x 6.5" Junction Box	154
13' Low Profile Platform	154
APXVSPP18-C w/ Mount Pipe	154
APXVSPP18-C w/ Mount Pipe	154
APXVSPP18-C w/ Mount Pipe	154
MTI1669	153.83
Andrew VHLP2-23	151.5
3' Dish w/ Randome	150.5
Andrew VHLP2-18	150.5
(2) OPA-65R-LCUU-H8	145
(2) LGP21401	145
(2) LGP21401	145
(2) LGP21401	145
(2) LGP21901	145
(2) LGP21901	145
(2) LGP21901	145
RRUS 32 B66	145
RRUS 32 B66	145
RRUS 32 B66	145

TYPE	ELEVATION
RRUS 32 B30	145
RRUS 32 B30	145
RRUS 32 B30	145
DC6-48-60-18-8C	145
DC6-48-60-18-8C	145
RRUS 11 B12	145
RRUS 11 B12	145
RRUS 11 B12	145
RRUS 4478 B5	145
RRUS 4478 B5	145
RRUS 4478 B5	145
NNH4-65B-R6	145
NNH4-65C-R6	145
NNH4-65C-R6	145
RRUS E2 B29	145
RRUS E2 B29	145
RRUS E2 B29	145
RRUS 12 B2	145
RRUS 12 B2	145
RRUS 12 B2	145
RRUS 4478 B14	145
RRUS 4478 B14	145
RRUS 4478 B14	145
RRU A2	145
RRU A2	145
RRU A2	145
DC6-48-60-0-8C	145
DC6-48-60-0-8C	145
Platform Mount [LP 301-1_KCKR]	145
800 10121	145
800 10121	145
(2) OPA-65R-LCUU-H6	145
800 10121	145
(2) OPA-65R-LCUU-H8	145
15' Whip	132.08
5'-6" Whip	129.42
24" Yagi	128.5
20' 4-Bay Dipole	128.17
15" Yagi	125.08
13' Low Profile Platform	123
2'6" Yagi	121.75
(2) HBXX-6517DS-A2M w/ Mount Pipe	111
RRFDC-3315-PF-48	111
RRFDC-3315-PF-48	111
B25 RRH4X30	111
B25 RRH4X30	111
B25 RRH4X30	111
B13 RRH 4X30	111
B13 RRH 4X30	111
B13 RRH 4X30	111
B4 RRH2X60-4R	111
B4 RRH2X60-4R	111
B4 RRH2X60-4R	111
RMQP 12' Platform w/ handrails	111
(2) LNX-6514DS-A1M w/ Mount Pipe	111
(2) HBXX-6517DS-A2M w/ Mount Pipe	111
(2) HBXX-6517DS-A2M w/ Mount Pipe	111
(2) LNX-6514DS-A1M w/ Mount Pipe	111
(2) LNX-6514DS-A1M w/ Mount Pipe	111
12" x 2.5" x 1.5" TMA	51.75
3' Side Mount Standoff	51.75
GPS	51.75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 94.4%

EFI Global, Inc.
1117 Perimeter Center West, Suite E500
Atlanta, GA 30338
Phone: (470) 990-6593
FAX:

Job: CT11365D			
Project: 049.00421 - 2075019			
Client: Foresite LLC	Drawn by: Evan.Martin	App'd:	
Code: TIA-222-G	Date: 04/21/21	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 105 mph.
- Structure Class III.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.0000 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
√ Use Code Stress Ratios
√ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile
Include Bolts In Member Capacity
Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
SR Members Have Cut Ends
SR Members Are Concentric

Distribute Leg Loads As Uniform
Assume Legs Pinned
√ Assume Rigid Index Plate
√ Use Clear Spans For Wind Area
Use Clear Spans For KL/r
Retension Guys To Initial Tension
√ Bypass Mast Stability Checks
√ Use Azimuth Dish Coefficients
√ Project Wind Area of Appurt.
Autocalc Torque Arm Areas
Add IBC .6D+W Combination
Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder
Ignore KL/ry For 60 Deg. Angle Legs

Use ASCE 10 X-Brace Ly Rules
Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
SR Leg Bolts Resist Compression
All Leg Panels Have Same Allowable
Offset Girt At Foundation
√ Consider Feed Line Torque
Include Angle Block Shear Check
Use TIA-222-G Bracing Resist. Exemption
Use TIA-222-G Tension Splice Exemption

Poles

√ Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets
Pole Without Linear Attachments
Pole With Shroud Or No Appurtenances
Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	183.0000-165.5000	17.5000	3.00	18	15.5000	19.4200	0.1875	0.7500	A572-65 (65 ksi)
L2	165.5000-132.0800	36.4200	3.83	18	18.3730	26.4100	0.2500	1.0000	A572-65 (65 ksi)
L3	132.0800-86.9900	48.9200	5.00	18	25.0648	35.8800	0.3750	1.5000	A572-65 (65 ksi)
L4	86.9900-42.9100	49.0800	6.17	18	34.0246	44.8800	0.4375	1.7500	A572-65 (65 ksi)
L5	42.9100-0.0000	49.0800		18	42.6403	53.5000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.7102	9.1129	269.9504	5.4359	7.8740	34.2838	540.2560	4.5573	2.3980	12.789
	19.6907	11.4457	534.8757	6.8275	9.8654	54.2176	1070.4552	5.7240	3.0879	16.469
L2	19.2901	14.3806	596.7256	6.4337	9.3335	63.9339	1194.2363	7.1917	2.7936	11.175
	26.7789	20.7580	1794.7237	9.2868	13.4163	133.7721	3591.8090	10.3810	4.2082	16.833
L3	26.2534	29.3870	2263.2318	8.7649	12.7329	177.7464	4529.4417	14.6963	3.7514	10.004
	36.3757	42.2598	6730.4514	12.6043	18.2270	369.2564	13469.7589	21.1339	5.6549	15.08
L4	35.6049	46.6399	6647.2213	11.9234	17.2845	384.5770	13303.1892	23.3244	5.2183	11.928
	45.5049	61.7140	15399.8990	15.7771	22.7990	675.4626	30820.0616	30.8628	7.1289	16.295
L5	44.6169	58.6039	13187.0389	14.9820	21.6613	608.7836	26391.4297	29.3075	6.7347	15.394
	54.2578	73.6839	26211.1184	18.8372	27.1780	964.4241	52456.7261	36.8490	8.6460	19.762

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 183.0000-165.5000				1	1	1			
L2 165.5000-132.0800				1	1	1			
L3 132.0800-86.9900				1	1	1			
L4 86.9900-42.9100				1	1	1			
L5 42.9100-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
LDF4P-50A(1/2")	A	No	Surface Ar (CaAa)	156.0000 - 5.0000	3	3	0.000 0.000	0.6300		0.00
2-1/2"	A	No	Surface Ar (CaAa)	156.0000 - 5.0000	2	2	0.000 0.000	2.3800		0.00
***										
LDF7-50A(1-5/8")	B	No	Surface Ar (CaAa)	113.0000 - 5.0000	2	2	0.000 0.000	1.9800		0.00
****										
*****										
7" x 0.5" Flat	A	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	-0.250 -0.083	7.0000	15.0000	0.00
7" x 0.5" Flat	A	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	0.250 0.417	7.0000	15.0000	0.00
7" x 0.5" Flat	B	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	-0.417 -0.250	7.0000	15.0000	0.00
7" x 0.5" Flat	B	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	0.250 0.417	7.0000	15.0000	0.00
7" x 0.5" Flat	C	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	-0.250 -0.083	7.0000	15.0000	0.00
7" x 0.5" Flat	C	No	Surface Af (CaAa)	43.0800 - 0.0000	1	1	0.083 0.250	7.0000	15.0000	0.00
6" x 0.25" Flat	A	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	-0.250 -0.083	6.0000	12.5000	0.00
6" x 0.25" Flat	A	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	0.250 0.417	6.0000	12.5000	0.00
6" x 0.25" Flat	B	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	-0.417 -0.250	6.0000	12.5000	0.00
6" x 0.25" Flat	B	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	0.250 0.417	6.0000	12.5000	0.00
6" x 0.25" Flat	C	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	-0.250 -0.083	6.0000	12.5000	0.00
6" x 0.25" Flat	C	No	Surface Af (CaAa)	87.6700 - 43.0800	1	1	0.083 0.250	6.0000	12.5000	0.00
5" x 0.25" Flat	A	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	-0.250 -0.083	5.0000	10.5000	0.00
5" x 0.25" Flat	A	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	0.250 0.417	5.0000	10.5000	0.00
5" x 0.25" Flat	B	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	-0.417 -0.250	5.0000	10.5000	0.00
5" x 0.25" Flat	B	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	0.250 0.417	5.0000	10.5000	0.00
5" x 0.25" Flat	C	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	-0.250 -0.083	5.0000	10.5000	0.00
5" x 0.25" Flat	C	No	Surface Af (CaAa)	117.5800 - 87.6700	1	1	0.083 0.250	5.0000	10.5000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF5-50A(7/8")	B	No	No	Inside Pole	183.0000 - 5.0000	4	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
LDF2-50A(3/8")	B	No	No	Inside Pole	183.0000 - 5.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement* *ft*	*Total Number*		*C_AA_A* *ft^2/ft*	*Weight* *klf*
							1" Ice	0.0000	0.00
LCF12-50J-P7(5/8")	B	No	No	Inside Pole	184.2500 - 5.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
***									
LDF6-50A(1-1/4")	A	No	No	Inside Pole	156.0000 - 5.0000	4	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
LDF4P-50A(1/2")	A	No	No	Inside Pole	156.0000 - 5.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
***									
LDF7-50A(1-5/8")	B	No	No	Inside Pole	145.0000 - 5.0000	6	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
DC Power Cables	B	No	No	Inside Pole	145.0000 - 5.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
Fiber Cables	B	No	No	Inside Pole	145.0000 - 5.0000	8	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
***									
LCF12-50J-P7(5/8")	B	No	No	Inside Pole	124.0000 - 5.0000	7	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
***									
LDF4P-50A(1/2")	A	No	No	Inside Pole	51.7500 - 5.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
0.2" Cable	A	No	No	Inside Pole	51.7500 - 5.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
T-Mobile									
LDF7-50A(1-5/8")	C	No	No	Inside Pole	163.0000 - 5.0000	21	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
9x18 MLE Hybrid Line - 40mm	C	No	No	Inside Pole	163.0000 - 5.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
HCS 6X12 4AWG (1-5/8")	C	No	No	Inside Pole	163.0000 - 5.0000	3	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
****									

Feed Line/Linear Appurtenances Section Areas

Tower Section	*Tower Elevation* *ft*	*Face*	*A_R* *ft^2*	*A_F* *ft^2*	*C_AA_A In Face* *ft^2*	*C_AA_A Out Face* *ft^2*	*Weight* *K*
L1	183.0000-165.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L2	165.5000-132.0800	A	0.000	0.000	15.907	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.24

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.68
L3	132.0800-86.9900	A	0.000	0.000	81.195	0.000	0.26
		B	0.000	0.000	61.510	0.000	0.80
		C	0.000	0.000	51.210	0.000	0.99
L4	86.9900-42.9100	A	0.000	0.000	117.530	0.000	0.25
		B	0.000	0.000	105.672	0.000	0.82
		C	0.000	0.000	88.217	0.000	0.96
L5	42.9100-0.0000	A	0.000	0.000	125.333	0.000	0.23
		B	0.000	0.000	115.136	0.000	0.71
		C	0.000	0.000	100.123	0.000	0.83

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	183.0000-165.5000	A	2.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.00
L2	165.5000-132.0800	A	2.905	0.000	0.000	55.190	0.000	1.12
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	0.000	0.68
L3	132.0800-86.9900	A	2.816	0.000	0.000	189.724	0.000	3.55
		B		0.000	0.000	118.517	0.000	2.86
		C		0.000	0.000	86.753	0.000	2.47
L4	86.9900-42.9100	A	2.674	0.000	0.000	236.590	0.000	4.18
		B		0.000	0.000	190.731	0.000	3.99
		C		0.000	0.000	137.875	0.000	3.20
L5	42.9100-0.0000	A	2.388	0.000	0.000	228.206	0.000	3.81
		B		0.000	0.000	190.119	0.000	3.69
		C		0.000	0.000	146.014	0.000	3.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	183.0000-165.5000	0.0000	0.0000	0.0000	0.0000
L2	165.5000-132.0800	-3.0674	-1.7710	-3.0951	-1.7870
L3	132.0800-86.9900	-1.2643	-0.7788	-1.6295	-1.3479
L4	86.9900-42.9100	-0.9004	-0.5505	-1.1906	-1.3131
L5	42.9100-0.0000	-0.9494	-0.3005	-1.2512	-1.1592

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	7	LDF4P-50A(1/2")	165.50 - 156.00	1.0000	1.0000
L1	8	2-1/2"	165.50 - 156.00	1.0000	1.0000
L2	7	LDF4P-50A(1/2")	132.08 - 156.00	1.0000	1.0000
L2	8	2-1/2"	132.08 - 156.00	1.0000	1.0000
L2	16	LDF7-50A(1-5/8")	132.08 - 113.00	1.0000	1.0000
L2	32	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	33	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	34	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	35	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	36	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	37	6" x 0.25" Flat	132.08 - 87.67	1.0000	1.0000
L2	38	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L2	39	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L2	40	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L2	41	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L2	42	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L2	43	5" x 0.25" Flat	132.08 - 117.58	1.0000	1.0000
L3	7	LDF4P-50A(1/2")	86.99 - 132.08	1.0000	1.0000
L3	8	2-1/2"	86.99 - 132.08	1.0000	1.0000
L3	16	LDF7-50A(1-5/8")	86.99 - 113.00	1.0000	1.0000
L3	26	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	27	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	28	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	29	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	30	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	31	7" x 0.5" Flat	86.99 - 43.08	1.0000	1.0000
L3	32	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L3	33	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L3	34	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L3	35	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L3	36	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L3	37	6" x 0.25" Flat	86.99 - 87.67	1.0000	1.0000
L4	7	LDF4P-50A(1/2")	42.91 - 86.99	1.0000	1.0000
L4	8	2-1/2"	42.91 - 86.99	1.0000	1.0000
L4	16	LDF7-50A(1-5/8")	42.91 - 86.99	1.0000	1.0000
L4	26	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000
L4	27	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000
L4	28	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000
L4	29	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000
L4	30	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000
L4	31	7" x 0.5" Flat	42.91 - 43.08	1.0000	1.0000

Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft ft ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
Lightning Rod w/ Pipe Extension	A	From Leg	1.0000	0.0000	189.7500	No Ice	2.5800	2.5800	0.05
			0.00			1/2" Ice	4.0200	4.0200	0.08
			6.00			1" Ice	5.4600	5.4600	0.11
14' Low Profile Platform	A	None		0.0000	184.0000	No Ice	15.7000	15.7000	1.30
						1/2" Ice	20.1000	20.1000	1.76
						1" Ice	24.5000	24.5000	2.23
24' 4-Bay Dipole	C	From Leg	3.5000	0.0000	184.0000	No Ice	4.7500	4.7500	0.05
			0.00			1/2" Ice	6.2500	6.2500	0.08
			0.00			1" Ice	7.7500	7.7500	0.11
24' 4-Bay Dipole	C	From Leg	3.5000	0.0000	184.0000	No Ice	4.7500	4.7500	0.05
			0.00			1/2" Ice	6.2500	6.2500	0.08
			0.00			1" Ice	7.7500	7.7500	0.11
9" x 9" x 3.5" TMA	A	From Leg	3.5000	0.0000	184.0000	No Ice	0.6750	0.2632	0.01
			0.00			1/2" Ice	0.7787	0.3356	0.02
			5.50			1" Ice	0.8898	0.4162	0.02
9" x 9" x 3.5" TMA	C	From Leg	3.5000	0.0000	184.0000	No Ice	0.6750	0.2632	0.01
			0.00			1/2" Ice	0.7787	0.3356	0.02
			5.50			1" Ice	0.8898	0.4162	0.02
163'									
AIR 32 B2a/B66Aa w/ Mount Pipe	A	From Leg	3.5000	0.0000	163.0000	No Ice	3.7600	3.1500	0.19
			0.00			1/2" Ice	4.1200	3.4900	0.25
			0.00			1" Ice	4.4800	3.8400	0.32
AIR 32 B2a/B66Aa w/ Mount Pipe	B	From Leg	3.5000	0.0000	163.0000	No Ice	3.7600	3.1500	0.19
			0.00			1/2" Ice	4.1200	3.4900	0.25
			0.00			1" Ice	4.4800	3.8400	0.32
AIR 32 B2a/B66Aa w/ Mount Pipe	C	From Leg	3.5000	0.0000	163.0000	No Ice	3.7600	3.1500	0.19
			0.00			1/2" Ice	4.1200	3.4900	0.25
			0.00			1" Ice	4.4800	3.8400	0.32
Ericsson AIR6449 B41 w/ Mount Pipe	A	From Leg	3.5000	0.0000	163.0000	No Ice	6.8995	4.3156	0.13
			0.00			1/2" Ice	7.7436	5.3695	0.19
			0.00			1" Ice	8.4932	6.2751	0.26
Ericsson AIR6449 B41 w/ Mount Pipe	B	From Leg	3.5000	0.0000	163.0000	No Ice	6.8995	4.3156	0.13
			0.00			1/2" Ice	7.7436	5.3695	0.19
			0.00			1" Ice	8.4932	6.2751	0.26
Ericsson AIR6449 B41 w/ Mount Pipe	C	From Leg	3.5000	0.0000	163.0000	No Ice	6.8995	4.3156	0.13
			0.00			1/2" Ice	7.7436	5.3695	0.19
			0.00			1" Ice	8.4932	6.2751	0.26
AIR 3246 B66 w/ Mount Pipe	A	From Leg	3.5000	0.0000	163.0000	No Ice	8.1769	6.5590	0.20
			0.00			1/2" Ice	8.6563	7.3933	0.27
			0.00			1" Ice	9.1243	8.1279	0.35
AIR 3246 B66 w/ Mount Pipe	B	From Leg	3.5000	0.0000	163.0000	No Ice	8.1769	6.5590	0.20
			0.00			1/2" Ice	8.6563	7.3933	0.27
			0.00			1" Ice	9.1243	8.1279	0.35
AIR 3246 B66 w/ Mount Pipe	C	From Leg	3.5000	0.0000	163.0000	No Ice	8.1769	6.5590	0.20
			0.00			1/2" Ice	8.6563	7.3933	0.27
			0.00			1" Ice	9.1243	8.1279	0.35
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	3.5000	0.0000	163.0000	No Ice	14.6900	6.8700	0.19
			0.00			1/2" Ice	15.4600	7.5500	0.31
			0.00			1" Ice	16.2300	8.2500	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	3.5000	0.0000	163.0000	No Ice	14.6900	6.8700	0.19
			0.00			1/2" Ice	15.4600	7.5500	0.31
			0.00			1" Ice	16.2300	8.2500	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	3.5000	0.0000	163.0000	No Ice	14.6900	6.8700	0.19
			0.00			1/2" Ice	15.4600	7.5500	0.31
			0.00			1" Ice	16.2300	8.2500	0.46
Radio 4449 B71+B85_T-Mobile	A	From Leg	3.5000	0.0000	163.0000	No Ice	1.9701	1.5865	0.07
			0.00			1/2" Ice	2.1466	1.7488	0.09

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft ft ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
			0.00			1" Ice	2.3306	1.9185	0.12
Radio 4449	B	From Leg	3.5000	0.0000	163.0000	No Ice	1.9701	1.5865	0.07
B71+B85_T-Mobile			0.00			1/2" Ice	2.1466	1.7488	0.09
			0.00			1" Ice	2.3306	1.9185	0.12
Radio 4449	C	From Leg	3.5000	0.0000	163.0000	No Ice	1.9701	1.5865	0.07
B71+B85_T-Mobile			0.00			1/2" Ice	2.1466	1.7488	0.09
			0.00			1" Ice	2.3306	1.9185	0.12
RRUS 4415 B25	A	From Leg	3.5000	0.0000	163.0000	No Ice	1.6444	0.6788	0.04
			0.00			1/2" Ice	1.8044	0.7911	0.06
			0.00			1" Ice	1.9719	0.9129	0.07
RRUS 4415 B25	B	From Leg	3.5000	0.0000	163.0000	No Ice	1.6444	0.6788	0.04
			0.00			1/2" Ice	1.8044	0.7911	0.06
			0.00			1" Ice	1.9719	0.9129	0.07
RRUS 4415 B25	C	From Leg	3.5000	0.0000	163.0000	No Ice	1.6444	0.6788	0.04
			0.00			1/2" Ice	1.8044	0.7911	0.06
			0.00			1" Ice	1.9719	0.9129	0.07
Platform Mount [LP	C	None		0.0000	163.0000	No Ice	26.3900	26.3900	2.36
1201-1_HR-1]						1/2" Ice	31.4000	31.4000	3.06
						1" Ice	36.2000	36.2000	3.86
Site Pro 1 (P/N: PRK-1245L)	C	None		0.0000	163.0000	No Ice	6.3200	4.8500	0.28
						1/2" Ice	7.7900	6.3600	0.42
						1" Ice	9.3600	7.9400	0.60
153									
APXVSPP18-C w/ Mount	A	From Leg	3.5000	0.0000	154.0000	No Ice	4.6000	4.0100	0.09
Pipe			0.00			1/2" Ice	5.0500	4.4500	0.15
			2.00			1" Ice	5.5000	4.8900	0.23
APXVSPP18-C w/ Mount	B	From Leg	3.5000	0.0000	154.0000	No Ice	4.6000	4.0100	0.09
Pipe			0.00			1/2" Ice	5.0500	4.4500	0.15
			2.00			1" Ice	5.5000	4.8900	0.23
APXVSPP18-C w/ Mount	C	From Leg	3.5000	0.0000	154.0000	No Ice	4.6000	4.0100	0.09
Pipe			0.00			1/2" Ice	5.0500	4.4500	0.15
			2.00			1" Ice	5.5000	4.8900	0.23
APXVTM14-C-120 w/	A	From Leg	3.5000	0.0000	154.0000	No Ice	4.0900	2.8600	0.08
Mount Pipe			0.00			1/2" Ice	4.4800	3.2300	0.13
			2.00			1" Ice	4.8800	3.6100	0.19
APXVTM14-C-120 w/	B	From Leg	3.5000	0.0000	154.0000	No Ice	4.0900	2.8600	0.08
Mount Pipe			0.00			1/2" Ice	4.4800	3.2300	0.13
			2.00			1" Ice	4.8800	3.6100	0.19
APXVTM14-C-120 w/	C	From Leg	3.5000	0.0000	154.0000	No Ice	4.0900	2.8600	0.08
Mount Pipe			0.00			1/2" Ice	4.4800	3.2300	0.13
			2.00			1" Ice	4.8800	3.6100	0.19
RRH2X50-800	A	From Leg	3.5000	0.0000	154.0000	No Ice	1.7008	1.2822	0.05
			0.00			1/2" Ice	1.8640	1.4275	0.07
			2.00			1" Ice	2.0345	1.5803	0.09
RRH2X50-800	B	From Leg	3.5000	0.0000	154.0000	No Ice	1.7008	1.2822	0.05
			0.00			1/2" Ice	1.8640	1.4275	0.07
			2.00			1" Ice	2.0345	1.5803	0.09
RRH2X50-800	C	From Leg	3.5000	0.0000	154.0000	No Ice	1.7008	1.2822	0.05
			0.00			1/2" Ice	1.8640	1.4275	0.07
			2.00			1" Ice	2.0345	1.5803	0.09
TD-RRH8x20	A	From Leg	3.5000	0.0000	154.0000	No Ice	3.7042	1.2939	0.07
			0.00			1/2" Ice	3.9462	1.4646	0.09
			4.50			1" Ice	4.1956	1.6424	0.12
TD-RRH8x20	B	From Leg	3.5000	0.0000	154.0000	No Ice	3.7042	1.2939	0.07
			0.00			1/2" Ice	3.9462	1.4646	0.09
			4.50			1" Ice	4.1956	1.6424	0.12
TD-RRH8x20	C	From Leg	3.5000	0.0000	154.0000	No Ice	3.7042	1.2939	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	3.9462	1.4646	0.09
			4.50			1" Ice	4.1956	1.6424	0.12
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	1.0000	0.0000	154.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			4.50			1" Ice	2.7388	2.6507	0.11
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	1.0000	0.0000	154.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			4.50			1" Ice	2.7388	2.6507	0.11
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	1.0000	0.0000	154.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2" Ice	2.5266	2.4407	0.08
			4.50			1" Ice	2.7388	2.6507	0.11
18" x 18" x 6.5" Junction Box	A	From Leg	1.0000	0.0000	154.0000	No Ice	2.7000	1.0528	0.05
			0.00			1/2" Ice	3.1148	1.3424	0.07
			0.00			1" Ice	3.5296	1.6320	0.09
13' Low Profile Platform	A	None		0.0000	154.0000	No Ice	15.7000	15.7000	1.30
						1/2" Ice	20.1000	20.1000	1.76
						1" Ice	24.5000	24.5000	2.23
Ring Mount	C	None		0.0000	159.0000	No Ice	1.4000	1.4000	0.09
						1/2" Ice	2.4000	2.4000	0.13
						1" Ice	3.4000	3.4000	0.17
154'									
MTI1669	B	From Leg	3.5000	0.0000	153.8300	No Ice	1.7521	0.5236	0.05
			0.00			1/2" Ice	2.0213	0.7236	0.07
			0.00			1" Ice	2.2905	0.9236	0.09
146									
800 10121	A	From Leg	3.5000	0.0000	145.0000	No Ice	3.7400	2.1700	0.05
			0.00			1/2" Ice	4.1800	2.5800	0.08
			0.00			1" Ice	4.6300	3.0000	0.12
800 10121	B	From Leg	3.5000	0.0000	145.0000	No Ice	3.7400	2.1700	0.05
			0.00			1/2" Ice	4.1800	2.5800	0.08
			0.00			1" Ice	4.6300	3.0000	0.12
800 10121	C	From Leg	3.5000	0.0000	145.0000	No Ice	3.7400	2.1700	0.05
			0.00			1/2" Ice	4.1800	2.5800	0.08
			0.00			1" Ice	4.6300	3.0000	0.12
(2) OPA-65R-LCUU-H6	A	From Leg	3.5000	0.0000	145.0000	No Ice	9.2000	4.6300	0.08
			0.00			1/2" Ice	9.9700	5.3400	0.14
			0.00			1" Ice	10.7600	6.0700	0.20
(2) OPA-65R-LCUU-H8	B	From Leg	3.5000	0.0000	145.0000	No Ice	11.9500	6.0300	0.07
			0.00			1/2" Ice	12.9200	6.9300	0.14
			0.00			1" Ice	13.9000	7.8500	0.22
(2) OPA-65R-LCUU-H8	C	From Leg	3.5000	0.0000	145.0000	No Ice	11.9500	6.0300	0.07
			0.00			1/2" Ice	12.9200	6.9300	0.14
			0.00			1" Ice	13.9000	7.8500	0.22
(2) LGP21401	A	From Leg	3.5000	0.0000	145.0000	No Ice	1.1040	0.2070	0.01
			0.00			1/2" Ice	1.2388	0.2738	0.02
			0.00			1" Ice	1.3810	0.3475	0.03
(2) LGP21401	B	From Leg	3.5000	0.0000	145.0000	No Ice	1.1040	0.2070	0.01
			0.00			1/2" Ice	1.2388	0.2738	0.02
			0.00			1" Ice	1.3810	0.3475	0.03
(2) LGP21401	C	From Leg	3.5000	0.0000	145.0000	No Ice	1.1040	0.2070	0.01
			0.00			1/2" Ice	1.2388	0.2738	0.02
			0.00			1" Ice	1.3810	0.3475	0.03
(2) LGP21901	A	From Leg	3.5000	0.0000	145.0000	No Ice	0.2310	0.1575	0.01
			0.00			1/2" Ice	0.2941	0.2129	0.01
			0.00			1" Ice	0.3647	0.2756	0.01
(2) LGP21901	B	From Leg	3.5000	0.0000	145.0000	No Ice	0.2310	0.1575	0.01
			0.00			1/2" Ice	0.2941	0.2129	0.01

