

# EXHIBIT 4

January 21, 2022



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

RE:      Site Number:                    CT1066  
            FA Number:                     10035005  
            PACE Number:                    MRCTB055774  
            PT Number:                        2051A11LZZ  
            Site Name:                         PORTLAND  
            Site Address:                      213 High Street  
    Portland, CT 06480

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) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B66A RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7" Ø – Wt. = 33 lbs. /each)
- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)**

*\*Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, performed a survey climb and mapping of the existing AT&T antenna mounts on January 5, 2022. HDG conducted a ground audit of the existing AT&T antenna mounts on October 20, 2021.

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 130 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 1.09 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 0.180 and a spectral response acceleration parameter at a period of 1 second,  $S_1$ , of 0.063.
- The mount has 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 mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst-case location on the mount.
- The existing mount is secured to the existing self-supporting tower with threaded rods and steel plates and/or 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 existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
<b>Existing Mount Rating</b>	18	LC7	94%	<b>PASS</b>

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

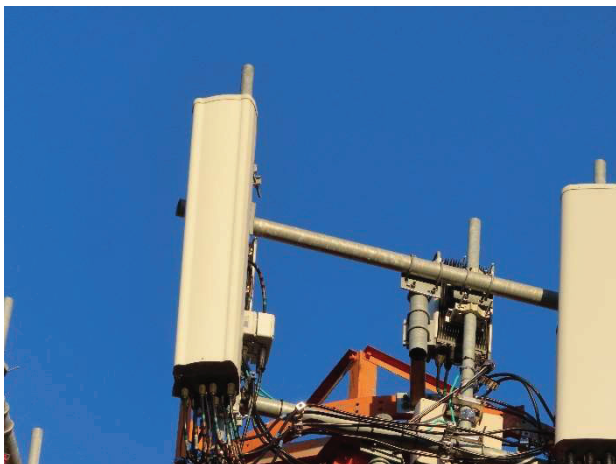


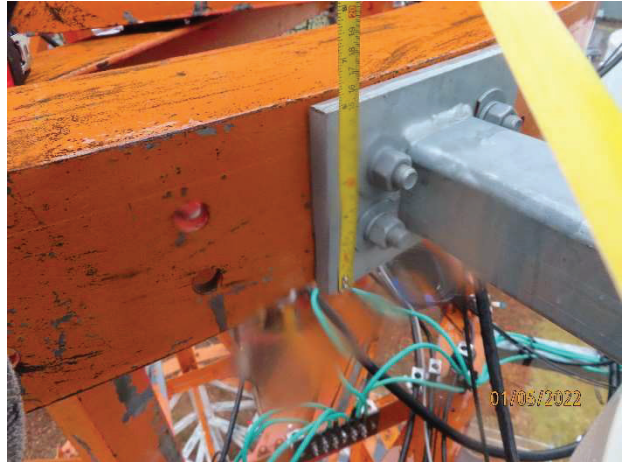
Michael Cabral  
Vice President



Daniel P. Hamm, PE  
Principal

FIELD PHOTOS:







**HUDSON**  
Design Group LLC

**Wind & Ice  
Calculations**

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**2.6.5.2 Velocity Pressure Coeff:**

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

$K_z =$  **1.198**

$z =$  77 (ft)  
 $z_g =$  900 (ft)  
 $\alpha =$  9.5

$K_{zmin} \leq K_z \leq 2.01$

**Table 2-4**

Exposure	Z <sub>g</sub>	α	K <sub>zmin</sub>	K <sub>c</sub>
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 <sub>t</sub>	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$K_{zt} =$  **1**

*(If Category 1 then K<sub>zt</sub> = 1.0)*

Category = **1**

$$K_h = e^{(fz/H)}$$

$K_h =$  1  
 $K_c =$  **1** (from Table 2-4)  
 $K_t =$  **0** (from Table 2-5)  
 $f =$  **0** (from Table 2-5)  
 $z =$  77  
 $z_s =$  **350** (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)  
 $K_e =$  0.99 (from 2.6.8)

**2.6.10 Design Ice Thickness**

Max Ice Thickness =  
 Importance Factor =

$t_i =$  **1.00** in  
 $I =$  **1.0** (from Table 2-3)  
 $K_{iz} =$  **1.09** (from Sec. 2.6.10)

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

$t_{iz} =$  **1.09** in



Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**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

$h =$  80

$G_h =$  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

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

$G_h =$  1.35

**$G_h =$  1.00**

**2.6.11.2 Design Wind Force on Appurtenances**

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

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

$q_z =$	<b>43.50</b>
$q_z (ice) =$	<b>6.43</b>
$q_z (30) =$	<b>2.32</b>

$K_z =$	1.198 (from 2.6.5.2)
$K_{zt} =$	1.0 (from 2.6.6.2.1)
$K_s =$	1.0 (from 2.6.7)
$K_e =$	0.99 (from 2.6.8)
$K_d =$	<b>0.85</b> (from Table 2-2)
$V_{max} =$	130 mph (Ultimate Wind Speed)
$V_{max (ice)} =$	50 mph
$V_{30} =$	30 mph

**Table 2-2**

Structure Type	Wind Direction Probability Factor, $K_d$
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: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**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 <sub>s</sub> ) ≥ 0.85	1.4 - 4.0(r <sub>s</sub> ) ≥ 0.90	2.0 - 6.0(r <sub>s</sub> ) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	4.14/(C <sup>0.485</sup> )	3.66/(C <sup>0.415</sup> )	46.8/(C <sup>1.0</sup> )
	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 = **1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	553	93	29
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	176	32	9
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.93	1.20	181	33	10
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	553	93	29
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	2.25	1.20	119	22	6
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	4.50	1.29	64	14	3
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	3.89	1.26	73	15	4
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	41	11	2
4478 B14 RRH	18.1	8.3	13.4	1.04	2.18	1.20	54	11	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	29	7	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	3.89	1.26	73	15	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	41	11	2
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.90	1.20	61	12	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	32	8	2
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	49	10	3
2" Pipe	2.4	12.0		0.20	0.20	0.70			6
3" Pipe	3.5	12.0		0.29	0.29	0.70			9
HSS 3x3	3.0	12.0		0.25	0.25	1.20			13

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



WIND LOADS

Angle = 30 (deg) Ice Thickness = 1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	476
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	176	119	162
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	181	87	158
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	476
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	64	73	66
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	84
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	61
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	54	88	63
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	29	88	44
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	84
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	61
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	67
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	32	86	45

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	81
AIR6449 Antenna	32.8	18.1	12.8	4.11	2.91	1.81	2.57	1.20	1.20	32	23	29
AIR6419 Antenna	33.2	18.3	9.5	4.21	2.18	1.82	3.50	1.20	1.24	33	17	29
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	81
RRUS-32 B66A RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.20	1.20	1.23	22	15	21
RRUS-32 B66A RRH (Shielded)	29.4	7.1	9.2	1.46	1.87	4.12	3.20	1.27	1.23	12	15	13
RRUS-32 B2 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	17
RRUS-32 B2 RRH (Shielded)	29.4	4.6	14.3	0.94	2.91	6.40	2.06	1.37	1.20	8	22	12
4478 B14 RRH	20.3	10.5	15.6	1.48	2.19	1.94	1.30	1.20	1.20	11	17	13
4478 B14 RRH (Shielded)	20.3	5.2	15.6	0.74	2.19	3.87	1.30	1.26	1.20	6	17	9
RRUS-32 B30 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	17
RRUS-32 B30 RRH (Shielded)	29.4	4.6	14.3	0.94	2.91	6.40	2.06	1.37	1.20	8	22	12
4449 B5/B12 RRH	20.1	11.6	15.4	1.61	2.14	1.73	1.31	1.20	1.20	12	17	13
4449 B5/B12 RRH (Shielded)	20.1	5.8	15.4	0.81	2.14	3.47	1.31	1.24	1.20	6	17	9

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	10	5	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = 60 (deg)

Ice Thickness = 1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	321
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	176	119	134
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	181	87	111
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	321
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-32 B66A RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	91	73	77
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	108
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	57	119	104
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	54	88	80
4478 B14 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	41	88	76
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	108
RRUS-32 B30 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	57	119	104
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	79
4449 B5/B12 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	46	86	76

**WIND LOADS WITH ICE:**

TPA65R-BU6DA-K Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	57
AIR6449 Antenna	32.8	18.1	12.8	4.11	2.91	1.81	2.57	1.20	1.20	32	23	25
AIR6419 Antenna	33.2	18.3	9.5	4.21	2.18	1.82	3.50	1.20	1.24	33	17	21
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	57
RRUS-32 B66A RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.20	1.20	1.23	22	15	17
RRUS-32 B66A RRH (Shielded)	29.4	10.7	9.2	2.18	1.87	2.74	3.20	1.21	1.23	17	15	15
RRUS-32 B2 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	21
RRUS-32 B2 RRH (Shielded)	29.4	6.9	14.3	1.40	2.91	4.27	2.06	1.28	1.20	12	22	20
4478 B14 RRH	20.3	10.5	15.6	1.48	2.19	1.94	1.30	1.20	1.20	11	17	16
4478 B14 RRH (Shielded)	20.3	7.9	15.6	1.11	2.19	2.58	1.30	1.20	1.20	9	17	15
RRUS-32 B30 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	21
RRUS-32 B30 RRH (Shielded)	29.4	6.9	14.3	1.40	2.91	4.27	2.06	1.28	1.20	12	22	20
4449 B5/B12 RRH	20.1	11.6	15.4	1.61	2.14	1.73	1.31	1.20	1.20	12	17	16
4449 B5/B12 RRH (Shielded)	20.1	8.7	15.4	1.21	2.14	2.31	1.31	1.20	1.20	9	17	15

**WIND LOADS AT 30 MPH:**

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	10	5	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B66A RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	5	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	2	5	4

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = 90 (deg)

Ice Thickness = 1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	244
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	176	119	119
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	181	87	87
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	244
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	73
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	64	73	73
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	119
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	119
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	54	88	88
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	29	88	88
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	119
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	119
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	86
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	32	86	86

**WIND LOADS WITH ICE:**

TPA65R-BU6DA-K Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	46
AIR6449 Antenna	32.8	18.1	12.8	4.11	2.91	1.81	2.57	1.20	1.20	32	23	23
AIR6419 Antenna	33.2	18.3	9.5	4.21	2.18	1.82	3.50	1.20	1.24	33	17	17
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	46
RRUS-32 B66A RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.20	1.20	1.23	22	15	15
RRUS-32 B66A RRH (Shielded)	29.4	8.2	9.2	1.68	1.87	3.57	3.20	1.25	1.23	13	15	15
RRUS-32 B2 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	22
RRUS-32 B2 RRH (Shielded)	29.4	5.7	14.3	1.16	2.91	5.17	2.06	1.32	1.20	10	22	22
4478 B14 RRH	20.3	10.5	15.6	1.48	2.19	1.94	1.30	1.20	1.20	11	17	17
4478 B14 RRH (Shielded)	20.3	6.3	15.6	0.89	2.19	3.20	1.30	1.23	1.20	7	17	17
RRUS-32 B30 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	22
RRUS-32 B30 RRH (Shielded)	29.4	5.7	14.3	1.16	2.91	5.17	2.06	1.32	1.20	10	22	22
4449 B5/B12 RRH	20.1	11.6	15.4	1.61	2.14	1.73	1.31	1.20	1.20	12	17	17
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.14	2.92	1.31	1.22	1.20	8	17	17

**WIND LOADS AT 30 MPH:**

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	13
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	10	5	5
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	13
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	5
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	5

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = 120 (deg)

Ice Thickness = 1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	321
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	176	119	134
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	181	87	111
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	321
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-32 B66A RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	91	73	77
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	108
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	57	119	104
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	54	88	80
4478 B14 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	41	88	76
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	108
RRUS-32 B30 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	57	119	104
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	79
4449 B5/B12 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	46	86	76

**WIND LOADS WITH ICE:**

TPA65R-BU6DA-K Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	57
AIR6449 Antenna	32.8	18.1	12.8	4.11	2.91	1.81	2.57	1.20	1.20	32	23	25
AIR6419 Antenna	33.2	18.3	9.5	4.21	2.18	1.82	3.50	1.20	1.24	33	17	21
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	57
RRUS-32 B66A RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.20	1.20	1.23	22	15	17
RRUS-32 B66A RRH (Shielded)	29.4	10.7	9.2	2.18	1.87	2.74	3.20	1.21	1.23	17	15	15
RRUS-32 B2 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	21
RRUS-32 B2 RRH (Shielded)	29.4	6.9	14.3	1.40	2.91	4.27	2.06	1.28	1.20	12	22	20
4478 B14 RRH	20.3	10.5	15.6	1.48	2.19	1.94	1.30	1.20	1.20	11	17	16
4478 B14 RRH (Shielded)	20.3	7.9	15.6	1.11	2.19	2.58	1.30	1.20	1.20	9	17	15
RRUS-32 B30 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	21
RRUS-32 B30 RRH (Shielded)	29.4	6.9	14.3	1.40	2.91	4.27	2.06	1.28	1.20	12	22	20
4449 B5/B12 RRH	20.1	11.6	15.4	1.61	2.14	1.73	1.31	1.20	1.20	12	17	16
4449 B5/B12 RRH (Shielded)	20.1	8.7	15.4	1.21	2.14	2.31	1.31	1.20	1.20	9	17	15

