March 13, 2023

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

RE: **EM-AT&T-138-230203** - AT&T notice of intent to modify an existing telecommunication facility located at 23 Stonybrook Road, Stratford, Connecticut.
AT&T Mobility Site # 13682835

Dear Ms. Bachman:

I received a notice of incompletion concerning the above referenced matter, enumerating problems with each of the four (4) engineering documents submitted with the application. Accordingly, enclosed please find three (3) collated sets of the following documents:

- A Revised Mount Analysis dated February 27, 2023, that specifically cites the 2022 Connecticut State Building Code (CSBC);
- Revised Construction Drawings dated March 10, 2023, citing the 2022 Connecticut State Building Code (CSBC);
- Structural Modification Drawings dated March 6, 2023, citing the 2022 Connecticut State Building Code (CSBC); and
- RF Analysis dated February 28, 2023, that includes a rigorous cumulative far-field analysis for all entities located on the tower.

A pdf copy of these same documents has been emailed to your office this day.

As always, if you have any questions or comments, please feel free to contact me.

Sincerely,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

AMERICAN TOWER®
CORPORATION

Post Modification Structural Analysis Report

Structure	:	119 ft Monopole
ATC Asset Name	:	STONEYBROOK RD CT
ATC Asset Number	:	283420
Engineering Number	:	13682835_C4_10
Proposed Carrier	:	AT&T MOBILITY
Carrier Site Name	:	MRCTB051448
Carrier Site Number	:	CTL02381
Site Location	:	23 Stonybrook Road Stratford, CT 06614-3715 41.2033, -73.1486
County	:	Fairfield
Date	:	March 6, 2023
Max Usage	:	96%
Analysis Result	:	Pass

Prepared By:

Thomas Pham
Structural Engineer II

Reviewed By:

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of a post-modification structural analysis performed on the 119 ft Monopole tower to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawing:	Valmont Order #20380-10, dated July 30, 2010
Foundation Drawing:	Valmont Order #20380-60, dated June 11, 2010
Geotechnical Report:	Terracon Project #J2105132, dated April 2, 2010
Modification:	TES Job #13142, dated November 12, 2014 ATC Project #13682835_C6_06, dated January 5, 2023 (Pending)

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:	119 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:	Ss = 0.21, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

Wind load and Ice thickness have been reduced by applicable existing structure load modification factors in accordance with TIA-222-H, ANNEX-S

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 the pending modifications cited in the supporting documents table are not completed, the results of this analysis are no longer valid, and AT&T Mobility should contact American Tower's Site Manager for further direction on how to proceed.

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.

Proposed Carrier Final Loading

Elev.*	Qty	Equipment	Lines	Carrier
119.0’	3	Ericsson Air 6449 B77D	-	AT&T MOBILITY
117.0’	1	Commscope WCS-IMFQ-AMT	(1) 0.40" (10.3mm) Fiber (3) 0.82" (20.8mm) 8 AWG 6 (4) 0.92" (23.4mm) Cable (1) 2" conduit	AT&T MOBILITY
	1	Raycap DC9-48-60-24-8C-EV		
	1	Raycap DC9-48-60-24-8C-EV		
	3	CCI DMP65R-BU6DA		
	3	Ericsson RRUS 32 B2		
	3	Ericsson RRUS 4426 B66		
	3	Ericsson RRUS 4449 B5, B12		
	3	Ericsson RRUS 4478 B14		
	3	Ericsson RRUS E2 B29		
	3	Ericsson RRUS-32 B30 (77 lbs)		
	3	Quintel QD6616-7		
115.0’	3	Ericsson AIR 6419 B77G	-	AT&T MOBILITY

(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.

Install proposed lines inside the pole shaft.

Other Existing/Reserved Loading

Elev.*	Qty	Equipment	Lines	Carrier
117.0’	1	Platform with Handrails	-	-
107.0’	1	Raycap RDIDC-9181-PF-48	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604		
	3	Fujitsu TA08025-B605		
	3	JMA Wireless MX08FRO665-21		
	1	Platform with Handrails	-	-
97.0’	3	Ericsson AIR32 B66Aa/B2a	(1) 1 1/4" (1.25"- 31.8mm) Fiber (2) 1 5/8" Hybriflex (6) 7/8" Coax	T-MOBILE
	3	Ericsson Air6449 B41		
	3	Ericsson RRUS 4415 B25		
	3	Ericsson Radio 4449 B71 B85A		
	3	RFS APXVAARR24_43-U-NA20		
	1	Platform with Handrails	-	-
96.9’	3	Ericsson RRUS 01 B2 w/ Solar Shield	-	T-MOBILE
87.0’	-	-	(6) 7/8" Coax	T-MOBILE
77.0’	3	T-Arm	-	-
	1	RFS DB-C1-12C-24AB-0Z	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B2/B66A RRH-BR049		
	3	Samsung B5/B13 RRH-BR04C		
	3	Samsung MT6407-77A		
	6	Quintel QS6656-5D		

(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	57%	Pass
Base Plate	32%	Pass
Shaft	90%	Pass
Flange Bolts	16%	Pass
Flange Plates	71%	Pass
Reinforcement	96%	Pass

Foundation Reactions & Usages

Reaction Component	Analysis Reactions	Usage
Moment (k-ft)	1918.2	52%
Axial (k)	40.1	5%
Shear (k)	19.3	27%

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.

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.

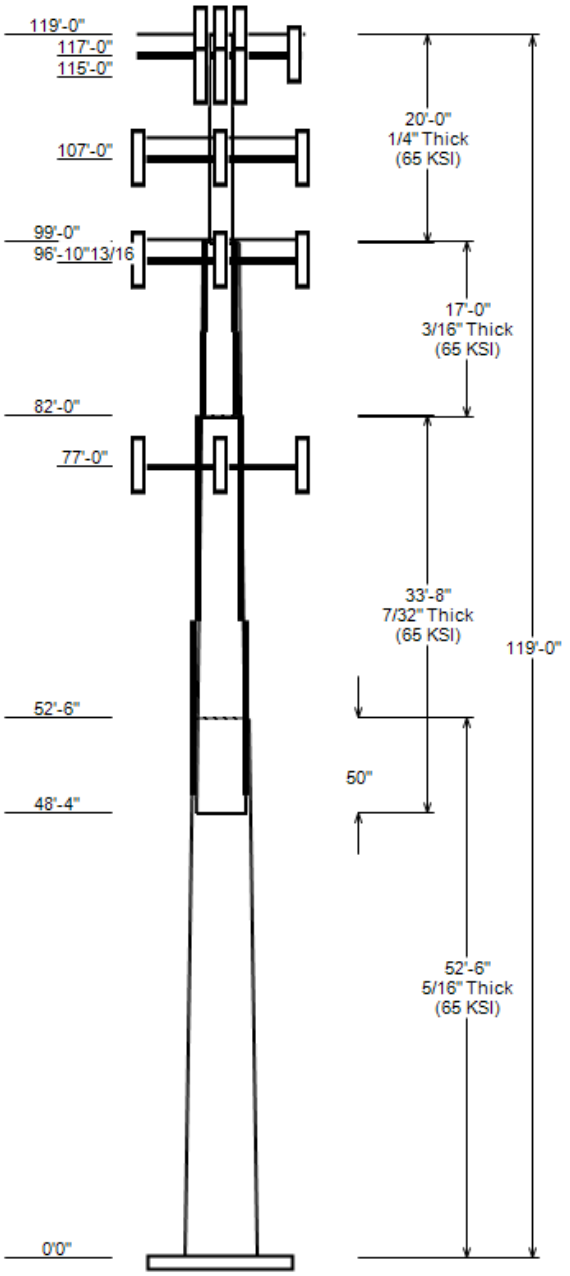
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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:	116 mph	**Ice Wind:**	49 mph w/ 0.85" ice	**Service Wind:**	60 mph
Risk Category:	II	**Exposure:**	B	**S_s:** 0.207	**S_1:** 0.054
Topo Category:	1	**Topo Factor:**	Method 1	**Topo Feature:**	
Structure Height:	119 ft	**Base Elevation:**	0.00 ft	**Structure Type:**	Custom
Base Diameter:	42 in	**Base Rotation:**	0°	**Taper:**	0.3000 (in/ft)



POLE SECTION PROPERTIES

Section	Length (ft)	Flat Diameter (in) Top	Flat Diameter (in) Bottom	Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
1	52.500	26.25	42.00	0.312		0.000	18 Sides	65
2	33.667	17.84	27.94	0.219	Slip Joint	50.000	18 Sides	65
3	17.000	12.74	17.84	0.188	Butt Joint	0.000	18 Sides	65
4	20.000	12.56	12.56	0.250	Butt Joint	0.000	18 Sides	65

DISCRETE APPURTENANCE

Elev (ft)	Description
119.0	(3) Ericsson Air 6449 B77D
117.0	(1) Commscope WCS-IMFQ-AMT
117.0	(3) Ericsson RRUS 4426 B66
117.0	(3) Ericsson RRUS 4478 B14
117.0	(3) Ericsson RRUS 4449 B5, B12
117.0	(3) Ericsson RRUS 32 B2
117.0	(3) Ericsson RRUS E2 B29
117.0	(3) Ericsson RRUS-32 B30 (77 lbs)
117.0	(1) Raycap DC9-48-60-24-8C-EV
117.0	(1) Raycap DC9-48-60-24-8C-EV
117.0	(3) CCI DMP65R-BU6DA
117.0	(1) Generic Flat Platform with Han
117.0	(3) Quintel QD6616-7
115.0	(3) Ericsson AIR 6419 B77G
107.0	(1) Raycap RDIDC-9181-PF-48
107.0	(3) Fujitsu TA08025-B605
107.0	(3) Fujitsu TA08025-B604
107.0	(3) JMA Wireless MX08FRO665-21
107.0	(1) Generic Flat Platform with Han
97.0	(3) Ericsson Radio 4449 B71 B85A
97.0	(3) Ericsson RRUS 4415 B25
97.0	(3) Ericsson Air6449 B41
97.0	(3) Ericsson AIR32 B66Aa/B2a
97.0	(3) RFS APXVAARR24_43-U-NA20
97.0	(1) Generic Flat Platform with Han
96.9	(3) Ericsson RRUS 01 B2 w/ Solar S
77.0	(3) Samsung B2/B66A RRH-BR049
77.0	(3) Samsung B5/B13 RRH-BR04C
77.0	(1) RFS DB-C1-12C-24AB-0Z
77.0	(3) Samsung MT6407-77A
77.0	(6) Quintel QS6656-5D
77.0	(3) Generic Round T-Arm

LINEAR APPURTENANCE

Elev To (ft)	Description
117.0	(1) 2" conduit
117.0	(1) 0.92" (23.4mm) Cable
117.0	(3) 0.92" (23.4mm) Cable
117.0	(3) 0.82" (20.8mm) 8 AWG 6
117.0	(1) 0.40" (10.3mm) Fiber
107.0	(1) 1.75" (44.5mm) Hybrid
105.0	(1) W8 Brackets for #20
105.0	(1) W8 Brackets for #20
105.0	(1) W8 Brackets for #20
105.0	(1) #20 w/ W Brackets
105.0	(1) #20 w/ W Brackets
105.0	(1) #20 w/ W Brackets
97.0	(6) 7/8" Coax
97.0	(2) 1 5/8" Hybriflex
97.0	(1) 1 1/4" (1.25"- 31.8mm) Fiber
92.0	(1) 1" Flat Plate
92.0	(1) 1" Flat Plate
92.0	(1) 1" Flat Plate
87.0	(6) 7/8" Coax
77.0	(2) 1 5/8" Hybriflex

GLOBAL BASE REACTIONS

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.0W	1918.22	40.10	19.30
0.9D + 1.0W	1868.96	30.06	19.27
1.2D + 1.0Di + 1.0Wi	477.06	50.77	4.83
1.2D + 1.0Ev + 1.0Eh	106.60	40.63	1.01
0.9D - 1.0Ev + 1.0Eh	103.12	27.95	1.01
1.0D + 1.0W	455.69	33.45	4.64

ANALYSIS PARAMETERS

Location:	Fairfield County,CT	**Height:**	119 ft
Type and Shape:	Custom, 18 Sides	**Base Diameter:**	42.00 in
Manufacturer:	Valmont	**Top Diameter:**	12.56 in
K_d (non-service):	0.95	**Taper:**	0.3000 in/ft
K_e:	1.00	**Rotation:**	0.000º

ICE & WIND PARAMETERS

Risk Category:	II	**Design Wind Speed:**	116 mph
Exposure Category:	B	**Design Wind Speed w/ Ice:**	49 mph
Topo Factor Procedure:	Method 1	**Design Ice Thickness:**	0.85 in
Topographic Category:	1	**Service Wind Speed:**	60 mph
Crest Height:	0 ft	**HMSL:**	77.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil		**Period Based on Rayleigh Method (sec):**		2.99
T_L (sec):	6	**P:**	1	**$C_{s:}$**	0.030
$S_{s:}$	0.207	**$S_{1:}$**	0.054	**C_s Max:**	0.030
$F_{a:}$	1.600	**$F_{v:}$**	2.400	**C_s Min:**	0.030
$S_{ds:}$	0.221	**$S_{d1:}$**	0.086		

LOAD CASES

1.2D + 1.0W	115.99 mph Wind with No Ice
0.9D + 1.0W	115.99 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	48.73 mph Wind with 0.85" 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

							Bottom						Top						
Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	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)
1-18	52.50	0.3125	65		0.00	5,991	42.00	0.000	41.35	9,078.5	21.94	134.40	26.25	52.50	25.73	2,186.6	13.05	84.00	0.3000
2-18	33.67	0.2188	65	Slip	50.00	1,803	27.94	48.333	19.25	1,868.6	20.75	127.69	17.84	82.00	12.24	479.9	12.61	81.53	0.3000
3-18	17.00	0.1875	65	Butt	0.00	520	17.84	82.000	10.50	413.4	15.01	95.14	12.74	99.00	7.47	148.6	10.22	67.94	0.3000
4-18	20.00	0.2500	65	Butt	0.00	665	12.56	99.000	9.77	187.1	7.10	50.25	12.56	119.00	9.77	187.1	7.10	50.25	0.0000
			Total Shaft Weight			**8,979**													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
119.00	Ericsson Air 6449 B77D	3	0.75	0.000	81.60	4.028	0.65	138.61	4.790	0.65
117.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3483.14	54.006	1.00
117.00	CCI DMP65R-BU6DA	3	0.75	0.000	79.40	12.709	0.63	221.96	14.252	0.63
117.00	Raycap DC9-48-60-24-8C-EV	1	0.75	0.000	16.00	4.788	0.50	87.45	5.602	0.50
117.00	Quintel QD6616-7	3	0.75	0.000	130.00	51.400	0.64	291.89	57.345	0.64
117.00	Commscope WCS-IMFQ-AMT	1	0.75	0.000	29.50	0.989	0.50	48.14	1.355	0.50
117.00	Raycap DC9-48-60-24-8C-EV	1	0.75	0.000	16.00	4.788	0.50	87.45	5.602	0.50
117.00	Ericsson RRUS 4426 B66	3	0.75	0.000	48.40	1.650	0.50	73.11	2.120	0.50
117.00	Ericsson RRUS 4478 B14	3	0.75	0.000	59.90	1.842	0.50	90.50	2.338	0.50
117.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	106.67	2.485	0.50
117.00	Ericsson RRUS 32 B2	3	0.75	1.000	53.00	2.743	0.50	93.70	3.390	0.50
117.00	Ericsson RRUS E2 B29	3	0.75	0.000	60.00	3.145	0.62	104.76	3.786	0.62
117.00	Ericsson RRUS-32 B30 (77 lbs)	3	0.75	0.000	77.00	3.314	0.50	130.82	4.024	0.50
115.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	119.63	4.524	0.65
107.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3474.31	53.902	1.00
107.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	205.47	14.030	0.64
107.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	95.88	2.467	0.50
107.00	Raycap RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	0.50	53.11	2.361	0.50
107.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	109.36	2.467	0.50
97.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	341.30	22.259	0.63
97.00	Ericsson AIR32 B66Aa/B2a	3	0.75	0.000	132.20	6.510	0.71	218.96	7.701	0.71
97.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	178.08	6.545	0.63
97.00	Ericsson RRUS 4415 B25	3	0.75	0.000	46.00	1.842	0.50	72.65	2.330	0.50
97.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	107.69	2.112	0.50
97.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3465.66	53.800	1.00
96.90	Ericsson RRUS 01 B2 w/ Solar S	3	0.75	0.000	44.00	3.146	0.50	86.44	3.793	0.50
77.00	Quintel QS6656-5D	6	0.80	0.000	88.00	8.133	0.74	193.70	9.612	0.74
77.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	135.67	5.515	0.61
77.00	RFS DB-C1-12C-24AB-0Z	1	0.80	0.000	32.00	4.056	0.50	99.42	4.780	0.50
77.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	118.24	2.354	0.50
77.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	100.65	2.354	0.50
77.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	451.09	14.074	0.67
Totals	**Row Count: 32**	**83**			**14,166.50**			**22,740.27**		

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	117.00	3	0.82" (20.8mm) 8 AWG	0.82	0.62	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	3	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	1	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	1	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	1	0.40" (10.3mm) Fiber	0.4	0.09	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	107.00	1	1.75" (44.5mm) Hybrid	1.75	2.72	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.
85.00	105.00	1	W8 Brackets for #20	2.48	6.3	Y	1	0	0	120	2.9	Y	
85.00	105.00	1	W8 Brackets for #20	2.48	6.3	Y	1	0	0	240	2.9	Y	
85.00	105.00	1	#20 w/ W Brackets	2.5	0	N	1	0	0	0	8.28	Y	
85.00	105.00	1	#20 w/ W Brackets	2.5	0	N	1	0	0	240	8.28	Y	

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
855.00	105.00	1	W8 Brackets for #20	2.48	6.3	Y	1	0	0	0	2.9	Y	
85.00	105.00	1	#20 w/ W Brackets	2.5	0	N	1	0	0	120	8.28	Y	
0.00	97.00	6	7/8" Coax	1.09	0.33	N	6	0	0.5	90	0.5	Y	T-MOBILE
0.00	97.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	T-MOBILE
0.00	97.00	1	1 1/4" (1.25"- 31.8mm	1.25	1.05	N	0	0	0	0	0	N	T-MOBILE
42.00	92.00	1	1" Flat Plate	1	30.45	Y	1	0	0	330	0	Y	
42.00	92.00	1	1" Flat Plate	1	30.45	Y	1	0	0	90	0	Y	
42.00	92.00	1	1" Flat Plate	1	30.45	Y	1	0	0	210	0	Y	
0.00	87.00	6	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	T-MOBILE
0.00	77.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIRELESS

ADDITIONAL STEEL

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Intermediate Connectors Offset (in)	Bracket Type	Spacing (in)	Length (in)	Connectors	Continuation?
45.00	62.00	3	PL PL 6" x 1"	55	0.00	5/8" Hollo Bolt	12.00	3.00	5/8" Hollo Bolt	N
62.00	82.00	3	PL PL 6" x 1"	55	0.00	5/8" Hollo Bolt	12.00	3.00	5/8" Hollo Bolt	N
82.00	90.13	3	PL PL 6" x 1"	55	0.00	5/8" Hollo Bolt	12.00	3.00	5/8" Hollo Bolt	N
90.13	99.00	3	SOL #20 All Thread Bar	80	8.28	6" T Bracket	24.00	3.31	5/8" A36 U-Bolt	N

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	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.3125	42.000	41.347	9,078.50	21.94	134.40	75.6	425.7	0.0	0.0			
5.00		0.3125	40.500	39.860	8,133.30	21.09	129.60	76.6	395.5	0.0	690.8			
10.00		0.3125	39.000	38.372	7,256.20	20.24	124.80	77.6	366.5	0.0	665.5			
15.00		0.3125	37.500	36.884	6,444.40	19.40	120.00	78.6	338.5	0.0	640.2			
20.00		0.3125	36.000	35.396	5,695.60	18.55	115.20	79.6	311.6	0.0	614.9			
25.00		0.3125	34.500	33.909	5,007.20	17.70	110.40	80.6	285.9	0.0	589.6			
30.00		0.3125	33.000	32.421	4,376.60	16.86	105.60	81.6	261.2	0.0	564.3			
35.00		0.3125	31.500	30.933	3,801.30	16.01	100.80	82.6	237.7	0.0	538.9			
40.00		0.3125	30.000	29.445	3,278.80	15.16	96.00	82.6	215.3	0.0	513.6			
45.00	Reinf Bottom	0.3125	28.500	27.957	2,806.50	14.32	91.20	82.6	194.0	0.0	488.3			
48.33	Bot - Section 2	0.3125	27.500	26.966	2,518.30	13.75	88.00	82.6	180.4	0.0	311.5	18.000	1,855.40	204.2
50.00		0.3125	27.000	26.470	2,381.90	13.47	86.40	82.6	173.8	0.0	259.7	18.000	1,847.40	102.1
52.50	Top - Section 1	0.2188	26.688	18.381	1,627.00	19.74	121.97	78.2	120.1	0.0	380.6	18.000	1,752.70	153.1
55.00		0.2188	25.938	17.860	1,492.60	19.14	118.54	78.9	113.3	0.0	154.2	18.000	1,660.50	153.1
60.00		0.2188	24.438	16.819	1,246.40	17.93	111.69	80.3	100.5	0.0	295.0	18.000	1,483.70	306.3
62.00	Reinf. Top Reinf Bottom	0.2188	23.838	16.402	1,156.00	17.45	108.95	80.9	95.5	0.0	113.0	18.000	1,415.80	122.5
65.00		0.2188	22.938	15.777	1,028.80	16.72	104.83	81.7	88.3	0.0	164.2	18.000	1,317.10	183.8
70.00		0.2188	21.438	14.735	838.20	15.51	97.98	82.6	77.0	0.0	259.6	18.000	1,160.60	306.3
75.00		0.2188	19.938	13.694	672.70	14.30	91.12	82.6	66.5	0.0	241.8	18.000	1,014.20	306.3
77.00		0.2188	19.338	13.277	613.20	13.82	88.38	82.6	62.5	0.0	91.8	18.000	958.40	122.5
80.00		0.2188	18.438	12.652	530.60	13.10	84.27	82.6	56.7	0.0	132.3	18.000	877.90	183.8
82.00	Top - Section 2 Reinf. Top Reinf Bot	0.2188	17.838	12.235	479.90	12.61	81.52	82.6	53.0	0.0	84.7	18.000	826.20	122.5
82.00	Bot - Section 3	0.1875	17.838	10.504	413.40	15.01	95.13	82.6	45.6	0.0		18.000	826.20	
85.00		0.1875	16.938	9.968	353.30	14.16	90.33	82.6	41.1	0.0	104.5	18.000	751.70	183.8
90.00		0.1875	15.438	9.075	266.70	12.75	82.33	82.6	34.0	0.0	162.0	18.000	635.70	306.3
90.13	Reinf. Top Reinf Bottom	0.1875	15.399	9.052	264.60	12.72	82.13	82.6	33.8	0.0	4.0	18.000	632.80	8.0
95.00		0.1875	13.938	8.183	195.50	11.34	74.33	82.6	27.6	0.0	142.8	14.730	1,983.20	244.0
96.90		0.1875	13.368	7.843	172.10	10.81	71.29	82.6	25.4	0.0	51.8	14.730	1,914.00	95.2
97.00		0.1875	13.338	7.826	171.00	10.78	71.13	82.6	25.2	0.0	2.7	14.730	1,910.40	5.0
99.00	Top - Section 3 Reinf. Top	0.1875	12.738	7.469	148.60	10.22	67.93	82.6	23.0	0.0	52.0	14.730	1,838.90	100.2
99.00	Bot - Section 4	0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0				
100.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	33.2			
105.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	166.2			
107.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	66.5			

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	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
110.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	99.7			
115.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	166.2			
117.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	66.5			
119.00		0.2500	12.563	9.770	187.10	7.10	50.25	82.6	29.3	0.0	66.5			
									Totals:		**8,979.1**			**3,209.0**