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft²	C_AA_A *Side* ft²	*Weight* K
			0.00			1" Ice	0.3647	0.2756	0.01
(2) LGP21901	C	From Leg	3.5000	0.0000	145.0000	No Ice	0.2310	0.1575	0.01
			0.00			1/2" Ice	0.2941	0.2129	0.01
			0.00			1" Ice	0.3647	0.2756	0.01
RRUS 32 B66	A	From Leg	3.5000	0.0000	145.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2" Ice	2.9647	1.8552	0.07
			0.00			1" Ice	3.1941	2.0493	0.10
RRUS 32 B66	B	From Leg	3.5000	0.0000	145.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2" Ice	2.9647	1.8552	0.07
			0.00			1" Ice	3.1941	2.0493	0.10
RRUS 32 B66	C	From Leg	3.5000	0.0000	145.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2" Ice	2.9647	1.8552	0.07
			0.00			1" Ice	3.1941	2.0493	0.10
RRUS 32 B30	A	From Leg	3.5000	0.0000	145.0000	No Ice	2.6923	1.5727	0.06
			0.00			1/2" Ice	2.9115	1.7556	0.08
			0.00			1" Ice	3.1382	1.9455	0.10
RRUS 32 B30	B	From Leg	3.5000	0.0000	145.0000	No Ice	2.6923	1.5727	0.06
			0.00			1/2" Ice	2.9115	1.7556	0.08
			0.00			1" Ice	3.1382	1.9455	0.10
RRUS 32 B30	C	From Leg	3.5000	0.0000	145.0000	No Ice	2.6923	1.5727	0.06
			0.00			1/2" Ice	2.9115	1.7556	0.08
			0.00			1" Ice	3.1382	1.9455	0.10
DC6-48-60-18-8C	A	From Leg	3.5000	0.0000	145.0000	No Ice	1.1450	1.1450	0.03
			0.00			1/2" Ice	1.7924	1.7924	0.05
			0.00			1" Ice	2.0024	2.0024	0.07
DC6-48-60-18-8C	B	From Leg	3.5000	0.0000	145.0000	No Ice	1.1450	1.1450	0.03
			0.00			1/2" Ice	1.7924	1.7924	0.05
			0.00			1" Ice	2.0024	2.0024	0.07
RRUS 11 B12	A	From Leg	3.5000	0.0000	145.0000	No Ice	2.8333	1.1821	0.05
			0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00			1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	B	From Leg	3.5000	0.0000	145.0000	No Ice	2.8333	1.1821	0.05
			0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00			1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	C	From Leg	3.5000	0.0000	145.0000	No Ice	2.8333	1.1821	0.05
			0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00			1" Ice	3.2593	1.4848	0.10
RRUS 4478 B5	A	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
RRUS 4478 B5	B	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
RRUS 4478 B5	C	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
NNH4-65B-R6	A	From Leg	3.5000	0.0000	145.0000	No Ice	7.6200	3.0100	0.10
			0.00			1/2" Ice	8.1200	3.4500	0.17
			0.00			1" Ice	8.6300	3.9000	0.25
NNH4-65C-R6	B	From Leg	3.5000	0.0000	145.0000	No Ice	9.7500	3.9600	0.10
			0.00			1/2" Ice	10.3600	4.5000	0.19
			0.00			1" Ice	10.9700	5.0600	0.30
NNH4-65C-R6	C	From Leg	3.5000	0.0000	145.0000	No Ice	9.7500	3.9600	0.10
			0.00			1/2" Ice	10.3600	4.5000	0.19
			0.00			1" Ice	10.9700	5.0600	0.30
RRUS E2 B29	A	From Leg	3.5000	0.0000	145.0000	No Ice	3.1450	1.2854	0.06
			0.00			1/2" Ice	3.3648	1.4379	0.08

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft²	C_AA_A *Side* ft²	*Weight* K
			0.00			1" Ice	3.5920	1.5998	0.11
RRUS E2 B29	B	From Leg	3.5000	0.0000	145.0000	No Ice	3.1450	1.2854	0.06
			0.00			1/2" Ice	3.3648	1.4379	0.08
			0.00			1" Ice	3.5920	1.5998	0.11
RRUS E2 B29	C	From Leg	3.5000	0.0000	145.0000	No Ice	3.1450	1.2854	0.06
			0.00			1/2" Ice	3.3648	1.4379	0.08
			0.00			1" Ice	3.5920	1.5998	0.11
RRUS 12 B2	A	From Leg	3.5000	0.0000	145.0000	No Ice	3.1435	1.2816	0.05
			0.00			1/2" Ice	3.3632	1.4340	0.07
			0.00			1" Ice	3.5904	1.5955	0.10
RRUS 12 B2	B	From Leg	3.5000	0.0000	145.0000	No Ice	3.1435	1.2816	0.05
			0.00			1/2" Ice	3.3632	1.4340	0.07
			0.00			1" Ice	3.5904	1.5955	0.10
RRUS 12 B2	C	From Leg	3.5000	0.0000	145.0000	No Ice	3.1435	1.2816	0.05
			0.00			1/2" Ice	3.3632	1.4340	0.07
			0.00			1" Ice	3.5904	1.5955	0.10
RRUS 4478 B14	A	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
RRUS 4478 B14	B	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
RRUS 4478 B14	C	From Leg	3.5000	0.0000	145.0000	No Ice	1.8425	1.0588	0.06
			0.00			1/2" Ice	2.0123	1.1969	0.08
			0.00			1" Ice	2.1895	1.3425	0.09
RRU A2	A	From Leg	3.5000	0.0000	145.0000	No Ice	2.0637	0.5047	0.02
			0.00			1/2" Ice	2.2424	0.6147	0.03
			0.00			1" Ice	2.4285	0.7318	0.05
RRU A2	B	From Leg	3.5000	0.0000	145.0000	No Ice	2.0637	0.5047	0.02
			0.00			1/2" Ice	2.2424	0.6147	0.03
			0.00			1" Ice	2.4285	0.7318	0.05
RRU A2	C	From Leg	3.5000	0.0000	145.0000	No Ice	2.0637	0.5047	0.02
			0.00			1/2" Ice	2.2424	0.6147	0.03
			0.00			1" Ice	2.4285	0.7318	0.05
DC6-48-60-0-8C	A	From Leg	3.5000	0.0000	145.0000	No Ice	0.8498	0.8498	0.02
			0.00			1/2" Ice	1.3563	1.3563	0.04
			0.00			1" Ice	1.5325	1.5325	0.05
DC6-48-60-0-8C	B	From Leg	3.5000	0.0000	145.0000	No Ice	0.8498	0.8498	0.02
			0.00			1/2" Ice	1.3563	1.3563	0.04
			0.00			1" Ice	1.5325	1.5325	0.05
Platform Mount [LP 301-1_KCKR]	A	None		0.0000	145.0000	No Ice	35.0300	35.0300	1.86
						1/2" Ice	44.4600	44.4600	2.52
						1" Ice	53.7200	53.7200	3.33
123									
20' 4-Bay Dipole	C	From Leg	3.5000	0.0000	128.1700	No Ice	4.7500	4.7500	0.05
			0.00			1/2" Ice	6.2500	6.2500	0.08
			0.00			1" Ice	7.7500	7.7500	0.11
15' Whip	A	From Leg	3.5000	0.0000	132.0800	No Ice	3.7500	3.7500	0.04
			0.00			1/2" Ice	4.5000	4.5000	0.07
			0.00			1" Ice	5.2500	5.2500	0.10
5'-6" Whip	A	From Leg	3.5000	0.0000	129.4200	No Ice	1.2000	1.2000	0.03
			0.00			1/2" Ice	1.8000	1.8000	0.03
			0.00			1" Ice	2.4000	2.4000	0.04
24" Yagi	C	From Leg	3.5000	0.0000	128.5000	No Ice	1.5000	1.5000	0.01
			0.00			1/2" Ice	2.2500	2.2500	0.02
			0.00			1" Ice	3.0000	3.0000	0.03
15" Yagi	B	From Leg	3.5000	0.0000	125.0800	No Ice	0.7500	0.7500	0.01

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft ft ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* *K*
			0.00			1/2" Ice	1.2500	1.2500	0.01
			0.00			1" Ice	1.7500	1.7500	0.01
2'6" Yagi	A	From Leg	3.5000	0.0000	121.7500	No Ice	1.5000	1.5000	0.01
			0.00			1/2" Ice	2.2500	2.2500	0.02
			0.00			1" Ice	3.0000	3.0000	0.03
13' Low Profile Platform	A	None		0.0000	123.0000	No Ice	15.7000	15.7000	1.30
						1/2" Ice	20.1000	20.1000	1.76
						1" Ice	24.5000	24.5000	2.23
112'									
(2) LNX-6514DS-A1M w/	A	From Leg	3.5000	0.0000	111.0000	No Ice	4.0900	3.3000	0.06
Mount Pipe			0.00			1/2" Ice	4.4900	3.6800	0.13
			0.00			1" Ice	4.8900	4.0600	0.20
(2) LNX-6514DS-A1M w/	B	From Leg	3.5000	0.0000	111.0000	No Ice	4.0900	3.3000	0.06
Mount Pipe			0.00			1/2" Ice	4.4900	3.6800	0.13
			0.00			1" Ice	4.8900	4.0600	0.20
(2) LNX-6514DS-A1M w/	C	From Leg	3.5000	0.0000	111.0000	No Ice	4.0900	3.3000	0.06
Mount Pipe			0.00			1/2" Ice	4.4900	3.6800	0.13
			0.00			1" Ice	4.8900	4.0600	0.20
(2) HBXX-6517DS-A2M w/	A	From Leg	3.5000	0.0000	111.0000	No Ice	7.9700	5.9900	0.08
Mount Pipe			0.00			1/2" Ice	8.7300	6.7200	0.14
			2.00			1" Ice	9.5000	7.4700	0.22
(2) HBXX-6517DS-A2M w/	B	From Leg	3.5000	0.0000	111.0000	No Ice	7.9700	5.9900	0.08
Mount Pipe			0.00			1/2" Ice	8.7300	6.7200	0.14
			2.00			1" Ice	9.5000	7.4700	0.22
(2) HBXX-6517DS-A2M w/	C	From Leg	3.5000	0.0000	111.0000	No Ice	7.9700	5.9900	0.08
Mount Pipe			0.00			1/2" Ice	8.7300	6.7200	0.14
			2.00			1" Ice	9.5000	7.4700	0.22
RRFDC-3315-PF-48	B	From Leg	1.0000	0.0000	111.0000	No Ice	3.7079	2.1921	0.02
			0.00			1/2" Ice	3.9505	2.3950	0.05
			4.42			1" Ice	4.2005	2.6056	0.09
RRFDC-3315-PF-48	C	From Leg	1.0000	0.0000	111.0000	No Ice	3.7079	2.1921	0.02
			0.00			1/2" Ice	3.9505	2.3950	0.05
			4.42			1" Ice	4.2005	2.6056	0.09
B25 RRH4X30	A	From Leg	3.5000	0.0000	111.0000	No Ice	2.2000	1.7417	0.06
			0.00			1/2" Ice	2.3926	1.9204	0.08
			2.00			1" Ice	2.5926	2.1065	0.10
B25 RRH4X30	B	From Leg	3.5000	0.0000	111.0000	No Ice	2.2000	1.7417	0.06
			0.00			1/2" Ice	2.3926	1.9204	0.08
			2.00			1" Ice	2.5926	2.1065	0.10
B25 RRH4X30	C	From Leg	3.5000	0.0000	111.0000	No Ice	2.2000	1.7417	0.06
			0.00			1/2" Ice	2.3926	1.9204	0.08
			2.00			1" Ice	2.5926	2.1065	0.10
B13 RRH 4X30	A	From Leg	3.5000	0.0000	111.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2" Ice	2.2405	1.4754	0.07
			2.00			1" Ice	2.4333	1.6376	0.09
B13 RRH 4X30	B	From Leg	3.5000	0.0000	111.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2" Ice	2.2405	1.4754	0.07
			2.00			1" Ice	2.4333	1.6376	0.09
B13 RRH 4X30	C	From Leg	3.5000	0.0000	111.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2" Ice	2.2405	1.4754	0.07
			2.00			1" Ice	2.4333	1.6376	0.09
B4 RRH2X60-4R	A	From Leg	3.5000	0.0000	111.0000	No Ice	3.3554	2.0048	0.06
			0.00			1/2" Ice	3.6120	2.2369	0.08
			2.00			1" Ice	3.8757	2.4759	0.10
B4 RRH2X60-4R	B	From Leg	3.5000	0.0000	111.0000	No Ice	3.3554	2.0048	0.06
			0.00			1/2" Ice	3.6120	2.2369	0.08
			2.00			1" Ice	3.8757	2.4759	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
B4 RRH2X60-4R	C	From Leg	3.5000 0.00 2.00	0.0000	111.0000	No Ice 1/2" Ice 1" Ice	3.3554 3.6120 3.8757	2.0048 2.2369 2.4759	0.06 0.08 0.10
RMQP 12' Platform w/ handrails	C	None		0.0000	111.0000	No Ice 1/2" Ice 1" Ice	26.3000 35.6000 44.9000	26.3000 35.6000 44.9000	1.92 2.34 2.76
55									
3' Side Mount Standoff	B	From Leg	1.5000 0.00 0.00	0.0000	51.7500	No Ice 1/2" Ice 1" Ice	1.5000 2.2000 2.9000	1.5000 2.2000 2.9000	0.04 0.07 0.10
GPS	B	From Leg	3.0000 0.00 0.00	0.0000	51.7500	No Ice 1/2" Ice 1" Ice	0.2100 0.3100 0.4100	0.2100 0.3100 0.4100	0.01 0.01 0.01
12" x 2.5" x 1.5" TMA	B	From Leg	3.0000 0.00 0.00	0.0000	51.7500	No Ice 1/2" Ice 1" Ice	0.5602 0.6590 0.7652	0.3658 0.4493 0.5429	0.02 0.02 0.03

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
HPD2-18RS	A	Paraboloid w/Shroud (HP)	From Leg	3.0000 0.00 0.00	70.0000		189.5000	2.0000	No Ice 1/2" Ice 1" Ice	3.1400 3.4100 3.6800	0.03 0.04 0.06
HPD2-18RS	A	Paraboloid w/Shroud (HP)	From Leg	3.0000 0.00 0.00	-60.0000		189.5000	2.0000	No Ice 1/2" Ice 1" Ice	3.1400 3.4100 3.6800	0.03 0.04 0.06
3' Dish w/ Randome	B	Paraboloid w/Radome	From Leg	3.5000 0.00 0.00	-10.0000		150.5000	3.0000	No Ice 1/2" Ice 1" Ice	7.1000 7.9000 8.7000	0.05 0.08 0.11
Andrew VHLP2-23	C	Paraboloid w/Radome	From Leg	3.5000 0.00 0.00	10.0000		151.5000	2.0000	No Ice 1/2" Ice 1" Ice	3.1400 6.4100 9.6800	0.03 0.04 0.05
Andrew VHLP2-18	A	Paraboloid w/Radome	From Leg	3.5000 0.00 0.00	-40.0000		150.5000	2.0000	No Ice 1/2" Ice 1" Ice	3.1400 6.4100 9.6800	0.03 0.04 0.05

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	183 - 165.5	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-7.11	2.06	0.42
			Max. Mx	20	-1.89	45.59	0.03
			Max. My	2	-1.92	0.21	42.71
			Max. Vy	20	-3.13	45.59	0.03
			Max. Vx	14	3.02	-0.27	-42.69
			Max. Torque	16			-2.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	165.5 - 132.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.99	0.93	0.32
			Max. Mx	20	-16.75	521.23	1.11
			Max. My	2	-16.87	1.19	511.74
			Max. Vy	8	24.44	-521.13	-1.94
			Max. Vx	2	-24.03	1.19	511.74
			Max. Torque	16			-2.48
L3	132.08 - 86.99	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-111.25	4.31	3.71
			Max. Mx	20	-31.76	1829.42	3.09
			Max. My	2	-31.86	4.69	1800.48
			Max. Vy	8	34.56	-1828.65	-4.90
			Max. Vx	2	-34.09	4.69	1800.48
			Max. Torque	16			-2.48
L4	86.99 - 42.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-139.49	4.96	6.88
			Max. Mx	20	-45.95	3375.47	4.79
			Max. My	2	-46.00	7.61	3326.74
			Max. Vy	8	37.42	-3375.15	-7.95
			Max. Vx	2	-36.96	7.61	3326.74
			Max. Torque	16			-2.36
L5	42.91 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-175.12	5.94	10.47
			Max. Mx	20	-65.06	5266.41	6.96
			Max. My	2	-65.06	11.16	5195.84
			Max. Vy	8	39.43	-5265.98	-11.19
			Max. Vx	2	-39.00	11.16	5195.84
			Max. Torque	16			-2.05

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	175.12	-0.00	-0.00
	Max. H_x	21	48.83	39.35	0.04
	Max. H_z	3	48.83	0.07	38.92
	Max. M_x	2	5195.84	0.07	38.92
	Max. M_z	8	5265.98	-39.36	-0.07
	Max. Torsion	2	1.88	0.07	38.92
	Min. Vert	21	48.83	39.35	0.04
	Min. H_x	9	48.83	-39.36	-0.07
	Min. H_z	15	48.83	-0.05	-38.89
	Min. M_x	14	-5189.32	-0.05	-38.89
	Min. M_z	20	-5266.41	39.35	0.04
	Min. Torsion	16	-2.04	19.67	-33.65

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	54.25	0.00	0.00	-0.73	0.23	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 0 deg - No Ice	65.10	-0.07	-38.92	-5195.84	11.16	-1.88
0.9 Dead+1.6 Wind 0 deg - No Ice	48.83	-0.07	-38.92	-5076.87	10.82	-1.87
1.2 Dead+1.6 Wind 30 deg - No Ice	65.10	19.55	-33.66	-4491.90	-2613.28	-1.82
0.9 Dead+1.6 Wind 30 deg - No Ice	48.83	19.55	-33.66	-4389.03	-2553.57	-1.80
1.2 Dead+1.6 Wind 60 deg - No Ice	65.10	34.00	-19.35	-2576.42	-4547.61	-1.06
0.9 Dead+1.6 Wind 60 deg - No Ice	48.83	34.00	-19.35	-2517.42	-4443.64	-1.04
1.2 Dead+1.6 Wind 90 deg - No Ice	65.10	39.36	0.07	11.19	-5265.98	-0.11
0.9 Dead+1.6 Wind 90 deg - No Ice	48.83	39.36	0.07	11.14	-5145.64	-0.09
1.2 Dead+1.6 Wind 120 deg - No Ice	65.10	34.14	19.54	2607.82	-4570.67	0.43
0.9 Dead+1.6 Wind 120 deg - No Ice	48.83	34.14	19.54	2548.51	-4466.16	0.45
1.2 Dead+1.6 Wind 150 deg - No Ice	65.10	19.75	33.74	4503.01	-2648.02	0.96
0.9 Dead+1.6 Wind 150 deg - No Ice	48.83	19.75	33.74	4400.37	-2587.42	0.96
1.2 Dead+1.6 Wind 180 deg - No Ice	65.10	0.05	38.89	5189.32	-7.97	1.68
0.9 Dead+1.6 Wind 180 deg - No Ice	48.83	0.05	38.89	5070.98	-7.82	1.67
1.2 Dead+1.6 Wind 210 deg - No Ice	65.10	-19.67	33.65	4487.33	2636.51	2.04
0.9 Dead+1.6 Wind 210 deg - No Ice	48.83	-19.67	33.65	4385.04	2576.03	2.02
1.2 Dead+1.6 Wind 240 deg - No Ice	65.10	-34.06	19.45	2593.86	4559.43	1.09
0.9 Dead+1.6 Wind 240 deg - No Ice	48.83	-34.06	19.45	2534.86	4455.01	1.07
1.2 Dead+1.6 Wind 270 deg - No Ice	65.10	-39.35	-0.04	-6.96	5266.41	-0.01
0.9 Dead+1.6 Wind 270 deg - No Ice	48.83	-39.35	-0.04	-6.54	5145.89	-0.02
1.2 Dead+1.6 Wind 300 deg - No Ice	65.10	-34.13	-19.49	-2600.07	4569.21	-0.80
0.9 Dead+1.6 Wind 300 deg - No Ice	48.83	-34.13	-19.49	-2540.48	4464.56	-0.81
1.2 Dead+1.6 Wind 330 deg - No Ice	65.10	-19.71	-33.79	-4511.56	2639.00	-1.39
0.9 Dead+1.6 Wind 330 deg - No Ice	48.83	-19.71	-33.79	-4408.22	2578.52	-1.39
1.2 Dead+1.0 Ice+1.0 Temp	175.12	0.00	0.00	-10.47	5.94	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	175.12	-0.00	-11.52	-1998.35	6.63	-1.18
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	175.12	5.79	-9.97	-1731.18	-994.46	-1.23
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	175.12	10.05	-5.74	-998.88	-1733.30	-0.82
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	175.12	11.65	0.02	-5.93	-2011.37	-0.26
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	175.12	10.10	5.80	990.88	-1744.33	0.28
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	175.12	5.84	10.00	1715.46	-1006.15	0.71

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Load Combination	*Vertical* K	*Shear$_x$* K	*Shear$_z$* K	*Overturning Moment, M_x* kip-ft	*Overturning Moment, M_z* kip-ft	*Torque* kip-ft
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	175.12	0.02	11.52	1978.47	1.39	1.10
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	175.12	-5.79	9.96	1708.53	1007.19	1.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	175.12	-10.03	5.77	984.89	1740.19	0.76
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	175.12	-11.59	-0.01	-12.89	2011.50	0.14
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	175.12	-10.05	-5.76	-1004.74	1744.94	-0.32
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	175.12	-5.79	-10.00	-1736.65	1007.15	-0.83
Dead+Wind 0 deg - Service	54.25	-0.01	-7.11	-939.02	2.24	-0.36
Dead+Wind 30 deg - Service	54.25	3.57	-6.15	-811.76	-471.66	-0.35
Dead+Wind 60 deg - Service	54.25	6.21	-3.53	-465.91	-821.00	-0.22
Dead+Wind 90 deg - Service	54.25	7.19	0.01	1.38	-951.06	-0.02
Dead+Wind 120 deg - Service	54.25	6.23	3.57	470.34	-825.23	0.10
Dead+Wind 150 deg - Service	54.25	3.61	6.16	812.54	-477.96	0.20
Dead+Wind 180 deg - Service	54.25	0.01	7.10	936.56	-1.21	0.32
Dead+Wind 210 deg - Service	54.25	-3.59	6.14	809.67	476.31	0.37
Dead+Wind 240 deg - Service	54.25	-6.22	3.55	467.79	823.61	0.19
Dead+Wind 270 deg - Service	54.25	-7.19	-0.01	-1.89	951.57	-0.00
Dead+Wind 300 deg - Service	54.25	-6.23	-3.56	-470.20	825.39	-0.13
Dead+Wind 330 deg - Service	54.25	-3.60	-6.17	-815.35	476.78	-0.25

Solution Summary

	Sum of Applied Forces			*Sum of Reactions*			
Load Comb.	*PX* K	*PY* K	*PZ* K	*PX* K	*PY* K	*PZ* K	*% Error*
1	0.00	-54.25	0.00	-0.00	54.25	-0.00	0.000%
2	-0.07	-65.10	-38.93	0.07	65.10	38.92	0.007%
3	-0.07	-48.83	-38.93	0.07	48.83	38.92	0.008%
4	19.55	-65.10	-33.66	-19.55	65.10	33.66	0.000%
5	19.55	-48.83	-33.66	-19.55	48.83	33.66	0.000%
6	34.00	-65.10	-19.35	-34.00	65.10	19.35	0.000%
7	34.00	-48.83	-19.35	-34.00	48.83	19.35	0.000%
8	39.36	-65.10	0.07	-39.36	65.10	-0.07	0.011%
9	39.36	-48.83	0.07	-39.36	48.83	-0.07	0.013%
10	34.14	-65.10	19.54	-34.14	65.10	-19.54	0.000%
11	34.14	-48.83	19.54	-34.14	48.83	-19.54	0.000%
12	19.75	-65.10	33.74	-19.75	65.10	-33.74	0.000%
13	19.75	-48.83	33.74	-19.75	48.83	-33.74	0.000%
14	0.05	-65.10	38.90	-0.05	65.10	-38.89	0.007%
15	0.05	-48.83	38.90	-0.05	48.83	-38.89	0.008%
16	-19.67	-65.10	33.65	19.67	65.10	-33.65	0.000%
17	-19.67	-48.83	33.65	19.67	48.83	-33.65	0.000%
18	-34.06	-65.10	19.45	34.06	65.10	-19.45	0.000%
19	-34.06	-48.83	19.45	34.06	48.83	-19.45	0.000%
20	-39.36	-65.10	-0.04	39.35	65.10	0.04	0.011%
21	-39.36	-48.83	-0.04	39.35	48.83	0.04	0.013%
22	-34.13	-65.10	-19.49	34.13	65.10	19.49	0.000%
23	-34.13	-48.83	-19.49	34.13	48.83	19.49	0.000%
24	-19.71	-65.10	-33.79	19.71	65.10	33.79	0.000%
25	-19.71	-48.83	-33.79	19.71	48.83	33.79	0.000%
26	0.00	-175.12	0.00	-0.00	175.12	-0.00	0.000%
27	-0.00	-175.12	-11.52	0.00	175.12	11.52	0.002%
28	5.79	-175.12	-9.97	-5.79	175.12	9.97	0.002%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	*PX K*	*PY K*	*PZ K*	*PX K*	*PY K*	*PZ K*	*% Error*
29	10.06	-175.12	-5.74	-10.05	175.12	5.74	0.002%
30	11.65	-175.12	0.02	-11.65	175.12	-0.02	0.002%
31	10.11	-175.12	5.80	-10.10	175.12	-5.80	0.002%
32	5.84	-175.12	10.00	-5.84	175.12	-10.00	0.002%
33	0.02	-175.12	11.53	-0.02	175.12	-11.52	0.002%
34	-5.79	-175.12	9.97	5.79	175.12	-9.96	0.002%
35	-10.03	-175.12	5.77	10.03	175.12	-5.77	0.002%
36	-11.60	-175.12	-0.01	11.59	175.12	0.01	0.002%
37	-10.05	-175.12	-5.76	10.05	175.12	5.76	0.002%
38	-5.79	-175.12	-10.00	5.79	175.12	10.00	0.002%
39	-0.01	-54.25	-7.11	0.01	54.25	7.11	0.002%
40	3.57	-54.25	-6.15	-3.57	54.25	6.15	0.002%
41	6.21	-54.25	-3.53	-6.21	54.25	3.53	0.002%
42	7.19	-54.25	0.01	-7.19	54.25	-0.01	0.002%
43	6.23	-54.25	3.57	-6.23	54.25	-3.57	0.002%
44	3.61	-54.25	6.16	-3.61	54.25	-6.16	0.002%
45	0.01	-54.25	7.10	-0.01	54.25	-7.10	0.002%
46	-3.59	-54.25	6.14	3.59	54.25	-6.14	0.002%
47	-6.22	-54.25	3.55	6.22	54.25	-3.55	0.002%
48	-7.19	-54.25	-0.01	7.19	54.25	0.01	0.002%
49	-6.23	-54.25	-3.56	6.23	54.25	3.56	0.002%
50	-3.60	-54.25	-6.17	3.60	54.25	6.17	0.002%

Non-Linear Convergence Results

Load Combination	*Converged?*	*Number of Cycles*	*Displacement Tolerance*	*Force Tolerance*
1	Yes	6	0.00000001	0.00000001
2	Yes	22	0.00007158	0.00012411
3	Yes	21	0.00007024	0.00014512
4	Yes	29	0.00000001	0.00009240
5	Yes	28	0.00000001	0.00009176
6	Yes	29	0.00000001	0.00009558
7	Yes	28	0.00000001	0.00009504
8	Yes	21	0.00011410	0.00008927
9	Yes	20	0.00011363	0.00010804
10	Yes	29	0.00000001	0.00009650
11	Yes	28	0.00000001	0.00009587
12	Yes	29	0.00000001	0.00009492
13	Yes	28	0.00000001	0.00009428
14	Yes	22	0.00007160	0.00009574
15	Yes	21	0.00007026	0.00011346
16	Yes	29	0.00000001	0.00009713
17	Yes	28	0.00000001	0.00009669
18	Yes	29	0.00000001	0.00009420
19	Yes	28	0.00000001	0.00009349
20	Yes	21	0.00011409	0.00009572
21	Yes	20	0.00011362	0.00011461
22	Yes	29	0.00000001	0.00009523
23	Yes	28	0.00000001	0.00009449
24	Yes	29	0.00000001	0.00009690
25	Yes	28	0.00000001	0.00009633
26	Yes	20	0.00000001	0.00000156
27	Yes	30	0.00012600	0.00001541
28	Yes	30	0.00012488	0.00009078
29	Yes	30	0.00012485	0.00009792

