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

VIA ELECTRONIC MAIL

October 7, 2022

Thomas J. Regan, Esq.
Brown Rudnick LLP
185 Asylum Street
Hartford, CT 06103
tregan@brownrudnick.com

RE: **SUBPETITION NO. 1133-CING-20220902 –** New Cingular Wireless PCS, LCC (AT&T) eligible facility request for modifications to an existing telecommunications facility located at 250 Olcott Street, Manchester, Connecticut.

Dear Attorney Regan:

The Connecticut Siting Council (Council) is in receipt of your correspondence with attachments dated October 7, 2022, regarding compliance with Condition No. 2 of the Council's Declaratory Ruling of October 4, 2022, for the above-referenced project.

The Council acknowledges that the condition has been satisfied. This acknowledgment applies only to the condition satisfied by the October 4, 2022 correspondence. Any significant changes to the above-referenced project require advance Council notification and approval.

Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/laf

brownrudnick

THOMAS J. REGAN
DIRECT DIAL: 860-509-6522
TREGAN@BROWNRUDNICK.COM

October 7, 2022

VIA E-MAIL (Siting.Council@ct.gov) & (Melanie.Bachman@ct.gov)
& UPS

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

RE: Sub-Petition No. 1133-CING-20220902 / Olcott Street, Manchester, CT

Dear Executive Director Bachman:

In accordance with condition two of the Siting Council's decision in this matter, New Cingular Wireless PCS, LLC d/b/a AT&T ("AT&T") hereby submits a mount analysis of the proposed AT&T antenna/RRH mounts confirming its capability of supporting additional loading.

An original and 15 hard copies of the analysis have been sent you your office via UPS.

Sincerely,

BROWN RUDNICK LLP

Thomas Regan

Thomas J. Regan

cc via first class mail:

Mayor Jay Moran
Town of Manchester
P.O. Box 191
41 Center Street
Manchester, CT 06040

Gary Anderson, Director of Planning
Town of Manchester
P.O. Box 191
41 Center Street
Manchester, CT 06040

David Laiuppa, Wetlands Agent
Town of Manchester
P.O. Box 191
41 Center Street
Manchester, CT 06040

Darryl E. Thames, Sr., City Clerk
Town of Manchester
P.O. Box 191
41 Center Street
Manchester, CT 06040

cc via e-mail:

Steven Florio, Eversource (steven_florio@eversource.com)

Edward Pare, Esq., Brown Rudnick (epare@brownrudnick.com)

Kevin Mason, SAI (kmason@saigrp.com)

HUDSON Design Group LLC

October 14, 2020
March 9, 2021 (Rev.1)
August 12, 2021 (Rev.2)
March 30, 2022 (Rev.3)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1425 (NSB)
	FA Number:	15353155
	PACE Number:	MRCTB049082
	PT Number:	2051A0WR83
	Site Name:	MANCHESTER CT OLCOTT STREET
	Site Address:	324 Olcott Street Manchester, CT 06040

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine its capability of supporting the following additional loading:

- **(3) TPA65R-BU8DA-K Antennas (96.0"x20.7"x7.7" – Wt. = 87 lbs. /each)**
- **(3) HPA65R-BU8A Antennas (96.0"x11.7"x7.6" – Wt. = 54 lbs. /each)**
- **(3) DMP65R-BU8DA-K Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)**
- **(3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(2) Squid Surge Arrestor (31.4"x10.3" Ø – Wt. = 33 lbs.)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1 P/N VFA12-WLL-30120, dated May 3, 2018, were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.71 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.178 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- The mounts have been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mounts have been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mounts are to be secured to the proposed self supporting tower with threaded rods and plate clamps tightened around the tower leg. HDG considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the Proposed SitePro1 VFA12-WLL-30120 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	9	LC87	57%	**PASS**

Reference Documents:

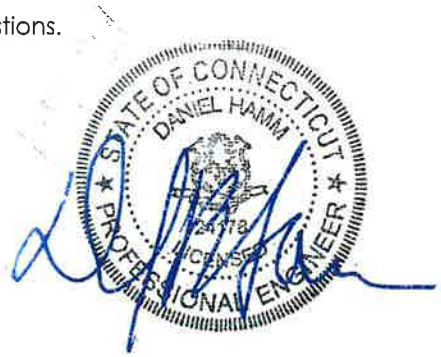
- Fabrication drawings prepared by SitePro1 P/N VFA12-WLL-30120, dated May 3, 2018.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mounts will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	124.0 (ft)
	z_g=	900 (ft)
K_z= **1.324**	α=	9.5

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= **1**	K_h=	1
	K_c=	1.0 (from Table 2-4)
(If Category 1 then K_{zt}=1.0)	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
Category= **1**	z=	124.0
	z_s=	105 (Mean elevation of base of structure above sea level)
	H=	0 (Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00 (from 2.6.6.2.1)
	K_e=	1.00 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50 in
Importance Factor =	I=	1.00 (from Table 2-3)
	K_{iz} =	1.14 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.71 in

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
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HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	180	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.324	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**44.85**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**7.18**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**2.58**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
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HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.71** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**802**	**155**	**46**
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	8.21	1.44	**504**	**108**	**29**
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**802**	**155**	**46**
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**56**	**15**	**3**
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	**37**	**11**	**2**
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.10	1.20	**141**	**31**	**8**
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	**63**	**16**	**4**
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	**61**	**16**	**3**
Squid Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**70**	**17**	**4**
Plate 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	**5**		
Plate 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	**5**		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	**3**		
5/8" RoundBar	0.6	12.0		0.05	0.05	1.20	**3**		
2" Pipe	2.4	12.0		0.20	0.20	1.20	**11**		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	**13**		

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	692
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	504	361	468
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	692
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	56	91	65
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	48
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	141	58	120
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	63	88	69
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	61	74	64

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	134
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.44	7.61	6.57	9.02	1.38	1.47	104	80	98
DMP65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	134
4478 B14 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	15	22	17
4415 B30 RRH (Side)	19.9	9.3	16.8	1.29	2.33	2.14	1.18	1.20	1.20	11	20	13
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.63	1.81	1.09	2.18	1.20	1.20	31	16	27
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	16	21	18
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.82	2.12	1.28	1.10	1.20	1.20	16	18	16

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	40
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	29	21	27
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	40
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	474
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	504	361	397
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	474
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	56	91	82
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	71
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	141	58	79
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	63	88	82
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	61	74	70

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	99
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.44	7.61	6.57	9.02	1.38	1.47	104	80	86
DMP65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	99
4478 B14 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	15	22	20
4415 B30 RRH (Side)	19.9	9.3	16.8	1.29	2.33	2.14	1.18	1.20	1.20	11	20	18
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.63	1.81	1.09	2.18	1.20	1.20	31	16	19
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	16	21	20
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.82	2.12	1.28	1.10	1.20	1.20	16	18	18

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	27
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	29	21	23
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	27
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	5
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	364
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	504	361	361
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	364
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	56	91	91
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	83
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	141	58	58
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	63	88	88
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	61	74	74