CALCULATED FORCES

Load Case: 1.2D + 1.0W — 115.99 mph Wind with No Ice — 27 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	-40.10	-19.30	0.00	-1,918.2	0.00	1,918.22	2,813.31	725.65	2,732.26	2,413.98	0	0	0.810
5.00	-39.03	-19.18	0.00	-1,821.7	0.00	1,821.74	2,747.79	699.53	2,539.19	2,272.29	0.16	-0.29	0.817
10.00	-38.00	-19.09	0.00	-1,725.8	0.00	1,725.82	2,679.61	673.42	2,353.20	2,132.56	0.63	-0.6	0.824
15.00	-36.99	-19.00	0.00	-1,630.4	0.00	1,630.39	2,608.76	647.31	2,174.28	1,995.03	1.44	-0.93	0.832
20.00	-36.01	-18.93	0.00	-1,535.4	0.00	1,535.38	2,535.24	621.20	2,002.44	1,859.96	2.6	-1.28	0.841
25.00	-35.05	-18.88	0.00	-1,440.7	0.00	1,440.71	2,459.06	595.09	1,837.67	1,727.58	4.14	-1.65	0.849
30.00	-34.11	-18.84	0.00	-1,346.3	0.00	1,346.31	2,380.22	568.98	1,679.97	1,598.16	6.08	-2.05	0.858
35.00	-33.20	-18.81	0.00	-1,252.1	0.00	1,252.12	2,298.17	542.87	1,529.34	1,471.58	8.45	-2.47	0.867
40.00	-32.32	-18.78	0.00	-1,158.1	0.00	1,158.08	2,187.63	516.76	1,385.79	1,332.77	11.28	-2.92	0.885
45.00	-31.15	-18.74	0.00	-1,064.2	0.00	1,064.17	2,077.10	490.65	1,249.31	1,200.82	14.6	-3.4	0.903
48.33	-30.01	-18.67	0.00	-1,001.7	0.00	1,001.69	2,003.41	473.25	1,162.25	1,116.68	17.1	-3.75	0.527
50.00	-29.31	-18.59	0.00	-970.6	0.00	970.57	1,966.57	464.54	1,119.91	1,075.76	18.43	-3.86	0.519
52.50	-28.29	-18.49	0.00	-924.1	0.00	924.08	1,293.31	322.59	771.23	704.07	20.49	-4.02	0.646
55.00	-27.51	-18.39	0.00	-877.9	0.00	877.87	1,268.09	313.45	728.15	670.62	22.64	-4.18	0.634
60.00	-26.04	-18.24	0.00	-785.9	0.00	785.93	1,215.65	295.17	645.70	605.07	27.22	-4.56	0.607
62.00	-25.43	-18.17	0.00	-749.4	0.00	749.45	1,193.93	287.85	614.11	579.41	29.16	-4.72	0.596
65.00	-24.52	-18.06	0.00	-694.9	0.00	694.94	1,160.55	276.89	568.21	541.55	32.2	-4.96	0.577
70.00	-23.07	-17.89	0.00	-604.6	0.00	604.63	1,094.76	258.60	495.66	476.80	37.6	-5.35	0.546
75.00	-21.66	-17.72	0.00	-515.2	0.00	515.19	1,017.37	240.32	428.07	411.45	43.42	-5.75	0.514
77.00	-18.64	-15.52	0.00	-479.8	0.00	479.75	986.41	233.01	402.42	386.66	45.86	-5.92	0.497
80.00	-17.82	-15.41	0.00	-433.2	0.00	433.19	939.98	222.04	365.43	350.92	49.65	-6.17	0.478
82.00	-17.27	-15.32	0.00	-402.4	0.00	402.37	780.36	184.34	293.89	282.62	52.27	-6.33	0.000
82.00	-17.27	-15.32	0.00	-402.4	0.00	402.37	909.02	214.73	341.76	328.05	52.27	-6.33	0.463
85.00	-16.46	-15.15	0.00	-356.4	0.00	356.41	740.57	174.94	264.69	254.39	56.32	-6.58	0.463
90.00	-15.14	-14.89	0.00	-280.7	0.00	280.67	674.25	159.27	219.41	210.64	63.43	-6.99	0.410
90.13	-15.07	-14.83	0.00	-278.7	0.00	278.73	672.53	158.86	218.29	209.56	63.62	-7	0.162
90.13	-15.07	-14.83	0.00	-278.7	0.00	278.73	672.53	158.86	218.29	209.56	63.62	-7	0.408
95.00	-14.20	-14.63	0.00	-206.5	0.00	206.49	607.93	143.61	178.38	171.01	70.95	-7.38	0.127
96.90	-13.81	-14.42	0.00	-178.7	0.00	178.70	582.73	137.65	163.90	157.04	73.89	-7.43	0.113
97.00	-9.52	-10.52	0.00	-177.3	0.00	177.26	581.40	137.34	163.16	156.32	74.04	-7.43	0.105
99.00	-9.28	-10.44	0.00	-156.2	0.00	156.22	725.83	171.46	190.75	181.64	77.16	-7.47	0.000
99.00	-9.28	-10.44	0.00	-156.2	0.00	156.22	554.88	131.07	148.61	142.28	77.16	-7.47	0.094
100.00	-9.13	-10.42	0.00	-145.8	0.00	145.78	725.83	171.46	190.75	181.64	78.72	-7.5	0.819
105.00	-8.71	-10.34	0.00	-93.7	0.00	93.67	725.83	171.46	190.75	181.64	87.06	-8.41	0.531
107.00	-5.21	-7.38	0.00	-73.0	0.00	72.99	725.83	171.46	190.75	181.64	90.62	-8.66	0.411
110.00	-5.04	-7.27	0.00	-50.8	0.00	50.85	725.83	171.46	190.75	181.64	96.14	-8.94	0.289
115.00	-4.59	-6.90	0.00	-14.5	0.00	14.51	725.83	171.46	190.75	181.64	105.62	-9.19	0.088
117.00	-0.33	-0.30	0.00	-0.6	0.00	0.60	725.83	171.46	190.75	181.64	109.46	-9.21	0.004
119.00	0.00	-0.24	0.00	0.0	0.00	0.00	725.83	171.46	190.75	181.64	113.3	-9.21	0.000

CALCULATED FORCES

Load Case: 0.9D + 1.0W — 115.99 mph Wind with No Ice (Reduced DL) — 26 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	-30.06	-19.27	0.00	-1,869.0	0.00	1,868.96	2,813.31	725.65	2,732.26	2,413.98	0	0	0.786
5.00	-29.24	-19.10	0.00	-1,772.6	0.00	1,772.63	2,747.79	699.53	2,539.19	2,272.29	0.15	-0.29	0.791
10.00	-28.44	-18.95	0.00	-1,677.1	0.00	1,677.13	2,679.61	673.42	2,353.20	2,132.56	0.61	-0.59	0.798
15.00	-27.67	-18.81	0.00	-1,582.4	0.00	1,582.40	2,608.76	647.31	2,174.28	1,995.03	1.4	-0.91	0.805
20.00	-26.90	-18.68	0.00	-1,488.4	0.00	1,488.37	2,535.24	621.20	2,002.44	1,859.96	2.53	-1.25	0.812
25.00	-26.16	-18.57	0.00	-1,395.0	0.00	1,394.97	2,459.06	595.09	1,837.67	1,727.58	4.03	-1.61	0.819
30.00	-25.44	-18.46	0.00	-1,302.1	0.00	1,302.14	2,380.22	568.98	1,679.97	1,598.16	5.91	-1.99	0.827
35.00	-24.73	-18.37	0.00	-1,209.8	0.00	1,209.82	2,298.17	542.87	1,529.34	1,471.58	8.21	-2.4	0.834
40.00	-24.03	-18.28	0.00	-1,118.0	0.00	1,117.97	2,187.63	516.76	1,385.79	1,332.77	10.95	-2.83	0.851
45.00	-23.13	-18.19	0.00	-1,026.6	0.00	1,026.57	2,077.10	490.65	1,249.31	1,200.82	14.17	-3.3	0.867
48.33	-22.27	-18.11	0.00	-965.9	0.00	965.92	2,003.41	473.25	1,162.25	1,116.68	16.59	-3.63	0.506
50.00	-21.74	-18.02	0.00	-935.7	0.00	935.74	1,966.57	464.54	1,119.91	1,075.76	17.88	-3.74	0.498
52.50	-20.97	-17.91	0.00	-890.7	0.00	890.69	1,293.31	322.59	771.23	704.07	19.87	-3.89	0.620
55.00	-20.37	-17.79	0.00	-845.9	0.00	845.92	1,268.09	313.45	728.15	670.62	21.95	-4.05	0.608
60.00	-19.25	-17.63	0.00	-757.0	0.00	756.98	1,215.65	295.17	645.70	605.07	26.38	-4.41	0.582
62.00	-18.79	-17.55	0.00	-721.7	0.00	721.72	1,193.93	287.85	614.11	579.41	28.26	-4.56	0.571
65.00	-18.09	-17.42	0.00	-669.1	0.00	669.07	1,160.55	276.89	568.21	541.55	31.2	-4.79	0.553
70.00	-16.98	-17.24	0.00	-582.0	0.00	581.96	1,094.76	258.60	495.66	476.80	36.42	-5.17	0.523
75.00	-15.91	-17.07	0.00	-495.8	0.00	495.79	1,017.37	240.32	428.07	411.45	42.04	-5.56	0.492
77.00	-13.68	-14.94	0.00	-461.6	0.00	461.64	986.41	233.01	402.42	386.66	44.4	-5.72	0.476
80.00	-13.06	-14.83	0.00	-416.8	0.00	416.83	939.98	222.04	365.43	350.92	48.07	-5.96	0.458
82.00	-12.63	-14.74	0.00	-387.2	0.00	387.17	780.36	184.34	293.89	282.62	50.6	-6.12	0.000
82.00	-12.63	-14.74	0.00	-387.2	0.00	387.17	909.02	214.73	341.76	328.05	50.6	-6.12	0.444
85.00	-12.02	-14.56	0.00	-342.9	0.00	342.94	740.57	174.94	264.69	254.39	54.51	-6.36	0.444
90.00	-11.02	-14.33	0.00	-270.1	0.00	270.13	674.25	159.27	219.41	210.64	61.38	-6.75	0.393
90.13	-10.96	-14.26	0.00	-268.3	0.00	268.27	672.53	158.86	218.29	209.56	61.56	-6.76	0.154
90.13	-10.96	-14.26	0.00	-268.3	0.00	268.27	672.53	158.86	218.29	209.56	61.56	-6.76	0.391
95.00	-10.30	-14.07	0.00	-198.8	0.00	198.82	607.93	143.61	178.38	171.01	68.64	-7.12	0.120
96.90	-10.02	-13.87	0.00	-172.1	0.00	172.10	582.73	137.65	163.90	157.04	71.48	-7.17	0.107
97.00	-6.89	-10.13	0.00	-170.7	0.00	170.71	581.40	137.34	163.16	156.32	71.63	-7.17	0.099
99.00	-6.71	-10.07	0.00	-150.4	0.00	150.44	725.83	171.46	190.75	181.64	74.64	-7.22	0.000
99.00	-6.71	-10.07	0.00	-150.4	0.00	150.44	554.88	131.07	148.61	142.28	74.64	-7.22	0.089
100.00	-6.58	-10.03	0.00	-140.4	0.00	140.38	725.83	171.46	190.75	181.64	76.15	-7.24	0.785
105.00	-6.25	-9.93	0.00	-90.2	0.00	90.24	725.83	171.46	190.75	181.64	84.2	-8.11	0.509
107.00	-3.70	-7.12	0.00	-70.4	0.00	70.38	725.83	171.46	190.75	181.64	87.64	-8.36	0.394
110.00	-3.57	-7.01	0.00	-49.0	0.00	49.03	725.83	171.46	190.75	181.64	92.97	-8.63	0.276
115.00	-3.24	-6.66	0.00	-14.0	0.00	13.99	725.83	171.46	190.75	181.64	102.12	-8.87	0.083
117.00	-0.24	-0.28	0.00	-0.6	0.00	0.57	725.83	171.46	190.75	181.64	105.83	-8.89	0.003
119.00	0.00	-0.24	0.00	0.0	0.00	0.00	725.83	171.46	190.75	181.64	109.54	-8.89	0.000

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi — 48.73 mph Wind with 0.85" Radial Ice — 25 Iterations

Gust Response Factor: 1.10 | Ice Dead Load Factor 1.00
Dead load Factor: 1.20 | Ice Importance 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	-50.77	-4.83	0.00	-477.1	0.00	477.06	2,813.31	725.65	2,732.26	2,413.98	0	0	0.216
5.00	-49.61	-4.80	0.00	-452.9	0.00	452.93	2,747.79	699.53	2,539.19	2,272.29	0.04	-0.07	0.217
10.00	-48.46	-4.77	0.00	-429.0	0.00	428.95	2,679.61	673.42	2,353.20	2,132.56	0.16	-0.15	0.219
15.00	-47.34	-4.75	0.00	-405.1	0.00	405.10	2,608.76	647.31	2,174.28	1,995.03	0.36	-0.23	0.221
20.00	-46.25	-4.73	0.00	-381.4	0.00	381.36	2,535.24	621.20	2,002.44	1,859.96	0.65	-0.32	0.223
25.00	-45.20	-4.72	0.00	-357.7	0.00	357.71	2,459.06	595.09	1,837.67	1,727.58	1.03	-0.41	0.225
30.00	-44.17	-4.71	0.00	-334.1	0.00	334.12	2,380.22	568.98	1,679.97	1,598.16	1.51	-0.51	0.228
35.00	-43.18	-4.70	0.00	-310.6	0.00	310.57	2,298.17	542.87	1,529.34	1,471.58	2.1	-0.61	0.230
40.00	-42.23	-4.70	0.00	-287.1	0.00	287.06	2,187.63	516.76	1,385.79	1,332.77	2.8	-0.73	0.235
45.00	-40.98	-4.69	0.00	-263.6	0.00	263.56	2,077.10	490.65	1,249.31	1,200.82	3.63	-0.85	0.239
48.33	-39.77	-4.67	0.00	-247.9	0.00	247.92	2,003.41	473.25	1,162.25	1,116.68	4.25	-0.93	0.140
50.00	-39.04	-4.65	0.00	-240.1	0.00	240.13	1,966.57	464.54	1,119.91	1,075.76	4.58	-0.96	0.138
52.50	-37.96	-4.62	0.00	-228.5	0.00	228.49	1,293.31	322.59	771.23	704.07	5.09	-1	0.171
55.00	-37.15	-4.60	0.00	-216.9	0.00	216.93	1,268.09	313.45	728.15	670.62	5.62	-1.04	0.168
60.00	-35.56	-4.56	0.00	-194.0	0.00	193.95	1,215.65	295.17	645.70	605.07	6.76	-1.13	0.161
62.00	-34.93	-4.54	0.00	-184.8	0.00	184.83	1,193.93	287.85	614.11	579.41	7.24	-1.17	0.158
65.00	-33.99	-4.51	0.00	-171.2	0.00	171.21	1,160.55	276.89	568.21	541.55	8	-1.23	0.153
70.00	-32.45	-4.47	0.00	-148.6	0.00	148.65	1,094.76	258.60	495.66	476.80	9.34	-1.33	0.144
75.00	-30.95	-4.42	0.00	-126.3	0.00	126.32	1,017.37	240.32	428.07	411.45	10.78	-1.42	0.136
77.00	-26.64	-3.89	0.00	-117.5	0.00	117.48	986.41	233.01	402.42	386.66	11.39	-1.46	0.130
80.00	-25.76	-3.86	0.00	-105.8	0.00	105.79	939.98	222.04	365.43	350.92	12.33	-1.53	0.125
82.00	-25.19	-3.84	0.00	-98.1	0.00	98.07	780.36	184.34	293.89	282.62	12.97	-1.57	0.000
82.00	-25.19	-3.84	0.00	-98.1	0.00	98.07	909.02	214.73	341.76	328.05	12.97	-1.57	0.121
85.00	-24.35	-3.81	0.00	-86.6	0.00	86.55	740.57	174.94	264.69	254.39	13.98	-1.63	0.121
90.00	-22.81	-3.69	0.00	-67.5	0.00	67.51	674.25	159.27	219.41	210.64	15.74	-1.73	0.107
90.13	-22.77	-3.68	0.00	-67.0	0.00	67.03	672.53	158.86	218.29	209.56	15.78	-1.73	0.048
90.13	-22.77	-3.68	0.00	-67.0	0.00	67.03	672.53	158.86	218.29	209.56	15.78	-1.73	0.106
95.00	-21.71	-3.57	0.00	-49.1	0.00	49.10	607.93	143.61	178.38	171.01	17.6	-1.82	0.039
96.90	-21.13	-3.49	0.00	-42.3	0.00	42.33	582.73	137.65	163.90	157.04	18.32	-1.83	0.035
97.00	-14.73	-2.58	0.00	-42.0	0.00	41.98	581.40	137.34	163.16	156.32	18.36	-1.83	0.031
99.00	-14.41	-2.53	0.00	-36.8	0.00	36.82	725.83	171.46	190.75	181.64	19.13	-1.84	0.000
99.00	-14.41	-2.53	0.00	-36.8	0.00	36.82	554.88	131.07	148.61	142.28	19.13	-1.84	0.028
100.00	-14.30	-2.52	0.00	-34.3	0.00	34.29	725.83	171.46	190.75	181.64	19.52	-1.85	0.209
105.00	-13.78	-2.43	0.00	-21.7	0.00	21.71	725.83	171.46	190.75	181.64	21.57	-2.06	0.139
107.00	-8.70	-1.71	0.00	-16.9	0.00	16.86	725.83	171.46	190.75	181.64	22.45	-2.12	0.105
110.00	-8.49	-1.68	0.00	-11.7	0.00	11.72	725.83	171.46	190.75	181.64	23.8	-2.18	0.076
115.00	-7.80	-1.58	0.00	-3.3	0.00	3.33	725.83	171.46	190.75	181.64	26.12	-2.24	0.029
117.00	-0.53	-0.08	0.00	-0.2	0.00	0.15	725.83	171.46	190.75	181.64	27.06	-2.25	0.002
119.00	0.00	-0.05	0.00	0.0	0.00	0.00	725.83	171.46	190.75	181.64	28	-2.25	0.000

CALCULATED FORCES

Load Case: 1.0D + 1.0W — 60 mph Wind with No Ice — 25 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	-33.45	-4.64	0.00	-455.7	0.00	455.69	2,813.31	725.65	2,732.26	2,413.98	0	0	0.201
5.00	-32.65	-4.61	0.00	-432.5	0.00	432.49	2,747.79	699.53	2,539.19	2,272.29	0.04	-0.07	0.202
10.00	-31.86	-4.57	0.00	-409.5	0.00	409.46	2,679.61	673.42	2,353.20	2,132.56	0.15	-0.14	0.204
15.00	-31.11	-4.55	0.00	-386.6	0.00	386.59	2,608.76	647.31	2,174.28	1,995.03	0.34	-0.22	0.206
20.00	-30.38	-4.52	0.00	-363.9	0.00	363.86	2,535.24	621.20	2,002.44	1,859.96	0.62	-0.3	0.208
25.00	-29.67	-4.50	0.00	-341.3	0.00	341.26	2,459.06	595.09	1,837.67	1,727.58	0.98	-0.39	0.210
30.00	-28.99	-4.48	0.00	-318.8	0.00	318.76	2,380.22	568.98	1,679.97	1,598.16	1.44	-0.49	0.212
35.00	-28.33	-4.47	0.00	-296.4	0.00	296.35	2,298.17	542.87	1,529.34	1,471.58	2.01	-0.59	0.214
40.00	-27.70	-4.45	0.00	-274.0	0.00	274.02	2,187.63	516.76	1,385.79	1,332.77	2.68	-0.69	0.218
45.00	-26.82	-4.44	0.00	-251.8	0.00	251.77	2,077.10	490.65	1,249.31	1,200.82	3.46	-0.81	0.223
48.33	-25.92	-4.42	0.00	-237.0	0.00	236.98	2,003.41	473.25	1,162.25	1,116.68	4.06	-0.89	0.130
50.00	-25.37	-4.40	0.00	-229.6	0.00	229.62	1,966.57	464.54	1,119.91	1,075.76	4.37	-0.91	0.128
52.50	-24.55	-4.37	0.00	-218.6	0.00	218.62	1,293.31	322.59	771.23	704.07	4.86	-0.95	0.159
55.00	-23.95	-4.35	0.00	-207.7	0.00	207.69	1,268.09	313.45	728.15	670.62	5.37	-0.99	0.156
60.00	-22.78	-4.31	0.00	-186.0	0.00	185.96	1,215.65	295.17	645.70	605.07	6.45	-1.08	0.150
62.00	-22.32	-4.29	0.00	-177.3	0.00	177.34	1,193.93	287.85	614.11	579.41	6.91	-1.12	0.147
65.00	-21.62	-4.27	0.00	-164.5	0.00	164.46	1,160.55	276.89	568.21	541.55	7.64	-1.17	0.142
70.00	-20.48	-4.23	0.00	-143.1	0.00	143.12	1,094.76	258.60	495.66	476.80	8.92	-1.27	0.135
75.00	-19.37	-4.19	0.00	-122.0	0.00	122.00	1,017.37	240.32	428.07	411.45	10.29	-1.36	0.127
77.00	-16.73	-3.67	0.00	-113.6	0.00	113.62	986.41	233.01	402.42	386.66	10.87	-1.4	0.122
80.00	-16.08	-3.64	0.00	-102.6	0.00	102.62	939.98	222.04	365.43	350.92	11.77	-1.46	0.117
82.00	-15.64	-3.62	0.00	-95.3	0.00	95.33	780.36	184.34	293.89	282.62	12.39	-1.5	0.000
82.00	-15.64	-3.62	0.00	-95.3	0.00	95.33	909.02	214.73	341.76	328.05	12.39	-1.5	0.114
85.00	-15.02	-3.58	0.00	-84.4	0.00	84.45	740.57	174.94	264.69	254.39	13.36	-1.56	0.114
90.00	-13.94	-3.53	0.00	-66.5	0.00	66.54	674.25	159.27	219.41	210.64	15.04	-1.66	0.101
90.13	-13.91	-3.51	0.00	-66.1	0.00	66.08	672.53	158.86	218.29	209.56	15.09	-1.66	0.043
90.13	-13.91	-3.51	0.00	-66.1	0.00	66.08	672.53	158.86	218.29	209.56	15.09	-1.66	0.100
95.00	-13.20	-3.46	0.00	-49.0	0.00	48.98	607.93	143.61	178.38	171.01	16.83	-1.75	0.034
96.90	-12.87	-3.41	0.00	-42.4	0.00	42.40	582.73	137.65	163.90	157.04	17.53	-1.76	0.031
97.00	-8.93	-2.50	0.00	-42.1	0.00	42.06	581.40	137.34	163.16	156.32	17.56	-1.76	0.028
99.00	-8.73	-2.48	0.00	-37.1	0.00	37.06	725.83	171.46	190.75	181.64	18.3	-1.77	0.000
99.00	-8.73	-2.48	0.00	-37.1	0.00	37.06	554.88	131.07	148.61	142.28	18.3	-1.77	0.025
100.00	-8.67	-2.47	0.00	-34.6	0.00	34.58	725.83	171.46	190.75	181.64	18.67	-1.78	0.203
105.00	-8.37	-2.45	0.00	-22.2	0.00	22.22	725.83	171.46	190.75	181.64	20.66	-1.99	0.134
107.00	-5.17	-1.75	0.00	-17.3	0.00	17.33	725.83	171.46	190.75	181.64	21.5	-2.05	0.103
110.00	-5.04	-1.72	0.00	-12.1	0.00	12.06	725.83	171.46	190.75	181.64	22.81	-2.12	0.073
115.00	-4.63	-1.64	0.00	-3.4	0.00	3.44	725.83	171.46	190.75	181.64	25.07	-2.18	0.025
117.00	-0.31	-0.07	0.00	-0.1	0.00	0.14	725.83	171.46	190.75	181.64	25.98	-2.18	0.001
119.00	0.00	-0.06	0.00	0.0	0.00	0.00	725.83	171.46	190.75	181.64	26.9	-2.18	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.207
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}):	0.221
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_S:	0.030
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	2.990
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	2.000
Total Unfactored Dead Load:	33.460 k
Seismic Base Shear (E):	1.000 k

