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

VIA ELECTRONIC MAIL

February 3, 2023

Jennifer Iliades
Site Acquisition – Project Manager
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

RE: **EM-AT&T-099-221121 –** AT&T notice of intent to modify an existing telecommunications facility located at 150 Foxon Road, North Branford, Connecticut.

Dear Jennifer Iliades:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 2, 2023 submitted in response to the Council's November 30, 2022 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman
Executive Director

c: Evan Renwick, Site Acquisition Specialist, Centerline Communications (erenwick@clinellc.com)

February 2, 2023

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

Regarding: EM-AT&T-099-221121
Notice of Exempt Modification – AT&T Site CT5184 / FA# 10071146 at 150 Foxon Road, North Branford CT

Dear Ms. Bachman:

Pursuant to your letter dated November 30, 2022 (enclosed), we are providing an updated Mount Analysis and construction drawings.

Thank you very much for your attention to his matter. Please do not hesitate to contact us with any questions or concerns.

Sincerely,

Jennifer Iliades

Jennifer Iliades
Project Manager
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

Enclosures

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VIA ELECTRONIC MAIL

November 30, 2022

Evan Renwick
Site Acquisition Specialist
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
erenwick@clinellc.com

RE: **EM-AT&T-099-221121 –** AT&T notice of intent to modify an existing telecommunications facility located at 150 Foxon Road, North Branford, Connecticut.

Dear Evan Renwick:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on November 21, 2022.

According to Section 16-50j-71 of the Regulations of Connecticut State Agencies, "…any modification, as defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, to an existing tower site, except as specified in Sections 16-50j-72 and 16-50j-88 of the Regulations of Connecticut State Agencies, may have a substantial adverse environmental effect."

Staff has reviewed this exempt modification request for completeness and has identified the following deficiencies:

a) The Mount Analysis dated October 25, 2022 and the construction drawings dated May 17, 2022 cite the 2015 International Building Code (IBC) and 2018 CSBC; however, the State of Connecticut has adopted the 2022 CSBC effective October 1, 2022 (which incorporates the 2021 IBC).

Therefore, the exempt modification request is incomplete at this time. The Council recommends that AT&T provide an updated Mount Analysis and construction drawings that comport with the current 2022 CSBC/2021 IBC on or before January 3, 2023. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to January 3, 2023. **Please provide an electronic version of the requested information for the incomplete exempt modification to be rendered complete and processed. Please include the Council's exempt modification identification number referenced above with the submittal.**

This notice of incompletion shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

emr

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VIA ELECTRONIC MAIL

January 3, 2023

Evan Renwick
Site Acquisition Specialist
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
erenwick@clinellc.com

RE: **EM-AT&T-099-221121** – AT&T notice of intent to modify an existing telecommunications facility located at 150 Foxon Road, North Branford, Connecticut.

Dear Evan Renwick:

The Connecticut Siting Council (Council) is in receipt of your correspondence dated December 30, 2022 requesting an extension of time to submit documentation required to make the above-referenced filing complete in response to the Council's incomplete notice dated November 30, 2022.

The Council hereby grants an extension of time to submit the required documentation by February 3, 2023.

Thank you for your attention to this matter.

Sincerely,

Melanie Bachman
Executive Director

MB/ANM/laf

Enclosures: Correspondence from Evan Renwick dated December 30, 2022
Incomplete filing letter dated November 30, 2022

c: Jennifer Iliades, Centerline Communications (jiliades@clinellc.com)

December 19, 2022 (Rev.2)
October 25, 2022 (Rev.1)
June 1, 2022

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

RE:		
	Site Number:	CT5184
	FA Number:	10071146
	PACE Number:	MRCTB055158
	PT Number:	2051A11KMW
	TEP Number:	354341
	Site Name:	EAST HAVEN
	Site Address:	108 Foxon Road North Branford, CT 06471

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Centerline Communications to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) HPA-65R-BUU-H6 Antennas (72.3"x14.4"x7.3" – Wt. = 43 lbs. /each)
- (3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (1) DC6-48-60-18-8F Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020; P/N MM01, dated May 10, 2010; and P/N LWRM, dated July 25, 2012, were used to perform this analysis. TEP NE's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on March 16, 2022.

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 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE 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 P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.17 in was used for this analysis.
- TEP NE considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- TEP NE considers this site to be topographic category 3; tower is located at the upper half of a hill.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.179 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.061.
- 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 proposed mounts are to be secured to the existing monopole with ring mounts and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 P/N VFA14-H10-2120 mounts, Proposed SitePro1 P/N MM01 standoffs, and Proposed SitePro1 P/N LWRM collar mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	9	LC83	58%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020.
- Fabrication drawings prepared by SitePro1, P/N MM01, dated May 10, 2010.
- Fabrication drawings prepared by SitePro1, P/N LWRM, dated July 25, 2012.

This determination was based on the following limitations and assumptions:

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

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:
** Existing mounts to be removed and replaced.*

FIELD PHOTOS: (CONT.)
** Existing mounts to be removed and replaced.*

Wind & Ice
Calculations

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

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

z=	157	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.392**	

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

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

K_{zt}= 1

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

Category= **1**

K_h=	1	
K_c=	1.0	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	157	
z_s=	167	(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 = t_i = 1.00 in
Importance Factor = I= 1.00 (from Table 2-3)
K_{iz} = 1.17 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ $\quad t_{iz}$ = 1.17 in

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
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=	176.58	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.392	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**52.57**	K_e=	0.99	(from 2.6.8)
$q_{z\,(ice)}$=	**8.41**	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	**3.03**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
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_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

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

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

Ice Thickness = **1.17** **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)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	5.02	1.31	499	96	29
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	213	42	12
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	668	123	38
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.20	71	16	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.90	1.20	74	17	4
DC6-48-60-18-8F Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	82	17	5
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	82	17	5
5/8" Round Bar	0.6	12.0		0.05	0.05	1.20	3		
3/4" Round Bar	0.8	12.0		0.06	0.06	1.20	4		
2" Pipe	2.4	12.0		0.20	0.20	1.20	13		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	15		
3" Pipe	3.5	12.0		0.29	0.29	1.20	18		
PL 3-1/2x5/8"	0.6	12.0		0.05	0.05	2.00	5		
PL 11-1/4x5/8"	0.6	12.0		0.05	0.05	2.00	5		
HSS 4x4	4.0	12.0		0.33	0.33	2.00	35		

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	499	288	446
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	213	144	196
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	668	295	575
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	71	86	75
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	74	104	81

WIND LOADS WITH ICE:

HPA-65R-BUU-H6 Antenna	74.6	16.7	9.6	8.68	5.00	4.46	7.74	1.29	1.42	94	60	85
AIR6449 Antenna	32.9	18.2	12.9	4.17	2.96	1.81	2.55	1.20	1.20	42	30	39
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.76	5.13	3.19	7.33	1.23	1.41	122	61	107
8843 B2/B66A RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	16	19	17
4449 B5/B12 RRH	20.2	11.7	15.5	1.65	2.18	1.72	1.30	1.20	1.20	17	22	18

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	29	17	26
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	33
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	499	288	341
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	213	144	161
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	668	295	388
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	71	86	82
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	74	104	96

WIND LOADS WITH ICE:

HPA-65R-BUU-H6 Antenna	74.6	16.7	9.6	8.68	5.00	4.46	7.74	1.29	1.42	94	60	68
AIR6449 Antenna	32.9	18.2	12.9	4.17	2.96	1.81	2.55	1.20	1.20	42	30	33
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.76	5.13	3.19	7.33	1.23	1.41	122	61	76
8843 B2/B66A RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	16	19	18
4449 B5/B12 RRH	20.2	11.7	15.5	1.65	2.18	1.72	1.30	1.20	1.20	17	22	21

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	29	17	20
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	22
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	499	288	288
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	213	144	144
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	668	295	295
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	71	86	86
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	74	104	104

WIND LOADS WITH ICE:

HPA-65R-BUU-H6 Antenna	74.6	16.7	9.6	8.68	5.00	4.46	7.74	1.29	1.42	94	60	60
AIR6449 Antenna	32.9	18.2	12.9	4.17	2.96	1.81	2.55	1.20	1.20	42	30	30
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.76	5.13	3.19	7.33	1.23	1.41	122	61	61
8843 B2/B66A RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	16	19	19
4449 B5/B12 RRH	20.2	11.7	15.5	1.65	2.18	1.72	1.30	1.20	1.20	17	22	22

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	29	17	17
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	17
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	499	288	341
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	213	144	161
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	668	295	388
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	71	86	82
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	74	104	96

WIND LOADS WITH ICE:

HPA-65R-BUU-H6 Antenna	74.6	16.7	9.6	8.68	5.00	4.46	7.74	1.29	1.42	94	60	68
AIR6449 Antenna	32.9	18.2	12.9	4.17	2.96	1.81	2.55	1.20	1.20	42	30	33
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.76	5.13	3.19	7.33	1.23	1.41	122	61	76
8843 B2/B66A RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	16	19	18
4449 B5/B12 RRH	20.2	11.7	15.5	1.65	2.18	1.72	1.30	1.20	1.20	17	22	21

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	29	17	20
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	22
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.17	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	499	288	446
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	213	144	196
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	668	295	575
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	71	86	75
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	74	104	81

WIND LOADS WITH ICE:

HPA-65R-BUU-H6 Antenna	74.6	16.7	9.6	8.68	5.00	4.46	7.74	1.29	1.42	94	60	85
AIR6449 Antenna	32.9	18.2	12.9	4.17	2.96	1.81	2.55	1.20	1.20	42	30	39
DMP65R-BU6DA Antenna	73.5	23.0	10.0	11.76	5.13	3.19	7.33	1.23	1.41	122	61	107
8843 B2/B66A RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	16	19	17
4449 B5/B12 RRH	20.2	11.7	15.5	1.65	2.18	1.72	1.30	1.20	1.20	17	22	18

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H6 Antenna	72.3	14.4	7.3	7.23	3.67	5.02	9.90	1.31	1.50	29	17	26
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	38	17	33
8843 B2/B66A RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	5

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.17 in.
Density of ice: 56 pcf

HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.3	
Width (in):	14.4	
Depth (in):	7.3	
Total weight of ice on object:		149 lbs
Weight of object:	43.0 lbs	
Combined weight of ice and object:		192 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:		74 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		156 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:		197 lbs
Weight of object:	80.0 lbs	
Combined weight of ice and object:		277 lbs

8843 B2/B66A RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		32 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		104 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:		37 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		110 lbs

DC6-48-60-18-8F Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		43 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		72 lbs

DC9-48-60-24-8C-EV Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		43 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		72 lbs

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.625	
Per foot weight of ice on object:		3 plf

3/4" Round Bar

Per foot weight of ice:

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

2" Pipe

Per foot weight of ice:

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

2-1/2" Pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		6 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		7 plf

PL 3-1/2x5/8"

Weight of ice based on total radial SF area:

Height (in):	0.625	
Width (in):	3.5	
Per foot weight of ice on object:		7 plf

PL 11-1/4x5/8"

Weight of ice based on total radial SF area:

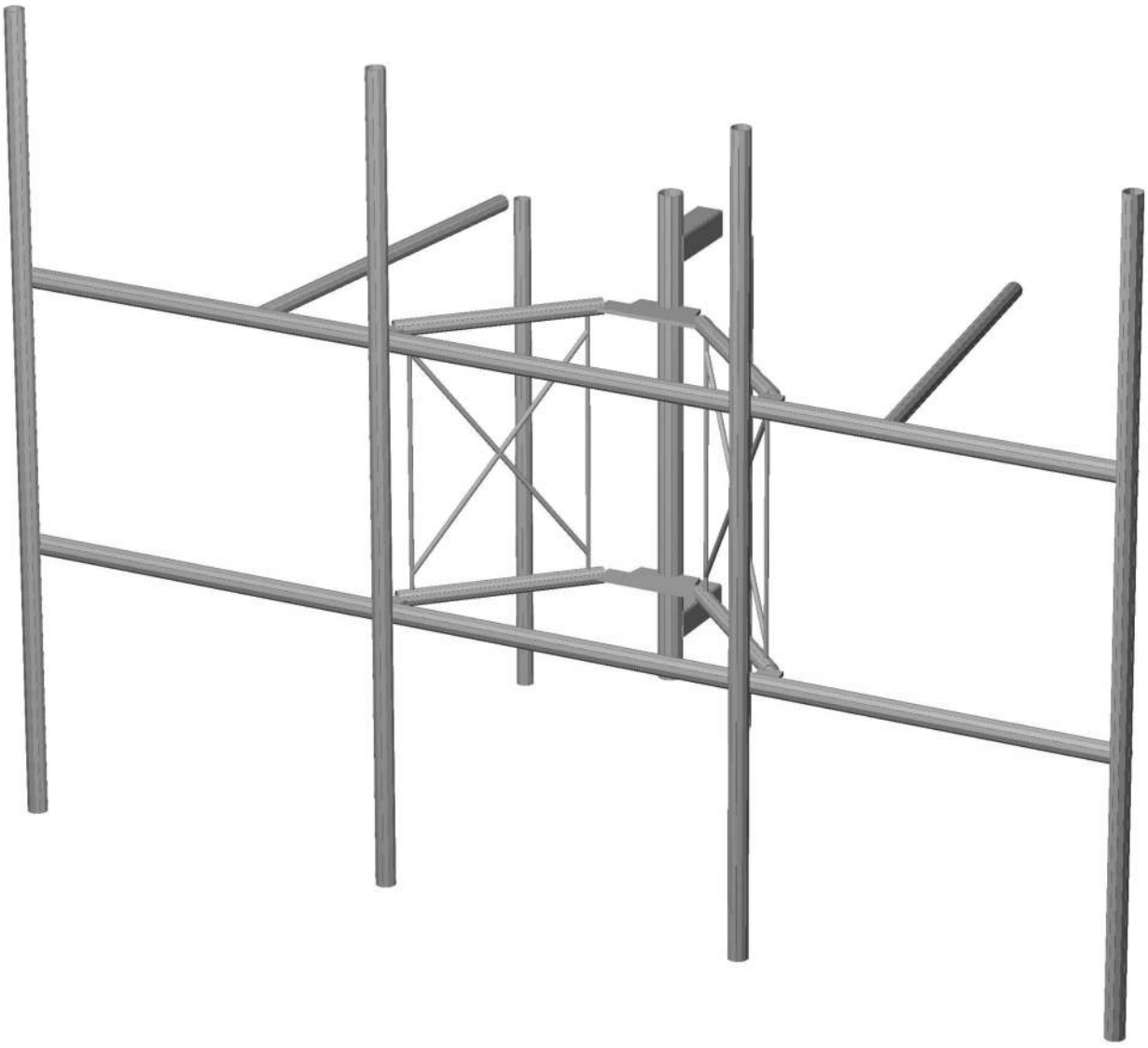
Height (in):	0.625	
Width (in):	11.25	
Per foot weight of ice on object:		18 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		10 plf

Mount Calculations
(Proposed Conditions)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CONNECT Edition

Current Date: 12/19/2022 1:19 PM
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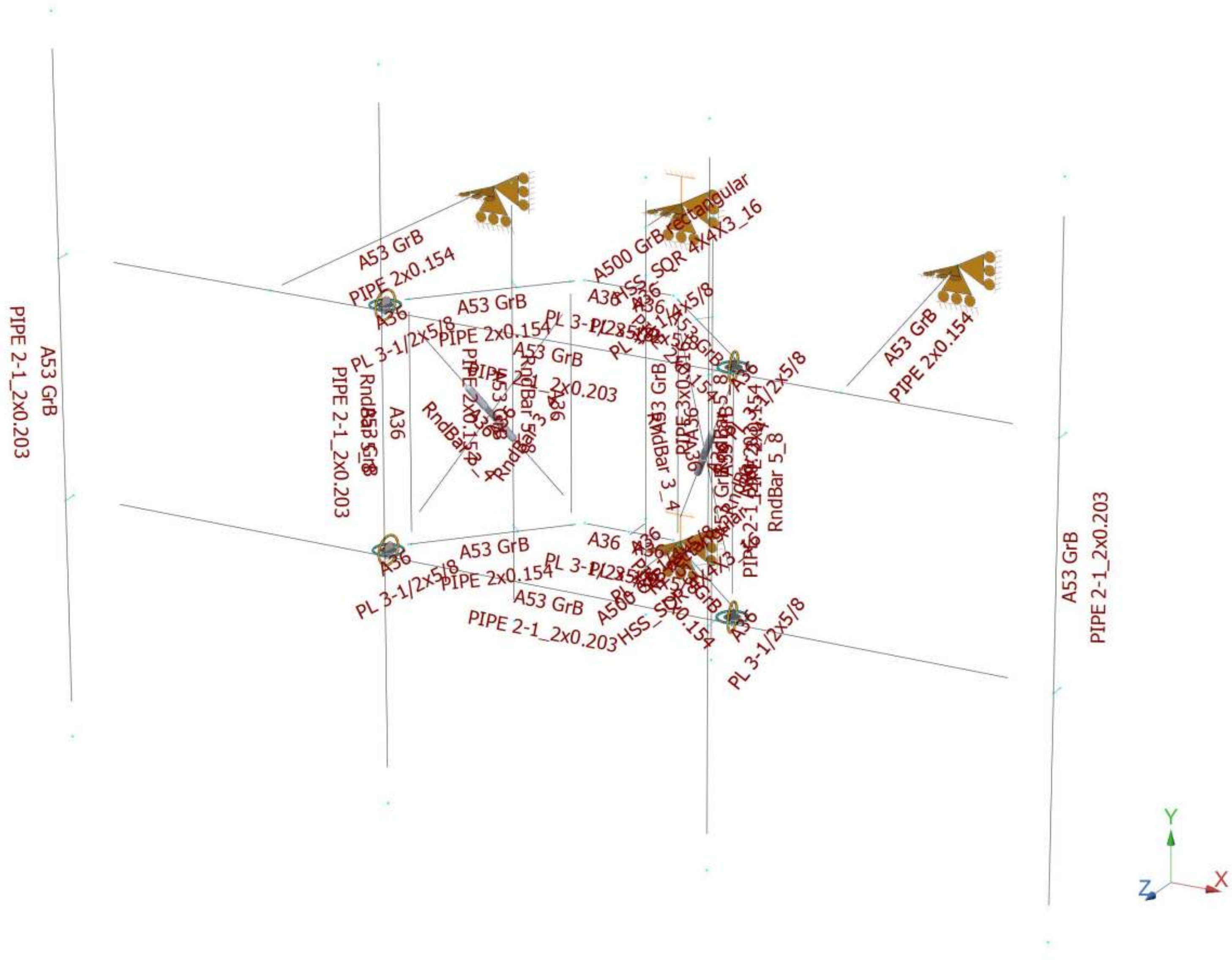