30	Yes	30	0.00012593	0.00001169
31	Yes	30	0.00012481	0.00009693
32	Yes	30	0.00012486	0.00009233
33	Yes	30	0.00012604	0.00001459
34	Yes	30	0.00012487	0.00009937
35	Yes	30	0.00012484	0.00009314
36	Yes	30	0.00012593	0.00001177
37	Yes	30	0.00012478	0.00009668
38	Yes	30	0.00012480	0.00010074
39	Yes	21	0.00009658	0.00002071
40	Yes	21	0.00009638	0.00002422
41	Yes	21	0.00009638	0.00003022
42	Yes	21	0.00009657	0.00001991
43	Yes	21	0.00009637	0.00002883
44	Yes	21	0.00009637	0.00002586
45	Yes	21	0.00009658	0.00002040
46	Yes	21	0.00009637	0.00003170
47	Yes	21	0.00009637	0.00002573
48	Yes	21	0.00009657	0.00001994
49	Yes	21	0.00009637	0.00002713
50	Yes	21	0.00009637	0.00003044

Maximum Tower Deflections - Service Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* *°*	*Twist* *°*
L1	183 - 165.5	41.85	48	2.0395	0.0126
L2	168.5 - 132.08	35.72	48	1.9876	0.0065
L3	135.91 - 86.99	22.94	48	1.6802	0.0025
L4	91.99 - 42.91	10.09	48	1.0723	0.0010
L5	49.08 - 0	2.80	48	0.5325	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection* *in*	*Tilt* *°*	*Twist* *°*	*Radius of Curvature* *ft*
189.7500	Lightning Rod w/ Pipe Extension	48	41.85	2.0395	0.0126	37706
189.5000	HPD2-18RS	48	41.85	2.0395	0.0126	37706
184.0000	14' Low Profile Platform	48	41.85	2.0395	0.0126	37706
163.0000	AIR 32 B2a/B66Aa w/ Mount Pipe	48	33.44	1.9543	0.0050	9535
159.0000	Ring Mount	48	31.80	1.9244	0.0042	7986
154.0000	APXVSPP18-C w/ Mount Pipe	48	29.79	1.8810	0.0035	6638
153.8300	MTI1669	48	29.72	1.8794	0.0035	6600
151.5000	Andrew VHLP2-23	48	28.80	1.8570	0.0032	6122
150.5000	3' Dish w/ Randome	48	28.41	1.8470	0.0032	5937
145.0000	800 10121	48	26.28	1.7884	0.0028	5091
132.0800	15' Whip	48	21.60	1.6313	0.0024	4132
129.4200	5'-6" Whip	48	20.70	1.5964	0.0023	4147
128.5000	24" Yagi	48	20.39	1.5842	0.0023	4152
128.1700	20' 4-Bay Dipole	48	20.28	1.5798	0.0023	4154
125.0800	15" Yagi	48	19.26	1.5382	0.0022	4172
123.0000	13' Low Profile Platform	48	18.59	1.5097	0.0021	4184
121.7500	2'6" Yagi	48	18.20	1.4925	0.0021	4191
111.0000	(2) LNX-6514DS-A1M w/ Mount	48	14.98	1.3411	0.0016	4251

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
51.7500	Pipe 3' Side Mount Standoff	48	3.10	0.5634	0.0003	3989

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	183 - 165.5	231.12	20	11.2789	0.0647
L2	168.5 - 132.08	197.42	20	11.0124	0.0324
L3	135.91 - 86.99	126.94	20	9.3177	0.0131
L4	91.99 - 42.91	55.89	20	5.9466	0.0051
L5	49.08 - 0	15.54	20	2.9514	0.0018

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
189.7500	Lightning Rod w/ Pipe Extension	20	231.12	11.2789	0.0647	7687
189.5000	HPD2-18RS	20	231.12	11.2789	0.0647	7687
184.0000	14' Low Profile Platform	20	231.12	11.2789	0.0647	7687
163.0000	AIR 32 B2a/B66Aa w/ Mount Pipe	20	184.84	10.8326	0.0265	1895
159.0000	Ring Mount	20	175.82	10.6691	0.0225	1569
154.0000	APXVSPP18-C w/ Mount Pipe	20	164.72	10.4303	0.0189	1290
153.8300	MTI1669	20	164.35	10.4215	0.0188	1283
151.5000	Andrew VHLP2-23	20	159.27	10.2978	0.0176	1185
150.5000	3' Dish w/ Randome	20	157.10	10.2426	0.0171	1147
145.0000	800 10121	20	145.40	9.9181	0.0152	976
132.0800	15' Whip	20	119.54	9.0465	0.0126	782
129.4200	5'-6" Whip	20	114.53	8.8531	0.0122	783
128.5000	24" Yagi	20	112.83	8.7853	0.0121	784
128.1700	20' 4-Bay Dipole	20	112.22	8.7609	0.0120	784
125.0800	15" Yagi	20	106.61	8.5299	0.0115	785
123.0000	13' Low Profile Platform	20	102.92	8.3721	0.0112	786
121.7500	2'6" Yagi	20	100.74	8.2765	0.0109	787
111.0000	(2) LNX-6514DS-A1M w/ Mount Pipe	20	82.96	7.4375	0.0088	792
51.7500	3' Side Mount Standoff	20	17.18	3.1230	0.0019	723

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	183 - 181.964	TP19.42x15.5x0.1875	17.5000	0.0000	0.0	9.2509	-1.44	687.30	0.002
	181.964 - 180.929					9.3890	-1.47	697.55	0.002
	180.929 - 179.893					9.5271	-1.50	707.81	0.002
	179.893 - 178.857					9.6651	-1.53	718.07	0.002
	178.857 - 177.821					9.8032	-1.56	728.33	0.002
	177.821 - 176.786					9.9413	-1.60	738.59	0.002
	176.786 - 175.75					10.0793	-1.63	748.84	0.002
	175.75 - 174.714					10.2174	-1.67	759.10	0.002
	174.714 - 173.679					10.3555	-1.70	769.36	0.002
	173.679 - 172.643					10.4935	-1.74	779.62	0.002
	172.643 - 171.607					10.6316	-1.77	789.88	0.002
	171.607 - 170.571					10.7697	-1.81	800.13	0.002
	170.571 - 169.536					10.9077	-1.85	810.39	0.002
	169.536 - 168.5					11.0458	-1.89	820.65	0.002
	168.5 - 165.5					11.4457	-0.94	845.01	0.001
L2	168.5 - 165.5	TP26.41x18.373x0.25	36.4200	0.0000	0.0	14.9059	-1.24	1107.44	0.001
	165.5 - 163.856					15.1938	-2.32	1128.82	0.002
	163.856 - 162.212					15.4816	-7.40	1150.21	0.006
	162.212 - 160.568					15.7695	-7.55	1171.59	0.006
	160.568 - 158.924					16.0573	-7.80	1192.98	0.007
	158.924 - 157.281					16.3452	-7.96	1214.37	0.007
	157.281 - 155.637					16.6330	-8.12	1235.75	0.007
	155.637 - 153.993					16.9209	-10.78	1257.14	0.009
	153.993 - 152.349					17.2088	-11.00	1278.52	0.009
	152.349 - 150.705					17.4966	-11.19	1299.91	0.009
	150.705 - 149.061					17.7845	-11.40	1321.30	0.009
	149.061 - 147.417					18.0723	-11.59	1342.68	0.009
	147.417 - 145.773					18.3602	-11.78	1364.07	0.009
	145.773 - 144.129					18.6480	-15.63	1385.46	0.011
	144.129 - 142.486					18.9359	-15.84	1406.84	0.011
	142.486 - 140.842					19.2237	-16.06	1428.23	0.011
	140.842 -					19.5116	-16.29	1449.61	0.011

Section No.	*Elevation* *ft*	*Size*	*L* *ft*	L_u *ft*	*Kl/r*	*A* in^2	P_u *K*	ϕP_n *K*	*Ratio* $\frac{P_u}{\phi P_n}$
	139.198								
	139.198 - 137.554					19.7994	-16.52	1471.00	0.011
	137.554 - 135.91					20.0873	-16.75	1487.91	0.011
	135.91 - 132.08					20.7580	-7.21	1524.51	0.005
L3	135.91 - 132.08	TP35.88x25.0648x0.375	48.9200	0.0000	0.0	30.3949	-10.48	2258.19	0.005
	132.08 - 129.853					30.9809	-18.15	2301.73	0.008
	129.853 - 127.626					31.5670	-18.63	2345.27	0.008
	127.626 - 125.398					32.1531	-19.09	2388.81	0.008
	125.398 - 123.171					32.7392	-19.55	2432.36	0.008
	123.171 - 120.944					33.3252	-21.46	2475.90	0.009
	120.944 - 118.717					33.9113	-21.94	2519.44	0.009
	118.717 - 116.489					34.4974	-22.42	2562.98	0.009
	116.489 - 114.262					35.0834	-22.92	2606.52	0.009
	114.262 - 112.035					35.6695	-23.42	2650.07	0.009
	112.035 - 109.808					36.2556	-27.30	2693.61	0.010
	109.808 - 107.581					36.8416	-27.83	2737.15	0.010
	107.581 - 105.353					37.4277	-28.37	2780.69	0.010
	105.353 - 103.126					38.0138	-28.92	2824.23	0.010
	103.126 - 100.899					38.5998	-29.48	2867.78	0.010
	100.899 - 98.6717					39.1859	-30.04	2911.32	0.010
	98.6717 - 96.4444					39.7720	-30.61	2954.86	0.010
	96.4444 - 94.2172					40.3581	-31.18	2998.40	0.010
	94.2172 - 91.99					40.9441	-31.76	3041.94	0.010
	91.99 - 86.99					42.2598	-15.91	3139.69	0.005
L4	91.99 - 86.99	TP44.88x34.0246x0.4375	49.0800	0.0000	0.0	48.1756	-18.00	3579.20	0.005
	86.99 - 84.8839					48.8224	-34.54	3627.26	0.010
	84.8839 - 82.7778					49.4693	-35.16	3675.32	0.010
	82.7778 - 80.6717					50.1161	-35.78	3723.38	0.010
	80.6717 - 78.5656					50.7630	-36.42	3771.44	0.010
	78.5656 - 76.4594					51.4098	-37.05	3819.49	0.010
	76.4594 - 74.3533					52.0567	-37.70	3867.55	0.010
	74.3533 -					52.7035	-38.35	3915.61	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	72.2472								
	72.2472 - 70.1411					53.3504	-39.00	3963.67	0.010
	70.1411 - 68.035					53.9973	-39.66	4011.73	0.010
	68.035 - 65.9289					54.6441	-40.33	4059.78	0.010
	65.9289 - 63.8228					55.2910	-41.00	4107.84	0.010
	63.8228 - 61.7167					55.9378	-41.68	4155.90	0.010
	61.7167 - 59.6106					56.5847	-42.37	4203.96	0.010
	59.6106 - 57.5044					57.2315	-43.06	4252.02	0.010
	57.5044 - 55.3983					57.8784	-43.75	4300.08	0.010
	55.3983 - 53.2922					58.5252	-44.45	4348.13	0.010
	53.2922 - 51.1861					59.1721	-45.24	4396.19	0.010
	51.1861 - 49.08					59.8190	-45.95	4444.25	0.010
	49.08 - 42.91					61.7140	-25.03	4567.55	0.005
L5	49.08 - 42.91	TP53.5x42.6403x0.4375	49.0800	0.0000	0.0	60.4997	-24.38	4494.82	0.005
	42.91 - 40.6516					61.1936	-50.19	4538.80	0.011
	40.6516 - 38.3932					61.8875	-50.97	4577.10	0.011
	38.3932 - 36.1347					62.5814	-51.75	4615.11	0.011
	36.1347 - 33.8763					63.2753	-52.54	4652.81	0.011
	33.8763 - 31.6179					63.9692	-53.33	4690.23	0.011
	31.6179 - 29.3595					64.6631	-54.13	4727.34	0.011
	29.3595 - 27.1011					65.3570	-54.93	4764.17	0.012
	27.1011 - 24.8426					66.0509	-55.74	4800.69	0.012
	24.8426 - 22.5842					66.7448	-56.56	4836.92	0.012
	22.5842 - 20.3258					67.4387	-57.38	4872.86	0.012
	20.3258 - 18.0674					68.1327	-58.21	4908.50	0.012
	18.0674 - 15.8089					68.8266	-59.05	4943.85	0.012
	15.8089 - 13.5505					69.5205	-59.89	4978.90	0.012
	13.5505 - 11.2921					70.2144	-60.73	5013.65	0.012
	11.2921 - 9.03368					70.9083	-61.59	5048.11	0.012
	9.03368 - 6.77526					71.6022	-62.44	5082.28	0.012
	6.77526 - 4.51684					72.2961	-63.31	5116.15	0.012
	4.51684 -					72.9900	-64.18	5149.72	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	2.25842 2.25842 - 0					73.6839	-65.06	5183.00	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	183 - 181.964	TP19.42x15.5x0.1875	8.89	218.78	0.041	0.00	218.78	0.000
	181.964 - 180.929		11.35	225.40	0.050	0.00	225.40	0.000
	180.929 - 179.893		13.86	232.12	0.060	0.00	232.12	0.000
	179.893 - 178.857		16.44	238.93	0.069	0.00	238.93	0.000
	178.857 - 177.821		19.07	245.85	0.078	0.00	245.85	0.000
	177.821 - 176.786		21.76	252.86	0.086	0.00	252.86	0.000
	176.786 - 175.75		24.52	259.97	0.094	0.00	259.97	0.000
	175.75 - 174.714		27.34	267.18	0.102	0.00	267.18	0.000
	174.714 - 173.679		30.22	274.49	0.110	0.00	274.49	0.000
	173.679 - 172.643		33.16	281.90	0.118	0.00	281.90	0.000
	172.643 - 171.607		36.17	289.41	0.125	0.00	289.41	0.000
	171.607 - 170.571		39.24	297.01	0.132	0.00	297.01	0.000
	170.571 - 169.536		42.39	304.71	0.139	0.00	304.71	0.000
	169.536 - 168.5		45.59	312.52	0.146	0.00	312.52	0.000
	168.5 - 165.5		24.70	333.56	0.074	0.00	333.56	0.000
L2	168.5 - 165.5	TP26.41x18.373x0.25	30.62	425.48	0.072	0.00	425.48	0.000
	165.5 - 163.856		60.94	442.18	0.138	0.00	442.18	0.000
	163.856 - 162.212		72.04	459.21	0.157	0.00	459.21	0.000
	162.212 - 160.568		89.05	476.55	0.187	0.00	476.55	0.000
	160.568 - 158.924		106.26	494.22	0.215	0.00	494.22	0.000
	158.924 - 157.281		123.82	512.21	0.242	0.00	512.21	0.000
	157.281 - 155.637		141.58	530.52	0.267	0.00	530.52	0.000
	155.637 - 153.993		165.97	549.15	0.302	0.00	549.15	0.000
	153.993 - 152.349		189.72	568.10	0.334	0.00	568.10	0.000
	152.349 - 150.705		214.13	587.38	0.365	0.00	587.38	0.000
	150.705 -		239.05	606.97	0.394	0.00	606.97	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	149.061							
	149.061 - 147.417		264.48	626.89	0.422	0.00	626.89	0.000
	147.417 - 145.773		290.10	647.13	0.448	0.00	647.13	0.000
	145.773 - 144.129		322.75	667.69	0.483	0.00	667.69	0.000
	144.129 - 142.486		362.09	688.57	0.526	0.00	688.57	0.000
	142.486 - 140.842		401.61	709.78	0.566	0.00	709.78	0.000
	140.842 - 139.198		441.31	731.30	0.603	0.00	731.30	0.000
	139.198 - 137.554		481.18	753.15	0.639	0.00	753.15	0.000
	137.554 - 135.91		521.23	772.99	0.674	0.00	772.99	0.000
	135.91 - 132.08		257.18	818.71	0.314	0.00	818.71	0.000
L3	135.91 - 132.08	TP35.88x25.0648x0.375	358.27	1177.83	0.304	0.00	1177.83	0.000
	132.08 - 129.853		671.30	1224.03	0.548	0.00	1224.03	0.000
	129.853 - 127.626		728.13	1271.11	0.573	0.00	1271.11	0.000
	127.626 - 125.398		785.59	1319.08	0.596	0.00	1319.08	0.000
	125.398 - 123.171		843.48	1367.94	0.617	0.00	1367.94	0.000
	123.171 - 120.944		903.88	1417.69	0.638	0.00	1417.69	0.000
	120.944 - 118.717		964.94	1468.33	0.657	0.00	1468.33	0.000
	118.717 - 116.489		1026.36	1519.86	0.675	0.00	1519.86	0.000
	116.489 - 114.262		1088.13	1572.28	0.692	0.00	1572.28	0.000
	114.262 - 112.035		1150.28	1625.58	0.708	0.00	1625.58	0.000
	112.035 - 109.808		1224.76	1679.77	0.729	0.00	1679.77	0.000
	109.808 - 107.581		1299.20	1734.85	0.749	0.00	1734.85	0.000
	107.581 - 105.353		1373.97	1790.82	0.767	0.00	1790.82	0.000
	105.353 - 103.126		1449.08	1847.68	0.784	0.00	1847.68	0.000
	103.126 - 100.899		1524.51	1905.43	0.800	0.00	1905.43	0.000
	100.899 - 98.6717		1600.26	1964.06	0.815	0.00	1964.06	0.000
	98.6717 - 96.4444		1676.33	2023.58	0.828	0.00	2023.58	0.000
	96.4444 - 94.2172		1752.72	2084.00	0.841	0.00	2084.00	0.000
	94.2172 - 91.99		1829.43	2145.30	0.853	0.00	2145.30	0.000
	91.99 - 86.99		959.89	2286.16	0.420	0.00	2286.16	0.000
L4	91.99 - 86.99	TP44.88x34.0246x0.4375	1043.43	2541.43	0.411	0.00	2541.43	0.000
	86.99 -		2077.29	2610.57	0.796	0.00	2610.57	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	84.8839							
	84.8839 - 82.7778		2151.53	2680.63	0.803	0.00	2680.63	0.000
	82.7778 - 80.6717		2226.06	2751.63	0.809	0.00	2751.63	0.000
	80.6717 - 78.5656		2300.86	2823.54	0.815	0.00	2823.54	0.000
	78.5656 - 76.4594		2375.93	2896.39	0.820	0.00	2896.39	0.000
	76.4594 - 74.3533		2451.28	2970.17	0.825	0.00	2970.17	0.000
	74.3533 - 72.2472		2526.88	3044.88	0.830	0.00	3044.88	0.000
	72.2472 - 70.1411		2602.76	3120.51	0.834	0.00	3120.51	0.000
	70.1411 - 68.035		2678.89	3197.07	0.838	0.00	3197.07	0.000
	68.035 - 65.9289		2755.29	3274.55	0.841	0.00	3274.55	0.000
	65.9289 - 63.8228		2831.95	3352.97	0.845	0.00	3352.97	0.000
	63.8228 - 61.7167		2908.86	3432.32	0.847	0.00	3432.32	0.000
	61.7167 - 59.6106		2986.02	3512.58	0.850	0.00	3512.58	0.000
	59.6106 - 57.5044		3063.43	3593.78	0.852	0.00	3593.78	0.000
	57.5044 - 55.3983		3141.08	3675.91	0.855	0.00	3675.91	0.000
	55.3983 - 53.2922		3218.98	3758.97	0.856	0.00	3758.97	0.000
	53.2922 - 51.1861		3296.90	3842.95	0.858	0.00	3842.95	0.000
	51.1861 - 49.08		3375.47	3927.87	0.859	0.00	3927.87	0.000
	49.08 - 42.91		1858.63	4166.01	0.446	0.00	4166.01	0.000
L5	49.08 - 42.91	TP53.5x42.6403x0.4375	1749.15	4018.22	0.435	0.00	4018.22	0.000
	42.91 - 40.6516		3693.53	4104.54	0.900	0.00	4104.54	0.000
	40.6516 - 38.3932		3779.46	4186.57	0.903	0.00	4186.57	0.000
	38.3932 - 36.1347		3865.56	4269.13	0.905	0.00	4269.13	0.000
	36.1347 - 33.8763		3951.83	4352.18	0.908	0.00	4352.18	0.000
	33.8763 - 31.6179		4038.29	4435.75	0.910	0.00	4435.75	0.000
	31.6179 - 29.3595		4124.92	4519.81	0.913	0.00	4519.81	0.000
	29.3595 - 27.1011		4211.71	4604.35	0.915	0.00	4604.35	0.000
	27.1011 - 24.8426		4298.68	4689.37	0.917	0.00	4689.37	0.000
	24.8426 - 22.5842		4385.82	4774.85	0.919	0.00	4774.85	0.000
	22.5842 - 20.3258		4473.13	4860.78	0.920	0.00	4860.78	0.000
	20.3258 - 18.0674		4560.61	4947.17	0.922	0.00	4947.17	0.000
	18.0674 -		4648.25	5033.98	0.923	0.00	5033.98	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	15.8089							
	15.8089 - 13.5505		4736.07	5121.23	0.925	0.00	5121.23	0.000
	13.5505 - 11.2921		4824.05	5208.90	0.926	0.00	5208.90	0.000
	11.2921 - 9.03368		4912.19	5296.98	0.927	0.00	5296.98	0.000
	9.03368 - 6.77526		5000.50	5385.46	0.929	0.00	5385.46	0.000
	6.77526 - 4.51684		5088.98	5474.33	0.930	0.00	5474.33	0.000
	4.51684 - 2.25842		5177.62	5563.58	0.931	0.00	5563.58	0.000
	2.25842 - 0		5266.42	5653.21	0.932	0.00	5653.21	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	183 - 181.964	TP19.42x15.5x0.1875	2.34	343.65	0.007	0.57	438.89	0.001
	181.964 - 180.929		2.40	348.78	0.007	0.57	452.15	0.001
	180.929 - 179.893		2.46	353.91	0.007	0.57	465.62	0.001
	179.893 - 178.857		2.51	359.04	0.007	0.57	479.28	0.001
	178.857 - 177.821		2.57	364.16	0.007	0.57	493.14	0.001
	177.821 - 176.786		2.63	369.29	0.007	0.57	507.19	0.001
	176.786 - 175.75		2.69	374.42	0.007	0.57	521.45	0.001
	175.75 - 174.714		2.75	379.55	0.007	0.57	535.90	0.001
	174.714 - 173.679		2.81	384.68	0.007	0.57	550.55	0.001
	173.679 - 172.643		2.87	389.81	0.007	0.57	565.39	0.001
	172.643 - 171.607		2.94	394.94	0.007	0.57	580.44	0.001
	171.607 - 170.571		3.00	400.07	0.008	0.57	595.68	0.001
	170.571 - 169.536		3.07	405.20	0.008	0.57	611.12	0.001
	169.536 - 168.5		3.13	410.32	0.008	0.57	626.75	0.001
	168.5 - 165.5		1.55	422.50	0.004	0.25	668.92	0.000
L2	168.5 - 165.5	TP26.41x18.373x0.25	1.81	553.72	0.003	0.32	853.71	0.000
	165.5 - 163.856		3.48	564.41	0.006	0.57	887.18	0.001
	163.856 - 162.212		10.29	575.10	0.018	0.57	921.31	0.001
	162.212 - 160.568		10.41	585.80	0.018	0.57	956.08	0.001
	160.568 -		10.62	596.49	0.018	0.57	991.48	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	158.924							
	158.924 - 157.281		10.74	607.18	0.018	0.57	1027.54	0.001
	157.281 - 155.637		10.86	617.88	0.018	0.57	1064.24	0.001
	155.637 - 153.993		14.46	628.57	0.023	0.67	1101.58	0.001
	153.993 - 152.349		14.66	639.26	0.023	0.67	1139.57	0.001
	152.349 - 150.705		14.89	649.96	0.023	0.60	1178.20	0.001
	150.705 - 149.061		15.42	660.65	0.023	0.36	1217.47	0.000
	149.061 - 147.417		15.53	671.34	0.023	0.14	1257.39	0.000
	147.417 - 145.773		15.65	682.03	0.023	0.14	1297.95	0.000
	145.773 - 144.129		23.89	692.73	0.034	0.38	1339.16	0.000
	144.129 - 142.486		24.00	703.42	0.034	0.38	1381.01	0.000
	142.486 - 140.842		24.11	714.11	0.034	0.38	1423.50	0.000
	140.842 - 139.198		24.22	724.81	0.033	0.38	1466.64	0.000
	139.198 - 137.554		24.33	735.50	0.033	0.38	1510.42	0.000
	137.554 - 135.91		24.43	743.95	0.033	0.38	1550.18	0.000
	135.91 - 132.08		10.45	762.25	0.014	0.16	1641.78	0.000
L3	135.91 - 132.08	TP35.88x25.0648x0.375	14.36	1129.09	0.013	0.22	2363.74	0.000
	132.08 - 129.853		25.18	1150.86	0.022	0.51	2456.35	0.000
	129.853 - 127.626		25.74	1172.64	0.022	0.51	2550.73	0.000
	127.626 - 125.398		25.91	1194.41	0.022	0.08	2646.90	0.000
	125.398 - 123.171		26.12	1216.18	0.021	0.08	2744.84	0.000
	123.171 - 120.944		27.36	1237.95	0.022	0.33	2844.57	0.000
	120.944 - 118.717		27.53	1259.72	0.022	0.33	2946.07	0.000
	118.717 - 116.489		27.69	1281.49	0.022	0.33	3049.35	0.000
	116.489 - 114.262		27.85	1303.26	0.021	0.33	3154.41	0.000
	114.262 - 112.035		28.02	1325.03	0.021	0.33	3261.25	0.000
	112.035 - 109.808		33.39	1346.80	0.025	0.33	3369.88	0.000
	109.808 - 107.581		33.54	1368.57	0.025	0.14	3480.28	0.000
	107.581 - 105.353		33.69	1390.35	0.024	0.14	3592.45	0.000
	105.353 - 103.126		33.84	1412.12	0.024	0.14	3706.41	0.000
	103.126 -		33.99	1433.89	0.024	0.14	3822.15	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	100.899							
	100.899 - 98.6717		34.13	1455.66	0.023	0.14	3939.67	0.000
	98.6717 - 96.4444		34.28	1477.43	0.023	0.14	4058.97	0.000
	96.4444 - 94.2172		34.42	1499.20	0.023	0.14	4180.04	0.000
	94.2172 - 91.99		34.56	1520.97	0.023	0.14	4302.90	0.000
	91.99 - 86.99		16.94	1569.85	0.011	0.07	4585.19	0.000
L4	91.99 - 86.99	TP44.88x34.0246x0.4375	18.17	1789.60	0.010	0.07	5098.73	0.000
	86.99 - 84.8839		35.23	1813.63	0.019	0.14	5237.30	0.000
	84.8839 - 82.7778		35.37	1837.66	0.019	0.14	5377.73	0.000
	82.7778 - 80.6717		35.50	1861.69	0.019	0.14	5520.02	0.000
	80.6717 - 78.5656		35.63	1885.72	0.019	0.14	5664.17	0.000
	78.5656 - 76.4594		35.76	1909.75	0.019	0.14	5810.17	0.000
	76.4594 - 74.3533		35.89	1933.78	0.019	0.14	5958.04	0.000
	74.3533 - 72.2472		36.02	1957.81	0.018	0.14	6107.77	0.000
	72.2472 - 70.1411		36.14	1981.83	0.018	0.14	6259.35	0.000
	70.1411 - 68.035		36.27	2005.86	0.018	0.14	6412.79	0.000
	68.035 - 65.9289		36.39	2029.89	0.018	0.14	6568.09	0.000
	65.9289 - 63.8228		36.51	2053.92	0.018	0.14	6725.24	0.000
	63.8228 - 61.7167		36.63	2077.95	0.018	0.14	6884.26	0.000
	61.7167 - 59.6106		36.75	2101.98	0.017	0.14	7045.13	0.000
	59.6106 - 57.5044		36.87	2126.01	0.017	0.14	7207.86	0.000
	57.5044 - 55.3983		36.99	2150.04	0.017	0.14	7372.45	0.000
	55.3983 - 53.2922		37.10	2174.07	0.017	0.14	7538.90	0.000
	53.2922 - 51.1861		37.31	2198.10	0.017	0.14	7707.20	0.000
	51.1861 - 49.08		37.42	2222.12	0.017	0.01	7877.37	0.000
	49.08 - 42.91		19.73	2283.78	0.009	0.00	8354.58	0.000
L5	49.08 - 42.91	TP53.5x42.6403x0.4375	18.29	2247.41	0.008	0.00	8058.44	0.000
	42.91 - 40.6516		38.08	2269.40	0.017	0.01	8231.41	0.000
	40.6516 - 38.3932		38.16	2288.55	0.017	0.01	8395.75	0.000
	38.3932 - 36.1347		38.23	2307.55	0.017	0.01	8561.17	0.000
	36.1347 - 33.8763		38.31	2326.41	0.016	0.01	8727.67	0.000
	33.8763 - 31.6179		38.39	2345.11	0.016	0.01	8895.08	0.000
	31.6179 -		38.46	2363.67	0.016	0.01	9063.50	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	29.3595							
	29.3595 - 27.1011		38.54	2382.08	0.016	0.01	9232.92	0.000
	27.1011 - 24.8426		38.62	2400.35	0.016	0.01	9403.25	0.000
	24.8426 - 22.5842		38.69	2418.46	0.016	0.01	9574.50	0.000
	22.5842 - 20.3258		38.77	2436.43	0.016	0.01	9746.67	0.000
	20.3258 - 18.0674		38.84	2454.25	0.016	0.01	9919.75	0.000
	18.0674 - 15.8089		38.92	2471.92	0.016	0.01	10093.67	0.000
	15.8089 - 13.5505		38.99	2489.45	0.016	0.01	10268.50	0.000
	13.5505 - 11.2921		39.06	2506.83	0.016	0.01	10444.17	0.000
	11.2921 - 9.03368		39.14	2524.06	0.016	0.01	10620.67	0.000
	9.03368 - 6.77526		39.21	2541.14	0.015	0.01	10797.92	0.000
	6.77526 - 4.51684		39.28	2558.07	0.015	0.01	10975.92	0.000
	4.51684 - 2.25842		39.36	2574.86	0.015	0.01	11154.75	0.000
	2.25842 - 0		39.43	2591.50	0.015	0.01	11334.33	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	183 - 181.964	0.002	0.041	0.000	0.007	0.001	0.043	1.000	4.8.2
	181.964 - 180.929	0.002	0.050	0.000	0.007	0.001	0.053	1.000	4.8.2
	180.929 - 179.893	0.002	0.060	0.000	0.007	0.001	0.062	1.000	4.8.2
	179.893 - 178.857	0.002	0.069	0.000	0.007	0.001	0.071	1.000	4.8.2
	178.857 - 177.821	0.002	0.078	0.000	0.007	0.001	0.080	1.000	4.8.2
	177.821 - 176.786	0.002	0.086	0.000	0.007	0.001	0.088	1.000	4.8.2
	176.786 - 175.75	0.002	0.094	0.000	0.007	0.001	0.097	1.000	4.8.2
	175.75 - 174.714	0.002	0.102	0.000	0.007	0.001	0.105	1.000	4.8.2
	174.714 - 173.679	0.002	0.110	0.000	0.007	0.001	0.112	1.000	4.8.2
	173.679 - 172.643	0.002	0.118	0.000	0.007	0.001	0.120	1.000	4.8.2
	172.643 - 171.607	0.002	0.125	0.000	0.007	0.001	0.127	1.000	4.8.2
	171.607 - 170.571	0.002	0.132	0.000	0.008	0.001	0.134	1.000	4.8.2

