



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

January 13, 2023

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

RE: EM-AT&T-115-221130 – AT&T notice of intent to modify an existing telecommunications facility located at 151 Waterbury Road, Prospect, Connecticut.

Dear Jennifer Iliades:

The Connecticut Siting Council (Council) is in receipt of your correspondence of January 12, 2023 submitted in response to the Council's December 7, 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 A. Bachman
Executive Director

MAB/RDM/lm

LM

January 12, 2023

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

**Regarding: EM-AT&T-115-21130
Notice of Exempt Modification – AT&T Site CT5626 / FA# 10071211 at 151
Waterbury Road, Prospect, CT 06712**

Dear Ms. Bachman:

Pursuant to your letter dated December 7, 2022 (enclosed), we are providing an updated Mount Analysis, Structural Analysis and construction drawings.

Please note, your letter dated December 7, 2022 noted an address of 54 Waterbury Road. Our submission is for the above-referenced tower located at 151 Waterbury Road. Please let us know if you need anything further for clarification.

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

April 15, 2022
June 16, 2022 (Rev.1)
December 19, 2022 (Rev.2)



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

RE: AT&T Site Number: CT5626
FA Number: 10071211
PACE Number: MRCTB062607
PT Number: 2051A149JK
TEP Project Number: N/A
AT&T Site Name: PROSPECT NORTH
Site Address: 151 Waterbury Road (Murphy Road)
Prospect, CT 06712

To Whom It May Concern:

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

- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Tower Mounted)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Tower Mounted)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each) (Tower Mounted)
- (3) DC6-48-60-0-8F Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Tower Mounted)
- **(3) QD8616-7 Antennas (96.0"x22.0"x9.6" – Wt. = 150 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)**
- **(3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each) (Tower Mounted)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. TEP NE conducted a survey climb and mapping of the existing AT&T antenna mounts on January 17, 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 120 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 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.197 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.054.
- 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 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	44	LC36	86%	PASS

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

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 existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. 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:



FIELD PHOTOS (CONT.):



**Wind & Ice
Calculations**

ANSI/TIA-222H - WIND, ICE & SEISMIC LOAD CALCULATIONS

Site Code/Name	CT5626 - Prospect North		
State	Connecticut		
County	New Haven		<i>Reference</i>
Structure Class	II		<i>Table 2-1</i>
Exposure Category	C		<i>Section 2.6.5.1.2</i>
Topographic Category	1 - Kzt = 1		<i>Section 2.6.6.2.1</i>
Mean Elevation of base of structure	z _s = 881.88	ft	<i>ASCE7-16 Hazards</i>
Height Above Ground	z = 154	ft	

Wind Parameters				
Basic wind speed	V	120	mph	<i>ASCE7-16 Hazards Tool</i>
Wind direction probability factor	K _d	0.95		<i>Section 16.6</i>
Gust effect factor	G _h	1		<i>Section 16.6</i>
Velocity Pressure (K _a = 0.9)		45.91	psf	<i>Section 2.6.11.6</i>

Wind & Ice Parameters				
Base windspeed in conjunction with ice, V		50	mph	<i>ASCE7-16 Hazards Tool</i>
Base Ice thickness	t _i	1.00	in	<i>ASCE7-16 Hazards Tool</i>
Ice Velocity Pressure (K _a = 0.9)	q _{ice}	7.35	psf	<i>Section 2.6.11.6</i>
Design Ice Thickness	t _{iz}	1.17	in	<i>Section 2.6.10</i>

Seismic Parameters				
Site Soil Class		D - Default		<i>Table 2-10</i>
Seismic Design Category		B		<i>ASCE7-16 Hazards Tool</i>
Spectral Response at Short Periods	S _s	0.197		<i>ASCE7-16 Hazards Tool</i>
Spectral Response at 1sec	S ₁	0.054		<i>ASCE7-16 Hazards Tool</i>
Long Period Transition Period	T _L	6		<i>ASCE7-16 Hazards Tool</i>
Seismic Importance Factor	I _s	1		<i>Table 2-3</i>
Response modification coefficient	R	2		<i>Section 16.7</i>
Short-Period Site Coefficient	F _a	1.6		<i>Table 2-11</i>
Design Spectral Response at Short Periods	S _{DS}	0.201		<i>Section 2.7.5</i>
Seismic Response Coefficient	C _s	0.100		<i>Section 2.7.7.1</i>

ALPHA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E _H [lbs]
Quintel	QD8616-7	96.0	22.0	9.6	150.0	863.9	440.8	290.5	15.0
Ericsson	AIR6449 +AIR6419	61.7	16.1	10.6	148.0	398.8	281.0	152.6	14.8
CCI	DMP65R-BU8DA	96.0	20.7	7.7	119.0	820.5	372.9	268.3	11.9
Ericsson	RRH 8843 B2/B66A	14.9	13.2	10.9	72.0	62.1	75.3	34.9	7.2
Ericsson	RRH 4478 B14	18.1	13.4	8.3	60.0	57.5	92.8	38.7	6.0
Ericsson	RRH 32 B30	27.2	12.1	7.0	60.0	76.6	125.9	51.0	6.0
Ericsson	RRH 4449 B5/B12	17.9	13.2	9.4	73.0	64.4	90.4	39.3	7.3

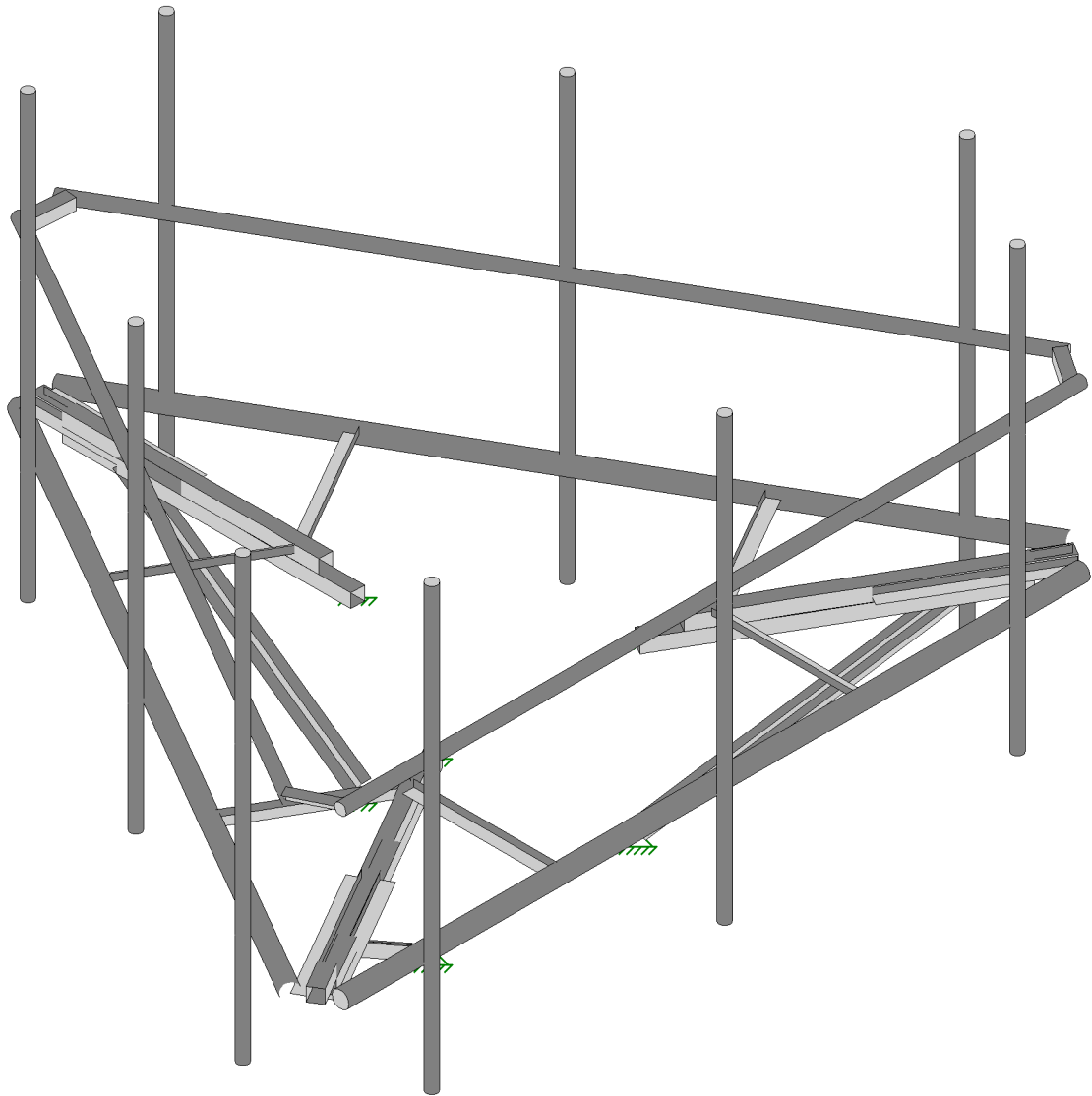
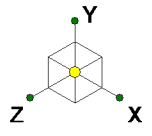
BETA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E _H [lbs]
Quintel	QD8616-7	96.0	22.0	9.6	150.0	546.5	758.1	290.5	15.0
Ericsson	AIR6449 +AIR6419	61.7	16.1	10.6	148.0	310.5	369.4	152.6	14.8
CCI	DMP65R-BU8DA	96.0	20.7	7.7	119.0	484.8	708.6	268.3	11.9
Ericsson	RRH 8843 B2/B66A	14.9	13.2	10.9	72.0	72.0	65.4	34.9	7.2
Ericsson	RRH 4478 B14	18.1	13.4	8.3	60.0	84.0	66.3	38.7	6.0
Ericsson	RRH 32 B30	27.2	12.1	7.0	60.0	113.6	88.9	51.0	6.0
Ericsson	RRH 4449 B5/B12	17.9	13.2	9.4	73.0	83.9	70.9	39.3	7.3

GAMMA SECTOR

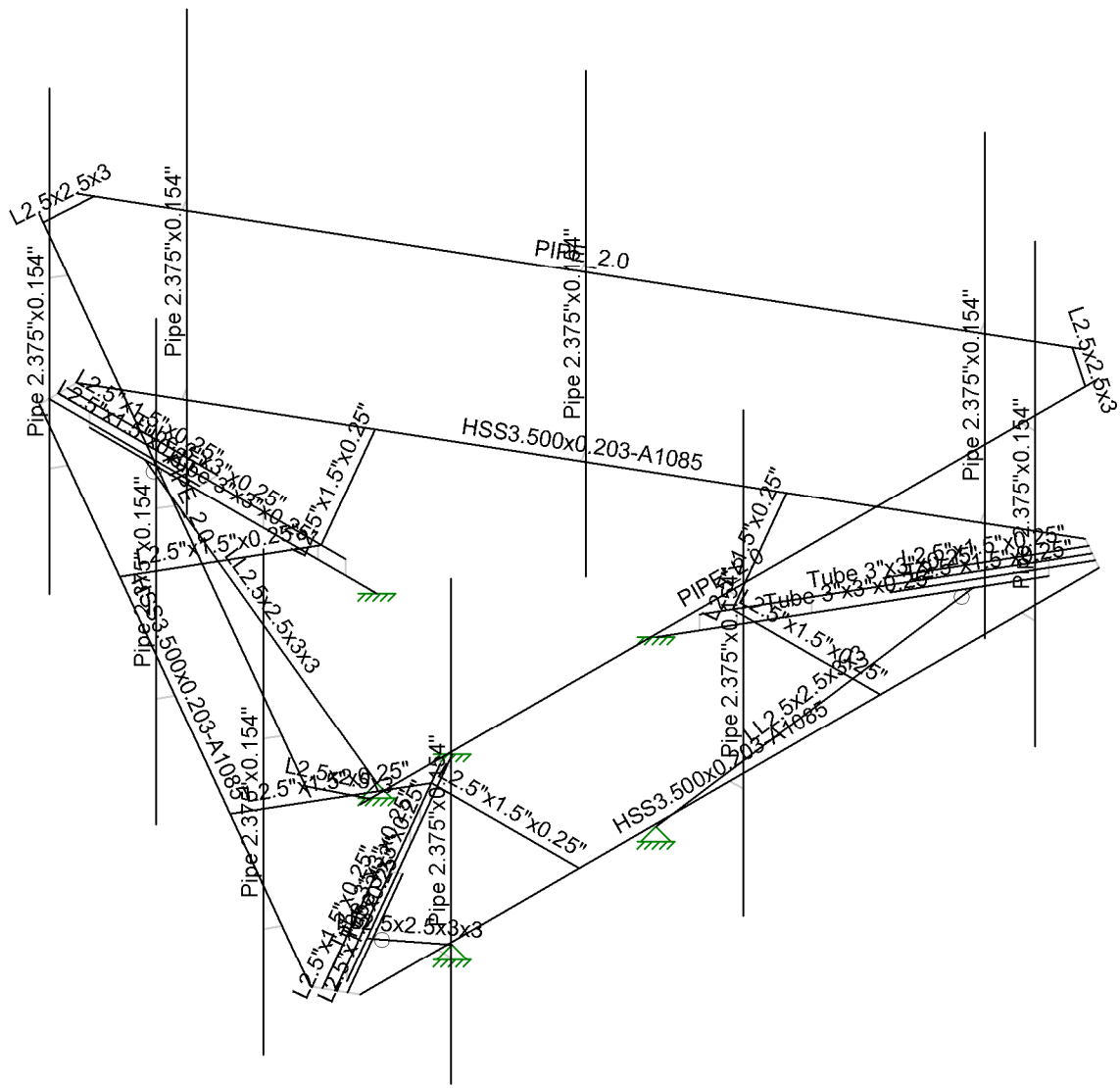
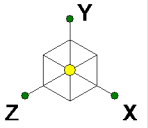
Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E _H [lbs]
Quintel	QD8616-7	96.0	22.0	9.6	150.0	546.5	758.1	290.5	15.0
Ericsson	AIR6449 +AIR6419	61.7	16.1	10.6	148.0	310.5	369.4	152.6	14.8
CCI	DMP65R-BU8DA	96.0	20.7	7.7	119.0	484.8	708.6	268.3	11.9
Ericsson	RRH 8843 B2/B66A	14.9	13.2	10.9	72.0	72.0	65.4	34.9	7.2
Ericsson	RRH 4478 B14	18.1	13.4	8.3	60.0	84.0	66.3	38.7	6.0
Ericsson	RRH 32 B30	27.2	12.1	7.0	60.0	113.6	88.9	51.0	6.0
Ericsson	RRH 4449 B5/B12	17.9	13.2	9.4	73.0	83.9	70.9	39.3	7.3

**Mount Calculations
(Existing Conditions)**



Envelope Only Solution

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CT5626		CT5626.R3D

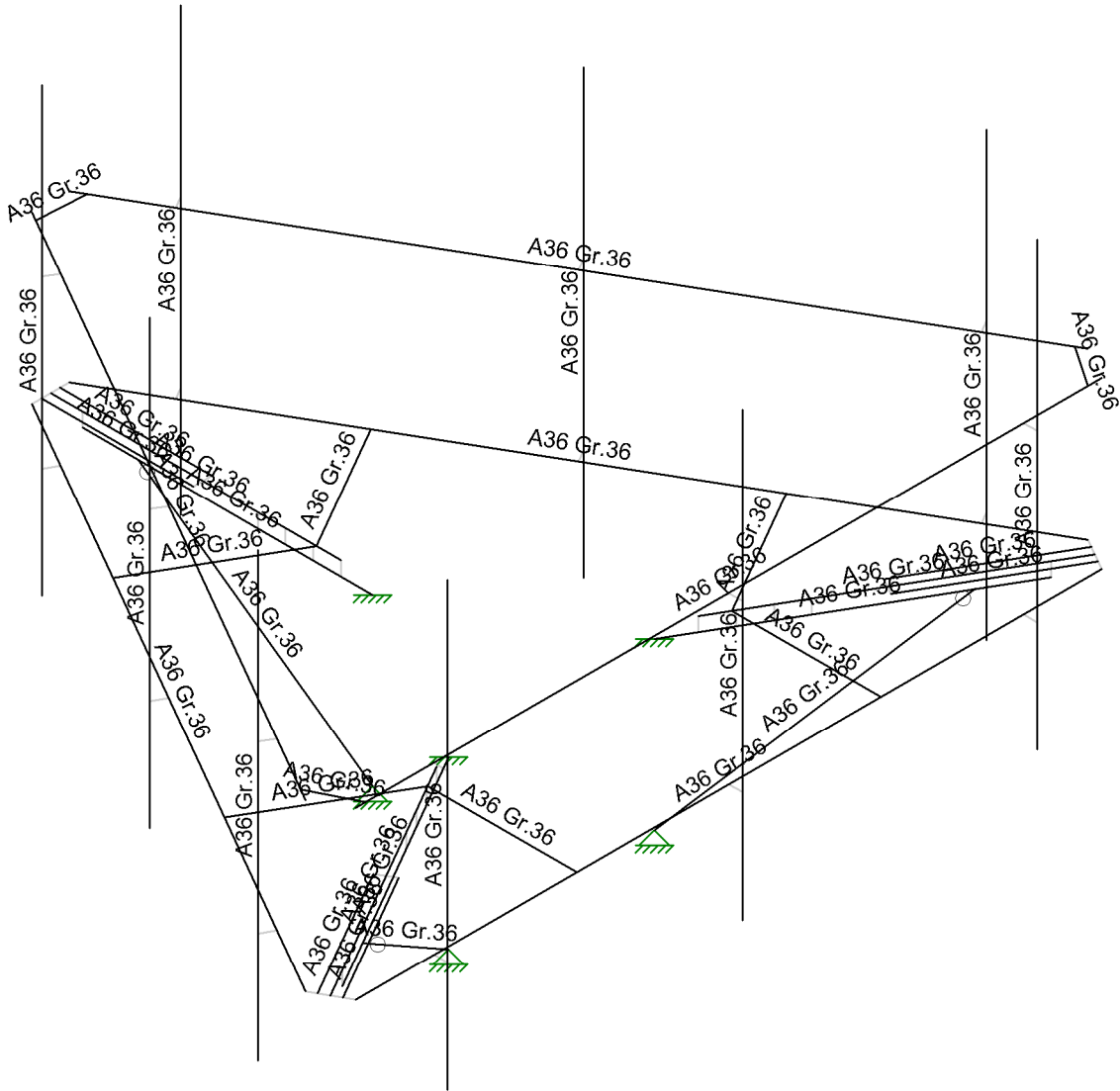
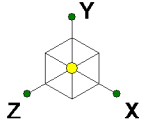


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Hudson Design Group
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CT5626

Prospect North

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CT5626.R3D



Envelope Only Solution

Hudson Design Group

DP

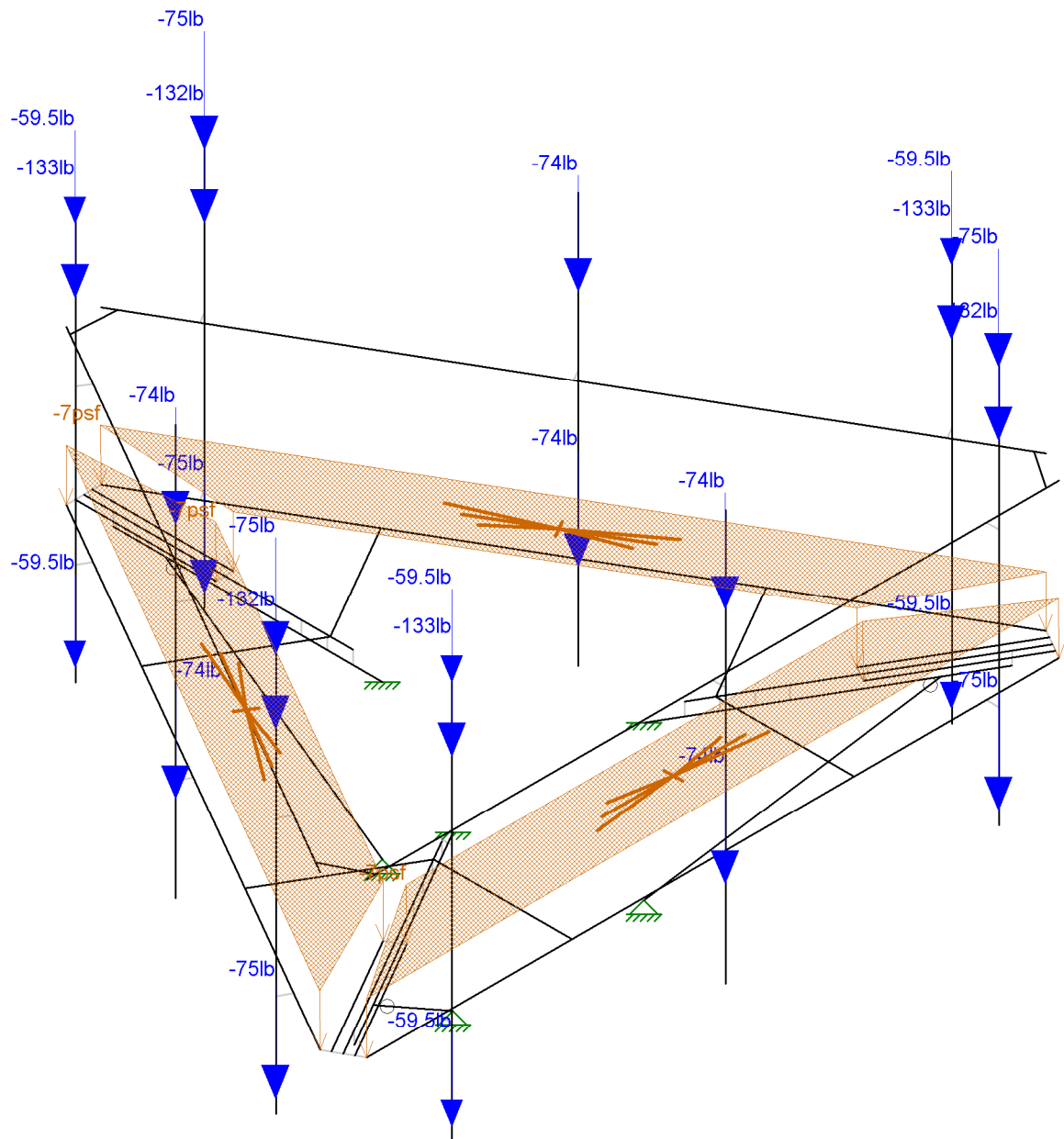
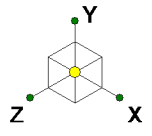
CT5626

Prospect North

SK - 3

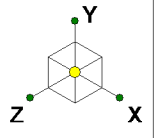
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CT5626.R3D