**WIND LOADS AT 30 MPH:**

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	10	5	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B66A RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B2 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
4478 B14 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	5	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH (Shielded)	27.2	5.3	12.1	0.99	2.29	5.18	2.25	1.32	1.20	3	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	2	5	4

Date: 1/21/2022  
 Project Name: PORTLAND  
 Project No.: CT1066  
 Designed By: CL Checked By: MSC



**WIND LOADS**

Angle = 150 (deg)

Ice Thickness = 1.09 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-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	476
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	176	119	162
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	181	87	158
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	553	244	476
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	64	73	66
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	84
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	61
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	54	88	63
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	29	88	44
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	119	84
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	41	119	61
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	67
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	32	86	45

**WIND LOADS WITH ICE:**

TPA65R-BU6DA-K Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	81
AIR6449 Antenna	32.8	18.1	12.8	4.11	2.91	1.81	2.57	1.20	1.20	32	23	29
AIR6419 Antenna	33.2	18.3	9.5	4.21	2.18	1.82	3.50	1.20	1.24	33	17	29
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.66	5.03	3.21	7.43	1.23	1.41	92	46	81
RRUS-32 B66A RRH	29.4	14.3	9.2	2.91	1.87	2.06	3.20	1.20	1.23	22	15	21
RRUS-32 B66A RRH (Shielded)	29.4	7.1	9.2	1.46	1.87	4.12	3.20	1.27	1.23	12	15	13
RRUS-32 B2 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	17
RRUS-32 B2 RRH (Shielded)	29.4	4.6	14.3	0.94	2.91	6.40	2.06	1.37	1.20	8	22	12
4478 B14 RRH	20.3	10.5	15.6	1.48	2.19	1.94	1.30	1.20	1.20	11	17	13
4478 B14 RRH (Shielded)	20.3	5.2	15.6	0.74	2.19	3.87	1.30	1.26	1.20	6	17	9
RRUS-32 B30 RRH	29.4	9.2	14.3	1.87	2.91	3.20	2.06	1.23	1.20	15	22	17
RRUS-32 B30 RRH (Shielded)	29.4	4.6	14.3	0.94	2.91	6.40	2.06	1.37	1.20	8	22	12
4449 B5/B12 RRH	20.1	11.6	15.4	1.61	2.14	1.73	1.31	1.20	1.20	12	17	13
4449 B5/B12 RRH (Shielded)	20.1	5.8	15.4	0.81	2.14	3.47	1.31	1.24	1.20	6	17	9

**WIND LOADS AT 30 MPH:**

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	10	5	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B66A RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B2 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2

Date: 1/21/2022

Project Name: PORTLAND

Project No.: CT1066

Designed By: CL Checked By: MSC



### ICE WEIGHT CALCULATIONS

Thickness of ice: 1.09 in.  
Density of ice: 56 pcf

#### TPA65R-BU6DA-K 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: 183 lbs  
Weight of object: 69.0 lbs  
Combined weight of ice and object: 252 lbs

#### AIR6449 Antenna

Weight of ice based on total radial SF area:  
Height (in): 30.6  
Width (in): 15.9  
Depth (in): 10.6  
Total weight of ice on object: 69 lbs  
Weight of object: 82.0 lbs  
Combined weight of ice and object: 151 lbs

#### AIR6419 Antenna

Weight of ice based on total radial SF area:  
Height (in): 31.0  
Width (in): 16.1  
Depth (in): 7.3  
Total weight of ice on object: 65 lbs  
Weight of object: 66.0 lbs  
Combined weight of ice and object: 131 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: 183 lbs  
Weight of object: 80.0 lbs  
Combined weight of ice and object: 263 lbs

#### RRUS-32 B66A RRH

Weight of ice based on total radial SF area:  
Height (in): 27.2  
Width (in): 12.1  
Depth (in): 7.0  
Total weight of ice on object: 45 lbs  
Weight of object: 60.0 lbs  
Combined weight of ice and object: 105 lbs

#### RRUS-32 B2 RRH

Weight of ice based on total radial SF area:  
Height (in): 27.2  
Width (in): 12.1  
Depth (in): 7.0  
Total weight of ice on object: 45 lbs  
Weight of object: 60.0 lbs  
Combined weight of ice and object: 105 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: 34 lbs  
Weight of object: 60.0 lbs  
Combined weight of ice and object: 94 lbs

#### RRUS-32 B30 RRH

Weight of ice based on total radial SF area:  
Height (in): 27.2  
Width (in): 12.1  
Depth (in): 7.0  
Total weight of ice on object: 45 lbs  
Weight of object: 60.0 lbs  
Combined weight of ice and object: 105 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: 34 lbs  
Weight of object: 73.0 lbs  
Combined weight of ice and object: 107 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: 29 lbs  
Weight of object: 33 lbs  
Combined weight of ice and object: 62 lbs

#### 2" Pipe

Per foot weight of ice:  
diameter (in): 2.38  
Per foot weight of ice on object: 5 plf

#### 3" Pipe

Per foot weight of ice:  
diameter (in): 3.5  
Per foot weight of ice on object: 6 plf

#### HSS 3x3

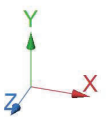
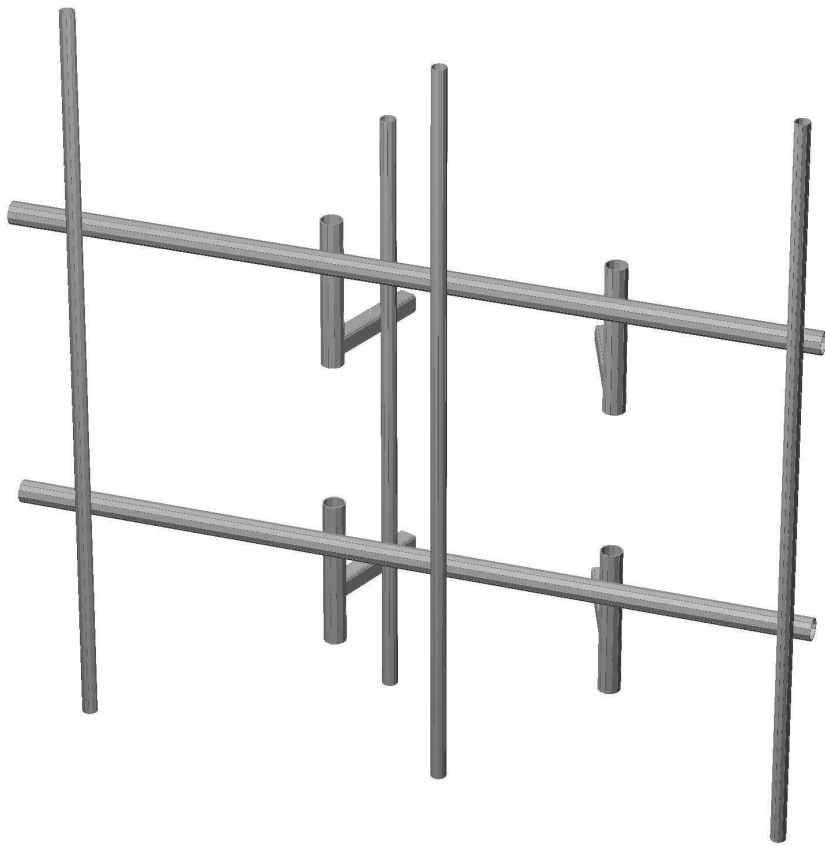
Weight of ice based on total radial SF area:  
Height (in): 3  
Width (in): 3  
Per foot weight of ice on object: 7 plf

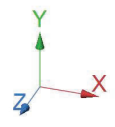
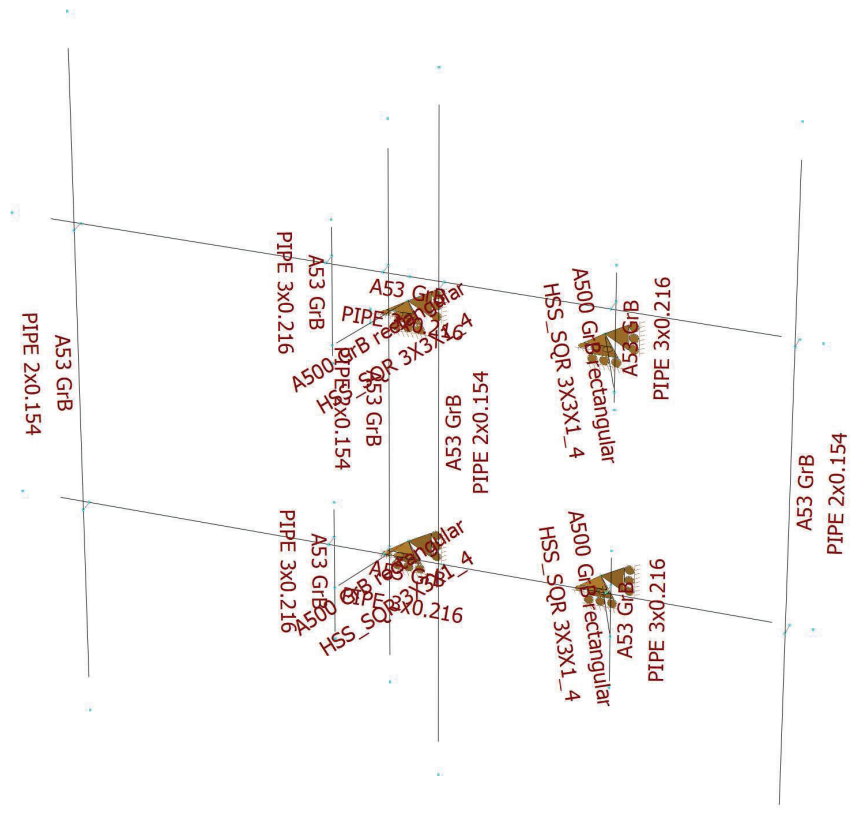




**HUDSON**  
Design Group LLC

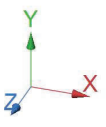
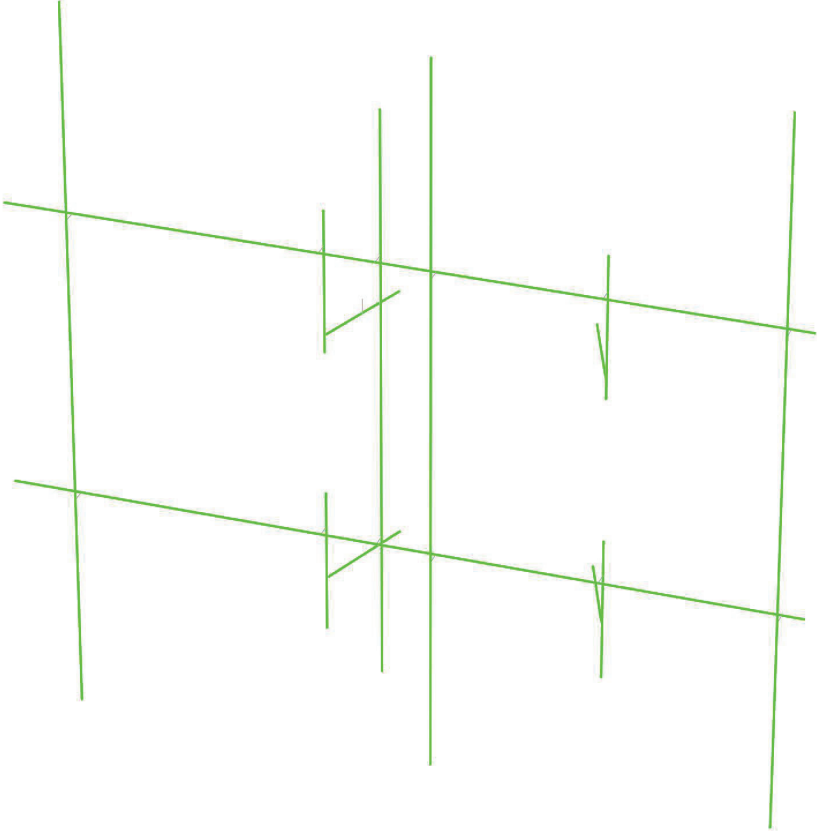
**Mount Calculations  
(Existing Conditions)**