EFI Global, Inc.
1117 Perimeter Center West, Suite E500
Atlanta, GA 30338
Phone: (470) 990-6593
FAX:

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	170.571 - 169.536	0.002	0.139	0.000	0.008	0.001	0.141	1.000	4.8.2
	169.536 - 168.5	0.002	0.146	0.000	0.008	0.001	0.148	1.000	4.8.2
	168.5 - 165.5	0.001	0.074	0.000	0.004	0.000	0.075	1.000	4.8.2
L2	168.5 - 165.5	0.001	0.072	0.000	0.003	0.000	0.073	1.000	4.8.2
	165.5 - 163.856	0.002	0.138	0.000	0.006	0.001	0.140	1.000	4.8.2
	163.856 - 162.212	0.006	0.157	0.000	0.018	0.001	0.164	1.000	4.8.2
	162.212 - 160.568	0.006	0.187	0.000	0.018	0.001	0.194	1.000	4.8.2
	160.568 - 158.924	0.007	0.215	0.000	0.018	0.001	0.222	1.000	4.8.2
	158.924 - 157.281	0.007	0.242	0.000	0.018	0.001	0.249	1.000	4.8.2
	157.281 - 155.637	0.007	0.267	0.000	0.018	0.001	0.274	1.000	4.8.2
	155.637 - 153.993	0.009	0.302	0.000	0.023	0.001	0.311	1.000	4.8.2
	153.993 - 152.349	0.009	0.334	0.000	0.023	0.001	0.343	1.000	4.8.2
	152.349 - 150.705	0.009	0.365	0.000	0.023	0.001	0.374	1.000	4.8.2
	150.705 - 149.061	0.009	0.394	0.000	0.023	0.000	0.403	1.000	4.8.2
	149.061 - 147.417	0.009	0.422	0.000	0.023	0.000	0.431	1.000	4.8.2
	147.417 - 145.773	0.009	0.448	0.000	0.023	0.000	0.457	1.000	4.8.2
	145.773 - 144.129	0.011	0.483	0.000	0.034	0.000	0.496	1.000	4.8.2
	144.129 - 142.486	0.011	0.526	0.000	0.034	0.000	0.538	1.000	4.8.2
	142.486 - 140.842	0.011	0.566	0.000	0.034	0.000	0.578	1.000	4.8.2
	140.842 - 139.198	0.011	0.603	0.000	0.033	0.000	0.616	1.000	4.8.2
	139.198 - 137.554	0.011	0.639	0.000	0.033	0.000	0.651	1.000	4.8.2
	137.554 - 135.91	0.011	0.674	0.000	0.033	0.000	0.687	1.000	4.8.2
	135.91 - 132.08	0.005	0.314	0.000	0.014	0.000	0.319	1.000	4.8.2
L3	135.91 - 132.08	0.005	0.304	0.000	0.013	0.000	0.309	1.000	4.8.2
	132.08 - 129.853	0.008	0.548	0.000	0.022	0.000	0.557	1.000	4.8.2
	129.853 - 127.626	0.008	0.573	0.000	0.022	0.000	0.581	1.000	4.8.2
	127.626 - 125.398	0.008	0.596	0.000	0.022	0.000	0.604	1.000	4.8.2
	125.398 - 123.171	0.008	0.617	0.000	0.021	0.000	0.625	1.000	4.8.2
	123.171 - 120.944	0.009	0.638	0.000	0.022	0.000	0.647	1.000	4.8.2
	120.944 - 118.717	0.009	0.657	0.000	0.022	0.000	0.666	1.000	4.8.2
	118.717 - 116.489	0.009	0.675	0.000	0.022	0.000	0.685	1.000	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	116.489 - 114.262	0.009	0.692	0.000	0.021	0.000	0.701	1.000	4.8.2
	114.262 - 112.035	0.009	0.708	0.000	0.021	0.000	0.717	1.000	4.8.2
	112.035 - 109.808	0.010	0.729	0.000	0.025	0.000	0.740	1.000	4.8.2
	109.808 - 107.581	0.010	0.749	0.000	0.025	0.000	0.760	1.000	4.8.2
	107.581 - 105.353	0.010	0.767	0.000	0.024	0.000	0.778	1.000	4.8.2
	105.353 - 103.126	0.010	0.784	0.000	0.024	0.000	0.795	1.000	4.8.2
	103.126 - 100.899	0.010	0.800	0.000	0.024	0.000	0.811	1.000	4.8.2
	100.899 - 98.6717	0.010	0.815	0.000	0.023	0.000	0.826	1.000	4.8.2
	98.6717 - 96.4444	0.010	0.828	0.000	0.023	0.000	0.839	1.000	4.8.2
	96.4444 - 94.2172	0.010	0.841	0.000	0.023	0.000	0.852	1.000	4.8.2
	94.2172 - 91.99	0.010	0.853	0.000	0.023	0.000	0.864	1.000	4.8.2
	91.99 - 86.99	0.005	0.420	0.000	0.011	0.000	0.425	1.000	4.8.2
L4	91.99 - 86.99	0.005	0.411	0.000	0.010	0.000	0.416	1.000	4.8.2
	86.99 - 84.8839	0.010	0.796	0.000	0.019	0.000	0.806	1.000	4.8.2
	84.8839 - 82.7778	0.010	0.803	0.000	0.019	0.000	0.813	1.000	4.8.2
	82.7778 - 80.6717	0.010	0.809	0.000	0.019	0.000	0.819	1.000	4.8.2
	80.6717 - 78.5656	0.010	0.815	0.000	0.019	0.000	0.825	1.000	4.8.2
	78.5656 - 76.4594	0.010	0.820	0.000	0.019	0.000	0.830	1.000	4.8.2
	76.4594 - 74.3533	0.010	0.825	0.000	0.019	0.000	0.835	1.000	4.8.2
	74.3533 - 72.2472	0.010	0.830	0.000	0.018	0.000	0.840	1.000	4.8.2
	72.2472 - 70.1411	0.010	0.834	0.000	0.018	0.000	0.844	1.000	4.8.2
	70.1411 - 68.035	0.010	0.838	0.000	0.018	0.000	0.848	1.000	4.8.2
	68.035 - 65.9289	0.010	0.841	0.000	0.018	0.000	0.852	1.000	4.8.2
	65.9289 - 63.8228	0.010	0.845	0.000	0.018	0.000	0.855	1.000	4.8.2
	63.8228 - 61.7167	0.010	0.847	0.000	0.018	0.000	0.858	1.000	4.8.2
	61.7167 - 59.6106	0.010	0.850	0.000	0.017	0.000	0.860	1.000	4.8.2
	59.6106 - 57.5044	0.010	0.852	0.000	0.017	0.000	0.863	1.000	4.8.2
	57.5044 - 55.3983	0.010	0.855	0.000	0.017	0.000	0.865	1.000	4.8.2
	55.3983 - 53.2922	0.010	0.856	0.000	0.017	0.000	0.867	1.000	4.8.2
	53.2922 - 51.1861	0.010	0.858	0.000	0.017	0.000	0.868	1.000	4.8.2
	51.1861 - 49.08	0.010	0.859	0.000	0.017	0.000	0.870	1.000	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	49.08 - 42.91	0.005	0.446	0.000	0.009	0.000	0.452	1.000	4.8.2
L5	49.08 - 42.91	0.005	0.435	0.000	0.008	0.000	0.441	1.000	4.8.2
	42.91 - 40.6516	0.011	0.900	0.000	0.017	0.000	0.911	1.000	4.8.2
	40.6516 - 38.3932	0.011	0.903	0.000	0.017	0.000	0.914	1.000	4.8.2
	38.3932 - 36.1347	0.011	0.905	0.000	0.017	0.000	0.917	1.000	4.8.2
	36.1347 - 33.8763	0.011	0.908	0.000	0.016	0.000	0.920	1.000	4.8.2
	33.8763 - 31.6179	0.011	0.910	0.000	0.016	0.000	0.922	1.000	4.8.2
	31.6179 - 29.3595	0.011	0.913	0.000	0.016	0.000	0.924	1.000	4.8.2
	29.3595 - 27.1011	0.012	0.915	0.000	0.016	0.000	0.927	1.000	4.8.2
	27.1011 - 24.8426	0.012	0.917	0.000	0.016	0.000	0.929	1.000	4.8.2
	24.8426 - 22.5842	0.012	0.919	0.000	0.016	0.000	0.930	1.000	4.8.2
	22.5842 - 20.3258	0.012	0.920	0.000	0.016	0.000	0.932	1.000	4.8.2
	20.3258 - 18.0674	0.012	0.922	0.000	0.016	0.000	0.934	1.000	4.8.2
	18.0674 - 15.8089	0.012	0.923	0.000	0.016	0.000	0.936	1.000	4.8.2
	15.8089 - 13.5505	0.012	0.925	0.000	0.016	0.000	0.937	1.000	4.8.2
	13.5505 - 11.2921	0.012	0.926	0.000	0.016	0.000	0.938	1.000	4.8.2
	11.2921 - 9.03368	0.012	0.927	0.000	0.016	0.000	0.940	1.000	4.8.2
	9.03368 - 6.77526	0.012	0.929	0.000	0.015	0.000	0.941	1.000	4.8.2
	6.77526 - 4.51684	0.012	0.930	0.000	0.015	0.000	0.942	1.000	4.8.2
	4.51684 - 2.25842	0.012	0.931	0.000	0.015	0.000	0.943	1.000	4.8.2
	2.25842 - 0	0.013	0.932	0.000	0.015	0.000	0.944	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$øP_{allow}$ K	% Capacity	Pass Fail
L1	183 - 165.5	Pole	TP19.42x15.5x0.1875	1	-1.89	820.65	14.8	Pass
L2	165.5 - 132.08	Pole	TP26.41x18.373x0.25	2	-16.75	1487.91	68.7	Pass
L3	132.08 - 86.99	Pole	TP35.88x25.0648x0.375	3	-31.76	3041.94	86.4	Pass
L4	86.99 - 42.91	Pole	TP44.88x34.0246x0.4375	4	-45.95	4444.25	87.0	Pass
L5	42.91 - 0	Pole	TP53.5x42.6403x0.4375	5	-65.06	5183.00	94.4	Pass
							Summary	
						Pole (L5)	94.4	Pass
						RATING =	**94.4**	**Pass**

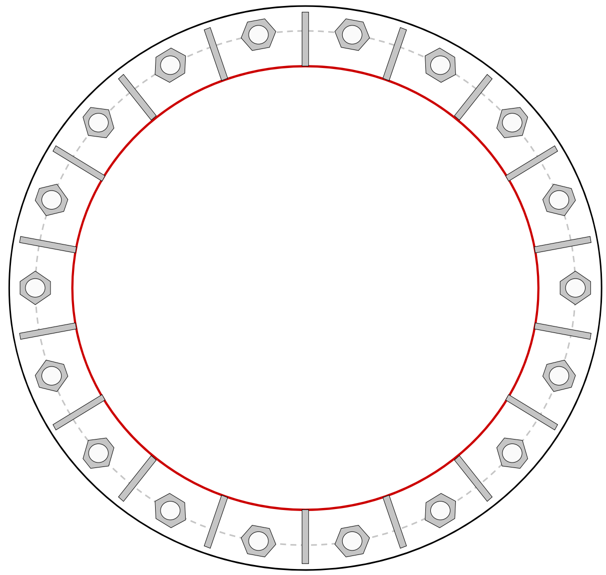
Program Version 8.0.5.0 - 11/28/2018 File:C:/Users/Evan.Martin/Sedgwick/Destek Server - Documents/Projects/2020/75 - ForeSite LLC/049.00421 - 019 - CT11365D/Rev. 5/TNXTower/CT11365D_rev.5.eri

Monopole Base Plate Connection

Site Info	
Site Name	CT11365D

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	1
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	5266.42
Axial Force (kips)	65.06
Shear Force (kips)	39.43



Connection Properties

Anchor Rod Data

(18) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 62" BC

Base Plate Data

68" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(18) 15"H x 6.5"W x 0.75"T, Notch: 1"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" groove, 45° dbl bevel, 0.375" fillet
vert. weld: 0.375" fillet

Pole Data

53.5" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 230	ϕPn_t = 260	**Stress Rating**
Vu = 2.19	ϕVn = n/a	**90.1%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	40.44	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**74.9%**	Pass

Stiffener Summary

Horizontal Weld:	**85.9%**	Pass
Vertical Weld:	**69.2%**	Pass
Plate Flexure+Shear:	**41.5%**	Pass
Plate Tension+Shear:	**91.1%**	Pass
Plate Compression:	**92.2%**	Pass

Pole Summary

Punching Shear:	**21.6%**	Pass

Analysis Date: 4/21/2021

Drilled Pier Foundation

BU # :	
Site Name:	CT11365D
Order Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5266	
Axial Force (kips)	65	
Shear Force (kips)	39	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	31	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 31' below grade		
Pier Diameter	7	ft
Rebar Quantity	27	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	7.17	-
Soil Safety Factor	3.68	-
Max Moment (kip-ft)	5498.84	-
Rating	*36.1%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	415.61	-
End Bearing (kips)	202.04	-
Weight of Concrete (kips)	146.75	-
Total Capacity (kips)	617.65	-
Axial (kips)	211.75	-
Rating	*34.3%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	7.26	-
Critical Moment (kip-ft)	5498.75	-
Critical Moment Capacity	6789.77	-
Rating	*81.0%*	-

Soil Interaction Rating	**36.1%**
Structural Foundation Rating	**81.0%**

Check Limitation	
N/A	☑
Load Z Normalization:	☐

Soil Profile

Groundwater Depth	5	ft	# of Layers	4

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	130	150	0	0	0.000	0.000					Cohesionless
2	3.5	5	1.5	130	150	0	38	0.450	0.450				10	Cohesionless
3	5	15	10	70	87.6	0	38	0.715	0.715				10	Cohesionless
4	15	31	16	70	87.6	0	38	1.086	1.086			7	10	Cohesionless

APPENDIX B
MOUNT STRUCTURAL ANALYSIS REPORT – UPGRADE (DATED 06/19/2020)

Date: 6/19/2020

To: T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

Subject:	**Mount Structural Analysis Report - Upgrade**	
T-Mobile Designation:	**Site Name:**	CT365/Manchester PD_MP
	Site ID:	CT11365D
EFI Designation:	**Project Number:**	049.00421 - 2075019
Site Data:	**239 E.Middle Tpk, Manchester, CT 06040**	
	Latitude 41.78438900°, Longitude -72.51177100°	

EFI Global, Inc. is pleased to submit this **"Mount Structural Analysis Report - Upgrade"** to determine the structural capacity of the antenna mounts utilized by T-Mobile at the above referenced site.

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

Existing + Proposed Equipment **Adequate Capacity/ with Modifications (71.6%)**
Note: See Analysis Criteria for loading configuration

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

We at *EFI Global, Inc.* 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.

Sincerely,
EFI Global, Inc.
License No: PEC0001245

6/19/2020

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

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	163’
Structure Type	Monopole
Exposure Category	B
Basic Wind Speed (3-Second Gust)	125 * √0.6 = 97 mph (ASD)
Ice Loading	1.00” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	Ericsson AIR32 KRD901146-1_B66A_B2A – Antennas
3	RFS APXVAARR24_43-U-NA20 – Antennas
3	Ericsson AIR3246 B66 – Antennas
3	Generic Twin Style 1B-AWS – TMAs
3	Radio 4449 B71+B85 – RRUs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Ericsson AIR32 KRD901146-1_B66A_B2A – Antennas
3	Ericsson AIR6449 B41 – Antennas
3	RFS APXVAARR24_43-U-NA20 – Antennas
3	Ericsson AIR3246 B66 – Antennas
3	Radio 4449 B71+B85 – RRUs*
3	Radio 4415 B25 – RRUs*

*** To be mounted behind the antenna**

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	T-Mobile	05/19/2020
Structural Analysis Report	Tectonic	07/21/2016
Mount Assessment Letter	Destek Engineering, LLC	05/02/2018
Construction Drawings	Northeast Site Solutions	07/12/2018
Site Photos	-	04/23/2020

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 structural analysis report, site photos 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.

EFI Global, Inc. (EFI), 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
Horizontal Face Angles	55.0	Fail
Support Rail Pipes	38.0	Pass
Platform Support Double Angle	46.0	Pass
Standoff Tube Arm	49.0	Pass
Grating Angles	29.0	Pass
Support Rail Bracing Angles	37.0	Pass
Antenna Mount Pipe	71.6	Pass

<u>**Platform Mount:**</u> The existing platform mount **will have adequate** capacity for the proposed changes by T-Mobile, **once the mount is upgraded as per the attached EFI drawings, dated 06/19/2020**. For the code specified load combinations and as a maximum, the mount members are stressed to **71.6%** of their structural capacity.

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT
UPGRADE DRAWINGS

CLIENT: ForeSite LLC - T-Mobile

PROJECT: CT11365D

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

Tower Height	184.00	ft	Type of Mount: Platform
Basic Wind Speed, V	97	mph (=Ultimate Speed*Sqrt(0.6))	
Basic Wind Speed with Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.0957	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Design Ice Thickness, t_i		1	inches

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thicknes s	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	
Monopole 2	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
Monopole 2	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Monopole	0.90	DOES NOT CHANGE

Seismic Factors

Ss	0.178	
S1	0.064	
Fa	1.6	
Fv	2.4	
R	1.5	Truss or Pole

CLIENT: ForeSite LLC - T-Mobile

PROJECT: CT11365D

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

Rad Center 163.00 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	163.00	Ericsson AIR32 KRD 901 146-1 B66A-B2A	1	143.0	59.3	12.9	8.7	0.90	5.30	3.56	4.60	6.84	1.29	1.39	1.136	26.0	160.3	116.1	143	160	116	143	10	5
		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					
																				81	59	72	5	3
Pos.2	163.00	Ericsson AIR6449 B41	1	103.0	33.1	20.5	8.3	0.90	4.71	1.91	1.61	3.99	1.20	1.27	1.136	26.0	132.3	56.5	103	132	57	103	7	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					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				67	29	52	4	2
Pos.3	163.00	RFS APXVAARR24_43-U-NA20	1	153.3	95.9	24.0	8.7	0.90	15.98	5.79	4.00	11.02	1.27	1.53	1.136	26.0	473.7	208.0	153.3	474	261	273	19	10
	163.00	Radio 4449 B71+B85	1	73.2	17.9	N/A	10.6	0.90	-	1.32	-	1.68	-	1.20	1.136	26.0	0.0	37.1	73.21					
	163.00	Radio 4415 B25	1	46.3	14.9	N/A	5.4	0.90	-	0.56	-	2.76	-	1.21	1.136	26.0	0.0	15.8	46.3					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				237	131	137	9	5
Pos.4	163.00	Ericsson AIR3246 B66	1	226.0	58.7	15.7	9.4	0.90	6.40	3.83	3.74	6.24	1.26	1.37	1.136	26.0	188.0	122.5	226	188	123	226	15	9
		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					
																				94	62	113	8	4

* 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 745

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)
	163.00	2 STD Pipe	12.00	2.38	0.00		1.20	1.136	23.4	6	-	-
	163.00	2.5 STD Pipe	0.00	2.88	0.00		-	-	-	-	-	-
	163.00	3 STD Pipe	0.00	3.50	0.00		-	-	-	-	-	-
	163.00	Angle Horizontal	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Angle (L3x3x4)	12.00	3.00	3.00		2.00	1.136	23.4	12	-	-
	163.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Tube Standoff (4x4x4)	12.00	4.00	4.00		2.00	1.136	23.4	16	-	-
	163.00	Tube Horizontal	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Plate	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Double Angle (LL2.5x2.5x3)	12.00	2.50	2.50		2.00	1.136	23.4	10	-	-
	163.00	Double Angle	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Channel (Weak Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-
	163.00	Channel (Strong Axis Bending)	0.00	0.00	0.00		-	-	-	-	-	-

* 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: ForeSite LLC - T-Mobile

PROJECT: CT11365D

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

ti (in) 2.346375 | Kiz 1.1731873 | reduction 0.2657

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	163.00	Ericsson AIR32 KRD 901 146-1 B66A-B2A	1	59.3	12.9	8.7	0.90	2.50	2.37	4.86	271.95	0.73	0.75	1.136	6.9	11.3	11.0	53.9	41.9	272	54	42	272
		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			
																					27	21	136
Pos.2	163.00	Ericsson AIR6449 B41	1	33.1	20.5	8.3	0.90	1.90	1.50	3.90	218.38	0.70	0.71	1.136	6.9	8.3	6.6	43.4	21.6	218	43	22	218
		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			
																					22	11	110
Pos.3	163.00	RFS APXVAARR24_43-U-NA20	1	95.9	24.0	8.7	0.90	4.06	3.56	10.78	603.79	0.72	0.81	1.136	6.9	18.2	18.0	144.1	73.2	604	144	96	803
	163.00	Radio 4449 B71+B85	1	17.9	13.2	10.6	0.90	-	1.08	2.13	119.38	0.70	0.70	1.136	6.9	0.0	4.7	0.0	14.6	119			
	163.00	Radio 4415 B25	1	14.9	13.2	5.4	0.90	-	0.81	1.43	80.24	0.70	0.70	1.136	6.9	0.0	3.5	0.0	7.8	80			
		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			
																					73	48	402
Pos.4	163.00	Ericsson AIR3246 B66	1	58.7	15.7	9.4	0.90	2.58	2.37	5.53	309.67	0.71	0.74	1.136	6.9	11.4	11.0	61.4	43.5	310	61	44	310
		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			
																					31	22	155

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

** Ca will equal 1.2 for all ice load calculations

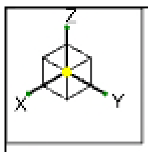
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	163.00	2 STD Pipe	12.00	2.38	0.00	0.62	0.24	13.55	1.20	1.136	6.2	4.6	6.1	14
	163.00	2.5 STD Pipe	0.00	2.88	0.00	-	-	-	-	-	-	-	-	-
	163.00	3 STD Pipe	0.00	3.50	0.00	-	-	-	-	-	-	-	-	-
	163.00	Angle Horizontal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Angle (L3x3x4)	12.00	3.00	3.00	0.64	0.20	10.95	1.20	1.136	6.2	4.8	7.9	11
	163.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Tube Standoff (4x4x4)	12.00	4.00	4.00	0.67	0.62	34.66	1.20	1.136	6.2	5.0	9.2	35
	163.00	Tube Horizontal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Plate	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Double Angle (LL2.5x2.5x3)	12.00	2.50	2.50	0.63	0.24	13.69	1.20	1.136	6.2	4.7	7.3	14
	163.00	Double Angle	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Channel (Weak Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	163.00	Channel (Strong Axis Bending)	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-

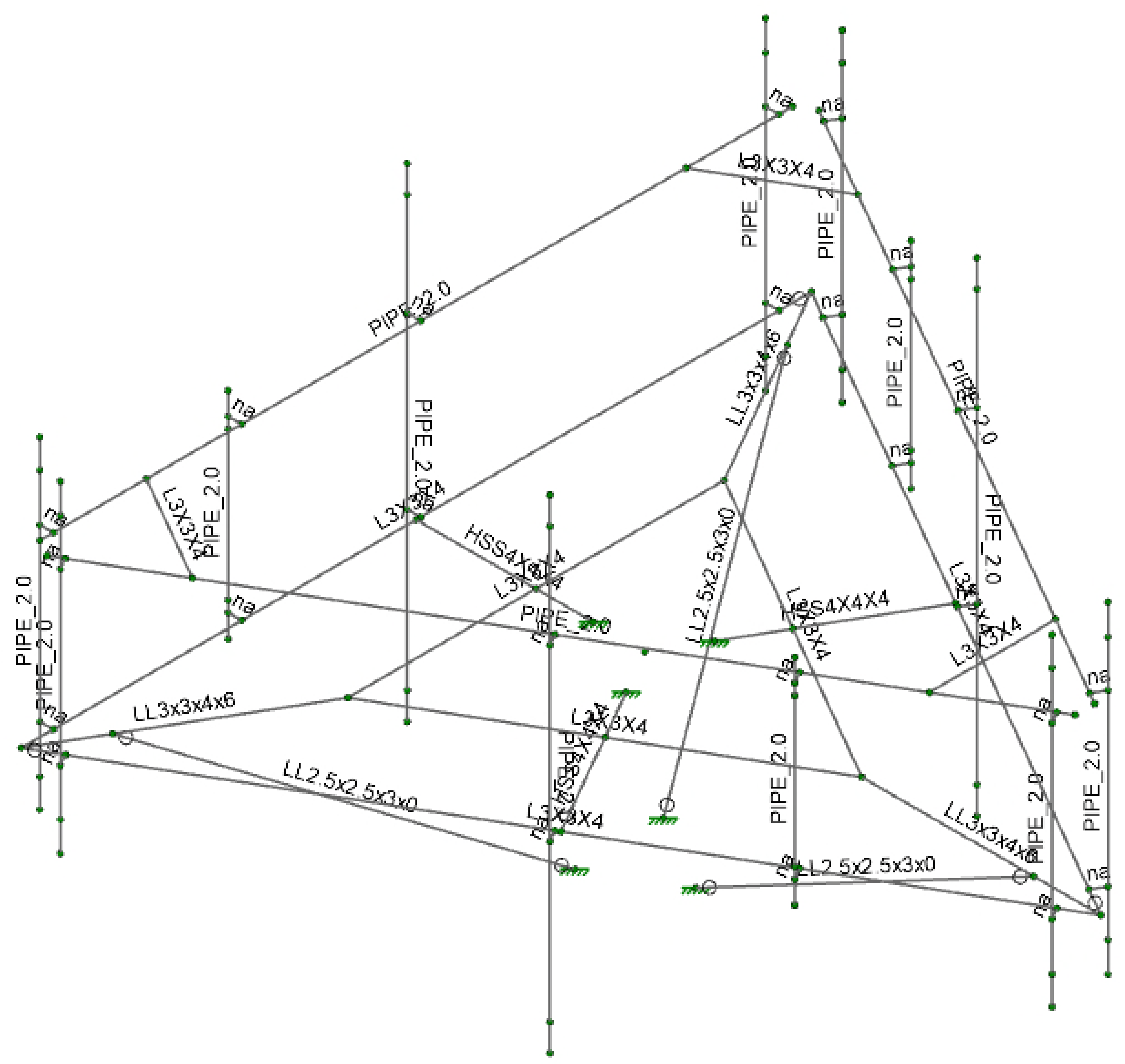
* The dimension L is the longest dimension of the member