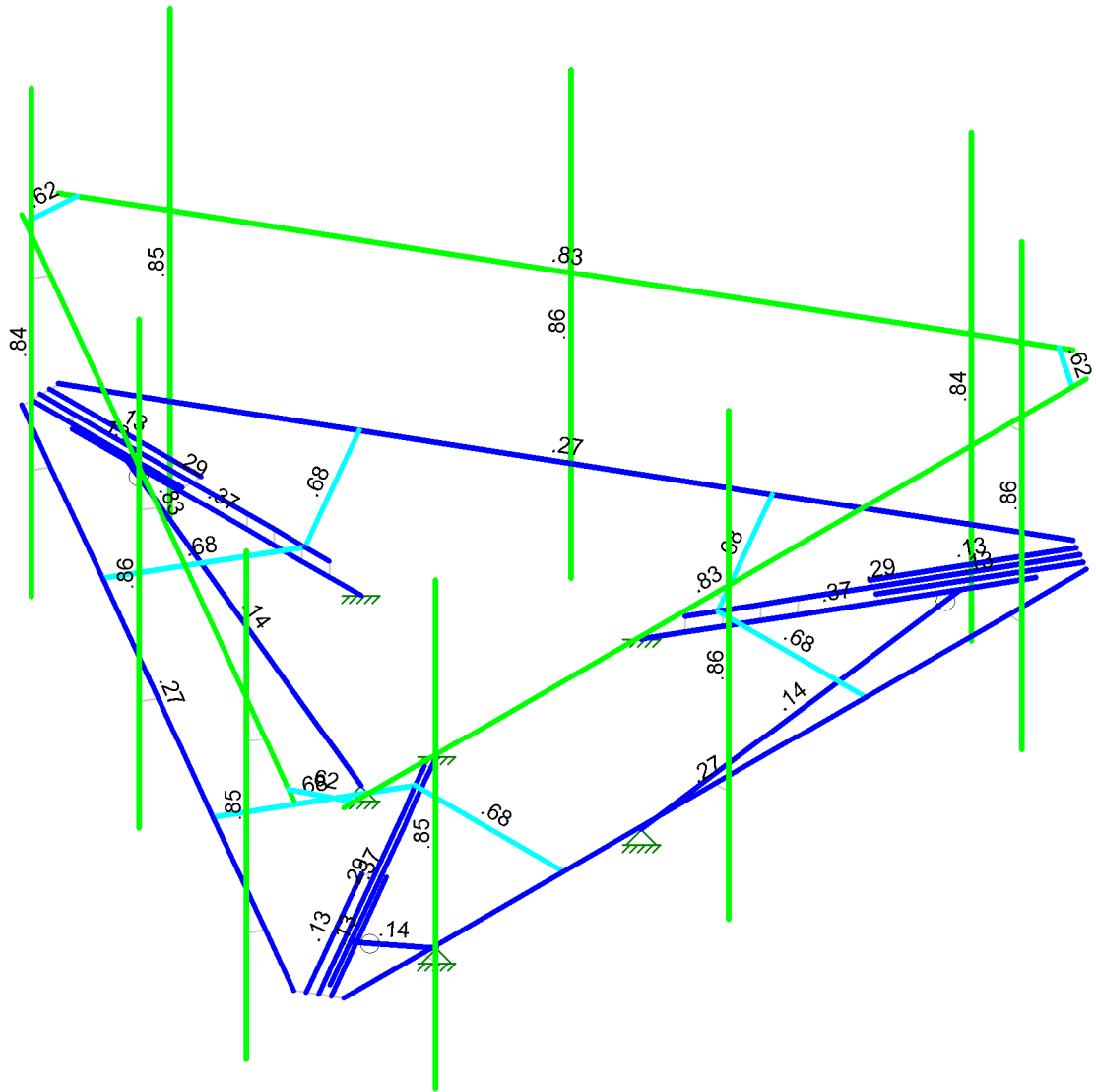
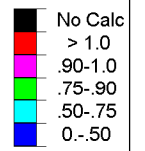


Loads: BLC 2, We
Envelope Only Solution

Hudson Design Group	Prospect North	SK - 4
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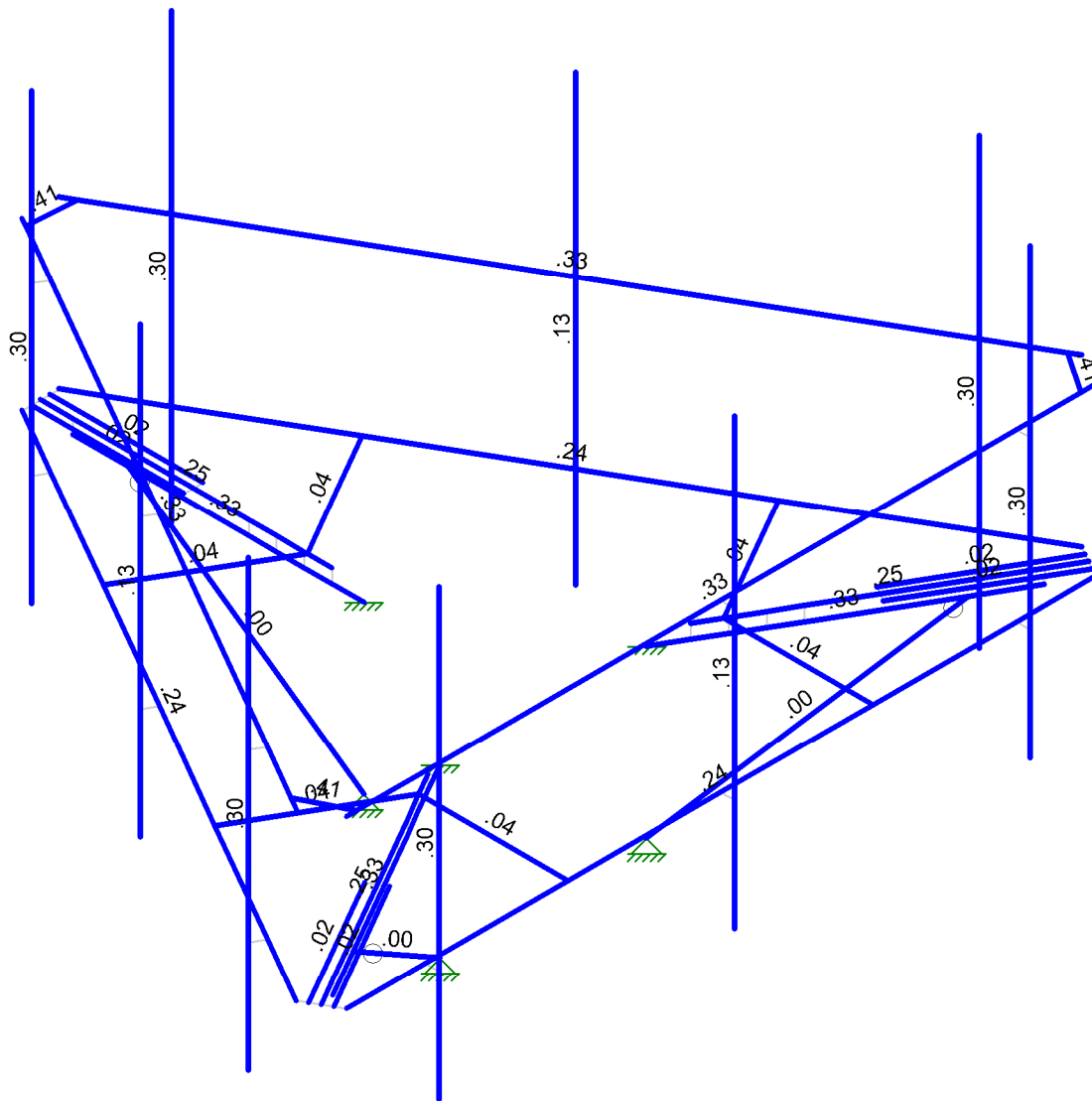
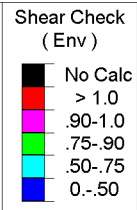
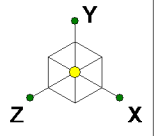


Code Check
(Env)



Member Code Checks Displayed (Enveloped)
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Hudson Design Group	Prospect North	SK - 5
DP		June 16, 2022 at 4:53 PM
CT5626		CT5626.R3D



Member Shear Checks Displayed (Enveloped)
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Hudson Design Group	Prospect North	SK - 6
DP		June 16, 2022 at 4:54 PM
CT5626		CT5626.R3D



Company : Hudson Design Group
 Designer : DP
 Job Number : CT5626
 Model Name : Prospect North

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(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N27	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N38	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N16	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N138	Reaction	Reaction	Reaction			
5	N140	Reaction	Reaction	Reaction			
6	N142	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N4			Pipe 3.5"x0.203"	None	None	A36 Gr.36	Typical
2	M2	N9	N2			Pipe 3.5"x0.203"	None	None	A36 Gr.36	Typical
3	M3	N3	N5			Pipe 3.5"x0.203"	None	None	A36 Gr.36	Typical
4	M4	N1	N2			RIGID	None	None	RIGID	Typical
5	M5	N3	N4			RIGID	None	None	RIGID	Typical
6	M6	N5	N9			RIGID	None	None	RIGID	Typical
7	M7	N6	N39			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical
8	M8	N7	N17			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical



Company : Hudson Design Group
 Designer : DP
 Job Number : CT5626
 Model Name : Prospect North

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Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
9	M9	N8	N28			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical
10	M10	N10	N11		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
11	M11	N11	N66		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
12	M12	N12	N13		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
13	M13	N13	N67		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
14	M14	N14	N15		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
15	M15	N15	N65		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
16	M16	N26	N16			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical
17	M17	N17	N18			RIGID	None	None	RIGID	Typical
18	M18	N19	N20			RIGID	None	None	RIGID	Typical
19	M19	N21	N22			RIGID	None	None	RIGID	Typical
20	M20	N23	N24			RIGID	None	None	RIGID	Typical
21	M21	N25	N26			RIGID	None	None	RIGID	Typical
22	M22	N37	N27			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical
23	M23	N28	N29			RIGID	None	None	RIGID	Typical
24	M24	N30	N31			RIGID	None	None	RIGID	Typical
25	M25	N32	N33			RIGID	None	None	RIGID	Typical
26	M26	N34	N35			RIGID	None	None	RIGID	Typical
27	M27	N36	N37			RIGID	None	None	RIGID	Typical
28	M28	N48	N38			Tube 3"x3"x0....	None	None	A36 Gr.36	Typical
29	M29	N39	N40			RIGID	None	None	RIGID	Typical
30	M30	N41	N42			RIGID	None	None	RIGID	Typical
31	M31	N43	N44			RIGID	None	None	RIGID	Typical
32	M32	N45	N46			RIGID	None	None	RIGID	Typical
33	M33	N47	N48			RIGID	None	None	RIGID	Typical
34	M34	N49	N52		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
35	M35	N51	N50		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
36	M36	N51	N52			RIGID	None	None	RIGID	Typical
37	M37	N54	N56			RIGID	None	None	RIGID	Typical
38	M38	N54	N53		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
39	M39	N55	N56		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
40	M40	N58	N60			RIGID	None	None	RIGID	Typical
41	M41	N58	N57		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
42	M42	N59	N60		270	L2.5"x1.5"x0.25"	None	None	A36 Gr.36	Typical
43	M43	N71	N72			RIGID	None	None	RIGID	Typical
44	M44	N74	N73			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
45	M45	N75	N76			RIGID	None	None	RIGID	Typical
46	M46	N78	N77			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
47	M47	N79	N80			RIGID	None	None	RIGID	Typical
48	M48	N82	N81			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
49	M49	N83	N84			RIGID	None	None	RIGID	Typical
50	M50	N86	N85			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
51	M51	N87	N88			RIGID	None	None	RIGID	Typical
52	M52	N90	N89			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
53	M53	N91	N92			RIGID	None	None	RIGID	Typical
54	M54	N94	N93			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
55	M55	N95	N96			RIGID	None	None	RIGID	Typical
56	M56	N98	N97			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
57	M57	N99	N100			RIGID	None	None	RIGID	Typical
58	M58	N102	N101			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
59	M59	N103	N104			RIGID	None	None	RIGID	Typical
60	M60	N106	N105			Pipe 2.375"x0....	None	None	A36 Gr.36	Typical
61	M61	N107	N110			PIPE 2.0	None	None	A36 Gr.36	Typical
62	M62	N112	N108			PIPE 2.0	None	None	A36 Gr.36	Typical
63	M63	N109	N111			PIPE 2.0	None	None	A36 Gr.36	Typical
64	M64	N113	N114			RIGID	None	None	RIGID	Typical
65	M65	N115	N116			RIGID	None	None	RIGID	Typical



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 Designer : DP
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Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
66	M66	N117	N118			RIGID	None	None	RIGID	Typical
67	M67	N119	N120			RIGID	None	None	RIGID	Typical
68	M68	N121	N122			RIGID	None	None	RIGID	Typical
69	M69	N123	N124			RIGID	None	None	RIGID	Typical
70	M70	N125	N126			RIGID	None	None	RIGID	Typical
71	M71	N127	N128			RIGID	None	None	RIGID	Typical
72	M72	N129	N130			RIGID	None	None	RIGID	Typical
73	M73	N131	N132		180	L2.5x2.5x3	None	None	A36 Gr.36	Typical
74	M74	N133	N134		180	L2.5x2.5x3	None	None	A36 Gr.36	Typical
75	M75	N135	N136		180	L2.5x2.5x3	None	None	A36 Gr.36	Typical
76	M76	N137	N138			LL2.5x2.5x3x3	None	None	A36 Gr.36	Typical
77	M77	N139	N140			LL2.5x2.5x3x3	None	None	A36 Gr.36	Typical
78	M78	N141	N142			LL2.5x2.5x3x3	None	None	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes	** NA **			None
10	M10						Yes	** NA **			None
11	M11						Yes	** NA **			None
12	M12						Yes	** NA **			None
13	M13						Yes	** NA **			None
14	M14						Yes	** NA **			None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18						Yes	** NA **			None
19	M19						Yes	** NA **			None
20	M20						Yes	** NA **			None
21	M21						Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23						Yes	** NA **			None
24	M24						Yes	** NA **			None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None



Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60						Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65						Yes	** NA **			None
66	M66						Yes	** NA **			None
67	M67						Yes	** NA **			None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None
70	M70						Yes	** NA **			None
71	M71						Yes	** NA **			None
72	M72						Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes	** NA **			None
76	M76	BenPIN					Yes	** NA **			None
77	M77	BenPIN					Yes	** NA **			None
78	M78	BenPIN					Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Pipe 3.5"x0...	162			Lbyy						Lateral
2	M2	Pipe 3.5"x0...	162			Lbyy						Lateral
3	M3	Pipe 3.5"x0...	162			Lbyy						Lateral
4	M7	Tube 3"x3"x...	63			Lbyy						Lateral
5	M8	Tube 3"x3"x...	63			Lbyy						Lateral
6	M9	Tube 3"x3"x...	63			Lbyy						Lateral
7	M10	L2.5"x1.5"x...	32.332			Lbyy						Lateral
8	M11	L2.5"x1.5"x...	32.332			Lbyy						Lateral
9	M12	L2.5"x1.5"x...	32.332			Lbyy						Lateral
10	M13	L2.5"x1.5"x...	32.332			Lbyy						Lateral
11	M14	L2.5"x1.5"x...	32.332			Lbyy						Lateral
12	M15	L2.5"x1.5"x...	32.332			Lbyy						Lateral
13	M16	Tube 3"x3"x...	63			Lbyy						Lateral



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Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
14	M22	Tube 3"x3"x...	63			Lbyy						Lateral
15	M28	Tube 3"x3"x...	63			Lbyy						Lateral
16	M34	L2.5"x1.5"x...	33			Lbyy						Lateral
17	M35	L2.5"x1.5"x...	33			Lbyy						Lateral
18	M38	L2.5"x1.5"x...	33			Lbyy						Lateral
19	M39	L2.5"x1.5"x...	33			Lbyy						Lateral
20	M41	L2.5"x1.5"x...	33			Lbyy						Lateral
21	M42	L2.5"x1.5"x...	33			Lbyy						Lateral
22	M44	Pipe 2.375"...	96			Lbyy						Lateral
23	M46	Pipe 2.375"...	96			Lbyy						Lateral
24	M48	Pipe 2.375"...	96			Lbyy						Lateral
25	M50	Pipe 2.375"...	96			Lbyy						Lateral
26	M52	Pipe 2.375"...	96			Lbyy						Lateral
27	M54	Pipe 2.375"...	96			Lbyy						Lateral
28	M56	Pipe 2.375"...	96			Lbyy						Lateral
29	M58	Pipe 2.375"...	96			Lbyy						Lateral
30	M60	Pipe 2.375"...	96			Lbyy						Lateral
31	M61	PIPE 2.0	162			Lbyy						Lateral
32	M62	PIPE 2.0	162			Lbyy						Lateral
33	M63	PIPE 2.0	162			Lbyy						Lateral
34	M73	L2.5x2.5x3	10.621									Lateral
35	M74	L2.5x2.5x3	10.621									Lateral
36	M75	L2.5x2.5x3	10.621									Lateral
37	M76	LL2.5x2.5x3...	62.426									Lateral
38	M77	LL2.5x2.5x3...	62.426									Lateral
39	M78	LL2.5x2.5x3...	62.426									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Self We	DL		-1.1					
2	We	DL					30	3	
3	Ice We	DL					30	36	3
4	W0	WL					30	36	
5	W30	WL					60	72	
6	W60	WL					60	72	
7	W90	WL					30	36	
8	W120	WL					60	72	
9	W150	WL					60	72	
10	W0 + Ice	WL					30	36	
11	W30 + Ice	WL					60	72	
12	W60 + Ice	WL					60	72	
13	W90 + Ice	WL					30	36	
14	W120 + Ice	WL					60	72	
15	W150 + Ice	WL					60	72	
16	500lbs LM 1	LL				1			
17	500lbs LM 2	LL				1			
18	500lbs LM 3	LL				1			
19	500lbs LM 4	LL							
20	250lbs LV 5	LL				1			
21	250lbs LV 6	LL				1			
22	E0	EL	-1				30		
23	E90	EL		.1			30		
24	BLC 2 Transient Area...	None						34	
25	BLC 3 Transient Area...	None						34	



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Load Combinations

	Description	Solve P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	Dead	Yes	Y	1	1.4	2	1.4	0	0									
2	Dead + Wind 0	Yes	Y	1	1.2	2	1.2	4	1	0								
3	Dead + Wind 30	Yes	Y	1	1.2	2	1.2	5	1	0								
4	Dead + Wind 60	Yes	Y	1	1.2	2	1.2	6	1	0								
5	Dead + Wind 90	Yes	Y	1	1.2	2	1.2	7	1	0								
6	Dead + Wind 120	Yes	Y	1	1.2	2	1.2	8	1	0								
7	Dead + Wind 150	Yes	Y	1	1.2	2	1.2	9	1	0								
8	Dead + Wind 180	Yes	Y	1	1.2	2	1.2	4	-1	0								
9	Dead + Wind 210	Yes	Y	1	1.2	2	1.2	5	-1	0								
10	Dead + Wind 240	Yes	Y	1	1.2	2	1.2	6	-1	0								
11	Dead + Wind 270	Yes	Y	1	1.2	2	1.2	7	-1	0								
12	Dead + Wind 300	Yes	Y	1	1.2	2	1.2	8	-1	0								
13	Dead + Wind 330	Yes	Y	1	1.2	2	1.2	9	-1	0								
14	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	10	1	3	1							
15	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	11	1	3	1							
16	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	12	1	3	1							
17	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	13	1	3	1							
18	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	14	1	3	1							
19	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	15	1	3	1							
20	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	10	-1	3	1							
21	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	11	-1	3	1							
22	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	12	-1	3	1							
23	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	13	-1	3	1							
24	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	14	-1	3	1							
25	Dead + Ice + Wind...	Yes	Y	1	1.2	2	1.2	15	-1	3	1							
26	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	4	.058							
27	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	5	.058							
28	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	6	.058							
29	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	7	.058							
30	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	8	.058							
31	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	9	.058							
32	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	4	-.058							
33	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	5	-.058							
34	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	6	-.058							
35	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	7	-.058							
36	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	8	-.058							
37	Dead + LM5001 + ...	Yes	Y	1	1.2	2	1.2	16	1.5	9	-.058							
38	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	4	.058							
39	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	5	.058							
40	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	6	.058							
41	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	7	.058							
42	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	8	.058							
43	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	9	.058							
44	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	4	-.058							
45	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	5	-.058							
46	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	6	-.058							
47	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	7	-.058							
48	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	8	-.058							
49	Dead + LM5002 + ...	Yes	Y	1	1.2	2	1.2	17	1.5	9	-.058							
50	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	4	.058							
51	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	5	.058							
52	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	6	.058							
53	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	7	.058							
54	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	8	.058							
55	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	9	.058							
56	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	4	-.058							



Load Combinations (Continued)

	Description	Solve P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
57	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	5	-0.58			
58	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	6	-0.58			
59	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	7	-0.58			
60	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	8	-0.58			
61	Dead + LM5003 + ...	Yes	Y	1	1.2	2	1.2	18	1.5	9	-0.58			
62	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	4	.058			
63	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	5	.058			
64	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	6	.058			
65	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	7	.058			
66	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	8	.058			
67	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	9	.058			
68	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	4	-0.58			
69	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	5	-0.58			
70	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	6	-0.58			
71	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	7	-0.58			
72	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	8	-0.58			
73	Dead + LM5004 + ...	Yes	Y	1	1.2	2	1.2	19	1.5	9	-0.58			
74	Dead + LV2505	Yes	Y	1	1.2	2	1.2	20	1.5	0				
75	Dead + LV2506	Yes	Y	1	1.2	2	1.2	21	1.5	0				
76	Service 60mph Wi...	Yes	Y	1	1	2	1	4	.23	0				
77	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	1	23				
78	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	.866	23	.5			
79	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	.5	23	.866			
80	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22		23	1			
81	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	-.5	23	.866			
82	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	-.866	23	.5			
83	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	-1	23				
84	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	-.866	23	-.5			
85	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	-.5	23	-.866			
86	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22		23	-1			
87	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	.5	23	-.866			
88	(1.2 + 0.2SDS)De...	Yes	Y	1	1.24	2	1.24	22	.866	23	-.5			

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	LL2.5x2.5x3x3	LL2.5x2.5...	None	None	A36 Gr.36	Typical	1.8	2.46	1.07	.023
2	L2.5x2.5x3	L2.5x2.5x3	None	None	A36 Gr.36	Typical	.901	.535	.535	.011
3	PIPE 2.0	PIPE 2.0	None	None	A36 Gr.36	Typical	1.02	.627	.627	1.25
4	Tube 3"x3"x0.25"	Tube 3"x3"...	None	None	A36 Gr.36	Typical	2.75	3.495	3.495	5.199
5	L2.5"x1.5"x0.25"	L2.5"x1.5"...	None	None	A36 Gr.36	Typical	.938	.161	.591	.018
6	Pipe 3.5"x0.203"	HSS3.500...	None	None	A36 Gr.36	Typical	2.1	2.87	2.87	5.74
7	Pipe 2.375"x0.154"	Pipe 2.375...	None	None	A36 Gr.36	Typical	1.075	.666	.666	1.331

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC
1	N27	max	2557.212	4	639.1	4	6627.317	10	11.175	13	19.962	7	17.177	7
2		min	-3830.143	10	-483.882	10	-4422.742	4	-7.155	7	-19.955	13	-14.631	13
3	N38	max	2551.619	12	639.106	12	4425.995	12	7.075	9	19.961	3	16.979	9
4		min	-3824.38	6	-483.87	6	-6630.656	6	-11.307	3	-19.955	9	-14.798	3
5	N16	max	7654.328	2	639.204	8	1626.271	11	18.461	11	19.96	11	-1.36	8
6		min	-5109.346	8	-483.806	2	-1626.354	5	-18.25	5	-19.954	5	-4.747	14
7	N138	max	584.995	8	3273.511	14	47.766	11	0	88	0	88	0	88
8		min	-4565.135	14	-427.074	8	-47.762	5	0	1	0	1	0	1
9	N140	max	2282.7	18	3273.693	18	3953.743	18	0	88	0	88	0	88