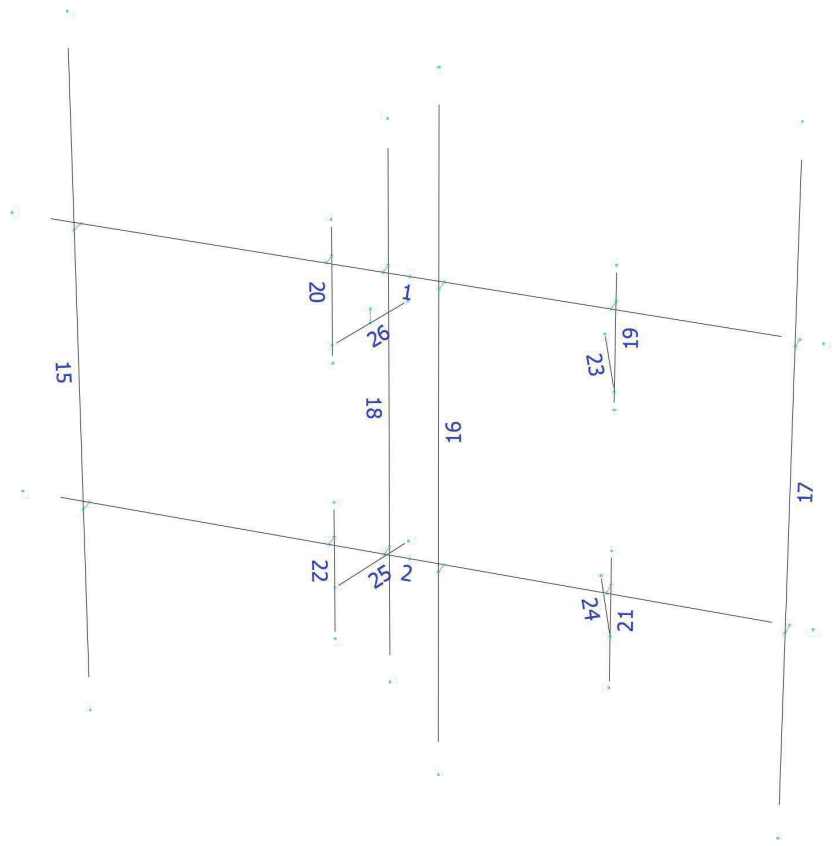




Design status

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





## Load data

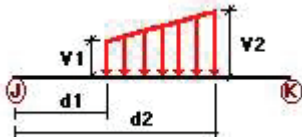
### GLOSSARY

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 <td 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

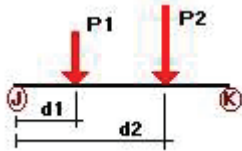
### Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.009	-0.009	0.00	No	100.00	Yes
	2	z	-0.009	-0.009	0.00	No	100.00	Yes
	18	z	-0.006	-0.006	0.00	No	100.00	Yes
	19	z	-0.009	-0.009	0.00	No	100.00	Yes
	20	z	-0.009	-0.009	0.00	No	100.00	Yes
	21	z	-0.009	-0.009	0.00	No	100.00	Yes
	22	z	-0.009	-0.009	0.00	No	100.00	Yes
	23	z	-0.013	-0.013	0.00	No	100.00	Yes
	24	z	-0.013	-0.013	0.00	No	100.00	Yes
	25	z	-0.013	-0.013	0.00	No	100.00	Yes
W30	1	z	-0.009	-0.009	0.00	No	100.00	Yes
	2	z	-0.009	-0.009	0.00	No	100.00	Yes
	18	z	-0.006	-0.006	0.00	No	100.00	Yes
	19	z	-0.009	-0.009	0.00	No	100.00	Yes
	20	z	-0.009	-0.009	0.00	No	100.00	Yes
	21	z	-0.009	-0.009	0.00	No	100.00	Yes
	22	z	-0.009	-0.009	0.00	No	100.00	Yes
	23	z	-0.013	-0.013	0.00	No	100.00	Yes
	24	z	-0.013	-0.013	0.00	No	100.00	Yes
	25	z	-0.013	-0.013	0.00	No	100.00	Yes
W60	15	x	-0.006	-0.006	0.00	No	100.00	Yes
	16	x	-0.006	-0.006	0.00	No	100.00	Yes
	17	x	-0.006	-0.006	0.00	No	100.00	Yes
	18	x	-0.006	-0.006	0.00	No	100.00	Yes
	19	x	-0.009	-0.009	0.00	No	100.00	Yes
	20	x	-0.009	-0.009	0.00	No	100.00	Yes
	21	x	-0.009	-0.009	0.00	No	100.00	Yes
	22	x	-0.009	-0.009	0.00	No	100.00	Yes
	23	x	-0.013	-0.013	0.00	No	100.00	Yes
	24	x	-0.013	-0.013	0.00	No	100.00	Yes
W90	15	x	-0.006	-0.006	0.00	No	100.00	Yes
	16	x	-0.006	-0.006	0.00	No	100.00	Yes
	17	x	-0.006	-0.006	0.00	No	100.00	Yes
	18	x	-0.006	-0.006	0.00	No	100.00	Yes
	19	x	-0.009	-0.009	0.00	No	100.00	Yes
	20	x	-0.009	-0.009	0.00	No	100.00	Yes
	21	x	-0.009	-0.009	0.00	No	100.00	Yes
	22	x	-0.009	-0.009	0.00	No	100.00	Yes
	23	x	-0.013	-0.013	0.00	No	100.00	Yes
	24	x	-0.013	-0.013	0.00	No	100.00	Yes
W120	15	x	-0.006	-0.006	0.00	No	100.00	Yes
	16	x	-0.006	-0.006	0.00	No	100.00	Yes
	17	x	-0.006	-0.006	0.00	No	100.00	Yes
	18	x	-0.006	-0.006	0.00	No	100.00	Yes
	19	x	-0.009	-0.009	0.00	No	100.00	Yes
	20	x	-0.009	-0.009	0.00	No	100.00	Yes
	21	x	-0.009	-0.009	0.00	No	100.00	Yes
	22	x	-0.009	-0.009	0.00	No	100.00	Yes
	23	x	-0.013	-0.013	0.00	No	100.00	Yes
	24	x	-0.013	-0.013	0.00	No	100.00	Yes
W150	1	z	0.009	0.009	0.00	No	100.00	Yes
	2	z	0.009	0.009	0.00	No	100.00	Yes

	15	z	0.006	0.006	0.00	No	100.00	Yes
	16	z	0.006	0.006	0.00	No	100.00	Yes
	17	z	0.006	0.006	0.00	No	100.00	Yes
	18	z	0.006	0.006	0.00	No	100.00	Yes
	19	z	0.009	0.009	0.00	No	100.00	Yes
	20	z	0.009	0.009	0.00	No	100.00	Yes
	21	z	0.009	0.009	0.00	No	100.00	Yes
	22	z	0.009	0.009	0.00	No	100.00	Yes
	23	z	0.013	0.013	0.00	No	100.00	Yes
	24	z	0.013	0.013	0.00	No	100.00	Yes
	25	z	0.013	0.013	0.00	No	100.00	Yes
	26	z	0.013	0.013	0.00	No	100.00	Yes
Di	1	y	-0.006	-0.006	0.00	No	100.00	Yes
	2	y	-0.006	-0.006	0.00	No	100.00	Yes
	15	y	-0.005	-0.005	0.00	No	100.00	Yes
	16	y	-0.005	-0.005	0.00	No	100.00	Yes
	17	y	-0.005	-0.005	0.00	No	100.00	Yes
	18	y	-0.005	-0.005	0.00	No	100.00	Yes
	19	y	-0.006	-0.006	0.00	No	100.00	Yes
	20	y	-0.006	-0.006	0.00	No	100.00	Yes
	21	y	-0.006	-0.006	0.00	No	100.00	Yes
	22	y	-0.006	-0.006	0.00	No	100.00	Yes
	23	y	-0.007	-0.007	0.00	No	100.00	Yes
	24	y	-0.007	-0.007	0.00	No	100.00	Yes
	25	y	-0.007	-0.007	0.00	No	100.00	Yes
	26	y	-0.007	-0.007	0.00	No	100.00	Yes

### Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	15	y	-0.04	2.50	No
		y	-0.04	7.50	No
	16	y	-0.073	5.00	No
		y	-0.06	5.00	No
		y	-0.041	2.00	No
		y	-0.041	4.50	No
		y	-0.033	5.50	No
		y	-0.033	8.00	No
	17	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.06	4.00	No
		y	-0.06	6.00	No
	18	y	-0.033	1.50	No
	27	y	-0.033	0.20	No
Wo	15	z	-0.267	2.50	No
		z	-0.267	7.50	No
		z	-0.032	5.00	No
		z	-0.041	5.00	No



	16	z	-0.088	2.00	No
		z	-0.088	4.50	No
		z	-0.091	5.50	No
		z	-0.091	8.00	No
	17	z	-0.267	2.50	No
		z	-0.267	7.50	No
		z	-0.064	4.00	No
		z	-0.029	6.00	No
		z	-0.041	6.00	No
	18	z	-0.049	1.50	No
	27	z	-0.049	0.20	No
W30	15	3	-0.238	2.50	No
		3	-0.238	7.50	No
		3	-0.084	5.00	No
	16	3	-0.081	2.00	No
		3	-0.081	4.50	No
		3	-0.079	5.50	No
		3	-0.079	8.00	No
	17	3	-0.238	2.50	No
		3	-0.238	7.50	No
		3	-0.108	4.00	No
		3	-0.084	6.00	No
	18	3	-0.049	1.50	No
	27	3	-0.049	0.20	No
W60	15	3	-0.161	2.50	No
		3	-0.161	7.50	No
		3	-0.108	5.00	No
	16	3	-0.067	2.00	No
		3	-0.067	4.50	No
		3	-0.056	5.50	No
		3	-0.056	8.00	No
	17	3	-0.161	2.50	No
		3	-0.161	7.50	No
		3	-0.084	4.00	No
		3	-0.108	6.00	No
	18	3	-0.049	1.50	No
	27	3	-0.049	0.20	No
W90	15	x	-0.122	2.50	No
		x	-0.122	7.50	No
		x	-0.119	5.00	No
	16	x	-0.06	2.00	No
		x	-0.06	4.50	No
		x	-0.044	5.50	No
		x	-0.044	8.00	No
	17	x	-0.122	2.50	No
		x	-0.122	7.50	No
		x	-0.073	4.00	No
		x	-0.119	6.00	No
	18	x	-0.049	1.50	No
	27	x	-0.049	0.20	No
W120	15	2	-0.161	2.50	No
		2	-0.161	7.50	No
		2	-0.108	5.00	No
	16	2	-0.067	2.00	No
		2	-0.067	4.50	No
		2	-0.056	5.50	No
		2	-0.056	8.00	No
	17	2	-0.161	2.50	No
		2	-0.161	7.50	No
		2	-0.084	4.00	No

		2	-0.108	6.00	No
	18	2	-0.049	1.50	No
	27	2	-0.049	0.20	No
W150	15	2	-0.238	2.50	No
		2	-0.238	7.50	No
		2	-0.084	5.00	No
	16	2	-0.081	2.00	No
		2	-0.081	4.50	No
		2	-0.079	5.50	No
		2	-0.079	8.00	No
	17	2	-0.238	2.50	No
		2	-0.238	7.50	No
		2	-0.108	4.00	No
		2	-0.084	6.00	No
	18	2	-0.049	1.50	No
	27	2	-0.049	0.20	No
Di	15	y	-0.092	2.50	No
		y	-0.092	7.50	No
		y	-0.034	5.00	No
		y	-0.045	5.00	No
	16	y	-0.035	2.00	No
		y	-0.035	4.50	No
		y	-0.033	5.50	No
		y	-0.033	8.00	No
	17	y	-0.092	2.50	No
		y	-0.092	7.50	No
		y	-0.045	4.00	No
		y	-0.034	6.00	No
		y	-0.045	6.00	No
	18	y	-0.029	1.50	No
	27	y	-0.029	0.20	No
W10	15	z	-0.047	2.50	No
		z	-0.047	7.50	No
		z	-0.008	5.00	No
		z	-0.011	5.00	No
	16	z	-0.016	2.00	No
		z	-0.016	4.50	No
		z	-0.017	5.50	No
		z	-0.017	8.00	No
	17	z	-0.047	2.50	No
		z	-0.047	7.50	No
		z	-0.014	4.00	No
		z	-0.007	6.00	No
		z	-0.011	6.00	No
	18	z	-0.01	1.50	No
	27	z	-0.01	0.20	No
W130	15	3	-0.041	2.50	No
		3	-0.041	7.50	No
		3	-0.017	5.00	No
	16	3	-0.015	2.00	No
		3	-0.015	4.50	No
		3	-0.015	5.50	No
		3	-0.015	8.00	No
	17	3	-0.041	2.50	No
		3	-0.041	7.50	No
		3	-0.021	4.00	No
		3	-0.017	6.00	No
	18	3	-0.01	1.50	No
	27	3	-0.01	0.20	No
W160	15	3	-0.029	2.50	No