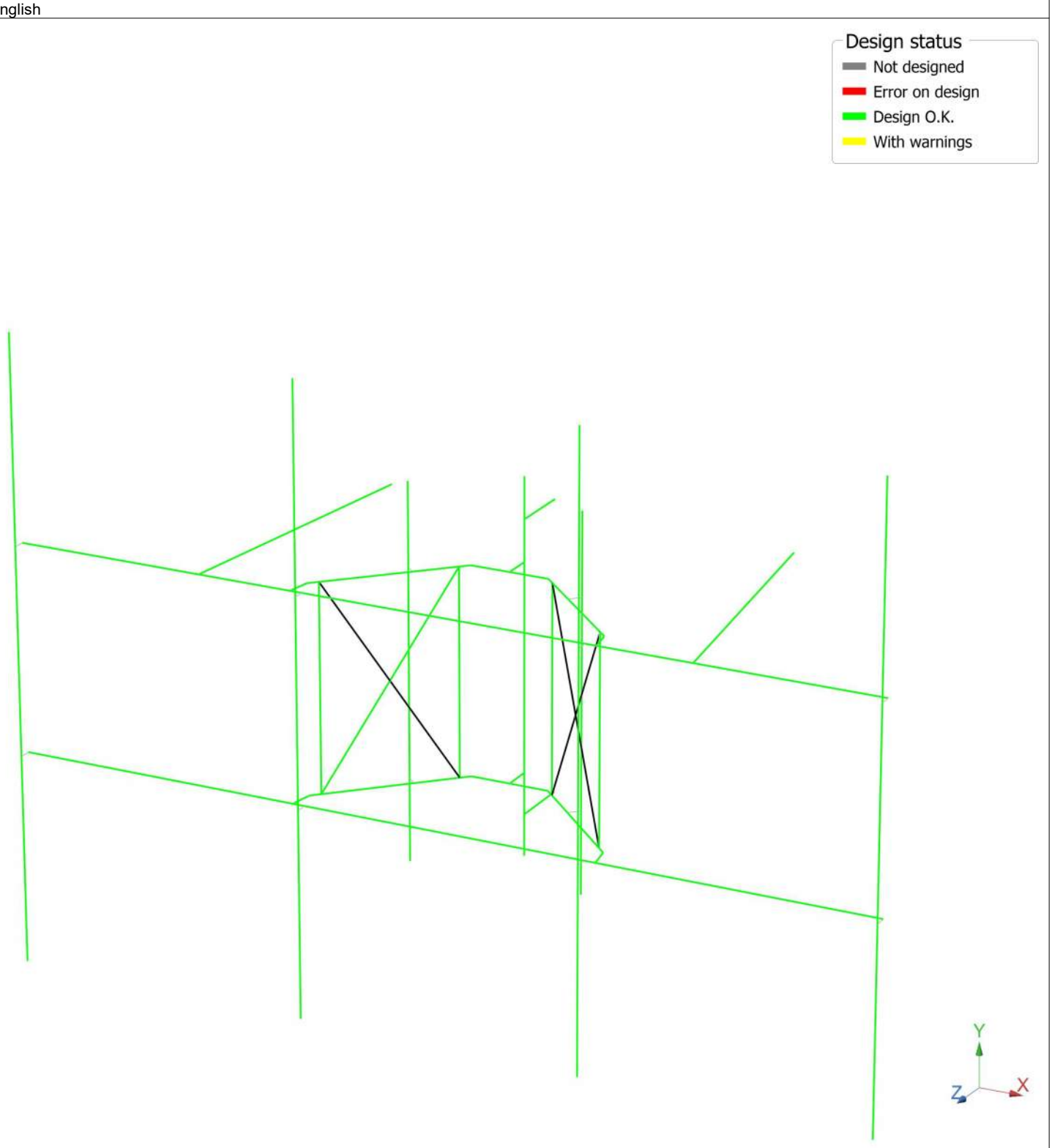
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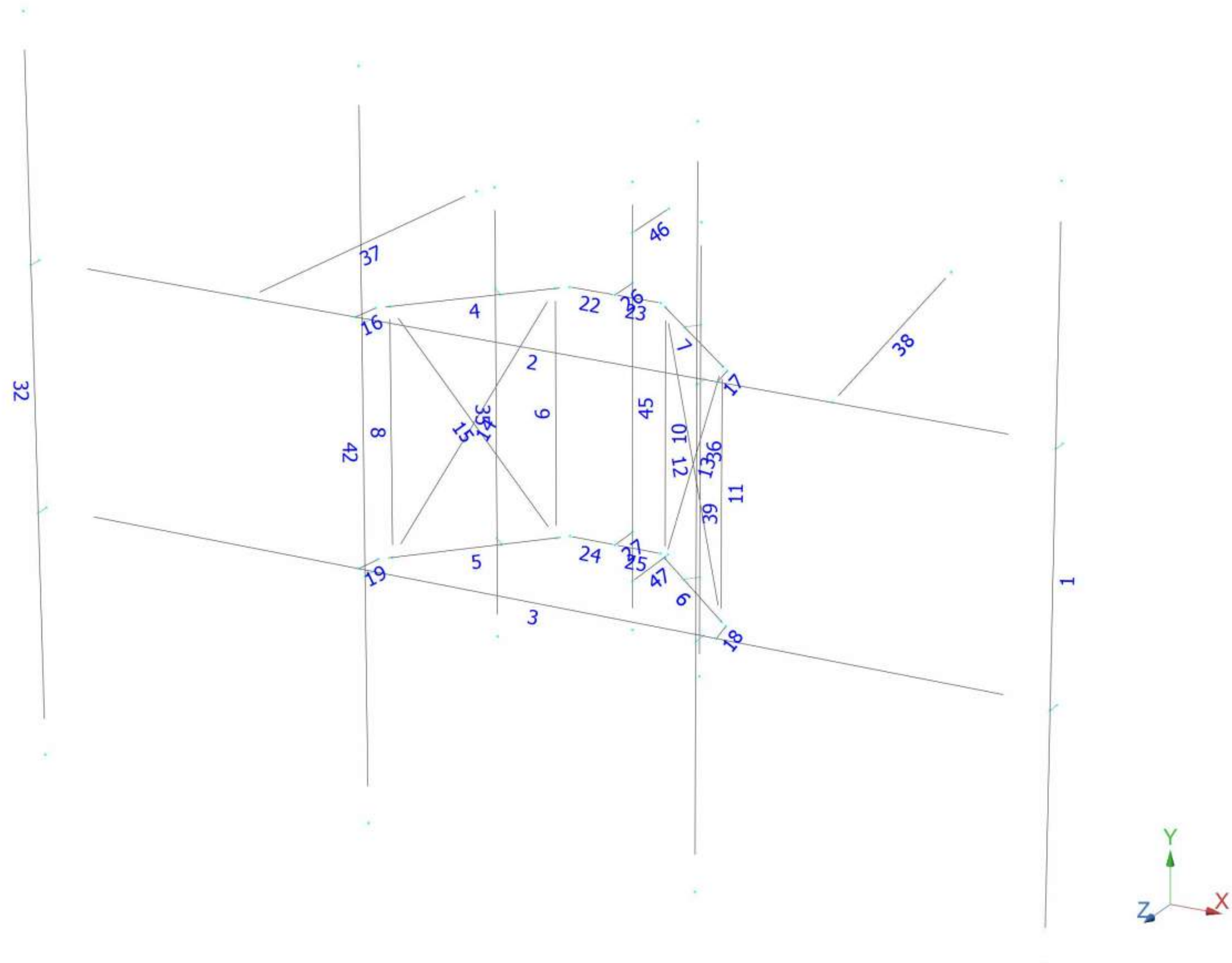
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Units system: English

Load data

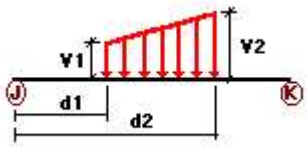
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

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

Distributed force on members



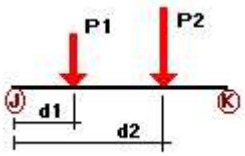
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.015	-0.015	0.00	No	100.00	Yes
	2	z	-0.015	-0.015	0.00	No	100.00	Yes
	3	z	-0.015	-0.015	0.00	No	100.00	Yes
	4	z	-0.013	-0.013	0.00	No	100.00	Yes
	5	z	-0.013	-0.013	0.00	No	100.00	Yes
	6	z	-0.013	-0.013	0.00	No	100.00	Yes
	7	z	-0.013	-0.013	0.00	No	100.00	Yes
	8	z	-0.003	-0.003	0.00	No	100.00	Yes
	9	z	-0.003	-0.003	0.00	No	100.00	Yes
	10	z	-0.003	-0.003	0.00	No	100.00	Yes
	11	z	-0.003	-0.003	0.00	No	100.00	Yes
	12	z	-0.004	-0.004	0.00	No	100.00	Yes
	13	z	-0.004	-0.004	0.00	No	100.00	Yes
	14	z	-0.004	-0.004	0.00	No	100.00	Yes
	15	z	-0.004	-0.004	0.00	No	100.00	Yes
	16	z	-0.005	-0.005	0.00	No	100.00	Yes
	17	z	-0.005	-0.005	0.00	No	100.00	Yes
	18	z	-0.005	-0.005	0.00	No	100.00	Yes
	19	z	-0.005	-0.005	0.00	No	100.00	Yes
	22	z	-0.005	-0.005	0.00	No	100.00	Yes
	23	z	-0.005	-0.005	0.00	No	100.00	Yes
	24	z	-0.005	-0.005	0.00	No	100.00	Yes
	25	z	-0.005	-0.005	0.00	No	100.00	Yes
	26	z	-0.005	-0.005	0.00	No	100.00	Yes
	27	z	-0.005	-0.005	0.00	No	100.00	Yes
	32	z	-0.015	-0.015	0.00	Yes	20.00	Yes
		z	-0.015	-0.015	80.00	Yes	100.00	Yes
	35	z	-0.013	-0.013	0.00	No	100.00	Yes
	36	z	-0.013	-0.013	0.00	No	100.00	Yes
	37	z	-0.013	-0.013	0.00	No	100.00	Yes
	38	z	-0.013	-0.013	0.00	No	100.00	Yes
	39	z	-0.015	-0.015	0.00	Yes	20.00	Yes
		z	-0.015	-0.015	80.00	Yes	100.00	Yes
	42	z	-0.015	-0.015	0.00	Yes	25.00	Yes
		z	-0.015	-0.015	65.00	Yes	100.00	Yes
	45	z	-0.018	-0.018	0.00	No	100.00	Yes
W30	1	z	-0.015	-0.015	0.00	No	100.00	Yes
	2	z	-0.015	-0.015	0.00	No	100.00	Yes
	3	z	-0.015	-0.015	0.00	No	100.00	Yes
	4	z	-0.013	-0.013	0.00	No	100.00	Yes
	5	z	-0.013	-0.013	0.00	No	100.00	Yes
	6	z	-0.013	-0.013	0.00	No	100.00	Yes
	7	z	-0.013	-0.013	0.00	No	100.00	Yes
	8	z	-0.003	-0.003	0.00	No	100.00	Yes
	9	z	-0.003	-0.003	0.00	No	100.00	Yes
	10	z	-0.003	-0.003	0.00	No	100.00	Yes
	11	z	-0.003	-0.003	0.00	No	100.00	Yes
	12	z	-0.004	-0.004	0.00	No	100.00	Yes
	13	z	-0.004	-0.004	0.00	No	100.00	Yes
	14	z	-0.004	-0.004	0.00	No	100.00	Yes
	15	z	-0.004	-0.004	0.00	No	100.00	Yes
	16	z	-0.005	-0.005	0.00	No	100.00	Yes
	17	z	-0.005	-0.005	0.00	No	100.00	Yes
	18	z	-0.005	-0.005	0.00	No	100.00	Yes
	19	z	-0.005	-0.005	0.00	No	100.00	Yes
	22	z	-0.005	-0.005	0.00	No	100.00	Yes
	23	z	-0.005	-0.005	0.00	No	100.00	Yes
	24	z	-0.005	-0.005	0.00	No	100.00	Yes
	25	z	-0.005	-0.005	0.00	No	100.00	Yes
	26	z	-0.005	-0.005	0.00	No	100.00	Yes

	27	z	-0.005	-0.005	0.00	No	100.00	Yes
	32	z	-0.015	-0.015	0.00	Yes	20.00	Yes
		z	-0.015	-0.015	80.00	Yes	100.00	Yes
	35	z	-0.013	-0.013	0.00	No	100.00	Yes
	36	z	-0.013	-0.013	0.00	No	100.00	Yes
	37	z	-0.013	-0.013	0.00	No	100.00	Yes
	38	z	-0.013	-0.013	0.00	No	100.00	Yes
	39	z	-0.015	-0.015	0.00	Yes	20.00	Yes
		z	-0.015	-0.015	80.00	Yes	100.00	Yes
	42	z	-0.015	-0.015	0.00	Yes	25.00	Yes
		z	-0.015	-0.015	65.00	Yes	100.00	Yes
	45	z	-0.018	-0.018	0.00	No	100.00	Yes
W60	1	x	-0.015	-0.015	0.00	No	100.00	Yes
	4	x	-0.013	-0.013	0.00	No	100.00	Yes
	5	x	-0.013	-0.013	0.00	No	100.00	Yes
	6	x	-0.013	-0.013	0.00	No	100.00	Yes
	7	x	-0.013	-0.013	0.00	No	100.00	Yes
	8	x	-0.003	-0.003	0.00	No	100.00	Yes
	9	x	-0.003	-0.003	0.00	No	100.00	Yes
	10	x	-0.003	-0.003	0.00	No	100.00	Yes
	11	x	-0.003	-0.003	0.00	No	100.00	Yes
	12	x	-0.004	-0.004	0.00	No	100.00	Yes
	13	x	-0.004	-0.004	0.00	No	100.00	Yes
	14	x	-0.004	-0.004	0.00	No	100.00	Yes
	15	x	-0.004	-0.004	0.00	No	100.00	Yes
	16	x	-0.005	-0.005	0.00	No	100.00	Yes
	17	x	-0.005	-0.005	0.00	No	100.00	Yes
	18	x	-0.005	-0.005	0.00	No	100.00	Yes
	19	x	-0.005	-0.005	0.00	No	100.00	Yes
	22	x	-0.005	-0.005	0.00	No	100.00	Yes
	23	x	-0.005	-0.005	0.00	No	100.00	Yes
	24	x	-0.005	-0.005	0.00	No	100.00	Yes
	25	x	-0.005	-0.005	0.00	No	100.00	Yes
	26	x	-0.005	-0.005	0.00	No	100.00	Yes
	27	x	-0.005	-0.005	0.00	No	100.00	Yes
	32	x	-0.015	-0.015	0.00	No	100.00	Yes
	35	x	-0.013	-0.013	0.00	No	100.00	Yes
	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.015	-0.015	0.00	No	100.00	Yes
	42	x	-0.015	-0.015	0.00	No	100.00	Yes
	45	x	-0.018	-0.018	0.00	No	100.00	Yes
	46	x	-0.035	-0.035	0.00	No	100.00	Yes
	47	x	-0.035	-0.035	0.00	No	100.00	Yes
W90	1	x	-0.015	-0.015	0.00	No	100.00	Yes
	4	x	-0.013	-0.013	0.00	No	100.00	Yes
	5	x	-0.013	-0.013	0.00	No	100.00	Yes
	6	x	-0.013	-0.013	0.00	No	100.00	Yes
	7	x	-0.013	-0.013	0.00	No	100.00	Yes
	8	x	-0.003	-0.003	0.00	No	100.00	Yes
	9	x	-0.003	-0.003	0.00	No	100.00	Yes
	10	x	-0.003	-0.003	0.00	No	100.00	Yes
	11	x	-0.003	-0.003	0.00	No	100.00	Yes
	12	x	-0.004	-0.004	0.00	No	100.00	Yes
	13	x	-0.004	-0.004	0.00	No	100.00	Yes
	14	x	-0.004	-0.004	0.00	No	100.00	Yes
	15	x	-0.004	-0.004	0.00	No	100.00	Yes
	16	x	-0.005	-0.005	0.00	No	100.00	Yes
	17	x	-0.005	-0.005	0.00	No	100.00	Yes