Envelope Joint Reactions (Continued)

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
10		min	-292.296	12	-426.791	12	-506.274	12	0	1	0	1	0	1
11	N142	max	2282.697	22	3273.7	22	506.258	4	0	88	0	88	0	88
12		min	-292.289	4	-426.779	4	-3953.756	22	0	1	0	1	0	1
13	Totals:	max	7826.436	2	9012.417	18	7826.149	11						
14		min	-7826.439	8	3718.936	76	-7826.147	5						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
1	M44	Pipe 2.375"x0...	.864	36	8	.303	36	8	15910.282	34814.837	24.652	24.652	1...	H3-6	
2	M52	Pipe 2.375"x0...	.862	72	9	.131	72	9	15910.282	34814.837	24.652	24.652	1...	H1-1b	
3	M46	Pipe 2.375"x0...	.861	72	5	.131	72	5	15910.282	34814.837	24.652	24.652	1...	H1-1b	
4	M58	Pipe 2.375"x0...	.861	72	13	.131	72	13	15910.282	34814.837	24.652	24.652	1...	H1-1b	
5	M50	Pipe 2.375"x0...	.852	36	12	.303	36	12	15910.282	34814.837	24.652	24.652	1...	H3-6	
6	M56	Pipe 2.375"x0...	.852	36	4	.303	36	4	15910.282	34814.837	24.652	24.652	1...	H3-6	
7	M48	Pipe 2.375"x0...	.851	36	8	.301	36	8	15910.282	34814.837	24.652	24.652	1...	H3-6	
8	M54	Pipe 2.375"x0...	.836	36	12	.301	36	12	15910.282	34814.837	24.652	24.652	1...	H3-6	
9	M60	Pipe 2.375"x0...	.836	36	4	.301	36	4	15910.282	34814.837	24.652	24.652	1...	H3-6	
10	M62	PIPE 2.0	.830	16.875	8	.326	3.375	8	5397.31	33048	23.101	23.101	2...	H3-6	
11	M61	PIPE 2.0	.830	16.875	12	.326	3.375	12	5397.31	33048	23.101	23.101	2...	H3-6	
12	M63	PIPE 2.0	.829	16.875	4	.326	3.375	4	5397.31	33048	23.101	23.101	2...	H3-6	
13	M10	L2.5"x1.5"x0...	.683	0	3	.041	32.332	z	39	17979.584	30375	5.629	19.175	2...	H2-1
14	M14	L2.5"x1.5"x0...	.681	0	7	.040	32.332	z	19	17979.584	30375	5.629	19.175	2...	H2-1
15	M12	L2.5"x1.5"x0...	.681	0	11	.040	32.332	z	23	17979.584	30375	5.629	19.175	2...	H2-1
16	M15	L2.5"x1.5"x0...	.680	32.332	13	.041	0	z	49	17979.584	30375	5.629	19.175	2...	H2-1
17	M13	L2.5"x1.5"x0...	.678	32.332	5	.040	0	z	17	17979.584	30375	5.629	19.175	2...	H2-1
18	M11	L2.5"x1.5"x0...	.678	32.332	9	.040	0	z	21	17979.584	30375	5.629	19.175	2...	H2-1
19	M73	L2.5x2.5x3	.615	0	9	.405	0	y	13	27816.675	29192.4	10.471	23.662	2...	H2-1
20	M74	L2.5x2.5x3	.615	0	13	.405	0	y	5	27816.675	29192.4	10.471	23.662	2...	H2-1
21	M75	L2.5x2.5x3	.615	0	5	.405	0	y	9	27816.675	29192.4	10.471	23.662	2...	H2-1
22	M28	Tube 3"x3"x0...	.368	63	3	.326	63	z	3	75591.437	89100	92.138	92.138	2...	H3-6
23	M16	Tube 3"x3"x0...	.368	63	11	.325	63	z	11	75591.437	89100	92.138	92.138	2...	H3-6
24	M22	Tube 3"x3"x0...	.368	63	7	.325	63	z	7	75591.437	89100	92.138	92.138	2...	H3-6
25	M9	Tube 3"x3"x0...	.290	0	22	.246	6.563	y	8	75591.437	89100	92.138	92.138	4...	H1-1b
26	M7	Tube 3"x3"x0...	.290	0	18	.246	6.563	y	4	75591.437	89100	92.138	92.138	4...	H1-1b
27	M8	Tube 3"x3"x0...	.290	0	14	.246	6.563	y	12	75591.437	89100	92.138	92.138	4...	H1-1b
28	M3	HSS3.500x0...	.268	162	6	.244	0	3	24705.39	68040	71.604	71.604	1...	H1-1b	
29	M2	HSS3.500x0...	.268	162	10	.245	0	7	24705.39	68040	71.604	71.604	1...	H1-1b	
30	M1	HSS3.500x0...	.268	162	2	.244	0	11	24705.39	68040	71.604	71.604	1...	H1-1b	
31	M78	LL2.5x2.5x3x3	.136	62.426	22	.003	0	z	13	41298.407	58320	47.452	30.522	1	H1-1b*
32	M77	LL2.5x2.5x3x3	.136	62.426	18	.003	0	z	9	41298.407	58320	47.452	30.522	1	H1-1b*
33	M76	LL2.5x2.5x3x3	.136	62.426	14	.003	0	z	11	41298.407	58320	47.452	30.522	1	H1-1b*
34	M39	L2.5"x1.5"x0...	.128	0	8	.022	33	z	7	17590.023	30375	5.629	19.175	1...	H2-1
35	M42	L2.5"x1.5"x0...	.128	0	4	.022	33	z	3	17590.023	30375	5.629	19.175	1...	H2-1
36	M34	L2.5"x1.5"x0...	.127	0	12	.023	33	z	11	17590.023	30375	5.629	19.175	1...	H2-1
37	M41	L2.5"x1.5"x0...	.127	33	8	.022	0	z	9	17590.023	30375	5.629	19.175	1...	H2-1
38	M38	L2.5"x1.5"x0...	.127	33	12	.022	0	z	13	17590.023	30375	5.629	19.175	1...	H2-1
39	M35	L2.5"x1.5"x0...	.127	33	4	.023	0	z	5	17590.023	30375	5.629	19.175	1...	H2-1

Connection Check Calculations

SITE DETAILS

Site Name/Code CT5626 - Prospect North
 Date 6/16/2022
 Engineer DP

CONNECTION PARAMETERS

Number of bolts	2
b - width of member	3 in
d - height of member	3 in
B - horizontal bolt spacing	4 in
D - vertical bolt spacing	4 in
Bolt Diameter	5/8 in
Section Shape	HSS
Weld Thickness	3/16 in
Tensile Area	$A_b = 0.31 \text{ in}^2$
Tensile Area	$A_n = 0.23 \text{ in}^2$
Grade	A325
Bolt Ultimate Strength	$F_{ub} = 120 \text{ ksi}$
Connection length reduction factor	$R_b = 1$



Connection Sketch/Photo

FLANGE LOADS

Loadcase #	3
Bending Moment	$M_{zz} = 2.39 \text{ kips-in}$
Bending Moment	$M_{yy} = 19.96 \text{ kips-in}$
Torsional Moment	$M_{xx} = 18.47 \text{ kips-in}$
Shear Force	$V_y = 0.08 \text{ kips}$
Shear Force	$V_z = 1.63 \text{ kips}$
Axial Force	$P_x = 1.28 \text{ kips}$

BOLT CHECK**Bolt Tension Capacity**

$$\phi R_{nt} = 0.75 * F_{ub} * A_n$$

$$\phi R_{nt} = 20.3 \text{ kips}$$

Bolt Shear Capacity

$$\phi R_{nv} = 0.75 * 0.625 * 0.8 * F_{ub} * A_b * R_b$$

$$\phi R_{nv} = 13.8 \text{ kips}$$

Maximum Bolt Tension

$$T_{ub} = F_{Mxx} + F_{Mzz} + T_v/4$$

$$T_{ub} = 3.44 \text{ kips}$$

Maximum Bolt Shear

$$V_{ub} = \text{sqrt}((V_x/4)^2 + (V_y/4)^2) + F_{Myy}$$

$$V_{ub} = 4.08 \text{ kips}$$

Tension Ratio:

16.9% %

Shear Ratio:

29.5% %

PASS

PASS

$$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$$

OK

Ratio 11.6% PASS

WELD CHECK

Filler Metal F_{EXX}	70 ksi
Weld Thk.	0.1875 in
Base metal F_u	58 ksi
Type of section	HSS
Length of Section [b]	3.0 in
Length of Section [d]	3.0 in
I_{total}	12.00 in
I_p	36.00 in ³
S_z	12.00 in ²
S_y	12.00 in ²
R_{ux}	1.97 kips/in
R_{uy}	0.78 kips/in
R_{uz}	0.90 kips/in
R_u	2.30 kips/in
Allowable Weld Stress	4.18 kips/in

Are stiffeners present?

No



55.1% PASS

Connection Sketch

PROJECT INFORMATION

SCOPE OF WORK: **ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:**

- NEW AT&T ANTENNAS: QD8616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3)(TOP).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3)(BOTTOM).
- NEW AT&T ANTENNAS: DMP65R-BU8DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4449 B5/B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T (6) Y-CABLES 92 PER SECTOR
- NEW AT&T (1) 18 PAIR OF FIBER RUN.
- RELOCATED EXISTING RRUS-32 B30 (WCS) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATED EXISTING 4478 B14 (700) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATED EXISTING 8843 B2/B66A (PCS) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:

- INSTALL (1) NEW 6648+XCEDE CABLE IN EXISTING LTE FIF RACK.
- FINAL=1x5216+1xXMU+1x6630+IDLe+1x6648+Xcede.
- INSTALL (10) NEW RECTIFIERS FOR NEW POWER PLANT.
- INSTALL (1) NEW BATTERY RACK WITH (2) STRINGS OF 190AH BATTERIES, TOTAL OF 12
- INSTALL (1) NEW VERTIV 7100 ID -48V POWER PLANT WITH (3) STRINGS OF 190AH BATTERIES.

ITEMS TO BE REMOVED:

- DECOMMISSION EXISTING AT&T POWER PLANT.
- DECOMMISSION EXISTING AT&T BATTERY RACK.
- DECOMMISSION EXISTING AT&T ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNA: HPA-65R-BUU-H8 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNA: 800-10966 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNA: TPA-65R-LCUUUU-H8 (TYP. OF 1 PER ALPHA & BETA SECTORS, TOTAL OF 2).
- DECOMMISSION EXISTING AT&T ANTENNA: QS66512-2 (TYP. OF 1 PER GAMMA SECTOR, TOTAL OF 1).
- DECOMMISSION EXISTING AT&T RRUS: RRU-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T DIPLEXERS: LGP21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- DECOMMISSION EXISTING AT&T DIPLEXERS: DBCT108F1V92-1A (TYP. OF 3 PER SECTOR, TOTAL OF 9).
- DECOMMISSION EXISTING AT&T TMAS: TT08-19DB111-01 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T (6) 1-5/8" COAX CABLES.

ITEMS TO REMAIN:

- (12) RRU'S, (3) SURGE ARRESTOR, (6) 1-5/8" COAX CABLES, (6) DC POWER & (2) FIBER.

SITE ADDRESS: 151 WATERBURY ROAD (MURPHY ROAD)
PROSPECT, CT 06712

LATITUDE: 41.5227919° N, 41° 31' 22.9" N
LONGITUDE: -72.9977989° W, 72° 59' 52.1" W

TYPE OF SITE: MONOPOLE / INDOOR EQUIPMENT

STRUCTURE HEIGHT: 150'-0"±
RAD CENTER: 154'-0"±

CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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



SITE NUMBER: CTL05626

SITE NAME: PROSPECT NORTH

FA CODE: 10071211

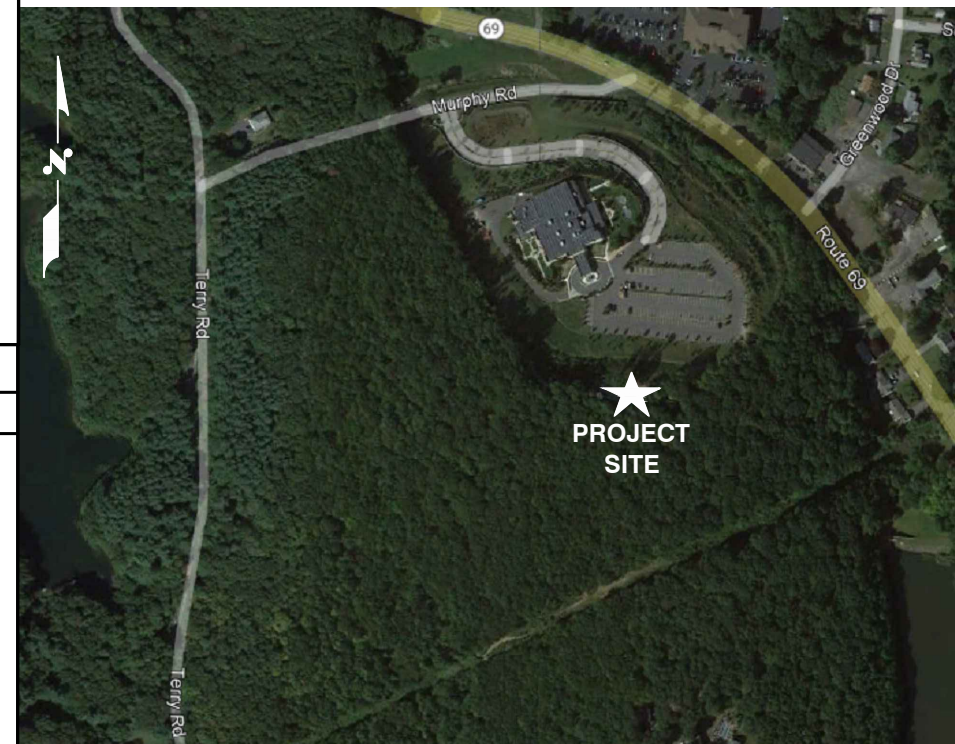
PACE ID: MRCTB055197, MRCTB055482, MRCTB055557, MRCTB053796, MRCTB053622, MRCTB055540, MRCTB062607

PROJECT: 4TXRX ANTENNA RETROFIT, 5G NR RADIO || 5G NR 1SR CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION, 2022 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 S, MERGE WITH I-91 S, TAKE EXIT 18 FOR I-691 W TOWARD MERIDEN/WATERBURY, CONTINUE ONTO I-691 W, TAKE EXIT 1 ON THE LEFT FOR I-84 W TOWARD WATERBURY/DANBURY, MERGE WITH I-84, TAKE EXIT 25A FOR AUSTIN RD, TURN LEFT ONTO AUSTIN RD, CONTINUE ONTO SCOTT RD, TURN RIGHT ONTO MARIA HOTCHKISS RD, TURN RIGHT ONTO CT-69 N, TURN LEFT ONTO MURPHY RD, TURN LEFT, SLIGHT LEFT, TURN RIGHT, DESTINATION WILL BE ON THE RIGHT.



GENERAL NOTES

- 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.
- 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.
- 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.
- CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS



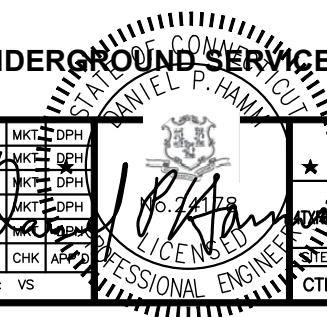
CALL BEFORE YOU DIG



CALL TOLL FREE **1-800-922-4455**

OR CALL **811**

UNDERGROUND SERVICE ALERT



HGD HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
TEL: (978) 557-5553 FAX: (978) 336-5586

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

SITE NUMBER: CTL05626
SITE NAME: PROSPECT NORTH
151 WATERBURY ROAD (MURPHY ROAD)
PROSPECT, CT 06712
NEW HAVEN COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP
2	01/12/23	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
1	10/28/22	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
C	09/06/22	ISSUED FOR PERMITTING	JS	MKT	DPH
B	08/15/22	ISSUED FOR PERMITTING	JS	MKT	DPH
A	06/08/22	ISSUED FOR REVIEW	JS	MKT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: VS

AT&T	
TITLE SHEET	REV
AT&T ANTENNA RETROFIT, 5G NR RADIO 5G NR 1SR CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE	
SITE NUMBER: CTL05626	DRAWING NUMBER: T-1
	REV: 2

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	WATER LINE		VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING				

45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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

SITE NUMBER: CTL05626
SITE NAME: PROSPECT NORTH

151 WATERBURY ROAD (MURPHY ROAD)
PROSPECT, CT 06712
NEW HAVEN COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

2	01/12/23	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
1	10/28/22	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
C	09/06/22	ISSUED FOR PERMITTING	SM	MKT	DPH
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NO.	DATE	REVISIONS	BY	CHK	APP
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VS		

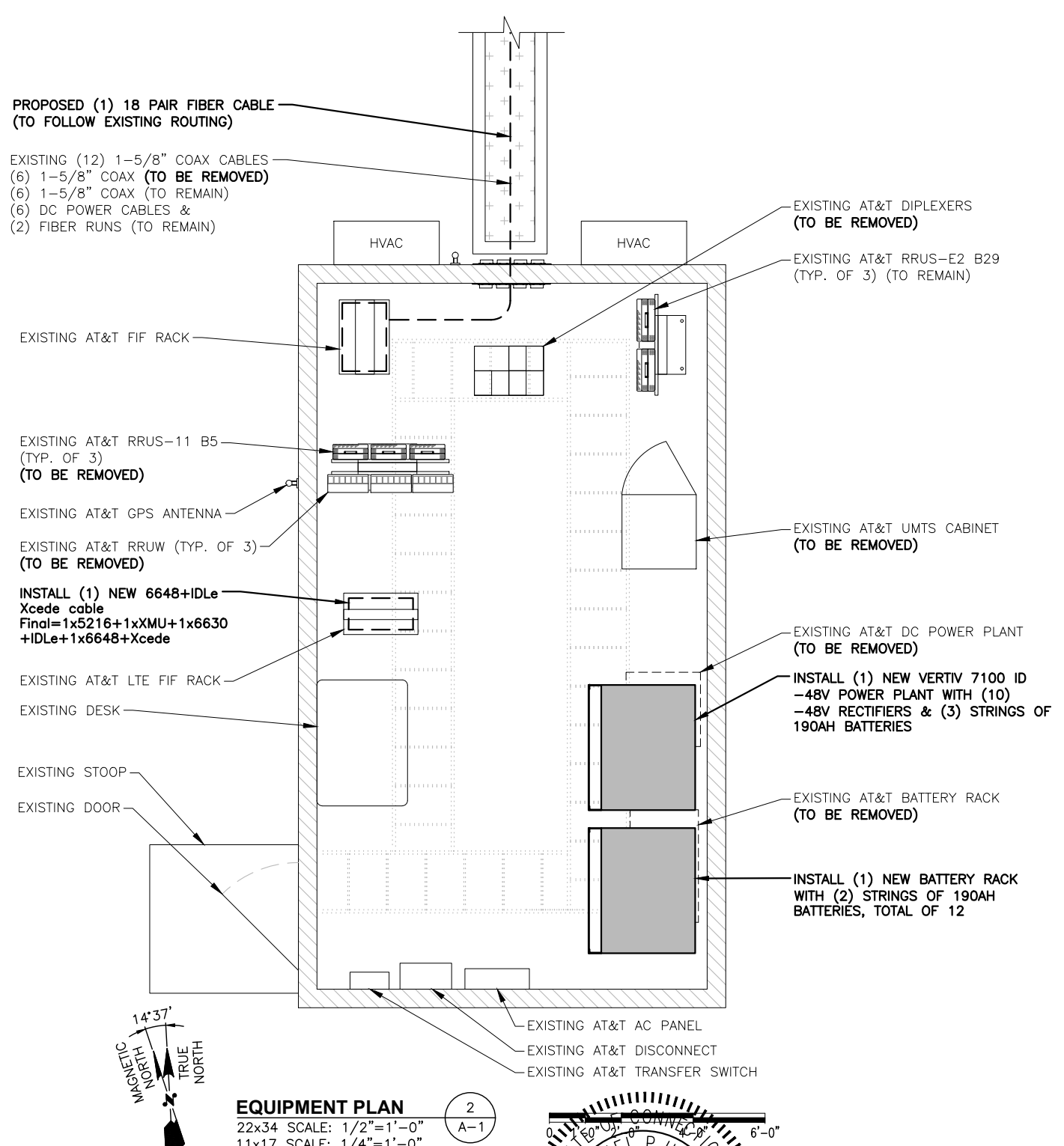
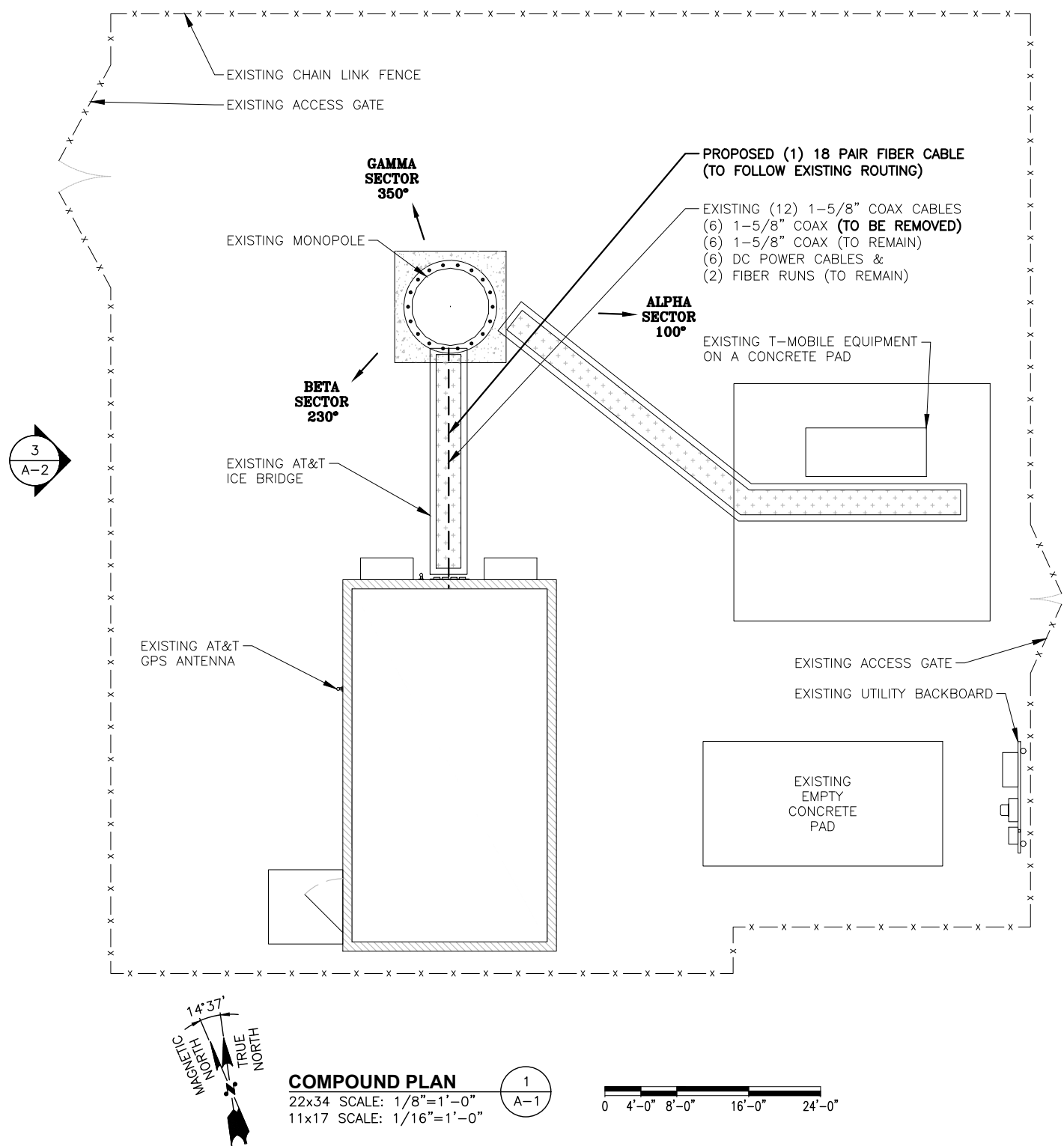
AT&T