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
35	118	66	926	0.004	4	83
34	116	85	1,141	0.005	5	106
33	112.5	212	2,683	0.012	12	264
32	108.5	127	1,498	0.007	7	158
31	106	90	1,014	0.004	4	112
30	102.5	289	3,032	0.013	13	359
29	99.5	58	571	0.002	3	72
28	98	201	1,932	0.008	9	250
27	96.95	11	100	0.000	0	13
26	95.95	204	1,880	0.008	8	254
25	92.565	704	6,034	0.027	27	876
24	90.065	28	225	0.001	1	35
23	87.5	1,080	8,265	0.036	37	1,343
22	83.5	621	4,328	0.019	19	772
21	81	429	2,814	0.012	12	534
20	78.5	649	3,997	0.018	18	807
19	76	441	2,548	0.011	11	549
18	72.5	1,115	5,862	0.026	26	1,388
17	67.5	1,133	5,162	0.023	23	1,410
16	63.5	688	2,775	0.012	12	856
15	61	462	1,721	0.008	8	575
14	57.5	1,168	3,863	0.017	17	1,454
13	53.75	591	1,707	0.008	8	735
12	51.25	817	2,147	0.010	10	1,017
11	49.1667	551	1,332	0.006	6	685
10	46.6667	894	1,946	0.009	9	1,112
9	42.5	873	1,577	0.007	7	1,086
8	37.5	624	878	0.004	4	776
7	32.5	649	686	0.003	3	808
6	27.5	675	510	0.002	2	839
5	22.5	700	354	0.002	2	871
4	17.5	725	222	0.001	1	902
3	12.5	751	117	0.000	1	934
2	7.5	776	44	0.000	0	965
1	2.5	801	5	0.000	0	997
Ericsson Air 6449 B77D	119	245	3,467	0.015	15	305
Commscope WCS-IMFQ-AMT	117	30	404	0.002	2	37
Ericsson RRUS 4426 B66	117	145	1,988	0.009	9	181

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Ericsson RRUS 4478 B14	117	180	2,460	0.011	11	224
Ericsson RRUS 4449 B5, B12	117	213	2,916	0.013	13	265
Ericsson RRUS 32 B2	117	159	2,177	0.010	10	198
Ericsson RRUS E2 B29	117	180	2,464	0.011	11	224
Ericsson RRUS-32 B30 (77 lbs)	117	231	3,162	0.014	14	287
Raycap DC9-48-60-24-8C-EV	117	16	219	0.001	1	20
Raycap DC9-48-60-24-8C-EV	117	16	219	0.001	1	20
CCI DMP65R-BU6DA	117	238	3,261	0.014	14	296
Generic Flat Platform with Handrails	117	2,500	34,222	0.151	152	3,110
Generic Flat Platform with Handrails	107	2,500	28,622	0.126	127	3,110
Generic Flat Platform with Handrails	97	2,500	23,522	0.104	104	3,110
Quintel QD6616-7	117	390	5,339	0.024	24	485
Ericsson AIR 6419 B77G	115	198	2,623	0.012	12	247
Raycap RDIDC-9181-PF-48	107	22	251	0.001	1	27
Fujitsu TA08025-B605	107	225	2,576	0.011	11	280
Fujitsu TA08025-B604	107	192	2,195	0.010	10	239
JMA Wireless MX08FRO665-21	107	194	2,215	0.010	10	241
Ericsson Radio 4449 B71 B85A	97	225	2,117	0.009	9	280
Ericsson RRUS 4415 B25	97	138	1,298	0.006	6	172
Ericsson Air6449 B41	97	312	2,936	0.013	13	388
Ericsson AIR32 B66Aa/B2a	97	397	3,732	0.016	17	493
RFS APXVAARR24_43-U-NA20	97	384	3,610	0.016	16	477
Ericsson RRUS 01 B2 w/ Solar Shield	96.9	132	1,239	0.006	5	164
Samsung B5/B13 RRH-BR04C	77	211	1,250	0.006	6	262
Samsung B2/B66A RRH-BR049	77	253	1,501	0.007	7	315
RFS DB-C1-12C-24AB-0Z	77	32	190	0.001	1	40
Samsung MT6407-77A	77	245	1,451	0.006	6	305
Quintel QS6656-5D	77	528	3,131	0.014	14	657
Generic Round T-Arm	77	938	5,558	0.025	25	1,166
	Totals:	**33,455**	**226,214**	**1.000**	**1,004**	**41,624**

SEISMIC FORCES

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
35	118	66	926	0.004	4	57
34	116	85	1,141	0.005	5	73
33	112.5	212	2,683	0.012	12	181
32	108.5	127	1,498	0.007	7	109
31	106	90	1,014	0.004	4	77
30	102.5	289	3,032	0.013	13	247
29	99.5	58	571	0.002	3	49
28	98	201	1,932	0.008	9	172
27	96.95	11	100	0.000	0	9
26	95.95	204	1,880	0.008	8	175
25	92.565	704	6,034	0.027	27	603
24	90.065	28	225	0.001	1	24
23	87.5	1,080	8,265	0.036	37	924
22	83.5	621	4,328	0.019	19	531
21	81	429	2,814	0.012	12	367
20	78.5	649	3,997	0.018	18	555
19	76	441	2,548	0.011	11	378
18	72.5	1,115	5,862	0.026	26	955
17	67.5	1,133	5,162	0.023	23	970
16	63.5	688	2,775	0.012	12	589
15	61	462	1,721	0.008	8	396
14	57.5	1,168	3,863	0.017	17	1,000
13	53.75	591	1,707	0.008	8	506
12	51.25	817	2,147	0.010	10	699
11	49.1667	551	1,332	0.006	6	471
10	46.6667	894	1,946	0.009	9	765

SEISMIC FORCES

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	42.5	873	1,577	0.007	7	747
8	37.5	624	878	0.004	4	534
7	32.5	649	686	0.003	3	556
6	27.5	675	510	0.002	2	577
5	22.5	700	354	0.002	2	599
4	17.5	725	222	0.001	1	621
3	12.5	751	117	0.000	1	642
2	7.5	776	44	0.000	0	664
1	2.5	801	5	0.000	0	686
Ericsson Air 6449 B77D	119	245	3,467	0.015	15	210
Commscope WCS-IMFQ-AMT	117	30	404	0.002	2	25
Ericsson RRUS 4426 B66	117	145	1,988	0.009	9	124
Ericsson RRUS 4478 B14	117	180	2,460	0.011	11	154
Ericsson RRUS 4449 B5, B12	117	213	2,916	0.013	13	182
Ericsson RRUS 32 B2	117	159	2,177	0.010	10	136
Ericsson RRUS E2 B29	117	180	2,464	0.011	11	154
Ericsson RRUS-32 B30 (77 lbs)	117	231	3,162	0.014	14	198
Raycap DC9-48-60-24-8C-EV	117	16	219	0.001	1	14
Raycap DC9-48-60-24-8C-EV	117	16	219	0.001	1	14
CCI DMP65R-BU6DA	117	238	3,261	0.014	14	204
Generic Flat Platform with Handrails	117	2,500	34,222	0.151	152	2,140
Generic Flat Platform with Handrails	107	2,500	28,622	0.126	127	2,140
Generic Flat Platform with Handrails	97	2,500	23,522	0.104	104	2,140
Quintel QD6616-7	117	390	5,339	0.024	24	334
Ericsson AIR 6419 B77G	115	198	2,623	0.012	12	170
Raycap RDIDC-9181-PF-48	107	22	251	0.001	1	19
Fujitsu TA08025-B605	107	225	2,576	0.011	11	193
Fujitsu TA08025-B604	107	192	2,195	0.010	10	164
JMA Wireless MX08FRO665-21	107	194	2,215	0.010	10	166
Ericsson Radio 4449 B71 B85A	97	225	2,117	0.009	9	193
Ericsson RRUS 4415 B25	97	138	1,298	0.006	6	118
Ericsson Air6449 B41	97	312	2,936	0.013	13	267
Ericsson AIR32 B66Aa/B2a	97	397	3,732	0.016	17	339
RFS APXVAARR24_43-U-NA20	97	384	3,610	0.016	16	328
Ericsson RRUS 01 B2 w/ Solar Shield	96.9	132	1,239	0.006	5	113
Samsung B5/B13 RRH-BR04C	77	211	1,250	0.006	6	180
Samsung B2/B66A RRH-BR049	77	253	1,501	0.007	7	217
RFS DB-C1-12C-24AB-0Z	77	32	190	0.001	1	27
Samsung MT6407-77A	77	245	1,451	0.006	6	210
Quintel QS6656-5D	77	528	3,131	0.014	14	452
Generic Round T-Arm	77	938	5,558	0.025	25	802
	Totals:	**33,455**	**226,214**	**1.000**	**1,004**	**28,632**

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	-40.63	-1.01	0.00	-106.60	0.00	106.60	2,813.31	725.65	2,732	2,413.98	0.00	0.00	0.06
5.00	-39.66	-1.02	0.00	-101.55	0.00	101.55	2,747.79	699.53	2,539	2,272.29	0.01	-0.02	0.06
10.00	-38.73	-1.03	0.00	-96.45	0.00	96.45	2,679.61	673.42	2,353	2,132.56	0.04	-0.03	0.06
15.00	-37.82	-1.04	0.00	-91.30	0.00	91.30	2,608.76	647.31	2,174	1,995.03	0.08	-0.05	0.06
20.00	-36.95	-1.05	0.00	-86.08	0.00	86.08	2,535.24	621.20	2,002	1,859.96	0.15	-0.07	0.06
25.00	-36.11	-1.06	0.00	-80.82	0.00	80.82	2,459.06	595.09	1,838	1,727.58	0.23	-0.09	0.06
30.00	-35.30	-1.07	0.00	-75.51	0.00	75.51	2,380.22	568.98	1,680	1,598.16	0.34	-0.11	0.06
35.00	-34.53	-1.08	0.00	-70.14	0.00	70.14	2,298.17	542.87	1,529	1,471.58	0.47	-0.14	0.06
40.00	-33.44	-1.09	0.00	-64.73	0.00	64.73	2,187.63	516.76	1,386	1,332.77	0.63	-0.16	0.06
45.00	-32.33	-1.09	0.00	-59.30	0.00	59.30	2,077.10	490.65	1,249	1,200.82	0.82	-0.19	0.07
48.33	-31.64	-1.09	0.00	-55.67	0.00	55.67	2,003.41	473.25	1,162	1,116.68	0.96	-0.21	0.04
50.00	-30.63	-1.08	0.00	-53.86	0.00	53.86	1,966.57	464.54	1,120	1,075.76	1.03	-0.22	0.04

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
52.50	-29.89	-1.07	0.00	-51.17	0.00	51.17	1,293.31	322.59	771	704.07	1.15	-0.22	0.05
55.00	-28.44	-1.06	0.00	-48.49	0.00	48.49	1,268.09	313.45	728	670.62	1.27	-0.23	0.05
60.00	-27.86	-1.05	0.00	-43.21	0.00	43.21	1,215.65	295.17	646	605.07	1.52	-0.25	0.04
62.00	-27.00	-1.04	0.00	-41.10	0.00	41.10	1,193.93	287.85	614	579.41	1.63	-0.26	0.04
62.00	-27.00	-1.04	0.00	-41.10	0.00	41.10	1,193.93	287.85	614	579.41	1.63	-0.26	0.04
65.00	-25.59	-1.02	0.00	-37.97	0.00	37.97	1,160.55	276.89	568	541.55	1.80	-0.28	0.04
70.00	-24.21	-1.00	0.00	-32.87	0.00	32.87	1,094.76	258.60	496	476.80	2.10	-0.30	0.04
75.00	-23.66	-0.99	0.00	-27.89	0.00	27.89	1,017.37	240.32	428	411.45	2.43	-0.32	0.04
77.00	-20.11	-0.90	0.00	-25.91	0.00	25.91	986.41	233.01	402	386.66	2.56	-0.33	0.04
80.00	-19.57	-0.88	0.00	-23.22	0.00	23.22	939.98	222.04	365	350.92	2.77	-0.34	0.03
82.00	-18.80	-0.86	0.00	-21.45	0.00	21.45	909.02	214.73	342	328.05	2.92	-0.35	0.03
82.00	-18.80	-0.86	0.00	-21.45	0.00	21.45	780.36	184.34	294	282.62	2.92	-0.35	0.00
85.00	-17.46	-0.83	0.00	-18.86	0.00	18.86	740.57	174.94	265	254.39	3.14	-0.36	0.03
90.00	-17.42	-0.83	0.00	-14.73	0.00	14.73	674.25	159.27	219	210.64	3.54	-0.39	0.03
90.13	-16.55	-0.80	0.00	-14.62	0.00	14.62	672.53	158.86	218	209.56	3.55	-0.39	0.03
90.13	-16.55	-0.80	0.00	-14.62	0.00	14.62	672.53	158.86	218	209.56	3.55	-0.39	0.02
95.00	-16.29	-0.79	0.00	-10.74	0.00	10.74	607.93	143.61	178	171.01	3.95	-0.41	0.02
96.90	-16.11	-0.78	0.00	-9.24	0.00	9.24	582.73	137.65	164	157.04	4.11	-0.41	0.01
97.00	-10.94	-0.57	0.00	-9.16	0.00	9.16	581.40	137.34	163	156.32	4.12	-0.41	0.01
99.00	-10.87	-0.57	0.00	-8.01	0.00	8.01	554.88	131.07	149	142.28	4.29	-0.41	0.01
99.00	-10.87	-0.57	0.00	-8.01	0.00	8.01	725.83	171.46	191	181.64	4.29	-0.41	0.00
100.00	-10.51	-0.56	0.00	-7.44	0.00	7.44	725.83	171.46	191	181.64	4.38	-0.41	0.06
105.00	-10.40	-0.56	0.00	-4.65	0.00	4.65	725.83	171.46	191	181.64	4.84	-0.46	0.04
107.00	-6.35	-0.36	0.00	-3.53	0.00	3.53	725.83	171.46	191	181.64	5.03	-0.47	0.03
110.00	-6.08	-0.35	0.00	-2.44	0.00	2.44	725.83	171.46	191	181.64	5.33	-0.48	0.02
115.00	-5.73	-0.33	0.00	-0.70	0.00	0.70	725.83	171.46	191	181.64	5.85	-0.50	0.01
117.00	-0.30	-0.02	0.00	-0.04	0.00	0.04	725.83	171.46	191	181.64	6.05	-0.50	0.00
119.00	0.00	-0.02	0.00	0.00	0.00	0.00	725.83	171.46	191	181.64	6.26	-0.50	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	-27.95	-1.01	0.00	-103.12	0.00	103.12	2,813.31	725.65	2,732	2,413.98	0.00	0.00	0.05
5.00	-27.28	-1.01	0.00	-98.09	0.00	98.09	2,747.79	699.53	2,539	2,272.29	0.01	-0.02	0.05
10.00	-26.64	-1.02	0.00	-93.02	0.00	93.02	2,679.61	673.42	2,353	2,132.56	0.03	-0.03	0.05
15.00	-26.02	-1.03	0.00	-87.91	0.00	87.91	2,608.76	647.31	2,174	1,995.03	0.08	-0.05	0.05
20.00	-25.42	-1.03	0.00	-82.78	0.00	82.78	2,535.24	621.20	2,002	1,859.96	0.14	-0.07	0.06
25.00	-24.84	-1.04	0.00	-77.60	0.00	77.60	2,459.06	595.09	1,838	1,727.58	0.22	-0.09	0.06
30.00	-24.28	-1.05	0.00	-72.40	0.00	72.40	2,380.22	568.98	1,680	1,598.16	0.33	-0.11	0.06
35.00	-23.75	-1.05	0.00	-67.18	0.00	67.18	2,298.17	542.87	1,529	1,471.58	0.46	-0.13	0.06
40.00	-23.00	-1.05	0.00	-61.92	0.00	61.92	2,187.63	516.76	1,386	1,332.77	0.61	-0.16	0.06
45.00	-22.24	-1.05	0.00	-56.67	0.00	56.67	2,077.10	490.65	1,249	1,200.82	0.79	-0.18	0.06
48.33	-21.77	-1.05	0.00	-53.17	0.00	53.17	2,003.41	473.25	1,162	1,116.68	0.92	-0.20	0.03
50.00	-21.07	-1.04	0.00	-51.43	0.00	51.43	1,966.57	464.54	1,120	1,075.76	0.99	-0.21	0.03
52.50	-20.56	-1.03	0.00	-48.84	0.00	48.84	1,293.31	322.59	771	704.07	1.10	-0.22	0.04
55.00	-19.56	-1.01	0.00	-46.26	0.00	46.26	1,268.09	313.45	728	670.62	1.22	-0.22	0.04
60.00	-19.16	-1.01	0.00	-41.19	0.00	41.19	1,215.65	295.17	646	605.07	1.46	-0.24	0.04
62.00	-18.58	-1.00	0.00	-39.17	0.00	39.17	1,193.93	287.85	614	579.41	1.57	-0.25	0.04
62.00	-18.58	-1.00	0.00	-39.17	0.00	39.17	1,193.93	287.85	614	579.41	1.57	-0.25	0.04
65.00	-17.61	-0.98	0.00	-36.17	0.00	36.17	1,160.55	276.89	568	541.55	1.73	-0.26	0.04
70.00	-16.65	-0.95	0.00	-31.29	0.00	31.29	1,094.76	258.60	496	476.80	2.02	-0.29	0.03
75.00	-16.27	-0.94	0.00	-26.54	0.00	26.54	1,017.37	240.32	428	411.45	2.33	-0.31	0.03
77.00	-13.83	-0.86	0.00	-24.65	0.00	24.65	986.41	233.01	402	386.66	2.46	-0.31	0.03
80.00	-13.46	-0.84	0.00	-22.08	0.00	22.08	939.98	222.04	365	350.92	2.66	-0.33	0.03
82.00	-12.93	-0.82	0.00	-20.39	0.00	20.39	909.02	214.73	342	328.05	2.80	-0.34	0.03
82.00	-12.93	-0.82	0.00	-20.39	0.00	20.39	780.36	184.34	294	282.62	2.80	-0.34	0.00
85.00	-12.01	-0.79	0.00	-17.92	0.00	17.92	740.57	174.94	265	254.39	3.01	-0.35	0.03
90.00	-11.98	-0.79	0.00	-13.99	0.00	13.99	674.25	159.27	219	210.64	3.39	-0.37	0.03

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
90.13	-11.38	-0.76	0.00	-13.89	0.00	13.89	672.53	158.86	218	209.56	3.40	-0.37	0.03
90.13	-11.38	-0.76	0.00	-13.89	0.00	13.89	672.53	158.86	218	209.56	3.40	-0.37	0.01
95.00	-11.21	-0.75	0.00	-10.20	0.00	10.20	607.93	143.61	178	171.01	3.79	-0.39	0.01
96.90	-11.08	-0.74	0.00	-8.77	0.00	8.77	582.73	137.65	164	157.04	3.94	-0.39	0.01
97.00	-7.53	-0.55	0.00	-8.70	0.00	8.70	581.40	137.34	163	156.32	3.95	-0.39	0.01
99.00	-7.48	-0.54	0.00	-7.61	0.00	7.61	554.88	131.07	149	142.28	4.12	-0.39	0.01
99.00	-7.48	-0.54	0.00	-7.61	0.00	7.61	725.83	171.46	191	181.64	4.12	-0.39	0.00
100.00	-7.23	-0.53	0.00	-7.06	0.00	7.06	725.83	171.46	191	181.64	4.20	-0.39	0.05
105.00	-7.15	-0.53	0.00	-4.41	0.00	4.41	725.83	171.46	191	181.64	4.63	-0.44	0.03
107.00	-4.37	-0.34	0.00	-3.35	0.00	3.35	725.83	171.46	191	181.64	4.82	-0.45	0.02
110.00	-4.18	-0.33	0.00	-2.32	0.00	2.32	725.83	171.46	191	181.64	5.11	-0.46	0.02
115.00	-3.94	-0.31	0.00	-0.66	0.00	0.66	725.83	171.46	191	181.64	5.60	-0.47	0.01
117.00	-0.21	-0.02	0.00	-0.03	0.00	0.03	725.83	171.46	191	181.64	5.80	-0.47	0.00
119.00	0.00	-0.02	0.00	0.00	0.00	0.00	725.83	171.46	191	181.64	6.00	-0.47	0.00

ANALYSIS SUMMARY

Load Case	Base Reactions Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Usage Elev (ft)	Interaction Ratio
1.2D + 1.0W	19.30	0.00	40.10	0.00	0.00	1918.22	45.00	0.9
0.9D + 1.0W	19.27	0.00	30.06	0.00	0.00	1868.96	45.00	0.87
1.2D + 1.0Di + 1.0Wi	4.83	0.00	50.77	0.00	0.00	477.06	45.00	0.24
1.2D + 1.0Ev + 1.0Eh	1.09	0.00	40.63	0.00	0.00	106.60	45.00	0.06
0.9D - 1.0Ev + 1.0Eh	1.05	0.00	27.95	0.00	0.00	103.12	45.00	0.06
1.0D + 1.0W	4.64	0.00	33.45	0.00	0.00	455.69	45.00	0.22

ADDITIONAL STEEL SUMMARY

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (k/in)	Shear Applied (kips)	phiVn (kips)	Ratio	Max Member Pu (kip)	phiPn (kip)	Ratio
45.00	62.00	PL PL 6" x 1"	526.4	6.3	25.3	0.25	274.6	285.4	0.9620
62.00	82.00	PL PL 6" x 1"	663.0	8.0	25.3	0.3148	265.0	285.4	0.9283
82.00	90.13	PL PL 6" x 1"	813.6	9.8	25.3	0.3864	212.3	285.4	0.7439
90.13	99.00	SOL #20 All Thread Bar	546.2	13.1	16.8	0.7799	118.8	338.6	0.3509

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors MQ/I (kips)	phiVn (kips)	Number Required	Number Actual	Ratio	Lower Termination Connectors MQ/I (kips)	phiVn (kip)	Number Required	Number Actual	Ratio
45.00	62.00	PL PL 6" x 1"	260.5609	25.27	11	99	0.1042	235.8226	25.27	10	12	0.7777
62.00	82.00	PL PL 6" x 1"	208.9229	25.27	9	10	0.8268	260.5609	25.27	11	99	0.1042
82.00	90.13	PL PL 6" x 1"	183.3485	25.27	8	8	0.9069	220.1234	25.27	9	99	0.0880
90.13	99.00	SOL #20 All Thread Bar	73.0652	12	7	12	0.5074	115.7111	12	10	12	0.8035

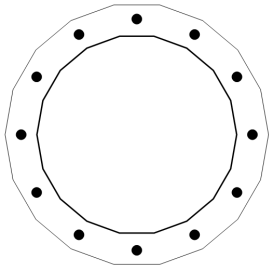
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1918.22	40.1	19.3

PLATE PARAMETERS (ID# 23384)

Width:	55.15	in
Shape:	18	
Thickness:	2	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	3.5	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	15	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F_y (ksi)	F_u (ksi)	Spacing (in)	Offset (°)
Original [ID#23998]	Radial	12	2.25	49.15	A615-75	75	100	-	-

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 0.3125" (18 Sides)	40.7191	-	-	8846.79	-
Bolt Group	Original (12) 2.25"ø	3.9761	3.2477	0.8393	10554.88	4.5

REACTION DISTRIBUTION

Component	ID	Moment M_u (k-ft)	Axial Load P_u (k)	Shear V_u (k)	Moment Factor
Pole	42"ø x 0.3125" (18 Sides)	1918.2	40.10	19.30	1.000
Bolt Group	Original (12) 2.25"ø	1918.2	-	19.30	1.000

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	42.12	in	Flat Width:	7.428	in	Neutral Axis:	15	°
Point-to-Point Diameter:	42.78	in	Flat Radians:	0.349	rad	Bend Line Limits:	1.219 to 2.446	rad
Orientation Offset:	-	°						

PLATE PROPERTIES

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 $M_u/\Phi M_n$
Flats	31.400	0.00	31.400	457.4	1413.0	32.4%
Corners	30.508	0.00	30.508	351.8	1372.9	25.6%
Circumferential	41.015	0.00	41.015	609.4	1845.7	33.0%

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)	Interaction Result
Original	12	2.25	134.7	2.4	243.6	57.3%

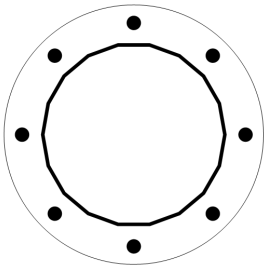
UPPER FLANGE PLATE ANALYSIS @ 99 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
156.22	9.28	10.44

PLATE PARAMETERS (ID# 23385)

Width:	18	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:	23	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F_y (ksi)	F_u (ksi)	Spacing (in)	Offset (°)
Original [ID#23997]	Radial	8	1	15.5	A490	130	150	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	12.5625"ø x 0.25" (18 Sides)	9.6212	-	-	182.52	-
Bolt Group	Original (8) 1"ø	0.7854	0.6057	0.0292	123.24	8.0