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	81
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.44	7.61	6.57	9.02	1.38	1.47	104	80	80
DMP65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	81
4478 B14 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	15	22	22
4415 B30 RRH (Side)	19.9	9.3	16.8	1.29	2.33	2.14	1.18	1.20	1.20	11	20	20
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.63	1.81	1.09	2.18	1.20	1.20	31	16	16
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	16	21	21
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.82	2.12	1.28	1.10	1.20	1.20	16	18	18

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	21
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	29	21	21
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	21
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	5
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	474
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	504	361	397
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	474
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	56	91	82
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	71
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	141	58	79
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	63	88	82
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	61	74	70

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	99
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.44	7.61	6.57	9.02	1.38	1.47	104	80	86
DMP65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	99
4478 B14 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	15	22	20
4415 B30 RRH (Side)	19.9	9.3	16.8	1.29	2.33	2.14	1.18	1.20	1.20	11	20	18
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.63	1.81	1.09	2.18	1.20	1.20	31	16	19
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	16	21	20
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.82	2.12	1.28	1.10	1.20	1.20	16	18	18

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	27
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	29	21	23
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	27
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	5
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	692
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	504	361	468
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	802	364	692
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	56	91	65
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	37	83	48
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	141	58	120
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	63	88	69
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	61	74	64

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	134
HPA65R-BU8A Antenna	99.4	15.1	11.0	10.44	7.61	6.57	9.02	1.38	1.47	104	80	98
DMP65R-BU8DA-K Antenna	99.4	24.1	11.1	16.66	7.68	4.12	8.94	1.27	1.46	152	81	134
4478 B14 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	15	22	17
4415 B30 RRH (Side)	19.9	9.3	16.8	1.29	2.33	2.14	1.18	1.20	1.20	11	20	13
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.63	1.81	1.09	2.18	1.20	1.20	31	16	27
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	16	21	18
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.82	2.12	1.28	1.10	1.20	1.20	16	18	16

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	40
HPA65R-BU8A Antenna	96.0	11.7	7.6	7.80	5.07	8.21	12.63	1.44	1.59	29	21	27
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	46	21	40
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.71 in.
Density of ice: 56 pcf

TPA65R-BU8DA-K Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 398 lbs
Weight of object: 87.0 lbs
Combined weight of ice and object: 485 lbs

HPA65R-BU8A Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 11.7
Depth (in): 7.6
Total weight of ice on object: 262 lbs
Weight of object: 54.0 lbs
Combined weight of ice and object: 316 lbs

DMP65R-BU8DA-K Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 398 lbs
Weight of object: 96.0 lbs
Combined weight of ice and object: 494 lbs

4478 B14 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 55 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 115 lbs

4415 B30 RRH
Weight of ice based on total radial SF area:
Height (in): 16.5
Width (in): 13.4
Depth (in): 5.9
Total weight of ice on object: 47 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 93 lbs

RRUS-E2 B29 RRH
Weight of ice based on total radial SF area:
Height (in): 20.4
Width (in): 18.5
Depth (in): 7.5
Total weight of ice on object: 77 lbs
Weight of object: 53.0 lbs
Combined weight of ice and object: 130 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 56 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 129 lbs

8843 B2/B66A RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 49 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 121 lbs

Squid Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 31.4
Diameter(in): 10.2
Total weight of ice on object: 65 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 98 lbs

3/4" Round Bar
Per foot weight of ice:
diameter (in): 0.75
Per foot weight of ice on object: 5 plf

5/8" Round Bar
Per foot weight of ice:
diameter (in): 0.63
Per foot weight of ice on object: 5 plf

PL 11-1/4x5/8
Weight of ice based on total radial SF area:
Height (in): 11.25
Width (in): 0.63
Per foot weight of ice on object: 27 plf

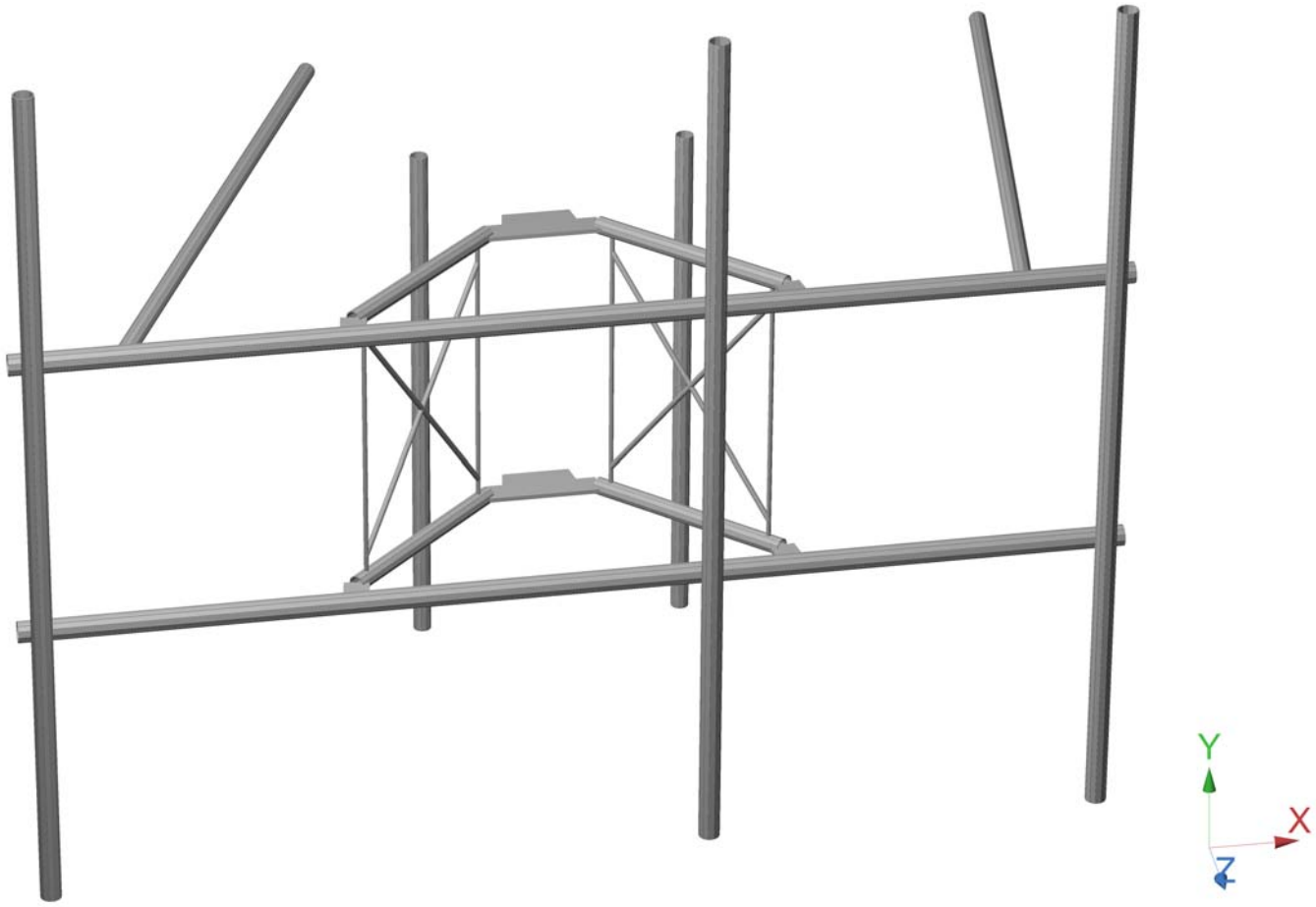
2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 9 plf

