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

www.ct.gov/csc

VIA ELECTRONIC MAIL

November 13, 2019

Jennifer Iliades
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379

RE: **EM-CING-125-191101** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 70 Herb Road, Sharon, Connecticut.

Dear Ms. Iliades:

The Connecticut Siting Council (Council) is in receipt of your correspondence of November 7, 2019 submitted in response to the Council's November 6, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Jennifer Iliades <jiliades@clinellc.com>
Sent: Thursday, November 07, 2019 10:59 AM
To: Robidoux, Evan
Cc: CSC-DL Siting Council
Subject: RE: Council Incomplete Letter for EM-CING-125-191101 (79 Herb Road, Sharon)
Attachments: CT1157 (2C-3C-4C-5C) Mount Analysis Rev1 08152019.pdf

Good morning,

Attached please find the requested mount analysis. A hard copy is being sent out today.

Thank you,

CENTERLINE

Jennifer Iliades | Site Acquisition Consultant
750 West Center Street, Suite 301 West Bridgewater, MA 02379
Phone: 973.944.1304 Fax: 508.819.9017
jiliades@clinellc.com www.centerlinecommunications.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Thursday, November 7, 2019 9:17 AM
To: Jennifer Iliades <jiliades@clinellc.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Incomplete Letter for EM-CING-125-191101 (79 Herb Road, Sharon)

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

August 12, 2019
August 15, 2019 (Rev. 1)

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT1157 (LTE 2C/3C/4C/5C)
	FA Number:	10107709
	PACE Number:	MRCTB041488
	PT Number:	2051A0Q87Y
	Site Name:	SHARON CT HERB ROAD
	Site Address:	70 Herb Road Sharon, CT 06069

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(2) DMP65R-BU4DA Antennas (48.0"x20.7"x7.7" – Wt. = 68 lbs. /each)**
- **(4) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) B5/B12 4449 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on May 14, 2019.

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 – R13.
- 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 115 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.31 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- AT&T policy forbids walking on or suspending below T-arm mounts. This Analysis does not include live load conditions for this mount.
- The existing mount is secured to the existing monopine with a ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new 2" std. (2.38" O.D.) horizontal pipe secured to existing antenna pipes (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/3C/4C/5C) Mount Rating	2	LC1	101%	**FAIL**
Modified (LTE 2C/3C/4C/5C) Mount Rating	2	LC1	91%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC

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 existing mount has been 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.

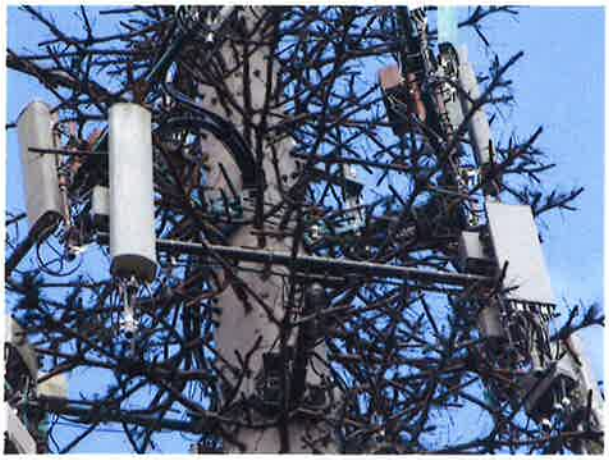
Please feel free to contact our office should you have any questions.

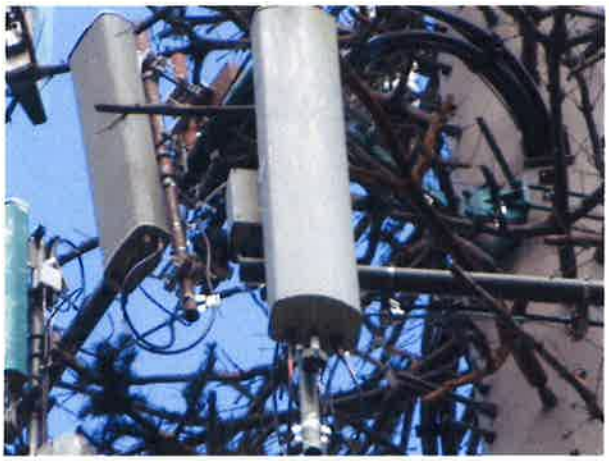
Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:





p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	92 (ft)
	z_g=	1200 (ft)
K_z= 0.965	α=	7.0

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}= 1.608864492

K_h= 1.7771305
K_c= 0.9 (from Table 2-4)
K_t= 0.53 (from Table 2-5)
f= 2 (from Table 2-5)
z= 92
z_s= 1100 (Mean elevation of base of structure above sea level)
H= 320 (Ht. of the crest above surrounding terrain)
K_{zt}= 1.61 (from 2.6.6.2.1)
K_e= 0.96 (from 2.6.8)

(If Category 1 then K_{zt} =1.0)

Category= 3

2.6.10 Design Ice Thickness

Max Ice Thickness = **t_i = 1.00 in**
Importance Factor = **I= 1.0 (from Table 2-3)**
K_{iz} = 1.11 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.31 in

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW Checked By: MSC

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=	112	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

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

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

q_z=	47.98	K_z=	0.965	(from 2.6.5.2)
$q_{z\,(Ice)}$=	9.07	K_{zt}=	1.6	(from 2.6.6.2.1)
$q_{z\,(30)}$=	3.27	K_s=	1.0	(from 2.6.7)
		K_e=	0.96	(from 2.6.8)
		K_d=	0.95	(from Table 2-2)
		V_{max}=	115	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

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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 = **1.31** 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)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	264	65	18
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.32	1.20	397	89	27
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	610	135	42
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	97	25	7
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	60	17	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	79	21	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	65	18	4
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.13	1.20	79	21	5
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	0.00	1.20	0	3	0
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	17	8	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	54	14	4
2" Pipe	2.4	12.0		0.20	0.20	1.20	11	6	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	17	7	1
4" Pipe	4.5	12.0		0.38	0.38	1.20	22	8	1
4x4 HSS	4.0	12.0		0.33	0.33	1.25	20	8	1

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
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Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.31	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	264	141	233
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	397	168	340
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	269	525
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	97	60	88
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	49	97	61
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	79	65	75
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	39	79	49
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	79	62	74
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	39	62	45
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	52	26

WIND LOADS WITH ICE:

7770 Antenna	57.6	13.6	7.6	5.45	3.05	4.23	7.56	1.28	1.42	63	39	57
DMP65R-BU4DA Antenna	50.6	23.3	10.3	8.20	3.63	2.17	4.91	1.20	1.31	89	43	78
DMP65R-BU6DA Antenna	73.8	23.3	10.3	11.95	5.29	3.17	7.15	1.23	1.41	133	67	117
B14 4478 RRH	20.7	16.0	10.9	2.30	1.57	1.29	1.90	1.20	1.20	25	17	23
B14 4478 RRH (Side)	20.7	8.0	16.0	1.15	2.30	2.59	1.29	1.20	1.20	13	25	16
B2/B66A 8843 RRH	17.5	15.8	13.5	1.92	1.64	1.11	1.30	1.20	1.20	21	18	20
B2/B66A 8843 RRH (Side)	17.5	7.9	15.8	0.96	1.92	2.21	1.11	1.20	1.20	10	21	13
B5/B12 4449 RRH	17.5	15.8	13.0	1.92	1.58	1.11	1.35	1.20	1.20	21	17	20
B5/B12 4449 RRH (Shielded)	17.5	7.9	13.0	0.96	1.58	2.21	1.35	1.20	1.20	10	17	12
LGP21401 TMA	17.0	5.3	11.6	0.63	1.37	3.20	1.46	1.23	1.20	7	15	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	18	10	16
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	27	11	23
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	42	18	36
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	6
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	7	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	3	5	3
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	3	4	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	2

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.31 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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	264	141	171
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	397	168	225
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	269	355
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	97	60	69
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	73	97	91
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	79	65	68
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	59	79	74
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	79	62	66
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	59	62	61
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	52	43

WIND LOADS WITH ICE:

7770 Antenna	57.6	13.6	7.6	5.45	3.05	4.23	7.56	1.28	1.42	63	39	45
DMP65R-BU4DA Antenna	50.6	23.3	10.3	8.20	3.63	2.17	4.91	1.20	1.31	89	43	55
DMP65R-BU6DA Antenna	73.8	23.3	10.3	11.95	5.29	3.17	7.15	1.23	1.41	133	67	84
B14 4478 RRH	20.7	16.0	10.9	2.30	1.57	1.29	1.90	1.20	1.20	25	17	19
B14 4478 RRH (Side)	20.7	12.0	16.0	1.73	2.30	1.72	1.29	1.20	1.20	19	25	24
B2/B66A 8843 RRH	17.5	15.8	13.5	1.92	1.64	1.11	1.30	1.20	1.20	21	18	19
B2/B66A 8843 RRH (Side)	17.5	11.9	15.8	1.44	1.92	1.48	1.11	1.20	1.20	16	21	20
B5/B12 4449 RRH	17.5	15.8	13.0	1.92	1.58	1.11	1.35	1.20	1.20	21	17	18
B5/B12 4449 RRH (Shielded)	17.5	11.9	13.0	1.44	1.58	1.48	1.35	1.20	1.20	16	17	17
LGP21401 TMA	17.0	5.3	11.6	0.63	1.37	3.20	1.46	1.23	1.20	7	15	13

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	18	10	12
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	27	11	15
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	42	18	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	5
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	5	7	6
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	4	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	4	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	3

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.31	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	264	141	141
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	397	168	168
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	269	269
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	97	60	60
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	60	97	97
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	79	65	65
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	65	79	79
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	79	62	62
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	62	62
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	52	52

WIND LOADS WITH ICE:

7770 Antenna	57.6	13.6	7.6	5.45	3.05	4.23	7.56	1.28	1.42	63	39	39
DMP65R-BU4DA Antenna	50.6	23.3	10.3	8.20	3.63	2.17	4.91	1.20	1.31	89	43	43
DMP65R-BU6DA Antenna	73.8	23.3	10.3	11.95	5.29	3.17	7.15	1.23	1.41	133	67	67
B14 4478 RRH	20.7	16.0	10.9	2.30	1.57	1.29	1.90	1.20	1.20	25	17	17
B14 4478 RRH (Side)	20.7	10.9	16.0	1.57	2.30	1.90	1.29	1.20	1.20	17	25	25
B2/B66A 8843 RRH	17.5	15.8	13.5	1.92	1.64	1.11	1.30	1.20	1.20	21	18	18
B2/B66A 8843 RRH (Side)	17.5	13.5	15.8	1.64	1.92	1.30	1.11	1.20	1.20	18	21	21
B5/B12 4449 RRH	17.5	15.8	13.0	1.92	1.58	1.11	1.35	1.20	1.20	21	17	17
B5/B12 4449 RRH (Shielded)	17.5	2.6	13.0	0.32	1.58	6.69	1.35	1.39	1.20	4	17	17
LGP21401 TMA	17.0	5.3	11.6	0.63	1.37	3.20	1.46	1.23	1.20	7	15	15

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	18	10	10
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	27	11	11
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	42	18	18
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	7	7
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	4
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	4

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.31	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	264	141	171
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	397	168	225
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	269	355
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	97	60	69
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	73	97	91
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	79	65	68
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	59	79	74
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	79	62	66
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	59	62	61
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	52	43

WIND LOADS WITH ICE:

7770 Antenna	57.6	13.6	7.6	5.45	3.05	4.23	7.56	1.28	1.42	63	39	45
DMP65R-BU4DA Antenna	50.6	23.3	10.3	8.20	3.63	2.17	4.91	1.20	1.31	89	43	55
DMP65R-BU6DA Antenna	73.8	23.3	10.3	11.95	5.29	3.17	7.15	1.23	1.41	133	67	84
B14 4478 RRH	20.7	16.0	10.9	2.30	1.57	1.29	1.90	1.20	1.20	25	17	19
B14 4478 RRH (Side)	20.7	12.0	16.0	1.73	2.30	1.72	1.29	1.20	1.20	19	25	24
B2/B66A 8843 RRH	17.5	15.8	13.5	1.92	1.64	1.11	1.30	1.20	1.20	21	18	19
B2/B66A 8843 RRH (Side)	17.5	11.9	15.8	1.44	1.92	1.48	1.11	1.20	1.20	16	21	20
B5/B12 4449 RRH	17.5	15.8	13.0	1.92	1.58	1.11	1.35	1.20	1.20	21	17	18
B5/B12 4449 RRH (Shielded)	17.5	11.9	13.0	1.44	1.58	1.48	1.35	1.20	1.20	16	17	17
LGP21401 TMA	17.0	5.3	11.6	0.63	1.37	3.20	1.46	1.23	1.20	7	15	13

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	18	10	12
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	27	11	15
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	42	18	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	5
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	5	7	6
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	4	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	4	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	3

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.31	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	264	141	233
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	397	168	340
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	610	269	525
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	97	60	88
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	49	97	61
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	79	65	75
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	39	79	49
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	79	62	74
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	39	62	45
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	52	26

WIND LOADS WITH ICE:

7770 Antenna	57.6	13.6	7.6	5.45	3.05	4.23	7.56	1.28	1.42	63	39	57
DMP65R-BU4DA Antenna	50.6	23.3	10.3	8.20	3.63	2.17	4.91	1.20	1.31	89	43	78
DMP65R-BU6DA Antenna	73.8	23.3	10.3	11.95	5.29	3.17	7.15	1.23	1.41	133	67	117
B14 4478 RRH	20.7	16.0	10.9	2.30	1.57	1.29	1.90	1.20	1.20	25	17	23
B14 4478 RRH (Side)	20.7	8.0	16.0	1.15	2.30	2.59	1.29	1.20	1.20	13	25	16
B2/B66A 8843 RRH	17.5	15.8	13.5	1.92	1.64	1.11	1.30	1.20	1.20	21	18	20
B2/B66A 8843 RRH (Side)	17.5	7.9	15.8	0.96	1.92	2.21	1.11	1.20	1.20	10	21	13
B5/B12 4449 RRH	17.5	15.8	13.0	1.92	1.58	1.11	1.35	1.20	1.20	21	17	20
B5/B12 4449 RRH (Shielded)	17.5	7.9	13.0	0.96	1.58	2.21	1.35	1.20	1.20	10	17	12
LGP21401 TMA	17.0	5.3	11.6	0.63	1.37	3.20	1.46	1.23	1.20	7	15	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	18	10	16
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	27	11	23
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	42	18	36
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	6
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	7	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	3	5	3
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	5	4	5
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	3	4	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	2

Date: 8/15/2019
Project Name: SHARON CT HERB ROAD
Project No.: CT1157
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.31 in.
Density of ice: 56 pcf

7770 Antenna
Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		98 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		133 lbs

DMP65R-BU4DA Antenna
Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		150 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		218 lbs

DMP65R-BU6DA Antenna
Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		222 lbs
Weight of object:	80.0 lbs	
Combined weight of ice and object:		302 lbs

B14 4478 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:		41 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		101 lbs

B2/B66A 8843 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:		37 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		109 lbs

B5/B12 4449 RRH
Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		36 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		109 lbs

LGP21401 TMA
Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		21 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		40 lbs

Squid Surge Arrestor
Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		35 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		68 lbs

3" Pipe
Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		8 plf

3/4" Round Bar
Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		3 plf

HSS 4x4
Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		11 plf

2" pipe
Per foot weight of ice:

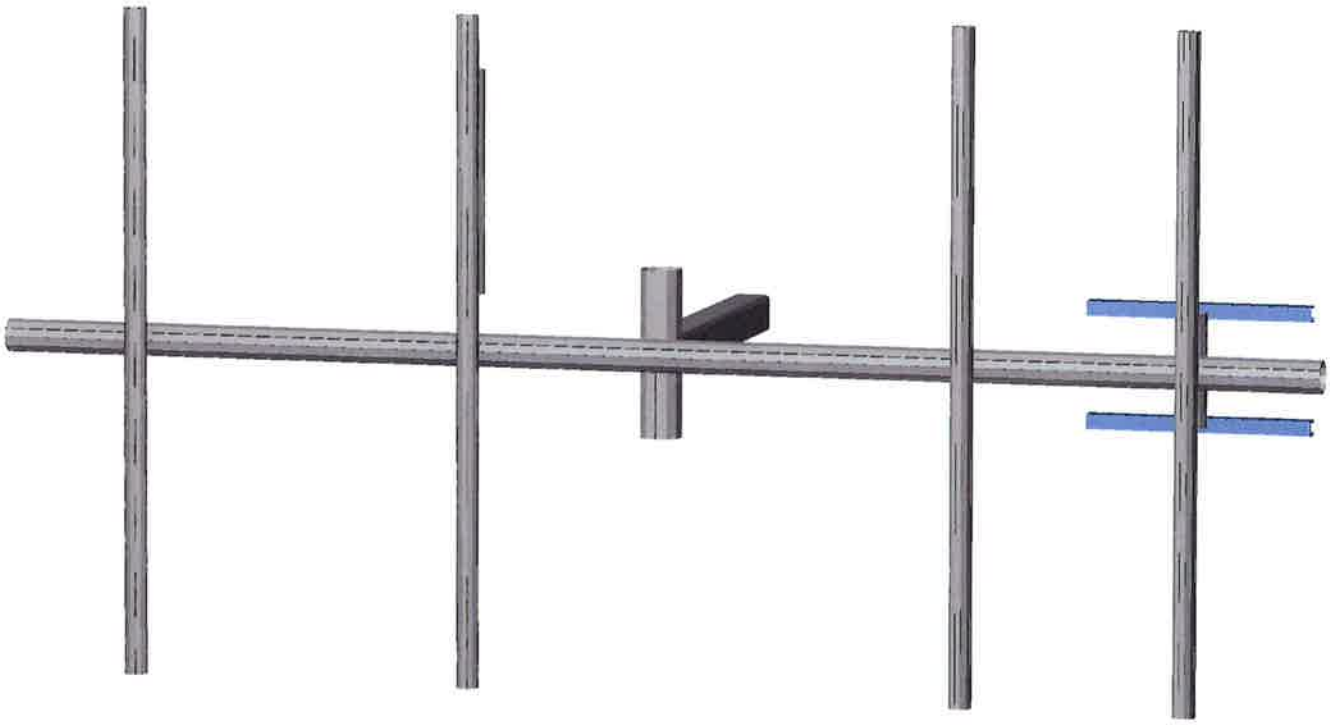
diameter (in):	2.38	
Per foot weight of ice on object:		6 plf

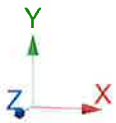
4" Pipe
Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		9 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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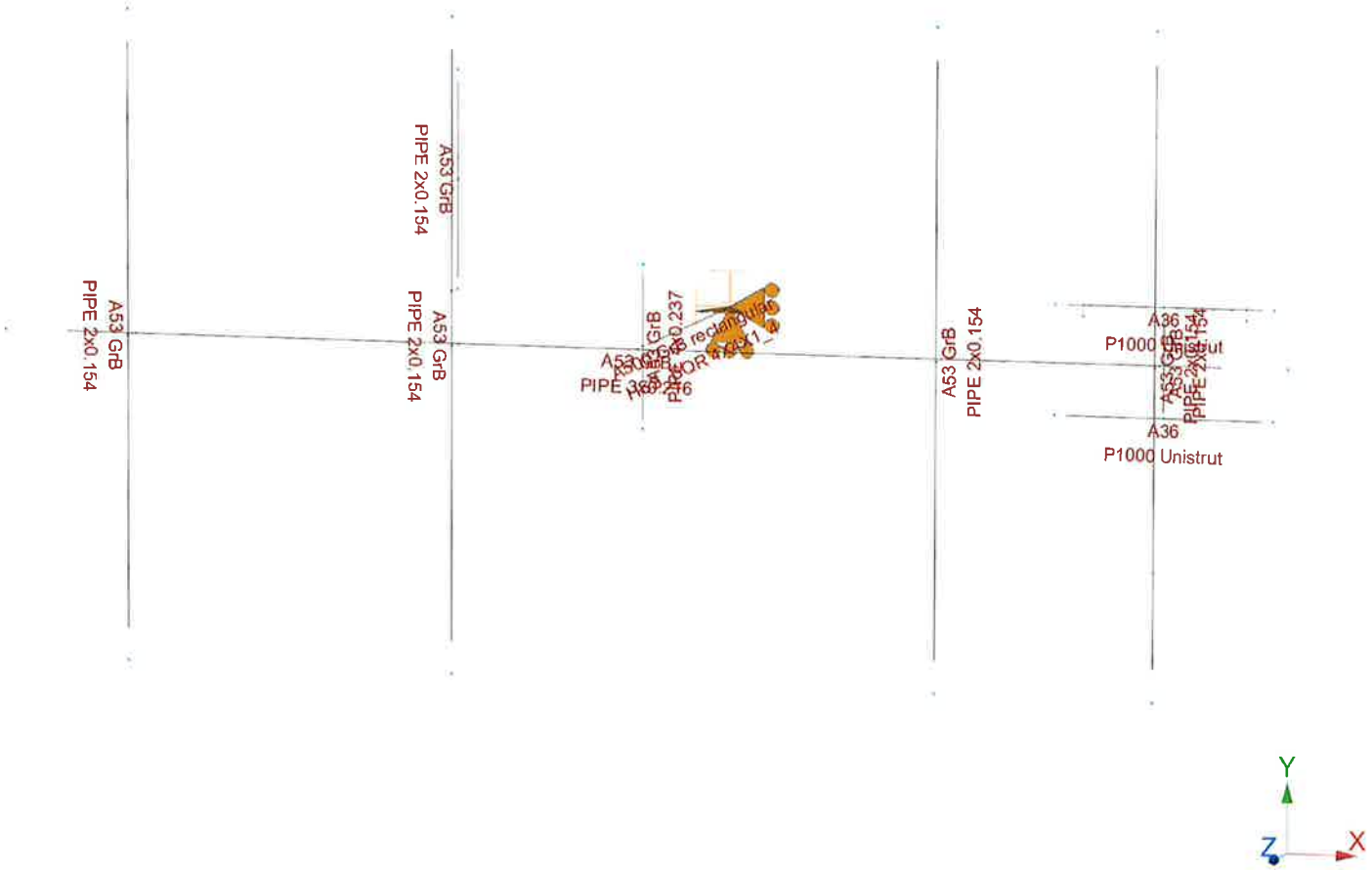
Z
X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PIPE 2x0.154
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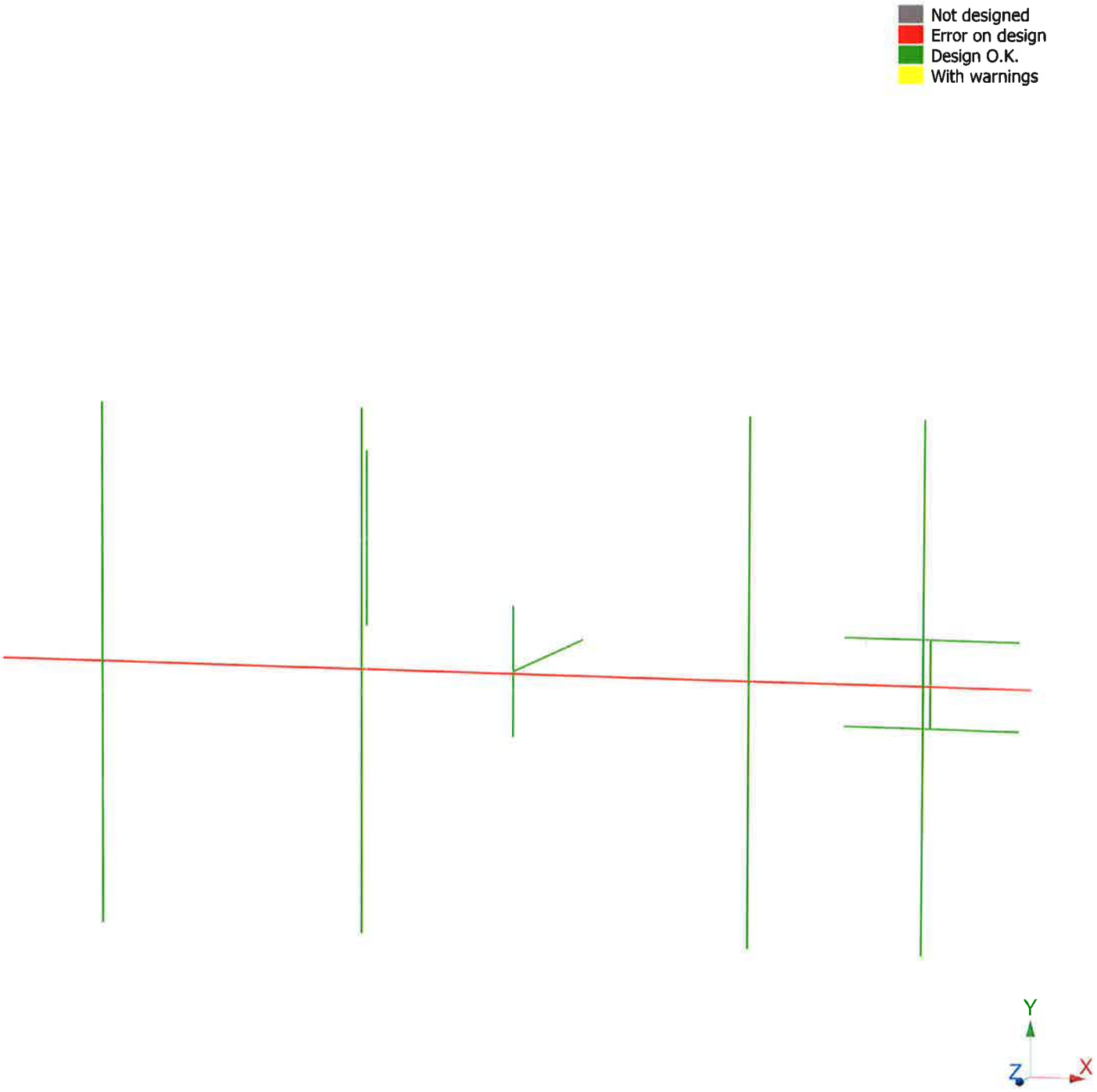
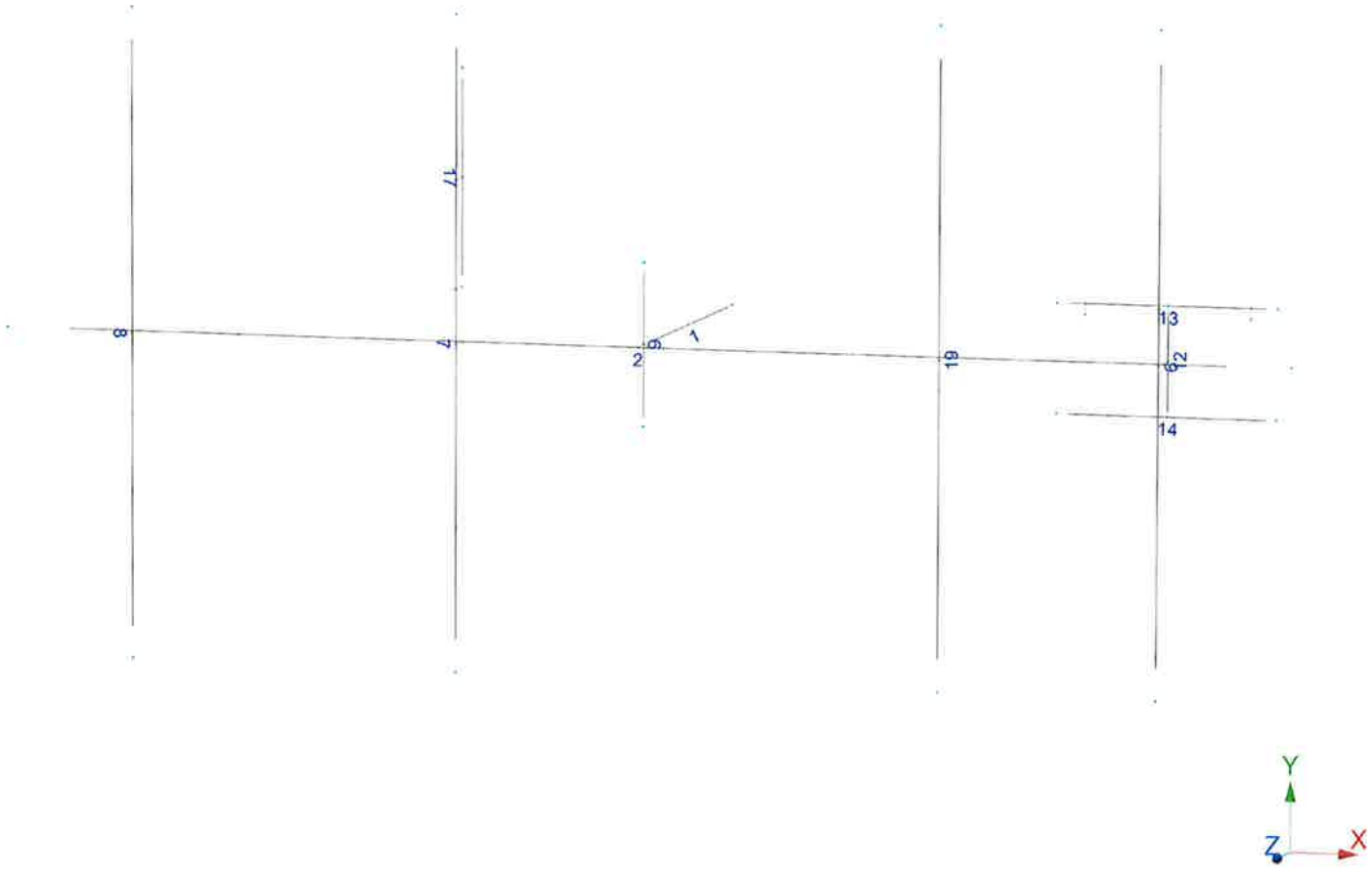