GENERAL NOTES
 AT&T ANTENNA RETROFIT, 5G NR RADIO II 5G NR 1SR CBAND, 5G NR
 ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER: CTL05626
 DRAWING NUMBER: GN-1
 REV: 2

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

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



HGD HUDSON Design Group LLC
 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553 FAX: (978) 336-5586

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

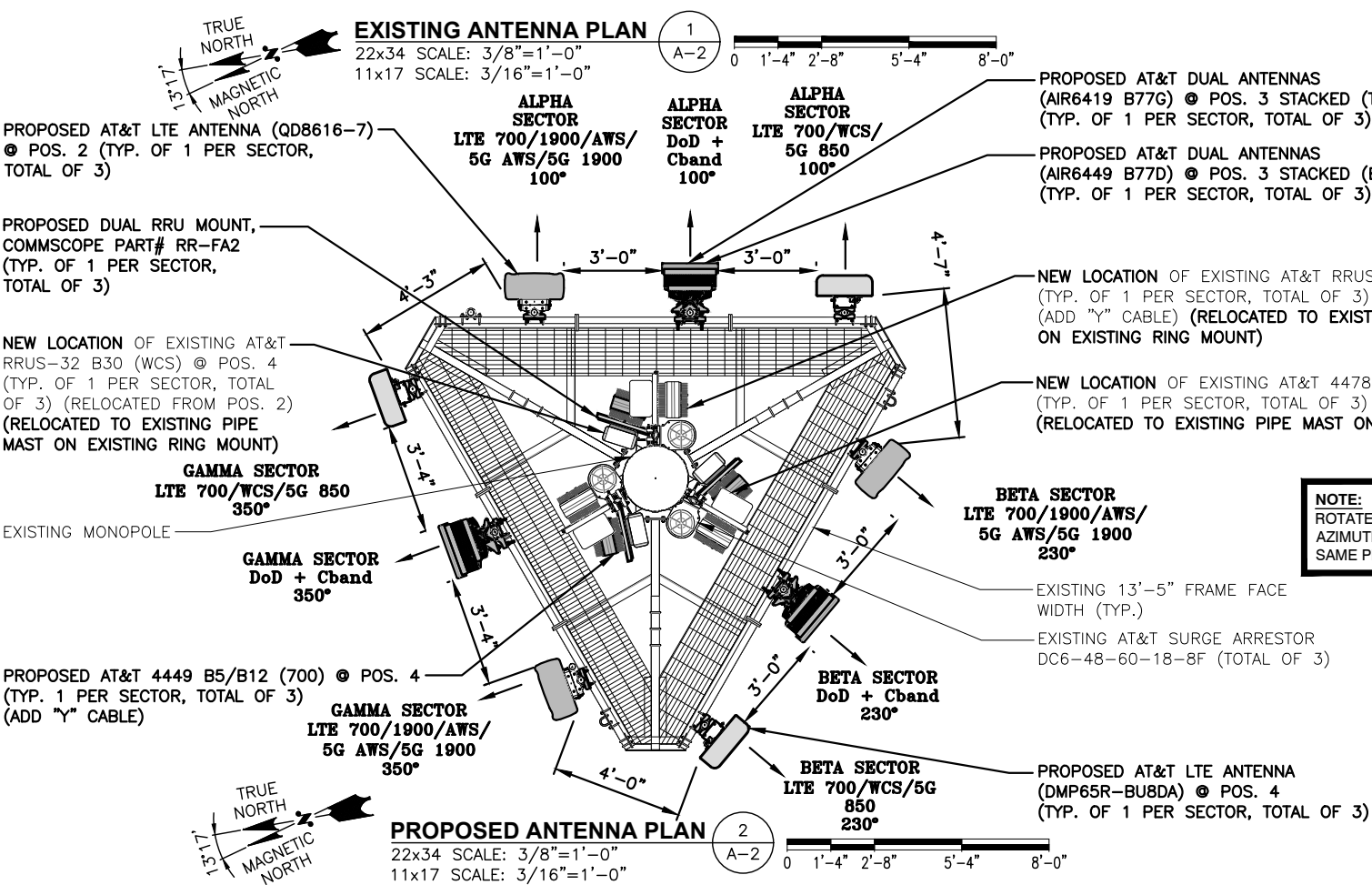
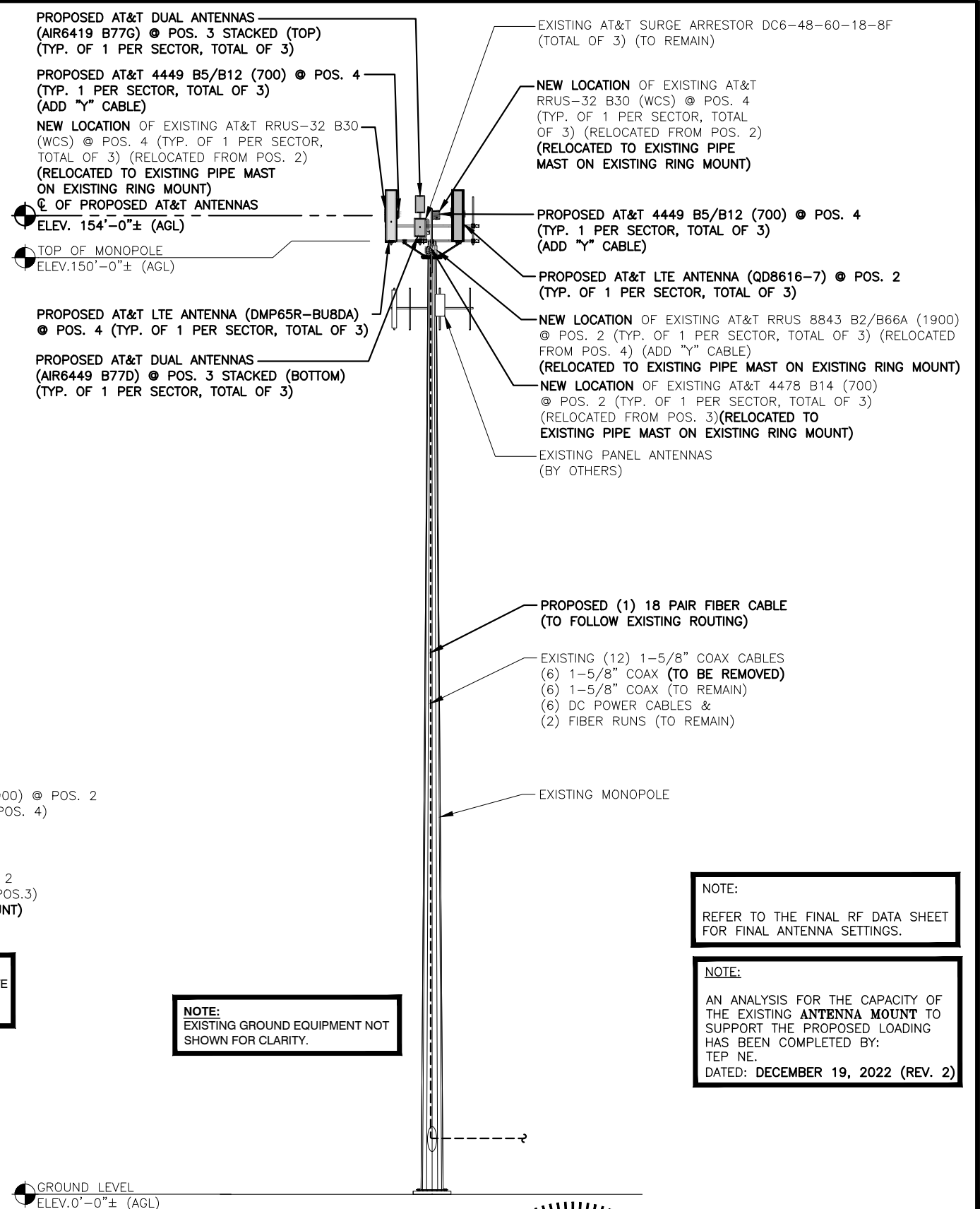
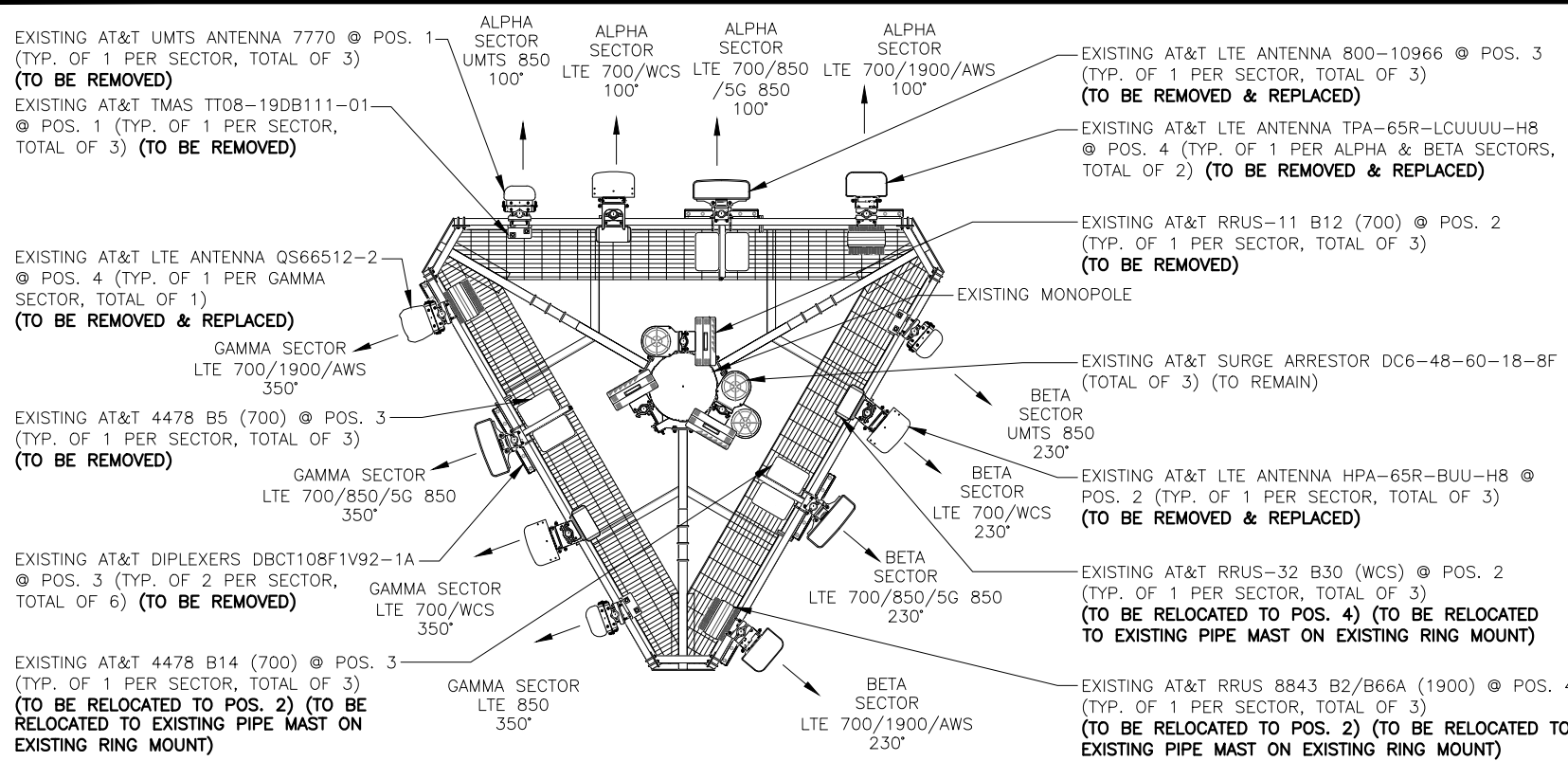
SITE NUMBER: CTL05626
SITE NAME: PROSPECT NORTH
 151 WATERBURY ROAD (MURPHY ROAD) PROSPECT, CT 06712 NEW HAVEN COUNTY

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

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SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VS		

DANIEL P. HAMM
 LICENSED PROFESSIONAL ENGINEER
 STATE OF CONNECTICUT

AT&T
 COMPOUND & EQUIPMENT PLANS
 AT&T ANTENNA RETROFIT, 5G NR RADIO | 5G NR 1SR CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE
 SITE NUMBER: CTL05626
 DRAWING NUMBER: A-1
 REV: 2



NOTE:
 ROTATE EXISTING MOUNT TO LTE AZIMUTHS TO GET THEM IN THE SAME PLANE.

NOTE:
 EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

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

NOTE:
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 DATED: DECEMBER 19, 2022 (REV. 2)

HUDSON Design Group LLC
 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553
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CENTERLINE COMMUNICATIONS
 750 WEST CENTER STREET, SUITE #301 WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL05626
SITE NAME: PROSPECT NORTH
 151 WATERBURY ROAD (MURPHY ROAD) PROSPECT, CT 06712 NEW HAVEN COUNTY

at&t
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SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: VS

STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
 No. 22178
 JOHN P. HANCOCK

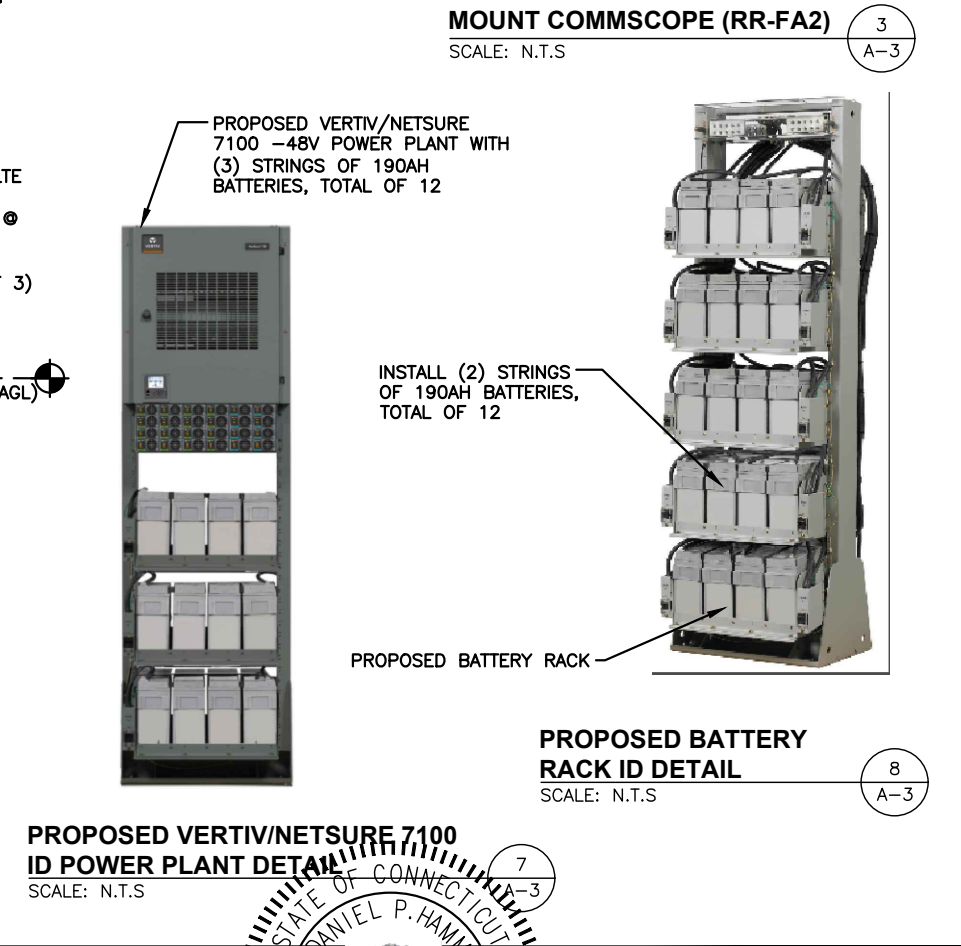
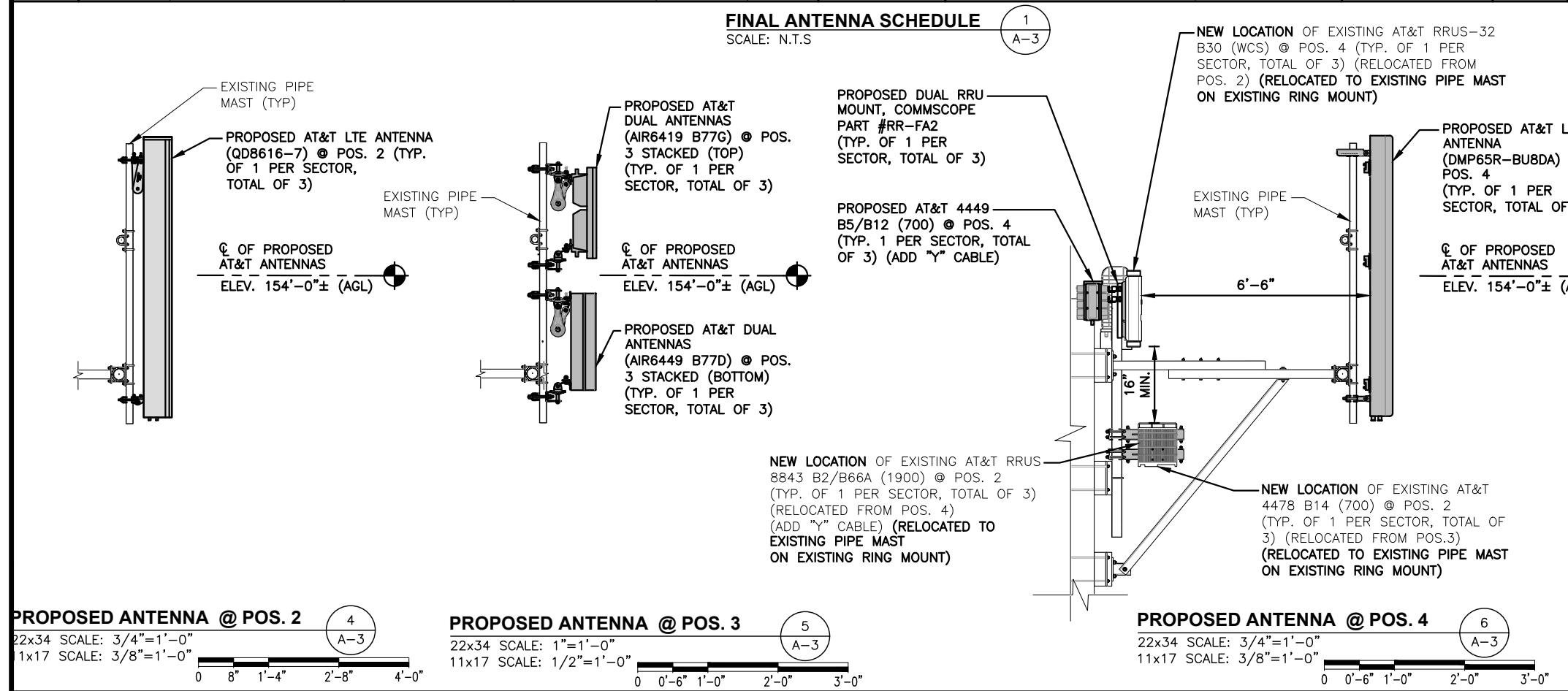
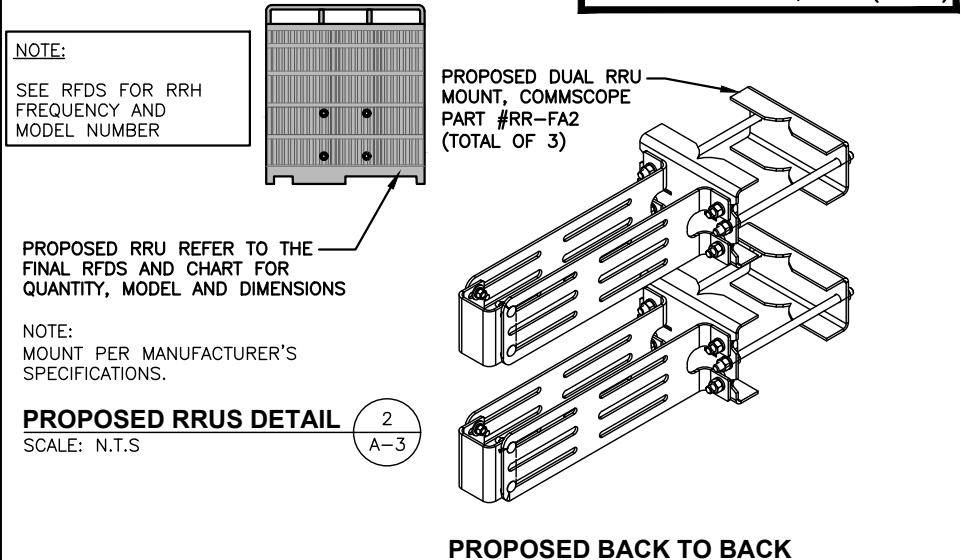
AT&T
 ANTENNA LAYOUT PLANS & ELEVATION
 AT&T ANTENNA RETROFIT, 5G NR RADIO || 5G NR 15R CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE
 SITE NUMBER: CTL05626 DRAWING NUMBER: A-2 REV: 2