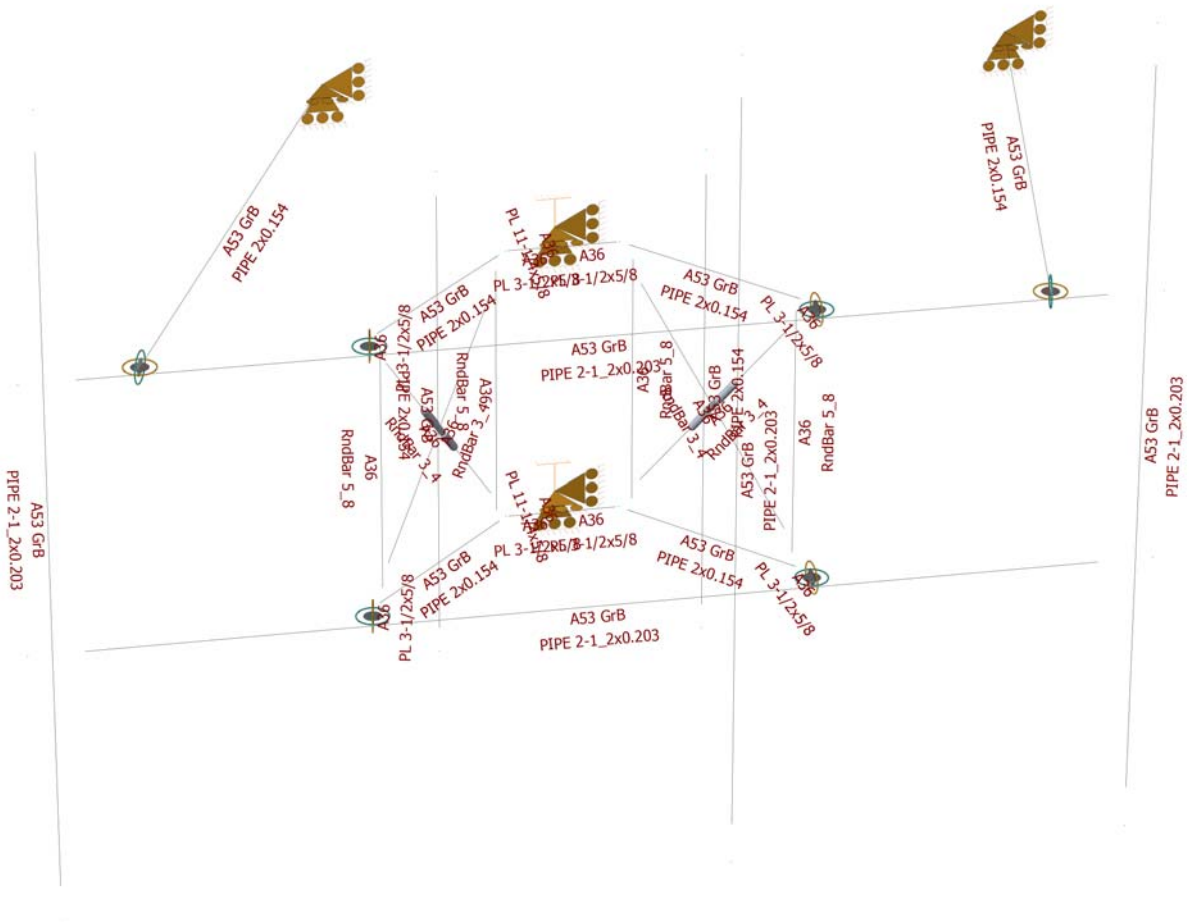
PL 3-1/2x5/8
Weight of ice based on total radial SF area:
Height (in): 3.5
Width (in): 0.63
Per foot weight of ice on object: 11 plf

2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 10 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)