	18	x	-0.005	-0.005	0.00	No	100.00	Yes
	19	x	-0.005	-0.005	0.00	No	100.00	Yes
	22	x	-0.005	-0.005	0.00	No	100.00	Yes
	23	x	-0.005	-0.005	0.00	No	100.00	Yes
	24	x	-0.005	-0.005	0.00	No	100.00	Yes
	25	x	-0.005	-0.005	0.00	No	100.00	Yes
	26	x	-0.005	-0.005	0.00	No	100.00	Yes
	27	x	-0.005	-0.005	0.00	No	100.00	Yes
	32	x	-0.015	-0.015	0.00	No	100.00	Yes
	35	x	-0.013	-0.013	0.00	No	100.00	Yes
	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.015	-0.015	0.00	No	100.00	Yes
	42	x	-0.015	-0.015	0.00	No	100.00	Yes
	45	x	-0.018	-0.018	0.00	No	100.00	Yes
	46	x	-0.035	-0.035	0.00	No	100.00	Yes
	47	x	-0.035	-0.035	0.00	No	100.00	Yes
W120	1	x	-0.015	-0.015	0.00	No	100.00	Yes
	4	x	-0.013	-0.013	0.00	No	100.00	Yes
	5	x	-0.013	-0.013	0.00	No	100.00	Yes
	6	x	-0.013	-0.013	0.00	No	100.00	Yes
	7	x	-0.013	-0.013	0.00	No	100.00	Yes
	8	x	-0.003	-0.003	0.00	No	100.00	Yes
	9	x	-0.003	-0.003	0.00	No	100.00	Yes
	10	x	-0.003	-0.003	0.00	No	100.00	Yes
	11	x	-0.003	-0.003	0.00	No	100.00	Yes
	12	x	-0.004	-0.004	0.00	No	100.00	Yes
	13	x	-0.004	-0.004	0.00	No	100.00	Yes
	14	x	-0.004	-0.004	0.00	No	100.00	Yes
	15	x	-0.004	-0.004	0.00	No	100.00	Yes
	16	x	-0.005	-0.005	0.00	No	100.00	Yes
	17	x	-0.005	-0.005	0.00	No	100.00	Yes
	18	x	-0.005	-0.005	0.00	No	100.00	Yes
	19	x	-0.005	-0.005	0.00	No	100.00	Yes
	22	x	-0.005	-0.005	0.00	No	100.00	Yes
	23	x	-0.005	-0.005	0.00	No	100.00	Yes
	24	x	-0.005	-0.005	0.00	No	100.00	Yes
	25	x	-0.005	-0.005	0.00	No	100.00	Yes
	26	x	-0.005	-0.005	0.00	No	100.00	Yes
	27	x	-0.005	-0.005	0.00	No	100.00	Yes
	32	x	-0.015	-0.015	0.00	No	100.00	Yes
	35	x	-0.013	-0.013	0.00	No	100.00	Yes
	36	x	-0.013	-0.013	0.00	No	100.00	Yes
	37	x	-0.013	-0.013	0.00	No	100.00	Yes
	38	x	-0.013	-0.013	0.00	No	100.00	Yes
	39	x	-0.015	-0.015	0.00	No	100.00	Yes
	42	x	-0.015	-0.015	0.00	No	100.00	Yes
	45	x	-0.018	-0.018	0.00	No	100.00	Yes
	46	x	-0.035	-0.035	0.00	No	100.00	Yes
	47	x	-0.035	-0.035	0.00	No	100.00	Yes
W150	1	z	0.015	0.015	0.00	No	100.00	Yes
	2	z	0.015	0.015	0.00	No	100.00	Yes
	3	z	0.015	0.015	0.00	No	100.00	Yes
	4	z	0.013	0.013	0.00	No	100.00	Yes
	5	z	0.013	0.013	0.00	No	100.00	Yes
	6	z	0.013	0.013	0.00	No	100.00	Yes
	7	z	0.013	0.013	0.00	No	100.00	Yes
	8	z	0.003	0.003	0.00	No	100.00	Yes
	9	z	0.003	0.003	0.00	No	100.00	Yes

	10	z	0.003	0.003	0.00	No	100.00	Yes
	11	z	0.003	0.003	0.00	No	100.00	Yes
	12	z	0.004	0.004	0.00	No	100.00	Yes
	13	z	0.004	0.004	0.00	No	100.00	Yes
	14	z	0.004	0.004	0.00	No	100.00	Yes
	15	z	0.004	0.004	0.00	No	100.00	Yes
	16	z	0.005	0.005	0.00	No	100.00	Yes
	17	z	0.005	0.005	0.00	No	100.00	Yes
	18	z	0.005	0.005	0.00	No	100.00	Yes
	19	z	0.005	0.005	0.00	No	100.00	Yes
	22	z	0.005	0.005	0.00	No	100.00	Yes
	23	z	0.005	0.005	0.00	No	100.00	Yes
	24	z	0.005	0.005	0.00	No	100.00	Yes
	25	z	0.005	0.005	0.00	No	100.00	Yes
	26	z	0.005	0.005	0.00	No	100.00	Yes
	27	z	0.005	0.005	0.00	No	100.00	Yes
	32	z	0.015	0.015	0.00	No	100.00	Yes
	35	z	0.013	0.013	0.00	No	100.00	Yes
	36	z	0.013	0.013	0.00	No	100.00	Yes
	37	z	0.013	0.013	0.00	No	100.00	Yes
	38	z	0.013	0.013	0.00	No	100.00	Yes
	39	z	0.015	0.015	0.00	No	100.00	Yes
	42	z	0.015	0.015	0.00	No	100.00	Yes
	45	z	0.018	0.018	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
	3	y	-0.006	-0.006	0.00	No	100.00	Yes
	4	y	-0.005	-0.005	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	y	-0.005	-0.005	0.00	No	100.00	Yes
	7	y	-0.005	-0.005	0.00	No	100.00	Yes
	8	y	-0.003	-0.003	0.00	No	100.00	Yes
	9	y	-0.003	-0.003	0.00	No	100.00	Yes
	10	y	-0.003	-0.003	0.00	No	100.00	Yes
	11	y	-0.003	-0.003	0.00	No	100.00	Yes
	12	y	-0.003	-0.003	0.00	No	100.00	Yes
	13	y	-0.003	-0.003	0.00	No	100.00	Yes
	14	y	-0.003	-0.003	0.00	No	100.00	Yes
	15	y	-0.003	-0.003	0.00	No	100.00	Yes
	16	y	-0.007	-0.007	0.00	No	100.00	Yes
	17	y	-0.007	-0.007	0.00	No	100.00	Yes
	18	y	-0.007	-0.007	0.00	No	100.00	Yes
	19	y	-0.007	-0.007	0.00	No	100.00	Yes
	22	y	-0.007	-0.007	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	-0.018	-0.018	0.00	No	100.00	Yes
	27	y	-0.018	-0.018	0.00	No	100.00	Yes
	32	y	-0.006	-0.006	0.00	No	100.00	Yes
	35	y	-0.005	-0.005	0.00	No	100.00	Yes
	36	y	-0.005	-0.005	0.00	No	100.00	Yes
	37	y	-0.005	-0.005	0.00	No	100.00	Yes
	38	y	-0.005	-0.005	0.00	No	100.00	Yes
	39	y	-0.006	-0.006	0.00	No	100.00	Yes
	42	y	-0.006	-0.006	0.00	No	100.00	Yes
	45	y	-0.007	-0.007	0.00	No	100.00	Yes
	46	y	-0.01	-0.01	0.00	No	100.00	Yes
	47	y	-0.01	-0.01	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	32	y	-0.04	2.50	No
		y	-0.04	7.50	No
	35	y	-0.073	2.50	No
		y	-0.072	2.50	No
		y	-0.029	4.00	No
	39	y	-0.022	2.50	No
		y	-0.022	7.50	No
	42	y	-0.041	3.00	No
		y	-0.041	6.00	No
Wo	32	z	-0.334	2.50	No
		z	-0.334	7.50	No
	35	z	-0.074	2.50	No
		z	-0.071	2.50	No
		z	-0.082	4.00	No
	39	z	-0.25	2.50	No
		z	-0.25	7.50	No
	42	z	-0.107	3.00	No
		z	-0.107	6.00	No
W30	32	3	-0.288	2.50	No
		3	-0.288	7.50	No
	35	3	-0.081	2.50	No
		3	-0.082	4.00	No
	39	3	-0.223	2.50	No
		3	-0.223	7.50	No
	42	3	-0.098	3.00	No
		3	-0.098	6.00	No
W60	32	3	-0.194	2.50	No
		3	-0.194	7.50	No
	35	3	-0.096	2.50	No
		3	-0.082	4.00	No
	39	3	-0.171	2.50	No
		3	-0.171	7.50	No
	42	3	-0.081	3.00	No
		3	-0.081	6.00	No
W90	32	x	-0.148	2.50	No
		x	-0.148	7.50	No
	35	x	-0.104	2.50	No
		x	-0.082	4.00	No
	39	x	-0.144	2.50	No
		x	-0.144	7.50	No
	42	x	-0.072	3.00	No
		x	-0.072	6.00	No
W120	32	2	-0.194	2.50	No
		2	-0.194	7.50	No
	35	2	-0.096	2.50	No
		2	-0.082	4.00	No
	39	2	-0.171	2.50	No
		2	-0.171	7.50	No
	42	2	-0.081	3.00	No
		2	-0.081	6.00	No
W150	32	2	-0.288	2.50	No
		2	-0.288	7.50	No

	35	2	-0.081	2.50	No
		2	-0.082	4.00	No
	39	2	-0.223	2.50	No
		2	-0.223	7.50	No
	42	2	-0.098	3.00	No
		2	-0.098	6.00	No
Di	32	y	-0.099	2.50	No
		y	-0.099	7.50	No
	35	y	-0.037	2.50	No
		y	-0.032	2.50	No
		y	-0.043	4.00	No
	39	y	-0.075	2.50	No
		y	-0.075	7.50	No
	42	y	-0.037	3.00	No
		y	-0.037	6.00	No
WI0	32	z	-0.062	2.50	No
		z	-0.062	7.50	No
	35	z	-0.017	2.50	No
		z	-0.016	2.50	No
		z	-0.017	4.00	No
	39	z	-0.048	2.50	No
		z	-0.048	7.50	No
	42	z	-0.021	3.00	No
		z	-0.021	6.00	No
WI30	32	3	-0.054	2.50	No
		3	-0.054	7.50	No
	35	3	-0.018	2.50	No
		3	-0.017	4.00	No
	39	3	-0.043	2.50	No
		3	-0.043	7.50	No
	42	3	-0.02	3.00	No
		3	-0.02	6.00	No
WI60	32	3	-0.038	2.50	No
		3	-0.038	7.50	No
	35	3	-0.021	2.50	No
		3	-0.017	4.00	No
	39	3	-0.034	2.50	No
		3	-0.034	7.50	No
	42	3	-0.017	3.00	No
		3	-0.017	6.00	No
WI90	32	x	-0.031	2.50	No
		x	-0.031	7.50	No
	35	x	-0.022	2.50	No
		x	-0.017	4.00	No
	39	x	-0.03	2.50	No
		x	-0.03	7.50	No
	42	x	-0.015	3.00	No
		x	-0.015	6.00	No
WI120	32	2	-0.038	2.50	No
		2	-0.038	7.50	No
	35	2	-0.021	2.50	No
		2	-0.017	4.00	No
	39	2	-0.034	2.50	No
		2	-0.034	7.50	No
	42	2	-0.017	3.00	No
		2	-0.017	6.00	No
WI150	32	2	-0.054	2.50	No
		2	-0.054	7.50	No
	35	2	-0.018	2.50	No
		2	-0.017	4.00	No

	39	2	-0.043	2.50	No
		2	-0.043	7.50	No
	42	2	-0.02	3.00	No
		2	-0.02	6.00	No
WL0	32	z	-0.019	2.50	No
		z	-0.019	7.50	No
	35	z	-0.004	2.50	No
		z	-0.004	2.50	No
		z	-0.005	4.00	No
	39	z	-0.015	2.50	No
		z	-0.015	7.50	No
	42	z	-0.006	3.00	No
		z	-0.006	6.00	No
WL30	32	3	-0.017	2.50	No
		3	-0.017	7.50	No
	35	3	-0.005	2.50	No
		3	-0.005	4.00	No
	39	3	-0.013	2.50	No
		3	-0.013	7.50	No
	42	3	-0.006	3.00	No
		3	-0.006	6.00	No
WL60	32	3	-0.011	2.50	No
		3	-0.011	7.50	No
	35	3	-0.006	2.50	No
		3	-0.005	4.00	No
	39	3	-0.01	2.50	No
		3	-0.01	7.50	No
	42	3	-0.005	3.00	No
		3	-0.005	6.00	No
WL90	32	x	-0.009	2.50	No
		x	-0.009	7.50	No
	35	x	-0.006	2.50	No
		x	-0.005	4.00	No
	39	x	-0.009	2.50	No
		x	-0.009	7.50	No
	42	x	-0.004	3.00	No
		x	-0.004	6.00	No
WL120	32	2	-0.011	2.50	No
		2	-0.011	7.50	No
	35	2	-0.006	2.50	No
		2	-0.005	4.00	No
	39	2	-0.01	2.50	No
		2	-0.01	7.50	No
	42	2	-0.005	3.00	No
		2	-0.005	6.00	No
WL150	32	2	-0.017	2.50	No
		2	-0.017	7.50	No
	35	2	-0.005	2.50	No
		2	-0.005	4.00	No
	39	2	-0.013	2.50	No
		2	-0.013	7.50	No
	42	2	-0.006	3.00	No
		2	-0.006	6.00	No
LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LL3	2	y	-0.25	0.00	Yes
LLa1	1	y	-0.50	50.00	Yes
LLa2	39	y	-0.50	50.00	Yes
LLa3	42	y	-0.50	50.00	Yes
LLa4	32	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

RAM® Elements
CONNECT Edition

Current Date: 12/19/2022 1:20 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+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X3_16	**46**	LC4 at 0.00%	0.12	OK	
		47	LC10 at 0.00%	**0.14**	**OK**	
	PIPE 2-1_2x0.203	**1**	LC47 at 33.33%	0.34	OK	
		2	LC7 at 20.54%	**0.46**	**OK**	
		3	LC76 at 31.25%	0.46	OK	
		32	LC77 at 33.33%	0.38	OK	
		39	LC47 at 33.33%	0.17	OK	
		42	LC77 at 33.33%	0.19	OK	
	PIPE 2x0.154	**4**	LC81 at 93.75%	**0.32**	**OK**	
		5	LC83 at 93.75%	0.32	OK	
		6	LC41 at 93.75%	0.25	OK	
		7	LC51 at 93.75%	0.26	OK	
		35	LC79 at 22.92%	0.16	OK	
		36	LC40 at 22.92%	0.12	OK	
		37	LC7 at 0.00%	0.25	OK	
		38	LC40 at 100.00%	0.09	OK	
	PIPE 3x0.216	**45**	LC25 at 11.25%	**0.19**	**OK**	
	PL 11-1/4x5/8	**26**	LC25 at 100.00%	**0.17**	**OK**	
		27	LC32 at 100.00%	0.14	OK	
	PL 3-1/2x5/8	**16**	LC76 at 100.00%	0.31	OK	
		17	LC40 at 100.00%	0.28	OK	
		18	LC41 at 100.00%	0.37	OK	
		19	LC83 at 100.00%	0.43	OK	
		22	LC77 at 100.00%	**0.52**	**OK**	

	23	LC51 at 0.00%	0.43	OK
	24	LC87 at 100.00%	0.50	OK
	25	LC41 at 0.00%	0.40	OK
RndBar 3_4	**12**	LC45 at 100.00%	0.15	With warnings
	13	LC41 at 0.00%	0.14	With warnings
	14	LC81 at 0.00%	0.19	OK
	15	LC83 at 100.00%	**0.20**	**With warnings**
RndBar 5_8	**8**	LC76 at 87.50%	0.49	OK
	9	LC83 at 87.50%	**0.58**	**OK**
	10	LC41 at 87.50%	0.48	OK
	11	LC40 at 87.50%	0.42	OK

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Current Date: 12/19/2022 1:20 PM
Units system: English

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	2.00	0
2	-0.6362	0.00	2.4783	0
3	0.00	-3.3333	2.00	0
4	-0.6362	-3.3333	2.4783	0
5	0.6362	-3.3333	2.4783	0
6	0.6362	0.00	2.4783	0
7	7.00	-6.6667	4.83	0
8	7.00	3.3333	4.83	0
9	-7.00	0.00	4.63	0
10	7.00	0.00	4.63	0
11	-7.00	-3.3333	4.63	0
12	7.00	-3.3333	4.63	0
13	-2.4126	0.00	4.2374	0
14	-2.4126	-3.3333	4.2374	0
15	2.4126	-3.3333	4.2374	0
16	2.4126	0.00	4.2374	0
17	-2.2835	0.00	4.1096	0
18	-2.2835	-3.3333	4.1096	0
19	-0.7653	0.00	2.6062	0
20	-0.7653	-3.3333	2.6062	0
21	0.7653	0.00	2.6062	0
22	0.7653	-3.3333	2.6062	0
23	2.2835	0.00	4.1096	0