** 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





Envelope Only Solution

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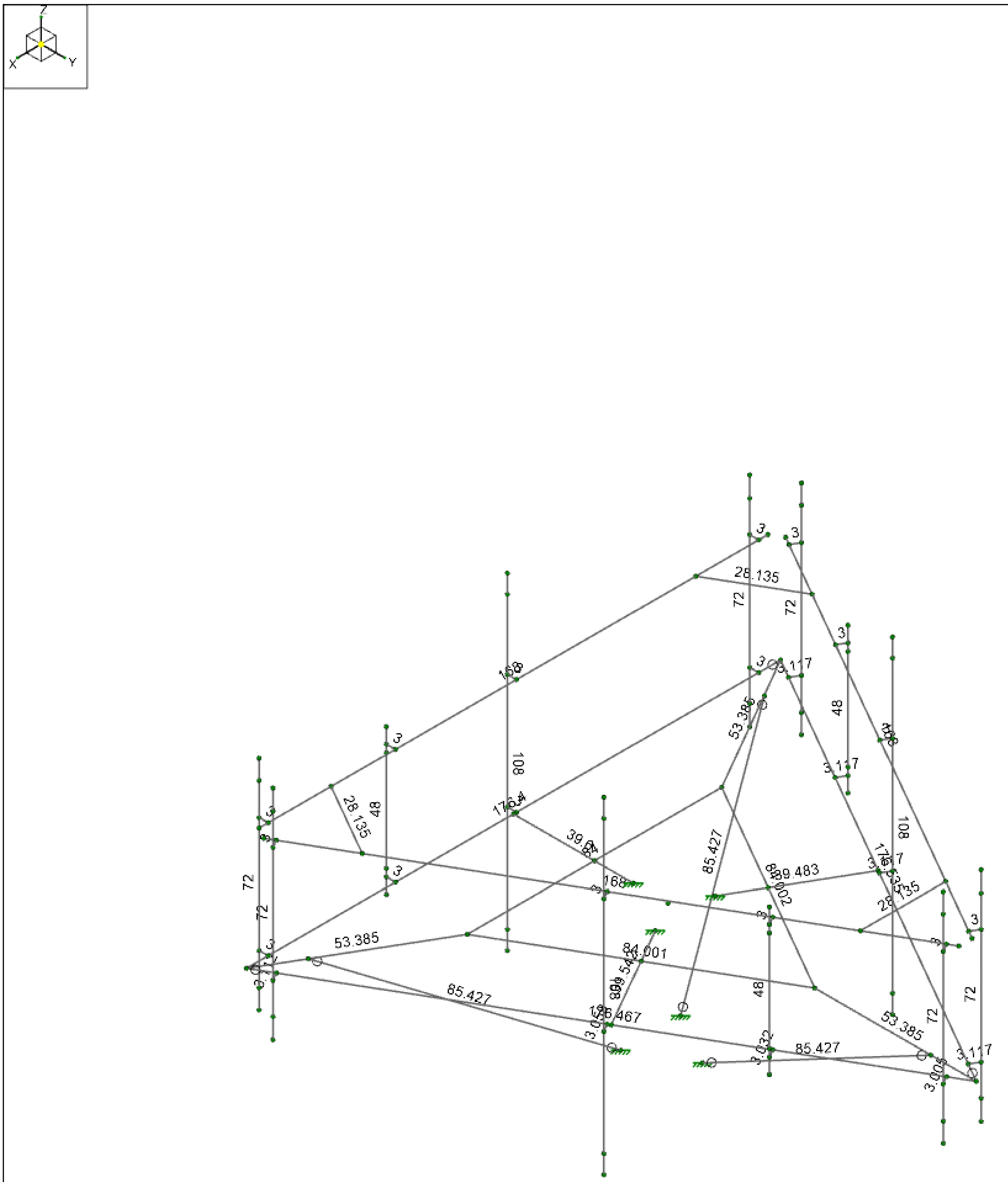
SK		Jun 18, 2020
049.00421 - 2075019		CT11365D - Upgrade.r3d



Member Length (in) Displayed
Envelope Only Solution

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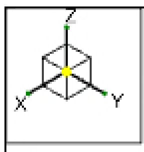

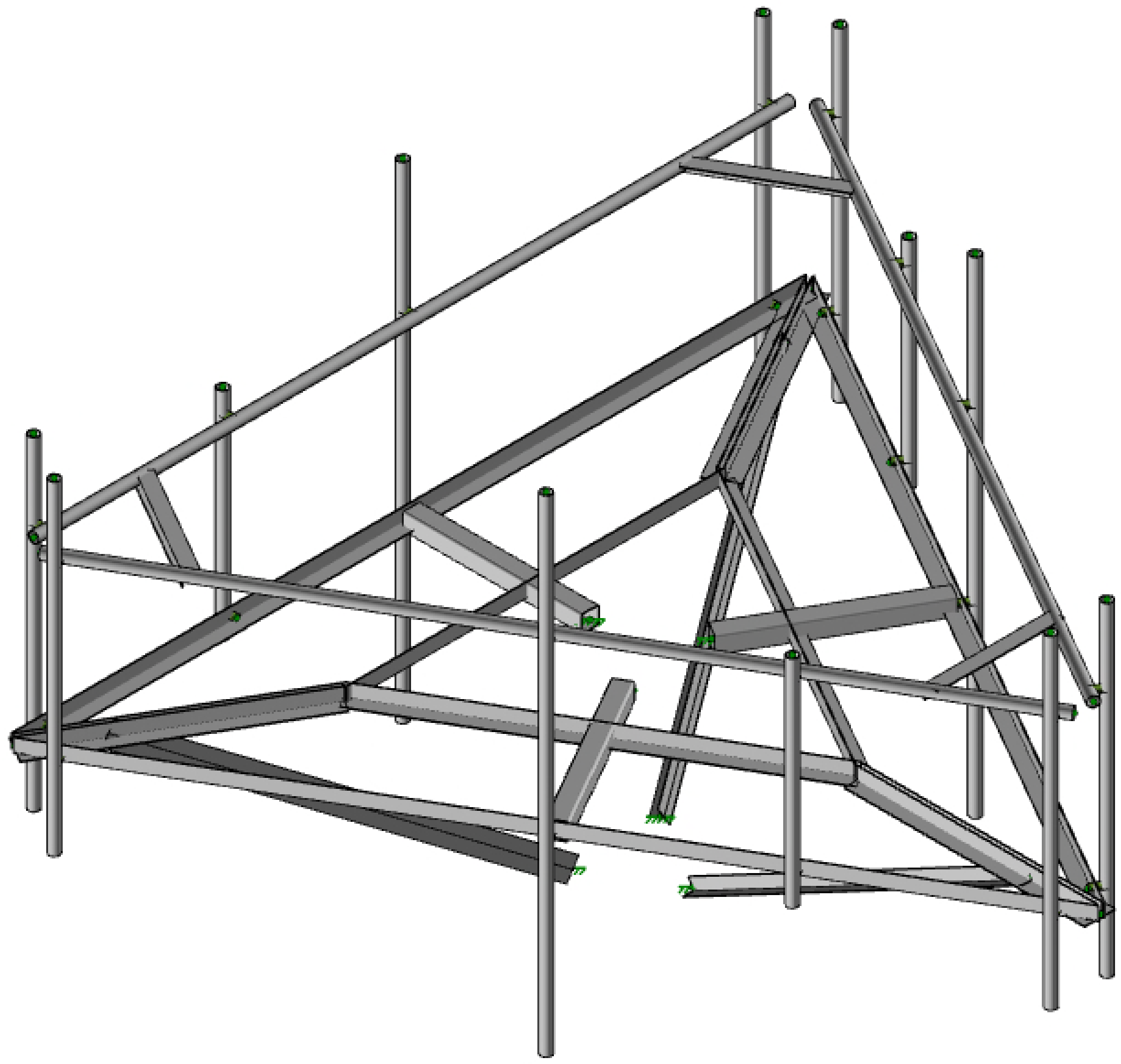

Member Length (in) Displayed
Envelope Only Solution

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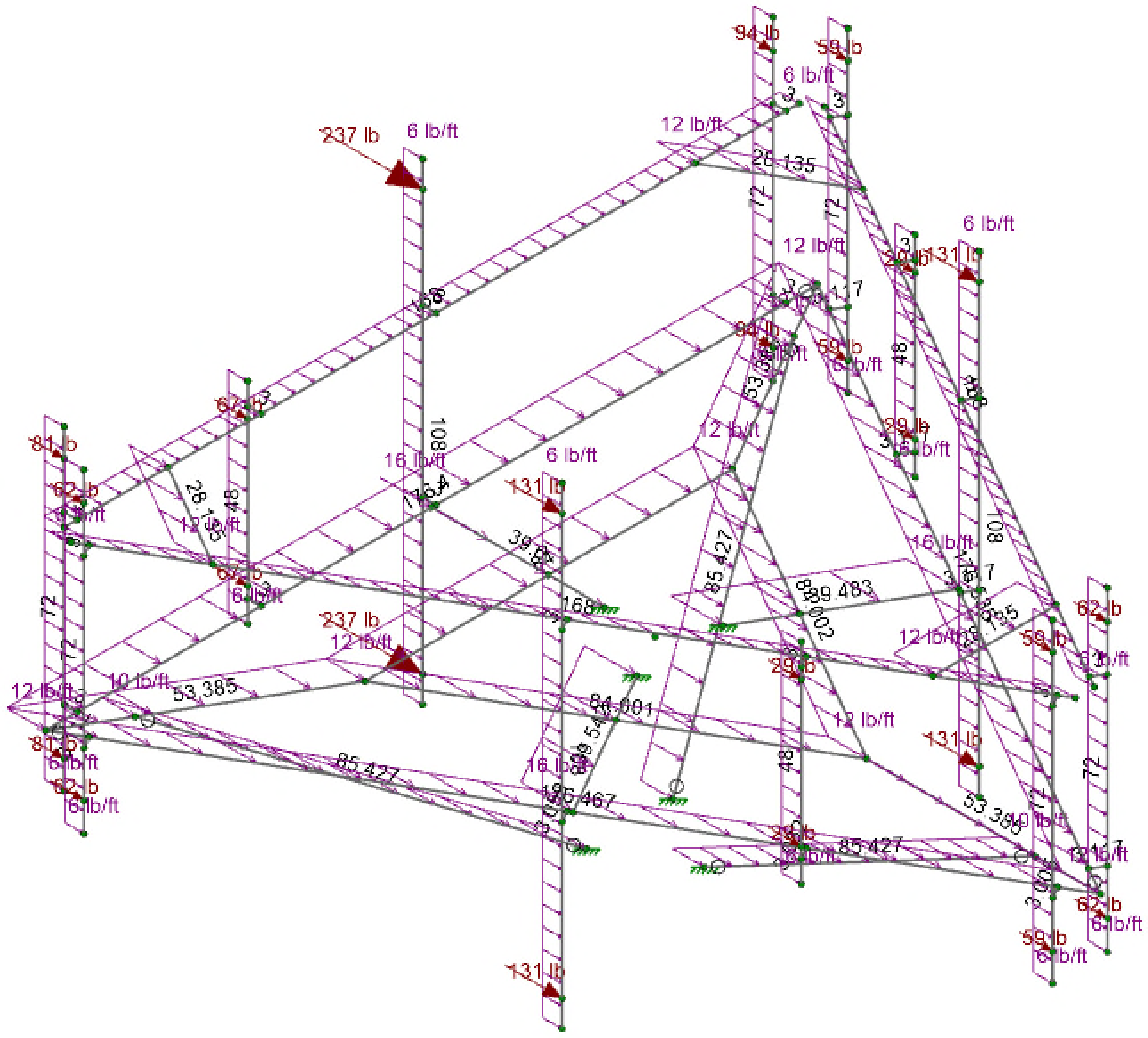

Member Length (in) Displayed
Loads: BLC 3, WIND LOAD (NO ICE) FRONT
Envelope Only Solution

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SK		Jun 18, 2020
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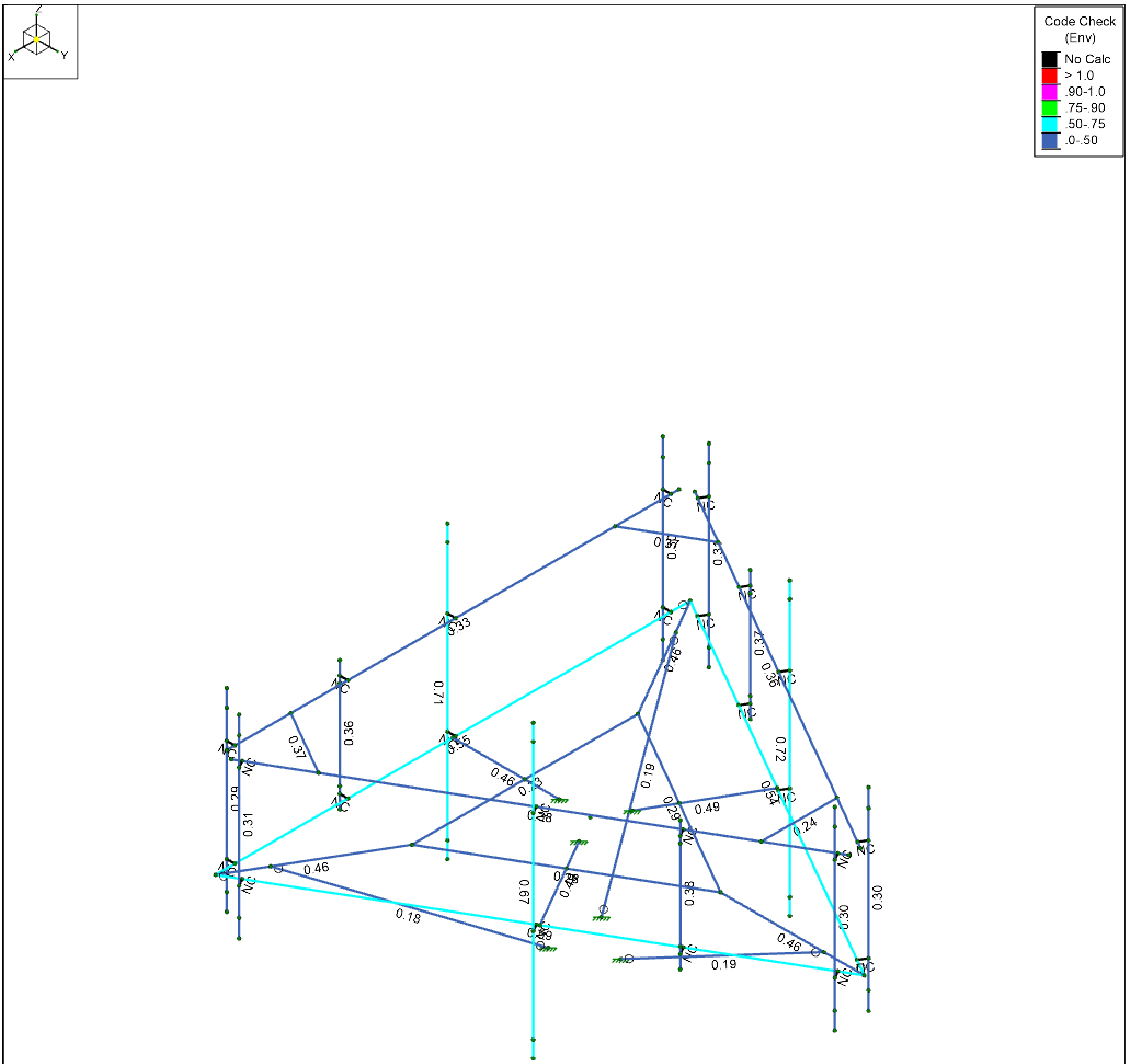

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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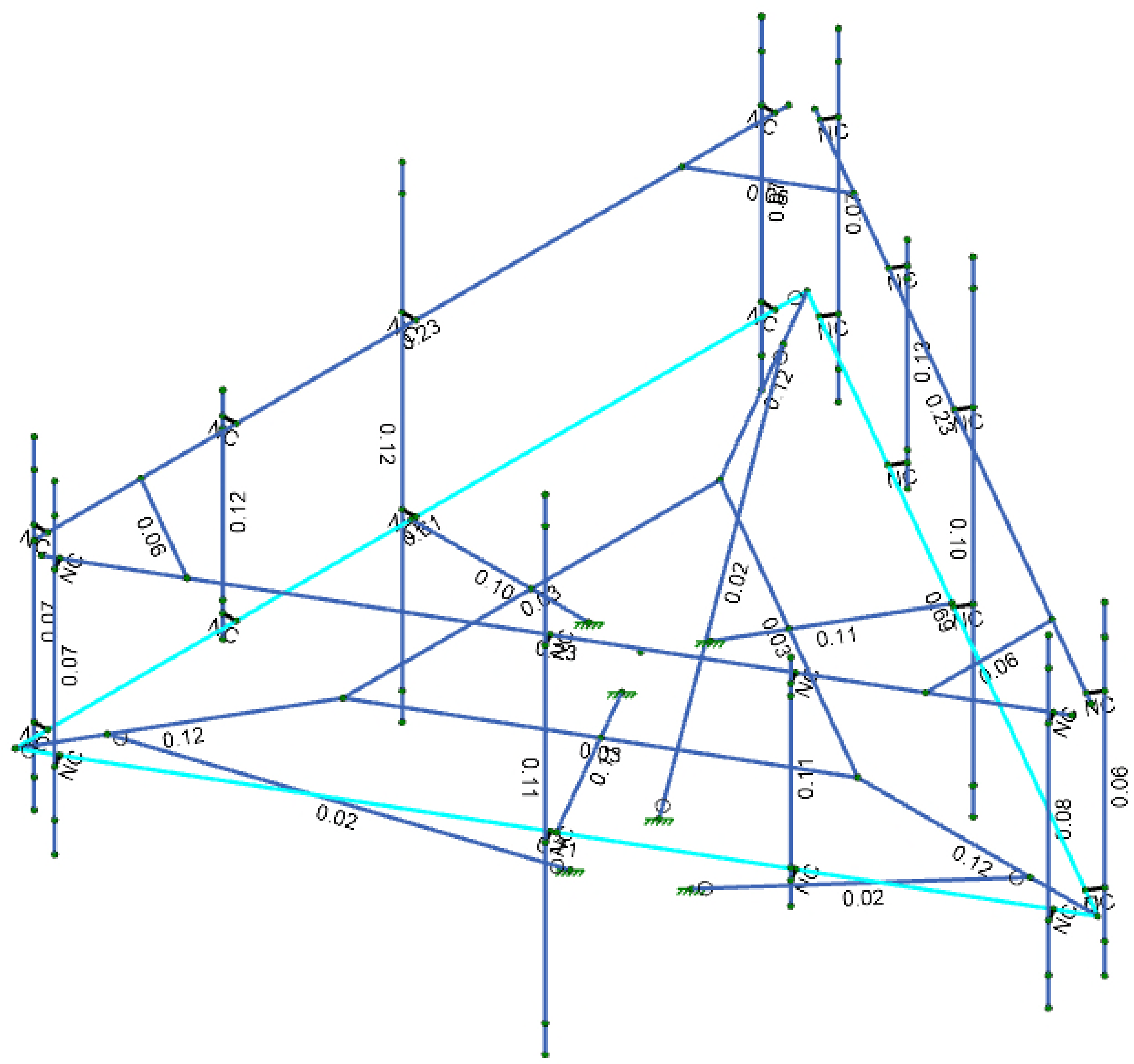
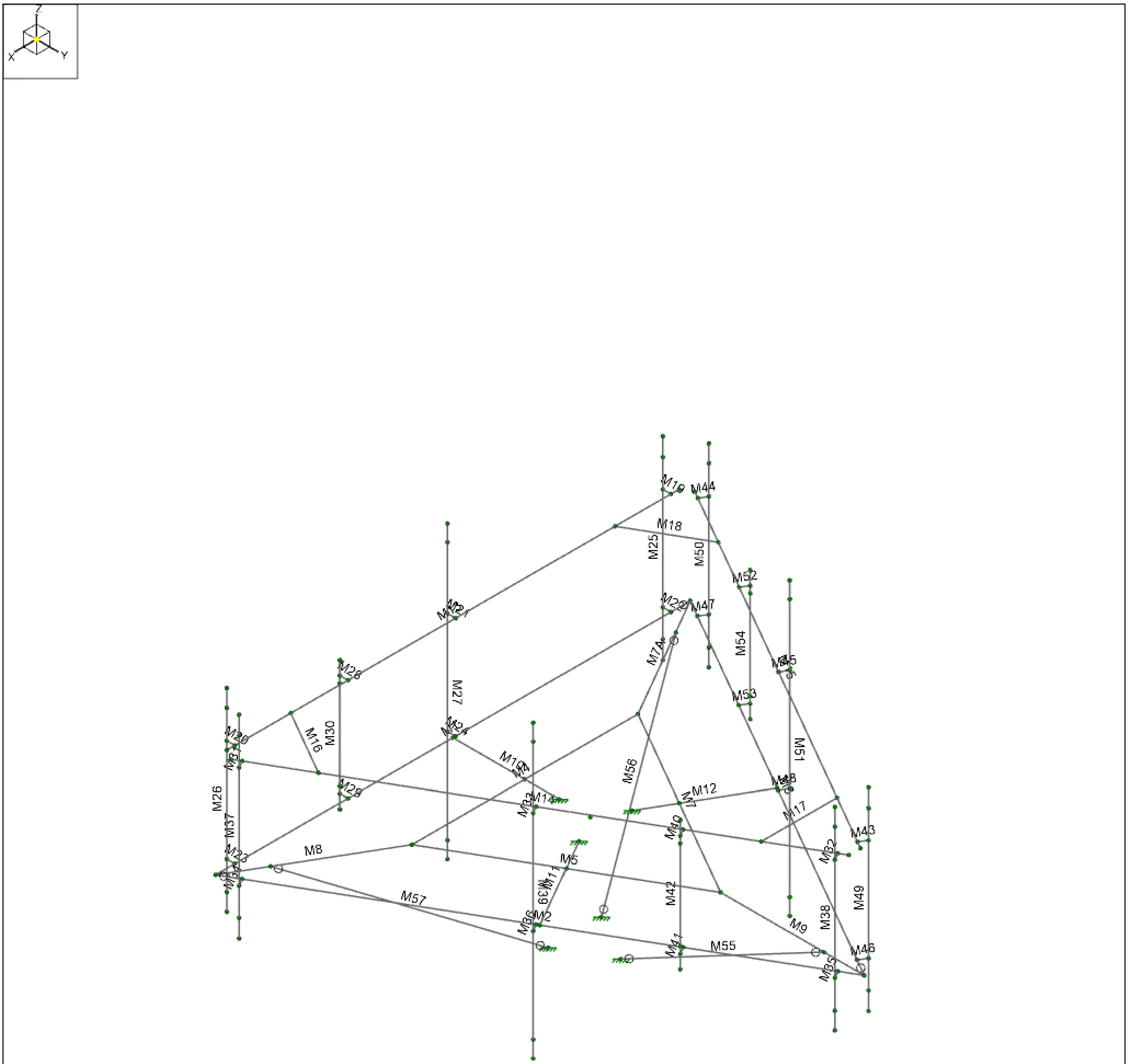


Shear Check
(Env)

- No Calc
- > 1.0
- .90-1.0
- .75-.90
- .50-.75
- .0-.50

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Foresite/ EFI Global	CT11365D - Upgrade	SK-6
SK		Jun 18, 2020
049.00421 - 2075019		CT11365D - Upgrade.r3d



Envelope Only Solution

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SK		Jun 18, 2020
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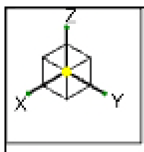
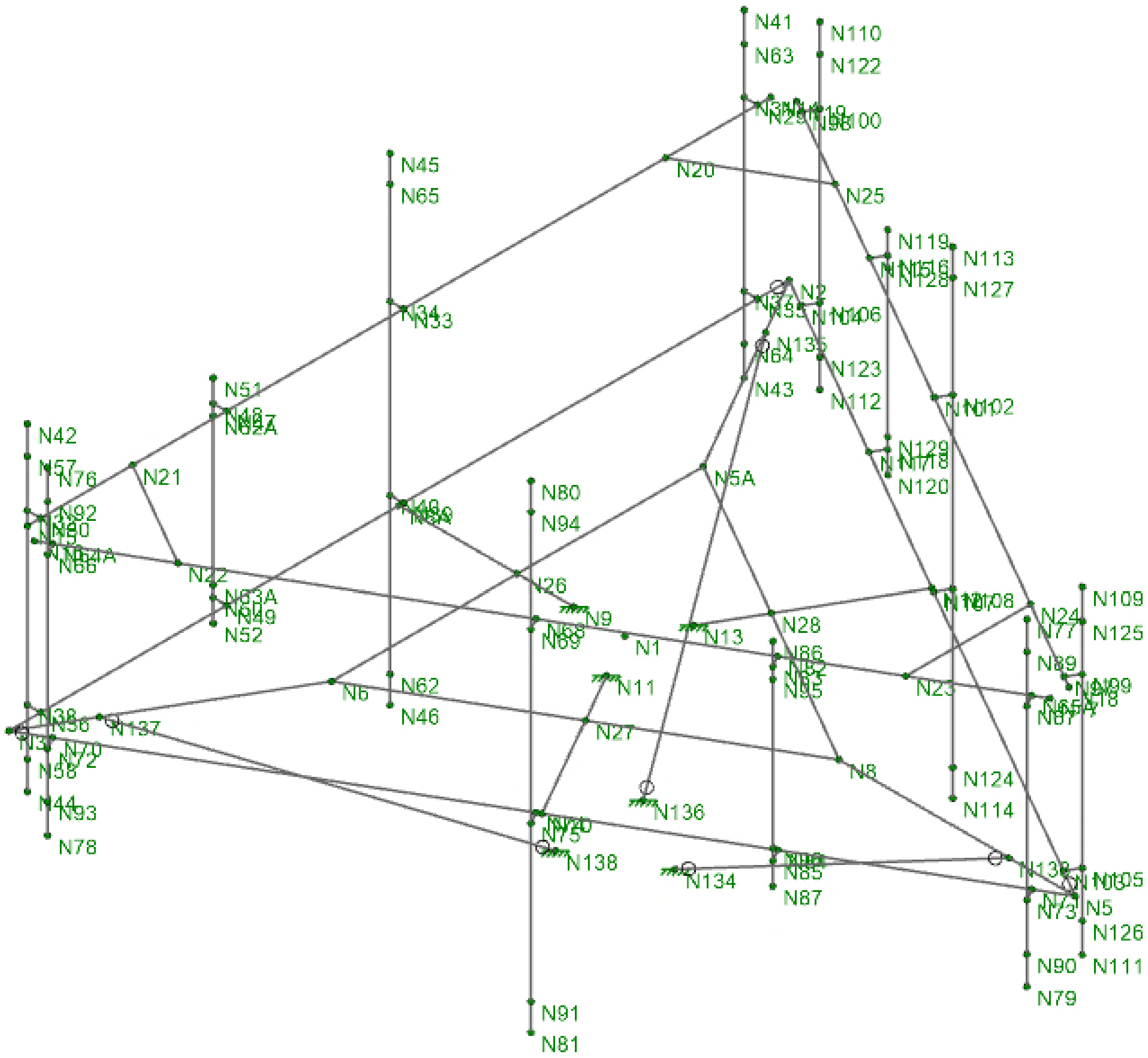