Y
X
Z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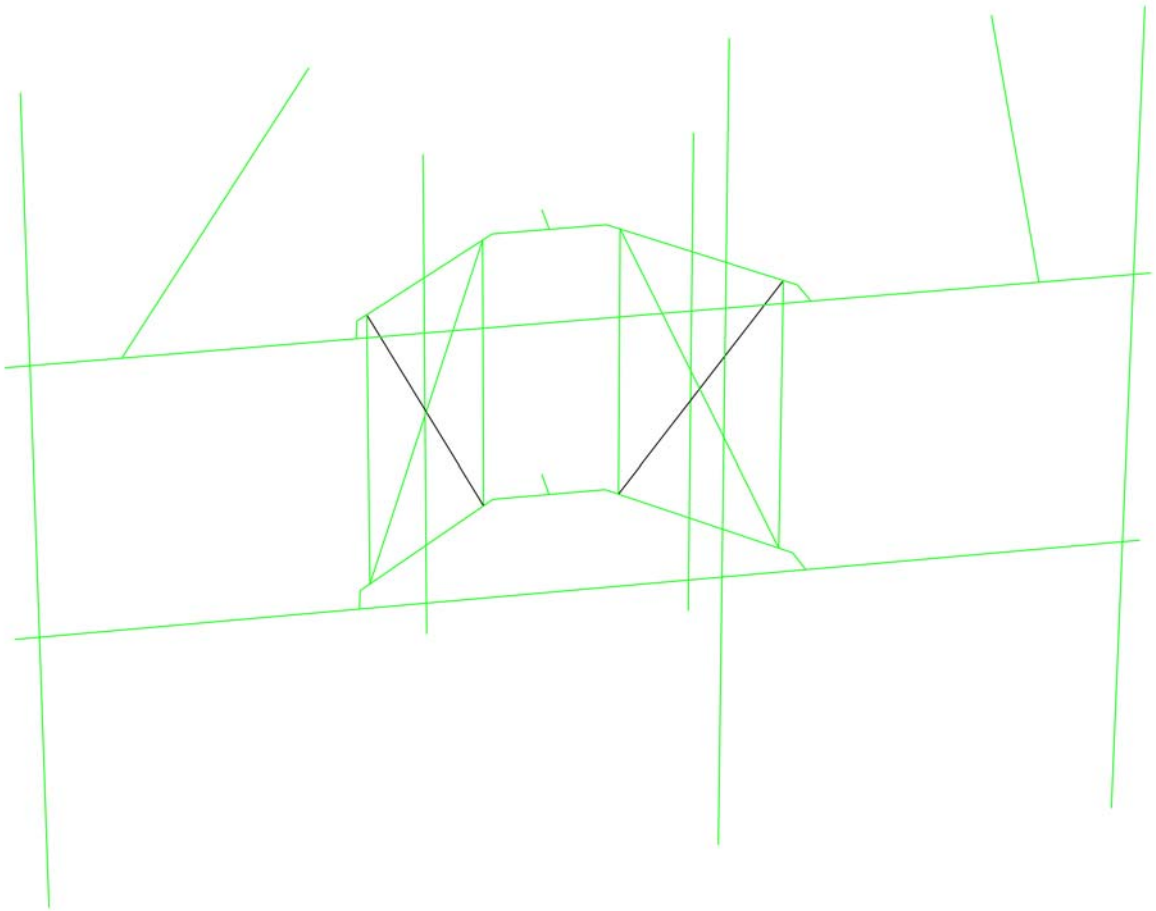
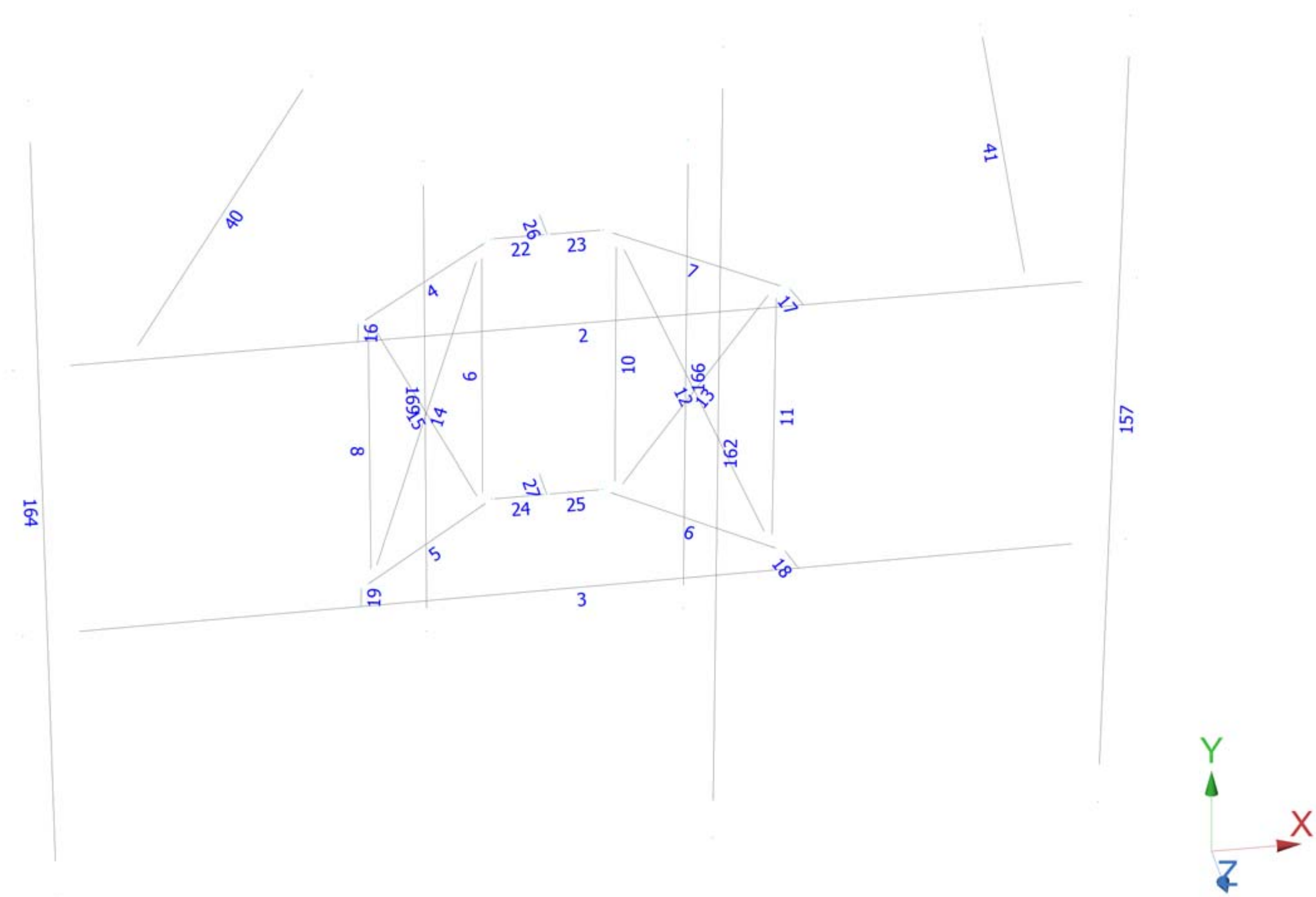
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2-1_2x0.203
A36
RndBar 5_8
A36
RndBar 5_8
PL 3-1/2x5/8
PL 3-1/2x5/8
Y
X
Z


Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 3/31/2022 11:55 AM
Units system: English



RAM® Elements
CONNECT Edition

Current Date: 3/31/2022 11:56 AM
Units system: English

Load data

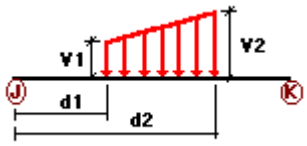
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



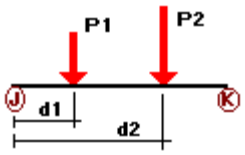
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	z	-0.013	0.00	0.00	No	0.00	No
	3	z	-0.013	0.00	0.00	No	0.00	No
	4	z	-0.011	0.00	0.00	No	0.00	No
	5	z	-0.011	0.00	0.00	No	0.00	No
	6	z	-0.011	0.00	0.00	No	0.00	No
	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.003	0.00	0.00	No	0.00	No
	9	z	-0.003	0.00	0.00	No	0.00	No
	10	z	-0.003	0.00	0.00	No	0.00	No
	11	z	-0.003	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.005	0.00	0.00	No	0.00	No
	17	z	-0.005	0.00	0.00	No	0.00	No
	18	z	-0.005	0.00	0.00	No	0.00	No
	19	z	-0.005	0.00	0.00	No	0.00	No
	22	z	-0.005	0.00	0.00	No	0.00	No
	23	z	-0.005	0.00	0.00	No	0.00	No
	24	z	-0.005	0.00	0.00	No	0.00	No
	25	z	-0.005	0.00	0.00	No	0.00	No
	26	z	-0.005	0.00	0.00	No	0.00	No
	27	z	-0.005	0.00	0.00	No	0.00	No
	40	z	-0.011	0.00	0.00	No	0.00	No
	41	z	-0.011	0.00	0.00	No	0.00	No
	166	z	-0.011	0.00	0.00	No	0.00	No
	169	z	-0.011	0.00	0.00	No	0.00	No
W30	2	z	-0.013	0.00	0.00	No	0.00	No
	3	z	-0.013	0.00	0.00	No	0.00	No
	4	z	-0.011	0.00	0.00	No	0.00	No
	5	z	-0.011	0.00	0.00	No	0.00	No
	6	z	-0.011	0.00	0.00	No	0.00	No
	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.003	0.00	0.00	No	0.00	No
	9	z	-0.003	0.00	0.00	No	0.00	No
	10	z	-0.003	0.00	0.00	No	0.00	No
	11	z	-0.003	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.005	0.00	0.00	No	0.00	No
	17	z	-0.005	0.00	0.00	No	0.00	No
	18	z	-0.005	0.00	0.00	No	0.00	No
	19	z	-0.005	0.00	0.00	No	0.00	No
	22	z	-0.005	0.00	0.00	No	0.00	No
	23	z	-0.005	0.00	0.00	No	0.00	No
	24	z	-0.005	0.00	0.00	No	0.00	No
	25	z	-0.005	0.00	0.00	No	0.00	No
	26	z	-0.005	0.00	0.00	No	0.00	No
	27	z	-0.005	0.00	0.00	No	0.00	No
	40	z	-0.011	0.00	0.00	No	0.00	No
	41	z	-0.011	0.00	0.00	No	0.00	No
	157	z	-0.013	0.00	0.00	No	0.00	No
	162	z	-0.013	0.00	0.00	No	0.00	No
	164	z	-0.013	0.00	0.00	No	0.00	No
	166	z	-0.011	0.00	0.00	No	0.00	No
	169	z	-0.011	0.00	0.00	No	0.00	No
W60	2	x	-0.013	0.00	0.00	No	0.00	No