24	2.2835	-3.3333	4.1096	0
25	-2.4792	0.00	4.63	0
26	2.4792	0.00	4.63	0
27	2.4792	-3.3333	4.63	0
28	-2.4792	-3.3333	4.63	0
29	7.00	3.33E-06	4.83	0
30	7.00	-3.3333	4.83	0
31	0.00	0.00	2.4783	0
32	0.00	-3.3333	2.4783	0
33	-1.2713	0.00	3.1073	0
34	-1.2713	-3.3333	3.1073	0
35	-1.4213	0.00	2.9573	0
36	-1.4213	-3.3333	2.9573	0
37	1.2713	0.00	3.1073	0
38	1.2713	-3.3333	3.1073	0
39	1.4213	0.00	2.9573	0
40	1.4213	-3.3333	2.9573	0
41	-7.00	-6.6667	4.83	0
42	-7.00	3.3333	4.83	0
43	-7.00	3.33E-06	4.83	0
44	-7.00	-3.3333	4.83	0
45	-1.4213	-4.6667	2.9573	0
46	1.4213	-4.6667	2.9573	0
47	-1.4213	1.3333	2.9573	0
48	1.4213	1.3333	2.9573	0
49	-4.00	0.00	4.63	0
50	-3.3572	0.00	-0.1711	0
51	4.00	0.00	4.63	0
52	3.3572	0.00	-0.1711	0
53	2.30	-6.6667	4.83	0
54	2.30	3.3333	4.83	0
55	2.30	0.00	4.63	0
56	2.30	-3.3333	4.63	0
57	2.30	3.33E-06	4.83	0
58	2.30	-3.3333	4.83	0
59	-2.28	-6.6667	4.83	0
60	-2.28	3.3333	4.83	0
61	-2.28	0.00	4.63	0
62	-2.28	-3.3333	4.63	0
63	-2.28	3.33E-06	4.83	0
64	-2.28	-3.3333	4.83	0
65	0.00	1.3333	2.00	0
66	0.00	-4.6667	2.00	0
67	0.00	0.6667	2.00	0
68	0.00	-4.00	2.00	0
69	0.00	0.6667	1.00	0
70	0.00	-4.00	1.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
50	1	1	1	0	0	0
52	1	1	1	0	0	0
69	1	1	1	0	1	0
70	1	1	1	0	1	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	8	7		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	9	10		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	11	12		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	13	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	14	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	16	6		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	18		RndBar 5_8	A36	0.00	0.00	0.00
9	19	20		RndBar 5_8	A36	0.00	0.00	0.00
10	21	22		RndBar 5_8	A36	0.00	0.00	0.00
11	23	24		RndBar 5_8	A36	0.00	0.00	0.00
12	21	24		RndBar 3_4	A36	0.00	0.00	0.00
13	22	23		RndBar 3_4	A36	0.00	0.00	0.00
14	18	19		RndBar 3_4	A36	0.00	0.00	0.00
15	17	20		RndBar 3_4	A36	0.00	0.00	0.00
16	13	25		PL 3-1/2x5/8	A36	0.00	0.00	0.00
17	16	26		PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	15	27		PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	14	28		PL 3-1/2x5/8	A36	0.00	0.00	0.00
22	2	31		PL 3-1/2x5/8	A36	0.00	0.00	0.00
23	31	6		PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	4	32		PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	32	5		PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	31	1		PL 11-1/4x5/8	A36	11.25	9.25	0.00
27	32	3		PL 11-1/4x5/8	A36	11.25	9.25	0.00
32	42	41		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
35	47	45		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
36	48	46		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
37	49	50		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	52	51		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	54	53		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
42	60	59		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	66	65		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
46	69	67		HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
47	70	68		HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00

Orientation of local axes

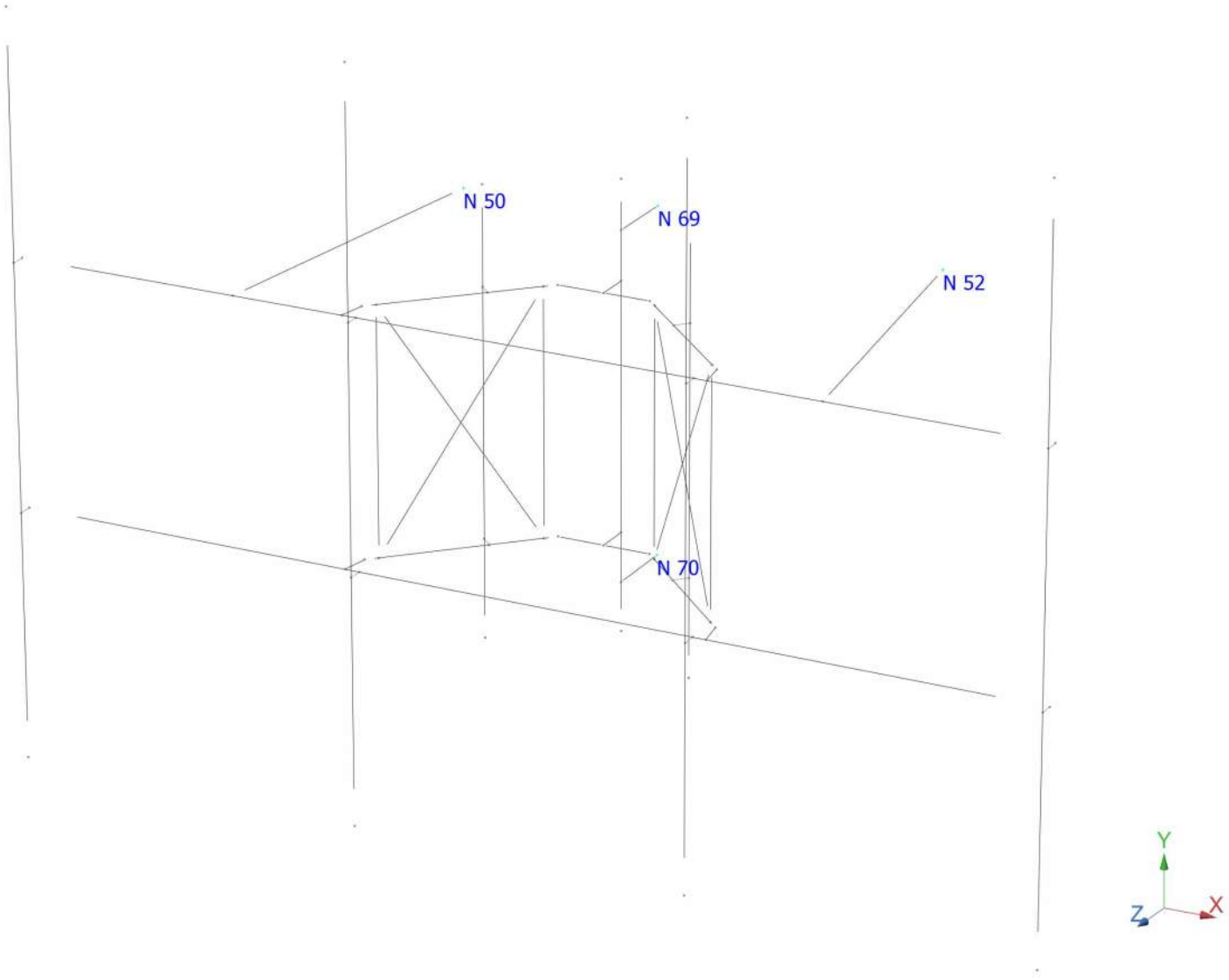
Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	315.00	0	0.00	0.00	0.00
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
32	315.00	0	0.00	0.00	0.00
35	315.00	0	0.00	0.00	0.00
39	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00

Rigid end offsets

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

Hinges

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


N 50
N 69
N 52
N 70
Y
Z
X

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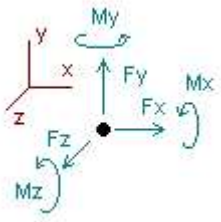
Current Date: 12/19/2022 1:20 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip] FX	FY	FZ	Moments [Kip*ft] MX	MY	MZ
Condition **LC1=1.2D+Wo**						
50	-0.25690	-0.00798	1.53501	0.00000	0.00000	0.00000
52	0.07951	0.01236	0.56413	0.00000	0.00000	0.00000
69	0.39610	0.43522	-1.11392	0.00000	0.34527	0.00000
70	-0.21871	0.77692	1.88118	0.00000	-0.03104	0.00000
SUM	0.00000	1.21652	2.86640	0.00000	0.31423	0.00000
Condition **LC2=1.2D+W30**						
50	-0.20497	-0.00788	1.36911	0.00000	0.00000	0.00000
52	0.04677	0.01723	0.20289	0.00000	0.00000	0.00000
69	0.87956	0.45391	-0.99115	0.00000	0.89398	0.00000
70	0.25516	0.75326	1.65307	0.00000	0.57234	0.00000
SUM	0.97651	1.21652	2.23391	0.00000	1.46632	0.00000
Condition **LC3=1.2D+W60**						
50	-0.11164	-0.00754	1.03491	0.00000	0.00000	0.00000
52	-0.01779	0.02619	-0.45791	0.00000	0.00000	0.00000
69	1.42082	0.55919	-0.87915	0.00000	1.49397	0.00000
70	0.71829	0.63868	1.05874	0.00000	1.17140	0.00000
SUM	2.00969	1.21652	0.75660	0.00000	2.66537	0.00000
Condition **LC4=1.2D+W90**						
50	-0.02651	0.00063	0.56586	0.00000	0.00000	0.00000
52	-0.02431	0.02313	-0.55153	0.00000	0.00000	0.00000
69	1.42589	0.60024	-0.78288	0.00000	1.52911	0.00000
70	0.79201	0.59251	0.76854	0.00000	1.17432	0.00000
SUM	2.16708	1.21652	0.00000	0.00000	2.70343	0.00000
Condition **LC5=1.2D+W120**						
50	0.06643	0.01109	0.01726	0.00000	0.00000	0.00000
52	-0.02363	0.01798	-0.56519	0.00000	0.00000	0.00000
69	1.25378	0.64273	-0.68701	0.00000	1.36080	0.00000
70	0.71310	0.54472	0.47833	0.00000	0.95471	0.00000
SUM	2.00969	1.21652	-0.75660	0.00000	2.31551	0.00000

Condition **LC6=1.2D+W150**

50	0.17138	0.02535	-0.85546	0.00000	0.00000	0.00000
52	-0.10394	0.01551	-0.84315	0.00000	0.00000	0.00000
69	0.66085	0.76591	-0.56848	0.00000	0.74003	0.00000
70	0.24823	0.40974	-0.20683	0.00000	0.30790	0.00000
SUM	0.97651	1.21652	-2.47392	0.00000	1.04793	0.00000

Condition **LC7=1.2D-Wo**

50	0.26319	0.04065	-1.51988	0.00000	0.00000	0.00000
52	-0.07905	0.00429	-0.57854	0.00000	0.00000	0.00000
69	0.04547	0.76126	-0.42829	0.00000	0.07509	0.00000
70	-0.22960	0.41032	-0.33970	0.00000	-0.47139	0.00000
SUM	0.00000	1.21652	-2.86640	0.00000	-0.39631	0.00000

Condition **LC8=1.2D-W30**

50	0.21085	0.04094	-1.36394	0.00000	0.00000	0.00000
52	-0.04703	-0.00042	-0.22137	0.00000	0.00000	0.00000
69	-0.43673	0.73906	-0.53887	0.00000	-0.47069	0.00000
70	-0.70360	0.43694	-0.10973	0.00000	-1.07568	0.00000
SUM	-0.97651	1.21652	-2.23392	0.00000	-1.54637	0.00000

Condition **LC9=1.2D-W60**

50	0.11595	0.04048	-1.02908	0.00000	0.00000	0.00000
52	0.01861	-0.00901	0.43974	0.00000	0.00000	0.00000
69	-0.97730	0.63445	-0.65158	0.00000	-1.07019	0.00000
70	-1.16694	0.55060	0.48431	0.00000	-1.67538	0.00000
SUM	-2.00969	1.21652	-0.75660	0.00000	-2.74557	0.00000

Condition **LC10=1.2D-W90**

50	0.03046	0.03179	-0.55715	0.00000	0.00000	0.00000
52	0.02570	-0.00605	0.53524	0.00000	0.00000	0.00000
69	-0.98230	0.59495	-0.75195	0.00000	-1.10570	0.00000
70	-1.24094	0.59583	0.77386	0.00000	-1.67917	0.00000
SUM	-2.16708	1.21652	0.00000	0.00000	-2.78487	0.00000

Condition **LC11=1.2D-W120**

50	-0.06219	0.02092	-0.00407	0.00000	0.00000	0.00000
52	0.02531	-0.00105	0.55118	0.00000	0.00000	0.00000
69	-0.81066	0.55437	-0.85368	0.00000	-0.93851	0.00000
70	-1.16215	0.64228	1.06318	0.00000	-1.45964	0.00000
SUM	-2.00969	1.21652	0.75660	0.00000	-2.39815	0.00000

Condition **LC12=1.2D-W150**

50	-0.16654	0.00645	0.87532	0.00000	0.00000	0.00000
52	0.10563	0.00125	0.83204	0.00000	0.00000	0.00000
69	-0.21834	0.43325	-0.98060	0.00000	-0.31939	0.00000
70	-0.69726	0.77557	1.74715	0.00000	-0.81224	0.00000
SUM	-0.97651	1.21652	2.47391	0.00000	-1.13164	0.00000

Condition **LC13=0.9D+Wo**

50	-0.25747	-0.01143	1.53360	0.00000	0.00000	0.00000
52	0.07948	0.01034	0.56607	0.00000	0.00000	0.00000
69	0.34029	0.28527	-0.92121	0.00000	0.29195	0.00000
70	-0.16230	0.62822	1.68794	0.00000	0.03220	0.00000
SUM	0.00000	0.91239	2.86640	0.00000	0.32415	0.00000

Condition **LC14=0.9D+W30**

50	-0.20554	-0.01139	1.36772	0.00000	0.00000	0.00000
52	0.04674	0.01515	0.20484	0.00000	0.00000	0.00000
69	0.82389	0.30402	-0.79860	0.00000	0.84080	0.00000
70	0.31143	0.60461	1.45996	0.00000	0.63531	0.00000
SUM	0.97651	0.91239	2.23392	0.00000	1.47612	0.00000

Condition **LC15=0.9D+W60**

50	-0.11222	-0.01117	1.03355	0.00000	0.00000	0.00000
52	-0.01783	0.02400	-0.45591	0.00000	0.00000	0.00000
69	1.36516	0.40943	-0.68686	0.00000	1.44081	0.00000
70	0.77457	0.49012	0.86582	0.00000	1.23427	0.00000
SUM	2.00969	0.91239	0.75660	0.00000	2.67508	0.00000

Condition **LC16=0.9D+W90**

50	-0.02710	-0.00317	0.56455	0.00000	0.00000	0.00000
52	-0.02434	0.02094	-0.54953	0.00000	0.00000	0.00000
69	1.37036	0.45058	-0.59078	0.00000	1.47610	0.00000
70	0.84817	0.44404	0.57576	0.00000	1.23712	0.00000
SUM	2.16708	0.91239	0.00000	0.00000	2.71322	0.00000

Condition **LC17=0.9D+W120**

50	0.06581	0.00709	0.01602	0.00000	0.00000	0.00000
52	-0.02366	0.01579	-0.56321	0.00000	0.00000	0.00000
69	1.19840	0.49318	-0.49511	0.00000	1.30796	0.00000
70	0.76913	0.39633	0.28569	0.00000	1.01746	0.00000
SUM	2.00969	0.91239	-0.75660	0.00000	2.32542	0.00000

Condition **LC18=0.9D+W150**

50	0.17073	0.02104	-0.85660	0.00000	0.00000	0.00000
52	-0.10398	0.01329	-0.84112	0.00000	0.00000	0.00000
69	0.60572	0.61654	-0.37696	0.00000	0.68741	0.00000
70	0.30405	0.26152	-0.39923	0.00000	0.37058	0.00000
SUM	0.97651	0.91239	-2.47392	0.00000	1.05799	0.00000

Condition **LC19=0.9D-Wo**

50	0.26251	0.03609	-1.52093	0.00000	0.00000	0.00000
52	-0.07909	0.00211	-0.57653	0.00000	0.00000	0.00000
69	-0.00957	0.61197	-0.23693	0.00000	0.02258	0.00000
70	-0.17384	0.26221	-0.53201	0.00000	-0.40852	0.00000
SUM	0.00000	0.91239	-2.86640	0.00000	-0.38594	0.00000

Condition **LC20=0.9D-W30**

50	0.21016	0.03642	-1.36495	0.00000	0.00000	0.00000
52	-0.04706	-0.00242	-0.21922	0.00000	0.00000	0.00000
69	-0.49181	0.58932	-0.34758	0.00000	-0.52322	0.00000
70	-0.64780	0.28907	-0.30217	0.00000	-1.01236	0.00000
SUM	-0.97651	0.91239	-2.23392	0.00000	-1.53558	0.00000

Condition **LC21=0.9D-W60**

50	0.11527	0.03607	-1.03008	0.00000	0.00000	0.00000
52	0.01858	-0.01084	0.44194	0.00000	0.00000	0.00000
69	-1.03231	0.48434	-0.46015	0.00000	-1.12265	0.00000
70	-1.11122	0.40282	0.29169	0.00000	-1.61183	0.00000
SUM	-2.00969	0.91239	-0.75660	0.00000	-2.73448	0.00000

Condition **LC22=0.9D-W90**

50	0.02980	0.02757	-0.55831	0.00000	0.00000	0.00000
52	0.02566	-0.00806	0.53718	0.00000	0.00000	0.00000
69	-1.03761	0.44539	-0.55997	0.00000	-1.15850	0.00000
70	-1.18494	0.44748	0.58110	0.00000	-1.61586	0.00000
SUM	-2.16708	0.91239	0.00000	0.00000	-2.77436	0.00000

Condition **LC23=0.9D-W120**

50	-0.06283	0.01690	-0.00530	0.00000	0.00000	0.00000
52	0.02527	-0.00307	0.55313	0.00000	0.00000	0.00000
69	-0.86613	0.40471	-0.66151	0.00000	-0.99148	0.00000
70	-1.10600	0.49384	0.87028	0.00000	-1.39630	0.00000
SUM	-2.00969	0.91239	0.75660	0.00000	-2.38778	0.00000

Condition **LC24=0.9D-W150**

50	-0.16714	0.00275	0.87399	0.00000	0.00000	0.00000
52	0.10560	-0.00073	0.83396	0.00000	0.00000	0.00000
69	-0.27406	0.28340	-0.78804	0.00000	-0.37259	0.00000
70	-0.64091	0.62696	1.55400	0.00000	-0.74882	0.00000
SUM	-0.97651	0.91239	2.47392	0.00000	-1.12141	0.00000