Envelope Only Solution

Foresite/ EFI Global	CT11365D - Upgrade	SK-8
SK		Jun 18, 2020
049.00421 - 2075019		CT11365D - Upgrade.r3d

Model Settings

Number of Reported Sections	5
Number of Internal Sections	97
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	No
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Z
Convert Existing Data	Yes

Default Global Plane for z-axis	XZ

Plate Local Axis Orientation	Nodal

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)

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65
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

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-05
Risk Category	I
Drift Cat	Other
Base Elevation (ft)	-999999
Include the weight of the structure in base shear calcs	Yes

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

T (sec)	
T (sec)	
C_t	0.035
C_t	0.035
C_t Exp.	0.75
C_t Exp.	0.75
R	8.5
R	8.5
Ω_0	1
Ω_0	1
C_d	4
C_d	4
ρ	1
ρ	1

Line Project Grid

No Data to Print...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [...	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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Standoff Tube...	HSS4X4X4	Beam	None	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
2	Face Pipe Hori...	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Antenna Pipe...	PIPE_2.5	Column	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	Pipe Rail	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
5	Pipe Rail Brace	PIPE_2.5	VBrace	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Primary Member Properties

	Label	I Node	J Node	K Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M19	N29	N31			RIGID	None	None	LINK	Typical
2	M20	N30	N32			RIGID	None	None	LINK	Typical
3	M21	N33	N34			RIGID	None	None	LINK	Typical
4	M22	N35	N37			RIGID	None	None	LINK	Typical
5	M23	N36	N38			RIGID	None	None	LINK	Typical
6	M24	N39	N40			RIGID	None	None	LINK	Typical
7	M28	N47	N48			RIGID	None	None	LINK	Typical
8	M29	N49	N50			RIGID	None	None	LINK	Typical
9	M31	N64A	N66			RIGID	None	None	LINK	Typical
10	M32	N65A	N67			RIGID	None	None	LINK	Typical
11	M33	N68	N69			RIGID	None	None	LINK	Typical
12	M34	N70	N72			RIGID	None	None	LINK	Typical
13	M35	N71	N73			RIGID	None	None	LINK	Typical
14	M36	N74	N75			RIGID	None	None	LINK	Typical
15	M40	N82	N83			RIGID	None	None	LINK	Typical
16	M41	N84	N85			RIGID	None	None	LINK	Typical
17	M43	N97	N99			RIGID	None	None	LINK	Typical
18	M44	N98	N100			RIGID	None	None	LINK	Typical
19	M45	N101	N102			RIGID	None	None	LINK	Typical
20	M46	N103	N105			RIGID	None	None	LINK	Typical
21	M47	N104	N106			RIGID	None	None	LINK	Typical
22	M48	N107	N108			RIGID	None	None	LINK	Typical
23	M52	N115	N116			RIGID	None	None	LINK	Typical
24	M53	N117	N118			RIGID	None	None	LINK	Typical
25	M13	N14	N15			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
26	M14	N16	N17			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
27	M15	N18	N19			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
28	M25	N43	N41			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
29	M26	N44	N42			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
30	M27	N45	N46			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
31	M30	N52	N51			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
32	M37	N78	N76			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
33	M38	N79	N77			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
34	M39	N80	N81			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
35	M42	N87	N86			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
36	M49	N111	N109			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
37	M50	N112	N110			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
38	M51	N113	N114			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
39	M54	N120	N119			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
40	M7A	N2	N5A		270	LL3x3x4x6	Beam	Wide Flange	A36 Gr.36	Typical
41	M8	N3	N6		90	LL3x3x4x6	Beam	Wide Flange	A36 Gr.36	Typical
42	M9	N5	N8		90	LL3x3x4x6	Beam	Wide Flange	A36 Gr.36	Typical
43	M1	N2	N3			L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
44	M2	N3	N5		180	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
45	M3	N5	N2		180	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
46	M4	N5A	N6		90	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
47	M5	N6	N8		270	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
48	M7	N8	N5A		270	L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
49	M16	N22	N21			L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
50	M17	N23	N24			L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
51	M18	N20	N25			L3X3X4	Beam	Wide Flange	A36 Gr.36	Typical
52	M10	N8A	N9			HSS4X4X4	Beam	Wide Flange	A500 Gr.46	Typical
53	M11	N10	N11			HSS4X4X4	Beam	Wide Flange	A500 Gr.46	Typical
54	M12	N12	N13			HSS4X4X4	Beam	Wide Flange	A500 Gr.46	Typical
55	M55	N133	N134			LL2.5x2.5x3x0	Beam	Double Angle (...	A36 Gr.36	Typical
56	M56	N135	N136			LL2.5x2.5x3x0	Beam	Double Angle (...	A36 Gr.36	Typical
57	M57	N137	N138			LL2.5x2.5x3x0	Beam	Double Angle (...	A36 Gr.36	Typical

Advanced Member Properties

	Label	I Release	J Release	I Offset [in]	J Offset [in]	T/C Only	Physical	Deflection Ra...	Analysis Offs...	Activation	Seismic DR
1	M19						Yes	** NA **			None
2	M20						Yes	** NA **			None
3	M21						Yes	** NA **			None
4	M22						Yes	** NA **			None
5	M23						Yes	** NA **			None
6	M24						Yes	** NA **			None
7	M28						Yes	** NA **			None
8	M29						Yes	** NA **			None
9	M31						Yes	** NA **			None
10	M32						Yes	** NA **			None
11	M33						Yes	** NA **			None
12	M34						Yes	** NA **			None
13	M35						Yes	** NA **			None
14	M36						Yes	** NA **			None

Advanced Member Properties (Continued)

	Label	I Release	J Release	I Offset [in]	J Offset [in]	T/C Only	Physical	Deflection Ra...	Analysis Offs...	Activation	Seismic DR
15	M40						Yes	** NA **			None
16	M41						Yes	** NA **			None
17	M43						Yes	** NA **			None
18	M44						Yes	** NA **			None
19	M45						Yes	** NA **			None
20	M46						Yes	** NA **			None
21	M47						Yes	** NA **			None
22	M48						Yes	** NA **			None
23	M52						Yes	** NA **			None
24	M53						Yes	** NA **			None
25	M13						Yes				None
26	M14						Yes				None
27	M15						Yes				None
28	M25						Yes				None
29	M26						Yes				None
30	M27						Yes				None
31	M30						Yes				None
32	M37						Yes				None
33	M38						Yes				None
34	M39						Yes				None
35	M42						Yes				None
36	M49						Yes				None
37	M50						Yes				None
38	M51						Yes				None
39	M54						Yes				None
40	M7A						Yes				None
41	M8						Yes				None
42	M9						Yes				None
43	M1	BenPIN					Yes				None
44	M2	BenPIN					Yes				None
45	M3	BenPIN					Yes				None
46	M4						Yes				None
47	M5						Yes				None
48	M7						Yes				None
49	M16						Yes				None
50	M17						Yes				None
51	M18						Yes				None
52	M10						Yes				None
53	M11						Yes				None
54	M12						Yes				None
55	M55	BenPIN	BenPIN				Yes	Default			None
56	M56	BenPIN	BenPIN				Yes	Default			None
57	M57	BenPIN	BenPIN				Yes	Default			None

Hot Rolled Member Properties

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Cb	Function
1	M13	PIPE_2.0	168			Lbyy						Lateral
2	M14	PIPE_2.0	168			Lbyy						Lateral
3	M15	PIPE_2.0	168			Lbyy						Lateral
4	M25	PIPE_2.0	72			Lbyy						Lateral
5	M26	PIPE_2.0	72			Lbyy						Lateral
6	M27	PIPE_2.0	108			Lbyy						Lateral
7	M30	PIPE_2.0	48			Lbyy						Lateral
8	M37	PIPE_2.0	72			Lbyy						Lateral
9	M38	PIPE_2.0	72			Lbyy						Lateral
10	M39	PIPE_2.0	108			Lbyy						Lateral
11	M42	PIPE_2.0	48			Lbyy						Lateral
12	M49	PIPE_2.0	72			Lbyy						Lateral
13	M50	PIPE_2.0	72			Lbyy						Lateral
14	M51	PIPE_2.0	108			Lbyy						Lateral
15	M54	PIPE_2.0	48			Lbyy						Lateral
16	M7A	LL3x3x4x6	53.385			Lbyy						Lateral
17	M8	LL3x3x4x6	53.385			Lbyy						Lateral
18	M9	LL3x3x4x6	53.385			Lbyy						Lateral
19	M1	L3X3X4	176.4			Lbyy						Lateral
20	M2	L3X3X4	176.467			Lbyy						Lateral
21	M3	L3X3X4	176.535			Lbyy						Lateral
22	M4	L3X3X4	84			Lbyy						Lateral
23	M5	L3X3X4	84.001			Lbyy						Lateral
24	M7	L3X3X4	84.002			Lbyy						Lateral
25	M16	L3X3X4	28.135			Lbyy						Lateral
26	M17	L3X3X4	28.135			Lbyy						Lateral
27	M18	L3X3X4	28.135			Lbyy						Lateral
28	M10	HSS4X4X4	39.6			Lbyy						Lateral
29	M11	HSS4X4X4	39.542			Lbyy						Lateral
30	M12	HSS4X4X4	39.483			Lbyy						Lateral
31	M55	LL2.5x2.5x3x0	85.427			Lbyy						Lateral
32	M56	LL2.5x2.5x3x0	85.427			Lbyy						Lateral
33	M57	LL2.5x2.5x3x0	85.427			Lbyy						Lateral

Nodes

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Diaphragm
1	N1	0	0	0		
2	N2	-88.2	-51	0		
3	N3	88.2	-51	0		
4	N5	0.067296	101.883441	0		
5	N5A	-42	-24.25	0		
6	N6	42	-24.25	0		
7	N8	0.001116	48.498067	0		
8	N8A	0	-51	0		
9	N9	0	-11.4	0		
10	N10	44.116843	25.470871	0		
11	N11	9.87269	5.7	0		
12	N12	-44.066352	25.44172	0		
13	N13	-9.87269	5.7	0		
14	N14	-84	-51	38		

Nodes (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Diaphragm
15	N15	84	-51	38		
16	N16	86.167296	-47.246134	38		
17	N17	2.167296	98.246134	38		
18	N18	-2.167296	98.246134	38		
19	N19	-86.167296	-47.246134	38		
20	N20	-60.2	-51	38		
21	N21	60.2	-51	38		
22	N22	74.267296	-26.634729	38		
23	N23	14.067296	77.634729	38		
24	N24	-14.067296	77.634729	38		
25	N25	-74.267296	-26.634729	38		
26	N26	0	-24.25	0		
27	N27	21.000279	12.124517	0		
28	N28	-20.999442	12.124033	0		
29	N29	-81	-51	38		
30	N30	81	-51	38		
31	N31	-81	-54	38		
32	N32	81	-54	38		
33	N33	-1	-51	38		
34	N34	-1	-54	38		
35	N35	-81	-51	0		
36	N36	81	-51	0		
37	N37	-81	-54	0		
38	N38	81	-54	0		
39	N39	-1	-51	0		
40	N40	-1	-54	0		
41	N41	-81	-54	55		
42	N42	81	-54	55		
43	N43	-81	-54	-17		
44	N44	81	-54	-17		
45	N45	-1	-54	67		
46	N46	-1	-54	-41		
47	N47	39	-51	38		
48	N48	39	-54	38		
49	N49	39	-51	0		
50	N50	39	-54	0		
51	N51	39	-54	43		
52	N52	39	-54	-5		
53	N57	81	-54	48.65		
54	N58	81	-54	-10.65		
55	N62	-1	-54	-34.95		
56	N63	-81	-54	48.35		
57	N64	-81	-54	-10.35		
58	N65	-1	-54	60.95		
59	N62A	39	-54	35.55		
60	N63A	39	-54	2.45		
61	N64A	84.667296	-44.648058	38		
62	N65A	3.667296	95.648058	38		
63	N66	87.265372	-43.148058	38		
64	N67	6.265372	97.148058	38		
65	N68	44.667296	24.633975	38		
66	N69	47.265372	26.133975	38		
67	N70	84.570509	-44.703937	0		
68	N71	3.663177	95.64568	0		
69	N72	87.265372	-43.148058	0		
70	N73	6.265372	97.148058	0		
71	N74	44.616271	24.604516	0		
72	N75	47.265372	26.133975	0		
73	N76	87.265372	-43.148058	55		
74	N77	6.265372	97.148058	55		
75	N78	87.265372	-43.148058	-17		
76	N79	6.265372	97.148058	-17		
77	N80	47.265372	26.133975	67		
78	N81	47.265372	26.133975	-41		
79	N82	24.667296	59.274991	38		
80	N83	27.265372	60.774991	38		
81	N84	24.639152	59.258742	0		
82	N85	27.265372	60.774991	0		
83	N86	27.265372	60.774991	43		
84	N87	27.265372	60.774991	-5		
85	N89	6.265372	97.148058	48.65		
86	N90	6.265372	97.148058	-10.65		
87	N91	47.265372	26.133975	-34.95		
88	N92	87.265372	-43.148058	48.35		
89	N93	87.265372	-43.148058	-10.35		
90	N94	47.265372	26.133975	60.95		
91	N95	27.265372	60.774991	35.55		
92	N96	27.265372	60.774991	2.45		
93	N97	-3.667296	95.648058	38		
94	N98	-84.667296	-44.648058	38		
95	N99	-6.265372	97.148058	38		
96	N100	-87.265372	-43.148058	38		
97	N101	-43.667296	26.366025	38		
98	N102	-46.265372	27.866025	38		
99	N103	-3.566352	95.589778	0		
100	N104	-84.566352	-44.706337	0		
101	N105	-6.265372	97.148058	0		
102	N106	-87.265372	-43.148058	0		
103	N107	-43.566352	26.307746	0		
104	N108	-46.265372	27.866025	0		
105	N109	-6.265372	97.148058	55		
106	N110	-87.265372	-43.148058	55		
107	N111	-6.265372	97.148058	-17		
108	N112	-87.265372	-43.148058	-17		
109	N113	-46.265372	27.866025	67		
110	N114	-46.265372	27.866025	-41		
111	N115	-63.667296	-8.274991	38		

Nodes (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [deg F]	Detach From Diaphragm
112	N116	-66.265372	-6.774991	38		
113	N117	-63.566352	-8.33327	0		
114	N118	-66.265372	-6.774991	0		
115	N119	-66.265372	-6.774991	43		
116	N120	-66.265372	-6.774991	-5		
117	N122	-87.265372	-43.148058	48.65		
118	N123	-87.265372	-43.148058	-10.65		
119	N124	-46.265372	27.866025	-34.95		
120	N125	-6.265372	97.148058	48.35		
121	N126	-6.265372	97.148058	-10.35		
122	N127	-46.265372	27.866025	60.95		
123	N128	-66.265372	-6.774991	35.55		
124	N129	-66.265372	-6.774991	2.45		
125	N133	0.067296	86.883441	0		
126	N134	0.	11.4	-40		
127	N135	-75.276915	-43.383441	0		
128	N136	-9.87269	-5.7	-40		
129	N137	75.209619	-43.5	0		
130	N138	9.87269	-5.7	-40		

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	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N134	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N136	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N138	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)	Surface(Plate/...
1	DEAD LOAD	None			-1	24			3	
2	DEAD LOAD ICE	None				24		33	3	
3	WIND LOAD (...	None				24		33		
4	WIND LOAD (...	None				24		33		
5	WIND LOAD (I...	None				24		33		
6	WIND LOAD (I...	None				24		31		
7	LIVE LOAD1	None				1				
8	LIVE LOAD2	None				1				
9	LIVE LOAD3	None				1				
10	MAINTENANC...	None				1				
11	MAINTENANC...	None				1				
12	MAINTENANC...	None				1				
13	MAINTENANC...	None				1				
14	BLC 1 Transien...	None						36		
15	BLC 2 Transien...	None						36		

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (l...	Inactive [(lb, k-ft), (in, rad), (lb*...
1	N57	L	Z	-72	Active
2	N58	L	Z	-72	Active
3	N122	L	Z	-72	Active
4	N123	L	Z	-72	Active
5	N89	L	Z	-72	Active
6	N90	L	Z	-72	Active
7	N62A	L	Z	-52	Active
8	N63A	L	Z	-52	Active
9	N128	L	Z	-52	Active
10	N129	L	Z	-52	Active
11	N95	L	Z	-52	Active
12	N96	L	Z	-52	Active
13	N65	L	Z	-137	Active
14	N62	L	Z	-137	Active
15	N127	L	Z	-137	Active
16	N124	L	Z	-137	Active
17	N94	L	Z	-137	Active
18	N91	L	Z	-137	Active
19	N63	L	Z	-113	Active
20	N64	L	Z	-113	Active
21	N125	L	Z	-113	Active
22	N126	L	Z	-113	Active
23	N92	L	Z	-113	Active
24	N93	L	Z	-113	Active

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (l...	Inactive [(lb, k-ft), (in, rad), (lb*...
1	N57	L	Z	-136	Active
2	N58	L	Z	-136	Active
3	N122	L	Z	-136	Active
4	N123	L	Z	-136	Active
5	N89	L	Z	-136	Active
6	N90	L	Z	-136	Active
7	N62A	L	Z	-110	Active
8	N63A	L	Z	-110	Active
9	N128	L	Z	-110	Active
10	N129	L	Z	-110	Active
11	N95	L	Z	-110	Active
12	N96	L	Z	-110	Active
13	N65	L	Z	-402	Active
14	N62	L	Z	-402	Active
15	N127	L	Z	-402	Active
16	N124	L	Z	-402	Active
17	N94	L	Z	-402	Active
18	N91	L	Z	-402	Active
19	N63	L	Z	-155	Active

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (l…	Inactive [(lb, k-ft), (in, rad), (lb*…
20	N64	L	Z	-155	Active
21	N125	L	Z	-155	Active
22	N126	L	Z	-155	Active
23	N92	L	Z	-155	Active
24	N93	L	Z	-155	Active

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

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (l...	Inactive [(lb, k-ft), (in, rad), (lb*...
7	N62A	L	X	11	Active
8	N63A	L	X	11	Active
9	N128	L	X	22	Active
10	N129	L	X	22	Active
11	N95	L	X	22	Active
12	N96	L	X	22	Active
13	N65	L	X	48	Active
14	N62	L	X	48	Active
15	N127	L	X	73	Active
16	N124	L	X	73	Active
17	N94	L	X	73	Active
18	N91	L	X	73	Active
19	N63	L	X	22	Active
20	N64	L	X	22	Active
21	N125	L	X	31	Active
22	N126	L	X	31	Active
23	N92	L	X	31	Active
24	N93	L	X	31	Active

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,...	Start Location [(in, %)]	End Location [(in, %)]	Inactive [(lb, k-ft), (in, r...
1	M13	Z	-14	-14	0	%100	Active
2	M14	Z	-14	-14	0	%100	Active
3	M15	Z	-14	-14	0	%100	Active
4	M25	Z	-14	-14	0	%100	Active
5	M26	Z	-14	-14	0	%100	Active
6	M27	Z	-14	-14	0	%100	Active
7	M30	Z	-14	-14	0	%100	Active
8	M37	Z	-14	-14	0	%100	Active
9	M38	Z	-14	-14	0	%100	Active
10	M39	Z	-14	-14	0	%100	Active
11	M42	Z	-14	-14	0	%100	Active
12	M49	Z	-14	-14	0	%100	Active
13	M50	Z	-14	-14	0	%100	Active
14	M51	Z	-14	-14	0	%100	Active
15	M54	Z	-14	-14	0	%100	Active
16	M7A	Z	-16	-16	0	%100	Active
17	M8	Z	-16	-16	0	%100	Active
18	M9	Z	-16	-16	0	%100	Active
19	M1	Z	-11	-11	0	%100	Active
20	M2	Z	-11	-11	0	%100	Active
21	M3	Z	-11	-11	0	%100	Active
22	M4	Z	-11	-11	0	%100	Active
23	M5	Z	-11	-11	0	%100	Active
24	M7	Z	-11	-11	0	%100	Active
25	M16	Z	-11	-11	0	%100	Active
26	M17	Z	-11	-11	0	%100	Active
27	M18	Z	-11	-11	0	%100	Active
28	M10	Z	-35	-35	0	%100	Active
29	M11	Z	-35	-35	0	%100	Active
30	M12	Z	-35	-35	0	%100	Active
31	M57	Z	-14	-14	0	%100	Active
32	M55	Z	-14	-14	0	%100	Active
33	M56	Z	-14	-14	0	%100	Active

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

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,...	Start Location [(in, %)]	End Location [(in, %)]	Inactive [(lb, k-ft), (in, r...
1	M13	PY	6	6	0	%100	Active
2	M14	PY	6	6	0	%100	Active
3	M15	PY	6	6	0	%100	Active
4	M25	PY	6	6	0	%100	Active
5	M26	PY	6	6	0	%100	Active
6	M27	PY	6	6	0	%100	Active
7	M30	PY	6	6	0	%100	Active
8	M37	PY	6	6	0	%100	Active
9	M38	PY	6	6	0	%100	Active
10	M39	PY	6	6	0	%100	Active
11	M42	PY	6	6	0	%100	Active
12	M49	PY	6	6	0	%100	Active
13	M50	PY	6	6	0	%100	Active
14	M51	PY	6	6	0	%100	Active
15	M54	PY	6	6	0	%100	Active
16	M7A	PY	12	12	0	%100	Active
17	M8	PY	12	12	0	%100	Active
18	M9	PY	12	12	0	%100	Active
19	M1	PY	12	12	0	%100	Active
20	M2	PY	12	12	0	%100	Active
21	M3	PY	12	12	0	%100	Active
22	M4	PY	12	12	0	%100	Active
23	M5	PY	12	12	0	%100	Active
24	M7	PY	12	12	0	%100	Active
25	M16	PY	12	12	0	%100	Active
26	M17	PY	12	12	0	%100	Active
27	M18	PY	12	12	0	%100	Active
28	M10	PY	16	16	0	%100	Active
29	M11	PY	16	16	0	%100	Active
30	M12	PY	16	16	0	%100	Active
31	M57	PY	10	10	0	%100	Active
32	M56	PY	10	10	0	%100	Active
33	M55	PY	10	10	0	%100	Active

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

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,...	Start Location [(in, %)]	End Location [(in, %)]	Inactive [(lb, k-ft), (in, r...
8	M37	PY	6	6	0	%100	Active
9	M38	PY	6	6	0	%100	Active
10	M39	PY	6	6	0	%100	Active
11	M42	PY	6	6	0	%100	Active
12	M49	PY	6	6	0	%100	Active
13	M50	PY	6	6	0	%100	Active
14	M51	PY	6	6	0	%100	Active
15	M54	PY	6	6	0	%100	Active
16	M7A	PY	12	12	0	%100	Active
17	M8	PY	12	12	0	%100	Active
18	M9	PY	12	12	0	%100	Active
19	M1	PY	12	12	0	%100	Active
20	M2	PY	12	12	0	%100	Active
21	M3	PY	12	12	0	%100	Active
22	M4	PY	12	12	0	%100	Active
23	M5	PY	12	12	0	%100	Active
24	M7	PY	12	12	0	%100	Active
25	M16	PY	12	12	0	%100	Active
26	M17	PY	12	12	0	%100	Active
27	M18	PY	12	12	0	%100	Active
28	M10	PY	16	16	0	%100	Active
29	M11	PY	16	16	0	%100	Active
30	M12	PY	16	16	0	%100	Active
31	M57	PY	10	10	0	%100	Active
32	M56	PY	10	10	0	%100	Active
33	M55	PY	10	10	0	%100	Active

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

	Member Label	Direction	Start Magnitude [lb/ft,…	End Magnitude [lb/ft,…	Start Location [(in, %)]	End Location [(in, %)]	Inactive [(lb, k-ft), (in, r…
32	M56	PY	7.3	7.3	0	%100	Active
33	M55	PY	7.3	7.3	0	%100	Active

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

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,...	Start Location [(in, %)]	End Location [(in, %)]	Inactive [(lb, k-ft), (in, r...
18	M1	Z	-6.724	-9.014	29.4	58.8	Active
19	M1	Z	-9.014	-9.342	58.8	88.2	Active
20	M1	Z	-9.342	-9.014	88.2	117.6	Active
21	M1	Z	-9.014	-6.724	117.6	147	Active
22	M1	Z	-6.724	-2.799	147	176.4	Active
23	M4	Z	-17.633	-4.409	0	28	Active
24	M4	Z	-4.409	-4.407	28	56	Active
25	M4	Z	-4.407	-17.628	56	84	Active
26	M10	Z	-19.641	-19.641	0	26.75	Active
27	M2	Z	-2.793	-6.706	0	29.411	Active
28	M2	Z	-6.706	-8.991	29.411	58.822	Active
29	M2	Z	-8.991	-9.321	58.822	88.234	Active
30	M2	Z	-9.321	-8.997	88.234	117.645	Active
31	M2	Z	-8.997	-6.713	117.645	147.056	Active
32	M2	Z	-6.713	-2.795	147.056	176.467	Active
33	M5	Z	-17.57	-4.391	0	28	Active
34	M5	Z	-4.391	-4.402	28	56.001	Active
35	M5	Z	-4.402	-17.604	56.001	84.001	Active
36	M11	Z	-19.648	-19.648	0.004	26.693	Active

Member Area Loads (BLC 1 : DEAD LOAD)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]	Inactive [(lb, k-ft), (i...
1	N5	N2	N5A	N8	Z	Two Way	-5	Active
2	N5A	N2	N3	N6	Z	Two Way	-5	Active
3	N5	N8	N6	N3	Z	Two Way	-5	Active

Member Area Loads (BLC 2 : DEAD LOAD ICE)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]	Inactive [(lb, k-ft), (i...
1	N5	N2	N5A	N8	Z	Two Way	-10.95	Active
2	N5A	N2	N3	N6	Z	Two Way	-10.95	Active
3	N5	N8	N6	N3	Z	Two Way	-10.95	Active

Load Combinations

	Desc...	Solve	PDelta	SRSS	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL +...	Yes	Y		1	1.2			3	1.6														
2	DL +...	Yes	Y		1	1.2			3	1.386	4	0.8												
3	DL +...	Yes	Y		1	1.2			3	0.8	4	1.386												
4	DL +...	Yes	Y		1	1.2					4	1.6												
5	DL +...	Yes	Y		1	1.2			3	-0.8	4	1.386												
6	DL +...	Yes	Y		1	1.2			3	-1.386	4	0.8												
7	DL +...	Yes	Y		1	1.2			3	-1.6														
8	DL +...	Yes	Y		1	1.2			3	-1.386	4	-0.8												
9	DL +...	Yes	Y		1	1.2			3	-0.8	4	-1.386												
10	DL +...	Yes	Y		1	1.2					4	-1.6												
11	DL +...	Yes	Y		1	1.2			3	0.8	4	-1.386												
12	DL +...	Yes	Y		1	1.2			3	1.386	4	-0.8												
13	DL +...	Yes	Y		1	1.2	2	1	5	1														
14	DL +...	Yes	Y		1	1.2	2	1	5	0.866	6	0.5												
15	DL +...	Yes	Y		1	1.2	2	1	5	0.5	6	0.866												
16	DL +...	Yes	Y		1	1.2	2	1			6	1												
17	DL +...	Yes	Y		1	1.2	2	1	5	-0.5	6	0.866												
18	DL +...	Yes	Y		1	1.2	2	1	5	-0.866	6	0.5												
19	DL +...	Yes	Y		1	1.2	2	1	5	-1														
20	DL +...	Yes	Y		1	1.2	2	1	5	-0.866	6	-0.5												
21	DL +...	Yes	Y		1	1.2	2	1	5	-0.5	6	-0.866												
22	DL +...	Yes	Y		1	1.2	2	1			6	-1												
23	DL +...	Yes	Y		1	1.2	2	1	5	0.5	6	-0.866												
24	DL +...	Yes	Y		1	1.2	2	1	5	0.866	6	-0.5												
25	DEA...	Yes	Y		1	1.2					7	1.5												
26	DEA...	Yes	Y		1	1.2					8	1.5												
27	DEA...	Yes	Y		1	1.2					9	1.5												
28	DL +...	Yes	Y		1	1.2	10	1.5	3	0.082														
29	DL +...	Yes	Y		1	1.2	11	1.5	3	0.082														
30	DL +...	Yes	Y		1	1.2	12	1.5	3	0.082														
31	DL +...	Yes	Y		1	1.2	13	1.5	3	0.082														
32	DL +...	Yes	Y		1	1.2	10	1.5	4	0.082														
33	DL +...	Yes	Y		1	1.2	11	1.5	4	0.082														
34	DL +...	Yes	Y		1	1.2	12	1.5	4	0.082														
35	DL +...	Yes	Y		1	1.2	13	1.5	4	0.082														
36	DL +...	Yes	Y		1	1.2	10	1.5	3	-0.082														
37	DL +...	Yes	Y		1	1.2	11	1.5	3	-0.082														
38	DL +...	Yes	Y		1	1.2	12	1.5	3	-0.082														
39	DL +...	Yes	Y		1	1.2	13	1.5	3	-0.082														
40	DL +...	Yes	Y		1	1.2	10	1.5	4	-0.082														
41	DL +...	Yes	Y		1	1.2	11	1.5	4	-0.082														
42	DL +...	Yes	Y		1	1.2	12	1.5	4	-0.082														
43	DL +...	Yes	Y		1	1.2	13	1.5	4	-0.082														
44	DL+...		Y		1	1	2	0.7	5	-0.7														

Node Reactions

No Data to Print...