		3	-0.029	7.50	No
		3	-0.021	5.00	No
	16	3	-0.013	2.00	No
		3	-0.013	4.50	No
		3	-0.011	5.50	No
		3	-0.011	8.00	No
	17	3	-0.029	2.50	No
		3	-0.029	7.50	No
		3	-0.017	4.00	No
		3	-0.021	6.00	No
	18	3	-0.01	1.50	No
	27	3	-0.01	0.20	No
WI90	15	x	-0.023	2.50	No
		x	-0.023	7.50	No
		x	-0.022	5.00	No
	16	x	-0.012	2.00	No
		x	-0.012	4.50	No
		x	-0.009	5.50	No
		x	-0.009	8.00	No
	17	x	-0.023	2.50	No
		x	-0.023	7.50	No
		x	-0.015	4.00	No
		x	-0.022	6.00	No
	18	x	-0.01	1.50	No
	27	x	-0.01	0.20	No
WI120	15	2	-0.029	2.50	No
		2	-0.029	7.50	No
		2	-0.021	5.00	No
	16	2	-0.013	2.00	No
		2	-0.013	4.50	No
		2	-0.011	5.50	No
		2	-0.011	8.00	No
	17	2	-0.029	2.50	No
		2	-0.029	7.50	No
		2	-0.017	4.00	No
		2	-0.021	6.00	No
	18	2	-0.01	1.50	No
	27	2	-0.01	0.20	No
WI150	15	2	-0.041	2.50	No
		2	-0.041	7.50	No
		2	-0.017	5.00	No
	16	2	-0.015	2.00	No
		2	-0.015	4.50	No
		2	-0.015	5.50	No
		2	-0.015	8.00	No
	17	2	-0.041	2.50	No
		2	-0.041	7.50	No
		2	-0.021	4.00	No
		2	-0.017	6.00	No
	18	2	-0.01	1.50	No
	27	2	-0.01	0.20	No
WLO	15	z	-0.015	2.50	No
		z	-0.015	7.50	No
		z	-0.002	5.00	No
		z	-0.002	5.00	No
	16	z	-0.005	2.00	No
		z	-0.005	4.50	No
		z	-0.005	5.50	No
		z	-0.005	8.00	No
	17	z	-0.015	2.50	No

		z	-0.015	7.50	No
		z	-0.003	4.00	No
		z	-0.002	6.00	No
		z	-0.002	6.00	No
	18	z	-0.003	1.50	No
	27	z	-0.003	0.20	No
WL30	15	3	-0.013	2.50	No
		3	-0.013	7.50	No
		3	-0.004	5.00	No
	16	3	-0.005	2.00	No
		3	-0.005	4.50	No
		3	-0.004	5.50	No
		3	-0.004	8.00	No
	17	3	-0.013	2.50	No
		3	-0.013	7.50	No
		3	-0.006	4.00	No
		3	-0.004	6.00	No
	18	3	-0.003	1.50	No
	27	3	-0.003	0.20	No
WL60	15	3	-0.009	2.50	No
		3	-0.009	7.50	No
		3	-0.006	5.00	No
	16	3	-0.004	2.00	No
		3	-0.004	4.50	No
		3	-0.003	5.50	No
		3	-0.003	8.00	No
	17	3	-0.009	2.50	No
		3	-0.009	7.50	No
		3	-0.004	4.00	No
		3	-0.006	6.00	No
	18	3	-0.003	1.50	No
	27	3	-0.003	0.20	No
WL90	15	x	-0.007	2.50	No
		x	-0.007	7.50	No
		x	-0.006	5.00	No
	16	x	-0.003	2.00	No
		x	-0.003	4.50	No
		x	-0.003	5.50	No
		x	-0.003	8.00	No
	17	x	-0.007	2.50	No
		x	-0.007	7.50	No
		x	-0.004	4.00	No
		x	-0.006	6.00	No
	18	x	-0.003	1.50	No
	27	x	-0.003	0.20	No
WL120	15	2	-0.009	2.50	No
		2	-0.009	7.50	No
		2	-0.006	5.00	No
	16	2	-0.004	2.00	No
		2	-0.004	4.50	No
		2	-0.003	5.50	No
		2	-0.003	8.00	No
	17	2	-0.009	2.50	No
		2	-0.009	7.50	No
		2	-0.004	4.00	No
		2	-0.006	6.00	No
	18	2	-0.003	1.50	No
	27	2	-0.003	0.20	No
WL150	15	2	-0.013	2.50	No
		2	-0.013	7.50	No

		2	-0.004	5.00	No
	16	2	-0.005	2.00	No
		2	-0.005	4.50	No
		2	-0.004	5.50	No
		2	-0.004	8.00	No
	17	2	-0.013	2.50	No
		2	-0.013	7.50	No
		2	-0.006	4.00	No
		2	-0.004	6.00	No
	18	2	-0.003	1.50	No
	27	2	-0.003	0.20	No
LL1	1	y	-0.25	50.00	Yes
LL2	1	y	-0.25	100.00	Yes
LL3	1	y	-0.25	0.00	Yes
LLa2	17	y	-0.50	50.00	Yes
LLa3	16	y	-0.50	50.00	Yes
LLa4	15	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
W10	0.00	0.00	0.00
W130	0.00	0.00	0.00
W160	0.00	0.00	0.00
W190	0.00	0.00	0.00
W1120	0.00	0.00	0.00
W1150	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



Current Date: 1/21/2022 1:22 PM

Units system: English

## 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+Wl0  
LC26=1.2D+Di+Wl30  
LC27=1.2D+Di+Wl60  
LC28=1.2D+Di+Wl90  
LC29=1.2D+Di+Wl120  
LC30=1.2D+Di+Wl150  
LC31=1.2D+Di-Wl0  
LC32=1.2D+Di-Wl30  
LC33=1.2D+Di-Wl60  
LC34=1.2D+Di-Wl90  
LC35=1.2D+Di-Wl120  
LC36=1.2D+Di-Wl150  
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
	<b>HSS_SQR 3X3X1_4</b>	<b>23</b>	LC10 at 100.00%	0.22	OK	Eq. H1-1b
		<b>24</b>	LC57 at 100.00%	0.39	OK	Eq. H1-1b
		<b>25</b>	LC83 at 100.00%	<b>0.47</b>	<b>OK</b>	Eq. H1-1b
		<b>26</b>	LC2 at 0.00%	0.24	OK	Eq. H1-1b
	<b>PIPE 2x0.154</b>	<b>15</b>	LC82 at 68.75%	0.90	OK	Eq. H1-1b
		<b>16</b>	LC7 at 31.25%	0.92	OK	Eq. H1-1b
		<b>17</b>	LC58 at 68.75%	0.83	OK	Eq. H1-1b
		<b>18</b>	LC7 at 25.00%	<b>0.94</b>	<b>OK</b>	Eq. H1-1b
	<b>PIPE 3x0.216</b>	<b>1</b>	LC8 at 39.84%	0.58	OK	Eq. H3-6
		<b>2</b>	LC81 at 39.84%	0.60	OK	Eq. H3-6
		<b>19</b>	LC59 at 72.92%	0.51	OK	Eq. H1-1b
		<b>20</b>	LC81 at 72.92%	0.60	OK	Eq. H1-1b
		<b>21</b>	LC59 at 37.50%	0.57	OK	Eq. H1-1b
		<b>22</b>	LC81 at 37.50%	<b>0.69</b>	<b>OK</b>	Eq. H1-1b



## 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	6.01	0
2	-5.25	0.00	6.01	0
3	5.25	0.00	6.01	0
4	0.00	-4.00	6.01	0
5	-5.25	-4.00	6.01	0
6	5.25	-4.00	6.01	0
7	4.95	0.00	6.01	0
8	4.95	-4.00	6.01	0
9	0.45	0.00	6.01	0
10	0.45	-4.00	6.01	0
11	-0.34	0.00	6.01	0
12	-0.34	-4.00	6.01	0
13	-4.33	0.00	6.01	0
14	-4.33	-4.00	6.01	0
15	4.95	0.00	6.21	0
16	4.95	-4.00	6.21	0
17	0.45	0.00	6.21	0
18	0.45	-4.00	6.21	0
19	-4.33	0.00	6.21	0
20	-4.33	-4.00	6.21	0
21	-0.34	0.00	5.81	0
22	-0.34	-4.00	5.81	0
23	2.583	0.00	6.01	0

24	2.583	-4.00	6.01	0
25	-1.08	0.00	6.01	0
26	-1.08	-4.00	6.01	0
27	2.583	0.00	5.81	0
28	2.583	-4.00	5.81	0
29	-1.08	0.00	5.81	0
30	-1.08	-4.00	5.81	0
31	4.95	3.00	6.21	0
32	0.45	3.00	6.21	0
33	-4.33	3.00	6.21	0
34	-4.33	-7.00	6.21	0
35	0.45	-7.00	6.21	0
36	4.95	-7.00	6.21	0
37	-0.34	2.00	5.81	0
38	-0.34	-6.00	5.81	0
39	2.583	0.50	5.81	0
40	-1.08	0.50	5.81	0
41	2.583	-1.50	5.81	0
42	-1.08	-1.50	5.81	0
43	2.583	-3.50	5.81	0
44	-1.08	-3.50	5.81	0
45	2.583	-5.50	5.81	0
46	-1.08	-5.50	5.81	0
47	2.583	-4.75	5.81	0
48	-1.08	-4.75	5.81	0
49	2.583	-1.25	5.81	0
50	-1.08	-1.25	5.81	0
71	2.023	-4.75	4.42	0
72	-0.58	-4.75	4.40	0
73	2.023	-1.25	4.42	0
74	-0.58	-1.25	4.40	0
75	-0.83	-1.25	5.105	0
76	-0.83	-1.05	5.105	0

## Restraints

Node	TX	TY	TZ	RX	RY	RZ
71	1	1	1	0	0	0
72	1	1	1	0	0	0
73	1	1	1	0	0	0
74	1	1	1	0	0	0

## Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	2	3		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
2	5	6		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
15	33	34		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
16	32	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
17	31	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

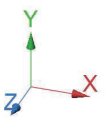
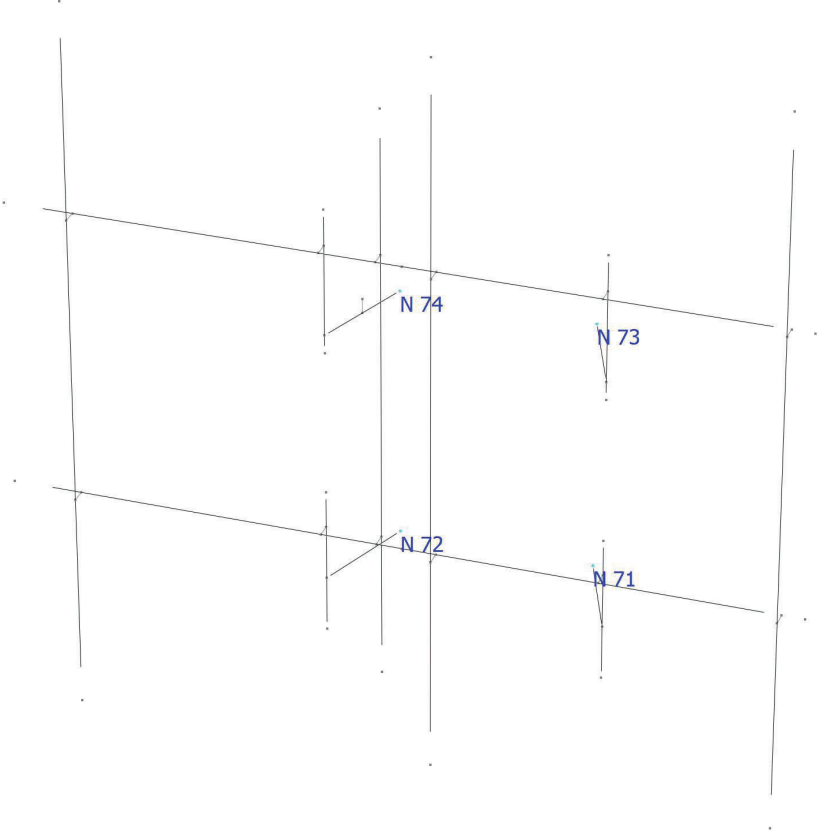
18	37	38	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	41	39	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
20	42	40	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
21	45	43	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
22	46	44	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
23	73	49	HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
24	71	47	HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
25	72	48	HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
26	50	74	HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00

---

### Orientation of local axes

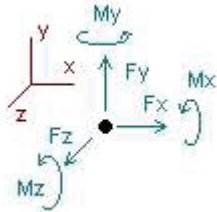
Member	Rotation [Deg]	Axes23	NX	NY	NZ
15	315.00	0	0.00	0.00	0.00
16	315.00	0	0.00	0.00	0.00
17	315.00	0	0.00	0.00	0.00
18	315.00	0	0.00	0.00	0.00