	3	x	-0.013	0.00	0.00	No	0.00	No
	4	x	-0.011	0.00	0.00	No	0.00	No
	5	x	-0.011	0.00	0.00	No	0.00	No
	6	x	-0.011	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.005	0.00	0.00	No	0.00	No
	17	x	-0.005	0.00	0.00	No	0.00	No
	18	x	-0.005	0.00	0.00	No	0.00	No
	19	x	-0.005	0.00	0.00	No	0.00	No
	22	x	-0.005	0.00	0.00	No	0.00	No
	23	x	-0.005	0.00	0.00	No	0.00	No
	24	x	-0.005	0.00	0.00	No	0.00	No
	25	x	-0.005	0.00	0.00	No	0.00	No
	26	x	-0.005	0.00	0.00	No	0.00	No
	27	x	-0.005	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
	157	x	-0.013	0.00	0.00	No	0.00	No
	162	x	-0.013	0.00	0.00	No	0.00	No
	164	x	-0.013	0.00	0.00	No	0.00	No
	166	x	-0.011	0.00	0.00	No	0.00	No
	169	x	-0.011	0.00	0.00	No	0.00	No
W90	4	x	-0.011	0.00	0.00	No	0.00	No
	5	x	-0.011	0.00	0.00	No	0.00	No
	6	x	-0.011	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.005	0.00	0.00	No	0.00	No
	17	x	-0.005	0.00	0.00	No	0.00	No
	18	x	-0.005	0.00	0.00	No	0.00	No
	19	x	-0.005	0.00	0.00	No	0.00	No
	22	x	-0.005	0.00	0.00	No	0.00	No
	23	x	-0.005	0.00	0.00	No	0.00	No
	24	x	-0.005	0.00	0.00	No	0.00	No
	25	x	-0.005	0.00	0.00	No	0.00	No
	26	x	-0.005	0.00	0.00	No	0.00	No
	27	x	-0.005	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
	157	x	-0.013	0.00	0.00	No	0.00	No
	162	x	-0.013	0.00	0.00	No	0.00	No
	164	x	-0.013	0.00	0.00	No	0.00	No
	166	x	-0.011	0.00	0.00	No	0.00	No
	169	x	-0.011	0.00	0.00	No	0.00	No
W120	2	x	-0.013	0.00	0.00	No	0.00	No

	3	x	-0.013	0.00	0.00	No	0.00	No
	4	x	-0.011	0.00	0.00	No	0.00	No
	5	x	-0.011	0.00	0.00	No	0.00	No
	6	x	-0.011	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.005	0.00	0.00	No	0.00	No
	17	x	-0.005	0.00	0.00	No	0.00	No
	18	x	-0.005	0.00	0.00	No	0.00	No
	19	x	-0.005	0.00	0.00	No	0.00	No
	22	x	-0.005	0.00	0.00	No	0.00	No
	23	x	-0.005	0.00	0.00	No	0.00	No
	24	x	-0.005	0.00	0.00	No	0.00	No
	25	x	-0.005	0.00	0.00	No	0.00	No
	26	x	-0.005	0.00	0.00	No	0.00	No
	27	x	-0.005	0.00	0.00	No	0.00	No
	40	x	-0.011	0.00	0.00	No	0.00	No
	41	x	-0.011	0.00	0.00	No	0.00	No
	157	x	-0.013	0.00	0.00	No	0.00	No
	162	x	-0.013	0.00	0.00	No	0.00	No
	164	x	-0.013	0.00	0.00	No	0.00	No
	166	x	-0.011	0.00	0.00	No	0.00	No
	169	x	-0.011	0.00	0.00	No	0.00	No
W150	2	z	0.013	0.00	0.00	No	0.00	No
	3	z	0.013	0.00	0.00	No	0.00	No
	4	z	0.011	0.00	0.00	No	0.00	No
	5	z	0.011	0.00	0.00	No	0.00	No
	6	z	0.011	0.00	0.00	No	0.00	No
	7	z	0.011	0.00	0.00	No	0.00	No
	8	z	0.003	0.00	0.00	No	0.00	No
	9	z	0.003	0.00	0.00	No	0.00	No
	10	z	0.003	0.00	0.00	No	0.00	No
	11	z	0.003	0.00	0.00	No	0.00	No
	12	z	0.003	0.00	0.00	No	0.00	No
	13	z	0.003	0.00	0.00	No	0.00	No
	14	z	0.003	0.00	0.00	No	0.00	No
	15	z	0.003	0.00	0.00	No	0.00	No
	16	z	0.005	0.00	0.00	No	0.00	No
	17	z	0.005	0.00	0.00	No	0.00	No
	18	z	0.005	0.00	0.00	No	0.00	No
	19	z	0.005	0.00	0.00	No	0.00	No
	22	z	0.005	0.00	0.00	No	0.00	No
	23	z	0.005	0.00	0.00	No	0.00	No
	24	z	0.005	0.00	0.00	No	0.00	No
	25	z	0.005	0.00	0.00	No	0.00	No
	26	z	0.005	0.00	0.00	No	0.00	No
	27	z	0.005	0.00	0.00	No	0.00	No
	40	z	0.011	0.00	0.00	No	0.00	No
	41	z	0.011	0.00	0.00	No	0.00	No
	157	z	0.013	0.00	0.00	No	0.00	No
	162	z	0.013	0.00	0.00	No	0.00	No
	164	z	0.013	0.00	0.00	No	0.00	No
	166	z	0.011	0.00	0.00	No	0.00	No

	169	z	0.011	0.00	0.00	No	0.00	No
Di	2	y	-0.01	0.00	0.00	No	0.00	No
	3	y	-0.01	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.009	0.00	0.00	No	0.00	No
	7	y	-0.009	0.00	0.00	No	0.00	No
	8	y	-0.005	0.00	0.00	No	0.00	No
	9	y	-0.005	0.00	0.00	No	0.00	No
	10	y	-0.005	0.00	0.00	No	0.00	No
	11	y	-0.005	0.00	0.00	No	0.00	No
	12	y	-0.005	0.00	0.00	No	0.00	No
	13	y	-0.005	0.00	0.00	No	0.00	No
	14	y	-0.005	0.00	0.00	No	0.00	No
	15	y	-0.005	0.00	0.00	No	0.00	No
	16	y	-0.011	0.00	0.00	No	0.00	No
	17	y	-0.011	0.00	0.00	No	0.00	No
	18	y	-0.011	0.00	0.00	No	0.00	No
	19	y	-0.011	0.00	0.00	No	0.00	No
	22	y	-0.011	0.00	0.00	No	0.00	No
	23	y	-0.011	0.00	0.00	No	0.00	No
	24	y	-0.011	0.00	0.00	No	0.00	No
	25	y	-0.011	0.00	0.00	No	0.00	No
	26	y	-0.027	0.00	0.00	No	0.00	No
	27	y	-0.027	0.00	0.00	No	0.00	No
	40	y	-0.009	0.00	0.00	No	0.00	No
	41	y	-0.009	0.00	0.00	No	0.00	No
	157	y	-0.01	0.00	0.00	No	0.00	No
	162	y	-0.01	0.00	0.00	No	0.00	No
	164	y	-0.01	0.00	0.00	No	0.00	No
	166	y	-0.009	0.00	0.00	No	0.00	No
	169	y	-0.009	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	157	y	-0.044	1.50	No
		y	-0.044	8.50	No
	162	y	-0.027	1.50	No
		y	-0.027	8.50	No
	164	y	-0.048	1.50	No
		y	-0.048	8.50	No
	166	y	-0.033	1.00	No
		y	-0.06	3.00	No
		y	-0.046	3.00	No
	169	y	-0.053	1.00	No
		y	-0.073	3.00	No
		y	-0.072	3.00	No
Wo	157	z	-0.401	1.50	No

		z	-0.401	8.50	No
	162	z	-0.252	1.50	No
		z	-0.252	8.50	No
	164	z	-0.401	1.50	No
		z	-0.401	8.50	No
	166	z	-0.07	1.00	No
		z	-0.056	3.00	No
	169	z	-0.141	1.00	No
		z	-0.063	3.00	No
W30	157	3	-0.347	1.50	No
		3	-0.347	8.50	No
	162	3	-0.235	1.50	No
		3	-0.235	8.50	No
	164	3	-0.347	1.50	No
		3	-0.347	8.50	No
	166	3	-0.07	1.00	No
		3	-0.065	3.00	No
	169	3	-0.12	1.00	No
		3	-0.069	3.00	No
W60	157	3	-0.237	1.50	No
		3	-0.237	8.50	No
	162	3	-0.199	1.50	No
		3	-0.199	8.50	No
	164	3	-0.237	1.50	No
		3	-0.237	8.50	No
	166	3	-0.07	1.00	No
		3	-0.082	3.00	No
	169	3	-0.079	1.00	No
		3	-0.082	3.00	No
W90	157	x	-0.183	1.50	No
		x	-0.183	8.50	No
	162	x	-0.181	1.50	No
		x	-0.181	8.50	No
	164	x	-0.183	1.50	No
		x	-0.183	8.50	No
	166	x	-0.07	1.00	No
		x	-0.091	3.00	No
	169	x	-0.058	1.00	No
		x	-0.088	3.00	No
W120	157	2	-0.237	1.50	No
		2	-0.237	8.50	No
	162	2	-0.199	1.50	No
		2	-0.199	8.50	No
	164	2	-0.237	1.50	No
		2	-0.237	8.50	No
	166	2	-0.07	1.00	No
		2	-0.082	3.00	No
	169	2	-0.079	1.00	No
		2	-0.082	3.00	No
W150	157	2	-0.347	1.50	No
		2	-0.347	8.50	No
	162	2	-0.235	1.50	No
		2	-0.235	8.50	No
	164	2	-0.347	1.50	No
		2	-0.347	8.50	No
	166	2	-0.07	1.00	No
		2	-0.065	3.00	No
	169	2	-0.12	1.00	No
		2	-0.069	3.00	No
Di	157	y	-0.199	1.50	No

		y	-0.199	8.50	No
	162	y	-0.131	1.50	No
		y	-0.131	8.50	No
	164	y	-0.199	1.50	No
		y	-0.199	8.50	No
	166	y	-0.065	1.00	No
		y	-0.055	3.00	No
		y	-0.047	3.00	No
	169	y	-0.077	1.00	No
		y	-0.056	3.00	No
		y	-0.049	3.00	No
WI0	157	z	-0.078	1.50	No
		z	-0.078	8.50	No
	162	z	-0.054	1.50	No
		z	-0.054	8.50	No
	164	z	-0.078	1.50	No
		z	-0.078	8.50	No
	166	z	-0.017	1.00	No
		z	-0.015	3.00	No
	169	z	-0.031	1.00	No
		z	-0.016	3.00	No
WI30	157	3	-0.068	1.50	No
		3	-0.068	8.50	No
	162	3	-0.049	1.50	No
		3	-0.049	8.50	No
	164	3	-0.068	1.50	No
		3	-0.068	8.50	No
	166	3	-0.017	1.00	No
		3	-0.017	3.00	No
	169	3	-0.027	1.00	No
		3	-0.018	3.00	No
WI60	157	3	-0.05	1.50	No
		3	-0.05	8.50	No
	162	3	-0.043	1.50	No
		3	-0.043	8.50	No
	164	3	-0.05	1.50	No
		3	-0.05	8.50	No
	166	3	-0.017	1.00	No
		3	-0.02	3.00	No
	169	3	-0.019	1.00	No
		3	-0.02	3.00	No
WI90	157	x	-0.041	1.50	No
		x	-0.041	8.50	No
	162	x	-0.041	1.50	No
		x	-0.041	8.50	No
	164	x	-0.041	1.50	No
		x	-0.041	8.50	No
	166	x	-0.017	1.00	No
		x	-0.022	3.00	No
	169	x	-0.016	1.00	No
		x	-0.021	3.00	No
WI120	157	2	-0.05	1.50	No
		2	-0.05	8.50	No
	162	2	-0.043	1.50	No
		2	-0.043	8.50	No
	164	2	-0.05	1.50	No
		2	-0.05	8.50	No
	166	2	-0.017	1.00	No
		2	-0.02	3.00	No
	169	2	-0.019	1.00	No