Condition **LC25=1.2D+Di+WI0**

50	-0.03496	0.02975	0.24346	0.00000	0.00000	0.00000
52	0.00280	0.01781	0.00281	0.00000	0.00000	0.00000
69	0.54183	1.02150	-1.42334	0.00000	0.50640	0.00000
70	-0.50967	1.03973	1.48906	0.00000	-0.53836	0.00000
SUM	0.00000	2.10878	0.31200	0.00000	-0.03196	0.00000

Condition **LC26=1.2D+Di+WI30**

50	-0.02576	0.02969	0.21701	0.00000	0.00000	0.00000
52	-0.00336	0.01877	-0.06579	0.00000	0.00000	0.00000
69	0.63664	1.02678	-1.40535	0.00000	0.61291	0.00000
70	-0.41731	1.03353	1.44434	0.00000	-0.42038	0.00000
SUM	0.19021	2.10878	0.19021	0.00000	0.19253	0.00000

Condition **LC27=1.2D+Di+WI60**

50	-0.01674	0.03096	0.16044	0.00000	0.00000	0.00000
52	-0.00267	0.01814	-0.05897	0.00000	0.00000	0.00000
69	0.60806	1.02289	-1.38171	0.00000	0.58696	0.00000
70	-0.43591	1.03679	1.43298	0.00000	-0.45383	0.00000
SUM	0.15274	2.10878	0.15273	0.00000	0.13313	0.00000

Condition **LC28=1.2D+Di+WI90**

50	-0.00030	0.03267	0.07052	0.00000	0.00000	0.00000
52	-0.00415	0.01761	-0.07926	0.00000	0.00000	0.00000
69	0.61306	1.03200	-1.36521	0.00000	0.59762	0.00000
70	-0.41762	1.02650	1.37395	0.00000	-0.44835	0.00000
SUM	0.19100	2.10878	0.00000	0.00000	0.14928	0.00000

Condition **LC29=1.2D+Di+WI120**

50	0.01819	0.03500	-0.04045	0.00000	0.00000	0.00000
52	-0.00373	0.01652	-0.07902	0.00000	0.00000	0.00000
69	0.57495	1.04125	-1.34827	0.00000	0.55938	0.00000
70	-0.43668	1.01600	1.31500	0.00000	-0.49758	0.00000
SUM	0.15274	2.10878	-0.15274	0.00000	0.06181	0.00000

Condition **LC30=1.2D+Di+WI150**

50	0.02406	0.03540	-0.06724	0.00000	0.00000	0.00000
52	-0.00550	0.01664	-0.09837	0.00000	0.00000	0.00000
69	0.59013	1.03836	-1.32772	0.00000	0.57956	0.00000
70	-0.41848	1.01838	1.30312	0.00000	-0.47620	0.00000
SUM	0.19021	2.10878	-0.19021	0.00000	0.10336	0.00000

Condition **LC31=1.2D+Di-WI0**

50	0.04630	0.03913	-0.22171	0.00000	0.00000	0.00000
52	-0.00070	0.01434	-0.04959	0.00000	0.00000	0.00000
69	0.46593	1.04137	-1.30064	0.00000	0.44661	0.00000
70	-0.51154	1.01393	1.25994	0.00000	-0.63223	0.00000
SUM	0.00000	2.10878	-0.31200	0.00000	-0.18562	0.00000

Condition **LC32=1.2D+Di-WI30**

50	0.03709	0.03921	-0.19556	0.00000	0.00000	0.00000
52	0.00545	0.01338	0.01890	0.00000	0.00000	0.00000
69	0.37115	1.03598	-1.31827	0.00000	0.34018	0.00000
70	-0.60391	1.02021	1.30472	0.00000	-0.75026	0.00000
SUM	-0.19021	2.10878	-0.19021	0.00000	-0.41008	0.00000

Condition **LC33=1.2D+Di-WI60**

50	0.02806	0.03791	-0.13890	0.00000	0.00000	0.00000
52	0.00477	0.01402	0.01212	0.00000	0.00000	0.00000
69	0.39974	1.03992	-1.34202	0.00000	0.36614	0.00000
70	-0.58531	1.01693	1.31607	0.00000	-0.71681	0.00000
SUM	-0.15274	2.10878	-0.15274	0.00000	-0.35067	0.00000

Condition **LC34=1.2D+Di-WI90**

50	0.01160	0.03620	-0.04892	0.00000	0.00000	0.00000
52	0.00626	0.01455	0.03244	0.00000	0.00000	0.00000
69	0.39475	1.03083	-1.35860	0.00000	0.35547	0.00000
70	-0.60360	1.02720	1.37508	0.00000	-0.72231	0.00000
SUM	-0.19100	2.10878	0.00000	0.00000	-0.36683	0.00000

Condition **LC35=1.2D+Di-WI120**

50	-0.00689	0.03386	0.06217	0.00000	0.00000	0.00000
52	0.00584	0.01563	0.03225	0.00000	0.00000	0.00000
69	0.43285	1.02163	-1.37569	0.00000	0.39369	0.00000
70	-0.58454	1.03766	1.43400	0.00000	-0.67306	0.00000
SUM	-0.15274	2.10878	0.15273	0.00000	-0.27937	0.00000

Condition **LC36=1.2D+Di-WI150**

50	-0.01277	0.03346	0.08907	0.00000	0.00000	0.00000
52	0.00763	0.01551	0.05164	0.00000	0.00000	0.00000
69	0.41767	1.02456	-1.39637	0.00000	0.37349	0.00000
70	-0.60274	1.03525	1.44587	0.00000	-0.69444	0.00000
SUM	-0.19021	2.10878	0.19021	0.00000	-0.32095	0.00000

Condition **LC37=1.2D+1.6LL1**

50	0.00316	0.01604	-0.00075	0.00000	0.00000	0.00000
52	-0.00052	0.00844	-0.01357	0.00000	0.00000	0.00000
69	0.22172	0.79564	-1.06954	0.00000	0.21166	0.00000
70	-0.22436	0.79640	1.08386	0.00000	-0.25201	0.00000
SUM	0.00000	1.61652	0.00000	0.00000	-0.04035	0.00000

Condition **LC38=1.2D+1.6LL2**

50	-0.00048	0.00791	-0.01886	0.00000	0.00000	0.00000
52	-0.00342	0.02378	0.01171	0.00000	0.00000	0.00000
69	-0.35602	0.79459	-1.07747	0.00000	-0.31910	0.00000
70	0.35992	0.79025	1.08462	0.00000	0.41881	0.00000
SUM	0.00000	1.61652	0.00000	0.00000	0.09971	0.00000

Condition **LC39=1.2D+1.6LL3**

50	0.00605	0.03129	0.02457	0.00000	0.00000	0.00000
52	0.00314	0.00023	-0.03148	0.00000	0.00000	0.00000
69	0.79950	0.79447	-1.07767	0.00000	0.74252	0.00000
70	-0.80868	0.79052	1.08458	0.00000	-0.92316	0.00000
SUM	0.00000	1.61652	0.00000	0.00000	-0.18064	0.00000

Condition **LC40=1.2D+WL0+1.6LLa1**

50	-0.01464	-0.00088	0.01429	0.00000	0.00000	0.00000
52	-0.01070	0.03229	0.01826	0.00000	0.00000	0.00000
69	-0.92528	0.98363	-1.40949	0.00000	-0.85050	0.00000
70	0.95062	1.00147	1.46993	0.00000	1.08202	0.00000
SUM	0.00000	2.01652	0.09300	0.00000	0.23151	0.00000

Condition **LC41=1.2D+WL30+1.6LLa1**

50	-0.01210	-0.00096	0.00823	0.00000	0.00000	0.00000
52	-0.01265	0.03268	-0.00326	0.00000	0.00000	0.00000
69	-0.89590	0.98504	-1.40391	0.00000	-0.81709	0.00000
70	0.97864	0.99975	1.45692	0.00000	1.11884	0.00000
SUM	0.05798	2.01652	0.05798	0.00000	0.30175	0.00000

Condition **LC42=1.2D+WL60+1.6LLa1**

50	-0.00873	-0.00053	-0.01291	0.00000	0.00000	0.00000
52	-0.01242	0.03244	-0.00089	0.00000	0.00000	0.00000
69	-0.90628	0.98342	-1.39464	0.00000	-0.82652	0.00000
70	0.97197	1.00118	1.45299	0.00000	1.10663	0.00000
SUM	0.04455	2.01652	0.04455	0.00000	0.28011	0.00000

Condition **LC43=1.2D+WL90+1.6LLa1**

50	-0.00397	-0.00009	-0.03911	0.00000	0.00000	0.00000
52	-0.01284	0.03231	-0.00667	0.00000	0.00000	0.00000
69	-0.90521	0.98615	-1.38999	0.00000	-0.82387	0.00000
70	0.97702	0.99815	1.43577	0.00000	1.10789	0.00000
SUM	0.05500	2.01652	0.00000	0.00000	0.28402	0.00000

Condition **LC44=1.2D+WL120+1.6LLa1**

50	0.00134	0.00051	-0.07101	0.00000	0.00000	0.00000
52	-0.01272	0.03199	-0.00671	0.00000	0.00000	0.00000
69	-0.91573	0.98897	-1.38538	0.00000	-0.83435	0.00000
70	0.97167	0.99504	1.41854	0.00000	1.09389	0.00000
SUM	0.04455	2.01652	-0.04455	0.00000	0.25954	0.00000

Condition **LC45=1.2D+WL150+1.6LLa1**

50	0.00358	0.00065	-0.08147	0.00000	0.00000	0.00000
52	-0.01337	0.03205	-0.01366	0.00000	0.00000	0.00000
69	-0.91036	0.98770	-1.37726	0.00000	-0.82718	0.00000
70	0.97813	0.99611	1.41441	0.00000	1.10127	0.00000
SUM	0.05798	2.01652	-0.05798	0.00000	0.27409	0.00000

Condition **LC46=1.2D-WL0+1.6LLa1**

50	0.01009	0.00165	-0.12687	0.00000	0.00000	0.00000
52	-0.01192	0.03132	0.00085	0.00000	0.00000	0.00000
69	-0.94798	0.98848	-1.36888	0.00000	-0.86687	0.00000
70	0.94981	0.99507	1.40190	0.00000	1.05471	0.00000
SUM	0.00000	2.01652	-0.09300	0.00000	0.18785	0.00000

Condition **LC47=1.2D-WL30+1.6LLa1**

50	0.00755	0.00173	-0.12084	0.00000	0.00000	0.00000
52	-0.00998	0.03093	0.02236	0.00000	0.00000	0.00000
69	-0.97735	0.98706	-1.37443	0.00000	-0.90027	0.00000
70	0.92179	0.99680	1.41492	0.00000	1.01789	0.00000
SUM	-0.05798	2.01652	-0.05798	0.00000	0.11761	0.00000

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

50	0.00419	0.00130	-0.09968	0.00000	0.00000	0.00000
52	-0.01021	0.03117	0.02000	0.00000	0.00000	0.00000
69	-0.96698	0.98869	-1.38370	0.00000	-0.89084	0.00000
70	0.92846	0.99536	1.41885	0.00000	1.03009	0.00000
SUM	-0.04455	2.01652	-0.04455	0.00000	0.13925	0.00000

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

50	-0.00058	0.00086	-0.07348	0.00000	0.00000	0.00000
52	-0.00979	0.03131	0.02577	0.00000	0.00000	0.00000
69	-0.96804	0.98596	-1.38836	0.00000	-0.89349	0.00000
70	0.92341	0.99839	1.43607	0.00000	1.02883	0.00000
SUM	-0.05500	2.01652	0.00000	0.00000	0.13534	0.00000

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

50	-0.00589	0.00025	-0.04157	0.00000	0.00000	0.00000
52	-0.00991	0.03162	0.02582	0.00000	0.00000	0.00000
69	-0.95752	0.98315	-1.39299	0.00000	-0.88301	0.00000
70	0.92876	1.00150	1.45329	0.00000	1.04283	0.00000
SUM	-0.04455	2.01652	0.04455	0.00000	0.15982	0.00000

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

50	-0.00813	0.00011	-0.03110	0.00000	0.00000	0.00000
52	-0.00926	0.03156	0.03278	0.00000	0.00000	0.00000
69	-0.96289	0.98442	-1.40112	0.00000	-0.89018	0.00000
70	0.92230	1.00042	1.45742	0.00000	1.03546	0.00000
SUM	-0.05798	2.01652	0.05798	0.00000	0.14527	0.00000

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

50	-0.00983	0.01270	0.06354	0.00000	0.00000	0.00000
52	-0.00190	0.01060	-0.01204	0.00000	0.00000	0.00000
69	-0.15646	0.99327	-1.42359	0.00000	-0.13614	0.00000
70	0.16819	0.99994	1.46509	0.00000	0.11126	0.00000
SUM	0.00000	2.01652	0.09300	0.00000	-0.02489	0.00000

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

50	-0.00730	0.01262	0.05752	0.00000	0.00000	0.00000
52	-0.00384	0.01093	-0.03353	0.00000	0.00000	0.00000
69	-0.12716	0.99472	-1.41809	0.00000	-0.10281	0.00000
70	0.19628	0.99824	1.45208	0.00000	0.14815	0.00000
SUM	0.05798	2.01652	0.05798	0.00000	0.04534	0.00000

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

50	-0.00393	0.01307	0.03639	0.00000	0.00000	0.00000
52	-0.00360	0.01070	-0.03117	0.00000	0.00000	0.00000
69	-0.13753	0.99309	-1.40882	0.00000	-0.11224	0.00000
70	0.18961	0.99965	1.44815	0.00000	0.13595	0.00000
SUM	0.04455	2.01652	0.04455	0.00000	0.02371	0.00000

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

50	0.00084	0.01353	0.01022	0.00000	0.00000	0.00000
52	-0.00402	0.01055	-0.03695	0.00000	0.00000	0.00000
69	-0.13650	0.99582	-1.40419	0.00000	-0.10961	0.00000
70	0.19469	0.99662	1.43092	0.00000	0.13725	0.00000
SUM	0.05500	2.01652	0.00000	0.00000	0.02764	0.00000

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

50	0.00615	0.01415	-0.02165	0.00000	0.00000	0.00000
52	-0.00390	0.01023	-0.03700	0.00000	0.00000	0.00000
69	-0.14704	0.99864	-1.39958	0.00000	-0.12010	0.00000
70	0.18934	0.99349	1.41368	0.00000	0.12328	0.00000
SUM	0.04455	2.01652	-0.04455	0.00000	0.00318	0.00000

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

50	0.00840	0.01429	-0.03209	0.00000	0.00000	0.00000
52	-0.00455	0.01028	-0.04394	0.00000	0.00000	0.00000
69	-0.14170	0.99738	-1.39150	0.00000	-0.11296	0.00000
70	0.19583	0.99456	1.40955	0.00000	0.13069	0.00000
SUM	0.05798	2.01652	-0.05798	0.00000	0.01773	0.00000

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

50	0.01493	0.01532	-0.07748	0.00000	0.00000	0.00000
52	-0.00311	0.00958	-0.02947	0.00000	0.00000	0.00000
69	-0.17928	0.99813	-1.38308	0.00000	-0.15261	0.00000
70	0.16747	0.99348	1.39703	0.00000	0.08412	0.00000
SUM	0.00000	2.01652	-0.09300	0.00000	-0.06848	0.00000

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

50	0.01240	0.01540	-0.07149	0.00000	0.00000	0.00000
52	-0.00118	0.00925	-0.00800	0.00000	0.00000	0.00000
69	-0.20857	0.99666	-1.38854	0.00000	-0.18593	0.00000
70	0.13937	0.99520	1.41005	0.00000	0.04722	0.00000
SUM	-0.05798	2.01652	-0.05798	0.00000	-0.13871	0.00000

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

50	0.00902	0.01495	-0.05034	0.00000	0.00000	0.00000
52	-0.00142	0.00949	-0.01035	0.00000	0.00000	0.00000
69	-0.19820	0.99830	-1.39783	0.00000	-0.17651	0.00000
70	0.14604	0.99378	1.41398	0.00000	0.05942	0.00000
SUM	-0.04455	2.01652	-0.04455	0.00000	-0.11708	0.00000

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

50	0.00425	0.01450	-0.02417	0.00000	0.00000	0.00000
52	-0.00099	0.00964	-0.00457	0.00000	0.00000	0.00000
69	-0.19923	0.99557	-1.40246	0.00000	-0.17913	0.00000
70	0.14097	0.99682	1.43121	0.00000	0.05812	0.00000
SUM	-0.05500	2.01652	0.00000	0.00000	-0.12101	0.00000

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

50	-0.00106	0.01387	0.00771	0.00000	0.00000	0.00000
52	-0.00111	0.00995	-0.00452	0.00000	0.00000	0.00000
69	-0.18869	0.99275	-1.40708	0.00000	-0.16864	0.00000
70	0.14632	0.99994	1.44844	0.00000	0.07209	0.00000
SUM	-0.04455	2.01652	0.04455	0.00000	-0.09655	0.00000

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

50	-0.00331	0.01373	0.01816	0.00000	0.00000	0.00000
52	-0.00047	0.00991	0.00243	0.00000	0.00000	0.00000
69	-0.19403	0.99401	-1.41518	0.00000	-0.17578	0.00000
70	0.13983	0.99887	1.45257	0.00000	0.06468	0.00000
SUM	-0.05798	2.01652	0.05798	0.00000	-0.11110	0.00000

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

50	-0.00726	0.01618	0.06261	0.00000	0.00000	0.00000
52	0.00069	0.00694	-0.01095	0.00000	0.00000	0.00000
69	0.61941	0.99320	-1.42375	0.00000	0.57274	0.00000
70	-0.61284	1.00019	1.46508	0.00000	-0.58505	0.00000
SUM	0.00000	2.01652	0.09300	0.00000	-0.01231	0.00000