---



## Analysis result

### Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition <b>LC1=1.2D+Wo</b>						
71	0.44112	0.18391	0.40654	0.00000	0.00000	0.00000
72	-0.45327	0.29186	0.62614	0.00000	0.00000	0.00000
73	0.38038	0.33351	0.38342	0.00000	0.00000	0.00000
74	-0.36823	0.49476	0.65146	0.00000	0.00000	0.00000
SUM	0.00000	1.30404	2.06756	0.00000	0.00000	0.00000
Condition <b>LC2=1.2D+W30</b>						
71	0.62229	0.05129	-0.05242	0.00000	0.00000	0.00000
72	-0.11796	0.57634	0.97048	0.00000	0.00000	0.00000
73	0.57077	0.05493	-0.10954	0.00000	0.00000	0.00000
74	0.08880	0.62149	0.69194	0.00000	0.00000	0.00000
SUM	1.16390	1.30404	1.50046	0.00000	0.00000	0.00000
Condition <b>LC3=1.2D+W60</b>						
71	0.60131	0.11732	-0.10612	0.00000	0.00000	0.00000
72	-0.03803	0.65287	0.88368	0.00000	0.00000	0.00000
73	0.49772	-0.01025	-0.30699	0.00000	0.00000	0.00000
74	0.22255	0.54410	0.44018	0.00000	0.00000	0.00000
SUM	1.28355	1.30404	0.91075	0.00000	0.00000	0.00000
Condition <b>LC4=1.2D+W90</b>						
71	0.51673	0.17945	-0.26873	0.00000	0.00000	0.00000
72	0.12164	0.81059	0.88586	0.00000	0.00000	0.00000
73	0.35874	-0.13648	-0.67329	0.00000	0.00000	0.00000
74	0.48070	0.45048	0.05616	0.00000	0.00000	0.00000
SUM	1.47780	1.30404	0.00000	0.00000	0.00000	0.00000
Condition <b>LC5=1.2D+W120</b>						
71	0.34901	0.30695	-0.29429	0.00000	0.00000	0.00000
72	0.19802	0.89404	0.74729	0.00000	0.00000	0.00000
73	0.11967	-0.17991	-0.92510	0.00000	0.00000	0.00000
74	0.61685	0.28296	-0.43865	0.00000	0.00000	0.00000
SUM	1.28355	1.30404	-0.91075	0.00000	0.00000	0.00000

Condition **LC6=1.2D+W150**

71	0.23712	0.40171	-0.32467	0.00000	0.00000	0.00000
72	0.22988	0.98310	0.59332	0.00000	0.00000	0.00000
73	-0.03847	-0.24800	-1.14458	0.00000	0.00000	0.00000
74	0.73537	0.16723	-0.80453	0.00000	0.00000	0.00000

---

SUM            1.16390            1.30404            -1.68046            0.00000            0.00000            0.00000

Condition **LC7=1.2D-W0**

71	-0.09266	0.65403	0.09649	0.00000	0.00000	0.00000
72	0.01166	0.82177	0.08550	0.00000	0.00000	0.00000
73	-0.41110	-0.04353	-0.88588	0.00000	0.00000	0.00000
74	0.49210	-0.12823	-1.36367	0.00000	0.00000	0.00000

---

SUM            0.00000            1.30404            -2.06756            0.00000            0.00000            0.00000

Condition **LC8=1.2D-W30**

71	-0.26775	0.78783	0.55537	0.00000	0.00000	0.00000
72	-0.32518	0.54467	-0.25195	0.00000	0.00000	0.00000
73	-0.60330	0.23009	-0.39764	0.00000	0.00000	0.00000
74	0.03234	-0.25855	-1.40624	0.00000	0.00000	0.00000

---

SUM            -1.16390            1.30404            -1.50046            0.00000            0.00000            0.00000

Condition **LC9=1.2D-W60**

71	-0.24695	0.72506	0.61221	0.00000	0.00000	0.00000
72	-0.40723	0.47022	-0.16442	0.00000	0.00000	0.00000
73	-0.53026	0.29407	-0.20062	0.00000	0.00000	0.00000
74	-0.09912	-0.18531	-1.15792	0.00000	0.00000	0.00000

---

SUM            -1.28355            1.30404            -0.91075            0.00000            0.00000            0.00000

Condition **LC10=1.2D-W90**

71	-0.16273	0.66602	0.77852	0.00000	0.00000	0.00000
72	-0.57042	0.31293	-0.16759	0.00000	0.00000	0.00000
73	-0.38997	0.42055	0.16651	0.00000	0.00000	0.00000
74	-0.35467	-0.09545	-0.77744	0.00000	0.00000	0.00000

---

SUM            -1.47780            1.30404            0.00000            0.00000            0.00000            0.00000

Condition **LC11=1.2D-W120**

71	0.00180	0.53865	0.80525	0.00000	0.00000	0.00000
72	-0.64735	0.22559	-0.03314	0.00000	0.00000	0.00000
73	-0.14933	0.46705	0.42119	0.00000	0.00000	0.00000
74	-0.48867	0.07276	-0.28254	0.00000	0.00000	0.00000

---

SUM            -1.28355            1.30404            0.91075            0.00000            0.00000            0.00000

Condition **LC12=1.2D-W150**

71	0.11055	0.44165	0.83465	0.00000	0.00000	0.00000
72	-0.67798	0.13099	0.11622	0.00000	0.00000	0.00000
73	0.01056	0.53896	0.64361	0.00000	0.00000	0.00000
74	-0.60703	0.19244	0.08598	0.00000	0.00000	0.00000

---

SUM            -1.16390            1.30404            1.68046            0.00000            0.00000            0.00000

Condition <b>LC13=0.9D+Wo</b>						
71	0.39690	0.07718	0.34219	0.00000	0.00000	0.00000
72	-0.39701	0.14995	0.53546	0.00000	0.00000	0.00000
73	0.38493	0.29893	0.44737	0.00000	0.00000	0.00000
74	-0.38482	0.45197	0.74254	0.00000	0.00000	0.00000
SUM	0.00000	0.97803	2.06756	0.00000	0.00000	0.00000
Condition <b>LC14=0.9D+W30</b>						
71	0.57855	-0.05548	-0.11669	0.00000	0.00000	0.00000
72	-0.06138	0.43536	0.88003	0.00000	0.00000	0.00000
73	0.57487	0.01971	-0.04584	0.00000	0.00000	0.00000
74	0.07186	0.57844	0.78296	0.00000	0.00000	0.00000
SUM	1.16390	0.97803	1.50046	0.00000	0.00000	0.00000
Condition <b>LC15=0.9D+W60</b>						
71	0.55767	0.01092	-0.17026	0.00000	0.00000	0.00000
72	0.01845	0.51237	0.79343	0.00000	0.00000	0.00000
73	0.50171	-0.04580	-0.24343	0.00000	0.00000	0.00000
74	0.20572	0.50054	0.53102	0.00000	0.00000	0.00000
SUM	1.28355	0.97803	0.91075	0.00000	0.00000	0.00000
Condition <b>LC16=0.9D+W90</b>						
71	0.47331	0.07355	-0.33267	0.00000	0.00000	0.00000
72	0.17802	0.67101	0.79594	0.00000	0.00000	0.00000
73	0.36247	-0.17261	-0.60996	0.00000	0.00000	0.00000
74	0.46401	0.40609	0.14669	0.00000	0.00000	0.00000
SUM	1.47780	0.97803	0.00000	0.00000	0.00000	0.00000
Condition <b>LC17=0.9D+W120</b>						
71	0.30567	0.20167	-0.35799	0.00000	0.00000	0.00000
72	0.25414	0.75523	0.65766	0.00000	0.00000	0.00000
73	0.12328	-0.21652	-0.86194	0.00000	0.00000	0.00000
74	0.60047	0.23765	-0.34848	0.00000	0.00000	0.00000
SUM	1.28355	0.97803	-0.91075	0.00000	0.00000	0.00000
Condition <b>LC18=0.9D+W150</b>						
71	0.19385	0.29688	-0.38820	0.00000	0.00000	0.00000
72	0.28581	0.84490	0.50394	0.00000	0.00000	0.00000
73	-0.03496	-0.28497	-1.08157	0.00000	0.00000	0.00000
74	0.71920	0.12123	-0.71463	0.00000	0.00000	0.00000
SUM	1.16390	0.97803	-1.68046	0.00000	0.00000	0.00000
Condition <b>LC19=0.9D-Wo</b>						
71	-0.13630	0.54981	0.03312	0.00000	0.00000	0.00000
72	0.06702	0.68351	-0.00378	0.00000	0.00000	0.00000
73	-0.40727	-0.08032	-0.82281	0.00000	0.00000	0.00000
74	0.47656	-0.17497	-1.27409	0.00000	0.00000	0.00000
SUM	0.00000	0.97803	-2.06756	0.00000	0.00000	0.00000

Condition **LC20=0.9D-W30**

71	-0.31186	0.68367	0.49192	0.00000	0.00000	0.00000
72	-0.27013	0.40552	-0.34146	0.00000	0.00000	0.00000
73	-0.59903	0.19389	-0.33432	0.00000	0.00000	0.00000
74	0.01713	-0.30505	-1.31660	0.00000	0.00000	0.00000

---

SUM            -1.16390            0.97803            -1.50046            0.00000            0.00000            0.00000

Condition **LC21=0.9D-W60**

71	-0.29115	0.62056	0.54864	0.00000	0.00000	0.00000
72	-0.35209	0.33062	-0.25413	0.00000	0.00000	0.00000
73	-0.52588	0.25819	-0.13717	0.00000	0.00000	0.00000
74	-0.11444	-0.23133	-1.06809	0.00000	0.00000	0.00000

---

SUM            -1.28355            0.97803            -0.91075            0.00000            0.00000            0.00000

Condition **LC22=0.9D-W90**

71	-0.20717	0.56103	0.71475	0.00000	0.00000	0.00000
72	-0.51520	0.17243	-0.25763	0.00000	0.00000	0.00000
73	-0.38533	0.38526	0.23020	0.00000	0.00000	0.00000
74	-0.37011	-0.14068	-0.68731	0.00000	0.00000	0.00000

---

SUM            -1.47780            0.97803            0.00000            0.00000            0.00000            0.00000

Condition **LC23=0.9D-W120**

71	-0.04273	0.43303	0.74124	0.00000	0.00000	0.00000
72	-0.59188	0.08429	-0.12349	0.00000	0.00000	0.00000
73	-0.14455	0.43225	0.48506	0.00000	0.00000	0.00000
74	-0.50439	0.02846	-0.19206	0.00000	0.00000	0.00000

---

SUM            -1.28355            0.97803            0.91075            0.00000            0.00000            0.00000

Condition **LC24=0.9D-W150**

71	0.06595	0.33556	0.77047	0.00000	0.00000	0.00000
72	-0.62233	-0.01095	0.02562	0.00000	0.00000	0.00000
73	0.01544	0.50457	0.70763	0.00000	0.00000	0.00000
74	-0.62296	0.14886	0.17674	0.00000	0.00000	0.00000

---

SUM            -1.16390            0.97803            1.68046            0.00000            0.00000            0.00000

Condition **LC25=1.2D+Di+W10**

71	0.35933	0.69684	0.47112	0.00000	0.00000	0.00000
72	-0.43163	0.91449	0.65802	0.00000	0.00000	0.00000
73	0.04178	0.27939	-0.33678	0.00000	0.00000	0.00000
74	0.03052	0.34625	-0.46736	0.00000	0.00000	0.00000

---

SUM            0.00000            2.23697            0.32500            0.00000            0.00000            0.00000

Condition **LC26=1.2D+Di+W130**

71	0.38870	0.67296	0.38572	0.00000	0.00000	0.00000
72	-0.36865	0.96577	0.71893	0.00000	0.00000	0.00000
73	0.07450	0.22964	-0.42846	0.00000	0.00000	0.00000
74	0.11686	0.36860	-0.46476	0.00000	0.00000	0.00000

---

SUM            0.21142            2.23697            0.21142            0.00000            0.00000            0.00000



Condition <b>LC27=1.2D+Di+W160</b>						
71	0.37428	0.68535	0.39749	0.00000	0.00000	0.00000
72	-0.37264	0.96492	0.69864	0.00000	0.00000	0.00000
73	0.05492	0.23095	-0.43200	0.00000	0.00000	0.00000
74	0.11527	0.35575	-0.49230	0.00000	0.00000	0.00000
-----						
SUM	0.17183	2.23697	0.17183	0.00000	0.00000	0.00000
Condition <b>LC28=1.2D+Di+W190</b>						
71	0.35985	0.69531	0.36428	0.00000	0.00000	0.00000
72	-0.34183	0.99502	0.70165	0.00000	0.00000	0.00000
73	0.03029	0.20650	-0.50306	0.00000	0.00000	0.00000
74	0.16470	0.34014	-0.56287	0.00000	0.00000	0.00000
-----						
SUM	0.21300	2.23697	0.00000	0.00000	0.00000	0.00000
Condition <b>LC29=1.2D+Di+W1120</b>						
71	0.32829	0.71964	0.36046	0.00000	0.00000	0.00000
72	-0.32859	1.00975	0.67498	0.00000	0.00000	0.00000
73	-0.01595	0.19921	-0.55007	0.00000	0.00000	0.00000
74	0.18807	0.30836	-0.65719	0.00000	0.00000	0.00000
-----						
SUM	0.17183	2.23697	-0.17183	0.00000	0.00000	0.00000
Condition <b>LC30=1.2D+Di+W1150</b>						
71	0.33290	0.71770	0.34150	0.00000	0.00000	0.00000
72	-0.31360	1.02239	0.68556	0.00000	0.00000	0.00000
73	-0.01529	0.18581	-0.57756	0.00000	0.00000	0.00000
74	0.20742	0.31106	-0.66093	0.00000	0.00000	0.00000
-----						
SUM	0.21142	2.23697	-0.21142	0.00000	0.00000	0.00000
Condition <b>LC31=1.2D+Di-W10</b>						
71	0.26665	0.76845	0.41391	0.00000	0.00000	0.00000
72	-0.34736	0.99855	0.58751	0.00000	0.00000	0.00000
73	-0.09135	0.21920	-0.54334	0.00000	0.00000	0.00000
74	0.17206	0.25077	-0.78307	0.00000	0.00000	0.00000
-----						
SUM	0.00000	2.23697	-0.32500	0.00000	0.00000	0.00000
Condition <b>LC32=1.2D+Di-W130</b>						
71	0.23745	0.79237	0.49932	0.00000	0.00000	0.00000
72	-0.41039	0.94748	0.52680	0.00000	0.00000	0.00000
73	-0.12413	0.26881	-0.45180	0.00000	0.00000	0.00000
74	0.08565	0.22831	-0.78575	0.00000	0.00000	0.00000
-----						
SUM	-0.21142	2.23697	-0.21142	0.00000	0.00000	0.00000
Condition <b>LC33=1.2D+Di-W160</b>						
71	0.25184	0.78003	0.48759	0.00000	0.00000	0.00000
72	-0.40641	0.94835	0.54708	0.00000	0.00000	0.00000
73	-0.10456	0.26749	-0.44825	0.00000	0.00000	0.00000
74	0.08730	0.24110	-0.75825	0.00000	0.00000	0.00000
-----						
SUM	-0.17183	2.23697	-0.17183	0.00000	0.00000	0.00000