Not designed
Error on design
Design O.K.
With warnings
Y
Z
X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8
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Load data

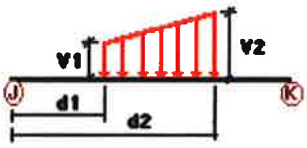
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

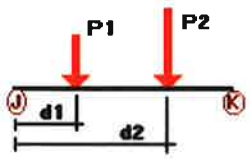
Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	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	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 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	1	z	-0.02	0.00	0.00	No	0.00	No
	2	z	-0.017	0.00	0.00	No	0.00	No
	9	z	-0.022	0.00	0.00	No	0.00	No
W30	1	z	-0.02	0.00	0.00	No	0.00	No
	2	z	-0.017	0.00	0.00	No	0.00	No
	9	z	-0.022	0.00	0.00	No	0.00	No
W60	1	x	-0.02	0.00	0.00	No	0.00	No
	2	x	-0.017	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
W90	1	x	-0.02	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
W120	1	x	-0.02	0.00	0.00	No	0.00	No
	2	x	-0.017	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
W150	1	z	0.02	0.00	0.00	No	0.00	No
	2	z	0.017	0.00	0.00	No	0.00	No
	9	z	0.022	0.00	0.00	No	0.00	No
Di	1	y	-0.011	0.00	0.00	No	0.00	No
	2	y	-0.008	0.00	0.00	No	0.00	No
	6	y	-0.006	0.00	0.00	No	0.00	No
	7	y	-0.006	0.00	0.00	No	0.00	No
	8	y	-0.006	0.00	0.00	No	0.00	No
	9	y	-0.009	0.00	0.00	No	0.00	No
	12	y	-0.006	0.00	0.00	No	0.00	No
	17	y	-0.006	0.00	0.00	No	0.00	No
	19	y	-0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	6	y	-0.018	1.00	No
		y	-0.018	4.50	No
	7	y	-0.04	1.00	No
		y	-0.04	5.50	No
	8	y	-0.04	1.00	No
		y	-0.04	5.50	No
		y	-0.073	2.00	No
	17	y	-0.132	0.50	No
	19	y	-0.033	2.00	No
Wo	6	z	-0.133	1.00	No
		z	-0.133	4.50	No
	7	z	-0.305	1.00	No
		z	-0.305	5.50	No
	8	z	-0.305	1.00	No
		z	-0.305	5.50	No
	17	z	-0.125	0.50	No
	19	z	-0.054	2.00	No
W30	6	3	-0.117	1.00	No
		3	-0.117	4.50	No
	7	3	-0.263	1.00	No
		3	-0.263	4.00	No
	8	3	-0.263	1.00	No
		3	-0.263	4.00	No
		3	-0.045	2.00	No
	17	3	-0.061	0.50	No
	19	3	-0.054	2.00	No
W60	6	3	-0.086	1.00	No
		3	-0.086	4.50	No
	7	3	-0.178	1.00	No
		3	-0.178	5.50	No
	8	3	-0.178	1.00	No
		3	-0.178	5.50	No
		3	-0.061	2.00	No
	17	3	-0.091	0.50	No
	19	3	-0.054	2.00	No
W90	6	x	-0.071	1.00	No
		x	-0.071	4.50	No
	7	x	-0.135	1.00	No
		x	-0.135	5.50	No
	8	x	-0.135	1.00	No
		x	-0.135	5.50	No
		x	-0.062	2.00	No
	17	x	-0.097	0.50	No
	19	x	-0.054	2.00	No
W120	6	2	-0.086	1.00	No
		2	-0.086	4.50	No
	7	2	-0.178	1.00	No
		2	-0.178	5.50	No
	8	2	-0.178	1.00	No
		2	-0.178	5.50	No
		2	-0.061	2.00	No
	17	2	-0.091	0.50	No
	19	2	-0.054	2.00	No
W150	6	2	-0.117	1.00	No
		2	-0.117	4.50	No
	7	2	-0.263	1.00	No
		2	-0.263	5.50	No
	8	2	-0.263	1.00	No
		2	-0.263	5.50	No
		2	-0.045	2.00	No