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

50	-0.00473	0.01611	0.05659	0.00000	0.00000	0.00000
52	-0.00123	0.00725	-0.03242	0.00000	0.00000	0.00000
69	0.64866	0.99466	-1.41822	0.00000	0.60603	0.00000
70	-0.58471	0.99849	1.45204	0.00000	-0.54810	0.00000
SUM	0.05798	2.01652	0.05798	0.00000	0.05793	0.00000

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

50	-0.00135	0.01658	0.03545	0.00000	0.00000	0.00000
52	-0.00100	0.00702	-0.03007	0.00000	0.00000	0.00000
69	0.63828	0.99302	-1.40894	0.00000	0.59660	0.00000
70	-0.59138	0.99990	1.44811	0.00000	-0.56030	0.00000
SUM	0.04455	2.01652	0.04455	0.00000	0.03630	0.00000

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

50	0.00342	0.01707	0.00929	0.00000	0.00000	0.00000
52	-0.00142	0.00686	-0.03584	0.00000	0.00000	0.00000
69	0.63929	0.99574	-1.40430	0.00000	0.59921	0.00000
70	-0.58628	0.99685	1.43086	0.00000	-0.55898	0.00000
SUM	0.05500	2.01652	0.00000	0.00000	0.04023	0.00000

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

50	0.00874	0.01772	-0.02259	0.00000	0.00000	0.00000
52	-0.00130	0.00655	-0.03589	0.00000	0.00000	0.00000
69	0.62873	0.99854	-1.39968	0.00000	0.58870	0.00000
70	-0.59162	0.99370	1.41361	0.00000	-0.57293	0.00000
SUM	0.04455	2.01652	-0.04455	0.00000	0.01577	0.00000

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

50	0.01099	0.01788	-0.03303	0.00000	0.00000	0.00000
52	-0.00195	0.00658	-0.04283	0.00000	0.00000	0.00000
69	0.63405	0.99728	-1.39158	0.00000	0.59582	0.00000
70	-0.58510	0.99477	1.40946	0.00000	-0.56550	0.00000
SUM	0.05798	2.01652	-0.05798	0.00000	0.03032	0.00000

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

50	0.01752	0.01895	-0.07842	0.00000	0.00000	0.00000
52	-0.00051	0.00590	-0.02837	0.00000	0.00000	0.00000
69	0.59647	0.99800	-1.38315	0.00000	0.55619	0.00000
70	-0.61348	0.99366	1.39694	0.00000	-0.61208	0.00000
SUM	0.00000	2.01652	-0.09300	0.00000	-0.05590	0.00000

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

50	0.01499	0.01903	-0.07243	0.00000	0.00000	0.00000
52	0.00141	0.00559	-0.00690	0.00000	0.00000	0.00000
69	0.56723	0.99653	-1.38864	0.00000	0.52290	0.00000
70	-0.64162	0.99537	1.40999	0.00000	-0.64903	0.00000
SUM	-0.05798	2.01652	-0.05798	0.00000	-0.12613	0.00000

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

50	0.01161	0.01856	-0.05128	0.00000	0.00000	0.00000
52	0.00118	0.00582	-0.00926	0.00000	0.00000	0.00000
69	0.57761	0.99818	-1.39793	0.00000	0.53233	0.00000
70	-0.63495	0.99396	1.41392	0.00000	-0.63683	0.00000
SUM	-0.04455	2.01652	-0.04455	0.00000	-0.10450	0.00000

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

50	0.00684	0.01807	-0.02511	0.00000	0.00000	0.00000
52	0.00160	0.00598	-0.00348	0.00000	0.00000	0.00000
69	0.57660	0.99546	-1.40258	0.00000	0.52973	0.00000
70	-0.64004	0.99701	1.43117	0.00000	-0.63816	0.00000
SUM	-0.05500	2.01652	0.00000	0.00000	-0.10843	0.00000

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

50	0.00152	0.01741	0.00677	0.00000	0.00000	0.00000
52	0.00148	0.00630	-0.00342	0.00000	0.00000	0.00000
69	0.58716	0.99266	-1.40722	0.00000	0.54024	0.00000
70	-0.63471	1.00015	1.44842	0.00000	-0.62421	0.00000
SUM	-0.04455	2.01652	0.04455	0.00000	-0.08397	0.00000

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

50	-0.00073	0.01726	0.01723	0.00000	0.00000	0.00000
52	0.00213	0.00626	0.00352	0.00000	0.00000	0.00000
69	0.58184	0.99392	-1.41533	0.00000	0.53311	0.00000
70	-0.64122	0.99908	1.45256	0.00000	-0.63163	0.00000
SUM	-0.05798	2.01652	0.05798	0.00000	-0.09852	0.00000

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

50	0.00152	0.03763	0.09303	0.00000	0.00000	0.00000
52	0.00556	-0.00683	-0.06005	0.00000	0.00000	0.00000
69	1.39170	0.98354	-1.41009	0.00000	1.29055	0.00000
70	-1.39878	1.00218	1.47011	0.00000	-1.55935	0.00000
SUM	0.00000	2.01652	0.09300	0.00000	-0.26880	0.00000

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

50	0.00404	0.03758	0.08701	0.00000	0.00000	0.00000
52	0.00364	-0.00654	-0.08152	0.00000	0.00000	0.00000
69	1.42073	0.98499	-1.40455	0.00000	1.32364	0.00000
70	-1.37043	1.00048	1.45704	0.00000	-1.52212	0.00000
SUM	0.05798	2.01652	0.05798	0.00000	-0.19848	0.00000

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

50	0.00743	0.03811	0.06584	0.00000	0.00000	0.00000
52	0.00387	-0.00677	-0.07917	0.00000	0.00000	0.00000
69	1.41037	0.98331	-1.39520	0.00000	1.31422	0.00000
70	-1.37713	1.00186	1.45308	0.00000	-1.53439	0.00000
SUM	0.04455	2.01652	0.04455	0.00000	-0.22017	0.00000

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

50	0.01222	0.03867	0.03964	0.00000	0.00000	0.00000
52	0.00345	-0.00693	-0.08494	0.00000	0.00000	0.00000
69	1.41129	0.98599	-1.39048	0.00000	1.31673	0.00000
70	-1.37196	0.99878	1.43578	0.00000	-1.53300	0.00000
SUM	0.05500	2.01652	0.00000	0.00000	-0.21627	0.00000

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

50	0.01756	0.03943	0.00773	0.00000	0.00000	0.00000
52	0.00357	-0.00722	-0.08497	0.00000	0.00000	0.00000
69	1.40069	0.98868	-1.38579	0.00000	1.30618	0.00000
70	-1.37727	0.99564	1.41849	0.00000	-1.54691	0.00000
SUM	0.04455	2.01652	-0.04455	0.00000	-0.24073	0.00000

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

50	0.01981	0.03961	-0.00273	0.00000	0.00000	0.00000
52	0.00293	-0.00719	-0.09191	0.00000	0.00000	0.00000
69	1.40592	0.98740	-1.37766	0.00000	1.31321	0.00000
70	-1.37067	0.99669	1.41432	0.00000	-1.53938	0.00000
SUM	0.05798	2.01652	-0.05798	0.00000	-0.22617	0.00000

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

50	0.02637	0.04083	-0.04818	0.00000	0.00000	0.00000
52	0.00436	-0.00783	-0.07740	0.00000	0.00000	0.00000
69	1.36845	0.98790	-1.36917	0.00000	1.27368	0.00000
70	-1.39918	0.99561	1.40175	0.00000	-1.58611	0.00000
SUM	0.00000	2.01652	-0.09300	0.00000	-0.31243	0.00000

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

50	0.02385	0.04088	-0.04218	0.00000	0.00000	0.00000
52	0.00628	-0.00812	-0.05593	0.00000	0.00000	0.00000
69	1.33943	0.98641	-1.37469	0.00000	1.24060	0.00000
70	-1.42754	0.99734	1.41482	0.00000	-1.62333	0.00000
SUM	-0.05798	2.01652	-0.05798	0.00000	-0.38273	0.00000

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

50	0.02046	0.04035	-0.02101	0.00000	0.00000	0.00000
52	0.00605	-0.00790	-0.05830	0.00000	0.00000	0.00000
69	1.34978	0.98814	-1.38403	0.00000	1.25001	0.00000
70	-1.42083	0.99593	1.41878	0.00000	-1.61108	0.00000
SUM	-0.04455	2.01652	-0.04455	0.00000	-0.36107	0.00000

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

50	0.01567	0.03978	0.00519	0.00000	0.00000	0.00000
52	0.00647	-0.00775	-0.05254	0.00000	0.00000	0.00000
69	1.34884	0.98551	-1.38873	0.00000	1.24748	0.00000
70	-1.42598	0.99898	1.43608	0.00000	-1.61250	0.00000
SUM	-0.05500	2.01652	0.00000	0.00000	-0.36501	0.00000

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

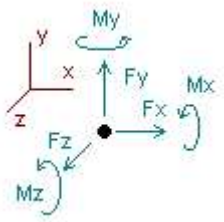
50	0.01033	0.03903	0.03711	0.00000	0.00000	0.00000
52	0.00635	-0.00746	-0.05251	0.00000	0.00000	0.00000
69	1.35944	0.98284	-1.39343	0.00000	1.25804	0.00000
70	-1.42067	1.00211	1.45337	0.00000	-1.59859	0.00000
SUM	-0.04455	2.01652	0.04455	0.00000	-0.34056	0.00000

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

50	0.00808	0.03884	0.04758	0.00000	0.00000	0.00000
52	0.00699	-0.00749	-0.04556	0.00000	0.00000	0.00000
69	1.35422	0.98412	-1.40157	0.00000	1.25100	0.00000
70	-1.42727	1.00104	1.45754	0.00000	-1.60613	0.00000
SUM	-0.05798	2.01652	0.05798	0.00000	-0.35513	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+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2

LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
50	Max	0.263	LC7	0.041	LC8	1.535	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.257	LC13	-0.011	LC13	-1.521	LC19	0.00000	LC1	0.00000	LC1	0.00000	LC1
52	Max	0.106	LC12	0.033	LC41	0.834	LC24	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.104	LC18	-0.011	LC21	-0.843	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
69	Max	1.426	LC4	1.041	LC31	-0.237	LC19	0.00000	LC1	1.52911	LC4	0.00000	LC1
	Min	-1.038	LC22	0.283	LC24	-1.424	LC64	0.00000	LC1	-1.15850	LC22	0.00000	LC1
70	Max	0.979	LC41	1.040	LC25	1.881	LC1	0.00000	LC1	1.23712	LC16	0.00000	LC1
	Min	-1.428	LC83	0.262	LC18	-0.532	LC19	0.00000	LC1	-1.67917	LC10	0.00000	LC1

Connection Check

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL **Checked By:** MSC

CHECK THRU BOLT CONNECTION CAPACITY → THRU BOLTS AT STANDOFF

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

Bolt Type = A325 5/8" Bolt

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{vall} = 8283 lbs.

CONNECTION PLATE CONFIGURATION (4-BOLTS)

$N_{BOLT\ ROWS}$	=	2	rows	d_Y	=	6	in (Min.)
N_{BOLTS}	=	2	bolts/row	d_X	=	6	in (Min.)

TENSILE FORCES

Moment in X axis:	0	lb-ft.	(See Bentley Output)
Couple Reaction from M_X:	0	lbs.	
Moment in Y axis:	1679	lb-ft.	(See Bentley Output)
Couple Reaction from M_Y:	6716	lbs.	
Reaction in Z direction:	1881	lbs.	(See Bentley Output)
Resultant:	3828	lbs.	

SHEAR FORCES

Moment in Z axis:	0	lb-ft.	(See Bentley Output)
Couple Reaction from M_Z:	0	lbs.	
Reaction in X direction:	1428	lbs.	(See Bentley Output)
Reaction in Y direction:	1040	lbs.	(See Bentley Output)
Resultant:	442	lbs.	

Tension Design Load /Bolts =

f_t= 3828.25 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 441.64 lbs. < 8283.5 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.277	+	0.053	=	0.331	<	1.0	**Therefore, OK !**

Date: 12/19/2022
Project Name: EAST HAVEN
Project No.: CT5184
Designed By: CL **Checked By:** MSC

CHECK THRU BOLT CONNECTION CAPACITY → THREADED RODS AT COLLAR MOUNT

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

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall} = 4004 lbs.

TENSILE FORCES

Reaction **F =** 1881 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1428 lbs. (See Bentley Output)
Reactions in Y direction: 1040 lbs. (See Bentley Output)

Resultant: 1767 lbs.

No. of Supports = 1
No. of Bolts / Support = 3

Tension Design Load /Bolts =

f_t = 627.00 lbs. < 6673 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 588.86 lbs. < 4004 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.094	+	0.147	=	0.241	<	1.0	**Therefore, OK !**

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE: • PROPOSED AT&T DUAL AIR ANTENNAS: AIR6449 B77D @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • PROPOSED AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1). • INSTALL AT&T (3) #6 AWG DC POWER CABLES & (1) #24 PAIRS OF FIBER RUNS. • INSTALL AT&T 14'-6" HEAVY DUTY V-FRAME SECTOR MOUNT (SITEPRO1 #VFA14-H10-2120) (TYP. OF 1 PER SECTOR, TOTAL OF 3). ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION: • INSTALL 6648 + XCEDE CABLE • INSTALL IDLE • INSTALL (6) NEW -48V RECTIFIERS • INSTALL (3) NEW STRINGS OF BATTERIES BELOW POWER PLANT. • INSTALL (1) NEW BATTERY CABINET WITH (2) STRINGS OF BATTERIES. ITEMS TO BE REMOVED: • EXISTING AT&T DIPLEXERS: DBCT108F1V92-1 (TYP. OF 1 PER SECTOR, TOTAL OF 3). ITEMS TO REMAIN: • (6) ANTENNAS, (8) RRU'S, (1) SURGE ARRESTOR, (6) 1-5/8" COAX, (2) #8 AWG DC TRUNKS & (1) #18 PAIR FIBER.
SITE ADDRESS:	108 FOXON ROAD NORTH BRANFORD, CT 06471
LATITUDE:	41.3285919° N, 41° 19' 42.93" N
LONGITUDE:	72.8188989° W, 72° 49' 8.03" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	176'-7"±
RAD CENTER:	157'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	C
GN-1	GENERAL NOTES	C
A-1	COMPOUND & EQUIPMENT PLANS	C
A-2	ANTENNA LAYOUT PLANS & ELEVATION	C
A-3	DETAILS	C
A-4	DETAILS	C
G-1	GROUNDING DETAILS	C
RF-1	RF PLUMBING DIAGRAM	C

at&t

SITE NUMBER: CTL05184

SITE NAME: EAST HAVEN

FA CODE: 10071146

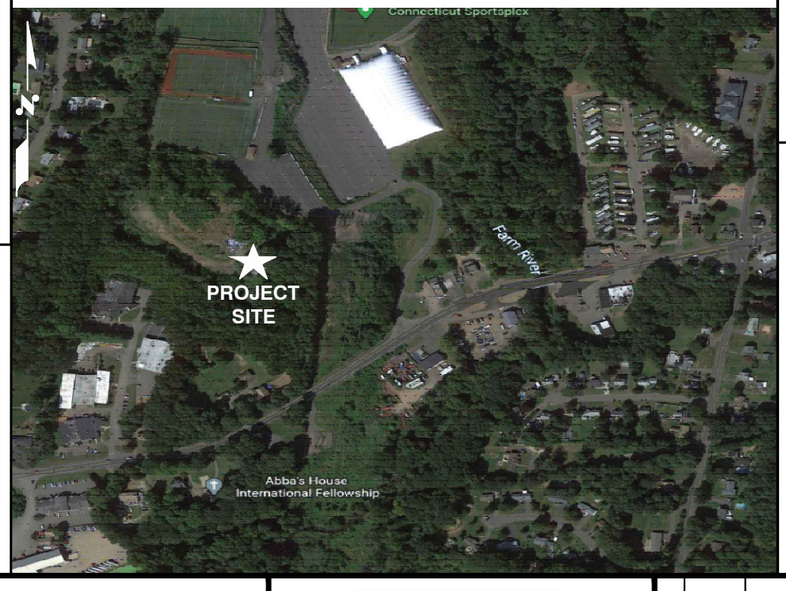
PACE ID: MRCTB053635,MRCTB053640, MRCTB055158

PROJECT: 5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

ISSUED FOR PERMITTING

VICINITY MAP

DIRECTIONS TO SITE:
START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD.TURN LEFT ONTO CAPITAL BLVD.TURN LEFT ONTO WEST ST.MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN.TAKE THE CT-80 EXIT, EXIT 8, TOWARD MIDDLETOWN AVE/NORTH BRANFORD/CT-17.TURN LEFT ONTO MIDDLETOWN AVE/CT-80. CONTINUE TO FOLLOW CT-80.108 FOXON RD, NORTH BRANFORD, CT 06471-1001, 108 FOXON RD IS ON THE LEFT.