Condition <b>LC34=1.2D+Di-WI90</b>						
71	0.26627	0.77016	0.52092	0.00000	0.00000	0.00000
72	-0.43733	0.91827	0.54406	0.00000	0.00000	0.00000
73	-0.07989	0.29193	-0.37718	0.00000	0.00000	0.00000
74	0.03795	0.25660	-0.68779	0.00000	0.00000	0.00000
-----						
SUM	-0.21300	2.23697	0.00000	0.00000	0.00000	0.00000
Condition <b>LC35=1.2D+Di-WI120</b>						
71	0.29774	0.74582	0.52475	0.00000	0.00000	0.00000
72	-0.45057	0.90342	0.57061	0.00000	0.00000	0.00000
73	-0.03361	0.29931	-0.33009	0.00000	0.00000	0.00000
74	0.01462	0.28842	-0.59345	0.00000	0.00000	0.00000
-----						
SUM	-0.17183	2.23697	0.17183	0.00000	0.00000	0.00000
Condition <b>LC36=1.2D+Di-WI150</b>						
71	0.29312	0.74775	0.54372	0.00000	0.00000	0.00000
72	-0.46560	0.89072	0.55997	0.00000	0.00000	0.00000
73	-0.03422	0.31276	-0.30256	0.00000	0.00000	0.00000
74	-0.00473	0.28574	-0.58970	0.00000	0.00000	0.00000
-----						
SUM	-0.21142	2.23697	0.21142	0.00000	0.00000	0.00000
Condition <b>LC37=1.2D+1.6LL1</b>						
71	0.20289	0.52933	0.33159	0.00000	0.00000	0.00000
72	-0.28209	0.76053	0.46713	0.00000	0.00000	0.00000
73	-0.03419	0.16676	-0.33014	0.00000	0.00000	0.00000
74	0.11339	0.24743	-0.46859	0.00000	0.00000	0.00000
-----						
SUM	0.00000	1.70404	0.00000	0.00000	0.00000	0.00000
Condition <b>LC38=1.2D+1.6LL2</b>						
71	0.38368	0.74369	0.33556	0.00000	0.00000	0.00000
72	-0.17015	0.52168	0.46153	0.00000	0.00000	0.00000
73	-0.13946	0.36861	-0.33429	0.00000	0.00000	0.00000
74	-0.07406	0.07006	-0.46279	0.00000	0.00000	0.00000
-----						
SUM	0.00000	1.70404	0.00000	0.00000	0.00000	0.00000
Condition <b>LC39=1.2D+1.6LL3</b>						
71	0.06594	0.32088	0.32694	0.00000	0.00000	0.00000
72	-0.47267	0.95676	0.47441	0.00000	0.00000	0.00000
73	0.17182	0.00567	-0.32381	0.00000	0.00000	0.00000
74	0.23491	0.42073	-0.47754	0.00000	0.00000	0.00000
-----						
SUM	0.00000	1.70404	0.00000	0.00000	0.00000	0.00000
Condition <b>LC40=1.2D+WL0+1.6LLa1</b>						
71	0.18918	0.41121	0.26211	0.00000	0.00000	0.00000
72	-0.23507	0.54862	0.37002	0.00000	0.00000	0.00000
73	0.00313	0.15139	-0.22301	0.00000	0.00000	0.00000
74	0.04276	0.19282	-0.31212	0.00000	0.00000	0.00000
-----						
SUM	0.00000	1.30404	0.09700	0.00000	0.00000	0.00000

Condition <b>LC41=1.2D+WL30+1.6LLa1</b>						
71	0.19782	0.40386	0.23682	0.00000	0.00000	0.00000
72	-0.21657	0.56425	0.38764	0.00000	0.00000	0.00000
73	0.01360	0.13637	-0.24955	0.00000	0.00000	0.00000
74	0.06879	0.19956	-0.31128	0.00000	0.00000	0.00000
SUM	0.06364	1.30404	0.06364	0.00000	0.00000	0.00000
Condition <b>LC42=1.2D+WL60+1.6LLa1</b>						
71	0.19377	0.40822	0.24064	0.00000	0.00000	0.00000
72	-0.21772	0.56411	0.38185	0.00000	0.00000	0.00000
73	0.00681	0.13644	-0.25163	0.00000	0.00000	0.00000
74	0.06806	0.19528	-0.31995	0.00000	0.00000	0.00000
SUM	0.05091	1.30404	0.05091	0.00000	0.00000	0.00000
Condition <b>LC43=1.2D+WL90+1.6LLa1</b>						
71	0.18934	0.41193	0.23182	0.00000	0.00000	0.00000
72	-0.20864	0.57273	0.38194	0.00000	0.00000	0.00000
73	-0.00100	0.12973	-0.27162	0.00000	0.00000	0.00000
74	0.08230	0.18965	-0.34214	0.00000	0.00000	0.00000
SUM	0.06200	1.30404	0.00000	0.00000	0.00000	0.00000
Condition <b>LC44=1.2D+WL120+1.6LLa1</b>						
71	0.17974	0.41904	0.23096	0.00000	0.00000	0.00000
72	-0.20485	0.57774	0.37401	0.00000	0.00000	0.00000
73	-0.01400	0.12717	-0.28526	0.00000	0.00000	0.00000
74	0.09001	0.18010	-0.37062	0.00000	0.00000	0.00000
SUM	0.05091	1.30404	-0.05091	0.00000	0.00000	0.00000
Condition <b>LC45=1.2D+WL150+1.6LLa1</b>						
71	0.18135	0.41839	0.22495	0.00000	0.00000	0.00000
72	-0.20036	0.58234	0.37810	0.00000	0.00000	0.00000
73	-0.01382	0.12217	-0.29510	0.00000	0.00000	0.00000
74	0.09647	0.18114	-0.37160	0.00000	0.00000	0.00000
SUM	0.06364	1.30404	-0.06364	0.00000	0.00000	0.00000
Condition <b>LC46=1.2D-WL0+1.6LLa1</b>						
71	0.16164	0.43418	0.24718	0.00000	0.00000	0.00000
72	-0.21059	0.57482	0.34790	0.00000	0.00000	0.00000
73	-0.03655	0.13257	-0.28367	0.00000	0.00000	0.00000
74	0.08551	0.16247	-0.40841	0.00000	0.00000	0.00000
SUM	0.00000	1.30404	-0.09700	0.00000	0.00000	0.00000
Condition <b>LC47=1.2D-WL30+1.6LLa1</b>						
71	0.15302	0.44153	0.27247	0.00000	0.00000	0.00000
72	-0.22909	0.55921	0.33029	0.00000	0.00000	0.00000
73	-0.04704	0.14758	-0.25715	0.00000	0.00000	0.00000
74	0.05947	0.15572	-0.40926	0.00000	0.00000	0.00000
SUM	-0.06364	1.30404	-0.06364	0.00000	0.00000	0.00000

Condition **LC48=1.2D-WL60+1.6LLa1**

71	0.15707	0.43718	0.26866	0.00000	0.00000	0.00000
72	-0.22794	0.55936	0.33609	0.00000	0.00000	0.00000
73	-0.04024	0.14751	-0.25507	0.00000	0.00000	0.00000
74	0.06021	0.15999	-0.40059	0.00000	0.00000	0.00000

---

SUM            -0.05091            1.30404            -0.05091            0.00000            0.00000            0.00000

Condition **LC49=1.2D-WL90+1.6LLa1**

71	0.16149	0.43348	0.27749	0.00000	0.00000	0.00000
72	-0.23703	0.55074	0.33600	0.00000	0.00000	0.00000
73	-0.03243	0.15422	-0.23508	0.00000	0.00000	0.00000
74	0.04597	0.16561	-0.37841	0.00000	0.00000	0.00000

---

SUM            -0.06200            1.30404            0.00000            0.00000            0.00000            0.00000

Condition **LC50=1.2D-WL120+1.6LLa1**

71	0.17108	0.42637	0.27835	0.00000	0.00000	0.00000
72	-0.24083	0.54572	0.34391	0.00000	0.00000	0.00000
73	-0.01943	0.15679	-0.22143	0.00000	0.00000	0.00000
74	0.03826	0.17517	-0.34992	0.00000	0.00000	0.00000

---

SUM            -0.05091            1.30404            0.05091            0.00000            0.00000            0.00000

Condition **LC51=1.2D-WL150+1.6LLa1**

71	0.16947	0.42702	0.28436	0.00000	0.00000	0.00000
72	-0.24532	0.54112	0.33982	0.00000	0.00000	0.00000
73	-0.01960	0.16179	-0.21159	0.00000	0.00000	0.00000
74	0.03180	0.17412	-0.34895	0.00000	0.00000	0.00000

---

SUM            -0.06364            1.30404            0.06364            0.00000            0.00000            0.00000

Condition **LC52=1.2D+WL0+1.6LLa2**

71	0.60435	1.05116	0.45304	0.00000	0.00000	0.00000
72	-0.15262	0.51158	0.59234	0.00000	0.00000	0.00000
73	-0.24712	0.54697	-0.41413	0.00000	0.00000	0.00000
74	-0.20461	-0.00568	-0.53426	0.00000	0.00000	0.00000

---

SUM            0.00000            2.10404            0.09700            0.00000            0.00000            0.00000

Condition **LC53=1.2D+WL30+1.6LLa2**

71	0.61288	1.04381	0.42768	0.00000	0.00000	0.00000
72	-0.13414	0.52705	0.60985	0.00000	0.00000	0.00000
73	-0.23655	0.53212	-0.44055	0.00000	0.00000	0.00000
74	-0.17855	0.00105	-0.53334	0.00000	0.00000	0.00000

---

SUM            0.06364            2.10404            0.06364            0.00000            0.00000            0.00000

Condition **LC54=1.2D+WL60+1.6LLa2**

71	0.60884	1.04812	0.43150	0.00000	0.00000	0.00000
72	-0.13528	0.52690	0.60406	0.00000	0.00000	0.00000
73	-0.24334	0.53224	-0.44264	0.00000	0.00000	0.00000
74	-0.17931	-0.00322	-0.54201	0.00000	0.00000	0.00000

---

SUM            0.05091            2.10404            0.05091            0.00000            0.00000            0.00000

Condition **LC55=1.2D+WL90+1.6LLa2**

71	0.60439	1.05175	0.42263	0.00000	0.00000	0.00000
72	-0.12617	0.53542	0.60410	0.00000	0.00000	0.00000
73	-0.25111	0.52571	-0.46259	0.00000	0.00000	0.00000
74	-0.16510	-0.00884	-0.56415	0.00000	0.00000	0.00000

SUM 0.06200 2.10404 0.00000 0.00000 0.00000 0.00000

Condition **LC56=1.2D+WL120+1.6LLa2**

71	0.59479	1.05876	0.42174	0.00000	0.00000	0.00000
72	-0.12234	0.54035	0.59615	0.00000	0.00000	0.00000
73	-0.26409	0.52330	-0.47621	0.00000	0.00000	0.00000
74	-0.15745	-0.01838	-0.59260	0.00000	0.00000	0.00000

SUM 0.05091 2.10404 -0.05091 0.00000 0.00000 0.00000

Condition **LC57=1.2D+WL150+1.6LLa2**

71	0.59637	1.05809	0.41571	0.00000	0.00000	0.00000
72	-0.11786	0.54489	0.60021	0.00000	0.00000	0.00000
73	-0.26389	0.51839	-0.48602	0.00000	0.00000	0.00000
74	-0.15099	-0.01733	-0.59354	0.00000	0.00000	0.00000