	17	2	-0.061	0.50	No
	19	2	-0.054	2.00	No
Di	6	y	-0.049	1.00	No
		y	-0.049	4.50	No
	7	y	-0.111	1.00	No
		y	-0.111	5.50	No
	8	y	-0.111	1.00	No
		y	-0.111	5.50	No
		y	-0.036	0.50	No
	17	y	-0.078	0.50	No
	19	y	-0.035	2.00	No
WI0	6	z	-0.033	1.00	No
		z	-0.033	4.50	No
	7	z	-0.068	1.00	No
		z	-0.068	5.50	No
	8	z	-0.068	1.00	No
		z	-0.068	5.50	No
		z	-0.003	2.00	No
	17	z	-0.035	0.50	No
	19	z	-0.014	2.00	No
WI30	6	3	-0.029	1.00	No
		3	-0.029	4.50	No
	7	3	-0.059	1.00	No
		3	-0.059	5.50	No
	8	3	-0.059	1.00	No
		3	-0.059	5.50	No
		3	-0.012	2.00	No
	17	3	-0.016	0.50	No
	19	3	-0.014	2.00	No
WI60	6	3	-0.023	1.00	No
		3	-0.023	4.50	No
	7	3	-0.042	1.00	No
		3	-0.042	5.50	No
	8	3	-0.042	1.00	No
		3	-0.042	5.50	No
		3	-0.017	2.00	No
	17	3	-0.024	0.50	No
	19	3	-0.014	2.00	No
WI90	6	x	-0.02	1.00	No
		x	-0.02	4.50	No
	7	x	-0.034	1.00	No
		x	-0.034	5.50	No
	8	x	-0.034	1.00	No
		x	-0.034	5.50	No
		x	-0.017	2.00	No
	17	x	-0.025	0.50	No
	19	x	-0.014	2.00	No
WI120	6	2	-0.023	1.00	No
		2	-0.023	4.50	No
	7	2	-0.042	1.00	No
		2	-0.042	5.50	No
	8	2	-0.042	1.00	No
		2	-0.042	5.50	No
		2	-0.024	0.50	No
	17	2	-0.017	2.00	No
	19	2	-0.014	2.00	No
WI150	6	2	-0.029	1.00	No
		2	-0.029	4.50	No
	7	2	-0.059	1.00	No
		2	-0.059	5.50	No

	8	2	-0.059	1.00	No
		2	-0.059	5.50	No
		2	-0.012	2.00	No
	17	2	-0.016	0.50	No
	19	2	-0.014	2.00	No
WL0	6	z	-0.009	1.00	No
		z	-0.009	4.50	No
	7	z	-0.021	1.00	No
		z	-0.021	5.50	No
	8	z	-0.021	1.00	No
		z	-0.021	5.50	No
	17	z	-0.008	0.50	No
	19	z	-0.004	2.00	No
WL30	6	3	-0.008	1.00	No
		3	-0.008	4.50	No
	7	3	-0.018	1.00	No
		3	-0.018	5.50	No
	8	3	-0.018	1.00	No
		3	-0.018	5.50	No
		3	-0.003	2.00	No
	17	3	-0.004	0.50	No
	19	3	-0.004	2.00	No
WL60	6	3	-0.006	1.00	No
		3	-0.006	4.50	No
	7	3	-0.013	1.00	No
		3	-0.013	5.50	No
	8	3	-0.013	1.00	No
		3	-0.013	5.50	No
		3	-0.004	2.00	No
	17	3	-0.006	0.50	No
	19	3	-0.004	2.00	No
WL90	6	x	-0.005	1.00	No
		x	-0.005	4.50	No
	7	x	-0.01	1.00	No
		x	-0.01	5.50	No
	8	x	-0.01	1.00	No
		x	-0.01	5.50	No
		x	-0.004	2.00	No
	17	x	-0.007	0.50	No
	19	x	-0.004	2.00	No
WL120	6	2	-0.006	1.00	No
		2	-0.006	4.50	No
	7	2	-0.013	1.00	No
		2	-0.013	5.50	No
	8	2	-0.013	1.00	No
		2	-0.013	5.50	No
		2	-0.004	2.00	No
	17	2	-0.006	0.50	No
	19	2	-0.004	2.00	No
WL150	6	2	-0.008	1.00	No
		2	-0.008	4.50	No
	7	2	-0.018	1.00	No
		2	-0.018	5.50	No
	8	2	-0.018	1.00	No
		2	-0.018	5.50	No
		2	-0.003	2.00	No
	17	2	-0.004	0.50	No
	19	2	-0.004	2.00	No

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	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 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
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2

LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**1**	LC8 at 0.00%	**0.54**	**OK**	
	P1000 Unistrut	**13**	LC29 at 50.00%	**0.08**	**OK**	Sec. G5
		14	LC4 at 50.00%	0.00	OK	Sec. G5
	PIPE 2x0.154	**6**	LC7 at 46.88%	0.18	OK	
		7	LC1 at 48.44%	**0.65**	**OK**	
		8	LC1 at 50.00%	0.58	OK	
		12	LC3 at 46.88%	0.04	OK	
		17	LC4 at 100.00%	0.08	OK	
		19	LC10 at 46.88%	0.07	OK	
	PIPE 3x0.216	**2**	LC1 at 48.96%	1.01	**N.G.**	
	PIPE 4x0.237	**9**	LC4 at 50.00%	**0.00**	**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	0.00	0
3	6.00	0.00	3.325	0
4	-6.00	0.00	3.325	0
11	4.83	-3.00	3.525	0
12	-1.67	-3.00	3.525	0
13	-4.75	-3.00	3.525	0
14	4.83	3.00	3.525	0
15	-1.67	3.00	3.525	0
16	-4.75	3.00	3.525	0
17	0.00	-0.75	3.125	0
18	0.00	0.75	3.125	0
21	4.83	0.50	3.125	0
22	4.83	-0.50	3.125	0
23	5.83	0.50	3.125	0
24	5.83	-0.50	3.125	0
25	3.83	0.50	3.125	0
26	3.83	-0.50	3.125	0
31	-1.67	2.50	3.325	0
34	2.83	3.00	3.525	0
35	2.83	-3.00	3.525	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	4	3		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	14	11		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	15	12		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	16	13		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	18	17		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
12	21	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	23	25		P1000 Unistrut	A36	0.00	0.00	0.00
14	24	26		P1000 Unistrut	A36	0.00	0.00	0.00
17	31	27		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	34	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