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

STATE OF CONNECTICUT · DANIEL P. KAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL05184
SITE NAME: EAST HAVEN
108 FOXON ROAD
NORTH BRANFORD, CT 06471
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

AT&T

TITLE SHEET
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	T-1	C

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD CENTER	RADIATION CENTER (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL05184
SITE NAME: EAST HAVEN
108 FOXON ROAD
NORTH BRANFORD, CT 06471
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

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GENERAL NOTES

5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	GN-1	C

NOTE:

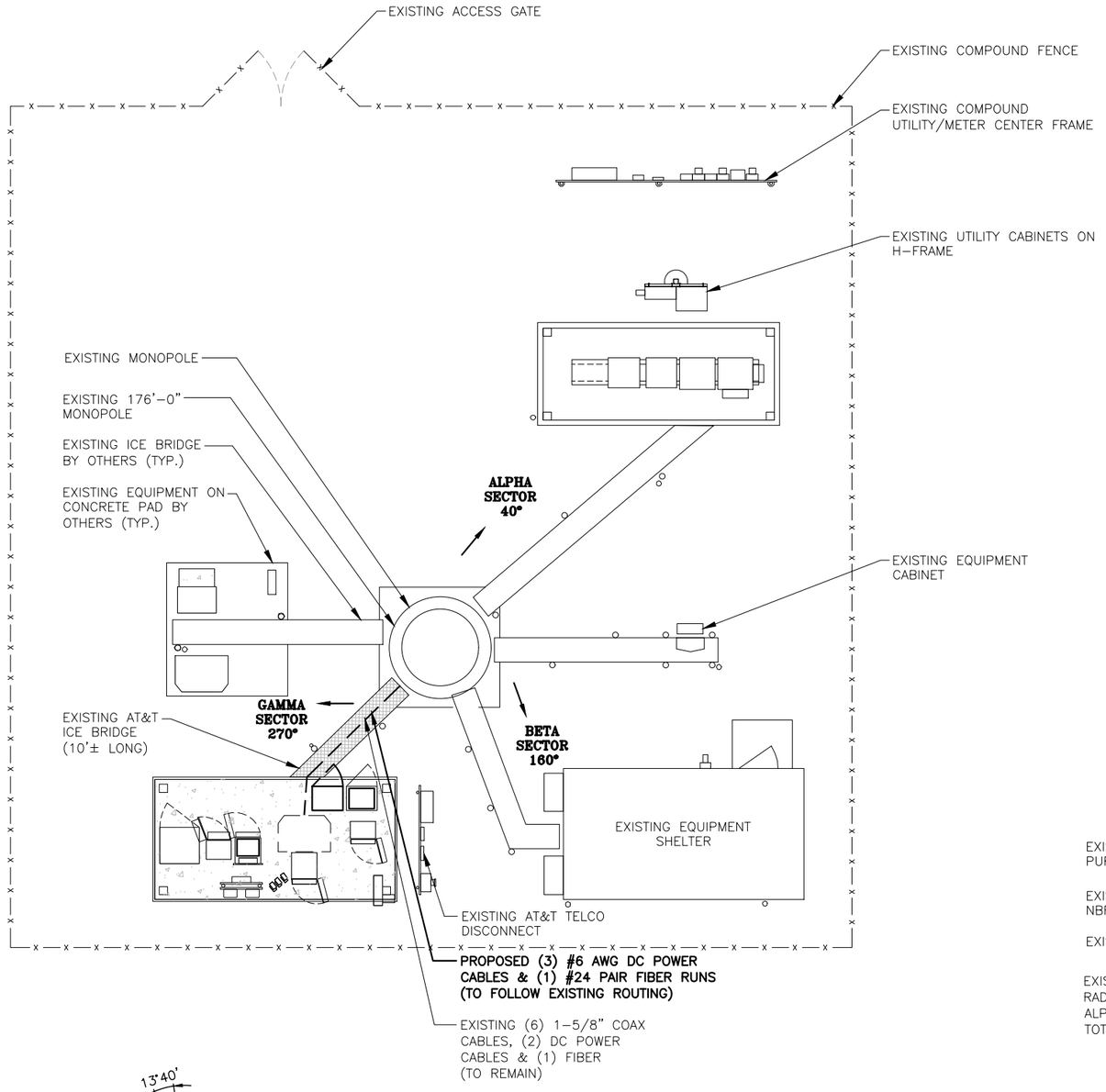
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

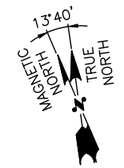
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

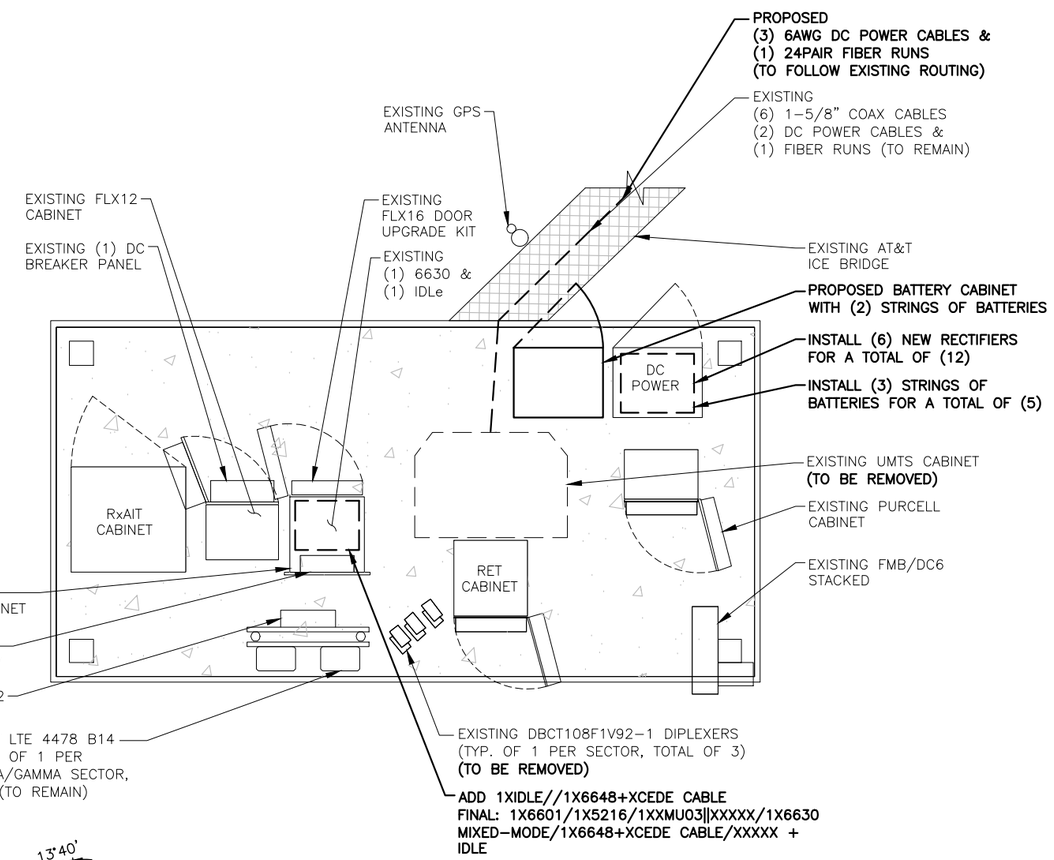
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
TEP NORTHEAST,
DATED: DECEMBER 19, 2022 (REV.2)

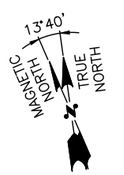




COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 2'-0" 4'-0" 6'-0"

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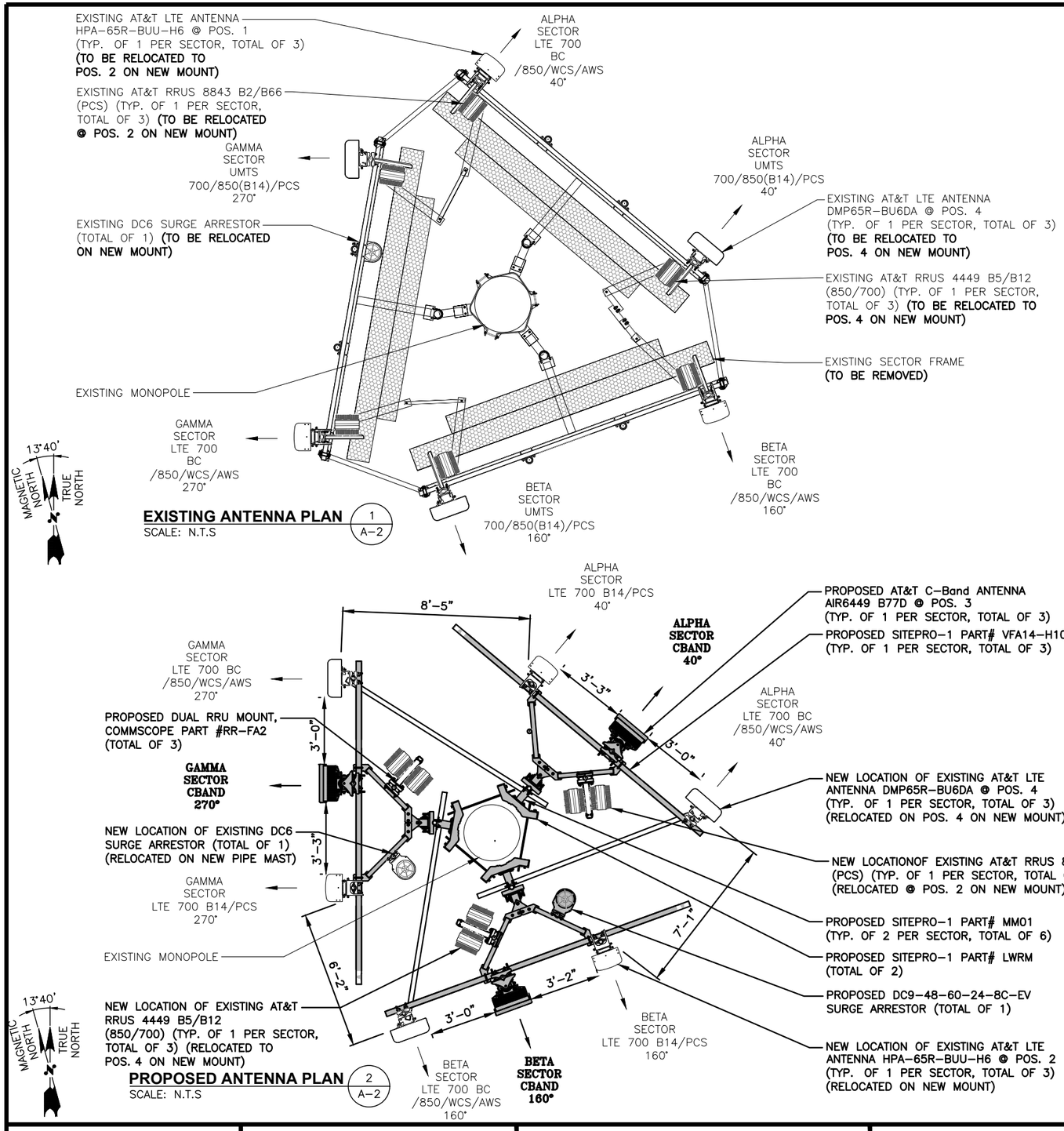
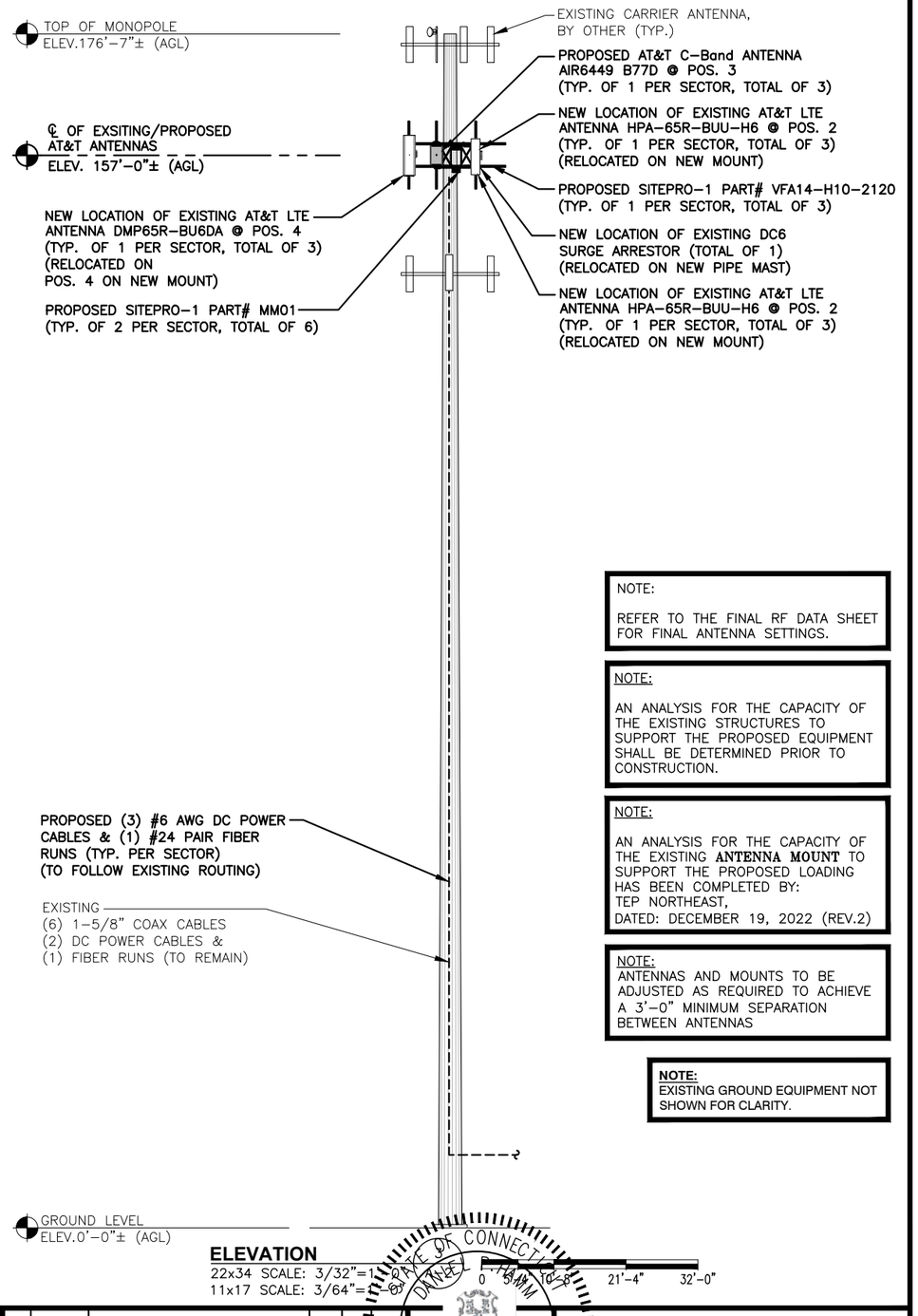
COMPOUND & EQUIPMENT PLANS
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	A-1	C





ELEVATION
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
TEP NORTHEAST,
DATED: DECEMBER 19, 2022 (REV.2)

NOTE:
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" MINIMUM SEPARATION BETWEEN ANTENNAS

NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT DANIEL P. HAMM No. 24178 LICENSED PROFESSIONAL ENGINEER

AT&T
ANTENNA LAYOUT PLANS & ELEVATION
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	A-2	C

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	EXISTING	LTE 700 B14/PCS	HPA-65R-BUU-H6	72"X14.8"X9"	157'-0"±	40°	–	(G)(E)(1) 4478 B14(700) (E)(1) 8843 B2 B66A (PCS/AWS)	–	**(P)(3) #6 AWG DC POWER & (P)(1) #24 PAIR FIBER (P)(1) Y-CABLE**	
A3	**PROPOSED**	**CBAND**	**AIR6449 B77D**	**30.4"X15.9"X8.1"**	**157'-0"±**	**40°**	–	–	–	–	
A4	EXISTING	LTE 700 BC /850/WCS/AWS	DMP65R-BU6DA	71.2"X20.7"X7.7"	157'-0"±	40°	–	(E)(1) 4449 B5/B12 (700/850)	–	**(P)(1) Y-CABLE**	
B1	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	–
B2	EXISTING	LTE 700 B14/PCS	HPA-65R-BUU-H6	72"X14.8"X9"	157'-0"±	160°	–	(G)(E)(1) 4478 B14(700) (E)(1) 8843 B2 B66A (PCS/AWS)	–	**(P)(1) Y-CABLE**	
B3	**PROPOSED**	**CBAND**	**AIR6449 B77D**	**30.4"X15.9"X8.1"**	**157'-0"±**	**160°**	–	–	–	–	
B4	EXISTING	LTE 700 BC /850/WCS/AWS	DMP65R-BU6DA	71.2"X20.7"X7.7"	157'-0"±	160°	–	(E)(1) 4449 B5/B12 (700/850)	–	**(P)(1) Y-CABLE**	
C1	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
C2	EXISTING	LTE 700 B14/PCS	HPA-65R-BUU-H6	72"X14.8"X9"	157'-0"±	270°	–	(E)(1) 8843 B2 B66A (PCS/AWS)	–	(E)(2) DC POWER & (E)(1) FIBER **(P)(1) Y-CABLE**	
C3	**PROPOSED**	**CBAND**	**AIR6449 B77D**	**30.4"X15.9"X8.1"**	**157'-0"±**	**270°**	–	–	–	–	
C4	EXISTING	LTE 700 BC /850/WCS/AWS	DMP65R-BU6DA	71.2"X20.7"X7.7"	157'-0"±	270°	–	(E)(1) 4449 B5/B12 (700/850)	–	**(P)(1) Y-CABLE**	

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
(E)(G)(2)	4478 B14 (700)	18.1"x13.4"x8.3"
(E)(3)	8843 B2/B66 (PCS/AWS)	14.9"x13.2"x10.9"
(E)(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

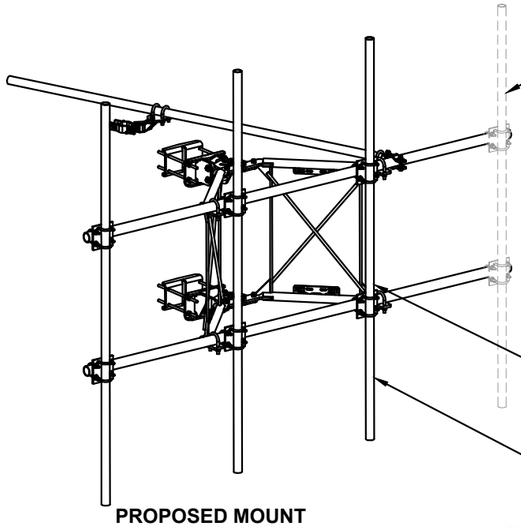
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
TEP NORTHEAST,
DATED: DECEMBER 19, 2022 (REV.2)