REACTION DISTRIBUTION

Component	ID	Moment M_u (k-ft)	Axial Load P_u (k)	Shear V_u (k)	Moment Factor
Pole	12.5625"ø x 0.25" (18 Sides)	156.2	9.28	10.44	1.000
Bolt Group	Original (8) 1"ø	156.2	-	10.44	1.000

UPPER FLANGE PLATE BEND LINE ANALYSIS @ 99 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	12.69	in	Flat Width:	2.237	in	Neutral Axis:	23	°
Point-to-Point Diameter:	12.88	in	Flat Radians:	0.349	rad	Bend Line Limits:	1.024 to 2.903	rad
Orientation Offset:	-	°						

PLATE PROPERTIES

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 $M_u/\Phi M_n$	
Flats	11.427	0.00	4.464	29.5	200.9	14.7%	✓
Corners	11.206	0.00	4.377	17.4	197.0	8.8%	✓
Circumferential	18.429	0.00	7.199	84.5	324.0	26.1%	✓

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	8	1	52.6	1.9	68.1	81.2%	✓

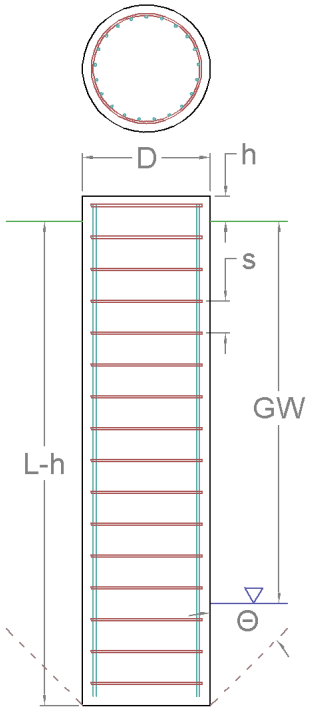
PIER FOUNDATION ANALYSIS

GLOBAL REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
1,918.22	40.10	19.30

FOUNDATION PARAMETERS

Pier Diameter:	D	6.50	ft
Pier Embedment Depth:	L-h	31.0	ft
Pier Height above Grade:	h	0.50	ft
Concrete Compressive Strength:		4,000	psi
Vertical Rebar:		(24) #9 bars [60 ksi]	
Tie Rebar:	s	#4 bars @ 12.0" c/c [60 ksi]	
Rebar Clear Cover:		3.00	in



SOIL PARAMETERS

Water Table Depth [BGL]: GW 7 ft

Layer Depth (ft) Top	Layer Depth (ft) Bottom	Unit Weight pcf	Cohesion psf	Friction Angle °	Ultimate Skin Friction psf	Ultimate Net Bearing psf
0	4	105	0	0	0	0
4	7	123	0	32	691	0
7	10	127	0	37	1,051	0
10	15	122	0	34	1,258	0
15	20	121	0	33	1,420	0
20	25	118	0	32	1,544	0
25	30	114	0	30	1,149	0
30	35	127	0	34	1,706	39,570

SOIL STRENGTH ANALYSIS

Volume of Concrete (ft^3)	Buoyant Weight of Concrete (k)	Skin Friction Resistance (k)	Inflection Point [BGL] (ft)
1,045.27	107.10	689.94	20.34

SOIL MOMENT ANALYSIS

Total Lateral Resistance (k)	Moment at Inflection Point, M_u (k-ft)	Additional Resistance (k-ft)	Nominal Moment Capacity, ΦM_n (k-ft)	Soil Moment Usage, $M_u / \Phi M_n$
2,110.19	2,320.36	0.00	10,023.97	**23.1%**

SOIL COMPRESSION ANALYSIS

Compressive Bearing Resistance (k)	Compressive Force, P_u (k)	Additional Resistance (k)	Nominal Compressive Capacity, ΦP_n (k)	Soil Compressive Usage, $P_u / \Phi P_n$
1,313.05	79.04	0.00	1,502.25	**5.3%**

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
69.872	29,000	0.9	0.75	0.65

PIER REINFORCING MOMENT ANALYSIS

Design Moment, M_u (k-ft)	Nominal Moment Capacity, $\Phi_b M_n$ (k-ft)	Bending Reinforcement Ratio	Pier Rebar Flexure Usage, $M_u/\Phi_b M_n$
1,929.20	3,695.06	0.01	**52.2%**

PIER REINFORCING COMPRESSION ANALYSIS

Buoyant Weight of Concrete (k)	Design Compression, P_u (k)	Nominal Compressive Capacity, $\Phi_p P_n$ (k)	Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$
107.10	79.04	9,154.51	**0.9%**

PIER REINFORCING SHEAR ANALYSIS

Design Shear, V_u (k)	Nominal Shear Capacity, $\Phi_v V_n$ (k)	Pier Rebar Shear Usage, $V_u / \Phi_v V_n$
147.62	548.82	**26.9%**

AMERICAN TOWER CORPORATION

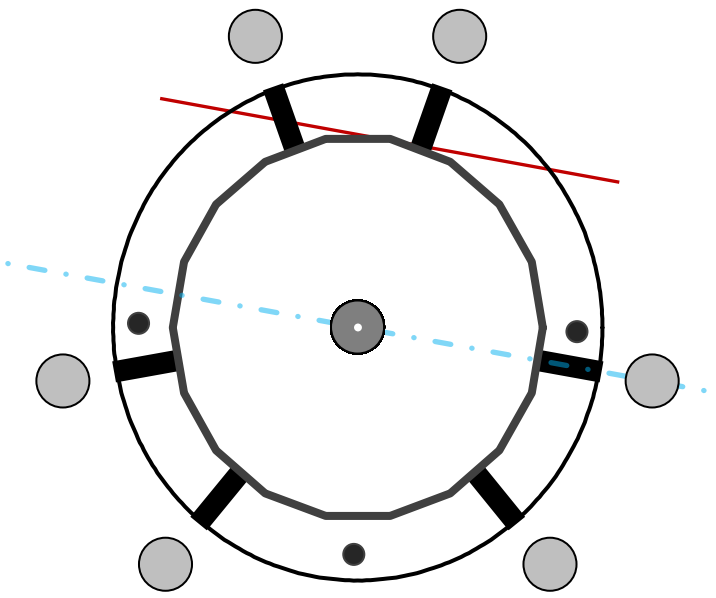
Flange Plate & Bolt Analysis at 82'

Pole Dimensions		
Number of Sides	18	-
Diameter	17.8375	in
Thickness	3/16	in
Base Weld Size	3/16	in
Orientation Offset		°

Applied Reactions		
Moment, Mu	134.2	k-ft
Axial, Pu	17.3	k
Shear, Vu	15.3	k
Analysis Type	Elastic	
Neutral Axis	350	°

Report Capacities		
Component	Capacity	Result
Flange Plate	71%	Pass
Bolts	16%	Pass
Dwyidag	-	-

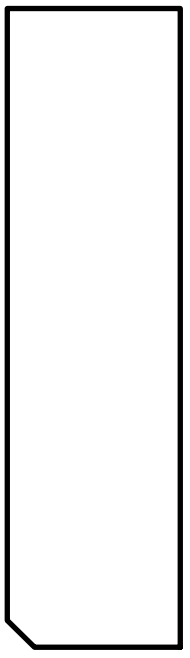
Flange Plate		
Shape	Round	-
Diameter, ø	24.2	in
Thickness	1 1/2	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	317.3	k
Bending Stress, ϕMn	449.9	k



Additional Bolts		
Quantity	6	-
Diameter, ø	2 1/2	in
Bolt Circle	29.5875	in
Grade	A572-65	
Yield Strength, Fy	65	ksi
Tensile Strength, Fu	80	ksi
Bypass Plate?	No	
Orientation Offset		°
Applied Force, Pu	36.6	k
Additional Rod, ϕPn	239.9	k

Original Bolts		
Arrangement	Cluster	-
Quantity	3	-
Diameter, ø	1	in
Bolt Circle	21.7	in
Grade	A325	
Yield Strength, Fy	92	ksi
Tensile Strength, Fu	120	ksi
Spacing	6.0	in
Orientation Offset	40	°
Applied Force, Pu	0.6	k
Anchor Rods, ϕPn	54.5	k

Stiffeners		
Arrangement	Radial	-
Quantity	6	-
Height	12	in
Width	3.181	in
Effective Width	3.181	in
Thickness	1	in
Effective Thickness	1.000	in
Notch	0.5	in
Flat Edge	3.181	in
Grade	A572-65	-
Yield Strength, Fy	65	ksi
Tensile Strength, Fu	80	ksi
Horizontal Weld	Fillet	
Horizontal Fillet Size	5/16	in
Bevel Depth		in
Vertical Weld	Fillet	
Vertical Fillet Size	5/16	in
Weld Strength	80	ksi
Electrode Coefficient	1.03	-
Orientation Offset		°
Vertical Weld, ϕRn	156.2	k
Horz. Weld, ϕRn	51.6	k
Ten. Capacity, ϕTn	144.8	k
Comp. Capacity, ϕPn	973.6	k



Individual Capacity Summary		
Component	Capacity	-
Flange Plate	71%	Pass
Bolts	7%	Pass
Plastic Rod Group	-	-
Dwyidag	-	-
Bolt Group 1	16%	Pass
Bolt Group 2	-	-
Stiffener Weld (V)	23%	Pass
Stiffener Weld (H)	70%	Pass
Stiffener Tension	9%	Pass
Stiffener Comp.	2%	Pass

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	15.3	134.2	1.00
Anchor Rod Forces	2.3	3.2	0.02
Additional Bolt (Grp1) Forces	13.0	131.0	0.98
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	10.2	89.6	0.67

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	10.3440	0.5747	0.0068		402.92
Bolt	0.7854	0.6057	0.0292	8	64.96
Bolt1	4.9087	3.9988	1.2725	4	2633.13
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	2.6810	2.4129	10.7293		808.32

Base Plate		
Shape	Round	-
Diameter, D	24.2	in
Thickness, t	1.5	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	16.354	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

External Base Plate		
Chord Length AA	14.725	in
Additional AA	4.852	in
Section Modulus, Z	11.012	in^3
Applied Moment, Mu	326.9	k-in
Bending Capacity, ϕMn	495.5	k-in
Capacity, Mu/ϕMn	66.0%	OK
Chord Length AB	14.378	in
Additional AB	3.396	in
Section Modulus, Z	9.998	in^3
Applied Moment, Mu	317.3	k-in
Bending Capacity, ϕMn	449.9	k-in
Capacity, Mu/ϕMn	70.5%	OK
Bend Line Length	0.000	in
Additional Bend Line	#N/A	in
Section Modulus, Z	#N/A	in^3
Applied Moment, Mu	346.7	k-in
Bending Capacity, ϕMn	#N/A	k-in
Capacity, Mu/ϕMn		

Anchor Rods		
Anchor Rod Quantity, N	3	-
Rod Diameter, d	1	in
Bolt Circle, BC	21.7	in
Yield Strength, Fy	92	ksi
Tensile Strength, Fu	120	ksi
Applied Axial, Pu	0.6	k
Applied Shear, Vu	1.8	k
Compressive Capacity, ϕPn	54.5	k
Axial Result	1.1%	OK
Interaction Result	7.3%	OK

Additional Bolt Group 1		
Bolt Quantity, N	6	-
Bolt Diameter, d	2.5	in
Bolt Circle, BC	29.5875	in
Yield Strength, Fy	65	ksi
Tensile Strength, Fu	80	ksi
Applied Axial, Pu	36.6	k
Applied Shear, Vu	0.6	k
Compressive Capacity, ϕPn	239.9	k
Axial Result	15.3%	OK
Interaction Result	15.7%	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	35.1	k
Applied Tensile Force, Tu	27.3	k
Applied Horizontal Force, Vu	0.48	k

Vertical Weld		
Vert.-to-Stiffener a=e_x/l	0.088	-
Spacing Ratio, k	0.083	-
Weld Coefficient, C	3.371	-
Compressive Capacity, ϕPn	156.2	k
Vert.-to-Plate a=e_x/l	0.333	-
Spacing Ratio, k	0.083	-
Weld Coefficient, C	2.940	-
Shear Capacity, ϕVn	136.3	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$	22.8%	OK

Horizontal Weld		
Horz.-to-Stiffener a=e_x/l	0.167	-
Spacing Ratio, k	0.314	-
Weld Coefficient, C	4.200	-
Effective Fillet	0.313	in
Compressive Capacity, ϕPn	51.6	k
Horz.-to-Pole a=e_x/l	0.629	-
Spacing Ratio, k	0.314	-
Weld Coefficient, C	2.070	-
Shear Capacity, ϕVn	25.4	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$	69.9%	OK

Plate Tension		
Gross Cross Section	2.681	in^2
Net Cross Section	2.413	in^2
Tensile Capacity, ϕTn	144.8	k
Capacity, Tu/ϕTn	9.4%	OK

Plate Compression		
Radius of Gyration	0.289	in^3
kl/r	24.94	-
4.71 $\sqrt{(E/Fy)}$	99.49	-
Buckling Stress(Fe)	460.1	-
Crit. Buckling Stress(Fcr)	403.5	ksi
Compressive Capacity, ϕPn	973.6	k
Capacity, Pu/ϕPn	1.8%	OK

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Asset Name	:	STONEYBROOK RD CT
ATC Asset Number	:	283420
Engineering Number	:	13682835_C8_09
Mount Elevation	:	118.75 ft
Proposed Carrier	:	AT&T Mobility
Carrier Site Name	:	MRCTB051448
Carrier Site Number	:	CTL02381
Site Location	:	23 Stonybrook Road Stratford, CT 06614-3715 41.203358, -73.148543
County	:	Fairfield
Date	:	February 27, 2023
Max Usage	:	65%
Analysis Result	:	Contingent Pass

Prepared By:
Aviskar Ghansam
Structural Engineer I

Aviskar Ghansam

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 118.75 ft.

Supporting Documents

Specifications Sheet:	Site Pro 1 RMQP-12-H5, dated November 1, 2017
Radio Frequency Data Sheet:	RFDS ID #12906923, dated November 15, 2021
Reference Photos:	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	119 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H/ 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.207, S1 = 0.054
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs

*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Analysis based on new installation of Site Pro 1 RMQP-12-H5, ANT.46132, Platform w/ Handrails(s) (M2050R(2500)-4[6]). Do not install work support catwalk below purpose mount.
- Install Site Pro 1 HRK12-HD (ANT.51651) Support Rail kit at 3'-6" above the existing platform horizontal pipe. Connect to all mount pipes using Site Pro 1 SCX7-U, ANT.16985, crossover plate kits or approved equivalent.
- Install P2 (2.375" x 72") antenna mounting pipe (Mount Pipe M, N, O) with Site Pro 1 SCX7-U, ANT.16985, (or approved equivalent) crossover plate kits.
- No structural failures were addressed with the noted contingencies. Contingencies address Carrier's antenna spacing requirements.
- The rough cost estimate, pre-MOD design, is estimated to be ≤$10k.

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.

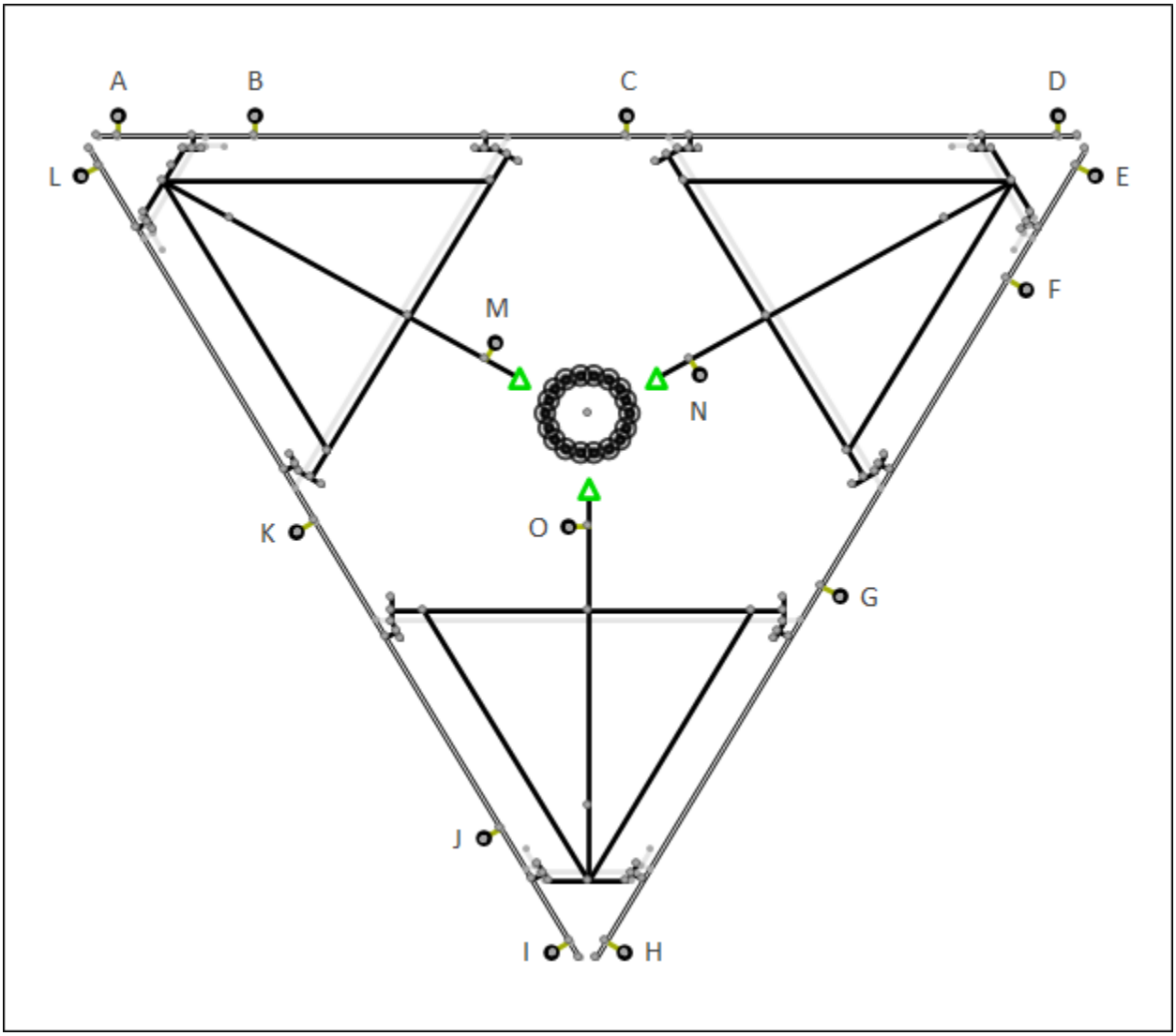
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
118.8	119.0	3	Ericsson Air 6449 B77D
	117.0	3	CCI DMP65R-BU6DA
		3	Quintel QD6616-7
		1	Raycap DC9-48-60-24-8C-EV
		1	Raycap DC9-48-60-24-8C-EV
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		3	Ericsson RRUS E2 B29
		3	Ericsson RRUS 32 B2
		3	Ericsson RRUS 4426 B66
		3	Ericsson RRUS-32 B30 (77 lbs)
		1	Commscope WCS-IMFQ-AMT
	115.0	3	Ericsson AIR 6419 B77G

Structure Usages

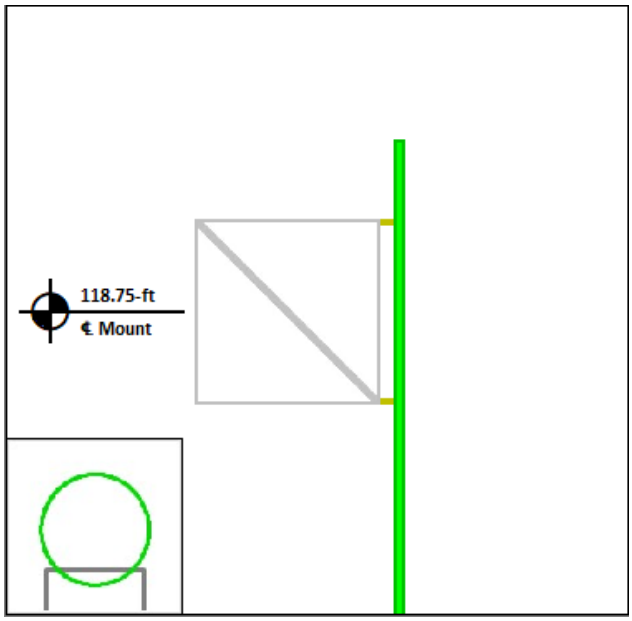
Structural Component	Controlling Usage	Pass/Fail
Horizontals	45%	Pass
Mount Pipes	65%	Pass
Connection Check	65%	Pass

Mount Layout

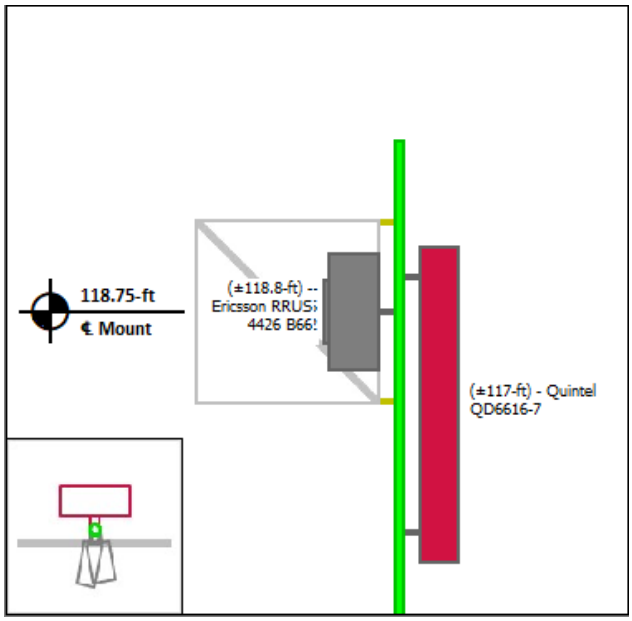


Equipment Layout

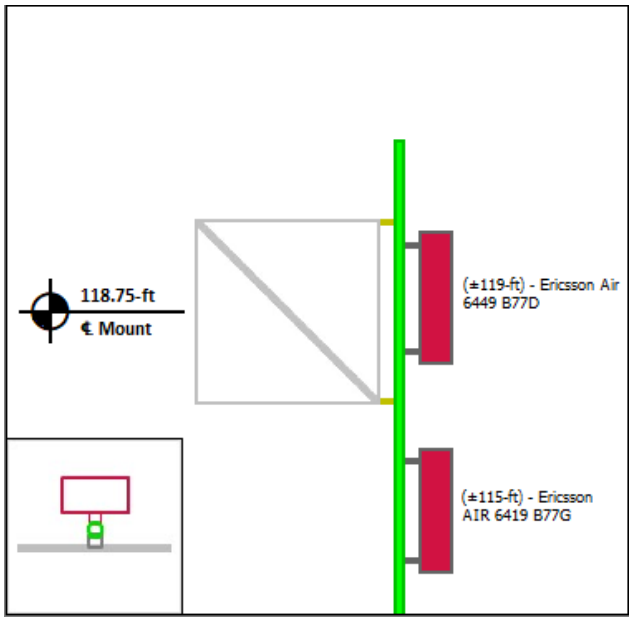
Mount Pipe A



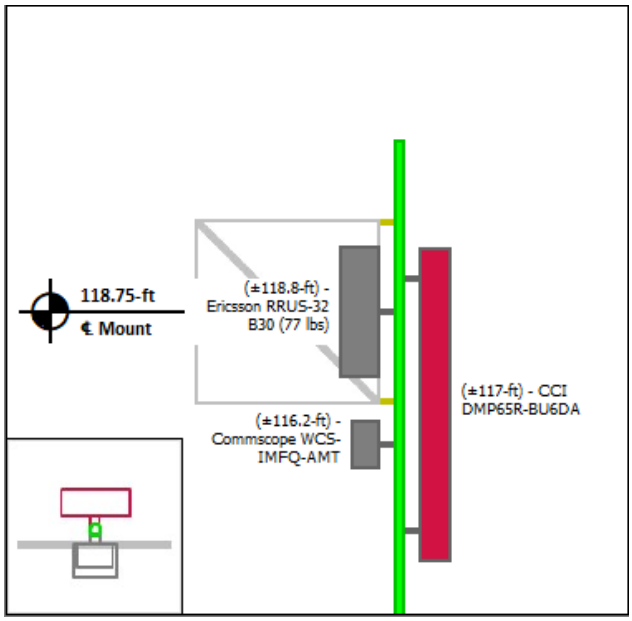
Mount Pipe B



Mount Pipe C

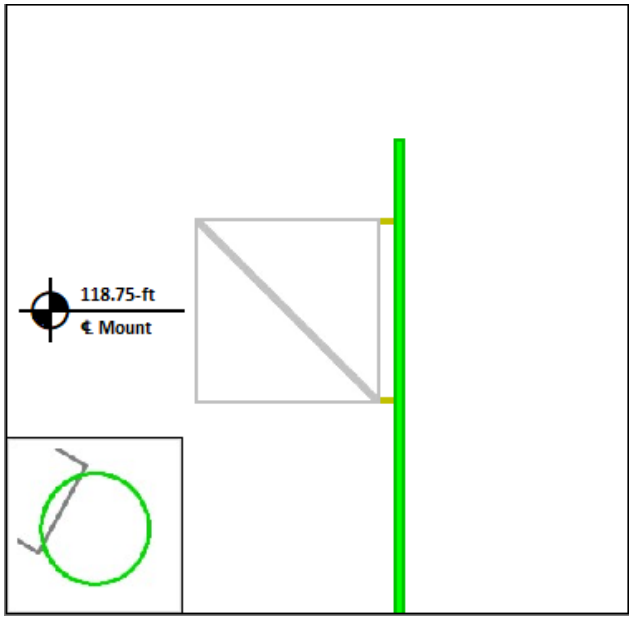


Mount Pipe D

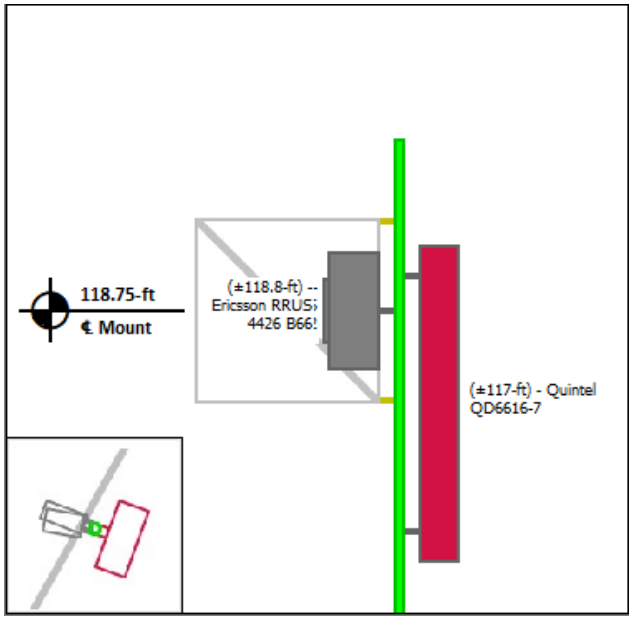


Equipment Layout Cont'd.