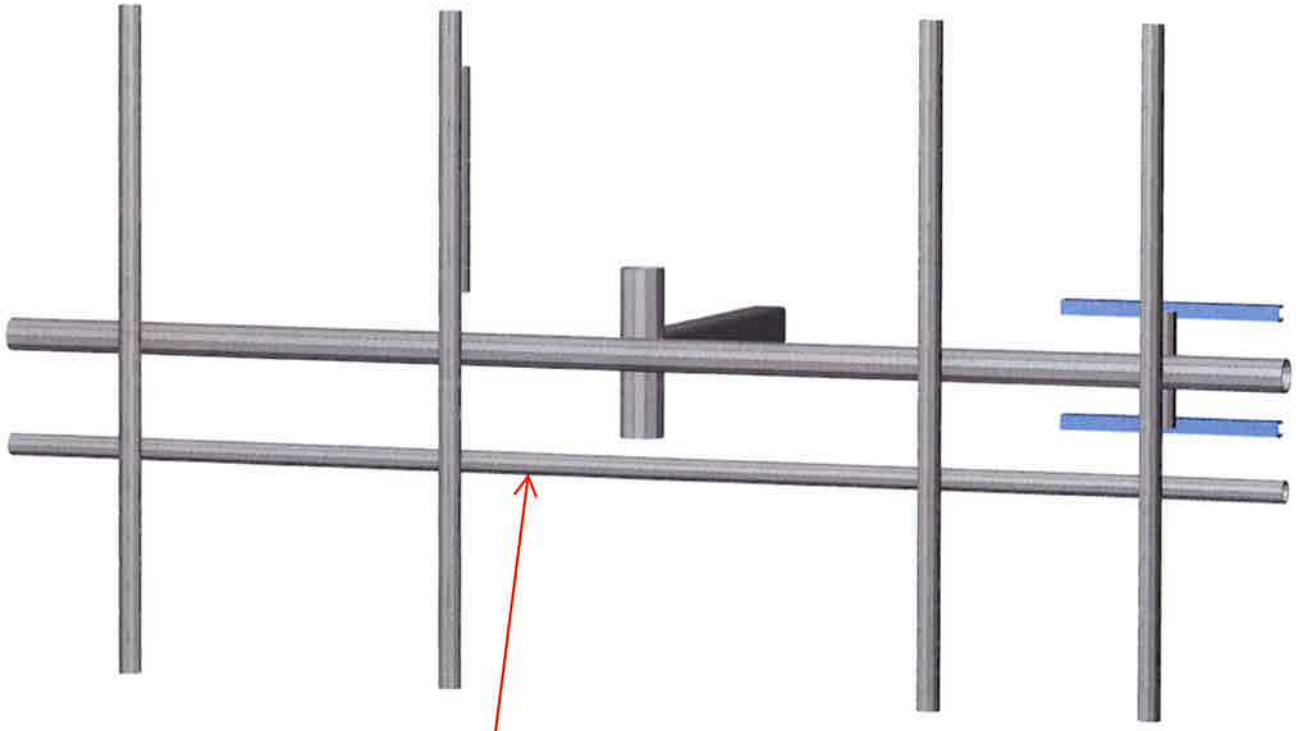
Member	Rotation [Deg]	Axes23	NX	NY	NZ
6	315.00	0	0.00	0.00	0.00
7	315.00	0	0.00	0.00	0.00
8	315.00	0	0.00	0.00	0.00
17	315.00	0	0.00	0.00	0.00
19	315.00	0	0.00	0.00	0.00

Rigid end offsets

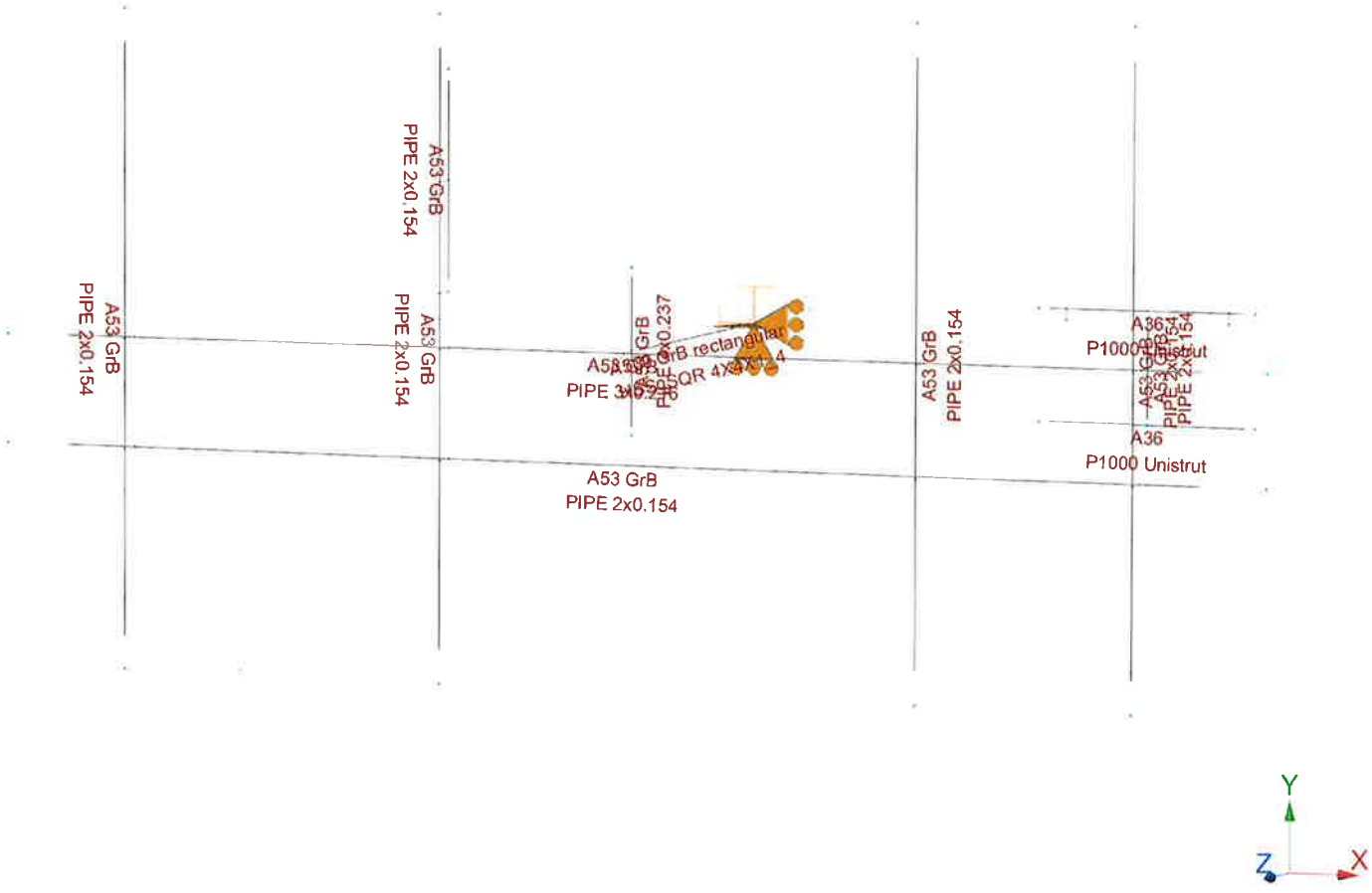
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	0.00	-2.00	0.00	0.00	-2.00
14	0.00	0.00	-2.00	0.00	0.00	-2.00

HUDSON
Design Group LLC

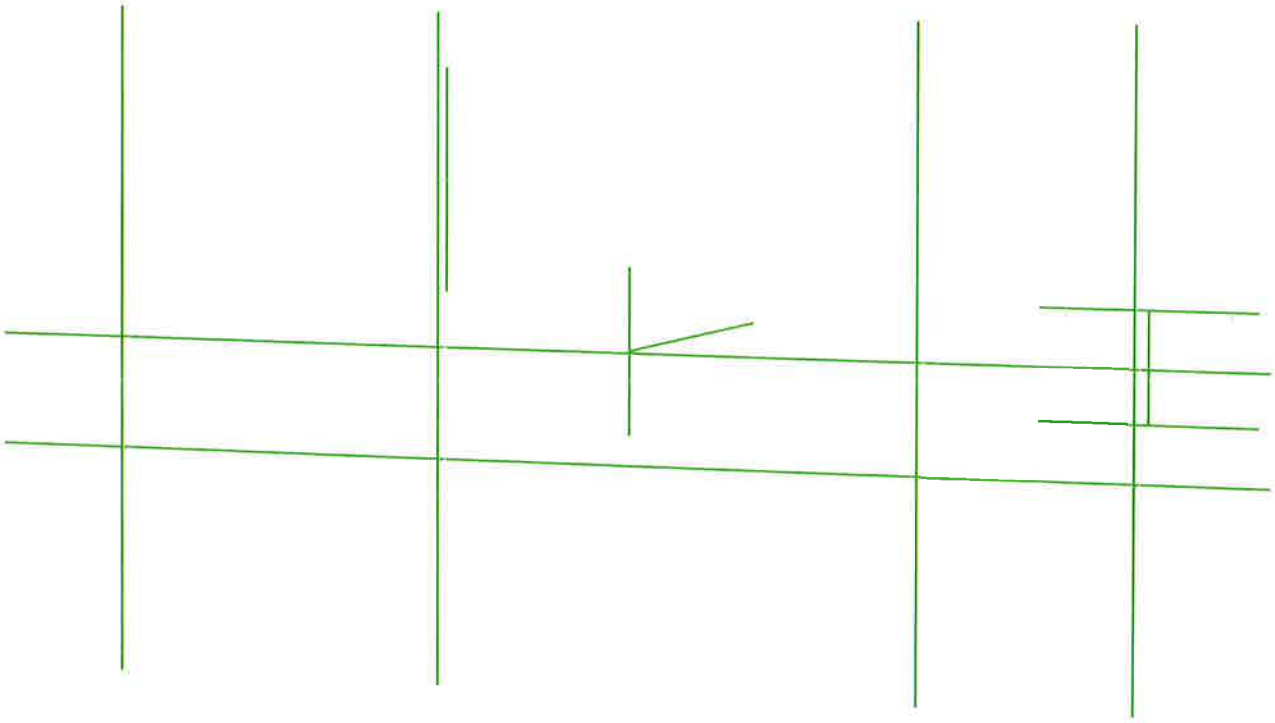
Mount Calculations
(Modified Conditions)