ANTENNA SCHEDULE												RRU CHART		
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA C HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP	QUANTITY	MODEL	SIZE (L x W x D)
A1	-	-	-	-	-	-	-	-	-	-	-	E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
A2	PROPOSED	LTE 700/1900/AWS/ 5G AWS/5G 1900	QD8616-7	96"x22"x9.6"	154'-0"±	100°	-	(E)(1) 4478 B14 (700) (E)(1) 8843 B2/B66A (1900) (E)(1) RRUS-E2 B29 (ADDITIONAL) (SHELTER)	-	(E)(2) DC POWER & (E)(1) FIBER (P)(1)(Y-CABLE)	(E)(1) RAYCAP DC6-48-60-18-8F	E(3)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"
A3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	154'-0"±	100°	-	-	-	-	-	E(3)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
A4	PROPOSED	LTE 700/WCS/5G 850	DMP65R-BU8DA	96"x20.7"x7.7"	154'-0"±	100°	-	(P)(1) 4449 B5/B12 (700) (E)(1) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	(E)(1) RAYCAP DC6-48-60-18-8F	P(3)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
B1	-	-	-	-	-	-	-	-	-	-	-	E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"
B2	PROPOSED	LTE 700/1900/AWS/ 5G AWS/5G 1900	QD8616-7	96"x22"x9.6"	154'-0"±	230°	-	(E)(1) 4478 B14 (700) (E)(1) 8843 B2/B66A (1900) (E)(1) RRUS-E2 B29 (ADDITIONAL) (SHELTER)	-	(E)(2) DC POWER & (E)(1) FIBER (P)(1)(Y-CABLE)	(E)(1) RAYCAP DC6-48-60-18-8F	E(3)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"
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C1	-	-	-	-	-	-	-	-	-	-	-	E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"
C2	PROPOSED	LTE 700/1900/AWS/ 5G AWS/5G 1900	QD8616-7	96"x22"x9.6"	154'-0"±	350°	-	(E)(1) 4478 B14 (700) (E)(1) 8843 B2/B66A (1900) (E)(1) RRUS-E2 B29 (ADDITIONAL) (SHELTER)	-	(E)(2) DC POWER (P)(1) 18 PAIR FIBER (P)(1)(Y-CABLE)	(E)(1) RAYCAP DC6-48-60-18-8F	E(3)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"
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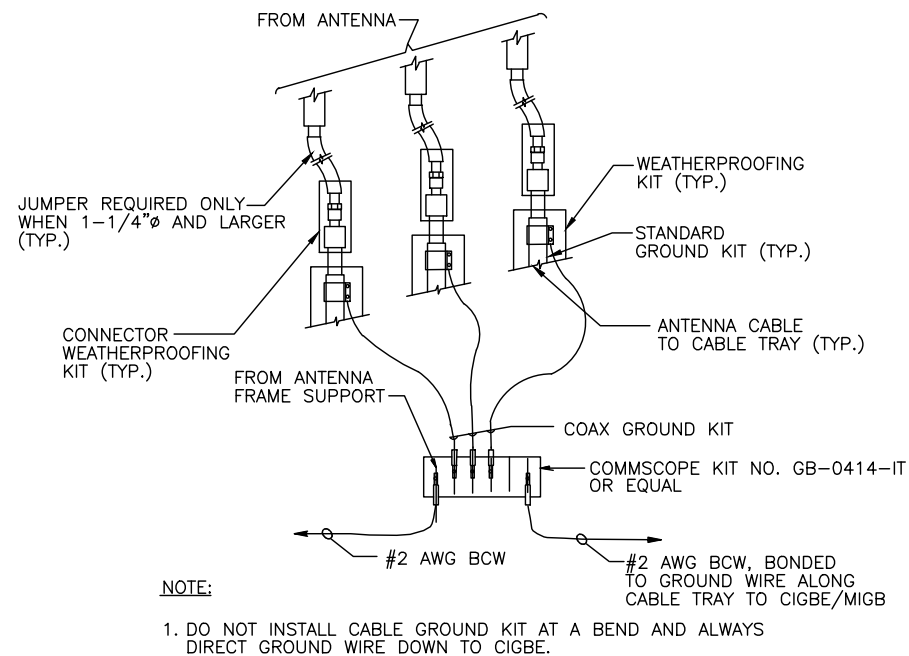
QUANTITY	MODEL	SIZE (L x W x D)
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NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

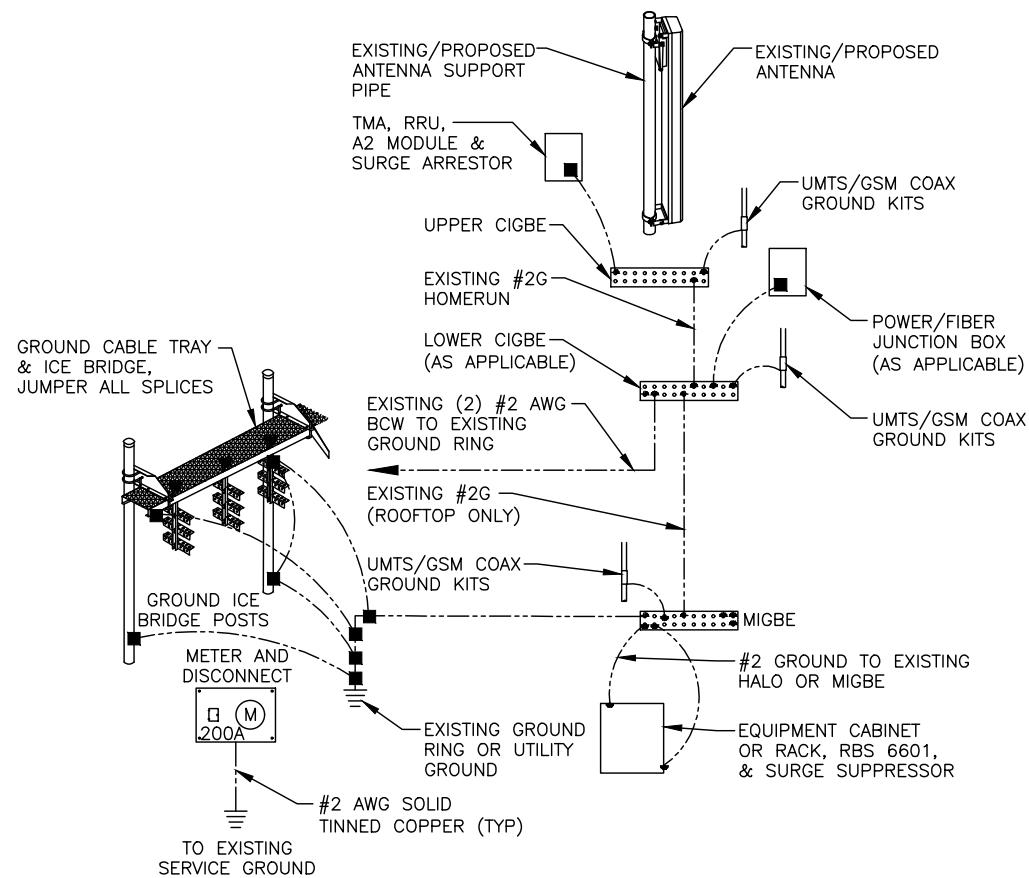
NOTE:
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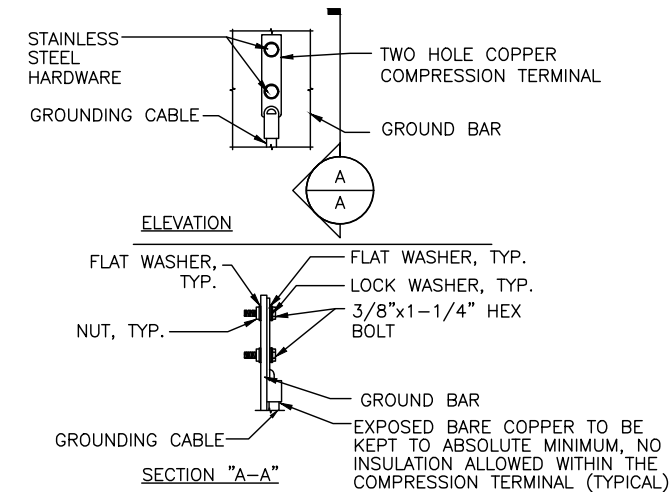
<p>45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586</p>	<p>750 WEST CENTER STREET, SUITE #301 WEST BRIDGEWATER, MA 02379</p>	<p>SITE NUMBER: CTL05626 SITE NAME: PROSPECT NORTH</p> <p>151 WATERBURY ROAD (MURPHY ROAD) PROSPECT, CT 06712 NEW HAVEN COUNTY</p>	<p>500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067</p>	<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISIONS</th> <th>BY</th> <th>CHK</th> <th>APP</th> </tr> <tr> <td>2</td> <td>01/12/23</td> <td>ISSUED FOR CONSTRUCTION</td> <td>JS</td> <td>MKT</td> <td>DPH</td> </tr> <tr> <td>1</td> <td>10/28/22</td> <td>ISSUED FOR CONSTRUCTION</td> <td>JS</td> <td>MKT</td> <td>DPH</td> </tr> <tr> <td>C</td> <td>09/06/22</td> <td>ISSUED FOR PERMITTING</td> <td>SP</td> <td>MKT</td> <td>DPH</td> </tr> <tr> <td>B</td> <td>08/15/22</td> <td>ISSUED FOR PERMITTING</td> <td>AW</td> <td>MKT</td> <td>DPH</td> </tr> <tr> <td>A</td> <td>06/08/22</td> <td>ISSUED FOR REVIEW</td> <td>AW</td> <td>MKT</td> <td>DPH</td> </tr> </table>	NO.	DATE	REVISIONS	BY	CHK	APP	2	01/12/23	ISSUED FOR CONSTRUCTION	JS	MKT	DPH	1	10/28/22	ISSUED FOR CONSTRUCTION	JS	MKT	DPH	C	09/06/22	ISSUED FOR PERMITTING	SP	MKT	DPH	B	08/15/22	ISSUED FOR PERMITTING	AW	MKT	DPH	A	06/08/22	ISSUED FOR REVIEW	AW	MKT	DPH	<p>DANIEL P. HAM LICENSED PROFESSIONAL ENGINEER No. 221178</p>	<p>AT&T</p> <p>DETAILS ANTENNA RETROFIT, 5G NR RADIO II 5G NR 1SR CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE</p> <table border="1"> <tr> <th>SITE NUMBER</th> <th>DRAWING NUMBER</th> <th>REV</th> </tr> <tr> <td>CTL05626</td> <td>A-3</td> <td>2</td> </tr> </table>	SITE NUMBER	DRAWING NUMBER	REV	CTL05626	A-3	2
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CTL05626	A-3	2																																														
<p>SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: VS</p>																																																



GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1



- 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
SCALE: N.T.S. G-1

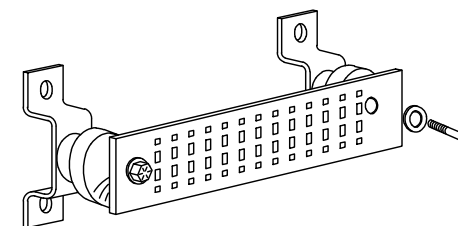
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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)



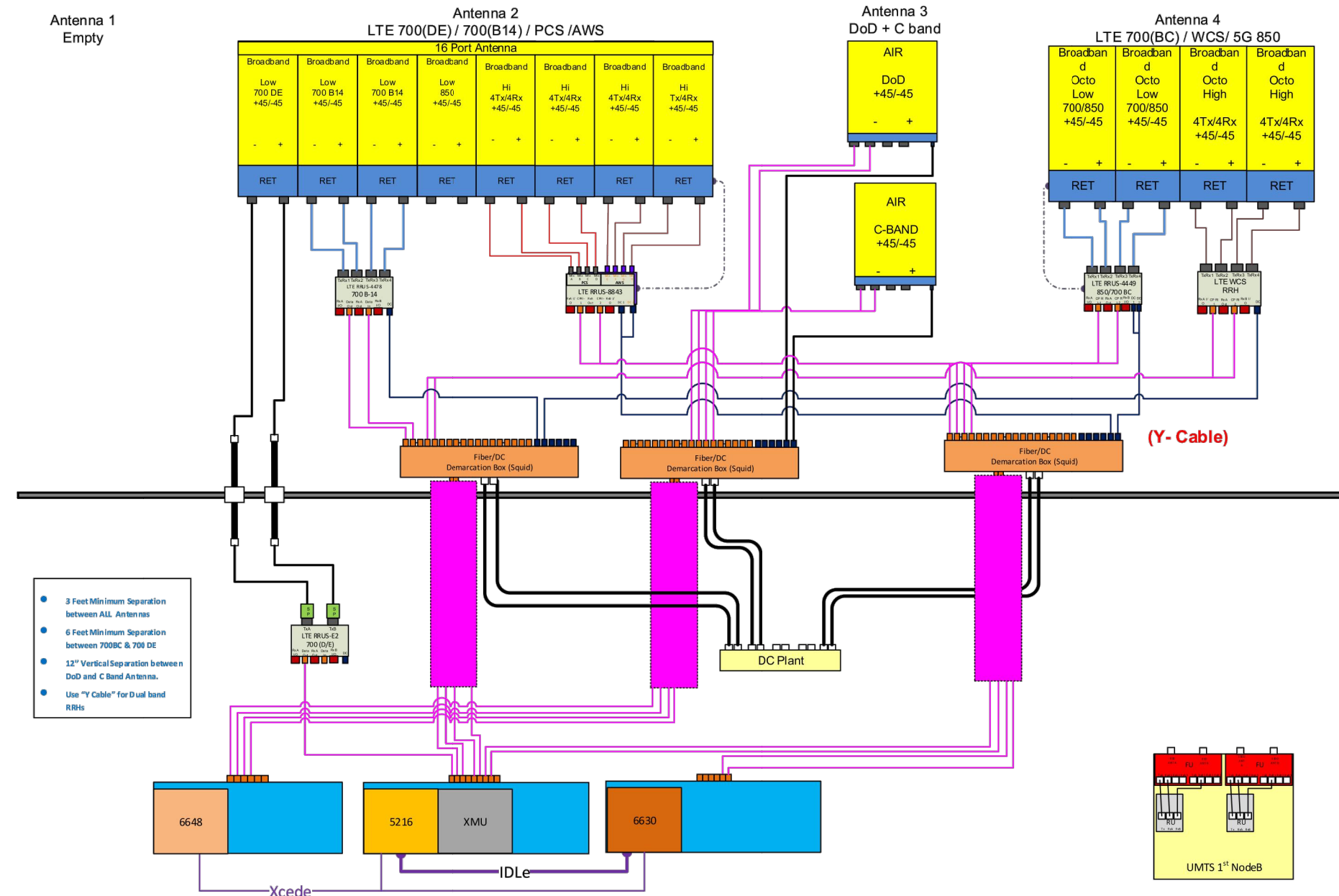
GROUND BAR - DETAIL (AS REQUIRED)
SCALE: N.T.S.

NO.	DATE	REVISIONS	BY	CHK	APP
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1	10/28/22	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
C	09/06/22	ISSUED FOR PERMITTING	JS	MKT	DPH
B	08/15/22	ISSUED FOR PERMITTING	JS	MKT	DPH
A	06/08/22	ISSUED FOR REVIEW	JS	MKT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: VS



AT&T		
GROUNDING DETAILS ANTENNA RETROFIT, 5G NR RADIO II 5G NR 1SR CBAND, 5G NR ACTIVATION, BBU RECONFIGURATION 2022 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL05626	G-1	2



- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

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.

RF PLUMBING DIAGRAM 1
 SCALE: N.T.S RF-1

2	01/12/23	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
1	10/28/22	ISSUED FOR CONSTRUCTION	JS	MKT	DPH
C	09/06/22	ISSUED FOR PERMITTING	SG	MKT	DPH
B	08/15/22	ISSUED FOR PERMITTING	KW	MKT	DPH
A	06/08/22	ISSUED FOR REVIEW	VS	MKT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VS		



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 150 ft Monopole
ATC Asset Name : PROSPECT CT
ATC Asset Number : 282660
Engineering Number : OAA782219_C3_01
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : Prospect North
Carrier Site Number : CT5626
Site Location : 151 Waterbury Prospect road
PROSPECT, CT 06712-1228
41.523, -72.9978
County : New Haven
Date : September 29, 2022
Max Usage : 44%
Analysis Result : Pass

Prepared By:

Sarah Kramer
Structural Engineer

Sarah D. Kramer

Reviewed



COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft Monopole tower to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawing:	ERI Project #25148/001, dated November 13, 2009
Foundation Drawing:	ERI Project #25148/002, dated November 13, 2009
Geotechnical Report:	FDH Project #09-10144E G1, dated November 9, 2009

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	118 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code(s):	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	$S_s = 0.20$, $S_i = 0.05$
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at **Engineering@americantower.com** Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing/Reserved Loading

Elev.*	Qty	Equipment	Lines	Carrier
137.0'	3	Ericsson Air6449 B41	(3) 1 1/4" (1.25"- 31.8mm) Fiber (1) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	Ericsson Radio 4449 B71 B85A		
	3	Ericsson Radio 4460 B25+B66		
	3	RFS APXVAARR24_43-U-NA20		
132.0'	1	Perfect Vision PV-LLP12M-HR-B Platform with Handrails		

(If table breaks across pages, please see previous page for data in merged cells)

*Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Proposed Carrier Final Loading

Elev.*	Qty	Equipment	Lines	Carrier
152.0'	1	Commscope WCS-IMFQ-AMT	(2) 0.39" (10mm) Fiber Trunk (8) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (3) 2" conduit	AT&T MOBILITY
	1	Ericsson RRUS E2 B29		
	1	Raycap DC6-48-60-18-8F ("Squid")		
	3	CCI DMP65R-BU8DA-K		
	3	Ericsson AIR 6419 B77G		
	3	Ericsson Air 6449 B77D		
	3	Ericsson RRUS 12		
	3	Ericsson RRUS 32 (50.8 lbs)		
	3	Ericsson RRUS 4449 B5, B12		
	3	Ericsson RRUS 4478 B14		
	3	Ericsson Radio 8843 - B2 + B66A		
	3	Quintel QD8616-7		
	3	Raycap DC6-48-60-0-8F		
	6	Powerwave Allgon TT08-19DB111-001		
150.0'	1	Platform with Handrails		
	1	Mount Reinforcement		

(If table breaks across pages, please see previous page for data in merged cells)

*Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Structure Usages

Structural Component	Usage	Pass/Fail
Anchor Rods	32%	Pass
Base Plate	44%	Pass
Shaft	44%	Pass
Flange Bolts	39%	Pass
Flange Plates	35%	Pass

Foundation Reactions & Usages

Reaction Component	Analysis Reactions	Usage
Moment (k-ft)	1966.0	44%
Axial (k)	50.2	28%
Shear (k)	18.5	19%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Antenna Deflection and Sway

Elev.	Antenna	Carrier	Deflection	Sway [Rotation]
152.0'	CCI DMP65R-BU8DA-K	AT&T MOBILITY	0.572'	0.410°

**Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H*

Standard Conditions

All engineering services performed by A.T. Engineering Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Services LLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

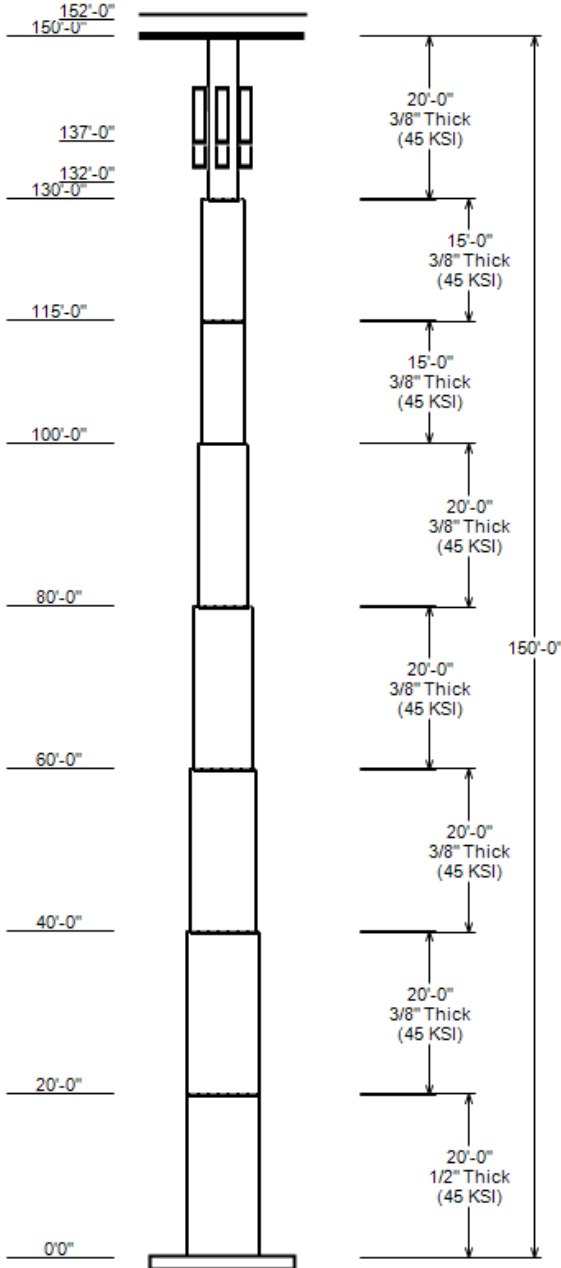
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

ANALYSIS PARAMETERS

Nominal Wind: 118 mph	Ice Wind: 50 mph w/ 1" ice	Service Wind: 60 mph
Risk Category: II	Exposure: B	S _s : 0.196 S _i : 0.054
Topo Category: 1	Topo Factor: Method 1	Topo Feature:
Structure Height: 150 ft	Base Elevation: 0.00 ft	Structure Type: Stepped
Base Diameter: 60 in	Base Rotation: 0°	Taper: 0.0000 (in/ft)

POLE SECTION PROPERTIES

Section	Length (ft)	Flat Diameter (in)		Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
		Top	Bottom					
1	20.000	60.00	60.00	0.500		0.000	Round	45
2	20.000	60.00	60.00	0.375	Butt Joint	0.000	Round	45
3	20.000	54.00	54.00	0.375	Butt Joint	0.000	Round	45
4	20.000	48.00	48.00	0.375	Butt Joint	0.000	Round	45
5	20.000	42.00	42.00	0.375	Butt Joint	0.000	Round	45
6	15.000	36.00	36.00	0.375	Butt Joint	0.000	Round	45
7	15.000	36.00	36.00	0.375	Butt Joint	0.000	Round	45
8	20.000	24.00	24.00	0.375	Butt Joint	0.000	Round	45



DISCRETE APPURTENANCE

Elev (ft)	Description
152.0	(9) Kaelus DBCT108F1V92-1
152.0	(6) Powerwave Allgon TT08-19DB111-
152.0	(1) Commscope WCS-IMFQ-AMT
152.0	(3) Raycap DC6-48-60-0-8F
152.0	(1) Raycap DC6-48-60-18-8F ("Squid)
152.0	(3) Ericsson Radio 8843 - B2 + B66
152.0	(3) Ericsson RRUS 4478 B14
152.0	(3) Ericsson RRUS 4449 B5, B12
152.0	(3) Ericsson RRUS 32 (50.8 lbs)
152.0	(1) Ericsson RRUS E2 B29
152.0	(3) Ericsson RRUS 12
152.0	(3) Ericsson AIR 6419 B77G
152.0	(3) Ericsson Air 6449 B77D
152.0	(3) CCI DMP65R-BU8DA-K
152.0	(3) Quintel QD8616-7
150.0	(1) Generic Mount Reinforcement
150.0	(1) Generic Round Platform with Ha
137.0	(3) Ericsson Radio 4449 B71 B85A
137.0	(3) Ericsson Radio 4460 B25+B66
137.0	(3) Ericsson Air6449 B41
137.0	(3) RFS APXVAARR24_43-U-NA20
132.0	(1) Perfect Vision PV-LLP12M-HR-B

LINEAR APPURTENANCE

Elev To (ft)	Description
152.0	(12) 1 5/8" Coax
152.0	(8) 0.78" (19.7mm) 8 AWG 6
152.0	(2) 0.39" (10mm) Fiber Trunk
147.0	(3) 2" conduit
137.0	(1) 1.99" (50.7mm) Hybrid
137.0	(3) 1 1/4" (1.25"- 31.8mm) Fiber

LOAD CASE KEY

1.2D + 1.0W	118 mph Wind with No Ice
0.9D + 1.0W	118 mph Wind with No Ice (Reduced)
1.2D + 1.0Di + 1.0Wi	50 mph Wind with 1" Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