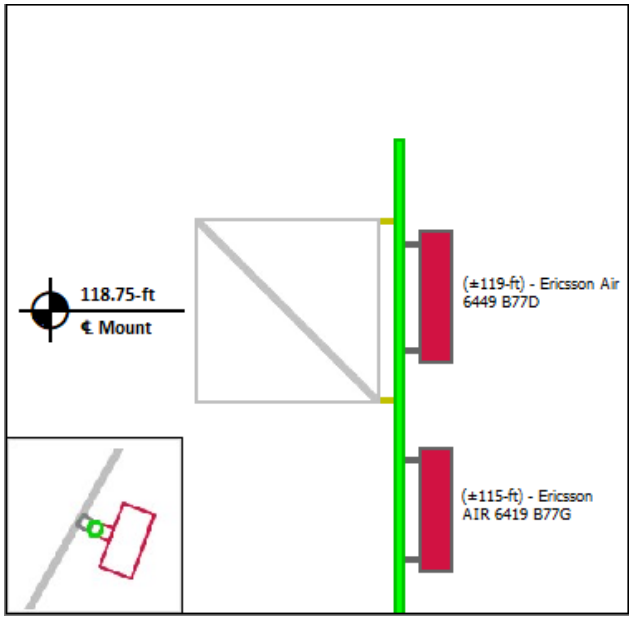
Mount Pipe E



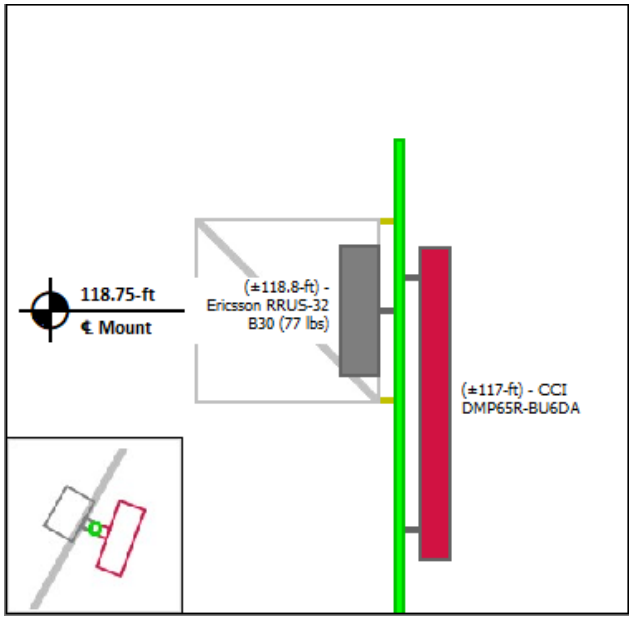
Mount Pipe F



Mount Pipe G

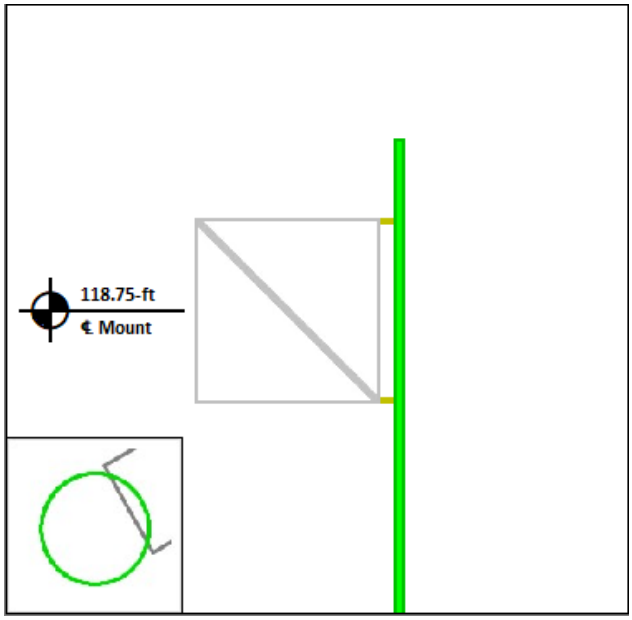


Mount Pipe H

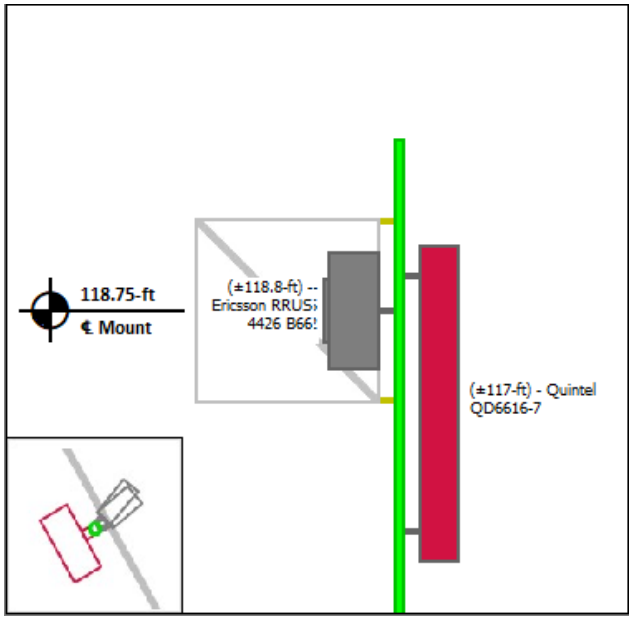


Equipment Layout Cont'd.

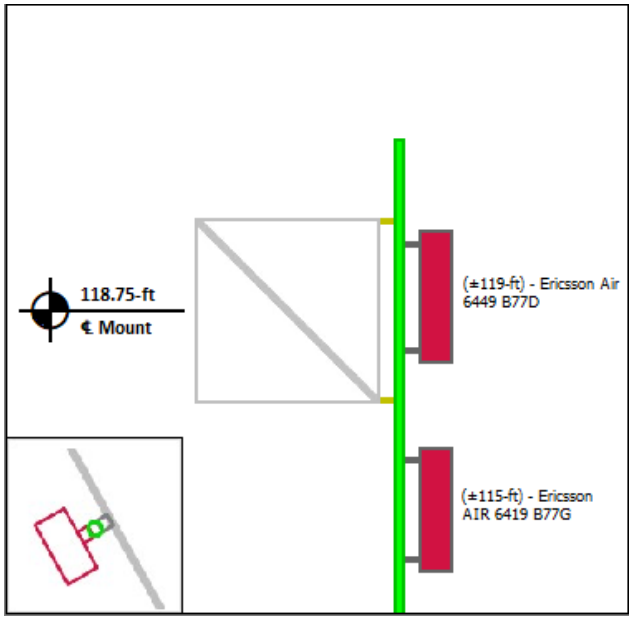
Mount Pipe I



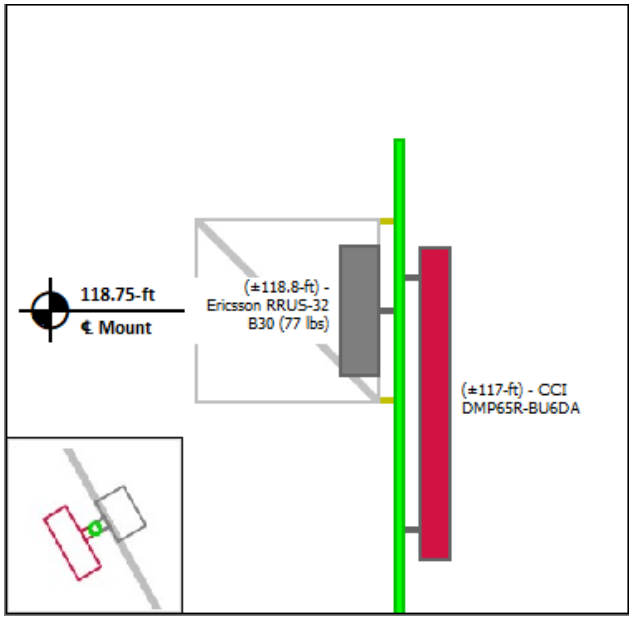
Mount Pipe J



Mount Pipe K

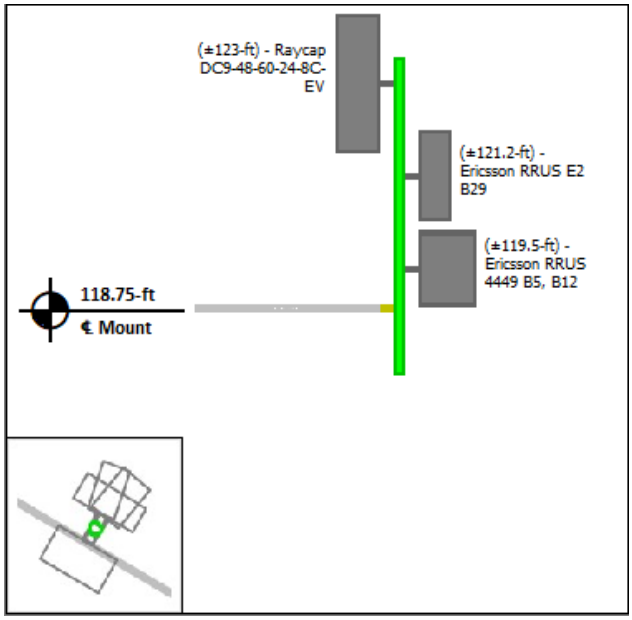


Mount Pipe L

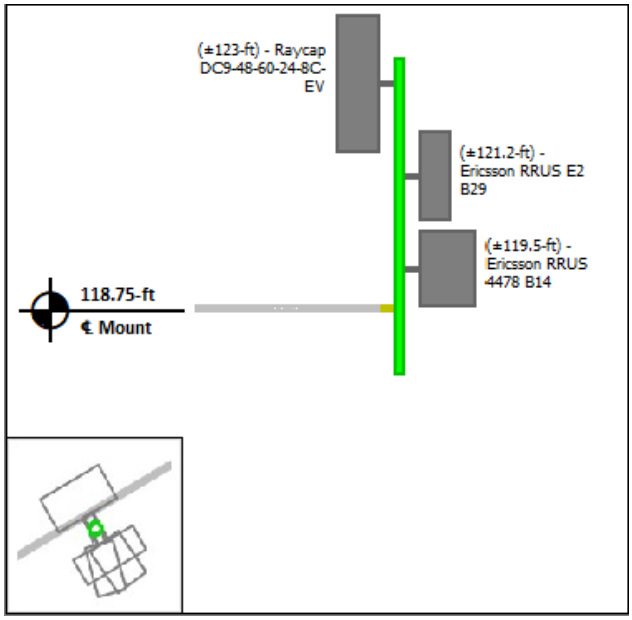


Equipment Layout Cont'd.

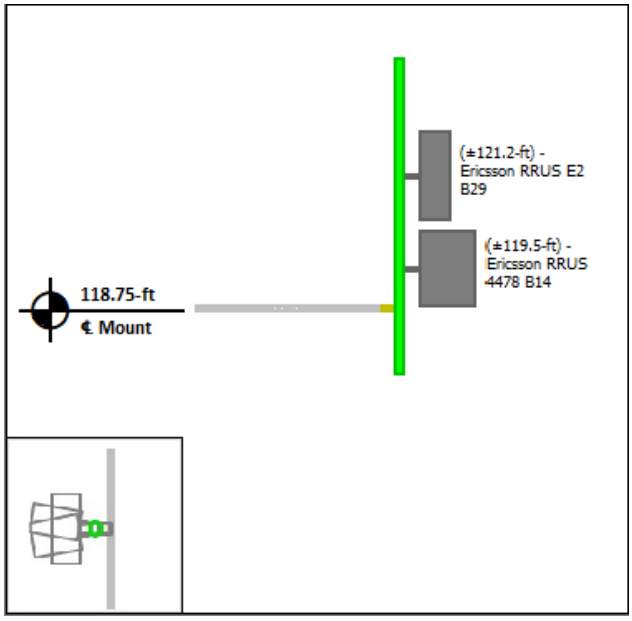
Mount Pipe M



Mount Pipe N



Mount Pipe O



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC 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 equipment, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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

AMERICAN TOWER®
CORPORATION

Site Number:	*283420*
Project Number:	*13682835_C8_09*
Carrier:	*AT&T Mobility*
Mount Elevation:	*118.75 ft*
Date:	2/27/2023

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.04	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	1.00	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	119	mph
Velocity Pressure	q_z	35.6	psf
Height Escalation Factor	K_{iz}	1.14	
Thickness of Radial Glaze Ice	T_{iz}	1.14	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.166	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.083	
Amplification Factor	A	1.0	
Total Weight	W	3824.8	lbs
Total Shear Force	V_S	316.7	lbs
Horizontal Seismic Load	Eh	316.7	lbs
Vertical Seismic Load	Ev	126.7	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson Air 6449 B77D	30.4	15.9	8.1	81.6	4.03	1.34	4.95	1.84
CCI DMP65R-BU6DA	71.2	20.7	7.7	79.4	12.71	2.29	14.56	3.06
Quintel QD6616-7	72.0	22.0	9.6	130.0	13.58	2.88	15.45	3.67
Raycap DC9-48-60-24-8C-EV	31.4	18.3	10.2	16.0	4.79	2.73	5.77	3.58
Raycap DC9-48-60-24-8C-EV	31.4	18.3	10.2	16.0	4.79	2.73	5.77	3.58
Ericsson RRUS 4449 B5, B12	17.9	13.2	9.4	71.0	1.97	1.40	2.60	1.96
Ericsson RRUS 4478 B14	16.5	13.4	7.7	59.9	1.84	1.06	2.45	1.56
Ericsson RRUS E2 B29	20.4	18.5	7.5	60.0	3.15	1.29	3.92	1.86
Ericsson RRUS 32 B2	27.2	12.1	7.0	53.0	2.74	1.67	3.53	2.39
Ericsson RRUS 4426 B66	15.0	13.2	5.8	48.4	1.65	0.73	2.23	1.17
Ericsson RRUS-32 B30 (77 lbs)	29.9	13.3	9.5	77.0	3.31	2.42	4.18	3.23
Commscope WCS-IMFQ-AMT	11.2	10.6	6.9	29.5	0.99	0.64	1.45	1.03
Ericsson AIR 6419 B77G	28.3	16.1	7.9	66.1	3.80	1.20	4.68	1.67

**** Equipment with EPA values N/A were not considered in the mount analysis***

AMERICAN TOWER®
CORPORATION

Site Number:	*283420*
Project Number:	*13682835_C8_09*
Carrier:	*AT&T Mobility*
Mount Elevation:	*118.75 ft*
Date:	2/27/2023

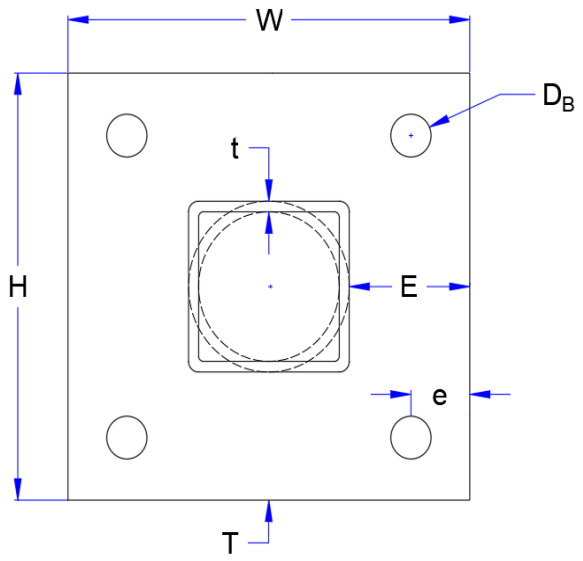
Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D			
Controlling Load Combination		3	
Node Label/ Orientation (Degrees)		N002	60
Force in X	Fx	970.8	lbs
Force in Y	Fy	1552.7	lbs
Force in Z	Fz	1521.6	lbs
Moment about X	Mx	-491.2	lb-ft
Moment about Y	My	2146.8	lb-ft
Moment about Z	Mz	-3471.8	lb-ft

Bolt Shear and Tensile Capacity			
Bolt Quantity	n	4	
Bolt Diameter	D_B	5/8	in
Bolt Horiz. Edge Distance	e_h	1	in
Bolt Vert. Edge Distance	e_v	1	in
Bolt Grade		A325	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Applied Shear	Vu	0.21	k
Applied Tension	Tu	5.80	k
Tensile Strength	ϕTn	20.3	k
Shear Strength	ϕVn	13.8	k
Interaction Capacity	(Vu/ϕVn)2+(Tu/ϕTn)2	8%	Pass

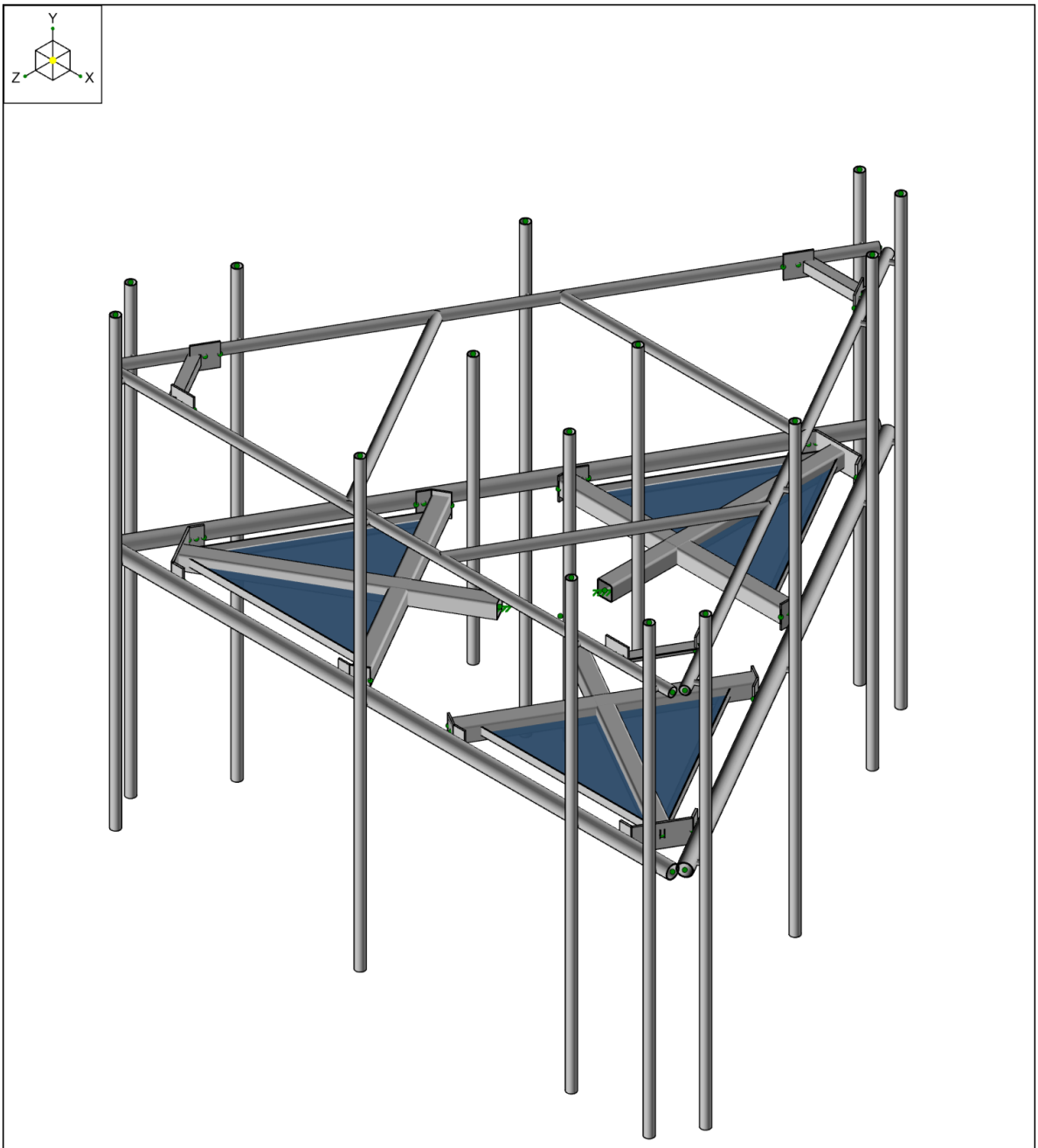
Plate Flexural Capacity			
Plate Height	H	8	in
Plate Width	W	8	in
Plate Thickness	T	1/2	in
Plate Grade		A36	
Plate Fy	Fy_P	36	ksi
Plate Fu	Fu_P	58	ksi
Shear Capacity	ϕVn	50.4	k
Applied Moment	Mu	16.9	k-in
Flexural Strength	ϕMn	26.1	k-in
Flexural Capacity	Mu/ϕMn	65%	Pass

Base Metal Checks		
Minimum Base Metal Thickness	0.206	in
Controlling Base Metal Thickness	0.250	in