		2	-0.02	3.00	No
WI150	157	2	-0.068	1.50	No
		2	-0.068	8.50	No
	162	2	-0.049	1.50	No
		2	-0.049	8.50	No
	164	2	-0.068	1.50	No
		2	-0.068	8.50	No
	166	2	-0.017	1.00	No
		2	-0.017	3.00	No
	169	2	-0.027	1.00	No
		2	-0.018	3.00	No
WL0	157	z	-0.024	1.50	No
		z	-0.024	8.50	No
	162	z	-0.015	1.50	No
		z	-0.015	8.50	No
	164	z	-0.024	1.50	No
		z	-0.024	8.50	No
	166	z	-0.004	1.00	No
		z	-0.003	3.00	No
	169	z	-0.008	1.00	No
		z	-0.004	3.00	No
WL30	157	3	-0.02	1.50	No
		3	-0.02	8.50	No
	162	3	-0.014	1.50	No
		3	-0.014	8.50	No
	164	3	-0.02	1.50	No
		3	-0.02	8.50	No
	166	3	-0.004	1.00	No
		3	-0.004	3.00	No
	169	3	-0.007	1.00	No
		3	-0.004	3.00	No
WL60	157	3	-0.014	1.50	No
		3	-0.014	8.50	No
	162	3	-0.012	1.50	No
		3	-0.012	8.50	No
	164	3	-0.014	1.50	No
		3	-0.014	8.50	No
	166	3	-0.004	1.00	No
		3	-0.005	3.00	No
	169	3	-0.005	1.00	No
		3	-0.005	3.00	No
WL90	157	x	-0.011	1.50	No
		x	-0.011	8.50	No
	162	x	-0.011	1.50	No
		x	-0.011	8.50	No
	164	x	-0.011	1.50	No
		x	-0.011	8.50	No
	166	x	-0.004	1.00	No
		x	-0.005	3.00	No
	169	x	-0.003	1.00	No
		x	-0.005	3.00	No
WL120	157	2	-0.014	1.50	No
		2	-0.014	8.50	No
	162	2	-0.012	1.50	No
		2	-0.012	8.50	No
	164	2	-0.014	1.50	No
		2	-0.014	8.50	No
	166	2	-0.004	1.00	No
		2	-0.005	3.00	No
	169	2	-0.005	1.00	No

		2	-0.005	3.00	No
WL150	157	2	-0.02	1.50	No
		2	-0.02	8.50	No
	162	2	-0.014	1.50	No
		2	-0.014	8.50	No
	164	2	-0.02	1.50	No
		2	-0.02	8.50	No
	166	2	-0.004	1.00	No
		2	-0.004	3.00	No
	169	2	-0.007	1.00	No
		2	-0.004	3.00	No
LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LL3	2	y	-0.25	0.00	Yes
LLa1	157	y	-0.50	50.00	Yes
LLa2	162	y	-0.50	50.00	Yes
LLa4	164	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2

LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**2**	LC77 at 29.86%	0.35	OK	
		3	LC76 at 29.46%	**0.37**	**OK**	
		157	LC7 at 33.33%	0.34	OK	
		162	LC1 at 64.58%	0.23	OK	
		164	LC7 at 33.33%	0.33	OK	
	PIPE 2x0.154	**4**	LC77 at 93.75%	**0.46**	**OK**	
		5	LC87 at 93.75%	0.46	OK	
		6	LC41 at 93.75%	0.44	OK	
		7	LC47 at 93.75%	0.46	OK	
		40	LC3 at 50.00%	0.07	OK	
		41	LC11 at 50.00%	0.06	OK	
		166	LC49 at 22.92%	0.13	OK	
		169	LC78 at 22.92%	0.13	OK	
	PL 11-1/4x5/8	**26**	LC30 at 0.00%	0.26	OK	
		27	LC36 at 0.00%	**0.29**	**OK**	
	PL 3-1/2x5/8	**16**	LC76 at 100.00%	0.30	OK	
		17	LC40 at 100.00%	0.31	OK	
		18	LC45 at 100.00%	0.36	OK	
		19	LC83 at 100.00%	0.36	OK	
		22	LC25 at 100.00%	0.47	OK	
		23	LC29 at 0.00%	**0.48**	**OK**	
		24	LC26 at 100.00%	0.42	OK	
		25	LC36 at 0.00%	0.44	OK	
	RndBar 3_4	**12**	LC45 at 100.00%	0.23	OK	
		13	LC36 at 0.00%	0.21	With warnings	

	14	LC87 at 0.00%	**0.23**	**OK**
	15	LC87 at 100.00%	0.23	With warnings
RndBar 5_8	**8**	LC76 at 87.50%	0.53	OK
	9	LC87 at 87.50%	**0.57**	**OK**
	10	LC45 at 87.50%	0.56	OK
	11	LC40 at 87.50%	0.56	OK

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	2.00	0
2	-0.6362	0.00	2.4783	0
3	0.00	-3.3333	2.00	0
4	-0.6362	-3.3333	2.4783	0
5	0.6362	-3.3333	2.4783	0
6	0.6362	0.00	2.4783	0
11	-6.25	-3.3333	4.63	0
13	-2.4126	0.00	4.2374	0
14	-2.4126	-3.3333	4.2374	0
15	2.4126	-3.3333	4.2374	0
16	2.4126	0.00	4.2374	0
17	-2.2835	0.00	4.1096	0
18	-2.2835	-3.3333	4.1096	0
19	-0.7653	0.00	2.6062	0
20	-0.7653	-3.3333	2.6062	0
21	0.7653	0.00	2.6062	0
22	0.7653	-3.3333	2.6062	0
23	2.2835	0.00	4.1096	0
24	2.2835	-3.3333	4.1096	0
25	-2.4792	0.00	4.63	0
26	2.4792	0.00	4.63	0
27	2.4792	-3.3333	4.63	0
28	-2.4792	-3.3333	4.63	0

31	0.00	0.00	2.4783	0
32	0.00	-3.3333	2.4783	0
55	-5.00	0.00	4.63	0
57	5.00	0.00	4.63	0
194	6.00	-6.6667	4.83	0
195	6.00	3.3333	4.83	0
196	6.25	0.00	4.63	0
197	6.25	-3.3333	4.63	0
200	-6.25	0.00	4.63	0
466	-2.00	0.00	-1.97	0
469	6.00	0.00	-1.97	0
479	1.50	3.3333	4.83	0
480	1.50	-6.6667	4.83	0
483	-6.00	3.3333	4.83	0
484	-6.00	-6.6667	4.83	0
485	-1.4875	1.3333	3.0399	0
486	-1.4875	-4.6667	3.0399	0
499	1.4875	1.3333	3.0399	0
500	1.4875	-4.6667	3.0399	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	0	1	0
3	1	1	1	0	1	0
466	1	1	1	0	0	0
469	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	200	196		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	11	197		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	13	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	14	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	16	6		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	18		RndBar 5_8	A36	0.00	0.00	0.00
9	19	20		RndBar 5_8	A36	0.00	0.00	0.00
10	21	22		RndBar 5_8	A36	0.00	0.00	0.00
11	23	24		RndBar 5_8	A36	0.00	0.00	0.00
12	21	24		RndBar 3_4	A36	0.00	0.00	0.00
13	22	23		RndBar 3_4	A36	0.00	0.00	0.00
14	18	19		RndBar 3_4	A36	0.00	0.00	0.00
15	17	20		RndBar 3_4	A36	0.00	0.00	0.00
16	13	25		PL 3-1/2x5/8	A36	0.00	0.00	0.00
17	16	26		PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	15	27		PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	14	28		PL 3-1/2x5/8	A36	0.00	0.00	0.00
22	2	31		PL 3-1/2x5/8	A36	0.00	0.00	0.00