GLOBAL BASE REACTIONS

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.0W	1966.00	50.23	18.51
0.9D + 1.0W	1953.20	37.67	18.50
1.2D + 1.0Di + 1.0Wi	577.43	64.18	5.83
1.2D + 1.0Ev + 1.0Eh	162.03	49.82	1.32
0.9D - 1.0Ev + 1.0Eh	160.72	34.43	1.32
1.0D + 1.0W	452.85	41.86	4.28

ANALYSIS PARAMETERS

Location:	New Haven County,CT	Height:	150 ft
Type and Shape:	Stepped, Round	Base Diameter:	60.00 in
Manufacturer:	ERI	Top Diameter:	24.00 in
K_d (non-service):	0.95	Taper:	0.0000 in/ft
K_e:	0.97	Rotation:	0.000°

ICE & WIND PARAMETERS

Risk Category:	II	Design Wind Speed:	118 mph
Exposure Category:	B	Design Wind Speed w/ Ice:	50 mph
Topo Factor Procedure:	Method 1	Design Ice Thickness:	1.00 in
Topographic Category:	1	Service Wind Speed:	60 mph
Crest Height:	0 ft	HMSL:	879.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	1.83
T_L (sec):	6	P:	1
S_s:	0.196	S₁:	0.054
F_a:	1.600	F_v:	2.400
S_{ds}:	0.209	S_{d1}:	0.086
		C_s:	0.032
		C_s Max:	0.032
		C_s Min:	0.030

LOAD CASES

1.2D + 1.0W	118 mph Wind with No Ice
0.9D + 1.0W	118 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph Wind with 1" Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Bottom						Top								
						Weight (lb)	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)	
1-R	20.00	0.5000	45		0.00	6,361	60.00	0.000	93.46	41,391.7	0.00	120.00	60.00	20.00	93.46	41,391.	0.00	120.00	0.0000	
2-R	20.00	0.3750	45	Butt	0.00	4,781	60.00	20.000	70.24	31,239.9	0.00	160.00	60.00	40.00	70.24	31,239.	0.00	160.00	0.0000	
3-R	20.00	0.3750	45	Butt	0.00	4,299	54.00	40.000	63.18	22,726.1	0.00	144.00	54.00	60.00	63.18	22,726.	0.00	144.00	0.0000	
4-R	20.00	0.3750	45	Butt	0.00	3,818	48.00	60.000	56.11	15,919.5	0.00	128.00	48.00	80.00	56.11	15,919.	0.00	128.00	0.0000	
5-R	20.00	0.3750	45	Butt	0.00	3,337	42.00	80.000	49.04	10,628.9	0.00	112.00	42.00	100.00	49.04	10,628.	0.00	112.00	0.0000	
6-R	15.00	0.3750	45	Butt	0.00	2,142	36.00	100.000	41.97	6,663.3	0.00	96.00	36.00	115.00	41.97	6,663.3	0.00	96.00	0.0000	
7-R	15.00	0.3750	45	Butt	0.00	2,142	36.00	115.000	41.97	6,663.3	0.00	96.00	36.00	130.00	41.97	6,663.3	0.00	96.00	0.0000	
8-R	20.00	0.3750	45	Butt	0.00	1,894	24.00	130.000	27.83	1,943.3	0.00	64.00	24.00	150.00	27.83	1,943.3	0.00	64.00	0.0000	
Total Shaft Weight						28,774														

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Vert Ecc (ft)	Ka	No Ice			Ice		
					Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor
152.00	Raycap DC6-48-60-18-8F ("Squid)	1	0.75	1.200	31.80	1.470	1.00	72.95	1.936	1.00
152.00	Raycap DC6-48-60-0-8F	3	0.75	0.000	32.80	1.360	1.00	71.57	1.802	1.00
152.00	Ericsson RRUS 4478 B14	3	0.75	-1.200	59.90	1.842	0.50	96.77	2.440	0.50
152.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	113.98	2.591	0.50
152.00	Ericsson RRUS 32 (50.8 lbs)	3	0.75	-0.300	50.80	2.692	0.67	98.50	3.462	0.67
152.00	Ericsson RRUS 12	3	0.75	0.000	50.00	3.145	0.62	103.94	3.918	0.62
152.00	Ericsson RRUS E2 B29	1	0.75	0.000	60.00	3.145	1.00	113.94	3.918	1.00
152.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	130.81	4.676	0.65
152.00	Ericsson Air 6449 B77D	3	0.75	0.000	81.60	4.028	0.65	150.18	4.945	0.65
152.00	CCI DMP65R-BU8DA-K	3	0.75	0.000	119.00	17.871	0.63	345.68	20.329	0.63
152.00	Quintel QD8616-7	3	0.75	0.000	150.00	18.815	0.65	403.96	21.280	0.65
152.00	Ericsson Radio 8843 - B2 + B66	3	0.75	0.200	71.90	1.650	0.50	112.99	2.215	0.50
152.00	Commscope WCS-IMFQ-AMT	1	0.75	0.000	29.50	0.989	1.00	51.96	1.430	1.00
152.00	Powerwave Allgon TT08-19DB111-	6	0.75	-0.800	22.00	0.793	0.50	39.71	1.217	0.50
152.00	Kaelus DBCT108F1V92-1	9	0.75	-1.400	13.90	0.633	0.50	30.68	0.997	0.50
150.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	329.07	12.493	1.00
150.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3580.22	43.502	1.00
137.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.500	127.90	20.243	0.63	387.60	22.697	0.63
137.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	194.15	6.732	0.63
137.00	Ericsson Radio 4460 B25+B66	3	0.75	0.000	109.00	2.564	0.67	167.47	3.261	0.67
137.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	114.78	2.212	0.50
132.00	Perfect Vision PV-LLP12M-HR-B	1	1.00	0.000	2000.00	36.800	1.00	2918.26	53.696	1.00
Totals		Row Count: 22	63		8,585.40			15,057.92		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg): 0.00

Elev From (ft)	Elev To (ft)	Qty	Description	Diameter (in)	Weight (lb/ft)	Flat	Max/Row	Distance Between Rows (in)	Distance Between Cols (in)	Azimuth (deg)	Distance From Face (in)	Exposed To Wind	Carrier
0.00	152.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	152.00	8	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	152.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	147.00	3	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	137.00	3	1 1/4" (1.25"- 31.8mm	1.25	1.05	N	0	0	0	0	0	N	T-MOBILE
0.00	137.00	1	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.5000	60.000	93.462	41,391.70	0.00	120.00	39.2	1379.7	1770.2	0.0
5.00		0.5000	60.000	93.462	41,391.70	0.00	120.00	39.2	1379.7	1770.2	1,590.2
10.00		0.5000	60.000	93.462	41,391.70	0.00	120.00	39.2	1379.7	1770.2	1,590.2
15.00		0.5000	60.000	93.462	41,391.70	0.00	120.00	39.2	1379.7	1770.2	1,590.2

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description	(Max Length: 5 ft)	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in ³)	Z (in ³)	Weight (lb)
20.00	Top - Section 1		0.5000	60.000	93.462	41,391.70	0.00	120.00	39.2	1379.7	1770.2	1,590.2
20.00	Bot - Section 2		0.3750	60.000	70.244	31,239.90	0.00	160.00	36.9	1041.3	1333.2	
25.00			0.3750	60.000	70.244	31,239.90	0.00	160.00	36.9	1041.3	1333.2	1,195.1
30.00			0.3750	60.000	70.244	31,239.90	0.00	160.00	36.9	1041.3	1333.2	1,195.1
35.00			0.3750	60.000	70.244	31,239.90	0.00	160.00	36.9	1041.3	1333.2	1,195.1
40.00	Top - Section 2		0.3750	60.000	70.244	31,239.90	0.00	160.00	36.9	1041.3	1333.2	1,195.1
40.00	Bot - Section 3		0.3750	54.000	63.175	22,726.10	0.00	144.00	37.6	841.7	1078.4	
45.00			0.3750	54.000	63.175	22,726.10	0.00	144.00	37.6	841.7	1078.4	1,074.9
50.00			0.3750	54.000	63.175	22,726.10	0.00	144.00	37.6	841.7	1078.4	1,074.9
55.00			0.3750	54.000	63.175	22,726.10	0.00	144.00	37.6	841.7	1078.4	1,074.9
60.00	Top - Section 3		0.3750	54.000	63.175	22,726.10	0.00	144.00	37.6	841.7	1078.4	1,074.9
60.00	Bot - Section 4		0.3750	48.000	56.107	15,919.50	0.00	128.00	38.6	663.3	850.6	
65.00			0.3750	48.000	56.107	15,919.50	0.00	128.00	38.6	663.3	850.6	954.6
70.00			0.3750	48.000	56.107	15,919.50	0.00	128.00	38.6	663.3	850.6	954.6
75.00			0.3750	48.000	56.107	15,919.50	0.00	128.00	38.6	663.3	850.6	954.6
80.00	Top - Section 4		0.3750	48.000	56.107	15,919.50	0.00	128.00	38.6	663.3	850.6	954.6
80.00	Bot - Section 5		0.3750	42.000	49.038	10,628.90	0.00	112.00	39.8	506.1	649.8	
85.00			0.3750	42.000	49.038	10,628.90	0.00	112.00	39.8	506.1	649.8	834.3
90.00			0.3750	42.000	49.038	10,628.90	0.00	112.00	39.8	506.1	649.8	834.3
95.00			0.3750	42.000	49.038	10,628.90	0.00	112.00	39.8	506.1	649.8	834.3
100.00	Top - Section 5		0.3750	42.000	49.038	10,628.90	0.00	112.00	39.8	506.1	649.8	834.3
100.00	Bot - Section 6		0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	
105.00			0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
110.00			0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
115.00	Top - Section 6		0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
115.00	Bot - Section 7		0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	
120.00			0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
125.00			0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
130.00	Top - Section 7		0.3750	36.000	41.970	6,663.30	0.00	96.00	41.4	370.2	475.9	714.1
130.00	Bot - Section 8		0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	
132.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	189.4
135.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	284.1
137.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	189.4
140.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	284.1
145.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	473.5
150.00			0.3750	24.000	27.833	1,943.30	0.00	64.00	45	161.9	209.3	473.5

Total: 28,775.0

CALCULATED FORCES

Load Case: 1.2D + 1.0W 118 mph Wind with No Ice 20 Iterations

Gust Response Factor: 1.10
 Dead load Factor: 1.20
 Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-50.23	-18.51	0.00	-1,966.0	0.00	1,966.00	3,293.92	1,135.57	5,940.32	5,174.22	0	0	0.395
5.00	-48.11	-18.19	0.00	-1,873.4	0.00	1,873.44	3,293.92	1,135.57	5,940.32	5,174.22	0.04	-0.07	0.377
10.00	-46.00	-17.85	0.00	-1,782.5	0.00	1,782.51	3,293.92	1,135.57	5,940.32	5,174.22	0.14	-0.13	0.359
15.00	-43.89	-17.51	0.00	-1,693.2	0.00	1,693.24	3,293.92	1,135.57	5,940.32	5,174.22	0.31	-0.19	0.341
20.00	-41.79	-17.17	0.00	-1,605.7	0.00	1,605.68	3,293.92	1,135.57	5,940.32	5,174.22	0.53	-0.25	0.323
20.00	-41.79	-17.17	0.00	-1,605.7	0.00	1,605.68	2,330.87	853.47	4,473.98	3,807.50	0.53	-0.25	0.440
25.00	-40.15	-16.82	0.00	-1,519.8	0.00	1,519.85	2,330.87	853.47	4,473.98	3,807.50	0.82	-0.3	0.417
30.00	-38.52	-16.47	0.00	-1,435.7	0.00	1,435.74	2,330.87	853.47	4,473.98	3,807.50	1.17	-0.37	0.394
35.00	-36.88	-16.11	0.00	-1,353.4	0.00	1,353.37	2,330.87	853.47	4,473.98	3,807.50	1.59	-0.43	0.372
40.00	-35.25	-15.74	0.00	-1,272.8	0.00	1,272.84	2,330.87	853.47	4,473.98	3,807.50	2.07	-0.49	0.350
40.00	-35.25	-15.74	0.00	-1,272.8	0.00	1,272.84	2,139.71	767.58	3,618.86	3,103.93	2.07	-0.49	0.427
45.00	-33.77	-15.38	0.00	-1,194.2	0.00	1,194.15	2,139.71	767.58	3,618.86	3,103.93	2.61	-0.55	0.401
50.00	-32.28	-15.01	0.00	-1,117.3	0.00	1,117.26	2,139.71	767.58	3,618.86	3,103.93	3.22	-0.62	0.375
55.00	-30.79	-14.62	0.00	-1,042.2	0.00	1,042.21	2,139.71	767.58	3,618.86	3,103.93	3.91	-0.69	0.351
60.00	-29.31	-14.24	0.00	-969.1	0.00	969.10	2,139.71	767.58	3,618.86	3,103.93	4.66	-0.75	0.326
60.00	-29.31	-14.24	0.00	-969.1	0.00	969.10	1,948.48	681.70	2,854.35	2,471.99	4.66	-0.75	0.408

CALCULATED FORCES

65.00	-27.97	-13.88	0.00	-897.9	0.00	897.90	1,948.48	681.70	2,854.35	2,471.99	5.48	-0.81	0.378
70.00	-26.63	-13.51	0.00	-828.5	0.00	828.50	1,948.48	681.70	2,854.35	2,471.99	6.36	-0.88	0.349
75.00	-25.29	-13.12	0.00	-761.0	0.00	760.97	1,948.48	681.70	2,854.35	2,471.99	7.33	-0.96	0.321
80.00	-23.95	-12.75	0.00	-695.4	0.00	695.36	1,948.48	681.70	2,854.35	2,471.99	8.36	-1.02	0.294
80.00	-23.95	-12.75	0.00	-695.4	0.00	695.36	1,757.14	595.82	2,180.45	1,911.67	8.36	-1.02	0.378
85.00	-22.76	-12.40	0.00	-631.6	0.00	631.62	1,757.14	595.82	2,180.45	1,911.67	9.46	-1.08	0.344
90.00	-21.56	-12.04	0.00	-569.6	0.00	569.63	1,757.14	595.82	2,180.45	1,911.67	10.64	-1.16	0.311
95.00	-20.37	-11.67	0.00	-509.4	0.00	509.43	1,757.14	595.82	2,180.45	1,911.67	11.89	-1.23	0.278
100.00	-19.18	-11.32	0.00	-451.1	0.00	451.08	1,757.14	595.82	2,180.45	1,911.67	13.22	-1.3	0.247
100.00	-19.18	-11.32	0.00	-451.1	0.00	451.08	1,565.64	509.93	1,597.15	1,422.98	13.22	-1.3	0.330
105.00	-18.14	-10.99	0.00	-394.5	0.00	394.49	1,565.64	509.93	1,597.15	1,422.98	14.61	-1.35	0.289
110.00	-17.09	-10.66	0.00	-339.6	0.00	339.55	1,565.64	509.93	1,597.15	1,422.98	16.07	-1.43	0.250
115.00	-16.05	-10.31	0.00	-286.3	0.00	286.27	1,565.64	509.93	1,597.15	1,422.98	17.6	-1.5	0.212
120.00	-15.01	-9.96	0.00	-234.7	0.00	234.71	1,565.64	509.93	1,597.15	1,422.98	19.2	-1.55	0.175
125.00	-13.97	-9.60	0.00	-184.9	0.00	184.91	1,565.64	509.93	1,597.15	1,422.98	20.85	-1.6	0.139
130.00	-12.93	-9.36	0.00	-136.9	0.00	136.91	1,565.64	509.93	1,597.15	1,422.98	22.55	-1.63	0.105
130.00	-12.93	-9.36	0.00	-136.9	0.00	136.91	1,127.22	338.17	702.39	660.47	22.55	-1.63	0.220
132.00	-10.27	-7.75	0.00	-118.2	0.00	118.20	1,127.22	338.17	702.39	660.47	23.23	-1.64	0.189
135.00	-9.82	-7.63	0.00	-95.0	0.00	94.95	1,127.22	338.17	702.39	660.47	24.28	-1.69	0.153
137.00	-8.07	-5.80	0.00	-79.1	0.00	79.14	1,127.22	338.17	702.39	660.47	25	-1.72	0.127
140.00	-7.64	-5.60	0.00	-61.7	0.00	61.74	1,127.22	338.17	702.39	660.47	26.08	-1.75	0.101
145.00	-6.92	-5.35	0.00	-33.7	0.00	33.72	1,127.22	338.17	702.39	660.47	27.93	-1.78	0.057
150.00	0.00	-5.13	0.00	-7.0	0.00	6.98	1,127.22	338.17	702.39	660.47	29.81	-1.8	0.011

CALCULATED FORCES

Load Case: 0.9D + 1.0W 118 mph Wind with No Ice (Reduced DL) 20 Iterations
 Gust Response Factor: 1.10
 Dead load Factor: 0.90
 Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.67	-18.50	0.00	-1,953.2	0.00	1,953.20	3,293.92	1,135.57	5,940.32	5,174.22	0	0	0.389
5.00	-36.08	-18.17	0.00	-1,860.7	0.00	1,860.68	3,293.92	1,135.57	5,940.32	5,174.22	0.04	-0.07	0.371
10.00	-34.49	-17.82	0.00	-1,769.9	0.00	1,769.86	3,293.92	1,135.57	5,940.32	5,174.22	0.14	-0.13	0.353
15.00	-32.90	-17.47	0.00	-1,680.8	0.00	1,680.75	3,293.92	1,135.57	5,940.32	5,174.22	0.3	-0.19	0.335
20.00	-31.32	-17.12	0.00	-1,593.4	0.00	1,593.40	3,293.92	1,135.57	5,940.32	5,174.22	0.53	-0.24	0.318
20.00	-31.32	-17.12	0.00	-1,593.4	0.00	1,593.40	2,330.87	853.47	4,473.98	3,807.50	0.53	-0.24	0.432
25.00	-30.09	-16.76	0.00	-1,507.8	0.00	1,507.83	2,330.87	853.47	4,473.98	3,807.50	0.81	-0.3	0.409
30.00	-28.86	-16.40	0.00	-1,424.0	0.00	1,424.02	2,330.87	853.47	4,473.98	3,807.50	1.16	-0.36	0.387
35.00	-27.63	-16.03	0.00	-1,342.0	0.00	1,341.99	2,330.87	853.47	4,473.98	3,807.50	1.58	-0.43	0.365
40.00	-26.41	-15.66	0.00	-1,261.8	0.00	1,261.84	2,330.87	853.47	4,473.98	3,807.50	2.06	-0.49	0.343
40.00	-26.41	-15.66	0.00	-1,261.8	0.00	1,261.84	2,139.71	767.58	3,618.86	3,103.93	2.06	-0.49	0.419
45.00	-25.29	-15.29	0.00	-1,183.6	0.00	1,183.56	2,139.71	767.58	3,618.86	3,103.93	2.59	-0.54	0.394
50.00	-24.17	-14.91	0.00	-1,107.1	0.00	1,107.11	2,139.71	767.58	3,618.86	3,103.93	3.2	-0.61	0.368
55.00	-23.05	-14.52	0.00	-1,032.5	0.00	1,032.54	2,139.71	767.58	3,618.86	3,103.93	3.88	-0.68	0.344
60.00	-21.94	-14.14	0.00	-959.9	0.00	959.92	2,139.71	767.58	3,618.86	3,103.93	4.62	-0.74	0.320
60.00	-21.94	-14.14	0.00	-959.9	0.00	959.92	1,948.48	681.70	2,854.35	2,471.99	4.62	-0.74	0.400
65.00	-20.93	-13.77	0.00	-889.2	0.00	889.23	1,948.48	681.70	2,854.35	2,471.99	5.43	-0.8	0.371
70.00	-19.92	-13.40	0.00	-820.4	0.00	820.37	1,948.48	681.70	2,854.35	2,471.99	6.31	-0.88	0.342
75.00	-18.91	-13.01	0.00	-753.4	0.00	753.39	1,948.48	681.70	2,854.35	2,471.99	7.27	-0.95	0.315
80.00	-17.91	-12.64	0.00	-688.3	0.00	688.34	1,948.48	681.70	2,854.35	2,471.99	8.3	-1.01	0.288
80.00	-17.91	-12.64	0.00	-688.3	0.00	688.34	1,757.14	595.82	2,180.45	1,911.67	8.3	-1.01	0.371
85.00	-17.01	-12.28	0.00	-625.2	0.00	625.17	1,757.14	595.82	2,180.45	1,911.67	9.39	-1.07	0.337
90.00	-16.11	-11.92	0.00	-563.8	0.00	563.76	1,757.14	595.82	2,180.45	1,911.67	10.55	-1.15	0.304
95.00	-15.22	-11.55	0.00	-504.1	0.00	504.14	1,757.14	595.82	2,180.45	1,911.67	11.8	-1.22	0.273
100.00	-14.33	-11.20	0.00	-446.4	0.00	446.38	1,757.14	595.82	2,180.45	1,911.67	13.11	-1.28	0.242
100.00	-14.33	-11.20	0.00	-446.4	0.00	446.38	1,565.64	509.93	1,597.15	1,422.98	13.11	-1.28	0.323
105.00	-13.54	-10.87	0.00	-390.4	0.00	390.37	1,565.64	509.93	1,597.15	1,422.98	14.48	-1.34	0.283
110.00	-12.75	-10.54	0.00	-336.0	0.00	336.00	1,565.64	509.93	1,597.15	1,422.98	15.93	-1.42	0.245
115.00	-11.97	-10.20	0.00	-283.3	0.00	283.29	1,565.64	509.93	1,597.15	1,422.98	17.45	-1.48	0.207
120.00	-11.19	-9.85	0.00	-232.3	0.00	232.28	1,565.64	509.93	1,597.15	1,422.98	19.04	-1.54	0.171
125.00	-10.41	-9.50	0.00	-183.0	0.00	183.02	1,565.64	509.93	1,597.15	1,422.98	20.68	-1.58	0.136
130.00	-9.64	-9.26	0.00	-135.5	0.00	135.54	1,565.64	509.93	1,597.15	1,422.98	22.35	-1.62	0.102
130.00	-9.64	-9.26	0.00	-135.5	0.00	135.54	1,127.22	338.17	702.39	660.47	22.35	-1.62	0.215
132.00	-7.65	-7.67	0.00	-117.0	0.00	117.02	1,127.22	338.17	702.39	660.47	23.03	-1.63	0.184
135.00	-7.31	-7.55	0.00	-94.0	0.00	94.01	1,127.22	338.17	702.39	660.47	24.07	-1.67	0.149
137.00	-6.01	-5.74	0.00	-78.4	0.00	78.36	1,127.22	338.17	702.39	660.47	24.78	-1.7	0.124
140.00	-5.69	-5.54	0.00	-61.1	0.00	61.14	1,127.22	338.17	702.39	660.47	25.86	-1.73	0.098
145.00	-5.15	-5.29	0.00	-33.4	0.00	33.43	1,127.22	338.17	702.39	660.47	27.69	-1.77	0.055
150.00	0.00	-5.13	0.00	-7.0	0.00	6.98	1,127.22	338.17	702.39	660.47	29.55	-1.78	0.011