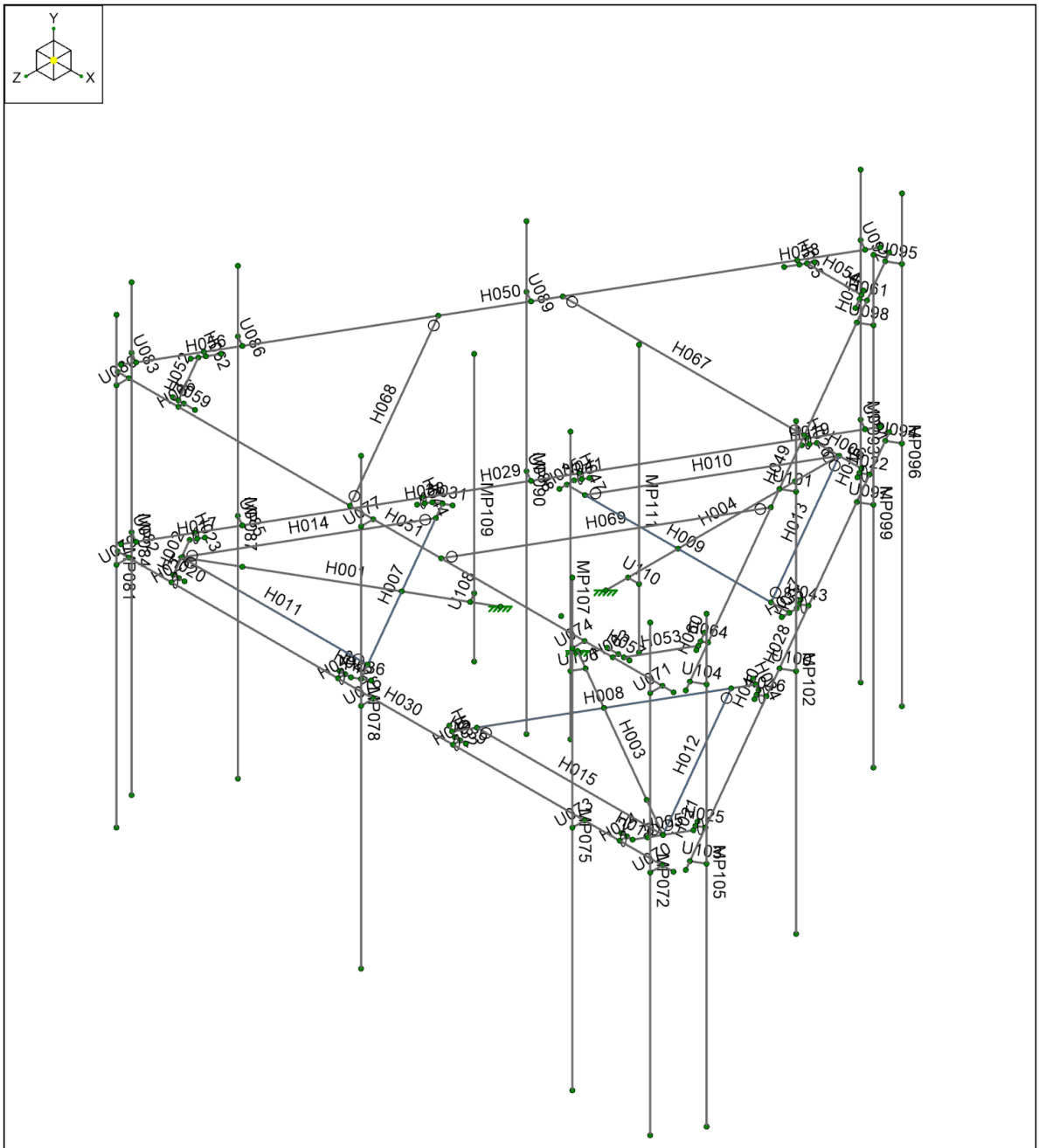


Weld Capacity			
Standoff Type		Tube	
Standoff Member		HSS4x4x4	
Member Edge Distance	E	2	in
Member Height	h	4	in
Member Width	w	4	in
Member Thickness	t	0.250	in
Member Grade		A53 Gr. B	
Member Fy	Fy_M	35	ksi
Member Fu	Fu_M	60	ksi
Weld Size	a	1/4	in
Weld Section Modulus	S	1.4	in^3
Applied Weld Stress	σu	2.8	ksi
Capacity Weld Stress	ϕσn	8.4	ksi
Weld Utilization	σu/ϕσn	34%	Pass

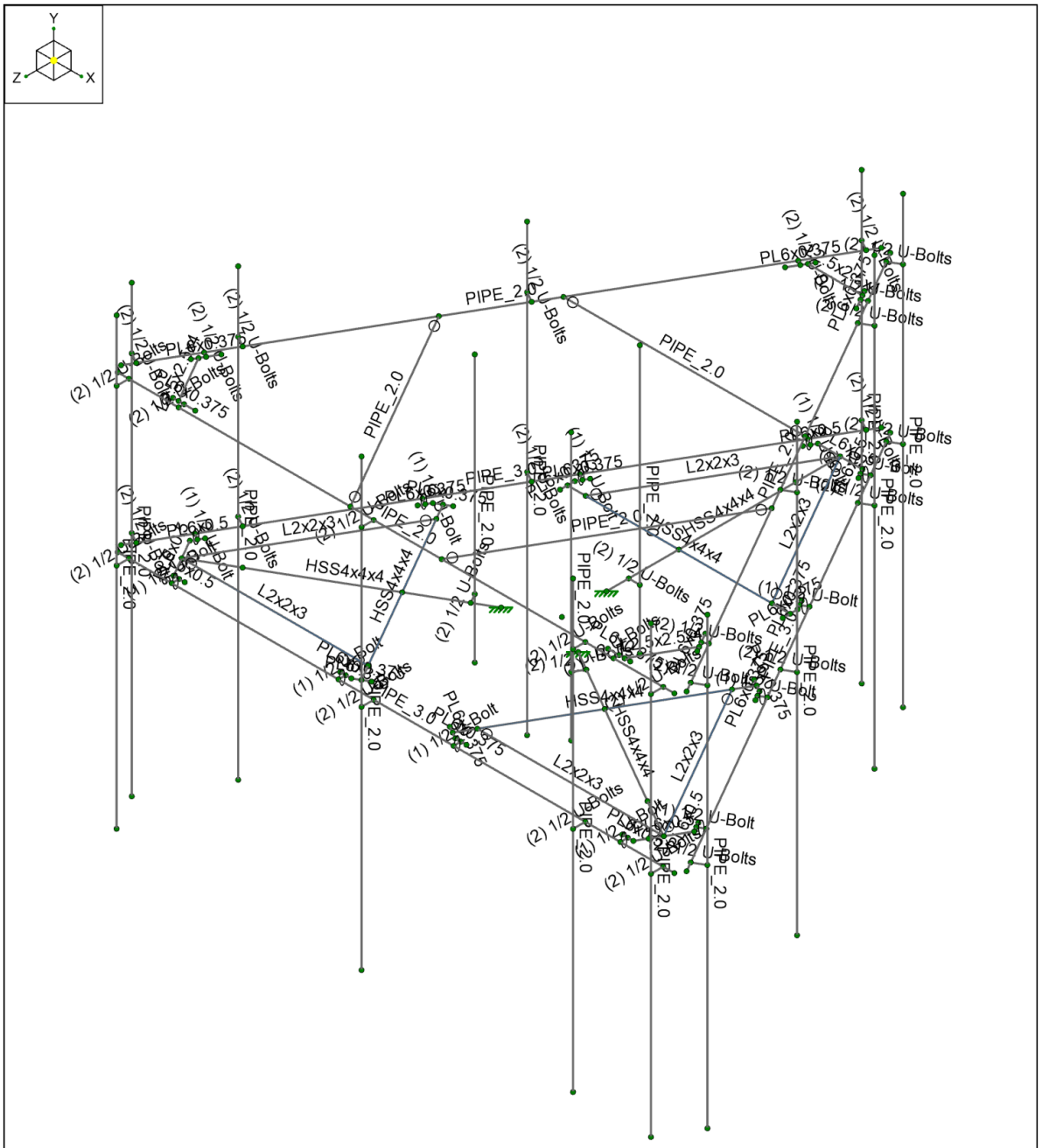
Prying Action Considerations			
Moment Arm	b	1.45	in
Effective Moment Arm	b'	1.14	in
Tributary Length	p	4.66	in
Effective Edge Distance	a'	1.31	in
Minimum Thickness	t_{min}	0.24	in
No Prying Thickness	t_{np}	0.33	in
Min Bolt Strength Thickness	t_c	0.62	k-in



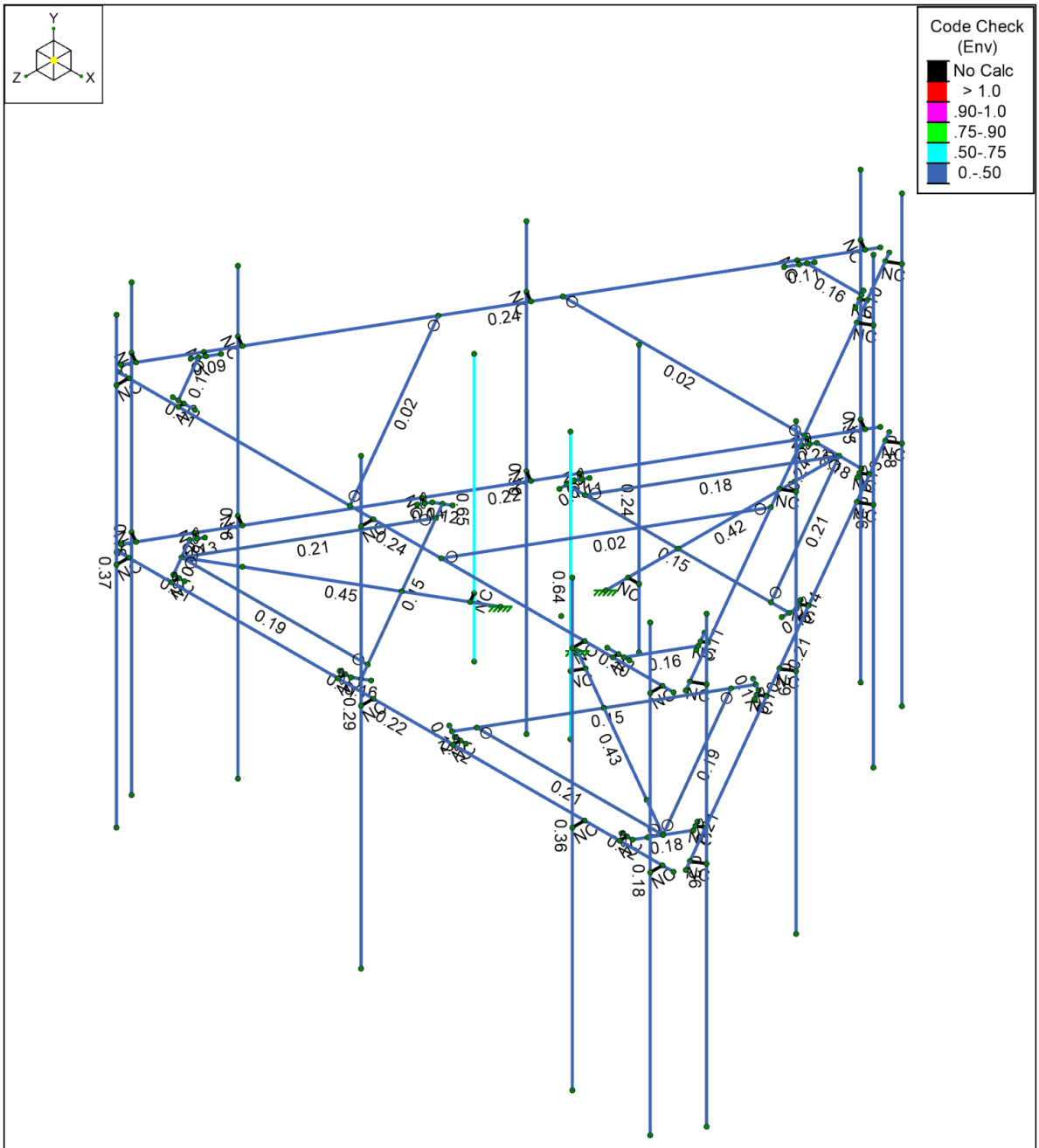
American Tower Corp.	283420, STONEYBROOK RD CT	SK-1
Aviskar.Ghansam		Feb 27, 2023
13682835_C8_09		R3D. AT&T MOBILITY @ 283420, …



American Tower Corp.	283420, STONEYBROOK RD CT	SK-3
Aviskar.Ghansam		Feb 27, 2023
13682835_C8_09		R3D. AT&T MOBILITY @ 283420, …

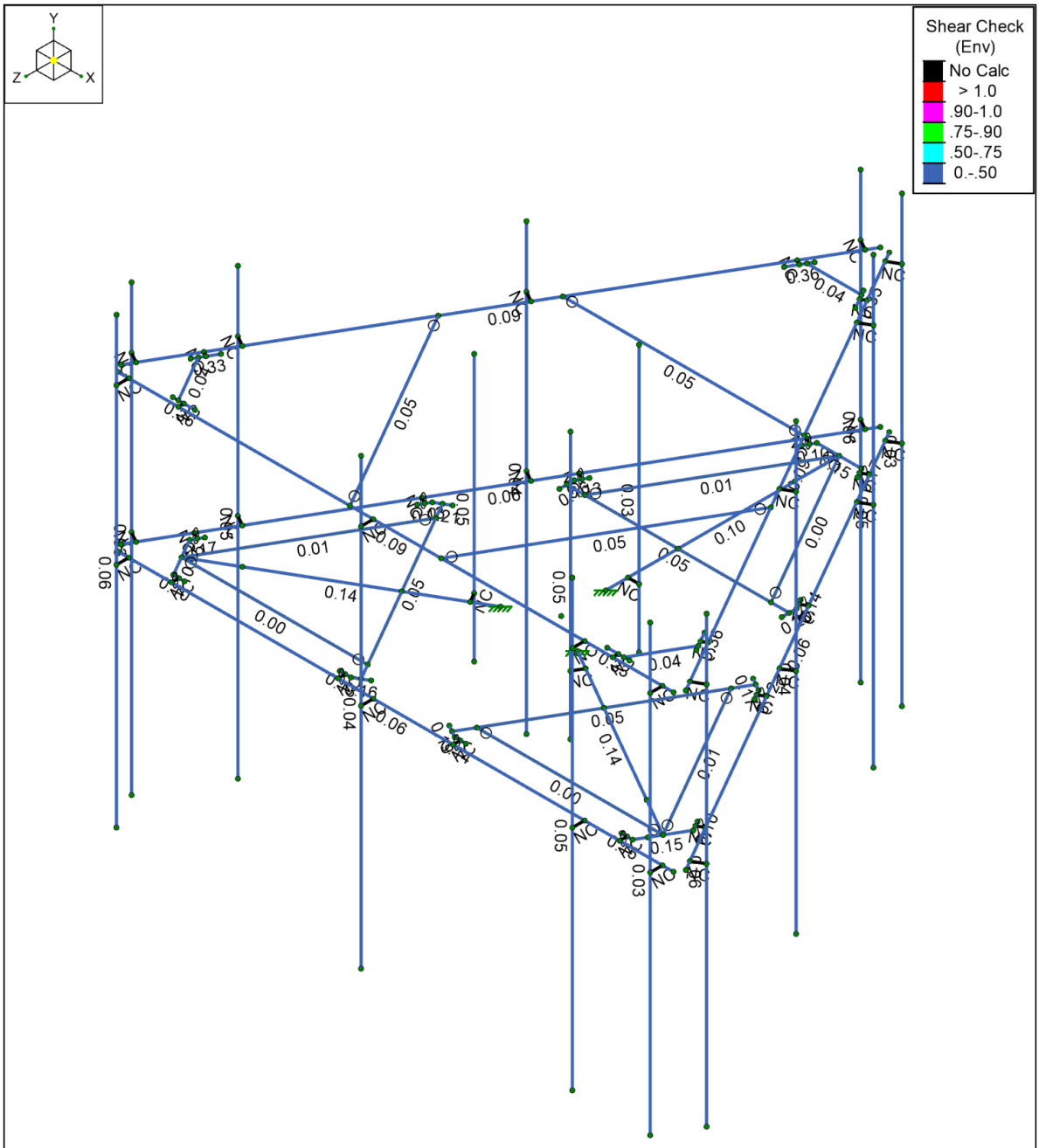


American Tower Corp.	283420, STONEYBROOK RD CT	SK-4
Aviskar.Ghansam		Feb 27, 2023
13682835_C8_09		R3D. AT&T MOBILITY @ 283420, …



Member Code Checks Displayed (Enveloped)

American Tower Corp.	283420, STONEYBROOK RD CT	SK-5
Aviskar.Ghansam		Feb 27, 2023
13682835_C8_09		R3D. AT&T MOBILITY @ 283420, …



American Tower Corp.	283420, STONEYBROOK RD CT	SK-6
Aviskar.Ghansam		Feb 27, 2023
13682835_C8_09		R3D. AT&T MOBILITY @ 283420, …

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
1	D	DL	-1		45		
2	Di	IL			45	66	3
3	W 0	WL			45	111	
4	W 30	WL			90	222	
5	W 60	WL			90	222	
6	W 90	WL			45	114	
7	W 120	WL			90	222	
8	W 150	WL			90	222	
9	W 180	WL			45	111	
10	W 210	WL			90	222	
11	W 240	WL			90	222	
12	W 270	WL			45	114	
13	W 300	WL			90	222	
14	W 330	WL			90	222	
15	Wi 0	WL			45	111	
16	Wi 30	WL			90	222	
17	Wi 60	WL			90	222	
18	Wi 90	WL			45	114	
19	Wi 120	WL			90	222	
20	Wi 150	WL			90	222	
21	Wi 180	WL			45	111	
22	Wi 210	WL			90	222	
23	Wi 240	WL			90	222	
24	Wi 270	WL			45	114	
25	Wi 300	WL			90	222	
26	Wi 330	WL			90	222	
27	Ws 0	WL			45	111	
28	Ws 30	WL			90	222	
29	Ws 60	WL			90	222	
30	Ws 90	WL			45	114	
31	Ws 120	WL			90	222	
32	Ws 150	WL			90	222	
33	Ws 180	WL			45	111	
34	Ws 210	WL			90	222	
35	Ws 240	WL			90	222	
36	Ws 270	WL			45	114	
37	Ws 300	WL			90	222	
38	Ws 330	WL			90	222	
39	Ev -Y	ELY				66	
40	Eh -Z	ELZ				66	
41	Eh -X	ELX				66	
42	Lm (1)	LL		1			
43	Lm (2)	LL		1			
44	Lm (3)	LL		1			
45	Lm (4)	LL		1			
46	Lm (5)	LL		1			
47	Lm (6)	LL		1			
48	Lm (7)	LL		1			
49	Lm (8)	LL		1			
50	Lm (9)	LL		1			
51	Lm (10)	LL		1			
52	Lm (11)	LL		1			
53	Lm (12)	LL		1			
54	Lm (13)	LL		1			
55	Lm (14)	LL		1			

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Surface(Plate/Wall)
56	Lm (15)	LL		1			