23	31	6	PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	4	32	PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	32	5	PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	31	1	PL 11-1/4x5/8	A36	11.25	9.25	0.00
27	32	3	PL 11-1/4x5/8	A36	11.25	9.25	0.00
40	55	466	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	469	57	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
157	195	194	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
162	479	480	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
164	483	484	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
166	499	500	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
169	485	486	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

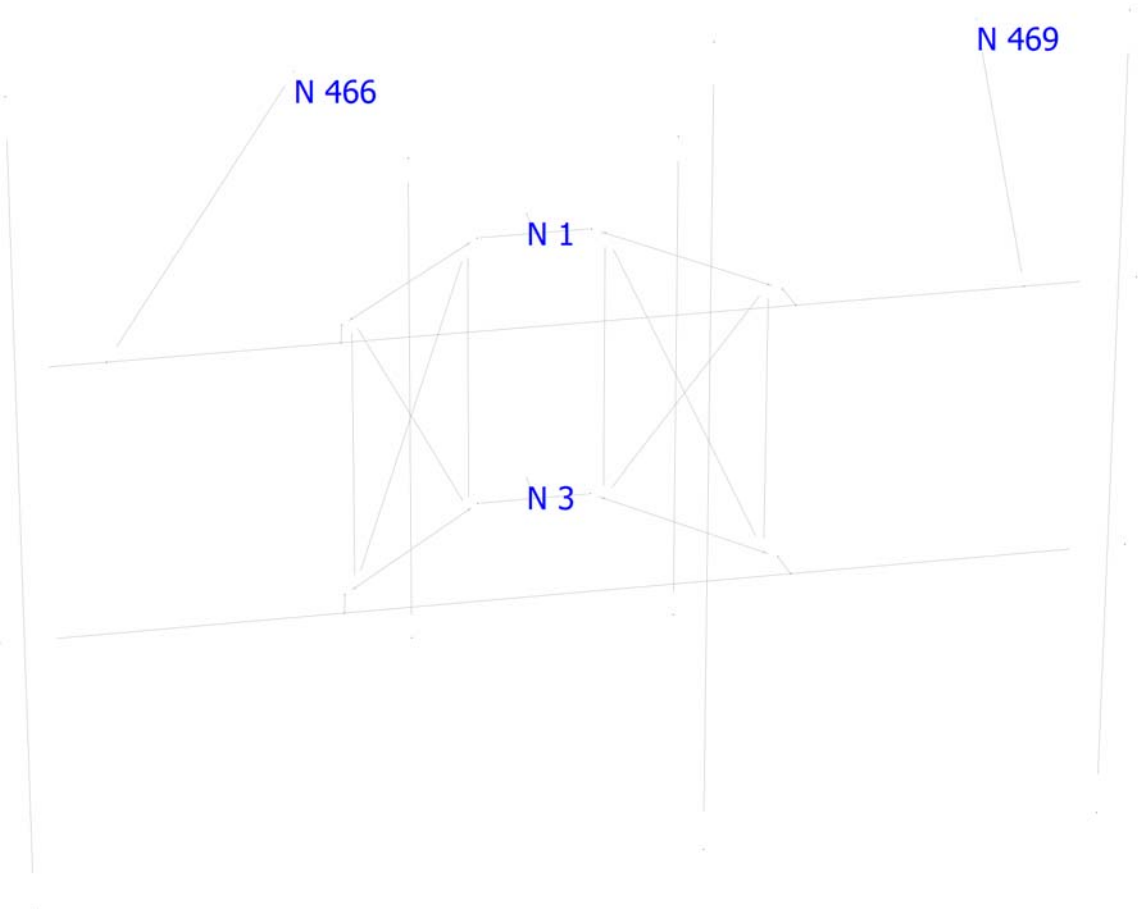
Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
157	315.00	0	0.00	0.00	0.00
162	315.00	0	0.00	0.00	0.00
164	315.00	0	0.00	0.00	0.00
166	315.00	0	0.00	0.00	0.00
169	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
12	0.00	-3.50	0.00	0.00	3.50	0.00
13	0.00	3.50	0.00	0.00	-3.50	0.00
14	0.00	3.50	0.00	0.00	-3.50	0.00
15	0.00	-3.50	0.00	0.00	3.50	0.00
26	0.00	-0.625	0.00	0.00	-0.625	0.00
27	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
13	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	1	1	0	0	0	0	0	0	0	0	Full
17	1	1	0	0	0	0	0	0	0	0	Full
18	1	1	0	0	0	0	0	0	0	0	Full
19	1	1	0	0	0	0	0	0	0	0	Full
40	1	1	0	0	0	0	0	0	0	0	Full
41	0	0	0	0	1	1	0	0	0	0	Full


N 469
N 466
N 1
N 3
Y
X
Z

RAM® Elements
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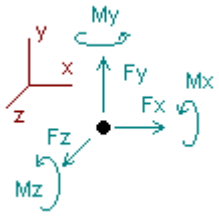
Analysis result

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1

LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
1	Max	1.533	LC77	1.835	LC25	-0.475	LC14	0.00000	LC1	0.78380	LC4	0.00000	LC1
	Min	-1.494	LC47	0.540	LC19	-2.150	LC25	0.00000	LC1	-0.75857	LC22	0.00000	LC1
3	Max	1.450	LC41	1.447	LC31	2.362	LC25	0.00000	LC1	1.13583	LC16	0.00000	LC1
	Min	-1.512	LC87	0.444	LC13	-0.863	LC19	0.00000	LC1	-1.19408	LC10	0.00000	LC1
466	Max	0.464	LC8	0.048	LC31	1.028	LC14	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.460	LC14	0.010	LC13	-1.039	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
469	Max	0.145	LC5	0.044	LC30	0.923	LC24	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.142	LC23	0.009	LC13	-0.938	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1

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Connection Check

Date: 3/30/2022
Project Name: MANCHESTER CT OLCOTT STREET
Project No.: CT1425
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 5/8" (Threaded Rod)

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{Vall} = 8283 lbs.

TENSILE FORCES

Reaction **F =** 2150 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1533 lbs. (See Bentley Output)
Reactions in Y direction: 1835 lbs. (See Bentley Output)

Resultant: 2391 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t = 537.50 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 597.77 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.039	+	0.072	=	0.111	<	1.0	**Therefore, OK !**