Node Reactions (Continued)

	Node Label		X [lbs]	LC	Y [lbs]	LC	Z [lbs]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N13	max	2432.825	9	3515.497	8	2012.4	14	3.351	13	5.825	13	3.474	2
2		min	-2618.236	3	-3418.001	2	367.327	8	0.584	7	0.96	7	-3.461	8
3	N11	max	2681.774	11	3604.846	6	2012.215	17	3.375	17	-0.93	11	3.612	5
4		min	-2499.898	5	-3501.174	12	342.791	11	0.49	11	-5.823	17	-3.612	11
5	N9	max	3469.639	10	1061.886	7	2003.54	22	-1.155	3	0.051	5	2.241	10
6		min	-3464	4	-1269.989	1	375.829	3	-6.703	21	-0.154	41	-2.229	4
7	N134	max	56.933	10	4962.543	13	2708.988	13	0	8	0	8	0	8
8		min	-54.45	4	657.612	6	362.656	6	0	14	-0.003	14	-0.002	14
9	N136	max	-485.739	3	-286.865	3	2718.515	21	0.003	22	0.002	22	0	4
10		min	-4325.789	21	-2481.28	21	304.014	3	0	4	0	4	-0.002	22

Node Reactions (Continued)

	Node Label		X [lbs]	LC	Y [lbs]	LC	Z [lbs]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
11	N138	max	4291.784	17	-295.473	10	2709.37	17	0	12	0.002	18	0	12
12		min	525.629	11	-2486.379	16	328.703	11	-0.003	18	0	12	-0.002	18
13	Totals:	max	6317.925	10	5794.924	7	13389.997	24						
14		min	-6317.92	4	-5794.931	1	4488.824	5						

Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
1	N1	max	0	43	0	43	0	43	0	43	0	43	0	43
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	0.006	10	0.049	3	0.041	3	-2.424e-03	5	-1.297e-03	3	1.09e-03	10
4		min	-0.008	4	-0.05	9	-0.203	21	-1.5e-02	23	-2.138e-02	21	-1.067e-03	4
5	N3	max	0.008	11	0.05	11	0.04	11	2.562e-02	18	1.936e-03	4	9.238e-04	10
6		min	-0.007	5	-0.052	5	-0.202	17	3.489e-03	12	-3.303e-03	10	-9.088e-04	4
7	N5	max	0.082	4	0.019	1	0.032	7	3.877e-04	7	2.33e-02	14	6.816e-04	10
8		min	-0.081	10	-0.016	7	-0.202	13	-1.117e-02	13	3.894e-03	8	-6.65e-04	4
9	N5A	max	0.01	4	0.015	2	0.041	43	4.289e-04	9	1.396e-03	20	4.882e-04	9
10		min	-0.011	10	-0.016	8	-0.01	3	-1.329e-03	15	2.526e-04	3	-5.219e-04	3
11	N6	max	0.011	4	0.016	12	0.04	32	2.951e-04	5	-4.903e-04	1	5.779e-04	11
12		min	-0.01	10	-0.017	6	-0.009	11	-7.428e-04	24	-1.669e-03	21	-6.052e-04	5
13	N8	max	0.023	4	0.016	1	0.037	13	1.801e-03	19	1.321e-03	4	1.044e-03	10
14		min	-0.023	10	-0.014	7	-0.007	7	3.591e-04	1	-1.122e-03	10	-1.074e-03	4
15	N8A	max	0.005	40	0	1	-0.04	3	8.814e-03	20	6.939e-04	29	6.12e-04	10
16		min	-0.005	35	0	7	-0.238	21	1.42e-03	3	-2.852e-04	39	-6.17e-04	4
17	N9	max	0	4	0	1	0	3	0	21	0	41	0	4
18		min	0	10	0	7	0	22	0	3	0	5	0	10
19	N10	max	0.022	5	0.038	11	-0.036	10	-4.902e-04	10	7.65e-03	16	1.143e-03	10
20		min	-0.022	11	-0.038	5	-0.238	16	-4.447e-03	16	1.141e-03	10	-1.15e-03	4
21	N11	max	0	5	0	12	0	11	0	11	0	17	0	11
22		min	0	11	0	6	0	17	0	17	0	11	0	5
23	N12	max	0.022	3	0.036	3	-0.038	7	-4.6e-04	6	-1.165e-03	7	1.122e-03	10
24		min	-0.021	9	-0.036	9	-0.237	13	-4.449e-03	24	-7.617e-03	13	-1.132e-03	4
25	N13	max	0	3	0	2	0	8	0	7	0	7	0	8
26		min	0	9	0	8	0	14	0	13	0	13	0	2
27	N14	max	0.212	4	0.339	1	0.024	3	7.802e-03	7	5.15e-03	4	4.395e-03	11
28		min	-0.215	10	-0.334	7	-0.243	21	-8.951e-03	1	-5.657e-03	10	-4.139e-03	5
29	N15	max	0.211	4	0.349	1	0.029	11	8.569e-03	7	5.106e-03	4	3.452e-03	9
30		min	-0.215	10	-0.367	7	-0.234	17	-9.174e-03	1	-5.622e-03	10	-4.079e-03	3
31	N16	max	0.287	3	0.288	1	0.023	11	7.405e-03	7	6.926e-03	3	4.098e-03	8
32		min	-0.29	9	-0.292	7	-0.243	17	-6.402e-03	1	-7.636e-03	9	-3.869e-03	2
33	N17	max	0.428	4	0.235	1	0.023	7	5.302e-03	7	9.166e-03	4	2.823e-03	4
34		min	-0.41	10	-0.228	7	-0.234	13	-4.57e-03	1	-9.393e-03	10	-3.518e-03	10
35	N18	max	0.425	4	0.222	1	0.014	7	4.988e-03	7	9.445e-03	4	3.425e-03	4
36		min	-0.422	10	-0.221	7	-0.241	13	-4.923e-03	1	-8.31e-03	10	-3.112e-03	10
37	N19	max	0.294	5	0.284	1	0.032	3	6.846e-03	7	7.786e-03	5	3.277e-03	12
38		min	-0.31	11	-0.273	7	-0.236	21	-6.977e-03	1	-7.056e-03	11	-3.866e-03	6
39	N20	max	0.212	4	0.417	1	-0.012	1	6.505e-03	7	1.794e-03	2	6.652e-03	12
40		min	-0.215	10	-0.408	7	-0.24	19	-7.537e-03	1	-1.749e-03	8	-6.729e-03	6
41	N21	max	0.211	4	0.445	1	-0.029	1	7.203e-03	7	5.11e-04	5	7.029e-03	8
42		min	-0.215	10	-0.453	7	-0.272	19	-7.432e-03	1	-3.48e-03	41	-6.805e-03	2
43	N22	max	0.371	3	0.339	1	-0.006	9	3.115e-03	8	6.222e-03	3	6.615e-03	8
44		min	-0.376	9	-0.346	7	-0.241	15	-2.641e-03	2	-7.075e-03	9	-6.752e-03	2
45	N23	max	0.513	4	0.258	2	-0.019	9	4.552e-03	9	6.157e-03	3	6.521e-03	4
46		min	-0.504	10	-0.255	8	-0.274	15	-3.219e-03	3	-5.571e-03	9	-6.381e-03	10
47	N24	max	0.513	4	0.237	12	0.005	5	4.873e-03	5	5.416e-03	5	5.884e-03	4
48		min	-0.504	10	-0.238	6	-0.244	23	-4.459e-03	11	-4.783e-03	11	-5.942e-03	10
49	N25	max	0.39	5	0.325	1	-0.023	5	2.876e-03	6	6.909e-03	5	6.863e-03	11
50		min	-0.399	11	-0.317	7	-0.273	23	-4.016e-03	12	-6.064e-03	11	-6.569e-03	5
51	N26	max	0.008	4	0	1	-0.006	3	4.807e-03	21	1.66e-04	41	3.232e-04	4
52		min	-0.008	10	0	7	-0.034	21	8.146e-04	3	-5.494e-05	5	-3.309e-04	10
53	N27	max	0.007	5	0.013	11	-0.005	11	-3.325e-04	11	4.172e-03	17	1.233e-03	11
54		min	-0.008	11	-0.013	5	-0.034	17	-2.424e-03	16	6.631e-04	11	-1.235e-03	5
55	N28	max	0.007	3	0.012	3	-0.006	7	-4.114e-04	6	-6.676e-04	7	1.167e-03	9
56		min	-0.007	9	-0.012	8	-0.034	13	-2.399e-03	13	-4.178e-03	13	-1.178e-03	3
57	N29	max	0.212	4	0.347	1	0.011	3	7.802e-03	7	5.151e-03	4	4.395e-03	11
58		min	-0.215	10	-0.341	7	-0.238	20	-8.951e-03	1	-5.657e-03	10	-4.139e-03	5
59	N30	max	0.211	4	0.358	1	0.015	11	8.569e-03	7	5.106e-03	4	3.452e-03	9
60		min	-0.215	10	-0.374	7	-0.233	17	-9.174e-03	1	-5.622e-03	10	-4.079e-03	3
61	N31	max	0.202	4	0.347	1	0.031	2	7.802e-03	7	5.151e-03	4	4.395e-03	11
62		min	-0.204	10	-0.341	7	-0.238	20	-8.951e-03	1	-5.657e-03	10	-4.139e-03	5
63	N32	max	0.202	4	0.358	1	0.027	11	8.569e-03	7	5.106e-03	4	3.452e-03	9
64		min	-0.207	10	-0.374	7	-0.235	18	-9.174e-03	1	-5.622e-03	10	-4.079e-03	3
65	N33	max	0.211	4	0.637	1	-0.028	6	2.416e-02	7	4.648e-03	4	2.937e-03	4
66		min	-0.215	10	-0.687	7	-0.261	23	-2.449e-02	1	-4.193e-03	10	-3.103e-03	10
67	N34	max	0.22	4	0.637	1	-0.036	2	2.416e-02	7	4.648e-03	4	2.937e-03	4
68		min	-0.224	10	-0.687	7	-0.266	20	-2.449e-02	1	-4.193e-03	10	-3.103e-03	10
69	N35	max	0.005	10	0.046	2	0.015	2	7.448e-03	7	4.547e-03	5	2.324e-03	12
70		min	-0.008	4	-0.057	8	-0.229	20	-6.618e-03	1	-2.125e-03	11	-3.391e-03	6
71	N36	max	0.008	11	0.046	11	0.019	11	9.461e-03	7	1.908e-03	4	1.466e-03	9
72		min	-0.006	5	-0.049	5	-0.219	17	-7.249e-03	1	-3.621e-03	22	-1.226e-03	3
73	N37	max	0.01	11	0.046	2	0.031	2	7.448e-03	7	4.547e-03	5	2.324e-03	12
74		min	-0.016	5	-0.057	8	-0.237	20	-6.618e-03	1	-2.125e-03	11	-3.391e-03	6
75	N38	max	0.01	10	0.046	11	0.027	11	9.461e-03	7	1.908e-03	4	1.466e-03	9
76		min	-0.008	4	-0.049	5	-0.234	18	-7.249e-03	1	-3.621e-03	22	-1.226e-03	3
77	N39	max	0.005	40	0	2	-0.039	3	9.281e-03	19	5.247e-04	29	5.046e-04	10
78		min	-0.005	35	0	8	-0.238	21	-2.338e-03	1	-4.409e-04	39	-4.301e-04	4
79	N40	max	0.005	10	0	2	-0.036	2	9.281e-03	19	5.247e-04	29	5.046e-04	10
80		min	-0.006	4	0	8	-0.265	20	-2.338e-03	1	-4.409e-04	39	-4.301e-04	4
81	N41	max	0.295	4	0.507	1	0.031	2	8.405e-03	7	5.564e-03	4	4.395e-03	11
82		min	-0.306	10	-0.482	7	-0.238	20	-9.555e-03	1	-6.071e-03	10	-4.139e-03	5
83	N42	max	0.294	4	0.522	1	0.027	11	9.123e-03	7	5.521e-03	4	3.452e-03	9
84		min	-0.308	10	-0.527	7	-0.235	18	-9.728e-03	1	-6.037e-03	10	-4.079e-03	3
85	N43	max	0.042	11	0.087	6	0.031	2	6.845e-03	7	4.2e-03	17	2.324e-03	12
86		min	-0.088	5	-0.084	12	-0.237	20	-6.016e-03	1	-1.768e-03	11	-3.391e-03	6
87	N44	max	0.065	22	0.132	8	0.027	11	8.907e-03	7	1.494e-03	4	1.466e-03	9
88		min	-0.035	4	-0.097	2	-0.234	18	-6.696e-03	1	-3.507e-03	22	-1.226e-03	3
89	N45	max	0.442	4	1.503	1	-0.036	2	3.133e-02	7	8.69e-03	4	2.937e-03	4

Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
90		min	-0.433	10	-1.542	7	-0.267	20	-3.167e-02	1	-8.232e-03	10	-3.103e-03	10
91	N46	max	0.271	4	0.392	1	-0.036	2	1.415e-02	1	9.253e-03	10	5.046e-04	10
92		min	-0.267	10	-0.228	7	-0.266	20	-1.016e-02	7	-9.364e-03	4	-4.301e-04	4
93	N47	max	0.211	4	0.56	1	-0.061	1	1.351e-02	7	2.292e-03	5	5.017e-03	7
94		min	-0.214	10	-0.583	7	-0.306	19	-1.36e-02	1	-2.414e-03	11	-4.119e-03	1
95	N48	max	0.213	4	0.56	1	-0.02	1	1.351e-02	7	2.292e-03	5	5.017e-03	7
96		min	-0.214	10	-0.583	7	-0.319	19	-1.36e-02	1	-2.414e-03	11	-4.119e-03	1
97	N49	max	0.006	11	0.034	12	-0.061	1	1.416e-02	7	3.015e-03	4	9.952e-04	11
98		min	-0.005	5	-0.056	7	-0.302	19	-1.375e-02	1	-2.754e-03	10	-1.025e-03	5
99	N50	max	0.009	11	0.034	12	-0.02	1	1.416e-02	7	3.015e-03	4	9.952e-04	11
100		min	-0.008	5	-0.056	7	-0.319	19	-1.375e-02	1	-2.754e-03	10	-1.025e-03	5
101	N51	max	0.222	4	0.628	1	-0.02	1	1.351e-02	7	2.293e-03	5	5.017e-03	7
102		min	-0.223	10	-0.651	7	-0.319	19	-1.36e-02	1	-2.415e-03	11	-4.119e-03	1
103	N52	max	0.022	10	0.025	9	-0.02	1	1.416e-02	7	3.014e-03	4	9.952e-04	11
104		min	-0.022	4	-0.046	3	-0.319	19	-1.375e-02	1	-2.753e-03	10	-1.025e-03	5
105	N57	max	0.259	4	0.46	1	0.027	11	9.121e-03	7	5.519e-03	4	3.452e-03	9
106		min	-0.27	10	-0.469	7	-0.235	18	-9.725e-03	1	-6.035e-03	10	-4.079e-03	3
107	N58	max	0.045	10	0.08	8	0.027	11	8.91e-03	7	1.497e-03	4	1.466e-03	9
108		min	-0.025	4	-0.06	2	-0.234	18	-6.699e-03	1	-3.508e-03	22	-1.226e-03	3
109	N62	max	0.215	4	0.306	1	-0.036	2	1.415e-02	1	9.251e-03	10	5.046e-04	10
110		min	-0.211	10	-0.167	7	-0.266	20	-1.016e-02	7	-9.362e-03	4	-4.301e-04	4
111	N63	max	0.258	4	0.444	1	0.031	2	8.403e-03	7	5.561e-03	4	4.395e-03	11
112		min	-0.266	10	-0.426	7	-0.238	20	-9.552e-03	1	-6.068e-03	10	-4.139e-03	5
113	N64	max	0.03	11	0.049	5	0.031	2	6.848e-03	7	4.202e-03	17	2.324e-03	12
114		min	-0.06	5	-0.051	11	-0.237	20	-6.019e-03	1	-1.77e-03	11	-3.391e-03	6
115	N65	max	0.39	4	1.311	1	-0.036	2	3.133e-02	7	8.688e-03	4	2.937e-03	4
116		min	-0.383	10	-1.352	7	-0.267	20	-3.167e-02	1	-8.23e-03	10	-3.103e-03	10
117	N62A	max	0.207	4	0.527	1	-0.02	1	1.353e-02	7	3.281e-03	5	4.674e-03	7
118		min	-0.207	10	-0.55	7	-0.319	19	-1.364e-02	1	-3.419e-03	11	-3.836e-03	1
119	N63A	max	0.008	28	0.067	1	-0.02	1	1.416e-02	7	4.159e-03	4	9.352e-04	10
120		min	-0.005	39	-0.091	7	-0.319	19	-1.384e-02	1	-3.961e-03	10	-9.085e-04	4
121	N64A	max	0.295	3	0.294	1	0.012	10	7.405e-03	7	6.926e-03	3	4.098e-03	8
122		min	-0.298	9	-0.298	7	-0.238	16	-6.403e-03	1	-7.636e-03	9	-3.869e-03	2
123	N65A	max	0.435	4	0.235	1	0.01	7	5.302e-03	7	9.166e-03	4	2.823e-03	4
124		min	-0.419	10	-0.229	7	-0.233	13	-4.57e-03	1	-9.393e-03	10	-3.518e-03	10
125	N66	max	0.3	3	0.284	1	0.033	10	7.405e-03	7	6.926e-03	3	4.098e-03	8
126		min	-0.303	9	-0.288	7	-0.238	16	-6.403e-03	1	-7.636e-03	9	-3.869e-03	2
127	N67	max	0.431	4	0.234	1	0.018	7	5.302e-03	7	9.166e-03	4	2.823e-03	4
128		min	-0.414	10	-0.23	7	-0.234	14	-4.57e-03	1	-9.393e-03	10	-3.518e-03	10
129	N68	max	0.626	3	0.374	2	-0.044	2	1.127e-02	8	2.042e-02	3	4.057e-03	11
130		min	-0.579	9	-0.352	8	-0.26	19	-1.151e-02	2	-2.089e-02	9	-4.178e-03	5
131	N69	max	0.628	3	0.377	2	-0.028	10	1.127e-02	8	2.042e-02	3	4.057e-03	11
132		min	-0.581	9	-0.354	8	-0.268	16	-1.151e-02	2	-2.089e-02	9	-4.178e-03	5
133	N70	max	0.024	2	0.05	11	0.017	10	4.277e-03	8	5.996e-03	3	1.991e-03	8
134		min	-0.013	8	-0.047	5	-0.229	16	-6.886e-03	2	-6.432e-03	9	-3.08e-03	2
135	N71	max	0.082	4	0.02	1	0.013	7	4.207e-03	8	9.209e-03	4	4.666e-04	16
136		min	-0.08	10	-0.017	7	-0.219	13	-3.972e-03	2	-6.455e-03	10	-1.202e-04	10
137	N72	max	0.029	2	0.05	11	0.033	10	4.277e-03	8	5.996e-03	3	1.991e-03	8
138		min	-0.016	8	-0.049	5	-0.237	16	-6.886e-03	2	-6.432e-03	9	-3.08e-03	2
139	N73	max	0.081	4	0.02	1	0.018	7	4.207e-03	8	9.209e-03	4	4.666e-04	16
140		min	-0.08	10	-0.017	7	-0.233	14	-3.972e-03	2	-6.455e-03	10	-1.202e-04	10
141	N74	max	0.021	5	0.038	11	-0.036	10	2.034e-03	9	8.342e-03	15	1.253e-03	11
142		min	-0.021	11	-0.039	5	-0.238	17	-4.629e-03	15	-3.162e-03	9	-1.177e-03	5
143	N75	max	0.023	5	0.042	11	-0.028	10	2.034e-03	9	8.342e-03	15	1.253e-03	11
144		min	-0.023	11	-0.042	5	-0.266	16	-4.629e-03	15	-3.162e-03	9	-1.177e-03	5
145	N76	max	0.425	3	0.399	1	0.033	10	7.819e-03	7	7.449e-03	3	4.098e-03	8
146		min	-0.44	9	-0.42	7	-0.238	16	-6.816e-03	1	-8.159e-03	9	-3.869e-03	2
147	N77	max	0.595	4	0.318	1	0.018	7	5.717e-03	7	9.719e-03	4	2.823e-03	4
148		min	-0.581	10	-0.326	7	-0.234	14	-4.985e-03	1	-9.947e-03	10	-3.518e-03	10
149	N78	max	0.09	9	0.074	9	0.033	10	3.919e-03	8	5.475e-03	3	1.991e-03	8
150		min	-0.07	3	-0.118	3	-0.237	16	-6.527e-03	2	-5.91e-03	9	-3.08e-03	2
151	N79	max	0.029	9	0.059	9	0.018	7	3.848e-03	8	8.655e-03	4	4.666e-04	16
152		min	-0.097	15	-0.052	3	-0.233	14	-3.613e-03	2	-5.903e-03	10	-1.202e-04	10
153	N80	max	1.354	3	0.786	2	-0.028	10	1.48e-02	8	2.678e-02	4	4.057e-03	11
154		min	-1.321	9	-0.757	8	-0.268	16	-1.504e-02	2	-2.729e-02	10	-4.178e-03	5
155	N81	max	0.3	5	0.226	12	-0.028	10	6.945e-03	12	1.438e-02	10	1.253e-03	11
156		min	-0.443	11	-0.303	6	-0.267	16	-8.803e-03	6	-1.081e-02	4	-1.177e-03	5
157	N82	max	0.611	4	0.31	2	-0.052	9	8.026e-03	9	1.108e-02	3	4.491e-03	3
158		min	-0.59	10	-0.301	8	-0.308	15	-7.941e-03	3	-1.107e-02	9	-3.572e-03	9
159	N83	max	0.606	4	0.321	2	-0.011	9	8.026e-03	9	1.108e-02	3	4.491e-03	3
160		min	-0.586	10	-0.31	8	-0.321	15	-7.941e-03	3	-1.107e-02	9	-3.572e-03	9
161	N84	max	0.088	4	0.025	1	-0.054	9	6.882e-03	9	1.332e-02	4	6.636e-04	8
162		min	-0.069	10	-0.014	7	-0.303	15	-7.364e-03	3	-1.311e-02	10	-6.942e-04	2
163	N85	max	0.089	4	0.024	1	-0.011	9	6.882e-03	9	1.332e-02	4	6.636e-04	8
164		min	-0.069	10	-0.012	7	-0.321	15	-7.364e-03	3	-1.311e-02	10	-6.942e-04	2
165	N86	max	0.661	4	0.356	2	-0.011	9	8.026e-03	9	1.108e-02	3	4.491e-03	3
166		min	-0.642	10	-0.345	8	-0.321	15	-7.942e-03	3	-1.108e-02	9	-3.572e-03	9
167	N87	max	0.029	18	0.036	10	-0.011	9	6.881e-03	9	1.332e-02	4	6.636e-04	8
168		min	-0.01	12	-0.026	4	-0.321	15	-7.363e-03	3	-1.311e-02	10	-6.942e-04	2
169	N89	max	0.533	4	0.286	1	0.018	7	5.715e-03	7	9.717e-03	4	2.823e-03	4
170		min	-0.518	10	-0.29	7	-0.234	14	-4.983e-03	1	-9.945e-03	10	-3.518e-03	10
171	N90	max	0.003	7	0.035	9	0.018	7	3.85e-03	8	8.658e-03	4	4.666e-04	16
172		min	-0.054	14	-0.029	3	-0.233	14	-3.615e-03	2	-5.905e-03	10	-1.202e-04	10
173	N91	max	0.235	5	0.184	12	-0.028	10	6.943e-03	12	1.438e-02	10	1.253e-03	11
174		min	-0.357	11	-0.249	6	-0.267	16	-8.801e-03	6	-1.08e-02	4	-1.177e-03	5
175	N92	max	0.376	3	0.353	1	0.033	10	7.817e-03	7	7.446e-03	3	4.098e-03	8
176		min	-0.386	9	-0.368	7	-0.238	16	-6.814e-03	1	-8.157e-03	9	-3.869e-03	2
177	N93	max	0.051	10	0.055	9	0.033	10	3.922e-03	8	5.477e-03	3	1.991e-03	8
178		min	-0.034	4	-0.081	3	-0.237	16	-6.529e-03	2	-5.912e-03	9	-3.08e-03	2
179	N94	max	1.193	3	0.696	2	-0.028	10	1.48e-02	8	2.678e-02	4	4.057e-03	11
180		min	-1.157	9	-0.668	8	-0.268	16	-1.503e-02	2	-2.729e-02	10	-4.178e-03	5
181	N95	max	0.578	4	0.304	2	-0.011	9	7.789e-03	9	1.163e-02	4	4.166e-03	3
182		min	-0.559	10	-0.292	8	-0.321	15	-7.68e-03	3	-1.167e-02	10	-3.308e-03	9
183	N96	max	0.122	4	0.037	2	-0.011	9	6.88e-03	8	1.372e-02	4	4.413e-04	7
184		min	-0.102	10	-0.025	8	-0.321	15	-7.239e-03	2	-1.356e-02	10	-4.175e-04	1
185	N97	max	0.434	4	0.221	1	0.008	6	4.988e-03	7	9.445e-03	4	3.425e-03	4
186		min	-0.43	10	-0.221	7	-0.238	24	-4.923e-03	1	-8.31e-03	10	-3.112e-03	10

Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation...	LC	Y Rotation...	LC	Z Rotation...	LC
187	N98	max	0.303	5	0.288	1	0.017	3	6.846e-03	7	7.786e-03	5	3.277e-03	12
188		min	-0.317	11	-0.278	7	-0.235	21	-6.977e-03	1	-7.056e-03	11	-3.866e-03	6
189	N99	max	0.429	4	0.22	1	0.029	6	4.988e-03	7	9.445e-03	4	3.425e-03	4
190		min	-0.425	10	-0.22	7	-0.238	24	-4.923e-03	1	-8.31e-03	10	-3.112e-03	10
191	N100	max	0.308	5	0.282	1	0.03	4	6.846e-03	7	7.786e-03	5	3.277e-03	12
192		min	-0.322	11	-0.269	7	-0.236	22	-6.977e-03	1	-7.056e-03	11	-3.866e-03	6
193	N101	max	0.584	4	0.364	12	-0.026	9	1.101e-02	6	2.09e-02	5	3.389e-03	8
194		min	-0.627	11	-0.335	6	-0.263	15	-1.049e-02	11	-2.097e-02	11	-3.582e-03	2
195	N102	max	0.588	4	0.368	12	-0.029	6	1.101e-02	6	2.09e-02	5	3.389e-03	8
196		min	-0.63	10	-0.338	6	-0.268	24	-1.049e-02	11	-2.097e-02	11	-3.582e-03	2
197	N103	max	0.094	4	0.025	12	0.013	6	4.052e-03	6	6.882e-03	4	1.847e-03	4
198		min	-0.103	10	-0.017	6	-0.229	24	-2.383e-03	12	-8.916e-03	10	-2.903e-03	10
199	N104	max	0.003	36	0.046	3	0.021	3	3.884e-03	6	6.798e-03	5	1.516e-03	11
200		min	-0.007	23	-0.046	9	-0.22	21	-6.398e-03	12	-8.007e-03	11	-1.255e-03	5
201	N105	max	0.091	4	0.029	12	0.028	6	4.052e-03	6	6.882e-03	4	1.847e-03	4
202		min	-0.098	10	-0.019	6	-0.237	24	-2.383e-03	12	-8.916e-03	10	-2.903e-03	10
203	N106	max	0.004	6	0.048	3	0.029	4	3.884e-03	6	6.798e-03	5	1.516e-03	11
204		min	-0.009	23	-0.049	9	-0.235	22	-6.398e-03	12	-8.007e-03	11	-1.255e-03	5
205	N107	max	0.023	3	0.036	3	-0.038	7	2.162e-03	5	2.886e-03	6	1.396e-03	10
206		min	-0.022	9	-0.036	9	-0.238	13	-5.042e-03	23	-8.186e-03	23	-1.327e-03	4
207	N108	max	0.025	3	0.039	3	-0.029	6	2.162e-03	5	2.886e-03	6	1.396e-03	10
208		min	-0.025	9	-0.039	9	-0.266	24	-5.042e-03	23	-8.186e-03	23	-1.327e-03	4
209	N109	max	0.598	4	0.31	1	0.028	6	5.401e-03	7	1.005e-02	4	3.425e-03	4
210		min	-0.575	10	-0.311	7	-0.238	24	-5.336e-03	1	-8.913e-03	10	-3.112e-03	10
211	N110	max	0.447	5	0.406	1	0.03	4	7.261e-03	7	8.266e-03	5	3.277e-03	12
212		min	-0.448	11	-0.392	7	-0.236	22	-7.393e-03	1	-7.535e-03	11	-3.866e-03	6
213	N111	max	0.046	11	0.065	19	0.028	6	3.694e-03	6	6.28e-03	4	1.847e-03	4
214		min	-0.018	5	-0.008	1	-0.237	24	-2.026e-03	12	-8.313e-03	10	-2.903e-03	10
215	N112	max	0.122	11	0.076	5	0.029	4	3.525e-03	6	6.319e-03	5	1.516e-03	11
216		min	-0.106	5	-0.12	11	-0.236	22	-6.038e-03	12	-7.527e-03	11	-1.255e-03	5
217	N113	max	1.336	4	0.748	12	-0.029	6	1.453e-02	6	2.764e-02	4	3.389e-03	8
218		min	-1.378	10	-0.733	6	-0.268	24	-1.401e-02	12	-2.762e-02	10	-3.582e-03	2
219	N114	max	0.475	3	0.209	2	-0.029	6	6.584e-03	2	1.158e-02	9	1.396e-03	10
220		min	-0.335	9	-0.295	8	-0.267	24	-8.668e-03	8	-1.503e-02	4	-1.327e-03	4
221	N115	max	0.495	5	0.356	1	-0.054	5	5.727e-03	6	1.24e-02	5	5.385e-03	10
222		min	-0.518	11	-0.341	7	-0.307	23	-5.805e-03	12	-1.238e-02	11	-4.488e-03	4
223	N116	max	0.502	5	0.352	1	-0.014	5	5.727e-03	6	1.24e-02	5	5.385e-03	10
224		min	-0.526	11	-0.34	7	-0.32	23	-5.805e-03	12	-1.238e-02	11	-4.488e-03	4
225	N117	max	0.021	5	0.042	2	-0.057	5	7.627e-03	6	1.231e-02	5	4.366e-04	2
226		min	-0.041	11	-0.032	8	-0.301	23	-7.647e-03	12	-1.294e-02	11	-4.672e-04	8
227	N118	max	0.021	5	0.041	2	-0.014	5	7.627e-03	6	1.231e-02	5	4.366e-04	2
228		min	-0.041	11	-0.031	8	-0.319	23	-7.647e-03	12	-1.294e-02	11	-4.672e-04	8
229	N119	max	0.564	5	0.376	1	-0.014	5	5.728e-03	6	1.24e-02	5	5.385e-03	10
230		min	-0.588	11	-0.363	7	-0.32	23	-5.806e-03	12	-1.238e-02	11	-4.488e-03	4
231	N120	max	0.024	11	0.05	4	-0.014	5	7.626e-03	6	1.23e-02	5	4.366e-04	2
232		min	-0.041	5	-0.039	10	-0.319	23	-7.646e-03	12	-1.294e-02	11	-4.672e-04	8
233	N122	max	0.395	5	0.359	1	0.03	4	7.259e-03	7	8.264e-03	5	3.277e-03	12
234		min	-0.401	11	-0.345	7	-0.236	22	-7.391e-03	1	-7.533e-03	11	-3.866e-03	6
235	N123	max	0.074	11	0.058	5	0.029	4	3.527e-03	6	6.321e-03	5	1.516e-03	11
236		min	-0.066	5	-0.085	11	-0.236	22	-6.04e-03	12	-7.529e-03	11	-1.255e-03	5
237	N124	max	0.384	3	0.169	2	-0.029	6	6.582e-03	2	1.158e-02	9	1.396e-03	10
238		min	-0.265	9	-0.242	8	-0.267	24	-8.666e-03	8	-1.503e-02	4	-1.327e-03	4
239	N125	max	0.531	4	0.274	1	0.028	6	5.398e-03	7	1.005e-02	4	3.425e-03	4
240		min	-0.516	10	-0.275	7	-0.238	24	-5.333e-03	1	-8.911e-03	10	-3.112e-03	10
241	N126	max	0.025	3	0.042	19	0.028	6	3.696e-03	6	6.283e-03	4	1.847e-03	4
242		min	-0.011	9	0.002	2	-0.237	24	-2.029e-03	12	-8.316e-03	10	-2.903e-03	10
243	N127	max	1.169	4	0.663	12	-0.029	6	1.453e-02	6	2.764e-02	4	3.389e-03	8
244		min	-1.211	10	-0.646	6	-0.268	24	-1.401e-02	12	-2.762e-02	10	-3.582e-03	2
245	N128	max	0.471	5	0.34	1	-0.014	5	6.39e-03	6	1.248e-02	5	5.02e-03	10
246		min	-0.496	11	-0.327	7	-0.32	23	-6.474e-03	12	-1.242e-02	11	-4.183e-03	4
247	N129	max	0.051	5	0.052	2	-0.014	5	8.083e-03	6	1.245e-02	5	4.27e-04	1
248		min	-0.073	11	-0.042	8	-0.32	23	-8.116e-03	12	-1.297e-02	11	-3.963e-04	7
249	N133	max	0.069	4	0.018	1	0.026	7	5.674e-04	7	1.628e-02	14	1.03e-03	10
250		min	-0.068	10	-0.016	7	-0.048	1	-8.262e-03	13	2.6e-03	8	-1.029e-03	4
251	N134	max	0	4	0	6	0	6	0	14	0	14	0	14
252		min	0	10	0	13	0	13	0	8	0	8	0	8
253	N135	max	0.003	36	0.037	3	0.029	3	-1.687e-03	6	-7.305e-04	3	8.903e-04	10
254		min	-0.006	31	-0.038	9	-0.051	9	-1.031e-02	24	-1.529e-02	21	-8.865e-04	4
255	N136	max	0	21	0	21	0	3	0	4	0	4	0	22
256		min	0	3	0	3	0	21	0	22	0	22	0	4
257	N137	max	0.006	1	0.04	11	0.029	11	1.812e-02	18	1.782e-03	4	8.318e-04	10
258		min	-0.004	7	-0.042	5	-0.051	5	2.19e-03	11	-2.533e-03	10	-8.295e-04	4
259	N138	max	0	11	0	16	0	11	0	18	0	12	0	18
260		min	0	17	0	10	0	17	0	12	0	18	0	12

LRFD

	Member	Shape	Code Ch...	Loc [in]	LC	Shear Ch...	Loc [in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mnyy...	phi*Mnzz...	Cb	Eqn
1	M13	PIPE_2.0	0.326	84	9	0.229	143.5		7	5018.672	32130	1.872	1.872	1.972	H1-1b
2	M14	PIPE_2.0	0.383	84	5	0.235	143.5		3	5018.672	32130	1.872	1.872	1.892	H1-1b
3	M15	PIPE_2.0	0.359	82.25	9	0.226	143.5		11	5018.672	32130	1.872	1.872	1.78	H1-1b
4	M25	PIPE_2.0	0.298	17.25	21	0.069	17.25		10	20866.733	32130	1.872	1.872	1.345	H1-1b
5	M26	PIPE_2.0	0.286	17.25	16	0.072	17.25		3	20866.733	32130	1.872	1.872	1.571	H1-1b
6	M27	PIPE_2.0	0.709	66.375	1	0.116	66.375		10	12143.947	32130	1.872	1.872	1.494	H1-1b
7	M30	PIPE_2.0	0.358	43	10	0.119	5		6	26521.424	32130	1.872	1.872	1.466	H1-1b
8	M37	PIPE_2.0	0.307	17.25	17	0.067	17.25		6	20866.733	32130	1.872	1.872	1.632	H1-1b
9	M38	PIPE_2.0	0.298	17.25	24	0.077	17.25		11	20866.733	32130	1.872	1.872	1.532	H1-1b
10	M39	PIPE_2.0	0.665	66.375	10	0.110	66.375		6	12143.947	32130	1.872	1.872	2.4	H1-1b
11	M42	PIPE_2.0	0.383	43	6	0.112	5		4	26521.424	32130	1.872	1.872	1.963	H1-1b
12	M49	PIPE_2.0	0.300	17.25	13	0.055	17.25		15	20866.733	32130	1.872	1.872	1.606	H1-1b
13	M50	PIPE_2.0	0.313	17.25	9	0.069	17.25		7	20866.733	32130	1.872	1.872	1.595	H1-1b
14	M51	PIPE_2.0	0.716	66.375	4	0.101	66.375		2	12143.947	32130	1.872	1.872	2.597	H1-1b
15	M54	PIPE_2.0	0.371	43	2	0.135	5		10	26521.424	32130	1.872	1.872	1.948	H1-1b
16	M7A	LL3x3x4x6	0.464	15.015	21	0.124	14.459	y	21	78280.295	93312	8.512	4.911	1.216	H1-1b
17	M8	LL3x3x4x6	0.462	15.015	17	0.122	14.459	y	17	78280.295	93312	8.512	4.911	2.07	H1-1b
18	M9	LL3x3x4x6	0.460	15.015	13	0.123	14.459	y	13	78280.295	93312	8.512	4.911	1.243	H1-1b
19	M1	L3X3X4	0.547	5.513	8	0.611	88.2	z	13	3577.807	46656	1.688	2.688	1.5	H2-1

LRFD (Continued)

	Member	Shape	Code Ch...	Loc [in]	LC	Shear Ch...	Loc [in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mnyy...	phi*Mnzz...	Cb	Eqn
20	M2	L3X3X4	0.590	5.515	4	0.708	88.234	y	8	3575.077	46656	1.688	2.688	1.5	H2-1
21	M3	L3X3X4	0.539	5.517	12	0.685	88.267	y	5	3572.354	46656	1.688	2.688	1.5	H2-1
22	M4	L3X3X4	0.231	42	21	0.032	0	y	21	15778.129	46656	1.688	3.345	1.5	H2-1
23	M5	L3X3X4	0.282	41.126	11	0.033	0	y	17	15777.71	46656	1.688	3.345	1.5	H2-1
24	M7	L3X3X4	0.288	42.001	3	0.032	0	y	13	15777.29	46656	1.688	3.345	1.5	H2-1
25	M16	L3X3X4	0.374	0	8	0.057	28.135	y	2	41307.194	46656	1.688	3.756	1.391	H2-1
26	M17	L3X3X4	0.238	0	9	0.063	28.135	z	10	41307.194	46656	1.688	3.756	1.5	H2-1
27	M18	L3X3X4	0.375	0	11	0.058	0	z	6	41307.194	46656	1.688	3.756	1.317	H2-1
28	M10	HSS4X4X4	0.461	39.6	22	0.096	39.6	y	10	133302.091	139518	16.181	16.181	2.565	H1-1b
29	M11	HSS4X4X4	0.487	39.542	17	0.113	39.542	y	6	133319.954	139518	16.181	16.181	3	H1-1b
30	M12	HSS4X4X4	0.485	39.483	14	0.113	39.483	y	2	133337.808	139518	16.181	16.181	3	H1-1b
31	M55	LL2.5x2.5...	0.185	85.427	13	0.019	85.427	y	14	30558.737	58320	3.3	2.55	1.136	H1-1b*
32	M56	LL2.5x2.5...	0.186	85.427	21	0.019	85.427	z	22	30558.737	58320	3.3	2.55	1.136	H1-1b*
33	M57	LL2.5x2.5...	0.185	85.427	17	0.019	85.427	z	18	30558.737	58320	3.3	2.55	1.136	H1-1b*

1.0 DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.0 GENERAL
ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK.

1.1 CODES
a. 2018 CONNECTICUT STATE BUILDING CODE (2015 IBC)
b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7–10, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
d. STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES, ANSI/TIA–222–G, TELECOMMUNICATIONS INDUSTRY ASSOCIATION

1.2 LOADS AND DESIGN CRITERIA
a. BASIC WIND SPEED (3–SECOND GUST): V: 97 MPH (ASD), EXPOSURE B, RISK CATEGORY II
b. EQUIPMENT AS LISTED IN MOUNT STRUCTURAL ANALYSIS REPORT – UPGRADE PREPARED BY EFI GLOBAL, INC, DATED 06/19/2020.

1.3 NOTES
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL PERFORM AN INSPECTION VERIFYING MEMBER AND BOLT SIZES. SHOULD THE CONTRACTOR DISCOVER ANY DAMAGED OR MISSING MEMBERS OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, EFI GLOBAL, INC, SHALL BE NOTIFIED IMMEDIATELY.
b. CONTRACTOR TO REPLACE ALL BOLTS REMOVED WITH NEW BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

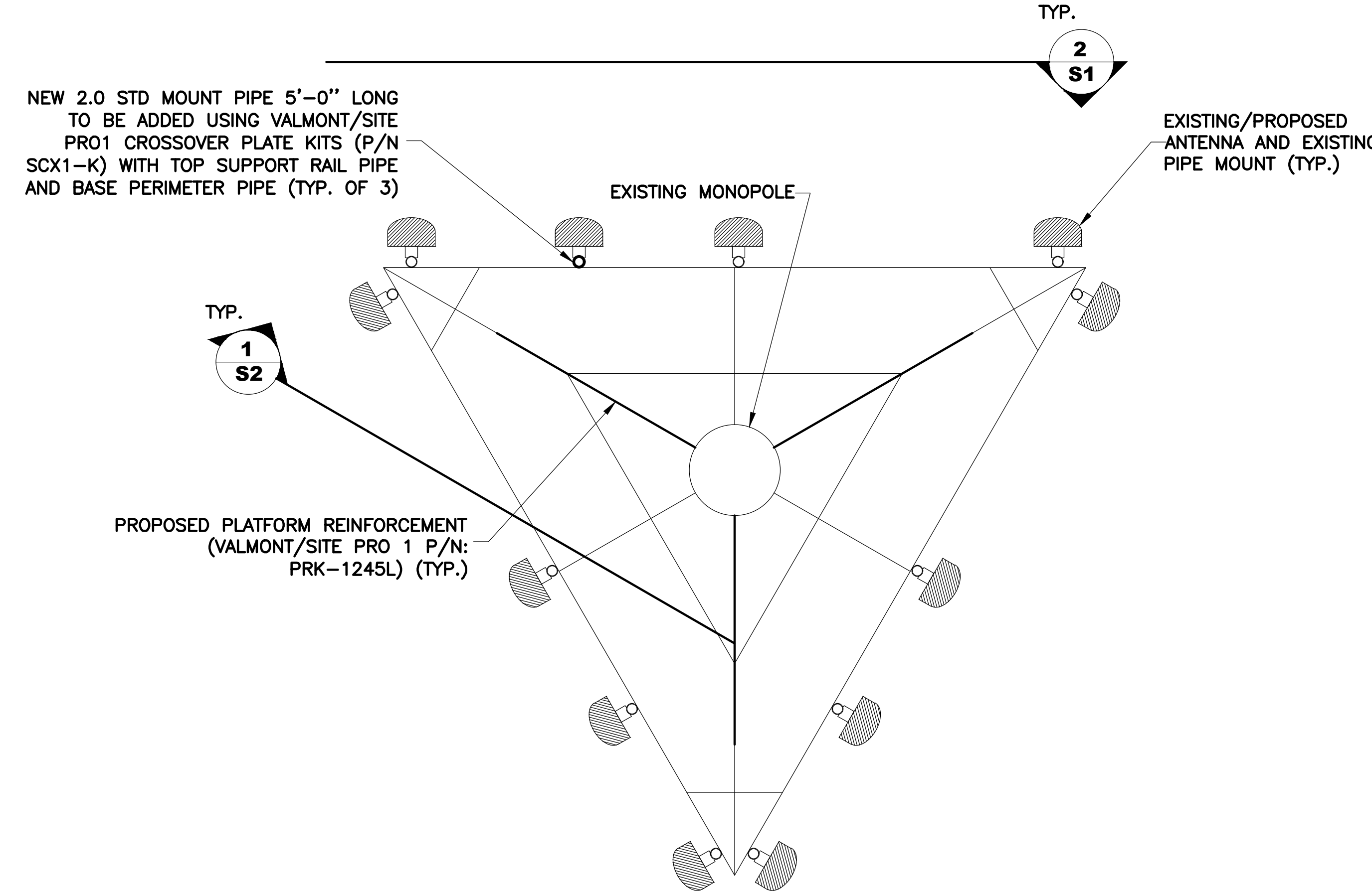
2.0 STRUCTURAL STEEL

2.1 MATERIALS
a. STRUCTURAL STEEL . . . . ASTM A992
MISC ANGLE & PLATE . . . . ASTM A36
PIPE . . . . ASTM A53 GR. B
RODS . . . . ASTM A572–50 (MINIMUM)
HSS. . . . . ASTM A500, GR. B, Fy=46 KSI
b. BOLTS . . . . ASTM A325 U.N.O.
c. WELDING ELECTRODES . . . . AWS A5.1 (E70XX)
d. STEEL CONSTRUCTION SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360–16"
e. WELDING SHALL CONFORM TO AWS D1.1/D1.3/D1.7 AS APPLICABLE.
f. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO "DETAILING FOR STEEL CONSTRUCTION, 2ND EDITION"
g. POOR MATCHING OF HOLES SHALL BE CORRECTED BY DRILLING TO THE NEXT LARGER SIZE. WELDING FOR REDRILLING WILL NOT BE PERMITTED.

2.2 CONNECTIONS
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED
b. CONNECTIONS WHERE THE BEAM SHEAR (V) IS NOT NOTED ON THE DRAWINGS, SIMPLE SHEAR CONNECTIONS SHALL BE DESIGNED TO DEVELOP 1/2 OF THE MAXIMUM TOTAL UNIFORM LOAD CAPACITY OF THE BEAM.
c. FIELD CONNECTIONS SHALL BE MADE WITH A325 BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE SURFACE OF THE METAL AND SHALL NOT BE MADE OR ENLARGED BY BURNING. HOLES SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

2.3 FINISHES
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
c. ALL SURFACES DAMAGED BY FIELD WELDING OR CUTTING SHALL BE PAINTED WITH COLD GALVANIZING COMPOUND TWICE. THE PAINT SHOULD BE AT LEAST 93% PURE ZINC. RUST–OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

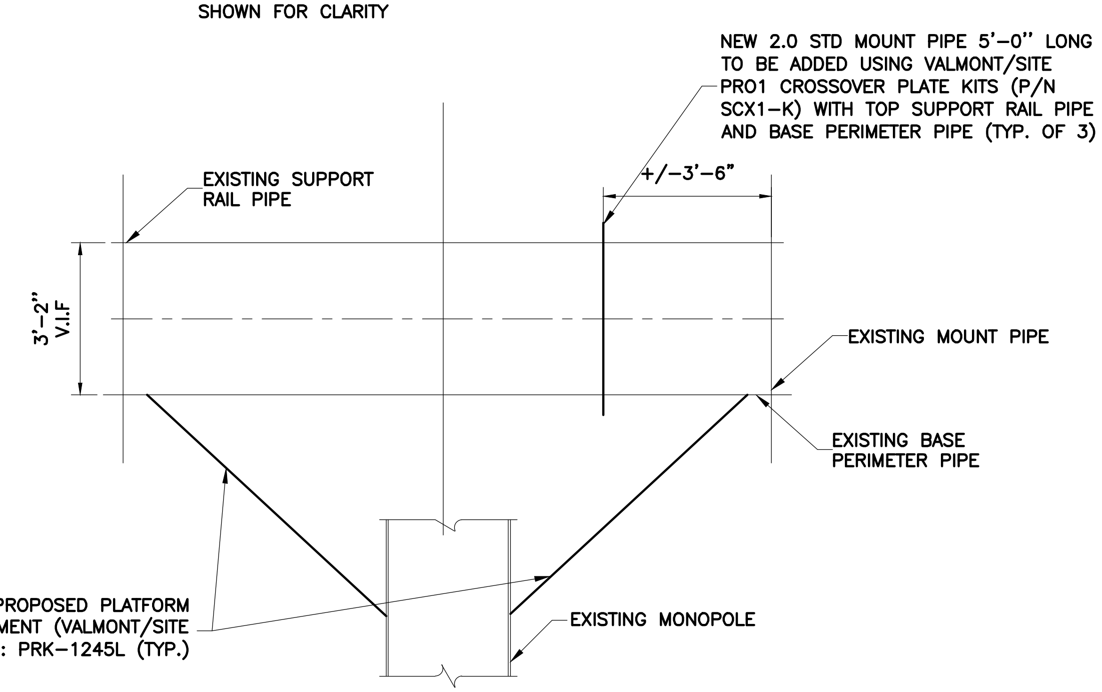
2.4 WELDING
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON GALVANIZED SURFACE. COAX IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED.
b. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GROUND GALVANIZING BEFORE WELDING.
c. WELDING CERTIFICATE MUST BE PROVIDED PRIOR TO WELDING. ALL WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES.



1 S1 **PLATFORM MOUNT @ 163' PLAN**
1/4" = 1'-0"

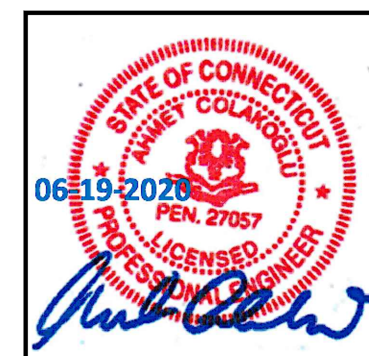
NOTE:
– ADDITIONAL EQUIPMENT AND MOUNTING HARDWARE NOT SHOWN FOR CLARITY

PROPOSED MODIFICATION TO BE INSTALLED AT ALL CORNERS.



2 S1 **PLATFORM MOUNT @ 163' ELEVATION**
N.T.S

NOTE:
– ADDITIONAL EQUIPMENT AND MOUNTING HARDWARE NOT SHOWN FOR CLARITY



Ahmet Colakoglu, PE
CT License No: 27057

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FIRM LICENSE: PEC0001245

PREPARED FOR:
T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

NUM	DATE	DESCRIPTION:
A	06/19/20	ISSUED FOR CONSTRUCTION

CT11365D

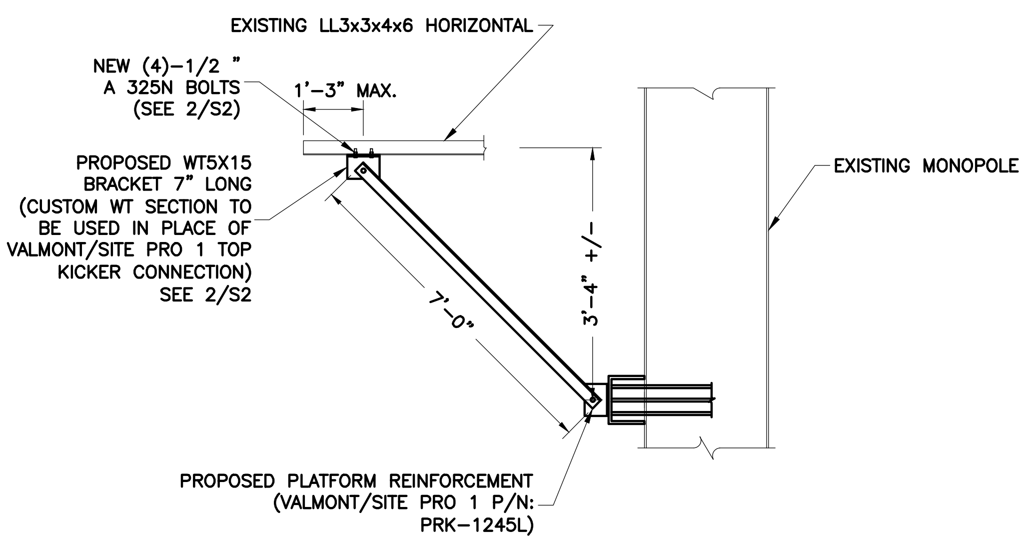
ADDRESS:
239E.MIDDLE TPK,
MANCHESTER, CT 06040

DESIGNED: SK
DRAWN: SK
CHECKED: AC

JOB #: 049.00421
2075019

S1
UPGRADE DRAWINGS

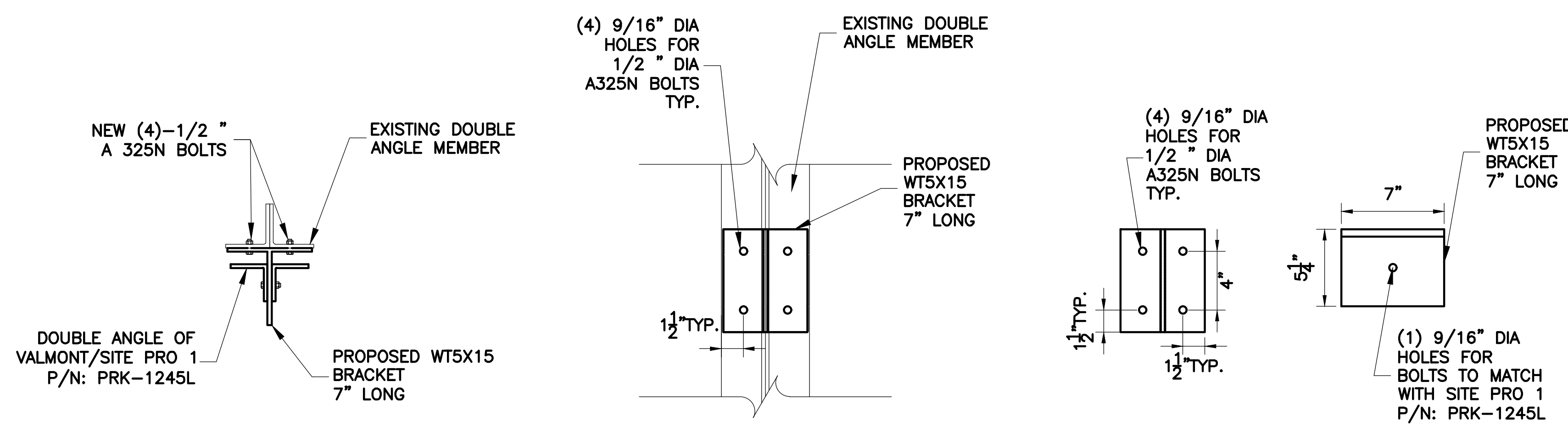
PROPOSED MODIFICATION TO BE INSTALLED AT ALL CORNERS.



1 / S2 PLATFORM MOUNT KICKER CONNECTION

1/4" = 1'-0"

NOTE:
– ADDITIONAL EQUIPMENT AND MOUNTING HARDWARE NOT SHOWN FOR CLARITY



2 / S2 CONNECTION DETAIL

1" = 1'-0"

NOTE:
– MODIFICATIONS SHOULD BE DONE AT ALL SECTORS

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STATE OF CONNECTICUT AHMET COLAKOGLU PEN. 27057 LICENSED PROFESSIONAL ENGINEER
06-19-2020

Ahmet Colakoglu, PE
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S2
UPGRADE DRAWINGS