NOTE:

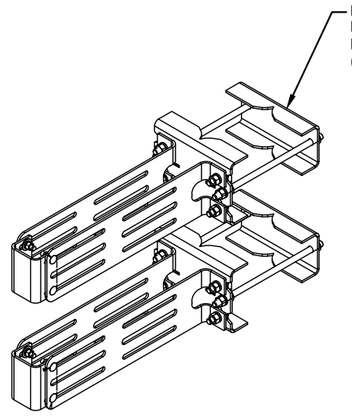
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

PROPOSED BATTERY CABINET WITH (2) STRINGS OF BATTERIES

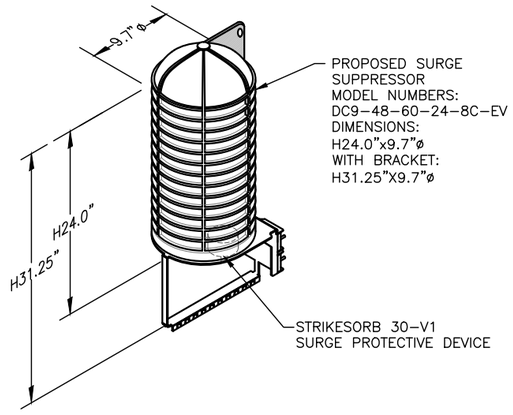
PROPOSED BATTERY CABINET DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED MOUNT (SITEPRO1 #VFA14-H10-2120) DETAIL (2 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



PROPOSED BACK TO BACK MOUNT COMMSCOPE (RR-FA2) (3 / A-6)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL05184
SITE NAME: EAST HAVEN
108 FOXON ROAD
NORTH BRANFORD, CT 06471
NEW HAVEN COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
C	01/13/23	ISSUED FOR PERMITTING	AT	DPH	DPH
B	11/01/22	ISSUED FOR PERMITTING	EB	DPH	DPH
A	05/17/22	ISSUED FOR REVIEW	EB	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	A-3	C

NOTE:

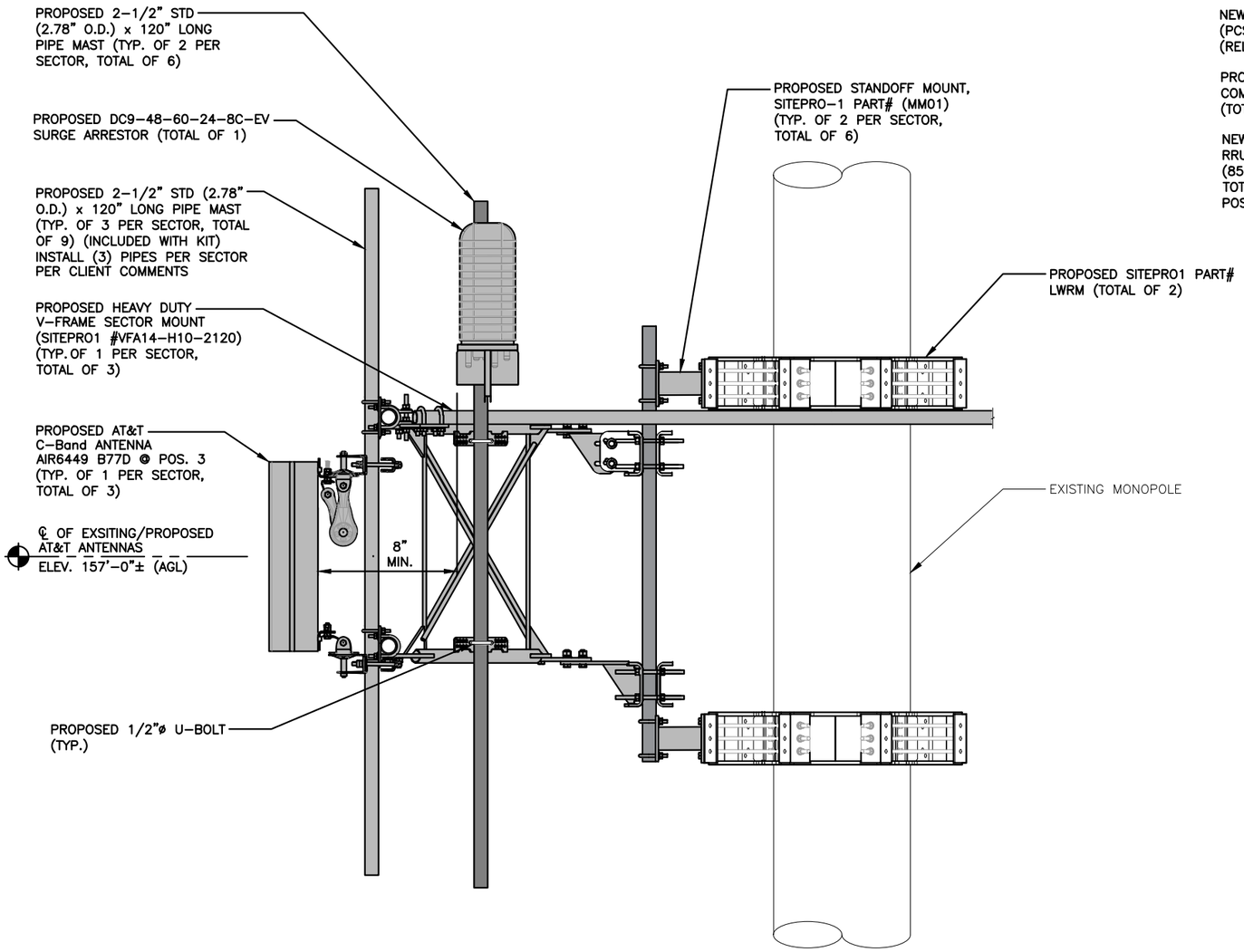
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
TEP NORTHEAST,
DATED: DECEMBER 19, 2022 (REV.2)

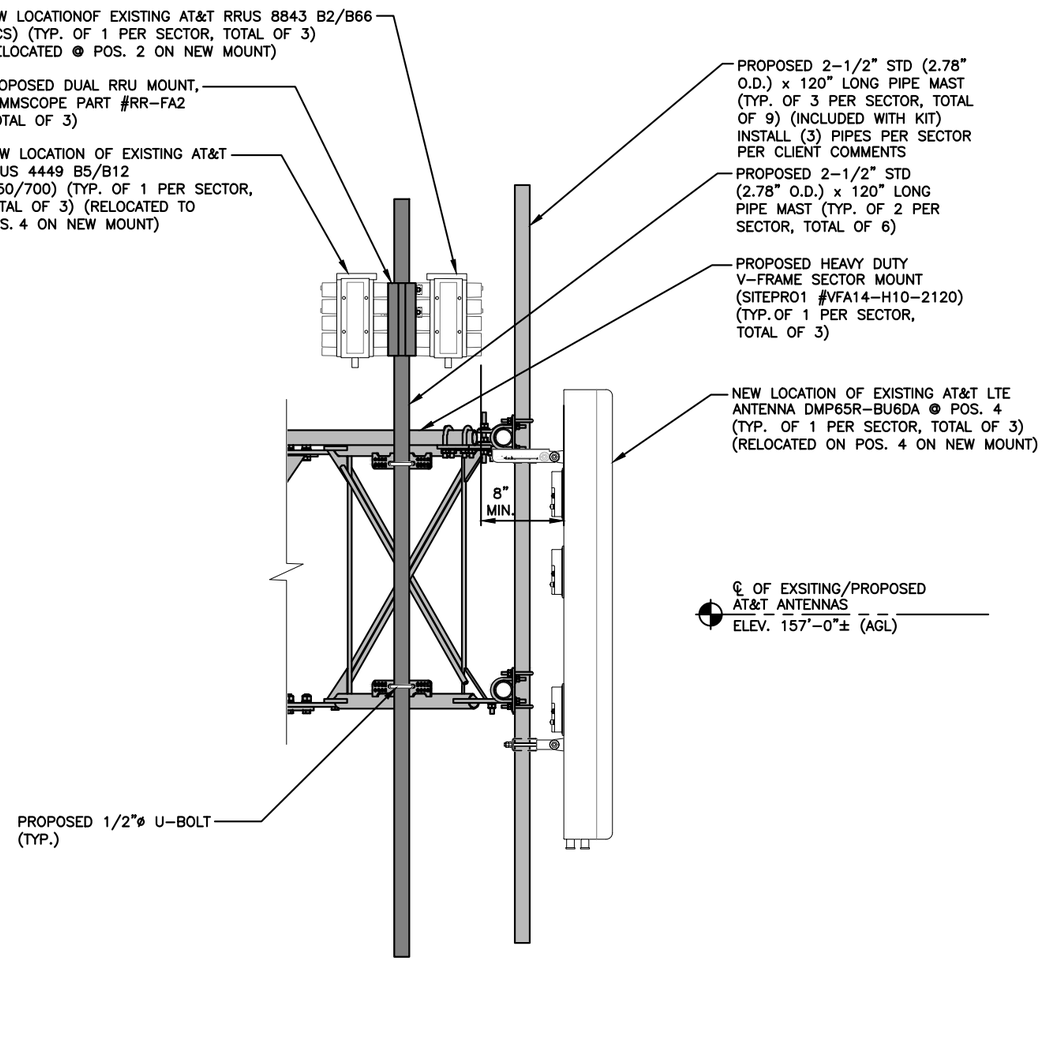
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



PROPOSED ANTENNA
@ POS. 3 (TYP. EACH SECTOR) (1 / A–4)
22x34 SCALE: 1"=1'–0"
11x17 SCALE: 1/2"=1'–0"

0 0'–6" 1'–0" 2'–0" 3'–0"



PROPOSED ANTENNA
@ POS. 4 (TYP. EACH SECTOR) (2 / A–4)
22x34 SCALE: 1"=1'–0"
11x17 SCALE: 1/2"=1'–0"

0 0'–6" 1'–0" 2'–0" 3'–0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

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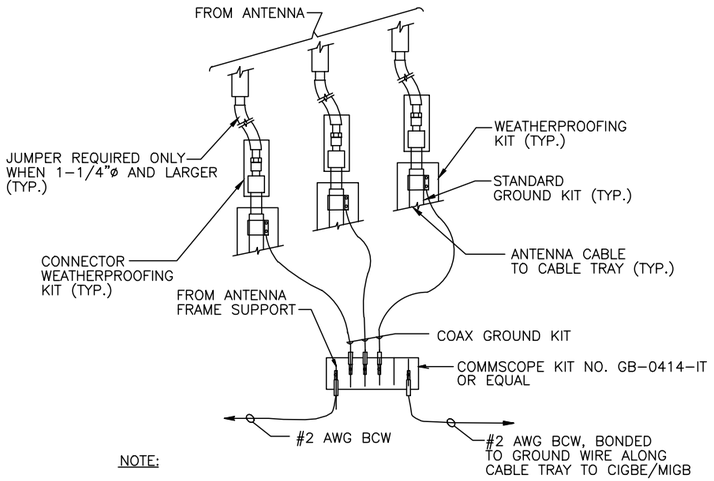
DETAILS

5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	A–4	C

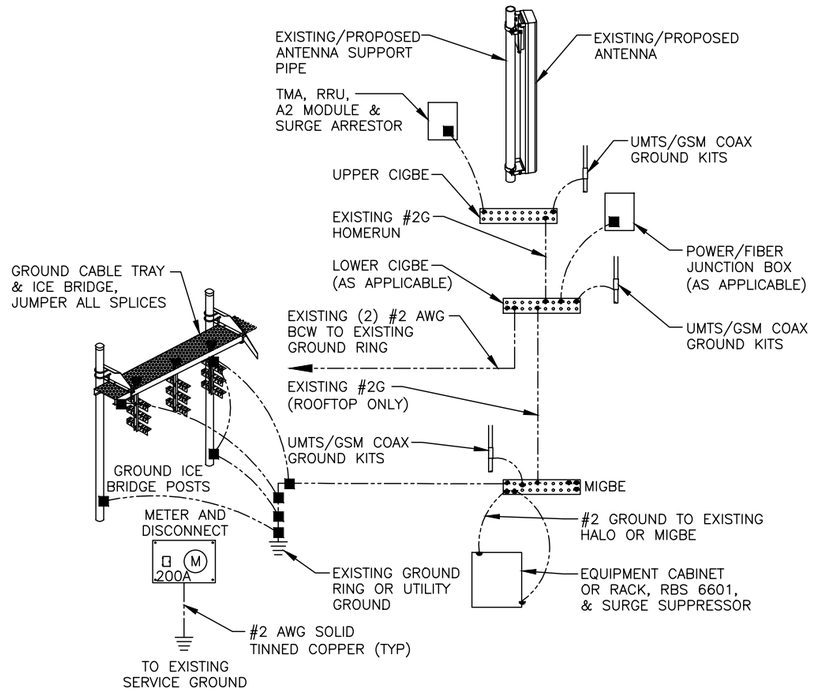


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

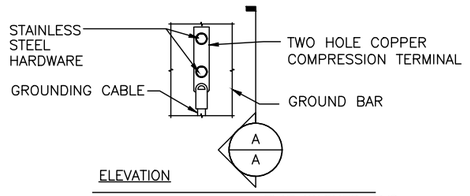
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

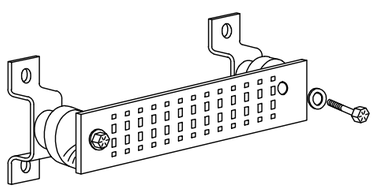
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

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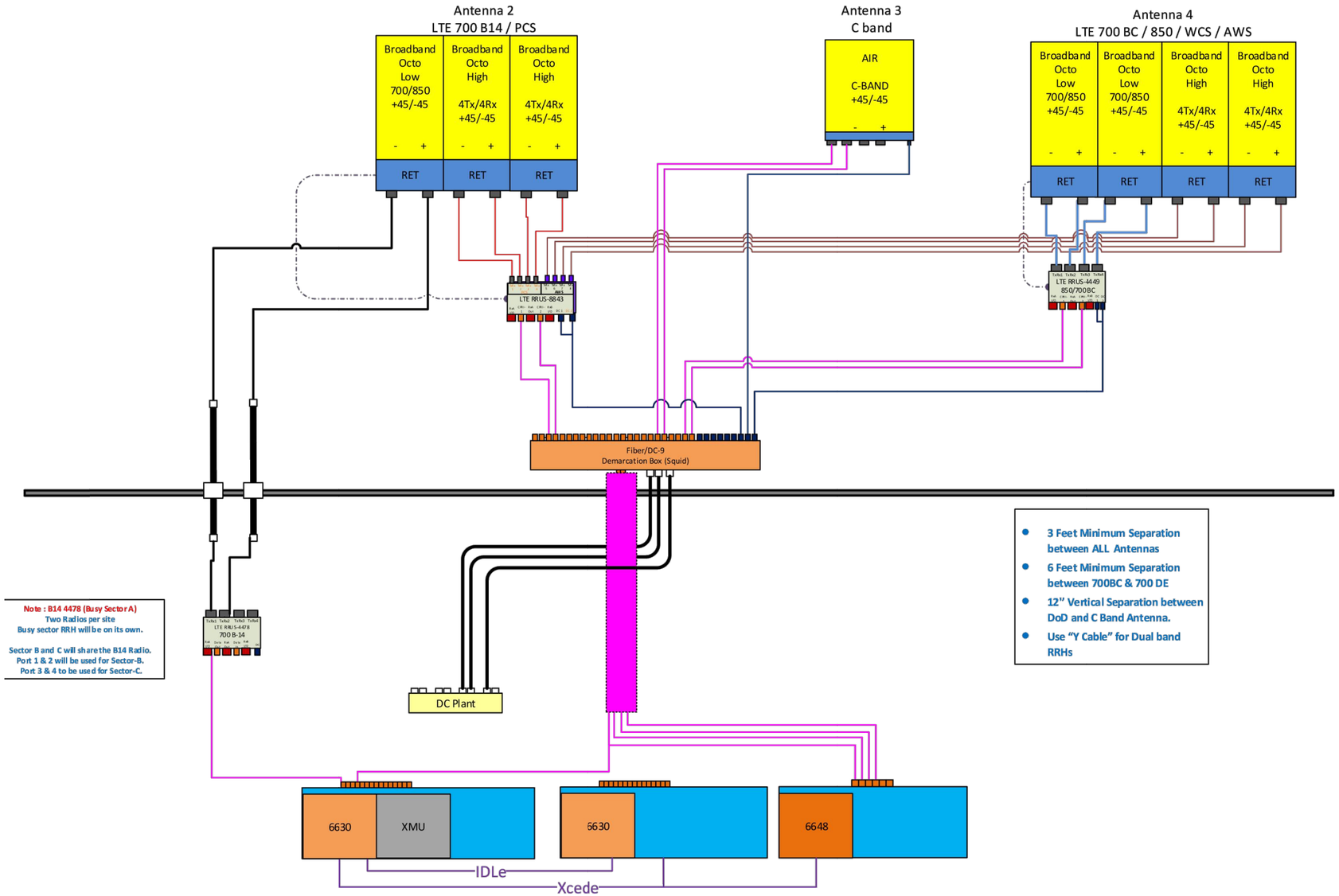
GROUNDING DETAILS
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	G-1	C



RF PLUMBING DIAGRAM

SCALE: N.T.S

1
RF–1

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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RF PLUMBING DIAGRAM
5G NR RADIO, 5G NR ACTIVATION, 5G NR SOFTWARE RADIO

SITE NUMBER	DRAWING NUMBER	REV
CTL05184	RF–1	C