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	42	1.5	27	1		
63	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	42	1.5	28	1		
64	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	42	1.5	29	1		
65	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	42	1.5	30	1		
66	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	42	1.5	31	1		
67	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	42	1.5	32	1		
68	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	42	1.5	33	1		
69	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	42	1.5	34	1		
70	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	42	1.5	35	1		
71	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	42	1.5	36	1		
72	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	42	1.5	37	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	42	1.5	38	1		
74	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	43	1.5	27	1		
75	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	43	1.5	28	1		
76	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	43	1.5	29	1		
77	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	43	1.5	30	1		
78	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	43	1.5	31	1		
79	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	43	1.5	32	1		
80	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	43	1.5	33	1		
81	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	43	1.5	34	1		
82	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	43	1.5	35	1		
83	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	43	1.5	36	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	43	1.5	37	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	43	1.5	38	1		
86	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	44	1.5	27	1		
87	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	44	1.5	28	1		
88	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	44	1.5	29	1		
89	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	44	1.5	30	1		
90	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	44	1.5	31	1		
91	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	44	1.5	32	1		
92	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	44	1.5	33	1		
93	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	44	1.5	34	1		
94	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	44	1.5	35	1		
95	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	44	1.5	36	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	44	1.5	37	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	44	1.5	38	1		
98	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	45	1.5	27	1		
99	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	45	1.5	28	1		
100	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	45	1.5	29	1		
101	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	45	1.5	30	1		
102	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	45	1.5	31	1		
103	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	45	1.5	32	1		
104	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	45	1.5	33	1		
105	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	45	1.5	34	1		
106	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	45	1.5	35	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
107	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	45	1.5	36	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	45	1.5	37	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	45	1.5	38	1		
110	1.2D + 1.5Lm(5) + 1.0Wm [0°]	Yes	Y	DL	1.2	46	1.5	27	1		
111	1.2D + 1.5Lm(5) + 1.0Wm [30°]	Yes	Y	DL	1.2	46	1.5	28	1		
112	1.2D + 1.5Lm(5) + 1.0Wm [60°]	Yes	Y	DL	1.2	46	1.5	29	1		
113	1.2D + 1.5Lm(5) + 1.0Wm [90°]	Yes	Y	DL	1.2	46	1.5	30	1		
114	1.2D + 1.5Lm(5) + 1.0Wm [120°]	Yes	Y	DL	1.2	46	1.5	31	1		
115	1.2D + 1.5Lm(5) + 1.0Wm [150°]	Yes	Y	DL	1.2	46	1.5	32	1		
116	1.2D + 1.5Lm(5) + 1.0Wm [180°]	Yes	Y	DL	1.2	46	1.5	33	1		
117	1.2D + 1.5Lm(5) + 1.0Wm [210°]	Yes	Y	DL	1.2	46	1.5	34	1		
118	1.2D + 1.5Lm(5) + 1.0Wm [240°]	Yes	Y	DL	1.2	46	1.5	35	1		
119	1.2D + 1.5Lm(5) + 1.0Wm [270°]	Yes	Y	DL	1.2	46	1.5	36	1		
120	1.2D + 1.5Lm(5) + 1.0Wm [300°]	Yes	Y	DL	1.2	46	1.5	37	1		
121	1.2D + 1.5Lm(5) + 1.0Wm [330°]	Yes	Y	DL	1.2	46	1.5	38	1		
122	1.2D + 1.5Lm(6) + 1.0Wm [0°]	Yes	Y	DL	1.2	47	1.5	27	1		
123	1.2D + 1.5Lm(6) + 1.0Wm [30°]	Yes	Y	DL	1.2	47	1.5	28	1		
124	1.2D + 1.5Lm(6) + 1.0Wm [60°]	Yes	Y	DL	1.2	47	1.5	29	1		
125	1.2D + 1.5Lm(6) + 1.0Wm [90°]	Yes	Y	DL	1.2	47	1.5	30	1		
126	1.2D + 1.5Lm(6) + 1.0Wm [120°]	Yes	Y	DL	1.2	47	1.5	31	1		
127	1.2D + 1.5Lm(6) + 1.0Wm [150°]	Yes	Y	DL	1.2	47	1.5	32	1		
128	1.2D + 1.5Lm(6) + 1.0Wm [180°]	Yes	Y	DL	1.2	47	1.5	33	1		
129	1.2D + 1.5Lm(6) + 1.0Wm [210°]	Yes	Y	DL	1.2	47	1.5	34	1		
130	1.2D + 1.5Lm(6) + 1.0Wm [240°]	Yes	Y	DL	1.2	47	1.5	35	1		
131	1.2D + 1.5Lm(6) + 1.0Wm [270°]	Yes	Y	DL	1.2	47	1.5	36	1		
132	1.2D + 1.5Lm(6) + 1.0Wm [300°]	Yes	Y	DL	1.2	47	1.5	37	1		
133	1.2D + 1.5Lm(6) + 1.0Wm [330°]	Yes	Y	DL	1.2	47	1.5	38	1		
134	1.2D + 1.5Lm(7) + 1.0Wm [0°]	Yes	Y	DL	1.2	48	1.5	27	1		
135	1.2D + 1.5Lm(7) + 1.0Wm [30°]	Yes	Y	DL	1.2	48	1.5	28	1		
136	1.2D + 1.5Lm(7) + 1.0Wm [60°]	Yes	Y	DL	1.2	48	1.5	29	1		
137	1.2D + 1.5Lm(7) + 1.0Wm [90°]	Yes	Y	DL	1.2	48	1.5	30	1		
138	1.2D + 1.5Lm(7) + 1.0Wm [120°]	Yes	Y	DL	1.2	48	1.5	31	1		
139	1.2D + 1.5Lm(7) + 1.0Wm [150°]	Yes	Y	DL	1.2	48	1.5	32	1		
140	1.2D + 1.5Lm(7) + 1.0Wm [180°]	Yes	Y	DL	1.2	48	1.5	33	1		
141	1.2D + 1.5Lm(7) + 1.0Wm [210°]	Yes	Y	DL	1.2	48	1.5	34	1		
142	1.2D + 1.5Lm(7) + 1.0Wm [240°]	Yes	Y	DL	1.2	48	1.5	35	1		
143	1.2D + 1.5Lm(7) + 1.0Wm [270°]	Yes	Y	DL	1.2	48	1.5	36	1		
144	1.2D + 1.5Lm(7) + 1.0Wm [300°]	Yes	Y	DL	1.2	48	1.5	37	1		
145	1.2D + 1.5Lm(7) + 1.0Wm [330°]	Yes	Y	DL	1.2	48	1.5	38	1		
146	1.2D + 1.5Lm(8) + 1.0Wm [0°]	Yes	Y	DL	1.2	49	1.5	27	1		
147	1.2D + 1.5Lm(8) + 1.0Wm [30°]	Yes	Y	DL	1.2	49	1.5	28	1		
148	1.2D + 1.5Lm(8) + 1.0Wm [60°]	Yes	Y	DL	1.2	49	1.5	29	1		
149	1.2D + 1.5Lm(8) + 1.0Wm [90°]	Yes	Y	DL	1.2	49	1.5	30	1		
150	1.2D + 1.5Lm(8) + 1.0Wm [120°]	Yes	Y	DL	1.2	49	1.5	31	1		
151	1.2D + 1.5Lm(8) + 1.0Wm [150°]	Yes	Y	DL	1.2	49	1.5	32	1		
152	1.2D + 1.5Lm(8) + 1.0Wm [180°]	Yes	Y	DL	1.2	49	1.5	33	1		
153	1.2D + 1.5Lm(8) + 1.0Wm [210°]	Yes	Y	DL	1.2	49	1.5	34	1		
154	1.2D + 1.5Lm(8) + 1.0Wm [240°]	Yes	Y	DL	1.2	49	1.5	35	1		
155	1.2D + 1.5Lm(8) + 1.0Wm [270°]	Yes	Y	DL	1.2	49	1.5	36	1		
156	1.2D + 1.5Lm(8) + 1.0Wm [300°]	Yes	Y	DL	1.2	49	1.5	37	1		
157	1.2D + 1.5Lm(8) + 1.0Wm [330°]	Yes	Y	DL	1.2	49	1.5	38	1		
158	1.2D + 1.5Lm(9) + 1.0Wm [0°]	Yes	Y	DL	1.2	50	1.5	27	1		
159	1.2D + 1.5Lm(9) + 1.0Wm [30°]	Yes	Y	DL	1.2	50	1.5	28	1		
160	1.2D + 1.5Lm(9) + 1.0Wm [60°]	Yes	Y	DL	1.2	50	1.5	29	1		
161	1.2D + 1.5Lm(9) + 1.0Wm [90°]	Yes	Y	DL	1.2	50	1.5	30	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
162	1.2D + 1.5Lm(9) + 1.0Wm [120°]	Yes	Y	DL	1.2	50	1.5	31	1		
163	1.2D + 1.5Lm(9) + 1.0Wm [150°]	Yes	Y	DL	1.2	50	1.5	32	1		
164	1.2D + 1.5Lm(9) + 1.0Wm [180°]	Yes	Y	DL	1.2	50	1.5	33	1		
165	1.2D + 1.5Lm(9) + 1.0Wm [210°]	Yes	Y	DL	1.2	50	1.5	34	1		
166	1.2D + 1.5Lm(9) + 1.0Wm [240°]	Yes	Y	DL	1.2	50	1.5	35	1		
167	1.2D + 1.5Lm(9) + 1.0Wm [270°]	Yes	Y	DL	1.2	50	1.5	36	1		
168	1.2D + 1.5Lm(9) + 1.0Wm [300°]	Yes	Y	DL	1.2	50	1.5	37	1		
169	1.2D + 1.5Lm(9) + 1.0Wm [330°]	Yes	Y	DL	1.2	50	1.5	38	1		
170	1.2D + 1.5Lm(10) + 1.0Wm [0°]	Yes	Y	DL	1.2	51	1.5	27	1		
171	1.2D + 1.5Lm(10) + 1.0Wm [30°]	Yes	Y	DL	1.2	51	1.5	28	1		
172	1.2D + 1.5Lm(10) + 1.0Wm [60°]	Yes	Y	DL	1.2	51	1.5	29	1		
173	1.2D + 1.5Lm(10) + 1.0Wm [90°]	Yes	Y	DL	1.2	51	1.5	30	1		
174	1.2D + 1.5Lm(10) + 1.0Wm [120°]	Yes	Y	DL	1.2	51	1.5	31	1		
175	1.2D + 1.5Lm(10) + 1.0Wm [150°]	Yes	Y	DL	1.2	51	1.5	32	1		
176	1.2D + 1.5Lm(10) + 1.0Wm [180°]	Yes	Y	DL	1.2	51	1.5	33	1		
177	1.2D + 1.5Lm(10) + 1.0Wm [210°]	Yes	Y	DL	1.2	51	1.5	34	1		
178	1.2D + 1.5Lm(10) + 1.0Wm [240°]	Yes	Y	DL	1.2	51	1.5	35	1		
179	1.2D + 1.5Lm(10) + 1.0Wm [270°]	Yes	Y	DL	1.2	51	1.5	36	1		
180	1.2D + 1.5Lm(10) + 1.0Wm [300°]	Yes	Y	DL	1.2	51	1.5	37	1		
181	1.2D + 1.5Lm(10) + 1.0Wm [330°]	Yes	Y	DL	1.2	51	1.5	38	1		
182	1.2D + 1.5Lm(11) + 1.0Wm [0°]	Yes	Y	DL	1.2	52	1.5	27	1		
183	1.2D + 1.5Lm(11) + 1.0Wm [30°]	Yes	Y	DL	1.2	52	1.5	28	1		
184	1.2D + 1.5Lm(11) + 1.0Wm [60°]	Yes	Y	DL	1.2	52	1.5	29	1		
185	1.2D + 1.5Lm(11) + 1.0Wm [90°]	Yes	Y	DL	1.2	52	1.5	30	1		
186	1.2D + 1.5Lm(11) + 1.0Wm [120°]	Yes	Y	DL	1.2	52	1.5	31	1		
187	1.2D + 1.5Lm(11) + 1.0Wm [150°]	Yes	Y	DL	1.2	52	1.5	32	1		
188	1.2D + 1.5Lm(11) + 1.0Wm [180°]	Yes	Y	DL	1.2	52	1.5	33	1		
189	1.2D + 1.5Lm(11) + 1.0Wm [210°]	Yes	Y	DL	1.2	52	1.5	34	1		
190	1.2D + 1.5Lm(11) + 1.0Wm [240°]	Yes	Y	DL	1.2	52	1.5	35	1		
191	1.2D + 1.5Lm(11) + 1.0Wm [270°]	Yes	Y	DL	1.2	52	1.5	36	1		
192	1.2D + 1.5Lm(11) + 1.0Wm [300°]	Yes	Y	DL	1.2	52	1.5	37	1		
193	1.2D + 1.5Lm(11) + 1.0Wm [330°]	Yes	Y	DL	1.2	52	1.5	38	1		
194	1.2D + 1.5Lm(12) + 1.0Wm [0°]	Yes	Y	DL	1.2	53	1.5	27	1		
195	1.2D + 1.5Lm(12) + 1.0Wm [30°]	Yes	Y	DL	1.2	53	1.5	28	1		
196	1.2D + 1.5Lm(12) + 1.0Wm [60°]	Yes	Y	DL	1.2	53	1.5	29	1		
197	1.2D + 1.5Lm(12) + 1.0Wm [90°]	Yes	Y	DL	1.2	53	1.5	30	1		
198	1.2D + 1.5Lm(12) + 1.0Wm [120°]	Yes	Y	DL	1.2	53	1.5	31	1		
199	1.2D + 1.5Lm(12) + 1.0Wm [150°]	Yes	Y	DL	1.2	53	1.5	32	1		
200	1.2D + 1.5Lm(12) + 1.0Wm [180°]	Yes	Y	DL	1.2	53	1.5	33	1		
201	1.2D + 1.5Lm(12) + 1.0Wm [210°]	Yes	Y	DL	1.2	53	1.5	34	1		
202	1.2D + 1.5Lm(12) + 1.0Wm [240°]	Yes	Y	DL	1.2	53	1.5	35	1		
203	1.2D + 1.5Lm(12) + 1.0Wm [270°]	Yes	Y	DL	1.2	53	1.5	36	1		
204	1.2D + 1.5Lm(12) + 1.0Wm [300°]	Yes	Y	DL	1.2	53	1.5	37	1		
205	1.2D + 1.5Lm(12) + 1.0Wm [330°]	Yes	Y	DL	1.2	53	1.5	38	1		
206	1.2D + 1.5Lm(13) + 1.0Wm [0°]	Yes	Y	DL	1.2	54	1.5	27	1		
207	1.2D + 1.5Lm(13) + 1.0Wm [30°]	Yes	Y	DL	1.2	54	1.5	28	1		
208	1.2D + 1.5Lm(13) + 1.0Wm [60°]	Yes	Y	DL	1.2	54	1.5	29	1		
209	1.2D + 1.5Lm(13) + 1.0Wm [90°]	Yes	Y	DL	1.2	54	1.5	30	1		
210	1.2D + 1.5Lm(13) + 1.0Wm [120°]	Yes	Y	DL	1.2	54	1.5	31	1		
211	1.2D + 1.5Lm(13) + 1.0Wm [150°]	Yes	Y	DL	1.2	54	1.5	32	1		
212	1.2D + 1.5Lm(13) + 1.0Wm [180°]	Yes	Y	DL	1.2	54	1.5	33	1		
213	1.2D + 1.5Lm(13) + 1.0Wm [210°]	Yes	Y	DL	1.2	54	1.5	34	1		
214	1.2D + 1.5Lm(13) + 1.0Wm [240°]	Yes	Y	DL	1.2	54	1.5	35	1		
215	1.2D + 1.5Lm(13) + 1.0Wm [270°]	Yes	Y	DL	1.2	54	1.5	36	1		
216	1.2D + 1.5Lm(13) + 1.0Wm [300°]	Yes	Y	DL	1.2	54	1.5	37	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
217	1.2D + 1.5Lm(13) + 1.0Wm [330°]	Yes	Y	DL	1.2	54	1.5	38	1		
218	1.2D + 1.5Lm(14) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
219	1.2D + 1.5Lm(14) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
220	1.2D + 1.5Lm(14) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
221	1.2D + 1.5Lm(14) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
222	1.2D + 1.5Lm(14) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
223	1.2D + 1.5Lm(14) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
224	1.2D + 1.5Lm(14) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
225	1.2D + 1.5Lm(14) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
226	1.2D + 1.5Lm(14) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
227	1.2D + 1.5Lm(14) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		
228	1.2D + 1.5Lm(14) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
229	1.2D + 1.5Lm(14) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
230	1.2D + 1.5Lm(15) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
231	1.2D + 1.5Lm(15) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
232	1.2D + 1.5Lm(15) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
233	1.2D + 1.5Lm(15) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
234	1.2D + 1.5Lm(15) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
235	1.2D + 1.5Lm(15) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
236	1.2D + 1.5Lm(15) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
237	1.2D + 1.5Lm(15) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
238	1.2D + 1.5Lm(15) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
239	1.2D + 1.5Lm(15) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		
240	1.2D + 1.5Lm(15) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
241	1.2D + 1.5Lm(15) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
2	H002	N004	N005		PL6x0.5	Beam	None	A36	Typical
3	H003	N006	N012		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
4	H004	N007	N013		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
5	H005	N008	N010		PL6x0.5	Beam	None	A36	Typical
6	H006	N009	N011		PL6x0.5	Beam	None	A36	Typical
7	H007	N015	N016		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
8	H008	N021	N023		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
9	H009	N022	N024		HSS4x4x4	Beam	None	A500 Gr. B [SQR]	Typical
10	H010	N033	N013		L2x2x3	Beam	None	A36	Typical
11	H011	N034	N003		L2x2x3	Beam	None	A36	Typical
12	H012	N029	N012		L2x2x3	Beam	None	A36	Typical
13	H013	N030	N013	270	L2x2x3	Beam	None	A36	Typical
14	H014	N031	N003	270	L2x2x3	Beam	None	A36	Typical
15	H015	N032	N012	270	L2x2x3	Beam	None	A36	Typical
16	H016	N009	N036		PL6x0.5	Beam	None	A36	Typical
17	H017	N004	N042		PL6x0.5	Beam	None	A36	Typical
18	H018	N008	N043		PL6x0.5	Beam	None	A36	Typical
19	H019	N011	N048		PL6x0.5	Beam	None	A36	Typical
20	H020	N005	N049		PL6x0.5	Beam	None	A36	Typical
21	H021	N010	N037		PL6x0.5	Beam	None	A36	Typical
22	H022	N038	N040		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
23	H023	N044	N050		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
24	H024	N045	N051		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
25	H025	N039	N041		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
26	H026	N046	N052		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
27	H027	N047	N053		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
28	H028	N017	N018		PIPE_3.0	Beam	None	A53 Gr. B	Typical
29	H029	N025	N027		PIPE_3.0	Beam	None	A53 Gr. B	Typical
30	H030	N026	N028		PIPE_3.0	Beam	None	A53 Gr. B	Typical
31	H031	N054	N055		PL6x0.375	Beam	None	A36	Typical
32	H032	N056	N058		PL6x0.375	Beam	None	A36	Typical
33	H033	N057	N059		PL6x0.375	Beam	None	A36	Typical
34	H034	N060	N062		PL6x0.375	Beam	None	A36	Typical
35	H035	N061	N063		PL6x0.375	Beam	None	A36	Typical
36	H036	N064	N035		PL6x0.375	Beam	None	A36	Typical
37	H037	N059	N065		PL6x0.375	Beam	None	A36	Typical
38	H038	N055	N071		PL6x0.375	Beam	None	A36	Typical
39	H039	N058	N072		PL6x0.375	Beam	None	A36	Typical
40	H040	N062	N066		PL6x0.375	Beam	None	A36	Typical
41	H041	N063	N073		PL6x0.375	Beam	None	A36	Typical
42	H042	N035	N074		PL6x0.375	Beam	None	A36	Typical
43	H043	N067	N069		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
44	H044	N075	N079		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
45	H045	N076	N080		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
46	H046	N068	N070		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
47	H047	N077	N081		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
48	H048	N078	N082		(1) 1/2 U-Bolt	Beam	None	SAE J429 Gr. 2	Typical
49	H049	N083	N084		PIPE_2.0	Beam	None	A53 Gr. B	Typical
50	H050	N085	N087		PIPE_2.0	Beam	None	A53 Gr. B	Typical
51	H051	N086	N088		PIPE_2.0	Beam	None	A53 Gr. B	Typical
52	H052	N093	N094	90	L2.5x2.5x4	Beam	None	A36	Typical
53	H053	N090	N091	90	L2.5x2.5x4	Beam	None	A36	Typical
54	H054	N089	N092	90	L2.5x2.5x4	Beam	None	A36	Typical
55	H055	N095	N098		PL6x0.375	Beam	None	A36	Typical
56	H056	N096	N099		PL6x0.375	Beam	None	A36	Typical
57	H057	N097	N100		PL6x0.375	Beam	None	A36	Typical
58	H058	N102	N105		PL6x0.375	Beam	None	A36	Typical
59	H059	N103	N106		PL6x0.375	Beam	None	A36	Typical
60	H060	N101	N104		PL6x0.375	Beam	None	A36	Typical
61	H061	N107	N113		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
62	H062	N108	N114		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
63	H063	N109	N115		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
64	H064	N110	N116		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
65	H065	N111	N117		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
66	H066	N112	N118		(2) 1/2 U-Bolts	Beam	None	SAE J429 Gr. 2	Typical
67	H067	N122	N123		PIPE_2.0	Beam	None	A53 Gr. B	Typical
68	H068	N124	N126		PIPE_2.0	Beam	None	A53 Gr. B	Typical
69	H069	N125	N127		PIPE_2.0	Beam	None	A53 Gr. B	Typical
70	U070	N128	N132		(2) 1/2 U-Bolts	Beam	None	A36	Typical
71	U071	N133	N134		(2) 1/2 U-Bolts	Beam	None	A36	Typical
72	MP072	N135	N136		PIPE_2.0	Column	None	A53 Gr. B	Typical
73	U073	N131	N137		(2) 1/2 U-Bolts	Beam	None	A36	Typical
74	U074	N138	N139		(2) 1/2 U-Bolts	Beam	None	A36	Typical
75	MP075	N140	N141		PIPE_2.0	Column	None	A53 Gr. B	Typical
76	U076	N130	N142		(2) 1/2 U-Bolts	Beam	None	A36	Typical
77	U077	N143	N144		(2) 1/2 U-Bolts	Beam	None	A36	Typical
78	MP078	N145	N146		PIPE_2.0	Column	None	A53 Gr. B	Typical
79	U079	N129	N147		(2) 1/2 U-Bolts	Beam	None	A36	Typical
80	U080	N148	N149		(2) 1/2 U-Bolts	Beam	None	A36	Typical
81	MP081	N150	N151		PIPE_2.0	Column	None	A53 Gr. B	Typical
82	U082	N153	N160		(2) 1/2 U-Bolts	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
83	U083	N161	N162		(2) 1/2 U-Bolts	Beam	None	A36	Typical
84	MP084	N163	N164		PIPE_2.0	Column	None	A53 Gr. B	Typical
85	U085	N155	N165		(2) 1/2 U-Bolts	Beam	None	A36	Typical
86	U086	N166	N167		(2) 1/2 U-Bolts	Beam	None	A36	Typical
87	MP087	N168	N169		PIPE_2.0	Column	None	A53 Gr. B	Typical
88	U088	N157	N170		(2) 1/2 U-Bolts	Beam	None	A36	Typical
89	U089	N171	N172		(2) 1/2 U-Bolts	Beam	None	A36	Typical
90	MP090	N173	N174		PIPE_2.0	Column	None	A53 Gr. B	Typical
91	U091	N159	N175		(2) 1/2 U-Bolts	Beam	None	A36	Typical
92	U092	N176	N177		(2) 1/2 U-Bolts	Beam	None	A36	Typical
93	MP093	N178	N179		PIPE_2.0	Column	None	A53 Gr. B	Typical
94	U094	N152	N180		(2) 1/2 U-Bolts	Beam	None	A36	Typical
95	U095	N181	N182		(2) 1/2 U-Bolts	Beam	None	A36	Typical
96	MP096	N183	N184		PIPE_2.0	Column	None	A53 Gr. B	Typical
97	U097	N154	N185		(2) 1/2 U-Bolts	Beam	None	A36	Typical
98	U098	N186	N187		(2) 1/2 U-Bolts	Beam	None	A36	Typical
99	MP099	N188	N189		PIPE_2.0	Column	None	A53 Gr. B	Typical
100	U100	N156	N190		(2) 1/2 U-Bolts	Beam	None	A36	Typical
101	U101	N191	N192		(2) 1/2 U-Bolts	Beam	None	A36	Typical
102	MP102	N193	N194		PIPE_2.0	Column	None	A53 Gr. B	Typical
103	U103	N158	N195		(2) 1/2 U-Bolts	Beam	None	A36	Typical
104	U104	N196	N197		(2) 1/2 U-Bolts	Beam	None	A36	Typical
105	MP105	N198	N199		PIPE_2.0	Column	None	A53 Gr. B	Typical
106	U106	N201	N204		(2) 1/2 U-Bolts	Beam	None	A36	Typical
107	MP107	N205	N206		PIPE_2.0	Column	None	A53 Gr. B	Typical
108	U108	N203	N207		(2) 1/2 U-Bolts	Beam	None	A36	Typical
109	MP109	N208	N209		PIPE_2.0	Column	None	A53 Gr. B	Typical
110	U110	N202	N210		(2) 1/2 U-Bolts	Beam	None	A36	Typical
111	MP111	N211	N212		PIPE_2.0	Column	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	HSS4x4x4	63			Lbyy		1	1	Lateral
2	H002	PL6x0.5	12			Lbyy		0.65	0.65	Lateral
3	H003	HSS4x4x4	63			Lbyy		1	1	Lateral
4	H004	HSS4x4x4	63			Lbyy		1	1	Lateral
5	H005	PL6x0.5	12			Lbyy		0.65	0.65	Lateral
6	H006	PL6x0.5	12			Lbyy		0.65	0.65	Lateral
7	H007	HSS4x4x4	60			Lbyy		0.65	0.65	Lateral
8	H008	HSS4x4x4	60			Lbyy		0.65	0.65	Lateral
9	H009	HSS4x4x4	60			Lbyy		0.65	0.65	Lateral
10	H010	L2x2x3	50.229			Lbyy		1	1	Lateral
11	H011	L2x2x3	50.229			Lbyy		1	1	Lateral
12	H012	L2x2x3	50.229			Lbyy		1	1	Lateral
13	H013	L2x2x3	50.229			Lbyy		1	1	Lateral
14	H014	L2x2x3	50.229			Lbyy		1	1	Lateral
15	H015	L2x2x3	50.229			Lbyy		1	1	Lateral
16	H016	PL6x0.5	3			Lbyy		1	1	Lateral
17	H017	PL6x0.5	3			Lbyy		1	1	Lateral
18	H018	PL6x0.5	3			Lbyy		1	1	Lateral
19	H019	PL6x0.5	3			Lbyy		1	1	Lateral
20	H020	PL6x0.5	3			Lbyy		1	1	Lateral
21	H021	PL6x0.5	3			Lbyy		1	1	Lateral
22	H022	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
23	H023	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
24	H024	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
25	H025	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
26	H026	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
27	H027	(1) 1/2 U-Bolt	2			Lbyy		0.65	0.65	Lateral
28	H028	PIPE_3.0	149.995			Lbyy		1	1	Lateral
29	H029	PIPE_3.0	149.995			Lbyy		1	1	Lateral
30	H030	PIPE_3.0	149.995			Lbyy		1	1	Lateral
31	H031	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
32	H032	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
33	H033	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
34	H034	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
35	H035	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
36	H036	PL6x0.375	4			Lbyy		0.65	0.65	Lateral
37	H037	PL6x0.375	3			Lbyy		1	1	Lateral
38	H038	PL6x0.375	3			Lbyy		1	1	Lateral
39	H039	PL6x0.375	3			Lbyy		1	1	Lateral
40	H040	PL6x0.375	3			Lbyy		1	1	Lateral
41	H041	PL6x0.375	3			Lbyy		1	1	Lateral
42	H042	PL6x0.375	3			Lbyy		1	1	Lateral
43	H043	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
44	H044	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
45	H045	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
46	H046	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
47	H047	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
48	H048	(1) 1/2 U-Bolt	1.965			Lbyy		0.65	0.65	Lateral
49	H049	PIPE_2.0	149.995			Lbyy		0.65	0.65	Lateral
50	H050	PIPE_2.0	149.995			Lbyy		0.65	0.65	Lateral
51	H051	PIPE_2.0	149.995			Lbyy		0.65	0.65	Lateral
52	H052	L2.5x2.5x4	14.71			Lbyy		0.65	0.65	Lateral
53	H053	L2.5x2.5x4	14.71			Lbyy		0.65	0.65	Lateral
54	H054	L2.5x2.5x4	14.71			Lbyy		0.65	0.65	Lateral
55	H055	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
56	H056	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
57	H057	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
58	H058	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
59	H059	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
60	H060	PL6x0.375	6			Lbyy		0.65	0.65	Lateral
61	H061	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
62	H062	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
63	H063	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
64	H064	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
65	H065	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
66	H066	(2) 1/2 U-Bolts	1.5			Lbyy		0.65	0.65	Lateral
67	H067	PIPE_2.0	65.116			Lbyy		1	1	Lateral
68	H068	PIPE_2.0	65.116			Lbyy		1	1	Lateral
69	H069	PIPE_2.0	65.116			Lbyy		1	1	Lateral
70	U070	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
71	U071	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
72	MP072	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
73	U073	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
74	U074	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
75	MP075	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
76	U076	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
77	U077	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
78	MP078	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
79	U079	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
80	U080	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
81	MP081	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
82	U082	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
83	U083	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
84	MP084	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
85	U085	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
86	U086	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
87	MP087	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
88	U088	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
89	U089	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
90	MP090	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
91	U091	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
92	U092	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
93	MP093	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
94	U094	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
95	U095	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
96	MP096	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
97	U097	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
98	U098	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
99	MP099	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
100	U100	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
101	U101	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
102	MP102	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
103	U103	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
104	U104	(2) 1/2 U-Bolts	3.304			Lbyy		0.5	0.5	Lateral
105	MP105	PIPE_2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
106	U106	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
107	MP107	PIPE_2.0	72	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
108	U108	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
109	MP109	PIPE_2.0	72	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
110	U110	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
111	MP111	PIPE_2.0	72	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N002	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N007	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	H007			Yes	N/A		None
8	H008			Yes	N/A		None
9	H009			Yes	N/A		None
10	H010	BenPIN	BenPIN	Yes	N/A		None
11	H011	BenPIN	BenPIN	Yes	N/A		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
12	H012	BenPIN	BenPIN	Yes	N/A		None
13	H013	BenPIN	BenPIN	Yes	N/A		None
14	H014	BenPIN	BenPIN	Yes	N/A		None
15	H015	BenPIN	BenPIN	Yes	N/A		None
16	H016			Yes	N/A		None
17	H017			Yes	N/A		None
18	H018			Yes	N/A		None
19	H019			Yes	N/A		None
20	H020			Yes	N/A		None
21	H021			Yes	N/A		None
22	H022		OOOXOO	Yes	N/A	Exclude	None
23	H023		OOOXOO	Yes	N/A	Exclude	None
24	H024		OOOXOO	Yes	N/A	Exclude	None
25	H025		OOOXOO	Yes	N/A	Exclude	None
26	H026		OOOXOO	Yes	N/A	Exclude	None
27	H027		OOOXOO	Yes	N/A	Exclude	None
28	H028			Yes	N/A		None
29	H029			Yes	N/A		None
30	H030			Yes	N/A		None
31	H031			Yes	N/A		None
32	H032			Yes	N/A		None
33	H033			Yes	N/A		None
34	H034			Yes	N/A		None
35	H035			Yes	N/A		None
36	H036			Yes	N/A		None
37	H037			Yes	N/A		None
38	H038			Yes	N/A		None
39	H039			Yes	N/A		None
40	H040			Yes	N/A		None
41	H041			Yes	N/A		None
42	H042			Yes	N/A		None
43	H043		OOOXOO	Yes	N/A	Exclude	None
44	H044		OOOXOO	Yes	N/A	Exclude	None
45	H045		OOOXOO	Yes	N/A	Exclude	None
46	H046		OOOXOO	Yes	N/A	Exclude	None
47	H047		OOOXOO	Yes	N/A	Exclude	None
48	H048		OOOXOO	Yes	N/A	Exclude	None
49	H049			Yes	N/A		None
50	H050			Yes	N/A		None
51	H051			Yes	N/A		None
52	H052			Yes	N/A		None
53	H053			Yes	N/A		None
54	H054			Yes	N/A		None
55	H055			Yes	N/A		None
56	H056			Yes	N/A		None
57	H057			Yes	N/A		None
58	H058			Yes	N/A		None
59	H059			Yes	N/A		None
60	H060			Yes	N/A		None
61	H061			Yes	N/A	Exclude	None
62	H062			Yes	N/A	Exclude	None
63	H063			Yes	N/A	Exclude	None
64	H064			Yes	N/A	Exclude	None
65	H065			Yes	N/A	Exclude	None
66	H066			Yes	N/A	Exclude	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
67	H067	BenPIN	BenPIN	Yes	N/A		None
68	H068	BenPIN	BenPIN	Yes	N/A		None
69	H069	BenPIN	BenPIN	Yes	N/A		None
70	U070			Yes	N/A	Exclude	None
71	U071			Yes	N/A	Exclude	None
72	MP072			Yes	** NA **		None
73	U073			Yes	N/A	Exclude	None
74	U074			Yes	N/A	Exclude	None
75	MP075			Yes	** NA **		None
76	U076			Yes	N/A	Exclude	None
77	U077			Yes	N/A	Exclude	None
78	MP078			Yes	** NA **		None
79	U079			Yes	N/A	Exclude	None
80	U080			Yes	N/A	Exclude	None
81	MP081			Yes	** NA **		None
82	U082			Yes	N/A	Exclude	None
83	U083			Yes	N/A	Exclude	None
84	MP084			Yes	** NA **		None
85	U085			Yes	N/A	Exclude	None
86	U086			Yes	N/A	Exclude	None
87	MP087			Yes	** NA **		None
88	U088			Yes	N/A	Exclude	None
89	U089			Yes	N/A	Exclude	None
90	MP090			Yes	** NA **		None
91	U091			Yes	N/A	Exclude	None
92	U092			Yes	N/A	Exclude	None
93	MP093			Yes	** NA **		None
94	U094			Yes	N/A	Exclude	None
95	U095			Yes	N/A	Exclude	None
96	MP096			Yes	** NA **		None
97	U097			Yes	N/A	Exclude	None
98	U098			Yes	N/A	Exclude	None
99	MP099			Yes	** NA **		None
100	U100			Yes	N/A	Exclude	None
101	U101			Yes	N/A	Exclude	None
102	MP102			Yes	** NA **		None
103	U103			Yes	N/A	Exclude	None
104	U104			Yes	N/A	Exclude	None
105	MP105			Yes	** NA **		None
106	U106			Yes	N/A	Exclude	None
107	MP107			Yes	** NA **		None
108	U108			Yes	N/A	Exclude	None
109	MP109			Yes	** NA **		None
110	U110			Yes	N/A	Exclude	None
111	MP111			Yes	** NA **		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	58000	1.3
2	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
3	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1
4	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N002	max	2887.964	18	3192.679	30	1755.508	2	416.511	14	2146.784	3	-463.711	23
2		min	-2930.53	12	842.87	24	-1732.381	20	-3551.354	32	-2144.461	21	-6386.679	29
3	N006	max	2757.917	4	3104.991	34	1937.005	2	240.869	14	1918.829	7	5894.666	35
4		min	-2717.994	22	802.643	16	-1913.149	20	-3792.727	32	-1916.448	25	177.089	17
5	N007	max	1659.061	5	2995.217	26	3011.091	14	6743.974	26	2067.731	23	781.412	11
6		min	-1656.735	23	768.261	20	-3058.437	8	961.139	20	-2067.57	17	-600.015	17
7	Totals:	max	6506.36	17	9045.181	32	6696.937	2						
8		min	-6506.36	11	3399.799	14	-6696.937	20						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	HSS4x4x4	0.451	0	32	0.143	0	z	3	124317.885	139518	16180.5	16180.5	2.549	H1-1b
2	H002	PL6x0.5	0.187	6	7	0.151	6	y	129	83348.625	97200	1012.5	12150	1.49	H1-1b
3	H003	HSS4x4x4	0.431	0	36	0.141	0	z	7	124317.885	139518	16180.5	16180.5	2.581	H1-1b
4	H004	HSS4x4x4	0.424	0	29	0.103	0	y	35	124317.885	139518	16180.5	16180.5	2.557	H1-1b
5	H005	PL6x0.5	0.184	6	6	0.147	6	y	73	83348.625	97200	1012.5	12150	1.23	H1-1b
6	H006	PL6x0.5	0.184	6	10	0.152	6	y	113	83348.625	97200	1012.5	12150	1.227	H1-1b
7	H007	HSS4x4x4	0.153	30	29	0.045	4.375	z	5	133484.923	139518	16180.5	16180.5	1.345	H1-1b
8	H008	HSS4x4x4	0.15	30	33	0.045	4.375	z	9	133484.923	139518	16180.5	16180.5	1.344	H1-1b
9	H009	HSS4x4x4	0.149	30	37	0.046	4.375	z	13	133484.923	139518	16180.5	16180.5	1.343	H1-1b
10	H010	L2x2x3	0.184	25.638	3	0.005	50.229	z	10	9724.796	23392.8	557.717	1072.365	1.136	H2-1
11	H011	L2x2x3	0.19	25.638	7	0.005	50.229	z	2	9724.796	23392.8	557.717	1072.365	1.136	H2-1
12	H012	L2x2x3	0.186	25.638	11	0.005	50.229	z	6	9724.796	23392.8	557.717	1072.365	1.136	H2-1
13	H013	L2x2x3	0.212	25.115	12	0.005	50.229	y	6	9724.796	23392.8	557.717	1072.365	1.136	H2-1
14	H014	L2x2x3	0.211	25.115	4	0.005	50.229	y	10	9724.796	23392.8	557.717	1072.365	1.136	H2-1
15	H015	L2x2x3	0.208	25.638	9	0.005	50.229	y	2	9724.796	23392.8	557.717	1072.365	1.136	H2-1
16	H016	PL6x0.5	0.129	1.5	6	0.169	0	y	6	95014.386	97200	1012.5	12150	2.82	H1-1b
17	H017	PL6x0.5	0.128	1.5	10	0.166	0	y	9	95014.386	97200	1012.5	12150	1.942	H1-1b
18	H018	PL6x0.5	0.125	1.5	2	0.147	0	y	13	95014.386	97200	1012.5	12150	2.715	H1-1b
19	H019	PL6x0.5	0.21	1.5	10	0.098	0	y	68	95014.386	97200	1012.5	12150	3	H1-1b
20	H020	PL6x0.5	0.215	1.5	2	0.1	0	y	112	95014.386	97200	1012.5	12150	3	H1-1b
21	H021	PL6x0.5	0.209	1.5	6	0.103	0	y	128	95014.386	97200	1012.5	12150	3	H1-1b
22	H028	PIPE_3.0	0.211	60.936	37	0.064	14.062		6	28252.006	65205	5748.75	5748.75	1.747	H1-1b
23	H029	PIPE_3.0	0.219	60.936	29	0.064	14.062		10	28252.006	65205	5748.75	5748.75	1.748	H1-1b
24	H030	PIPE_3.0	0.218	90.622	32	0.062	14.062		2	28252.006	65205	5748.75	5748.75	1.733	H1-1b
25	H031	PL6x0.375	0.121	2	5	0.206	2	y	34	70719.442	72900	569.531	9112.5	1.443	H1-1b
26	H032	PL6x0.375	0.123	2	9	0.191	2	y	192	70719.442	72900	569.531	9112.5	1.441	H1-1b
27	H033	PL6x0.375	0.111	2	13	0.204	2	y	30	70719.442	72900	569.531	9112.5	1.442	H1-1b
28	H034	PL6x0.375	0.166	2	11	0.168	2	y	30	70719.442	72900	569.531	9112.5	1.441	H1-1b
29	H035	PL6x0.375	0.167	2	3	0.158	2	y	34	70719.442	72900	569.531	9112.5	1.438	H1-1b
30	H036	PL6x0.375	0.159	2	7	0.162	2	y	28	70719.442	72900	569.531	9112.5	1.441	H1-1b
31	H037	PL6x0.375	0.136	1.5	5	0.136	0	y	6	70011.374	72900	569.531	9112.5	3	H1-1b
32	H038	PL6x0.375	0.136	1.5	9	0.129	0	y	196	70011.374	72900	569.531	9112.5	3	H1-1b
33	H039	PL6x0.375	0.12	1.5	13	0.136	0	y	80	70011.374	72900	569.531	9112.5	3	H1-1b
34	H040	PL6x0.375	0.096	1.5	11	0.121	0	y	120	70011.374	72900	569.531	9112.5	3	H1-1b
35	H041	PL6x0.375	0.111	1.5	11	0.128	0	y	124	70011.374	72900	569.531	9112.5	3	H1-1b
36	H042	PL6x0.375	0.112	1.5	3	0.127	0	y	68	70011.374	72900	569.531	9112.5	3	H1-1b
37	H049	PIPE_2.0	0.236	81.248	26	0.091	23.437		114	14560.647	32130	1871.625	1871.625	2.327	H1-1b
38	H050	PIPE_2.0	0.244	81.248	30	0.091	23.437		131	14560.647	32130	1871.625	1871.625	2.325	H1-1b
39	H051	PIPE_2.0	0.244	81.248	34	0.091	23.437		62	14560.647	32130	1871.625	1871.625	2.321	H1-1b
40	H052	L2.5x2.5x4	0.166	14.71	74	0.044	0	z	82	37765.457	38556	1113.554	2537.388	1.441	H2-1
41	H053	L2.5x2.5x4	0.163	14.71	186	0.042	0	z	182	37765.457	38556	1113.554	2537.388	1.443	H2-1
42	H054	L2.5x2.5x4	0.161	14.71	202	0.042	0	z	198	37765.457	38556	1113.554	2537.388	1.435	H2-1
43	H055	PL6x0.375	0.099	3	117	0.345	1.5	y	6	68085.235	72900	569.531	9112.5	1.345	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
44	H056	PL6x0.375	0.094	3	133	0.331	1.5	y	10	68085.235	72900	569.531	9112.5	1.341	H1-1b
45	H057	PL6x0.375	0.095	3	65	0.328	1.5	y	2	68085.235	72900	569.531	9112.5	1.343	H1-1b
46	H058	PL6x0.375	0.112	1.5	117	0.362	1.5	y	10	68085.235	72900	569.531	9112.5	1.423	H1-1b
47	H059	PL6x0.375	0.109	1.5	133	0.362	1.5	y	2	68085.235	72900	569.531	9112.5	1.4	H1-1b
48	H060	PL6x0.375	0.109	3	5	0.359	1.5	y	6	68085.235	72900	569.531	9112.5	1.378	H1-1b
49	H067	PIPE_2.0	0.019	32.558	26	0.046	65.116		11	22572.808	32130	1871.625	1871.625	1.136	H1-1b
50	H068	PIPE_2.0	0.019	32.558	30	0.046	65.116		3	22572.808	32130	1871.625	1871.625	1.136	H1-1b
51	H069	PIPE_2.0	0.019	32.558	34	0.047	65.116		7	22572.808	32130	1871.625	1871.625	1.136	H1-1b
52	MP072	PIPE_2.0	0.181	57.5	2	0.032	57.5		7	16811.605	32130	1871.625	1871.625	2.27	H1-1b
53	MP075	PIPE_2.0	0.362	57.5	3	0.052	57.5		7	16811.605	32130	1871.625	1871.625	2.585	H1-1b
54	MP078	PIPE_2.0	0.293	57.5	2	0.036	57.5		3	16811.605	32130	1871.625	1871.625	3	H1-1b
55	MP081	PIPE_2.0	0.372	57.5	13	0.063	57.5		3	16811.605	32130	1871.625	1871.625	2.123	H1-1b
56	MP084	PIPE_2.0	0.184	57.5	10	0.032	57.5		3	16811.605	32130	1871.625	1871.625	3	H1-1b
57	MP087	PIPE_2.0	0.365	57.5	11	0.052	57.5		3	16811.605	32130	1871.625	1871.625	1.874	H1-1b
58	MP090	PIPE_2.0	0.297	57.5	10	0.037	57.5		11	16811.605	32130	1871.625	1871.625	2.238	H1-1b
59	MP093	PIPE_2.0	0.348	57.5	9	0.062	57.5		11	16811.605	32130	1871.625	1871.625	1.828	H1-1b
60	MP096	PIPE_2.0	0.184	57.5	6	0.032	57.5		11	16811.605	32130	1871.625	1871.625	1.959	H1-1b
61	MP099	PIPE_2.0	0.36	57.5	7	0.053	57.5		11	16811.605	32130	1871.625	1871.625	2.457	H1-1b
62	MP102	PIPE_2.0	0.294	57.5	6	0.035	57.5		5	16811.605	32130	1871.625	1871.625	2.229	H1-1b
63	MP105	PIPE_2.0	0.358	57.5	5	0.061	57.5		7	16811.605	32130	1871.625	1871.625	2.63	H1-1b
64	MP107	PIPE_2.0	0.644	55.5	12	0.047	55.5		12	10242.188	32130	1871.625	1871.625	1.595	H1-1b
65	MP109	PIPE_2.0	0.646	55.5	4	0.047	55.5		4	10242.188	32130	1871.625	1871.625	2.12	H1-1b
66	MP111	PIPE_2.0	0.245	55.5	12	0.028	55.5		12	10242.188	32130	1871.625	1871.625	1.932	H1-1b