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi													50 mph Wind with 1" Radial Ice		19 Iterations
Gust Response Factor:		1.10	Ice Dead Load Factor				1.00	Ice Importance Factor					1.00		
Dead Load Factor:		1.20													
Wind Load Factor:		1.00													
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio		
0.00	-64.18	-5.83	0.00	-577.4	0.00	577.43	3,293.92	1,135.57	5,940.32	5,174.22	0	0	0.131		
5.00	-61.80	-5.71	0.00	-548.3	0.00	548.28	3,293.92	1,135.57	5,940.32	5,174.22	0.01	-0.02	0.125		
10.00	-59.39	-5.59	0.00	-519.7	0.00	519.73	3,293.92	1,135.57	5,940.32	5,174.22	0.04	-0.04	0.119		
15.00	-56.96	-5.46	0.00	-491.8	0.00	491.80	3,293.92	1,135.57	5,940.32	5,174.22	0.09	-0.06	0.112		
20.00	-54.51	-5.33	0.00	-464.5	0.00	464.49	3,293.92	1,135.57	5,940.32	5,174.22	0.16	-0.07	0.106		
20.00	-54.51	-5.33	0.00	-464.5	0.00	464.49	2,330.87	853.47	4,473.98	3,807.50	0.16	-0.07	0.145		
25.00	-52.54	-5.21	0.00	-437.8	0.00	437.82	2,330.87	853.47	4,473.98	3,807.50	0.24	-0.09	0.138		
30.00	-50.55	-5.08	0.00	-411.8	0.00	411.79	2,330.87	853.47	4,473.98	3,807.50	0.34	-0.11	0.130		
35.00	-48.56	-4.94	0.00	-386.4	0.00	386.40	2,330.87	853.47	4,473.98	3,807.50	0.46	-0.12	0.122		
40.00	-46.56	-4.81	0.00	-361.7	0.00	361.69	2,330.87	853.47	4,473.98	3,807.50	0.6	-0.14	0.115		
40.00	-46.56	-4.81	0.00	-361.7	0.00	361.69	2,139.71	767.58	3,618.86	3,103.93	0.6	-0.14	0.138		
45.00	-44.74	-4.67	0.00	-337.7	0.00	337.67	2,139.71	767.58	3,618.86	3,103.93	0.76	-0.16	0.130		
50.00	-42.92	-4.53	0.00	-314.3	0.00	314.31	2,139.71	767.58	3,618.86	3,103.93	0.94	-0.18	0.121		
55.00	-41.09	-4.39	0.00	-291.6	0.00	291.64	2,139.71	767.58	3,618.86	3,103.93	1.13	-0.2	0.113		
60.00	-39.26	-4.25	0.00	-269.7	0.00	269.69	2,139.71	767.58	3,618.86	3,103.93	1.35	-0.21	0.105		
60.00	-39.26	-4.25	0.00	-269.7	0.00	269.69	1,948.48	681.70	2,854.35	2,471.99	1.35	-0.21	0.129		
65.00	-37.61	-4.11	0.00	-248.5	0.00	248.46	1,948.48	681.70	2,854.35	2,471.99	1.58	-0.23	0.120		
70.00	-35.96	-3.97	0.00	-227.9	0.00	227.90	1,948.48	681.70	2,854.35	2,471.99	1.83	-0.25	0.111		
75.00	-34.31	-3.83	0.00	-208.0	0.00	208.03	1,948.48	681.70	2,854.35	2,471.99	2.11	-0.27	0.102		
80.00	-32.65	-3.69	0.00	-188.9	0.00	188.89	1,948.48	681.70	2,854.35	2,471.99	2.4	-0.29	0.093		
80.00	-32.65	-3.69	0.00	-188.9	0.00	188.89	1,757.14	595.82	2,180.45	1,911.67	2.4	-0.29	0.117		
85.00	-31.18	-3.56	0.00	-170.4	0.00	170.45	1,757.14	595.82	2,180.45	1,911.67	2.71	-0.31	0.107		
90.00	-29.70	-3.42	0.00	-152.7	0.00	152.67	1,757.14	595.82	2,180.45	1,911.67	3.05	-0.33	0.097		
95.00	-28.22	-3.28	0.00	-135.6	0.00	135.57	1,757.14	595.82	2,180.45	1,911.67	3.4	-0.35	0.087		
100.00	-26.74	-3.15	0.00	-119.2	0.00	119.16	1,757.14	595.82	2,180.45	1,911.67	3.77	-0.36	0.078		
100.00	-26.74	-3.15	0.00	-119.2	0.00	119.16	1,565.64	509.93	1,597.15	1,422.98	3.77	-0.36	0.101		
105.00	-25.45	-3.02	0.00	-103.4	0.00	103.42	1,565.64	509.93	1,597.15	1,422.98	4.16	-0.38	0.089		
110.00	-24.15	-2.90	0.00	-88.3	0.00	88.30	1,565.64	509.93	1,597.15	1,422.98	4.57	-0.4	0.078		
115.00	-22.86	-2.77	0.00	-73.8	0.00	73.82	1,565.64	509.93	1,597.15	1,422.98	4.99	-0.42	0.067		
120.00	-21.56	-2.63	0.00	-60.0	0.00	59.99	1,565.64	509.93	1,597.15	1,422.98	5.44	-0.43	0.056		
125.00	-20.26	-2.50	0.00	-46.8	0.00	46.82	1,565.64	509.93	1,597.15	1,422.98	5.89	-0.44	0.046		
130.00	-18.96	-2.40	0.00	-34.4	0.00	34.35	1,565.64	509.93	1,597.15	1,422.98	6.36	-0.45	0.036		
130.00	-18.96	-2.40	0.00	-34.4	0.00	34.35	1,127.22	338.17	702.39	660.47	6.36	-0.45	0.069		
132.00	-15.47	-1.96	0.00	-29.5	0.00	29.54	1,127.22	338.17	702.39	660.47	6.55	-0.45	0.058		
135.00	-14.92	-1.91	0.00	-23.7	0.00	23.66	1,127.22	338.17	702.39	660.47	6.84	-0.46	0.049		
137.00	-12.00	-1.50	0.00	-19.7	0.00	19.72	1,127.22	338.17	702.39	660.47	7.03	-0.47	0.041		
140.00	-11.46	-1.42	0.00	-15.2	0.00	15.22	1,127.22	338.17	702.39	660.47	7.33	-0.48	0.033		
145.00	-10.56	-1.32	0.00	-8.1	0.00	8.11	1,127.22	338.17	702.39	660.47	7.84	-0.49	0.022		
150.00	0.00	-1.23	0.00	-1.5	0.00	1.50	1,127.22	338.17	702.39	660.47	8.35	-0.49	0.002		

CALCULATED FORCES

Load Case: 1.0D + 1.0W

60 mph Wind with No Ice

19 Iterations

Gust Response Factor: 1.10
 Dead load Factor: 1.00
 Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-41.86	-4.28	0.00	-452.8	0.00	452.85	3,293.92	1,135.57	5,940.32	5,174.22	0	0	0.100
5.00	-40.12	-4.20	0.00	-431.4	0.00	431.44	3,293.92	1,135.57	5,940.32	5,174.22	0.01	-0.02	0.096
10.00	-38.37	-4.12	0.00	-410.4	0.00	410.42	3,293.92	1,135.57	5,940.32	5,174.22	0.03	-0.03	0.091
15.00	-36.63	-4.04	0.00	-389.8	0.00	389.80	3,293.92	1,135.57	5,940.32	5,174.22	0.07	-0.04	0.086
20.00	-34.89	-3.96	0.00	-369.6	0.00	369.58	3,293.92	1,135.57	5,940.32	5,174.22	0.12	-0.06	0.082
20.00	-34.89	-3.96	0.00	-369.6	0.00	369.58	2,330.87	853.47	4,473.98	3,807.50	0.12	-0.06	0.112
25.00	-33.54	-3.88	0.00	-349.8	0.00	349.76	2,330.87	853.47	4,473.98	3,807.50	0.19	-0.07	0.106
30.00	-32.19	-3.80	0.00	-330.4	0.00	330.35	2,330.87	853.47	4,473.98	3,807.50	0.27	-0.08	0.101
35.00	-30.84	-3.71	0.00	-311.4	0.00	311.35	2,330.87	853.47	4,473.98	3,807.50	0.37	-0.1	0.095
40.00	-29.49	-3.63	0.00	-292.8	0.00	292.78	2,330.87	853.47	4,473.98	3,807.50	0.48	-0.11	0.090
40.00	-29.49	-3.63	0.00	-292.8	0.00	292.78	2,139.71	767.58	3,618.86	3,103.93	0.48	-0.11	0.108
45.00	-28.26	-3.54	0.00	-274.6	0.00	274.64	2,139.71	767.58	3,618.86	3,103.93	0.6	-0.13	0.102
50.00	-27.03	-3.46	0.00	-256.9	0.00	256.92	2,139.71	767.58	3,618.86	3,103.93	0.74	-0.14	0.095
55.00	-25.80	-3.37	0.00	-239.6	0.00	239.64	2,139.71	767.58	3,618.86	3,103.93	0.9	-0.16	0.089
60.00	-24.57	-3.28	0.00	-222.8	0.00	222.80	2,139.71	767.58	3,618.86	3,103.93	1.07	-0.17	0.083
60.00	-24.57	-3.28	0.00	-222.8	0.00	222.80	1,948.48	681.70	2,854.35	2,471.99	1.07	-0.17	0.103
65.00	-23.46	-3.19	0.00	-206.4	0.00	206.41	1,948.48	681.70	2,854.35	2,471.99	1.26	-0.19	0.096
70.00	-22.36	-3.11	0.00	-190.4	0.00	190.44	1,948.48	681.70	2,854.35	2,471.99	1.46	-0.2	0.089
75.00	-21.25	-3.02	0.00	-174.9	0.00	174.90	1,948.48	681.70	2,854.35	2,471.99	1.69	-0.22	0.082
80.00	-20.14	-2.93	0.00	-159.8	0.00	159.81	1,948.48	681.70	2,854.35	2,471.99	1.92	-0.23	0.075
80.00	-20.14	-2.93	0.00	-159.8	0.00	159.81	1,757.14	595.82	2,180.45	1,911.67	1.92	-0.23	0.095
85.00	-19.15	-2.85	0.00	-145.2	0.00	145.15	1,757.14	595.82	2,180.45	1,911.67	2.18	-0.25	0.087
90.00	-18.16	-2.77	0.00	-130.9	0.00	130.90	1,757.14	595.82	2,180.45	1,911.67	2.45	-0.27	0.079
95.00	-17.17	-2.68	0.00	-117.1	0.00	117.06	1,757.14	595.82	2,180.45	1,911.67	2.74	-0.28	0.071
100.00	-16.19	-2.60	0.00	-103.6	0.00	103.65	1,757.14	595.82	2,180.45	1,911.67	3.04	-0.3	0.063
100.00	-16.19	-2.60	0.00	-103.6	0.00	103.65	1,565.64	509.93	1,597.15	1,422.98	3.04	-0.3	0.083
105.00	-15.32	-2.52	0.00	-90.6	0.00	90.65	1,565.64	509.93	1,597.15	1,422.98	3.36	-0.31	0.074
110.00	-14.45	-2.45	0.00	-78.0	0.00	78.02	1,565.64	509.93	1,597.15	1,422.98	3.7	-0.33	0.064
115.00	-13.58	-2.37	0.00	-65.8	0.00	65.78	1,565.64	509.93	1,597.15	1,422.98	4.05	-0.34	0.055
120.00	-12.72	-2.29	0.00	-53.9	0.00	53.94	1,565.64	509.93	1,597.15	1,422.98	4.42	-0.36	0.046
125.00	-11.85	-2.21	0.00	-42.5	0.00	42.50	1,565.64	509.93	1,597.15	1,422.98	4.8	-0.37	0.037
130.00	-10.98	-2.15	0.00	-31.5	0.00	31.47	1,565.64	509.93	1,597.15	1,422.98	5.19	-0.38	0.029
130.00	-10.98	-2.15	0.00	-31.5	0.00	31.47	1,127.22	338.17	702.39	660.47	5.19	-0.38	0.057
132.00	-8.73	-1.78	0.00	-27.2	0.00	27.17	1,127.22	338.17	702.39	660.47	5.34	-0.38	0.049
135.00	-8.36	-1.75	0.00	-21.8	0.00	21.83	1,127.22	338.17	702.39	660.47	5.59	-0.39	0.040
137.00	-6.86	-1.33	0.00	-18.2	0.00	18.19	1,127.22	338.17	702.39	660.47	5.75	-0.39	0.034
140.00	-6.50	-1.29	0.00	-14.2	0.00	14.20	1,127.22	338.17	702.39	660.47	6	-0.4	0.027
145.00	-5.90	-1.23	0.00	-7.8	0.00	7.76	1,127.22	338.17	702.39	660.47	6.43	-0.41	0.017
150.00	0.00	-1.19	0.00	-1.6	0.00	1.61	1,127.22	338.17	702.39	660.47	6.86	-0.41	0.002

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_s):	0.196
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a :	1.600
Site Coefficient F_v :	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.209
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.032
Upper Limit C_s :	0.032
Lower Limit C_s :	0.030
Period based on Rayleigh Method (sec):	1.830
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.660
Total Unfactored Dead Load:	41.860 k
Seismic Base Shear (E):	1.320 k

1.2D + 1.0Ev + 1.0Eh Seismic

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.82	-1.32	0.00	-162.03	0.00	162.03	3,293.92	1,135.57	5,940	5,174.22	0.00	0.00	0.05
5.00	-47.66	-1.32	0.00	-155.42	0.00	155.42	3,293.92	1,135.57	5,940	5,174.22	0.00	-0.01	0.05
10.00	-45.49	-1.33	0.00	-148.80	0.00	148.80	3,293.92	1,135.57	5,940	5,174.22	0.01	-0.01	0.04
15.00	-43.33	-1.33	0.00	-142.17	0.00	142.17	3,293.92	1,135.57	5,940	5,174.22	0.03	-0.02	0.04
20.00	-41.65	-1.32	0.00	-135.55	0.00	135.55	3,293.92	1,135.57	5,940	5,174.22	0.04	-0.02	0.04
20.00	-41.65	-1.32	0.00	-135.55	0.00	135.55	2,330.87	853.47	4,474	3,807.50	0.04	-0.02	0.05
25.00	-39.98	-1.32	0.00	-128.93	0.00	128.93	2,330.87	853.47	4,474	3,807.50	0.07	-0.02	0.05
30.00	-38.30	-1.32	0.00	-122.32	0.00	122.32	2,330.87	853.47	4,474	3,807.50	0.10	-0.03	0.05
35.00	-36.63	-1.31	0.00	-115.74	0.00	115.74	2,330.87	853.47	4,474	3,807.50	0.13	-0.04	0.05
40.00	-35.10	-1.30	0.00	-109.20	0.00	109.20	2,330.87	853.47	4,474	3,807.50	0.17	-0.04	0.04
40.00	-35.10	-1.30	0.00	-109.20	0.00	109.20	2,139.71	767.58	3,619	3,103.93	0.17	-0.04	0.05
45.00	-33.58	-1.29	0.00	-102.70	0.00	102.70	2,139.71	767.58	3,619	3,103.93	0.22	-0.05	0.05
50.00	-32.05	-1.27	0.00	-96.27	0.00	96.27	2,139.71	767.58	3,619	3,103.93	0.27	-0.05	0.05
55.00	-30.53	-1.26	0.00	-89.90	0.00	89.90	2,139.71	767.58	3,619	3,103.93	0.33	-0.06	0.04
60.00	-29.15	-1.24	0.00	-83.61	0.00	83.61	2,139.71	767.58	3,619	3,103.93	0.39	-0.06	0.04
60.00	-29.15	-1.24	0.00	-83.61	0.00	83.61	1,948.48	681.70	2,854	2,471.99	0.39	-0.06	0.05
65.00	-27.77	-1.22	0.00	-77.42	0.00	77.42	1,948.48	681.70	2,854	2,471.99	0.46	-0.07	0.05
70.00	-26.40	-1.20	0.00	-71.32	0.00	71.32	1,948.48	681.70	2,854	2,471.99	0.54	-0.08	0.04
75.00	-25.02	-1.17	0.00	-65.35	0.00	65.35	1,948.48	681.70	2,854	2,471.99	0.62	-0.08	0.04
80.00	-23.79	-1.14	0.00	-59.51	0.00	59.51	1,948.48	681.70	2,854	2,471.99	0.71	-0.09	0.04
80.00	-23.79	-1.14	0.00	-59.51	0.00	59.51	1,757.14	595.82	2,180	1,911.67	0.71	-0.09	0.05
85.00	-22.57	-1.11	0.00	-53.80	0.00	53.80	1,757.14	595.82	2,180	1,911.67	0.80	-0.09	0.04
90.00	-21.34	-1.08	0.00	-48.24	0.00	48.24	1,757.14	595.82	2,180	1,911.67	0.90	-0.10	0.04
95.00	-20.11	-1.04	0.00	-42.84	0.00	42.84	1,757.14	595.82	2,180	1,911.67	1.01	-0.10	0.03
100.00	-19.04	-1.01	0.00	-37.62	0.00	37.62	1,757.14	595.82	2,180	1,911.67	1.12	-0.11	0.03
100.00	-19.04	-1.01	0.00	-37.62	0.00	37.62	1,565.64	509.93	1,597	1,422.98	1.12	-0.11	0.04
105.00	-17.96	-0.97	0.00	-32.58	0.00	32.58	1,565.64	509.93	1,597	1,422.98	1.24	-0.12	0.03
110.00	-16.88	-0.93	0.00	-27.72	0.00	27.72	1,565.64	509.93	1,597	1,422.98	1.36	-0.12	0.03
115.00	-15.81	-0.89	0.00	-23.07	0.00	23.07	1,565.64	509.93	1,597	1,422.98	1.49	-0.13	0.03
115.00	-15.81	-0.89	0.00	-23.07	0.00	23.07	1,565.64	509.93	1,597	1,422.98	1.49	-0.13	0.03
120.00	-14.73	-0.84	0.00	-18.63	0.00	18.63	1,565.64	509.93	1,597	1,422.98	1.63	-0.13	0.02
125.00	-13.65	-0.79	0.00	-14.43	0.00	14.43	1,565.64	509.93	1,597	1,422.98	1.77	-0.13	0.02
130.00	-13.34	-0.77	0.00	-10.49	0.00	10.49	1,565.64	509.93	1,597	1,422.98	1.91	-0.14	0.02
130.00	-13.34	-0.77	0.00	-10.49	0.00	10.49	1,127.22	338.17	702	660.47	1.91	-0.14	0.03
132.00	-10.39	-0.62	0.00	-8.94	0.00	8.94	1,127.22	338.17	702	660.47	1.97	-0.14	0.02
135.00	-10.08	-0.61	0.00	-7.07	0.00	7.07	1,127.22	338.17	702	660.47	2.06	-0.14	0.02

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
137.00	-8.08	-0.50	0.00	-5.85	0.00	5.85	1,127.22	338.17	702	660.47	2.12	-0.14	0.02
140.00	-7.33	-0.46	0.00	-4.36	0.00	4.36	1,127.22	338.17	702	660.47	2.21	-0.15	0.01
145.00	-6.63	-0.41	0.00	-2.07	0.00	2.07	1,127.22	338.17	702	660.47	2.36	-0.15	0.01
150.00	0.00	-0.40	0.00	0.00	0.00	0.00	1,127.22	338.17	702	660.47	2.52	-0.15	0.00

0.9D - 1.0Ev + 1.0Eh Seismic (Reduced DL)

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-34.43	-1.32	0.00	-160.72	0.00	160.72	3,293.92	1,135.57	5,940	5,174.22	0.00	0.00	0.04
5.00	-32.93	-1.32	0.00	-154.12	0.00	154.12	3,293.92	1,135.57	5,940	5,174.22	0.00	-0.01	0.04
10.00	-31.44	-1.32	0.00	-147.51	0.00	147.51	3,293.92	1,135.57	5,940	5,174.22	0.01	-0.01	0.04
15.00	-29.94	-1.32	0.00	-140.90	0.00	140.90	3,293.92	1,135.57	5,940	5,174.22	0.03	-0.02	0.04
20.00	-28.78	-1.32	0.00	-134.29	0.00	134.29	3,293.92	1,135.57	5,940	5,174.22	0.04	-0.02	0.04
20.00	-28.78	-1.32	0.00	-134.29	0.00	134.29	2,330.87	853.47	4,474	3,807.50	0.04	-0.02	0.05
25.00	-27.63	-1.31	0.00	-127.70	0.00	127.70	2,330.87	853.47	4,474	3,807.50	0.07	-0.02	0.05
30.00	-26.47	-1.31	0.00	-121.13	0.00	121.13	2,330.87	853.47	4,474	3,807.50	0.10	-0.03	0.04
35.00	-25.31	-1.30	0.00	-114.58	0.00	114.58	2,330.87	853.47	4,474	3,807.50	0.13	-0.04	0.04
40.00	-24.26	-1.29	0.00	-108.08	0.00	108.08	2,330.87	853.47	4,474	3,807.50	0.17	-0.04	0.04
40.00	-24.26	-1.29	0.00	-108.08	0.00	108.08	2,139.71	767.58	3,619	3,103.93	0.17	-0.04	0.05
45.00	-23.20	-1.28	0.00	-101.62	0.00	101.62	2,139.71	767.58	3,619	3,103.93	0.22	-0.05	0.04
50.00	-22.15	-1.26	0.00	-95.23	0.00	95.23	2,139.71	767.58	3,619	3,103.93	0.27	-0.05	0.04
55.00	-21.09	-1.25	0.00	-88.91	0.00	88.91	2,139.71	767.58	3,619	3,103.93	0.33	-0.06	0.04
60.00	-20.14	-1.23	0.00	-82.68	0.00	82.68	2,139.71	767.58	3,619	3,103.93	0.39	-0.06	0.04
60.00	-20.14	-1.23	0.00	-82.68	0.00	82.68	1,948.48	681.70	2,854	2,471.99	0.39	-0.06	0.04
65.00	-19.19	-1.21	0.00	-76.53	0.00	76.53	1,948.48	681.70	2,854	2,471.99	0.46	-0.07	0.04
70.00	-18.24	-1.18	0.00	-70.50	0.00	70.50	1,948.48	681.70	2,854	2,471.99	0.53	-0.07	0.04
75.00	-17.29	-1.16	0.00	-64.58	0.00	64.58	1,948.48	681.70	2,854	2,471.99	0.61	-0.08	0.04
80.00	-16.44	-1.13	0.00	-58.79	0.00	58.79	1,948.48	681.70	2,854	2,471.99	0.70	-0.09	0.03
80.00	-16.44	-1.13	0.00	-58.79	0.00	58.79	1,757.14	595.82	2,180	1,911.67	0.70	-0.09	0.04
85.00	-15.60	-1.10	0.00	-53.15	0.00	53.15	1,757.14	595.82	2,180	1,911.67	0.79	-0.09	0.04
90.00	-14.75	-1.07	0.00	-47.65	0.00	47.65	1,757.14	595.82	2,180	1,911.67	0.89	-0.10	0.03
95.00	-13.90	-1.03	0.00	-42.31	0.00	42.31	1,757.14	595.82	2,180	1,911.67	1.00	-0.10	0.03
100.00	-13.16	-1.00	0.00	-37.15	0.00	37.15	1,757.14	595.82	2,180	1,911.67	1.11	-0.11	0.03
100.00	-13.16	-1.00	0.00	-37.15	0.00	37.15	1,565.64	509.93	1,597	1,422.98	1.11	-0.11	0.04
105.00	-12.41	-0.96	0.00	-32.16	0.00	32.16	1,565.64	509.93	1,597	1,422.98	1.23	-0.11	0.03
110.00	-11.67	-0.92	0.00	-27.36	0.00	27.36	1,565.64	509.93	1,597	1,422.98	1.35	-0.12	0.03
115.00	-10.92	-0.88	0.00	-22.77	0.00	22.77	1,565.64	509.93	1,597	1,422.98	1.48	-0.13	0.02
115.00	-10.92	-0.88	0.00	-22.77	0.00	22.77	1,565.64	509.93	1,597	1,422.98	1.48	-0.13	0.02
120.00	-10.18	-0.83	0.00	-18.39	0.00	18.39	1,565.64	509.93	1,597	1,422.98	1.61	-0.13	0.02
125.00	-9.43	-0.78	0.00	-14.24	0.00	14.24	1,565.64	509.93	1,597	1,422.98	1.75	-0.13	0.02
130.00	-9.22	-0.76	0.00	-10.35	0.00	10.35	1,565.64	509.93	1,597	1,422.98	1.89	-0.14	0.01
130.00	-9.22	-0.76	0.00	-10.35	0.00	10.35	1,127.22	338.17	702	660.47	1.89	-0.14	0.02
132.00	-7.18	-0.62	0.00	-8.82	0.00	8.82	1,127.22	338.17	702	660.47	1.95	-0.14	0.02
135.00	-6.96	-0.60	0.00	-6.98	0.00	6.98	1,127.22	338.17	702	660.47	2.04	-0.14	0.02
137.00	-5.58	-0.49	0.00	-5.78	0.00	5.78	1,127.22	338.17	702	660.47	2.09	-0.14	0.01
140.00	-5.07	-0.45	0.00	-4.30	0.00	4.30	1,127.22	338.17	702	660.47	2.19	-0.14	0.01
145.00	-4.58	-0.41	0.00	-2.04	0.00	2.04	1,127.22	338.17	702	660.47	2.34	-0.15	0.01
150.00	0.00	-0.40	0.00	0.00	0.00	0.00	1,127.22	338.17	702	660.47	2.49	-0.15	0.00