SUM 0.06364 2.10404 -0.06364 0.00000 0.00000 0.00000

Condition **LC58=1.2D-WL0+1.6LLa2**

71	0.57676	1.07379	0.43797	0.00000	0.00000	0.00000
72	-0.12801	0.53743	0.57010	0.00000	0.00000	0.00000
73	-0.28669	0.52879	-0.47468	0.00000	0.00000	0.00000
74	-0.16205	-0.03597	-0.63039	0.00000	0.00000	0.00000

SUM 0.00000 2.10404 -0.09700 0.00000 0.00000 0.00000

Condition **LC59=1.2D-WL30+1.6LLa2**

71	0.56824	1.08114	0.46334	0.00000	0.00000	0.00000
72	-0.14649	0.52198	0.55260	0.00000	0.00000	0.00000
73	-0.29727	0.54363	-0.44826	0.00000	0.00000	0.00000
74	-0.18812	-0.04271	-0.63132	0.00000	0.00000	0.00000

SUM -0.06364 2.10404 -0.06364 0.00000 0.00000 0.00000

Condition **LC60=1.2D-WL60+1.6LLa2**

71	0.57228	1.07684	0.45952	0.00000	0.00000	0.00000
72	-0.14536	0.52213	0.55839	0.00000	0.00000	0.00000
73	-0.29047	0.54352	-0.44617	0.00000	0.00000	0.00000
74	-0.18736	-0.03844	-0.62265	0.00000	0.00000	0.00000

SUM -0.05091 2.10404 -0.05091 0.00000 0.00000 0.00000

Condition **LC61=1.2D-WL90+1.6LLa2**

71	0.57673	1.07322	0.46840	0.00000	0.00000	0.00000
72	-0.15448	0.51362	0.55835	0.00000	0.00000	0.00000
73	-0.28270	0.55004	-0.42623	0.00000	0.00000	0.00000
74	-0.20156	-0.03284	-0.60053	0.00000	0.00000	0.00000

SUM -0.06200 2.10404 0.00000 0.00000 0.00000 0.00000

Condition **LC62=1.2D-WL120+1.6LLa2**

71	0.58632	1.06621	0.46929	0.00000	0.00000	0.00000
72	-0.15831	0.50868	0.56629	0.00000	0.00000	0.00000
73	-0.26972	0.55245	-0.41259	0.00000	0.00000	0.00000
74	-0.20921	-0.02329	-0.57208	0.00000	0.00000	0.00000

SUM -0.05091 2.10404 0.05091 0.00000 0.00000 0.00000

Condition **LC63=1.2D-WL150+1.6LLa2**

71	0.58474	1.06687	0.47532	0.00000	0.00000	0.00000
72	-0.16279	0.50413	0.56223	0.00000	0.00000	0.00000
73	-0.26991	0.55738	-0.40279	0.00000	0.00000	0.00000
74	-0.21567	-0.02434	-0.57113	0.00000	0.00000	0.00000

SUM -0.06364 2.10404 0.06364 0.00000 0.00000 0.00000

Condition **LC64=1.2D+WL0+1.6LLa3**

71	0.27623	0.67239	0.43294	0.00000	0.00000	0.00000
72	-0.33631	0.91644	0.61489	0.00000	0.00000	0.00000
73	-0.06536	0.22557	-0.39370	0.00000	0.00000	0.00000
74	0.12544	0.28965	-0.55713	0.00000	0.00000	0.00000

SUM 0.00000 2.10404 0.09700 0.00000 0.00000 0.00000

Condition **LC65=1.2D+WL30+1.6LLa3**

71	0.28480	0.66503	0.40764	0.00000	0.00000	0.00000
72	-0.31787	0.93194	0.63248	0.00000	0.00000	0.00000
73	-0.05483	0.21061	-0.42022	0.00000	0.00000	0.00000
74	0.15153	0.29645	-0.55626	0.00000	0.00000	0.00000

SUM 0.06364 2.10404 0.06364 0.00000 0.00000 0.00000

Condition **LC66=1.2D+WL60+1.6LLa3**

71	0.28075	0.66936	0.41146	0.00000	0.00000	0.00000
72	-0.31900	0.93178	0.62667	0.00000	0.00000	0.00000
73	-0.06162	0.21070	-0.42229	0.00000	0.00000	0.00000
74	0.15078	0.29221	-0.56492	0.00000	0.00000	0.00000

SUM 0.05091 2.10404 0.05091 0.00000 0.00000 0.00000

Condition **LC67=1.2D+WL90+1.6LLa3**

71	0.27630	0.67299	0.40260	0.00000	0.00000	0.00000
72	-0.30990	0.94027	0.62671	0.00000	0.00000	0.00000
73	-0.06941	0.20407	-0.44225	0.00000	0.00000	0.00000
74	0.16501	0.28671	-0.58706	0.00000	0.00000	0.00000

SUM 0.06200 2.10404 0.00000 0.00000 0.00000 0.00000

Condition **LC68=1.2D+WL120+1.6LLa3**

71	0.26669	0.68001	0.40171	0.00000	0.00000	0.00000
72	-0.30607	0.94517	0.61874	0.00000	0.00000	0.00000
73	-0.08240	0.20158	-0.45587	0.00000	0.00000	0.00000
74	0.17269	0.27729	-0.61550	0.00000	0.00000	0.00000

SUM 0.05091 2.10404 -0.05091 0.00000 0.00000 0.00000

Condition **LC69=1.2D+WL150+1.6LLa3**

71	0.26828	0.67935	0.39570	0.00000	0.00000	0.00000
72	-0.30159	0.94972	0.62282	0.00000	0.00000	0.00000
73	-0.08221	0.19661	-0.46569	0.00000	0.00000	0.00000
74	0.17916	0.27836	-0.61646	0.00000	0.00000	0.00000

SUM 0.06364 2.10404 -0.06364 0.00000 0.00000 0.00000

Condition **LC70=1.2D-WL0+1.6LLa3**

71	0.24861	0.69504	0.41789	0.00000	0.00000	0.00000
72	-0.31173	0.94218	0.59259	0.00000	0.00000	0.00000
73	-0.10499	0.20702	-0.45425	0.00000	0.00000	0.00000
74	0.16810	0.25980	-0.65323	0.00000	0.00000	0.00000

SUM 0.00000 2.10404 -0.09700 0.00000 0.00000 0.00000

Condition **LC71=1.2D-WL30+1.6LLa3**

71	0.24006	0.70240	0.44319	0.00000	0.00000	0.00000
72	-0.33018	0.92670	0.57502	0.00000	0.00000	0.00000
73	-0.11553	0.22196	-0.42775	0.00000	0.00000	0.00000
74	0.14200	0.25299	-0.65410	0.00000	0.00000	0.00000

SUM -0.06364 2.10404 -0.06364 0.00000 0.00000 0.00000

Condition **LC72=1.2D-WL60+1.6LLa3**

71	0.24411	0.69808	0.43938	0.00000	0.00000	0.00000
72	-0.32905	0.92686	0.58083	0.00000	0.00000	0.00000
73	-0.10873	0.22187	-0.42567	0.00000	0.00000	0.00000
74	0.14276	0.25723	-0.64545	0.00000	0.00000	0.00000

SUM -0.05091 2.10404 -0.05091 0.00000 0.00000 0.00000

Condition **LC73=1.2D-WL90+1.6LLa3**

71	0.24856	0.69445	0.44824	0.00000	0.00000	0.00000
72	-0.33815	0.91837	0.58078	0.00000	0.00000	0.00000
73	-0.10094	0.22850	-0.40571	0.00000	0.00000	0.00000
74	0.12853	0.26272	-0.62332	0.00000	0.00000	0.00000

SUM -0.06200 2.10404 0.00000 0.00000 0.00000 0.00000

Condition **LC74=1.2D-WL120+1.6LLa3**

71	0.25816	0.68743	0.44914	0.00000	0.00000	0.00000
72	-0.34198	0.91346	0.58874	0.00000	0.00000	0.00000
73	-0.08795	0.23101	-0.39209	0.00000	0.00000	0.00000
74	0.12086	0.27214	-0.59488	0.00000	0.00000	0.00000

SUM -0.05091 2.10404 0.05091 0.00000 0.00000 0.00000

Condition **LC75=1.2D-WL150+1.6LLa3**

71	0.25657	0.68809	0.45515	0.00000	0.00000	0.00000
72	-0.34647	0.90890	0.58466	0.00000	0.00000	0.00000
73	-0.08813	0.23598	-0.38226	0.00000	0.00000	0.00000
74	0.11439	0.27107	-0.59391	0.00000	0.00000	0.00000

SUM -0.06364 2.10404 0.06364 0.00000 0.00000 0.00000

Condition **LC76=1.2D+WL0+1.6LLa4**

71	0.03026	0.29954	0.41693	0.00000	0.00000	0.00000
72	-0.68216	1.30861	0.63587	0.00000	0.00000	0.00000
73	0.30342	-0.08083	-0.37457	0.00000	0.00000	0.00000
74	0.34847	0.57673	-0.58122	0.00000	0.00000	0.00000

SUM 0.00000 2.10404 0.09700 0.00000 0.00000 0.00000

Condition **LC77=1.2D+WL30+1.6LLa4**

71	0.03886	0.29221	0.39167	0.00000	0.00000	0.00000
72	-0.66373	1.32410	0.65353	0.00000	0.00000	0.00000
73	0.31394	-0.09582	-0.40112	0.00000	0.00000	0.00000
74	0.37456	0.58355	-0.58045	0.00000	0.00000	0.00000

SUM 0.06364 2.10404 0.06364 0.00000 0.00000 0.00000

Condition **LC78=1.2D+WL60+1.6LLa4**

71	0.03481	0.29654	0.39548	0.00000	0.00000	0.00000
72	-0.66486	1.32392	0.64770	0.00000	0.00000	0.00000
73	0.30716	-0.09577	-0.40319	0.00000	0.00000	0.00000
74	0.37380	0.57935	-0.58909	0.00000	0.00000	0.00000

SUM 0.05091 2.10404 0.05091 0.00000 0.00000 0.00000

Condition **LC79=1.2D+WL90+1.6LLa4**

71	0.03034	0.30018	0.38665	0.00000	0.00000	0.00000
72	-0.65577	1.33238	0.64775	0.00000	0.00000	0.00000
73	0.29939	-0.10249	-0.42315	0.00000	0.00000	0.00000
74	0.38804	0.57396	-0.61124	0.00000	0.00000	0.00000

SUM 0.06200 2.10404 0.00000 0.00000 0.00000 0.00000

Condition **LC80=1.2D+WL120+1.6LLa4**

71	0.02072	0.30720	0.38575	0.00000	0.00000	0.00000
72	-0.65194	1.33723	0.63974	0.00000	0.00000	0.00000
73	0.28643	-0.10507	-0.43676	0.00000	0.00000	0.00000
74	0.39570	0.56468	-0.63965	0.00000	0.00000	0.00000

SUM 0.05091 2.10404 -0.05091 0.00000 0.00000 0.00000

Condition **LC81=1.2D+WL150+1.6LLa4**

71	0.02231	0.30655	0.37976	0.00000	0.00000	0.00000
72	-0.64747	1.34178	0.64384	0.00000	0.00000	0.00000
73	0.28663	-0.11006	-0.44659	0.00000	0.00000	0.00000
74	0.40217	0.56577	-0.64064	0.00000	0.00000	0.00000

SUM 0.06364 2.10404 -0.06364 0.00000 0.00000 0.00000

Condition **LC82=1.2D-WL0+1.6LLa4**

71	0.00260	0.32219	0.40189	0.00000	0.00000	0.00000
72	-0.65759	1.33419	0.61349	0.00000	0.00000	0.00000
73	0.26389	-0.09972	-0.43512	0.00000	0.00000	0.00000
74	0.39109	0.54738	-0.67726	0.00000	0.00000	0.00000

SUM 0.00000 2.10404 -0.09700 0.00000 0.00000 0.00000



Condition **LC83=1.2D-WL30+1.6LLa4**

71	-0.00598	0.32952	0.42715	0.00000	0.00000	0.00000
72	-0.67602	1.31872	0.59584	0.00000	0.00000	0.00000
73	0.25337	-0.08474	-0.40860	0.00000	0.00000	0.00000
74	0.36500	0.54054	-0.67803	0.00000	0.00000	0.00000
SUM	-0.06364	2.10404	-0.06364	0.00000	0.00000	0.00000

Condition **LC84=1.2D-WL60+1.6LLa4**

71	-0.00193	0.32520	0.42334	0.00000	0.00000	0.00000
72	-0.67489	1.31890	0.60167	0.00000	0.00000	0.00000
73	0.26015	-0.08480	-0.40652	0.00000	0.00000	0.00000
74	0.36576	0.54474	-0.66940	0.00000	0.00000	0.00000
SUM	-0.05091	2.10404	-0.05091	0.00000	0.00000	0.00000