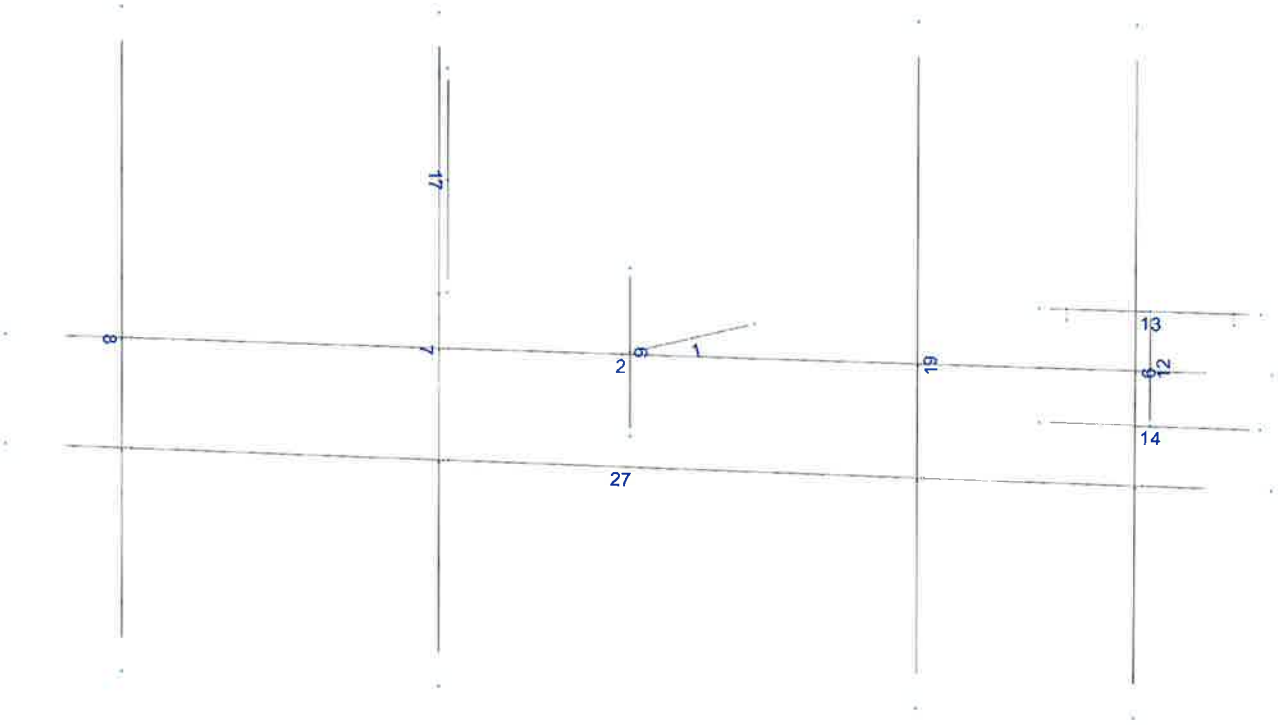


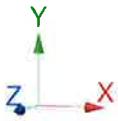
Install new 2" std. (2.38" O.D.) horizontal pipe secured to existing antenna pipes (typ. of 1 per sector, total of 3).


A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
P1000 Unistrut
A36
P1000 Unistrut
Y
Z
X

Not designed
Error on design
Design O.K.
With warnings




17
8
7
2
9
1
19
13
6
12
14
27


Y
Z
X

Current Date: 8/15/2019 3:56 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1157\LTE 2C-3C-4C-5C\Rev. 1\CT11 (LTE 2C-3C-4C-5C)(Rev. 1)(MODS).retx\

Load data

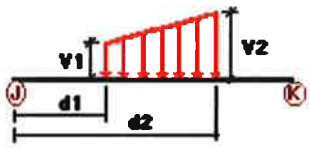
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

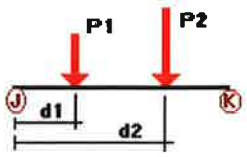
Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	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	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 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	1	z	-0.02	0.00	0.00	No	0.00	No
	2	z	-0.017	0.00	0.00	No	0.00	No
	9	z	-0.022	0.00	0.00	No	0.00	No
	27	z	-0.017	0.00	0.00	No	0.00	No
W30	1	z	-0.02	0.00	0.00	No	0.00	No
	2	z	-0.017	0.00	0.00	No	0.00	No
	9	z	-0.022	0.00	0.00	No	0.00	No
	27	z	-0.017	0.00	0.00	No	0.00	No
W60	1	x	-0.02	0.00	0.00	No	0.00	No
	2	x	-0.017	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
	27	x	-0.017	0.00	0.00	No	0.00	No
W90	1	x	-0.02	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
W120	1	x	-0.02	0.00	0.00	No	0.00	No
	2	x	-0.017	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	-0.011	0.00	0.00	No	0.00	No
	9	x	-0.022	0.00	0.00	No	0.00	No
	12	x	-0.011	0.00	0.00	No	0.00	No
	17	x	-0.011	0.00	0.00	No	0.00	No
	19	x	-0.011	0.00	0.00	No	0.00	No
	27	x	-0.017	0.00	0.00	No	0.00	No
W150	1	z	0.02	0.00	0.00	No	0.00	No
	2	z	0.017	0.00	0.00	No	0.00	No
	9	z	0.022	0.00	0.00	No	0.00	No
	27	z	0.017	0.00	0.00	No	0.00	No
Di	1	y	-0.011	0.00	0.00	No	0.00	No
	2	y	-0.008	0.00	0.00	No	0.00	No
	6	y	-0.006	0.00	0.00	No	0.00	No
	7	y	-0.006	0.00	0.00	No	0.00	No
	8	y	-0.006	0.00	0.00	No	0.00	No
	9	y	-0.009	0.00	0.00	No	0.00	No
	12	y	-0.006	0.00	0.00	No	0.00	No
	17	y	-0.006	0.00	0.00	No	0.00	No
	19	y	-0.006	0.00	0.00	No	0.00	No
	27	y	-0.008	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	6	y	-0.018	1.00	No
		y	-0.018	4.50	No
	7	y	-0.04	1.00	No
		y	-0.04	5.50	No
	8	y	-0.04	1.00	No
		y	-0.04	5.50	No
		y	-0.073	2.00	No
	17	y	-0.132	0.50	No
	19	y	-0.033	2.00	No
Wo	6	z	-0.133	1.00	No
		z	-0.133	4.50	No
	7	z	-0.305	1.00	No
		z	-0.305	5.50	No
	8	z	-0.305	1.00	No
		z	-0.305	5.50	No
	17	z	-0.125	0.50	No
	19	z	-0.054	2.00	No
W30	6	3	-0.117	1.00	No
		3	-0.117	4.50	No
	7	3	-0.263	1.00	No
		3	-0.263	4.00	No
	8	3	-0.263	1.00	No
		3	-0.263	4.00	No
		3	-0.045	2.00	No
	17	3	-0.061	0.50	No
	19	3	-0.054	2.00	No
W60	6	3	-0.086	1.00	No
		3	-0.086	4.50	No
	7	3	-0.178	1.00	No
		3	-0.178	5.50	No
	8	3	-0.178	1.00	No
		3	-0.178	5.50	No
		3	-0.061	2.00	No
	17	3	-0.091	0.50	No
	19	3	-0.054	2.00	No
W90	6	x	-0.071	1.00	No
		x	-0.071	4.50	No
	7	x	-0.135	1.00	No
		x	-0.135	5.50	No
	8	x	-0.135	1.00	No
		x	-0.135	5.50	No
		x	-0.062	2.00	No
	17	x	-0.097	0.50	No
	19	x	-0.054	2.00	No
W120	6	2	-0.086	1.00	No
		2	-0.086	4.50	No
	7	2	-0.178	1.00	No
		2	-0.178	5.50	No
	8	2	-0.178	1.00	No
		2	-0.178	5.50	No
		2	-0.061	2.00	No
	17	2	-0.091	0.50	No
	19	2	-0.054	2.00	No
W150	6	2	-0.117	1.00	No

		2	-0.117	4.50	No
	7	2	-0.263	1.00	No
		2	-0.263	5.50	No
	8	2	-0.263	1.00	No
		2	-0.263	5.50	No
		2	-0.045	2.00	No
	17	2	-0.061	0.50	No
	19	2	-0.054	2.00	No
Di	6	y	-0.049	1.00	No
		y	-0.049	4.50	No
	7	y	-0.111	1.00	No
		y	-0.111	5.50	No
	8	y	-0.111	1.00	No
		y	-0.111	5.50	No
		y	-0.036	0.50	No
	17	y	-0.078	0.50	No
	19	y	-0.035	2.00	No
WI0	6	z	-0.033	1.00	No
		z	-0.033	4.50	No
	7	z	-0.068	1.00	No
		z	-0.068	5.50	No
	8	z	-0.068	1.00	No
		z	-0.068	5.50	No
		z	-0.003	2.00	No
	17	z	-0.035	0.50	No
	19	z	-0.014	2.00	No
WI30	6	3	-0.029	1.00	No
		3	-0.029	4.50	No
	7	3	-0.059	1.00	No
		3	-0.059	5.50	No
	8	3	-0.059	1.00	No
		3	-0.059	5.50	No
		3	-0.012	2.00	No
	17	3	-0.016	0.50	No
	19	3	-0.014	2.00	No
WI60	6	3	-0.023	1.00	No
		3	-0.023	4.50	No
	7	3	-0.042	1.00	No
		3	-0.042	5.50	No
	8	3	-0.042	1.00	No
		3	-0.042	5.50	No
		3	-0.017	2.00	No
	17	3	-0.024	0.50	No
	19	3	-0.014	2.00	No
WI90	6	x	-0.02	1.00	No
		x	-0.02	4.50	No
	7	x	-0.034	1.00	No
		x	-0.034	5.50	No
	8	x	-0.034	1.00	No
		x	-0.034	5.50	No
		x	-0.017	2.00	No
	17	x	-0.025	0.50	No
	19	x	-0.014	2.00	No
WI120	6	2	-0.023	1.00	No
		2	-0.023	4.50	No
	7	2	-0.042	1.00	No
		2	-0.042	5.50	No
	8	2	-0.042	1.00	No
		2	-0.042	5.50	No
		2	-0.024	0.50	No

	17	2	-0.017	2.00	No
	19	2	-0.014	2.00	No
WI150	6	2	-0.029	1.00	No
		2	-0.029	4.50	No
	7	2	-0.059	1.00	No
		2	-0.059	5.50	No
	8	2	-0.059	1.00	No
		2	-0.059	5.50	No
		2	-0.012	2.00	No
	17	2	-0.016	0.50	No
	19	2	-0.014	2.00	No
WL0	6	z	-0.009	1.00	No
		z	-0.009	4.50	No
	7	z	-0.021	1.00	No
		z	-0.021	5.50	No
	8	z	-0.021	1.00	No
		z	-0.021	5.50	No
	17	z	-0.008	0.50	No
	19	z	-0.004	2.00	No
WL30	6	3	-0.008	1.00	No
		3	-0.008	4.50	No
	7	3	-0.018	1.00	No
		3	-0.018	5.50	No
	8	3	-0.018	1.00	No
		3	-0.018	5.50	No
		3	-0.003	2.00	No
	17	3	-0.004	0.50	No
	19	3	-0.004	2.00	No
WL60	6	3	-0.006	1.00	No
		3	-0.006	4.50	No
	7	3	-0.013	1.00	No
		3	-0.013	5.50	No
	8	3	-0.013	1.00	No
		3	-0.013	5.50	No
		3	-0.004	2.00	No
	17	3	-0.006	0.50	No
	19	3	-0.004	2.00	No
WL90	6	x	-0.005	1.00	No
		x	-0.005	4.50	No
	7	x	-0.01	1.00	No
		x	-0.01	5.50	No
	8	x	-0.01	1.00	No
		x	-0.01	5.50	No
		x	-0.004	2.00	No
	17	x	-0.007	0.50	No
	19	x	-0.004	2.00	No
WL120	6	2	-0.006	1.00	No
		2	-0.006	4.50	No
	7	2	-0.013	1.00	No
		2	-0.013	5.50	No
	8	2	-0.013	1.00	No
		2	-0.013	5.50	No
		2	-0.004	2.00	No
	17	2	-0.006	0.50	No
	19	2	-0.004	2.00	No
WL150	6	2	-0.008	1.00	No
		2	-0.008	4.50	No
	7	2	-0.018	1.00	No
		2	-0.018	5.50	No
	8	2	-0.018	1.00	No

	2	-0.018	5.50	No
	2	-0.003	2.00	No
17	2	-0.004	0.50	No
19	2	-0.004	2.00	No

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	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 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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Units system: English
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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
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2

LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**1**	LC8 at 0.00%	**0.54**	**OK**	
	P1000 Unistrut	**13**	LC25 at 50.00%	**0.08**	**OK**	Sec. G5
		14	LC1 at 50.00%	0.00	OK	Sec. G5
	PIPE 2x0.154	**6**	LC36 at 50.00%	0.24	OK	
		7	LC7 at 50.00%	**0.72**	**OK**	
		8	LC7 at 50.00%	0.51	OK	
		12	LC3 at 46.88%	0.04	OK	
		17	LC4 at 100.00%	0.08	OK	
		19	LC32 at 50.00%	0.28	OK	
		27	LC1 at 36.25%	0.40	OK	
	PIPE 3x0.216	**2**	LC1 at 48.96%	**0.91**	**OK**	
	PIPE 4x0.237	**9**	LC1 at 50.00%	**0.00**	**OK**	

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	0.00	0
3	6.00	0.00	3.325	0
4	-6.00	0.00	3.325	0
11	4.83	-3.00	3.525	0
12	-1.67	-3.00	3.525	0
13	-4.75	-3.00	3.525	0
14	4.83	3.00	3.525	0
15	-1.67	3.00	3.525	0
16	-4.75	3.00	3.525	0
17	0.00	-0.75	3.125	0
18	0.00	0.75	3.125	0
21	4.83	0.50	3.125	0
22	4.83	-0.50	3.125	0
23	5.83	0.50	3.125	0
24	5.83	-0.50	3.125	0
25	3.83	0.50	3.125	0
26	3.83	-0.50	3.125	0
31	-1.67	2.50	3.325	0
34	2.83	3.00	3.525	0
35	2.83	-3.00	3.525	0
49	-6.00	-1.00	3.325	0

50	6.00	-1.00	3.325	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	4	3		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	14	11		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	15	12		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	16	13		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	18	17		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
12	21	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	23	25		P1000 Unistrut	A36	0.00	0.00	0.00
14	24	26		P1000 Unistrut	A36	0.00	0.00	0.00
17	31	27		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	34	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	49	50		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
6	315.00	0	0.00	0.00	0.00
7	315.00	0	0.00	0.00	0.00
8	315.00	0	0.00	0.00	0.00
17	315.00	0	0.00	0.00	0.00
19	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]
13	0.00	0.00	-2.00	0.00	0.00	-2.00
14	0.00	0.00	-2.00	0.00	0.00	-2.00