ANALYSIS SUMMARY

Load Case	Base Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	18.51	0.00	50.23	0.00	0.00	1966.00	20.00	0.44
0.9D + 1.0W	18.50	0.00	37.67	0.00	0.00	1953.20	20.00	0.43
1.2D + 1.0Di + 1.0Wi	5.83	0.00	64.18	0.00	0.00	577.43	20.00	0.15
1.2D + 1.0Ev + 1.0Eh	1.33	0.00	49.82	0.00	0.00	162.03	20.00	0.05
0.9D - 1.0Ev + 1.0Eh	1.32	0.00	34.43	0.00	0.00	160.72	20.00	0.05
1.0D + 1.0W	4.28	0.00	41.86	0.00	0.00	452.85	20.00	0.11

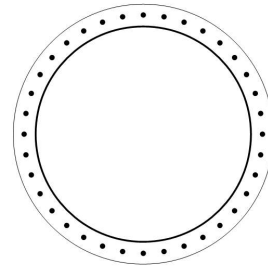
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1966	50.23	18.51

PLATE PARAMETERS (ID# 21566)

Width:	72	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	3	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	240	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22134]	Radial	36	1.5	66	A325 (>1")	81	105	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	60"Ø x 0.5" (Round)	93.4612	-	-	41367.32	-
Bolt Group	Original (36) 1.5"Ø	1.7671	1.4053	0.1571	26059.25	6.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	60"Ø x 0.5" (Round)	1966.0	50.23	18.51	1.000
Bolt Group	Original (36) 1.5"Ø	1966.0	-	18.51	1.000

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	60.12	in
Point-to-Point Diameter:	60.12	in
Orientation Offset:	-	°

Flat Width:	0.525	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	240	°
Bend Line Limits:	5.336 to 6.183	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	32.402	0.00	18.226	221.8	820.2	27.0%
Corners	32.402	0.00	18.226	221.8	820.2	27.0%
Circumferential	37.187	0.00	20.917	416.3	941.3	44.2%

PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Plastic Result
Original	36	1.5	35.0	0.8	110.7	31.6%

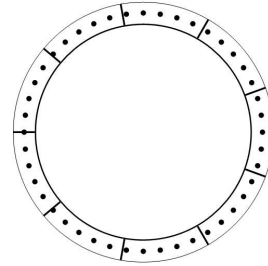
UPPER FLANGE PLATE ANALYSIS @ 20 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1605.68	41.79	17.17

PLATE PARAMETERS (ID# 21567)

Width:	72	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	270	°

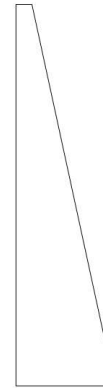


FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22131]	Radial	44	1.5	66	A325	92	120	-	-

STIFFENER PARAMETERS

Arrangement:	Radial	
Quantity:	9	
Height:	24	in
Width:	6	in
Thickness:	0.5	in
Notch:		in
Grade:	A36	
Yield Strength:	36	ksi
Tensile Strength:	58	ksi
Horizontal Weld Type:	Fillet	
Horizontal Weld Fillet Size:	0.125	in
Vertical Weld Fillet Size:	0.125	in
Weld Strength:	70	ksi
Orientation Offset:	-	°



COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	60"Ø x 0.375" (Round)	70.2432	-	-	31218.84	-
Bolt Group	Original (44) 1.5"Ø	1.7671	1.4053	0.1571	31850.20	6.0
Stiffeners	(9) 24"H x 6"W x 0.5"T			36.0000	40.78	-

ASSET: 282660, PROSPECT CT
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 PROJECT: OAA782219

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	60"Ø x 0.375" (Round)	1605.7	41.79	17.17	1.000
Bolt Group	Original (44) 1.5"Ø	1605.7	-	17.17	1.000
Stiffeners	(9) 24"H x 6"W x 0.5"T	2.1	-	0.02	0.001

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 20 FT

POLE PROPERTIES

Flat-to-Flat Diameter: 60.12 in
 Point-to-Point Diameter: 60.12 in
 Orientation Offset: - °

Flat Width: 0.525 in
 Flat Radians: 0.017 rad

PLATE PROPERTIES

Neutral Axis: 270 °
 Bend Line Limits: 5.955 to 0.328 rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n	
Flats	32.402	4.79	20.920	192.3	941.4	20.4%	✓
Corners	32.402	4.79	20.920	192.3	941.4	20.4%	✓
Circumferential	31.463	0.00	17.698	281.1	796.4	35.3%	✓

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	44	1.5	23.4	0.6	126.5	19.2% ✓

UPPER FLANGE PLATE STIFFENER ANALYSIS

Quantity:	9	
Height:	24	in
Width:	6	in
Effective Width:	6.000	in
Thickness:	0.5	in
Notch:		in
Grade:	A36	
Yield Strength:	36	ksi
Tensile Strength:	58	ksi
Horizontal Weld Type:	Fillet	
Horizontal Weld Fillet Size:	0.125	in
Horizontal Weld Bevel Size:		in
Vertical Weld Fillet Size:	0.125	in
Weld Strength:	70	ksi
Electrode Coefficient:	1.000	

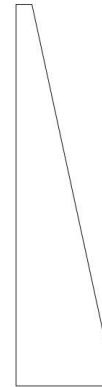


PLATE COMPRESSION

Radius of Gyration:	0.000	in ³
kl/r:	0.00	
4.71 √(E/F _y):	133.68	
Buckling Stress, F _e :	0.00	ksi
Crit. Buckling Stress, F _{cr} :	0.00	ksi
Applied Compression, P _u :	0.01	k
Compressive Capacity, φP:		k
Compressive Result, P _u /φP _n :	0.0%	✓

PLATE TENSION

Gross Cross Section:		in ²
Net Cross Section:		in ²
Applied Tension, T _u :	0.01	k
Tensile Capacity, φT _n :		k
Tension Result, T _u /φT _n :	0.0%	✓

VERTICAL WELD TO POLE

Vertical Eccentricity Ratio, a=e _x /l:	0.083	
Spacing Ratio, k:	0.021	
Weld Coefficient, C:	3.371	
Applied Compression, P _u :	0.01	k
Compressive Capacity, φP _n :	121.36	k
Horizontal Eccentricity Ratio, a=e _x /l:	0.333	
Weld Coefficient, C:	2.940	
Applied Shear, V _u :	0.00	k
Shear Capacity, φV _n :	105.84	k
Weld Result, P _u /φP _n + V _u /φV _n :	0.0%	✓

HORIZONTAL WELD TO PLATE

Horizontal Eccentricity Ratio, a=e _x /l:	0.167	
Spacing Ratio, k:	0.083	
Weld Coefficient, C:	3.900	
Effective Fillet Size:	0.125	in
Applied Compression, P _u :	0.01	k
Compressive Capacity, φP _n :	35.10	k
Vertical Eccentricity Ratio, a=e _x /l:	0.667	
Weld Coefficient, C:	2.000	
Applied Shear, V _u :	0.00	k
Shear Capacity, φV _n :	18.00	k
Weld Result, P _u /φP _n + V _u /φV _n :	0.0%	✓

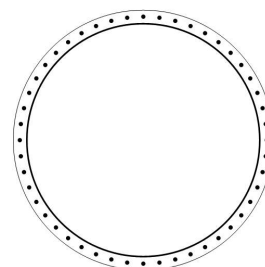
UPPER FLANGE PLATE ANALYSIS @ 40 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1272.84	35.25	15.74

PLATE PARAMETERS (ID# 21565)

Width:	60	in
Shape:	Round	
Thickness:	1.25	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	86	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22132]	Radial	48	1	57	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	54"ø x 0.375" (Round)	63.1747	-	-	22711.43	-
Bolt Group	Original (48) 1"ø	0.7854	0.6057	0.0292	11297.57	8.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	54"ø x 0.375" (Round)	1272.8	35.25	15.74	1.000
Bolt Group	Original (48) 1"ø	1272.8	-	15.74	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 40 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	54.12	in
Point-to-Point Diameter:	54.12	in
Orientation Offset:	-	°

Flat Width:	0.472	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	86	°
Bend Line Limits:	2.805 to 3.348	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	22.395	0.00	8.748	48.2	393.7	12.2%
Corners	22.395	0.00	8.748	48.2	393.7	12.2%
Circumferential	21.172	0.00	8.270	75.8	372.2	20.4%

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	48	1	19.4	0.5	54.5	36.9%

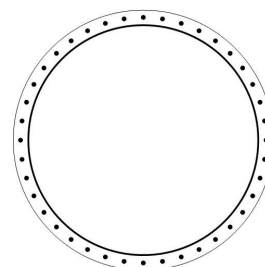
UPPER FLANGE PLATE ANALYSIS @ 60 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
969.1	29.31	14.24

PLATE PARAMETERS (ID# 21564)

Width:	54	in
Shape:	Round	
Thickness:	1.25	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	230	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22133]	Radial	40	1	51	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	48"Ø x 0.375" (Round)	56.1062	-	-	15909.73	-
Bolt Group	Original (40) 1"Ø	0.7854	0.6057	0.0292	7497.46	8.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	48"Ø x 0.375" (Round)	969.1	29.31	14.24	1.000
Bolt Group	Original (40) 1"Ø	969.1	-	14.24	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 60 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	48.12	in
Point-to-Point Diameter:	48.12	in
Orientation Offset:	-	°

Flat Width:	0.420	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	230	°
Bend Line Limits:	5.246 to 5.906	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	21.169	0.00	8.269	41.2	372.1	11.1%
Corners	21.169	0.00	8.269	41.2	372.1	11.1%
Circumferential	22.357	0.00	8.733	77.2	393.0	19.6%

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	40	1	19.8	0.6	54.5	37.8%

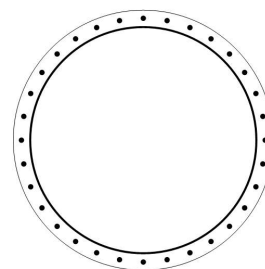
UPPER FLANGE PLATE ANALYSIS @ 80 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
695.36	23.95	12.75

PLATE PARAMETERS (ID# 21569)

Width:	48	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	225	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22135]	Radial	32	1	45	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	42"Ø x 0.375" (Round)	49.0377	-	-	10622.89	-
Bolt Group	Original (32) 1"Ø	0.7854	0.6057	0.0292	4638.67	8.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	42"Ø x 0.375" (Round)	695.4	23.95	12.75	1.000
Bolt Group	Original (32) 1"Ø	695.4	-	12.75	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 80 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	42.12	in
Point-to-Point Diameter:	42.12	in
Orientation Offset:	-	°

Flat Width:	0.368	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	225	°
Bend Line Limits:	5.177 to 5.819	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	19.867	0.00	11.175	38.9	502.9	7.7%
Corners	19.867	0.00	11.175	38.9	502.9	7.7%
Circumferential	19.998	0.00	11.249	59.2	506.2	11.7%

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	32	1	20.3	0.6	54.5	38.8%

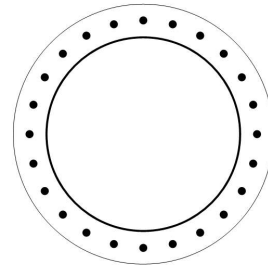
UPPER FLANGE PLATE ANALYSIS @ 100 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
451.08	19.18	11.32

PLATE PARAMETERS (ID# 21562)

Width:	48	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	7	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22136]	Radial	24	1.5	42	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	36"Ø x 0.375" (Round)	41.9692	-	-	6660.08	-
Bolt Group	Original (24) 1.5"Ø	1.7671	1.4053	0.1571	6812.37	6.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	36"Ø x 0.375" (Round)	451.1	19.18	11.32	1.000
Bolt Group	Original (24) 1.5"Ø	451.1	-	11.32	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 100 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	36.12	in
Point-to-Point Diameter:	36.12	in
Orientation Offset:	-	°

Flat Width:	0.315	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	7	°
Bend Line Limits:	1.215 to 2.188	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	25.641	0.00	14.423	107.2	649.0	16.5%
Corners	25.641	0.00	14.423	107.2	649.0	16.5%
Circumferential	29.304	0.00	16.484	181.1	741.8	24.4%

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	24	1.5	19.2	0.7	126.5	16.0%

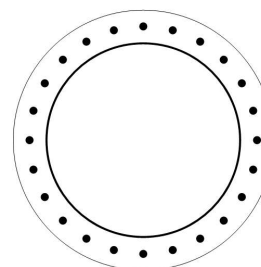
UPPER FLANGE PLATE ANALYSIS @ 115 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
286.27	16.05	10.31

PLATE PARAMETERS (ID# 21568)

Width:	48	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	7	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22137]	Radial	24	1.5	42	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	36"Ø x 0.375" (Round)	41.9692	-	-	6660.08	-
Bolt Group	Original (24) 1.5"Ø	1.7671	1.4053	0.1571	6812.37	6.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	36"Ø x 0.375" (Round)	286.3	16.05	10.31	1.000
Bolt Group	Original (24) 1.5"Ø	286.3	-	10.31	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 115 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	36.12	in	Flat Width:	0.315	in
Point-to-Point Diameter:	36.12	in	Flat Radians:	0.017	rad
Orientation Offset:	-	°			

PLATE PROPERTIES

Neutral Axis:	7	°
Bend Line Limits:	1.215 to 2.188	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	25.641	0.00	14.423	68.8	649.0	10.6%
Corners	25.641	0.00	14.423	68.8	649.0	10.6%
Circumferential	29.304	0.00	16.484	116.2	741.8	15.7%

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	24	1.5	12.5	0.7	126.5	10.6%

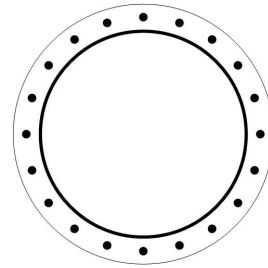
UPPER FLANGE PLATE ANALYSIS @ 130 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
136.91	12.93	9.36

PLATE PARAMETERS (ID# 21563)

Width:	30	in
Shape:	Round	
Thickness:	1	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	252	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#22138]	Radial	20	1	27	A325	92	120	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	24"ø x 0.375" (Round)	27.8322	-	-	1943.10	-
Bolt Group	Original (20) 1"ø	0.7854	0.6057	0.0292	1004.70	8.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	24"ø x 0.375" (Round)	136.9	12.93	9.36	1.000
Bolt Group	Original (20) 1"ø	136.9	-	9.36	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 130 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	24.12	in
Point-to-Point Diameter:	24.12	in
Orientation Offset:	-	°

Flat Width:	0.211	in
Flat Radians:	0.017	rad

PLATE PROPERTIES

Neutral Axis:	252	°
Bend Line Limits:	5.466 to 0.189	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n	
Flats	15.314	0.00	3.828	15.5	172.3	9.0%	✔
Corners	15.314	0.00	3.828	15.5	172.3	9.0%	✔
Circumferential	18.597	0.00	4.649	31.6	209.2	15.1%	✔

PLASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	20	1	11.4	0.7	54.5	22.9% ✔

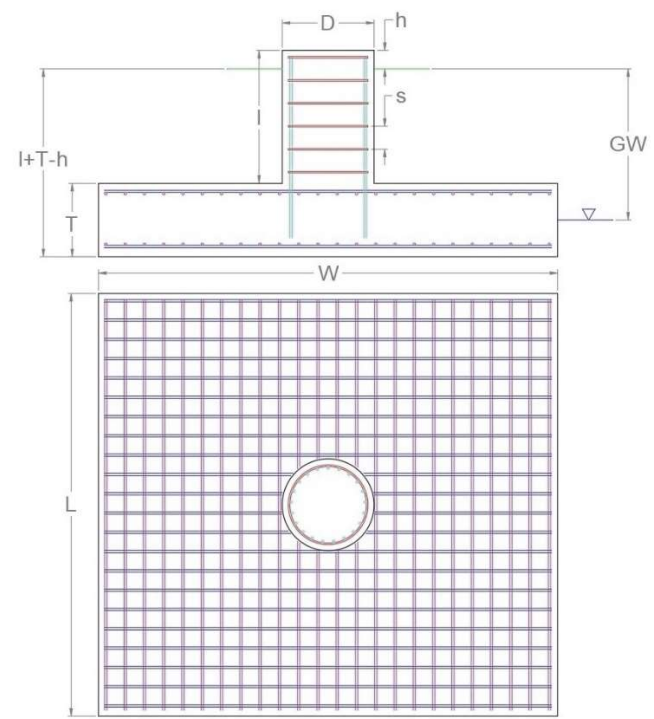


APPLIED GLOBAL REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1,966.00	50.23	18.51

FOUNDATION PARAMETERS

Mat Length:	L	25	ft
Mat Width:	W	25	ft
Mat Thickness:	T	2	ft
Base Depth:	L+T-h	4	ft
Pier Shape:		Square	
Pier Width:	D	7	ft
Pier Height above Grade:	h	1	ft
Concrete Compressive Strength:		4,000	psi
Mat Top Rebar:		(27) #9 bars [60 ksi]	
Mat Bottom Rebar:		(27) #9 bars [60 ksi]	
Pier Vertical Rebar:		(60) #7 bars [60 ksi]	
Pier Rebar Ties:	s	#4 bars @ 6.0" c/c [60 ksi]	
Rebar Clear Cover:		6.0	in
Tower Eccentricity:	ecc	0	ft
Tower Leg Count		1	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW		ft
Soil Unit Weight:		130	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		50,000	psf
Bearing Pressure Type:		Gross	
Coefficient of Shear Friction:		0.45	

SOIL STRENGTH ANALYSIS

Soil Strength Reduction Factor, Φ_s	Uplift Strength Reduction Factor, Φ_s	Asset Dead Load Factor	Dead Load Factor
0.75	0.75	0.9	1.2

SOIL OVERTURNING ANALYSIS

Design Moment, $M_{u,Design}$ (k-ft)	Nominal Overturning Capacity, $\Phi_m M_n$ (k-ft)	Soil Overturning Usage, $M_{u,Design} / \Phi_m M_n$
2,058.55	4,660.26	44.2% ✔

SOIL BEARING ANALYSIS

Net Bearing Pressure, $P_{u,Net}$ (psf)	Nominal Bearing Capacity, $\Phi_b P_n$ (k-ft)	Bearing Pressure Controlling Load Direction	Soil Bearing Usage, $P_{u,net} / \Phi_b P_n$
1,082.00	37,500.00	Diagonal to Pad Edge	2.9% ✔

SOIL SLIDING SHEAR ANALYSIS

Applied Shear Force, V_u (k)	Friction Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Nominal Shear Capacity, $\Phi_s V_n$ (k)	Soil Sliding Shear Usage, $V_u / \Phi_s V_n$
18.51	0.00	390.0	19.50	150.02	12.0% ✔

MAT REINFORCING STEEL STRENGTH ANALYSIS

Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, Φ_b	Strength Shear Reduction Factor, Φ_v	Strength Compression Reduction Factor, Φ_c
29,000	0.9	0.75	0.65

MAT REINFORCING ONE WAY SHEAR ANALYSIS

One Way Design Shear, V_u (k)	Nominal One Way Shear Capacity, $\Phi_c V_n$ (k)	One Way Shear Controlling Load Direction	Mat One Way Shear Usage, $V_u / \Phi_c V_n$
91.71	490.70	Diagonal to Pad Edge	18.7%

MAT REINFORCING PUNCHING SHEAR ANALYSIS

Punching Shear Design Stress, v_u (psi)	Nominal Punching Shear Capacity, $\Phi_c v_n$ (psi)	Mat Punching Shear Usage, $v_u / \Phi_c v_n$
52.9	189.7	27.9%

MAT REINFORCING MOMENT TRANSFER ANALYSIS

Moment Transfer Effective Flexural Width, w_t (in)	Neutral Axis Depth (in)	Pier Moment at Joint, M_{ut} (k-in)	Nominal Moment Transfer Capacity, $\Phi M_{sc,f}$ (k-in)	Mat Moment Transfer Usage, $0.6 M_{ut} / \Phi M_{sc,f}$
13.00	1.71	0.00	13,177.0	0.0%

MAT REINFORCING FLEXURE ANALYSIS – UPPER STEEL

Factored Moment, M_u (k-ft)	Nominal Flexural Capacity, ΦM_n (k-ft)	Flexural Steel Controlling Load Direction	Mat Upper Rebar Flexure Usage, $M_u / \Phi M_n$
567.00	1,968.30	Parallel to Pad Edge	28.8%

MAT REINFORCING FLEXURE ANALYSIS – LOWER STEEL

Factored Moment, M_u (k-ft)	Nominal Flexural Capacity, ΦM_n (k-ft)	Flexural Steel Controlling Load Direction	Mat Lower Rebar Flexure Usage, $M_u / \Phi M_n$
763.70	1,968.30	Parallel to Pad Edge	38.8%

PIER REINFORCING STEEL STRENGTH ANALYSIS

Rebar Cage Diameter (in)	Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, Φ_b	Strength Shear Reduction Factor, Φ_v	Strength Compression Reduction Factor, Φ_c
70.12	29,000	0.9	0.75	0.65

PIER REINFORCING MOMENT ANALYSIS

Design Moment, M_u (k-ft)	Nominal Moment Capacity, $\Phi_u M_n$ (k-ft)	Bending Reinforcement Ratio	Pier Rebar Flexure Usage, $M_u / \Phi_u M_n$
2,021.53	5,554.46	0.005	36.4%

PIER REINFORCING COMPRESSION ANALYSIS

Design Compression, P_u (k)	Nominal Compressive Capacity, $\Phi_p P_n$ (k)	Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$
50.23	12,430.08	0.4%

PIER REINFORCING SHEAR ANALYSIS

Design Shear, V_u (k)	Nominal Shear Capacity, $\Phi_v V_n$ (k)	Pier Rebar Shear Usage, $V_u / \Phi_v V_n$
18.51	873.37	2.1%