Condition **LC85=1.2D-WL90+1.6LLa4**

71	0.00253	0.32157	0.43219	0.00000	0.00000	0.00000
72	-0.68399	1.31044	0.60163	0.00000	0.00000	0.00000
73	0.26792	-0.07808	-0.38656	0.00000	0.00000	0.00000
74	0.35154	0.55011	-0.64725	0.00000	0.00000	0.00000
SUM	-0.06200	2.10404	0.00000	0.00000	0.00000	0.00000

Condition **LC86=1.2D-WL120+1.6LLa4**

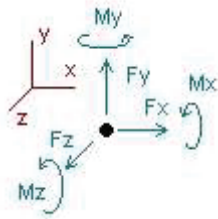
71	0.01215	0.31455	0.43308	0.00000	0.00000	0.00000
72	-0.68782	1.30559	0.60962	0.00000	0.00000	0.00000
73	0.28088	-0.07549	-0.37294	0.00000	0.00000	0.00000
74	0.34388	0.55940	-0.61885	0.00000	0.00000	0.00000
SUM	-0.05091	2.10404	0.05091	0.00000	0.00000	0.00000

Condition **LC87=1.2D-WL150+1.6LLa4**

71	0.01056	0.31519	0.43908	0.00000	0.00000	0.00000
72	-0.69230	1.30102	0.60552	0.00000	0.00000	0.00000
73	0.28069	-0.07049	-0.36310	0.00000	0.00000	0.00000
74	0.33740	0.55832	-0.61785	0.00000	0.00000	0.00000
SUM	-0.06364	2.10404	0.06364	0.00000	0.00000	0.00000

**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+W10  
LC26=1.2D+Di+W130  
LC27=1.2D+Di+W160  
LC28=1.2D+Di+W190  
LC29=1.2D+Di+W120  
LC30=1.2D+Di+W150  
LC31=1.2D+Di-W10  
LC32=1.2D+Di-W130  
LC33=1.2D+Di-W160  
LC34=1.2D+Di-W190  
LC35=1.2D+Di-W120  
LC36=1.2D+Di-W150  
LC37=1.2D+1.6LL1  
LC38=1.2D+1.6LL2  
LC39=1.2D+1.6LL3  
LC40=1.2D+W10+1.6LLa1  
LC41=1.2D+W130+1.6LLa1  
LC42=1.2D+W160+1.6LLa1  
LC43=1.2D+W190+1.6LLa1  
LC44=1.2D+W120+1.6LLa1  
LC45=1.2D+W150+1.6LLa1  
LC46=1.2D-W10+1.6LLa1  
LC47=1.2D-W130+1.6LLa1  
LC48=1.2D-W160+1.6LLa1  
LC49=1.2D-W190+1.6LLa1  
LC50=1.2D-W120+1.6LLa1  
LC51=1.2D-W150+1.6LLa1  
LC52=1.2D+W10+1.6LLa2  
LC53=1.2D+W130+1.6LLa2  
LC54=1.2D+W160+1.6LLa2  
LC55=1.2D+W190+1.6LLa2  
LC56=1.2D+W120+1.6LLa2  
LC57=1.2D+W150+1.6LLa2  
LC58=1.2D-W10+1.6LLa2  
LC59=1.2D-W130+1.6LLa2  
LC60=1.2D-W160+1.6LLa2  
LC61=1.2D-W190+1.6LLa2  
LC62=1.2D-W120+1.6LLa2  
LC63=1.2D-W150+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

Node		Forces						Moments					
		Fx	lc	Fy	lc	Fz	lc	Mx	lc	My	lc	Mz	lc
		[Kip]		[Kip]		[Kip]		[Kip*ft]		[Kip*ft]		[Kip*ft]	
71	Max	0.622	LC2	1.081	LC59	0.835	LC12	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.312	LC20	-0.055	LC14	-0.388	LC18	0.00000	LC1	0.00000	LC1	0.00000	LC1
72	Max	0.286	LC18	1.342	LC81	0.970	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.692	LC87	-0.011	LC24	-0.341	LC20	0.00000	LC1	0.00000	LC1	0.00000	LC1
73	Max	0.575	LC14	0.557	LC63	0.708	LC24	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.603	LC8	-0.285	LC18	-1.145	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
74	Max	0.735	LC6	0.621	LC2	0.783	LC14	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.623	LC24	-0.305	LC20	-1.406	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 1/21/2022  
Project Name: PORTLAND  
Project No.: CT1066  
Designed By: CL Checked By: MSC



**CHECK CONNECTION CAPACITY (Worst Case)**

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

**Bolt Type =** A36 1/2" Threaded Rod

**Allowable Tensile Load =**

$F_{Tall} = 4271$  lbs.

**Allowable Shear Load =**

$F_{Vall} = 2562$  lbs.

**TENSILE FORCES**

**Reaction**  $F = 970$  lbs. (See Bentley Output)

**SHEAR FORCES**

**Reactions in X direction:** 692 lbs. (See Bentley Output)

**Reactions in Y direction:** 1342 lbs. (See Bentley Output)

**Resultant:** 1510 lbs.

**No. of Supports =** 1

**No. of Bolts / Support =** 4

**Tension Design Load /Bolts =**

$f_t = 242.50$  lbs.  $<$  4271 lbs. **Therefore, OK !**

**Shear Design Load / Bolts=**

$f_v = 377.48$  lbs.  $<$  2562 lbs. **Therefore, OK !**

**CHECK COMBINED TENSION AND SHEAR**

$f_t / F_T + f_v / F_V \leq 1.0$   
0.057 + 0.147 = 0.204  $<$  1.0 **Therefore, OK !**

# EXHIBIT 5

# Radio Frequency Exposure Analysis Report

September 6, 2022

Centerline on behalf of AT&T

AT&T Site Name: PORTLAND

Site Number: CT1066

FA#: 10035005

USID: 59359

Site Address: 97 HIGH STREET, PORTLAND, CT 06480



Michael Fischer, P.E.  
Registered Professional Engineer (Electrical)  
Connecticut License Number 33928  
Expires January 31, 2023

Signed 06 September 2022

## Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	6.50552 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	0.71868%



September 6, 2022

Centerline  
Attn: Jennifer Iliades, Project Manager  
750 W Center St, Suite 301  
West Bridgewater, MA 02379

#### RF Exposure Analysis for Site: **PORTLAND**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed AT&T facility at **97 HIGH STREET, PORTLAND, CT 06480** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ) or microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in  $\text{mW}/\text{cm}^2$ ) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ( $f_{\text{MHz}}/1500$ ). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of  $1 \text{ mW}/\text{cm}^2$  ( $1000 \mu\text{W}/\text{cm}^2$ ). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the MPE limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Additional details can be found in FCC OET 65.



## **Calculation Methodology**

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.





## **Data & Results**

The following table details the antennas and operating parameters for the AT&T antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at ground level.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.



**Maximum Calculated Cumulative Power Density @ Ground Level (Location: approximately 5' west of site)**

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
AT&T A 1	CCI TPA65R-BU6D	700	11.75	77.00	4.00	30.00	1795.48	0.00008	466.67	0.00002
AT&T A 1	CCI TPA65R-BU6D	1900	15.05	77.00	4.00	30.00	3838.67	0.00014	1000.00	0.00001
AT&T A 1	CCI TPA65R-BU6D	2100	15.95	77.00	4.00	30.00	4722.60	0.00015	1000.00	0.00002
AT&T A 2	ERICSSON AIR6449	3700	23.55	75.20	1.00	108.40	24548.74	0.02155	1000.00	0.00216
AT&T A 3	ERICSSON AIR6419	3450	23.55	78.75	1.00	108.40	24548.74	0.01982	1000.00	0.00198
AT&T A 4	CCI DMP65R-BU6D	700	11.35	77.00	4.00	30.00	1637.50	0.00083	466.67	0.00018
AT&T A 4	CCI DMP65R-BU6D	850	11.45	77.00	4.00	30.00	1675.64	0.00034	566.67	0.00006
AT&T A 4	CCI DMP65R-BU6D	2300	15.25	77.00	4.00	18.00	2411.75	0.00027	1000.00	0.00003
AT&T B 5	CCI TPA65R-BU6D	700	11.75	77.00	4.00	30.00	1795.48	0.00018	466.67	0.00004
AT&T B 5	CCI TPA65R-BU6D	1900	15.05	77.00	4.00	30.00	3838.67	0.00011	1000.00	0.00001
AT&T B 5	CCI TPA65R-BU6D	2100	15.95	77.00	4.00	30.00	4722.60	0.00008	1000.00	0.00001
AT&T B 6	ERICSSON AIR6449	3700	23.55	75.20	1.00	108.40	24548.74	0.01952	1000.00	0.00195
AT&T B 7	ERICSSON AIR6419	3450	23.55	78.75	1.00	108.40	24548.74	0.01795	1000.00	0.00180
AT&T B 8	CCI DMP65R-BU6D	700	11.35	77.00	4.00	30.00	1637.50	0.00042	466.67	0.00009
AT&T B 8	CCI DMP65R-BU6D	850	11.45	77.00	4.00	30.00	1675.64	0.00022	566.67	0.00004
AT&T B 8	CCI DMP65R-BU6D	2300	15.25	77.00	4.00	18.00	2411.75	0.00005	1000.00	0.00001
AT&T C 9	CCI TPA65R-BU6D	700	11.75	77.00	4.00	30.00	1795.48	0.21546	466.67	0.04617
AT&T C 9	CCI TPA65R-BU6D	1900	15.05	77.00	4.00	30.00	3838.67	0.23800	1000.00	0.02380
AT&T C 9	CCI TPA65R-BU6D	2100	15.95	77.00	4.00	30.00	4722.60	0.25044	1000.00	0.02504
AT&T C 10	ERICSSON AIR6449	3700	23.55	75.20	1.00	108.40	24548.74	2.66530	1000.00	0.26653
AT&T C 11	ERICSSON AIR6419	3450	23.55	78.75	1.00	108.40	24548.74	2.45111	1000.00	0.24511
AT&T C 12	CCI DMP65R-BU6D	700	11.35	77.00	4.00	30.00	1637.50	0.24435	466.67	0.05236
AT&T C 12	CCI DMP65R-BU6D	850	11.45	77.00	4.00	30.00	1675.64	0.20087	566.67	0.03545
AT&T C 12	CCI DMP65R-BU6D	2300	15.25	77.00	4.00	18.00	2411.75	0.15829	1000.00	0.01583
							<b>Cumulative Power Density:</b>	<b>6.50552 <math>\mu\text{W}/\text{cm}^2</math></b>	<b>Cumulative % MPE:</b>	<b>0.71868%</b>



## Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at ground level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **compliant** with FCC rules and regulations.

A handwritten signature in black ink, appearing to read "Katrina Styx", with a long, sweeping horizontal stroke extending to the right.

Katrina Styx  
RF EME Technical Writer  
Centerline Communications, LLC

# EXHIBIT 6

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030333070037

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

09/08/2022

**Delivered On**

09/27/2022 1:17 P.M.

**Delivered To**

33 E MAIN ST  
PORTLAND, CT, 06480, US

**Received By**

MICHELLE

**Left At**

Inside Delivery

**Reference Number(s)**

CT1066- CSC\_FIRST SELECTMAN

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 09/28/2022 9:06 A.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030301788519

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

09/08/2022

**Delivered On**

09/27/2022 1:17 P.M.

**Delivered To**

33 E MAIN ST  
PORTLAND, CT, 06480, US

**Received By**

LIZ

**Left At**

Inside Delivery

**Reference Number(s)**

CT1066-CSC\_TOWN PLANNER

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 09/28/2022 9:13 A.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030304685508

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

09/08/2022

**Delivered On**

09/27/2022 1:17 P.M.

**Delivered To**

33 E MAIN ST  
PORTLAND, CT, 06480, US

**Received By**

LIZ

**Left At**

Inside Delivery

**Reference Number(s)**

CT1066-CSC\_ZEO

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 09/28/2022 9:15 A.M. EST



UPS  
CampusShip®

Shipping

Tracking

Business Solutions

Support

**i** Your package has arrived at a local UPS location and is still being processed for delivery. [View Less](#)

**i** If you prefer to pick up your package at an eligible facility, select Delivery Options to make arrangements.

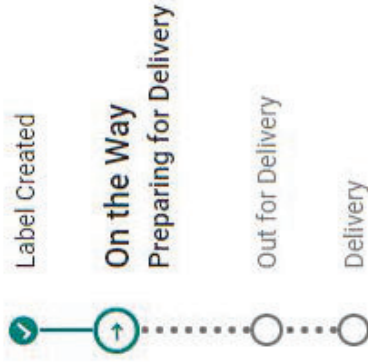


Your shipment from

## CENTERLINE SITE ACQUISITION

Estimated delivery

**Today, September 28 between 9:30 A.M. - 12:30 P.M.**



**Ship To**

SRR TOWERS, LLC  
PROPERTY MANAGEMENT  
57 E WASHINGTON ST  
CHAGRIN FALLS, OH 440223044 US

[Get Updates](#)

[Change My Delivery](#)

[View Details](#)