Radio Frequency Exposure Analysis Report

February 28, 2023

American Tower

AT&T Site Name: STRATFORD STONYBROOK ROAD
AT&T Site Number: ATC: ATT: CT2381
FA#: 12906923
USID: 149436

Site Address: 23 Stonybrook Road, Stratford, CT 06614

Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2024

Signed 28 February 2023

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	42.47076 µW/cm^2
Cumulative General Population % MPE (Ground Level):	5.821067%

February 28, 2023

Attn: Blake Paynter, Project Manager

RF Exposure Analysis for Site: **STRATFORD STONYBROOK ROAD**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **23 STONYBROOK ROAD, Stratford, CT 06614** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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

Calculation Methodology

IXUS electromagnetic energy (EME) calculation software was used to assess all RF field levels presented in this study. IXUS software uses a fast and accurate EME calculation tool that allows for the determination of RF field strength in the vicinity of radio communication base stations and transmitters. At its core, the IXUS EME calculation module implements evaluation techniques detailed in the ITU-T K.61, CENELEC EN 50383, and IEC 62232 specifications and referenced in C95.3 IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz. The EME calculation result at any point in 3D space is achieved via a synthetic ray tracing technique, a conservative cylindrical envelope method, or through full-wave electromagnetic simulation. The ray tracing method is an advanced computation method described in IEC 622322 where the power is summed from elemental sources representing the individual components of the antenna which are selected by an analysis of published manufacturer datasheets and antenna pattern information. The selection of the solution method is determined by the particular antenna being considered.

In order to determine the spatial power density for comparison to the FCC limits, IXUS performs a spatial average of power density values between 0-6’ above the specified study plane (e.g., ground level).

Data & Results

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

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

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

Maximum Calculated Cumulative Power Density @ Ground Level
(Location: approximately 353' southeast of site)

Antenna ID	Make & Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
ATT1	Quintel QD6616-7	700	12.55	117	6	30	3237.97	0.010458	466.67	0.002241
ATT1	Quintel QD6616-7	1900	15.05	117	4	30	3838.67	0.00061	1000	0.000061
ATT1	Quintel QD6616-7	2100	15.55	117	4	45	6459.16	0.00087	1000	0.000087
ATT2	Ericsson AIR 6449	3700	23.55	115.5	1	86.75	19645.79	0.2693	1000	0.026930
ATT3	Ericsson AIR 6419	3450	23.05	118.5	1	54.22	10943.58	0.1554	1000	0.015540
ATT4	CCI DMP65R-BU6D	700	11.85	117	4	30	1837.3	0.003075	466.67	0.000659
ATT4	CCI DMP65R-BU6D	850	12.45	117	4	30	2109.51	0.002777	566.67	0.000490
ATT4	CCI DMP65R-BU6D	2300	16.25	117	4	18.75	3162.72	0.00018	1000	0.000018
ATT5	Quintel QD6616-7	700	12.55	117	6	30	3237.97	2.26755	466.67	0.485900
ATT5	Quintel QD6616-7	1900	15.05	117	4	30	3838.67	0.1723	1000	0.017230
ATT5	Quintel QD6616-7	2100	15.55	117	4	45	6459.16	0.1959	1000	0.019590
ATT6	Ericsson AIR 6449	3700	23.55	115.5	1	86.75	19645.79	10.91	1000	1.091000
ATT7	Ericsson AIR 6419	3450	23.05	118.5	1	54.22	10943.58	6.668	1000	0.666800
ATT8	CCI DMP65R-BU6D	700	11.85	117	4	30	1837.3	0.797072	466.67	0.170800
ATT8	CCI DMP65R-BU6D	850	12.45	117	4	30	2109.51	0.722504	566.67	0.127500
ATT8	CCI DMP65R-BU6D	2300	16.25	117	4	18.75	3162.72	0.04199	1000	0.004199
ATT9	Quintel QD6616-7	700	12.55	117	6	30	3237.97	0.008111	466.67	0.001738
ATT9	Quintel QD6616-7	1900	15.05	117	4	30	3838.67	0.00061	1000	0.000061
ATT9	Quintel QD6616-7	2100	15.55	117	4	45	6459.16	0.00081	1000	0.000081
ATT10	Ericsson AIR 6449	3700	23.55	115.5	1	86.75	19645.79	0.03831	1000	0.003831
ATT11	Ericsson AIR 6419	3450	23.05	118.5	1	54.22	10943.58	0.02558	1000	0.002558
ATT12	CCI DMP65R-BU6D	700	11.85	117	4	30	1837.3	0.00301	466.67	0.000645
ATT12	CCI DMP65R-BU6D	850	12.45	117	4	30	2109.51	0.002992	566.67	0.000528
ATT12	CCI DMP65R-BU6D	2300	16.25	117	4	18.75	3162.72	0.00017	1000	0.000017
TMO13	RFS APXVAARR18_43-U-NA20	600	11.95	97	2	60	1880.1	0.006396	400	0.001599
TMO13	RFS APXVAARR18_43-U-NA20	700	12.35	97	2	60	2061.49	0.007177	466.67	0.001538
TMO13	RFS APXVAARR18_43-U-NA20	1900	15.55	97	2	60	4307.06	0.0074	1000	0.000740
TMO13	RFS APXVAARR18_43-U-NA20	2100	15.55	97	2	60	4307.06	0.00739	1000	0.000739
TMO14	RFS APXVAARR18_43-U-NA20	600	11.95	97	2	60	1880.1	1.8264	400	0.456600
TMO14	RFS APXVAARR18_43-U-NA20	700	12.35	97	2	60	2061.49	2.022081	466.67	0.433300
TMO14	RFS APXVAARR18_43-U-NA20	1900	15.55	97	2	60	4307.06	1.89	1000	0.189000
TMO14	RFS APXVAARR18_43-U-NA20	2100	15.55	97	2	60	4307.06	1.887	1000	0.188700
TMO15	RFS APXVAARR18_43-U-NA20	600	11.95	97	2	60	1880.1	0.006168	400	0.001542
TMO15	RFS APXVAARR18_43-U-NA20	700	12.35	97	2	60	2061.49	0.006921	466.67	0.001483

Antenna ID	Make & Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density (µW/cm²)	General Population MPE Limit (µW/cm²)	General Population % MPE
TMO15	RFS APXVAARR18_43-U-NA20	1900	15.55	97	2	60	4307.06	0.00725	1000	0.000725
TMO15	RFS APXVAARR18_43-U-NA20	2100	15.55	97	2	60	4307.06	0.00724	1000	0.000724
Sprint16	CommScope FFVV-65A-R2-V1	850	11.05	87	2	40	1018.8	0.007321	566.67	0.001292
Sprint16	CommScope FFVV-65A-R2-V1	1900	14.55	87	2	60	3421.22	0.0043	1000	0.000430
Sprint16	CommScope FFVV-65A-R2-V1	2600	15.85	87	1	35	1346.07	0.00147	1000	0.000147
Sprint17	CommScope FFVV-65A-R2-V1	850	11.05	87	2	40	1018.8	0.928772	566.67	0.163900
Sprint17	CommScope FFVV-65A-R2-V1	1900	14.55	87	2	60	3421.22	3.166	1000	0.316600
Sprint17	CommScope FFVV-65A-R2-V1	2600	15.85	87	1	35	1346.07	1.128	1000	0.112800
Sprint18	CommScope FFVV-65A-R2-V1	850	11.05	87	2	40	1018.8	0.002879	566.67	0.000508
Sprint18	CommScope FFVV-65A-R2-V1	1900	14.55	87	2	60	3421.22	0.00135	1000	0.000135
Sprint18	CommScope FFVV-65A-R2-V1	2600	15.85	87	1	35	1346.07	0.00062	1000	0.000062
VZW19	CommScope SBNHH-1D65B	850	12.55	78	4	40	2878.19	0.01509	566.67	0.002663
VZW19	CommScope SBNHH-1D65B	1900	15.55	78	4	40	5742.75	0.0032	1000	0.000320
VZW20	CommScope SBNHH-1D65B	700	12.75	78	4	40	3013.84	0.022405	466.67	0.004801
VZW20	CommScope SBNHH-1D65B	2100	16.45	78	4	40	7065.13	0.00078	1000	0.000078
VZW21	CommScope SBNHH-1D65B	850	12.55	78	4	40	2878.19	3.006751	566.67	0.530600
VZW21	CommScope SBNHH-1D65B	1900	15.55	78	4	40	5742.75	0.7694	1000	0.076940
VZW22	CommScope SBNHH-1D65B	700	12.75	78	4	40	3013.84	2.991355	466.67	0.641000
VZW22	CommScope SBNHH-1D65B	2100	16.45	78	4	40	7065.13	0.4374	1000	0.043740
VZW23	CommScope SBNHH-1D65B	850	12.55	78	4	40	2878.19	0.002743	566.67	0.000484
VZW23	CommScope SBNHH-1D65B	1900	15.55	78	4	40	5742.75	0.00022	1000	0.000022
VZW24	CommScope SBNHH-1D65B	700	12.75	78	4	40	3013.84	0.001587	466.67	0.000340
VZW24	CommScope SBNHH-1D65B	2100	16.45	78	4	40	7065.13	0.00011	1000	0.000011
							Cumulative Power Density:	**42.47076 µW/cm²**	**Cumulative % MPE:**	**5.812067%**

Summary

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

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC