



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 130 ft Monopole
ATC Site Name : CLMB 118 OH, OH
ATC Asset Number : 413306
Engineering Number : 13625925_C3_03
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : MROWP052352
Carrier Site Number : OHL03615
Site Location : 6430 Shier-Rings Road
Dublin, OH 43016-8715
40.097000,-83.162400
County : Franklin
Date : April 23, 2021
Max Usage : 90%
Result : Pass

Prepared By:
Brady Layton
Structural Engineer

Reviewed By:



COA: COA.02041



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
Proposed Equipment	2
Structure Usages	3
Foundations	3
Deflection and Sway	3
Standard Conditions	4
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 130 ft monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	EI Project #GS52508, dated July 17, 2000 Mapping by ETS Report #162934, dated December 29, 2016
Foundation Drawing	EI Project #7388, dated July 17, 2000
Geotechnical Report	CTL Project #00050356, dated June 5, 2000

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:	90 mph (3-Second Gust, Vasd) / 115 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2017 Ohio Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.13$, $S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

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

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



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
132.0	3	Nokia AZQC AirScale Micro CBRS 3.5GHz (AC)	Triangular Platform with Handrails	(2) 1 5/8" Hybriflex (13) 7/8" Coax	VERIZON WIRELESS
	6	Alcatel-Lucent B25 RRH4x30-4R			
	3	Nokia AHBC AirScale Dual RRH 4T4R B5/13 320W			
	1	Raycap RCMD-3315-PF-48			
	9	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield			
	1	Commscope RC3DC-3315-PF-48			
	1	VZW Unused Reserve (665.39 sqin)			
	3	Commscope VVSSP-65S-R1BV2			
	9	Andrew SBNHH-1D65C			
109.0	1	Raycap DC6-48-60-18-8F	Triangular Platform with Handrails	(3) 0.92" (23.4mm) Cable (3) 2" conduit (2) 0.39" (10mm) Fiber Trunk (6) 1 5/8" Coax (6) 7/8" Coax	AT&T MOBILITY
	3	Nokia AirScale RRH 4T4R B5 160W AHCA			
	3	Nokia AirScale Dual RRH 4T4R B25/66 320W AHFIB (66.1lbs)			
	3	Nokia AirScale Dual RRH 4T4R B12/14 320W AHLBA w/ cover			
	3	Alcatel-Lucent RRH4x25-WCS (91lb)			
	3	Andrew SBNHH-1D65C			
	6	Commscope NNH4-65C-R6 (102.1 lbs)			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
109.0	1	Raycap DC6-48-60-18-8F	-	(1) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Kathrein Scala 742-265 / AP15/18-880/1940/065D/ADT/XXP			
	6	Kathrein Scala 860-10025			

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
109.0	3	Nokia AEQK AirScale MAA 64T64R 192AE n77 200W	Triangular Platform with Handrails	(2) 0.96" (24.3mm) Cable	AT&T MOBILITY
	1	Raycap DC9-48-60-24-8C-EV			

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	76%	Pass
Shaft	80%	Pass
Base Plate	43%	Pass
Reinforcement	90%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,041.8	56%
Axial (Kips)	31.7	8%
Shear (Kips)	19.8	40%

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.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
109.0	Nokia AEQK AirScale MAA 64T64R 192AE n77 200W Raycap DC9-48-60-24-8C-EV	AT&T MOBILITY	1.487	1.518

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



Standard Conditions

All engineering services performed by ATC Tower 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 ATC Tower Services LLC

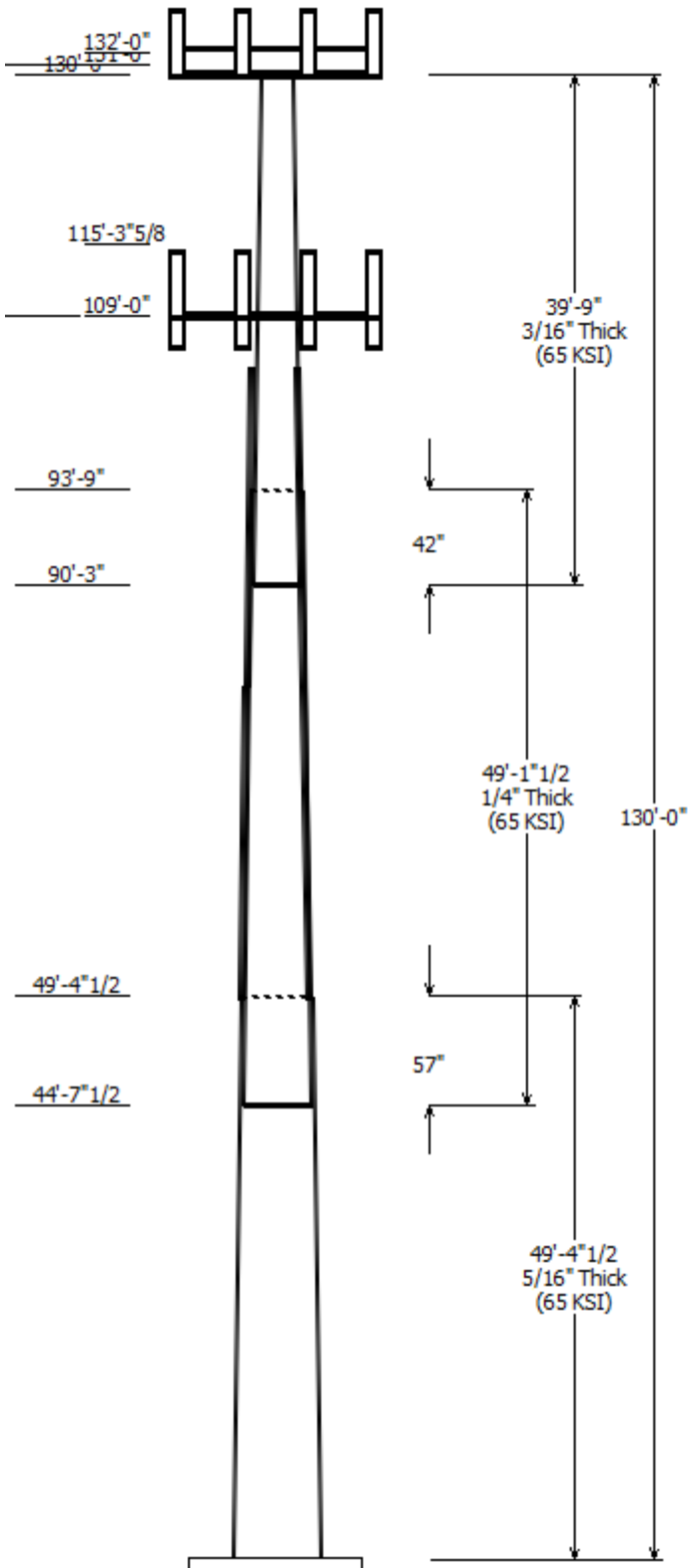
It is the responsibility of the client to ensure that the information provided to ATC Tower Services LLC and used in the performance of our engineering services is correct and complete.

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 ATC Tower 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. ATC Tower Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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Job Information	
Client : AT&T MOBILITY	Code: ANSI/TIA-222-G
Pole : 413306	
Location : CLMB 118 OH, OH	
Description : 130 ft Monopole	Struct Class : II
Shape : 18 Sides	Exposure : C
Height : 130.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.23750@in/ft)	

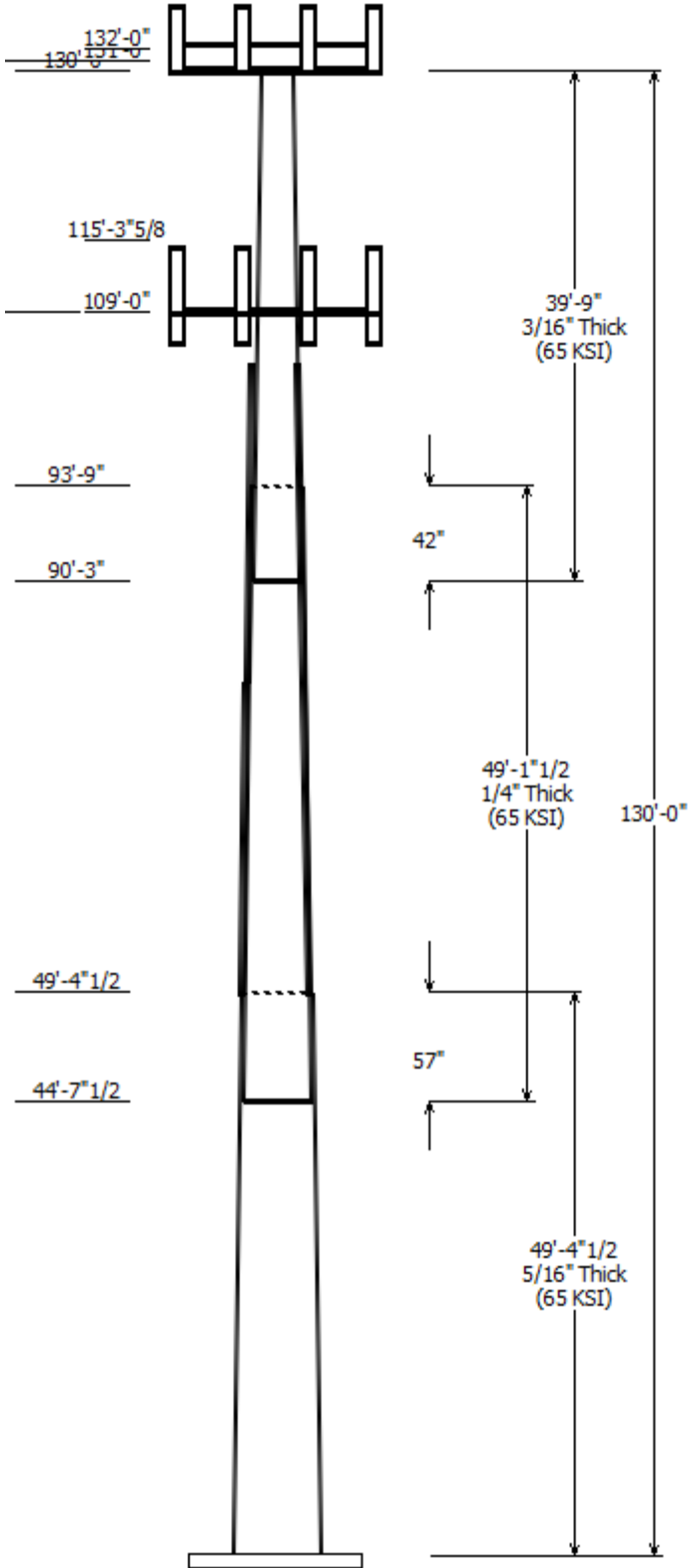
Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Accross Top	Flats Bottom				
1	49.375	32.27	44.00	0.313		0.000	18 Sides 65
2	49.125	22.23	33.90	0.250	Slip Joint	57.000	18 Sides 65
3	39.750	14.00	23.44	0.188	Slip Joint	42.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
132.000	135.000	1	Commscope RC3DC-3315-PF-
132.000	133.700	9	Alcatel-Lucent B66A RRH4x45-
132.000	133.700	1	Raycap RCMDC-3315-PF-48
132.000	133.100	3	Nokia AHBC AirScale Dual
132.000	133.700	6	Alcatel-Lucent B25 RRH4x30-4R
132.000	133.600	3	Nokia AZQC AirScale Micro
131.000	131.000	1	VZW Unused Reserve (665.39
130.000	130.000	1	Generic Flat Platform with Han
130.000	131.100	9	Andrew SBNHH-1D65C
130.000	131.100	3	Commscope VVSSP-65S-
115.300	115.300	1	Raycap DC6-48-60-18-8F
109.000	109.000	1	Flat Platform w/ Handrails
109.000	111.500	6	Commscope NNH4-65C-R6
109.000	111.200	3	Andrew SBNHH-1D65C
109.000	109.000	1	Raycap DC9-48-60-24-8C-EV
109.000	109.000	3	Nokia AEQK AirScale MAA
109.000	111.400	3	Alcatel-Lucent RRH4x25-WCS
109.000	111.500	3	Nokia AirScale Dual RRH 4T4R B
109.000	111.500	3	Nokia AirScale Dual RRH 4T4R B
109.000	111.900	3	Nokia AirScale RRH 4T4R B5 160

Linear Appurtenance				
Elev (ft)	From	To	Description	Exposed To Wind
46.300	46.300	106.5	Plate	Yes
46.300	46.300	106.5	Plate	Yes
46.300	46.300	106.5	Plate	Yes
5.000	5.000	109.0	0.39" (10mm)	No
5.000	5.000	109.0	1 5/8" Coax	No
5.000	5.000	130.0	7/8" Coax	No
5.000	5.000	132.0	1 5/8" Hybriflex	Yes
0.000	0.000	109.0	0.92" (23.4mm)	No
0.000	0.000	109.0	0.96" (24.3mm)	No
0.000	0.000	109.0	2" conduit	No
0.000	0.000	109.0	7/8" Coax	No

Load Cases	
1.2D + 1.6W	90 mph with No Ice
0.9D + 1.6W	90 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice

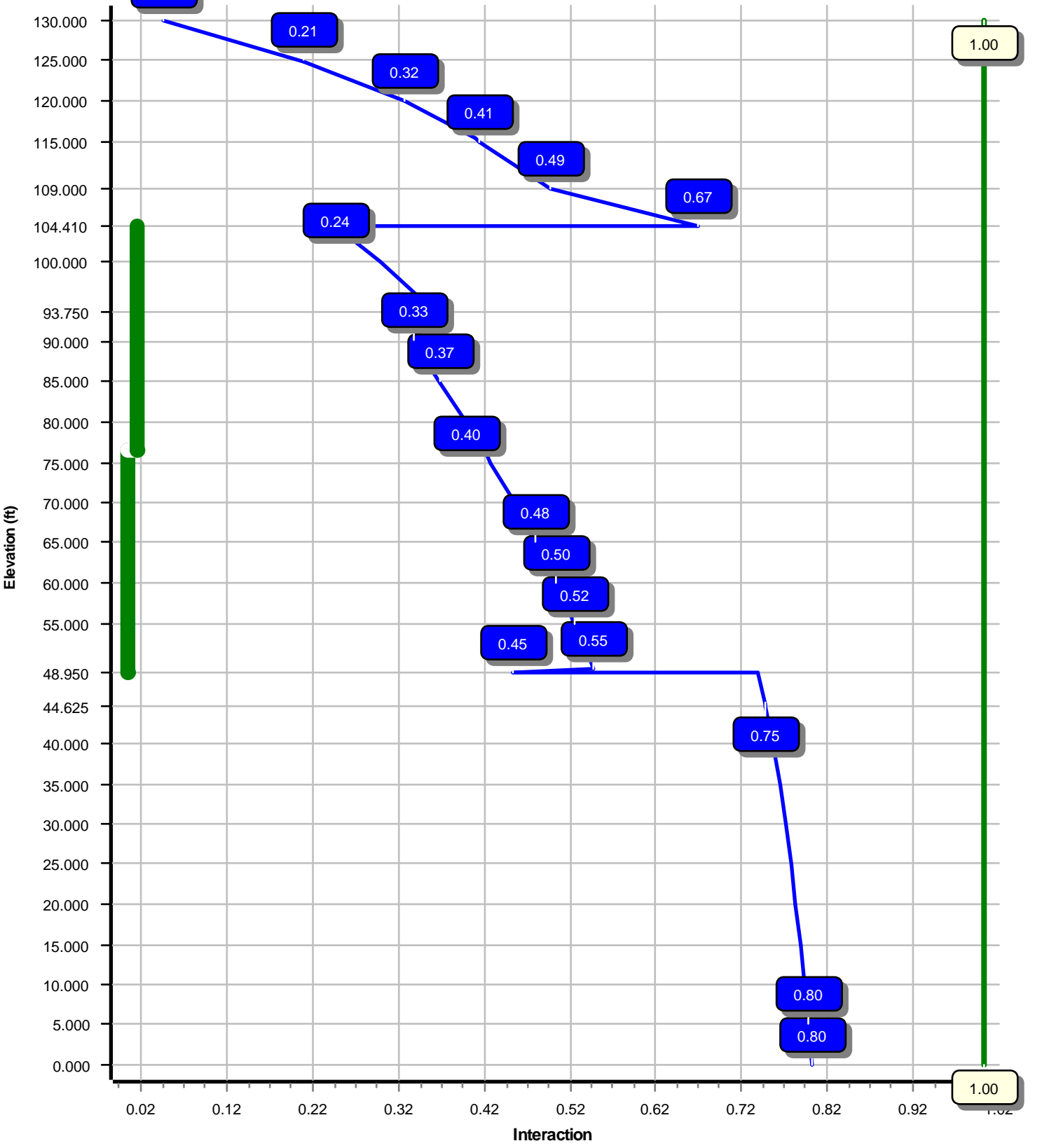
$(1.2 + 0.2Sds) * DL + E$	Seismic Equivalent Lateral Forces Method
$(1.2 + 0.2Sds) * DL + E$	Seismic Equivalent Modal Analysis Method
$(0.9 - 0.2Sds) * DL + E$	Seismic (Reduced DL) Equivalent Lateral
$(0.9 - 0.2Sds) * DL + E$	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph



Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2041.79	19.78	31.74
0.9D + 1.6W	2003.22	19.71	23.79
1.2D + 1.0Di + 1.0Wi	445.44	4.43	50.20
$(1.2 + 0.2Sds) * DL + E$ ELM	90.11	0.80	31.49
$(1.2 + 0.2Sds) * DL + E$ EMAM	136.20	1.15	31.49
$(0.9 - 0.2Sds) * DL + E$ ELM	88.49	0.80	22.42
$(0.9 - 0.2Sds) * DL + E$ EMAM	133.57	1.15	22.42
1.0D + 1.0W	501.53	4.90	26.48

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000

Load Case : 1.2D + 1.6W
Max Ratio 79.93% at 0.0 ft



Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

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Customer: AT&T MOBILITY

Analysis Parameters

Location :	Franklin County, OH	Height (ft) :	130
Code :	ANSI/TIA-222-G	Base Diameter (in) :	44.00
Shape :	18 Sides	Top Diameter (in) :	14.00
Pole Type :	Taper	Taper (in/ft) :	0.237
Pole Manufacturer :	EEL	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	90 mph
Exposure Category:	C	Design Wind Speed With Ice:	40 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method: Equivalent Modal Analysis & Equivalent Lateral Force Methods

Site Class: D - Stiff Soil

Period Based on Rayleigh Method (sec): 2.55

T _L (sec):	12	p:	1	C _s :	0.030
S _s :	0.125	S ₁ :	0.062	C _s Max:	0.030
F _a :	1.600	F _v :	2.400	C _s Min:	0.030
S _{ds} :	0.133	S _{d1} :	0.099		

Load Cases

1.2D + 1.6W	90 mph with No Ice
0.9D + 1.6W	90 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

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Site Name: CLMB 118 OH, OH

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Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom				Top								
							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	49.375	0.3125	65		0.00	6,303	44.00	0.00	43.33	10448.8	23.42	140.80	32.27	49.38	31.70	4091.2	16.80	103.28	0.237500
2-18	49.125	0.2500	65	Slip	57.00	3,690	33.90	44.63	26.70	3820.3	22.50	135.61	22.23	93.75	17.44	1065.2	14.27	88.94	0.237500
3-18	39.750	0.1875	65	Slip	42.00	1,492	23.44	90.25	13.84	945.3	20.63	125.02	14.00	130.00	8.22	198.1	11.76	74.67	0.237500
Shaft Weight						11,485													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
132.00	Nokia AZQC AirScale Micro	3	0.75	1.600	13.40	1.025	0.50	37.28	1.687	0.50
132.00	Alcatel-Lucent B25 RRH4x30-4R	6	0.75	1.700	51.00	2.140	0.67	110.97	3.125	0.67
132.00	Nokia AHBCC AirScale Dual RRH	3	0.75	1.100	83.80	2.218	0.67	146.25	3.222	0.67
132.00	Raycap RCMD-3315-PF-48	1	0.75	1.700	21.40	2.512	0.67	99.93	3.539	0.67
132.00	Alcatel-Lucent B66A RRH4x45-	9	0.75	1.700	56.80	2.537	0.67	125.89	3.642	0.67
132.00	Commscope RC3DC-3315-PF-48	1	0.75	3.000	32.00	3.781	0.50	140.07	5.085	0.50
131.00	VZW Unused Reserve (665.39	1	0.75	0.000	0.00	4.621	0.90	0.00	7.795	0.90
130.00	Commscope VVSSP-65S-R1BV2	3	0.75	1.100	15.20	2.360	0.67	69.53	3.407	0.67
130.00	Andrew SBNHH-1D65C	9	0.75	1.100	66.10	11.350	0.70	290.69	14.531	0.70
130.00	Generic Flat Platform with	1	1.00	0.000	2,500.00	42.400	1.00	4,251.42	63.076	1.00
115.30	Raycap DC6-48-60-18-8F	1	0.75	0.000	20.00	1.260	1.00	71.38	1.902	1.00
109.00	Nokia AirScale RRH 4T4R B5	3	0.75	2.900	35.30	1.286	0.50	73.39	2.015	0.50
109.00	Nokia AirScale Dual RRH 4T4R	3	0.75	2.500	66.10	2.218	0.67	122.18	3.203	0.67
109.00	Nokia AirScale Dual RRH 4T4R	3	0.75	2.500	101.40	3.683	0.68	321.35	4.953	0.68
109.00	Alcatel-Lucent RRH4x25-WCS	3	0.75	2.400	91.00	3.835	0.75	206.89	5.217	0.75
109.00	Nokia AEQK AirScale MAA	3	0.75	0.000	99.20	4.351	0.66	211.68	5.708	0.66
109.00	Raycap DC9-48-60-24-8C-EV	1	0.75	0.000	16.00	4.788	1.00	141.07	6.213	1.00
109.00	Andrew SBNHH-1D65C	3	0.75	2.200	66.10	11.350	0.70	286.79	14.475	0.70
109.00	Commscope NNH4-65C-R6	6	0.75	2.500	102.10	17.073	0.64	420.11	20.645	0.64
109.00	Flat Platform w/ Handrails	1	1.00	0.000	2,000.00	42.400	1.00	3,376.79	62.717	1.00
Totals	Num Loadings:20	64			8,328.60			19,442.37		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
5.00	132.00	2	1 5/8" Hybriflex	1.98	1.30	N	2	1.00	1.00	90	Y	VERIZON WIRELESS
5.00	130.00	13	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	N	VERIZON WIRELESS
0.00	109.00	3	0.92" (23.4mm) Cable	0.92	0.89	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	109.00	2	0.96" (24.3mm) Cable	0.96	0.88	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	109.00	3	2" conduit	2.38	3.65	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	109.00	6	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	N	AT&T MOBILITY
5.00	109.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N	AT&T MOBILITY
5.00	109.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	AT&T MOBILITY
46.30	106.50	1	Plate Reinforcement	1.12	0.00	Y	1	0.00	0.00	0	Y	
46.30	106.50	1	Plate Reinforcement	1.12	0.00	Y	1	0.00	0.00	120	Y	
46.30	106.50	1	Plate Reinforcement	1.12	0.00	Y	1	0.00	0.00	240	Y	

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Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	— Intermediate Connections —		Connectors	Continuation?
						Description	Spacing (in)		
48.95	76.50	3	PL PL 6" x 1"	50	0.00	AJAX M20 Class	18.5	AJAX M20 Class	No
76.50	104.4	3	PL PL 6" x 1"	50	0.00	AJAX M20 Class	16.0	AJAX M20 Class	Yes

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Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.3125	44.000	43.331	10,448.8	23.42	140.80	73.9	467.7	0.0	0.0			
5.00		0.3125	42.813	42.153	9,619.7	22.75	137.00	74.6	442.6	0.0	727.2			
10.00		0.3125	41.625	40.975	8,835.7	22.08	133.20	75.4	418.1	0.0	707.2			
15.00		0.3125	40.438	39.798	8,095.4	21.41	129.40	76.2	394.3	0.0	687.1			
20.00		0.3125	39.250	38.620	7,397.7	20.74	125.60	77.0	371.2	0.0	667.1			
25.00		0.3125	38.063	37.442	6,741.3	20.07	121.80	77.8	348.8	0.0	647.1			
30.00		0.3125	36.875	36.264	6,124.9	19.40	118.00	78.6	327.2	0.0	627.0			
35.00		0.3125	35.688	35.086	5,547.3	18.73	114.20	79.4	306.2	0.0	607.0			
40.00		0.3125	34.500	33.909	5,007.2	18.06	110.40	80.2	285.9	0.0	586.9			
44.63	Bot - Section 2	0.3125	33.402	32.819	4,539.9	17.44	106.88	80.9	267.7	0.0	525.1			
45.00		0.3125	33.313	32.731	4,503.4	17.39	106.60	81.0	266.3	0.0	75.8			
48.95	Reinf Bottom	0.3125	32.374	31.800	4,130.1	16.86	103.60	81.6	251.3	0.0	786.6			
49.38	Top - Section 1	0.2500	32.773	25.806	3,448.8	21.70	131.09	75.9	207.3	0.0	83.3	18.00	2,594	26.0
50.00		0.2500	32.625	25.689	3,401.8	21.60	130.50	76.0	205.4	0.0	54.8	18.00	2,571	38.3
55.00		0.2500	31.438	24.746	3,041.1	20.76	125.75	77.0	190.5	0.0	429.0	18.00	2,395	306.3
60.00		0.2500	30.250	23.804	2,706.8	19.92	121.00	78.0	176.2	0.0	413.0	18.00	2,225	306.3
65.00		0.2500	29.063	22.862	2,397.9	19.09	116.25	79.0	162.5	0.0	397.0	18.00	2,061	306.3
70.00		0.2500	27.875	21.920	2,113.4	18.25	111.50	79.9	149.3	0.0	381.0	18.00	1,903	306.3
75.00		0.2500	26.688	20.977	1,852.4	17.41	106.75	80.9	136.7	0.0	364.9	18.00	1,752	306.3
76.50	Reinf. Top Reinf	0.2500	26.331	20.695	1,778.6	17.16	105.32	81.2	133.0	0.0	106.4	18.00	1,708	91.9
80.00		0.2500	25.500	20.035	1,613.9	16.57	102.00	81.9	124.7	0.0	242.5	18.00	1,607	214.4
85.00		0.2500	24.313	19.093	1,396.7	15.74	97.25	82.6	113.2	0.0	332.9	18.00	1,469	306.3
90.00		0.2500	23.125	18.151	1,200.0	14.90	92.50	82.6	102.2	0.0	316.8	18.00	1,337	306.3
90.25	Bot - Section 3	0.2500	23.066	18.104	1,190.6	14.86	92.26	82.6	101.7	0.0	15.4	18.00	1,330	15.3
93.75	Top - Section 2	0.1875	22.609	13.343	847.5	19.85	120.58	78.1	73.8	0.0	373.5	18.00	1,282	214.4
95.00		0.1875	22.313	13.167	814.3	19.57	119.00	78.4	71.9	0.0	56.4	18.00	1,250	76.6
100.0		0.1875	21.125	12.460	690.1	18.46	112.67	79.7	64.3	0.0	218.0	18.00	1,129	306.3
104.4	Reinf. Top	0.1875	20.078	11.837	591.6	17.47	107.08	80.9	58.0	0.0	182.3	18.00	1,027	270.1
105.0		0.1875	19.938	11.753	579.2	17.34	106.33	81.0	57.2	0.0	23.7			
109.0		0.1875	18.987	11.188	499.6	16.45	101.27	82.1	51.8	0.0	156.1			
110.0		0.1875	18.750	11.047	480.9	16.22	100.00	82.3	50.5	0.0	37.8			
115.0		0.1875	17.563	10.340	394.4	15.11	93.67	82.6	44.2	0.0	181.9			
115.3		0.1875	17.491	10.298	389.6	15.04	93.29	82.6	43.9	0.0	10.5			
120.0		0.1875	16.375	9.633	318.9	13.99	87.33	82.6	38.4	0.0	159.4			
125.0		0.1875	15.187	8.927	253.8	12.87	81.00	82.6	32.9	0.0	157.9			
130.0		0.1875	14.000	8.220	198.1	11.76	74.67	82.6	27.9	0.0	145.9			
											11,484.6			3,397.0

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:30 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W	90 mph with No Ice	25 Iterations
Gust Response Factor :1.10		Wind Importance Factor 1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		175.9	0.0					0.0	0.0	175.9	0.0	0.0	0.0
5.00		347.0	872.7					0.0	104.2	347.0	976.8	0.0	0.0
10.00		337.4	848.6					0.0	175.7	337.4	1,024.3	0.0	0.0
15.00		332.8	824.6					0.0	175.7	332.8	1,000.3	0.0	0.0
20.00		336.9	800.5					0.0	175.7	336.9	976.2	0.0	0.0
25.00		342.7	776.5					0.0	175.7	342.7	952.2	0.0	0.0
30.00		345.1	752.4					0.0	175.7	345.1	928.2	0.0	0.0
35.00		345.0	728.4					0.0	175.7	345.0	904.1	0.0	0.0
40.00		330.3	704.3					0.0	175.7	330.3	880.1	0.0	0.0
44.63	Bot - Section 2	171.0	630.1					0.0	162.6	171.0	792.6	0.0	0.0
45.00		148.5	91.0					0.0	13.2	148.5	104.2	0.0	0.0
48.95	Reinf Bottom	150.1	943.9					0.0	138.8	150.1	1,082.8	0.0	0.0
49.38	Top - Section 1	35.8	100.0					0.0	46.2	35.8	146.1	0.0	0.0
50.00		190.0	65.7					0.0	67.9	190.0	133.6	0.0	0.0
55.00		334.4	514.9					0.0	543.2	334.4	1,058.1	0.0	0.0
60.00		327.7	495.6					0.0	543.2	327.7	1,038.9	0.0	0.0
65.00		320.2	476.4					0.0	543.2	320.2	1,019.6	0.0	0.0
70.00		312.0	457.1					0.0	543.2	312.0	1,000.4	0.0	0.0
75.00		199.1	437.9					0.0	543.2	199.1	981.2	0.0	0.0
76.50	Reinf. Top Reinf	149.2	127.6					0.0	163.0	149.2	290.6	0.0	0.0
80.00		248.3	291.0					0.0	380.3	248.3	671.3	0.0	0.0
85.00		283.5	399.4					0.0	543.2	283.5	942.7	0.0	0.0
90.00		146.0	380.2					0.0	543.2	146.0	923.4	0.0	0.0
90.25	Bot - Section 3	102.4	18.5					0.0	27.2	102.4	45.7	0.0	0.0
93.75	Top - Section 2	129.0	448.3					0.0	380.3	129.0	828.5	0.0	0.0
95.00		163.8	67.7					0.0	135.8	163.8	203.5	0.0	0.0
100.00		240.5	261.6					0.0	543.2	240.5	804.9	0.0	0.0
104.41	Reinf. Top	124.5	218.8					0.0	479.1	124.5	697.9	0.0	0.0
105.00		109.7	28.4					0.0	20.7	109.7	49.2	0.0	0.0
109.00	Appurtenance(s)	118.8	187.4	6,112.1	0.0	9,177.2	4,807.1	0.0	140.6	6,230.9	5,135.0	0.0	0.0
110.00		138.2	45.4					0.0	8.3	138.2	53.7	0.0	0.0
115.00		121.5	218.3					0.0	41.3	121.5	259.7	0.0	0.0
115.30		110.7	12.6					0.0	2.5	110.7	15.1	0.0	0.0
120.00		210.3	191.3					0.0	38.9	210.3	230.1	0.0	0.0
125.00		208.4	189.5					0.0	41.3	208.4	230.8	0.0	0.0
130.00	Appurtenance(s)	102.0	175.0	4,622.7	0.0	2,922.2	3,768.6	0.0	41.3	4,724.7	3,985.0	0.0	0.0
Totals:										18,523.4	30,366.7	0.00	0.00

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:32 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W

90 mph with No Ice

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

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	-31.74	-19.78	0.00	-2,041.79	0.00	2,041.79	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.799
5.00	-30.67	-19.58	0.00	-1,942.88	0.00	1,942.88	2,831.95	1,415.98	4,948.02	2,477.69	0.15	-0.27	0.795
10.00	-29.55	-19.38	0.00	-1,844.98	0.00	1,844.98	2,781.89	1,390.94	4,723.74	2,365.38	0.58	-0.55	0.791
15.00	-28.46	-19.18	0.00	-1,748.07	0.00	1,748.07	2,730.15	1,365.07	4,501.64	2,254.16	1.31	-0.84	0.786
20.00	-27.39	-18.98	0.00	-1,652.15	0.00	1,652.15	2,676.74	1,338.37	4,281.95	2,144.16	2.35	-1.14	0.781
25.00	-26.34	-18.76	0.00	-1,557.27	0.00	1,557.27	2,621.66	1,310.83	4,064.92	2,035.48	3.71	-1.45	0.775
30.00	-25.32	-18.53	0.00	-1,463.49	0.00	1,463.49	2,564.92	1,282.46	3,850.80	1,928.26	5.40	-1.77	0.769
35.00	-24.32	-18.30	0.00	-1,370.85	0.00	1,370.85	2,506.50	1,253.25	3,639.84	1,822.62	7.42	-2.10	0.762
40.00	-23.35	-18.07	0.00	-1,279.38	0.00	1,279.38	2,446.41	1,223.20	3,432.28	1,718.69	9.80	-2.44	0.754
44.63	-22.51	-17.93	0.00	-1,195.82	0.00	1,195.82	2,389.33	1,194.67	3,243.53	1,624.17	12.32	-2.76	0.746
45.00	-22.36	-17.84	0.00	-1,189.10	0.00	1,189.10	2,384.64	1,192.32	3,228.36	1,616.58	12.54	-2.79	0.745
48.95	-21.24	-17.69	0.00	-1,118.64	0.00	1,118.64	2,334.67	1,167.34	3,070.02	1,537.29	14.96	-3.08	0.737
49.38	-21.09	-17.66	0.00	-1,111.12	0.00	1,111.12	1,762.19	881.09	2,355.38	1,179.44	15.24	-3.11	0.545
50.00	-20.92	-17.51	0.00	-1,100.08	0.00	1,100.08	1,756.99	878.50	2,337.64	1,170.55	15.65	-3.14	0.543
55.00	-19.81	-17.21	0.00	-1,012.51	0.00	1,012.51	1,714.48	857.24	2,196.77	1,100.02	19.07	-3.39	0.522
60.00	-18.71	-16.90	0.00	-926.48	0.00	926.48	1,670.31	835.15	2,058.03	1,030.54	22.75	-3.64	0.500
65.00	-17.64	-16.59	0.00	-841.98	0.00	841.98	1,624.46	812.23	1,921.66	962.26	26.71	-3.90	0.477
70.00	-16.60	-16.28	0.00	-759.02	0.00	759.02	1,576.94	788.47	1,787.90	895.28	30.92	-4.15	0.452
75.00	-15.59	-16.06	0.00	-677.60	0.00	677.60	1,527.75	763.88	1,657.01	829.73	35.41	-4.41	0.426
76.50	-15.27	-15.92	0.00	-653.51	0.00	653.51	1,512.67	756.34	1,618.33	810.37	36.81	-4.49	0.417
76.50	-15.27	-15.92	0.00	-653.51	0.00	653.51	1,512.67	756.34	1,618.33	810.37	36.81	-4.49	0.417
80.00	-14.56	-15.67	0.00	-597.79	0.00	597.79	1,476.89	738.45	1,529.22	765.75	40.16	-4.67	0.397
85.00	-13.58	-15.37	0.00	-519.42	0.00	519.42	1,418.51	709.25	1,399.01	700.55	45.18	-4.91	0.367
90.00	-12.64	-15.17	0.00	-442.57	0.00	442.57	1,348.50	674.25	1,263.66	632.77	50.45	-5.15	0.336
90.25	-12.58	-15.09	0.00	-438.77	0.00	438.77	1,345.00	672.50	1,257.07	629.47	50.72	-5.16	0.334
93.75	-11.74	-14.90	0.00	-385.98	0.00	385.98	937.32	468.66	863.14	432.21	54.56	-5.33	0.362
95.00	-11.52	-14.75	0.00	-367.35	0.00	367.35	928.80	464.40	843.88	422.57	55.96	-5.38	0.349
100.00	-10.69	-14.47	0.00	-293.59	0.00	293.59	893.68	446.84	768.02	384.58	61.72	-5.61	0.296
104.41	-9.98	-14.30	0.00	-229.77	0.00	229.77	861.32	430.66	702.85	351.95	66.98	-5.79	0.244
104.41	-9.98	-14.30	0.00	-229.77	0.00	229.77	861.32	430.66	702.85	351.95	66.98	-5.79	0.666
105.00	-9.89	-14.22	0.00	-221.34	0.00	221.34	856.89	428.44	694.27	347.65	67.70	-5.82	0.649
109.00	-5.41	-7.50	0.00	-155.29	0.00	155.29	826.25	413.13	636.94	318.94	72.73	-6.19	0.494
110.00	-5.34	-7.38	0.00	-147.78	0.00	147.78	818.43	409.21	622.86	311.89	74.04	-6.28	0.481
115.00	-5.07	-7.25	0.00	-110.86	0.00	110.86	768.20	384.10	546.86	273.84	80.81	-6.66	0.412
115.30	-5.03	-7.11	0.00	-108.69	0.00	108.69	765.05	382.53	542.36	271.58	81.23	-6.69	0.407
120.00	-4.79	-6.90	0.00	-75.27	0.00	75.27	715.70	357.85	474.29	237.50	87.96	-7.00	0.324
125.00	-4.56	-6.68	0.00	-40.78	0.00	40.78	663.20	331.60	406.89	203.75	95.43	-7.26	0.207
130.00	0.00	-6.04	0.00	-7.39	0.00	7.39	610.70	305.35	344.65	172.58	103.10	-7.40	0.043

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:32 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W	90 mph with No Ice (Reduced DL)	25 Iterations
Gust Response Factor :1.10		Wind Importance Factor 1.00
Dead Load Factor :0.90		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		175.9	0.0					0.0	0.0	175.9	0.0	0.0	0.0
5.00		347.0	654.5					0.0	78.1	347.0	732.6	0.0	0.0
10.00		337.4	636.5					0.0	131.8	337.4	768.3	0.0	0.0
15.00		332.8	618.4					0.0	131.8	332.8	750.2	0.0	0.0
20.00		336.9	600.4					0.0	131.8	336.9	732.2	0.0	0.0
25.00		342.7	582.3					0.0	131.8	342.7	714.2	0.0	0.0
30.00		345.1	564.3					0.0	131.8	345.1	696.1	0.0	0.0
35.00		345.0	546.3					0.0	131.8	345.0	678.1	0.0	0.0
40.00		330.3	528.2					0.0	131.8	330.3	660.0	0.0	0.0
44.63	Bot - Section 2	171.0	472.6					0.0	121.9	171.0	594.5	0.0	0.0
45.00		148.5	68.3					0.0	9.9	148.5	78.1	0.0	0.0
48.95	Reinf Bottom	150.1	708.0					0.0	104.1	150.1	812.1	0.0	0.0
49.38	Top - Section 1	35.8	75.0					0.0	34.6	35.8	109.6	0.0	0.0
50.00		190.0	49.3					0.0	50.9	190.0	100.2	0.0	0.0
55.00		334.4	386.1					0.0	407.4	334.4	793.6	0.0	0.0
60.00		327.7	371.7					0.0	407.4	327.7	779.1	0.0	0.0
65.00		320.2	357.3					0.0	407.4	320.2	764.7	0.0	0.0
70.00		312.0	342.9					0.0	407.4	312.0	750.3	0.0	0.0
75.00		199.1	328.4					0.0	407.4	199.1	735.9	0.0	0.0
76.50	Reinf. Top Reinf	149.2	95.7					0.0	122.2	149.2	217.9	0.0	0.0
80.00		248.3	218.3					0.0	285.2	248.3	503.5	0.0	0.0
85.00		283.5	299.6					0.0	407.4	283.5	707.0	0.0	0.0
90.00		146.0	285.1					0.0	407.4	146.0	692.6	0.0	0.0
90.25	Bot - Section 3	102.4	13.9					0.0	20.4	102.4	34.3	0.0	0.0
93.75	Top - Section 2	129.0	336.2					0.0	285.2	129.0	621.4	0.0	0.0
95.00		163.8	50.7					0.0	101.9	163.8	152.6	0.0	0.0
100.00		240.5	196.2					0.0	407.4	240.5	603.6	0.0	0.0
104.41	Reinf. Top	124.5	164.1					0.0	359.4	124.5	523.4	0.0	0.0
105.00		109.7	21.3					0.0	15.6	109.7	36.9	0.0	0.0
109.00	Appurtenance(s)	118.5	140.5	6,112.1	0.0	9,177.2	3,605.3	0.0	105.4	6,230.6	3,851.3	0.0	0.0
110.00		135.5	34.0					0.0	6.2	135.5	40.2	0.0	0.0
115.00		118.8	163.7					0.0	31.0	118.8	194.7	0.0	0.0
115.30		105.9	9.5					0.0	1.9	105.9	11.3	0.0	0.0
120.00		198.8	143.4					0.0	29.1	198.8	172.6	0.0	0.0
125.00		192.1	142.1					0.0	31.0	192.1	173.1	0.0	0.0
130.00	Appurtenance(s)	92.7	131.3	4,622.7	0.0	2,922.2	2,826.4	0.0	31.0	4,715.4	2,988.7	0.0	0.0
Totals:										18,475.6	22,775.0	0.00	0.00

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:34 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

90 mph with No Ice (Reduced DL)

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

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	-23.79	-19.71	0.00	-2,003.22	0.00	2,003.22	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.782
5.00	-22.97	-19.47	0.00	-1,904.65	0.00	1,904.65	2,831.95	1,415.98	4,948.02	2,477.69	0.14	-0.27	0.777
10.00	-22.11	-19.24	0.00	-1,807.28	0.00	1,807.28	2,781.89	1,390.94	4,723.74	2,365.38	0.57	-0.54	0.772
15.00	-21.27	-19.00	0.00	-1,711.09	0.00	1,711.09	2,730.15	1,365.07	4,501.64	2,254.16	1.29	-0.82	0.767
20.00	-20.44	-18.76	0.00	-1,616.07	0.00	1,616.07	2,676.74	1,338.37	4,281.95	2,144.16	2.30	-1.12	0.762
25.00	-19.64	-18.51	0.00	-1,522.26	0.00	1,522.26	2,621.66	1,310.83	4,064.92	2,035.48	3.63	-1.42	0.756
30.00	-18.85	-18.25	0.00	-1,429.72	0.00	1,429.72	2,564.92	1,282.46	3,850.80	1,928.26	5.29	-1.73	0.749
35.00	-18.08	-17.98	0.00	-1,338.48	0.00	1,338.48	2,506.50	1,253.25	3,639.84	1,822.62	7.27	-2.05	0.742
40.00	-17.34	-17.73	0.00	-1,248.56	0.00	1,248.56	2,446.41	1,223.20	3,432.28	1,718.69	9.59	-2.38	0.734
44.63	-16.70	-17.58	0.00	-1,166.57	0.00	1,166.57	2,389.33	1,194.67	3,243.53	1,624.17	12.06	-2.70	0.725
45.00	-16.58	-17.47	0.00	-1,159.98	0.00	1,159.98	2,384.64	1,192.32	3,228.36	1,616.58	12.27	-2.73	0.725
48.95	-15.73	-17.33	0.00	-1,090.96	0.00	1,090.96	2,334.67	1,167.34	3,070.02	1,537.29	14.64	-3.01	0.717
49.38	-15.61	-17.29	0.00	-1,083.60	0.00	1,083.60	1,762.19	881.09	2,355.38	1,179.44	14.91	-3.04	0.530
50.00	-15.48	-17.13	0.00	-1,072.79	0.00	1,072.79	1,756.99	878.50	2,337.64	1,170.55	15.31	-3.07	0.527
55.00	-14.64	-16.82	0.00	-987.12	0.00	987.12	1,714.48	857.24	2,196.77	1,100.02	18.66	-3.31	0.507
60.00	-13.81	-16.51	0.00	-903.02	0.00	903.02	1,670.31	835.15	2,058.03	1,030.54	22.26	-3.56	0.486
65.00	-12.99	-16.19	0.00	-820.49	0.00	820.49	1,624.46	812.23	1,921.66	962.26	26.12	-3.81	0.463
70.00	-12.20	-15.88	0.00	-739.52	0.00	739.52	1,576.94	788.47	1,787.90	895.28	30.24	-4.06	0.439
75.00	-11.43	-15.66	0.00	-660.10	0.00	660.10	1,527.75	763.88	1,657.01	829.73	34.62	-4.31	0.413
76.50	-11.19	-15.52	0.00	-636.61	0.00	636.61	1,512.67	756.34	1,618.33	810.37	35.99	-4.38	0.405
76.50	-11.19	-15.52	0.00	-636.61	0.00	636.61	1,512.67	756.34	1,618.33	810.37	35.99	-4.38	0.405
80.00	-10.66	-15.28	0.00	-582.28	0.00	582.28	1,476.89	738.45	1,529.22	765.75	39.27	-4.56	0.385
85.00	-9.91	-14.98	0.00	-505.90	0.00	505.90	1,418.51	709.25	1,399.01	700.55	44.16	-4.80	0.356
90.00	-9.20	-14.79	0.00	-431.02	0.00	431.02	1,348.50	674.25	1,263.66	632.77	49.31	-5.03	0.326
90.25	-9.16	-14.70	0.00	-427.32	0.00	427.32	1,345.00	672.50	1,257.07	629.47	49.57	-5.04	0.324
93.75	-8.52	-14.53	0.00	-375.88	0.00	375.88	937.32	468.66	863.14	432.21	53.32	-5.20	0.351
95.00	-8.35	-14.38	0.00	-357.71	0.00	357.71	928.80	464.40	843.88	422.57	54.69	-5.26	0.339
100.00	-7.72	-14.11	0.00	-285.84	0.00	285.84	893.68	446.84	768.02	384.58	60.31	-5.48	0.286
104.41	-7.19	-13.94	0.00	-223.63	0.00	223.63	861.32	430.66	702.85	351.95	65.45	-5.65	0.237
104.41	-7.19	-13.94	0.00	-223.63	0.00	223.63	861.32	430.66	702.85	351.95	65.45	-5.65	0.645
105.00	-7.12	-13.86	0.00	-215.40	0.00	215.40	856.89	428.44	694.27	347.65	66.15	-5.68	0.629
109.00	-3.89	-7.28	0.00	-150.80	0.00	150.80	826.25	413.13	636.94	318.94	71.06	-6.04	0.478
110.00	-3.84	-7.16	0.00	-143.52	0.00	143.52	818.43	409.21	622.86	311.89	72.34	-6.13	0.465
115.00	-3.64	-7.03	0.00	-107.75	0.00	107.75	768.20	384.10	546.86	273.84	78.95	-6.50	0.399
115.30	-3.60	-6.89	0.00	-105.64	0.00	105.64	765.05	382.53	542.36	271.58	79.36	-6.52	0.394
120.00	-3.42	-6.69	0.00	-73.26	0.00	73.26	715.70	357.85	474.29	237.50	85.93	-6.83	0.314
125.00	-3.25	-6.49	0.00	-39.82	0.00	39.82	663.20	331.60	406.89	203.75	93.21	-7.08	0.201
130.00	0.00	-6.03	0.00	-7.39	0.00	7.39	610.70	305.35	344.65	172.58	100.69	-7.21	0.043

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:34 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice	24 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		42.2	0.0					0.0	0.0	42.2	0.0	0.0	0.0
5.00		83.5	1,191.9					0.0	104.2	83.5	1,296.0	0.0	0.0
10.00		81.7	1,196.3					10.4	211.8	92.1	1,408.1	0.0	0.0
15.00		81.0	1,180.9					10.7	213.7	91.7	1,394.6	0.0	0.0
20.00		82.3	1,159.0					11.2	215.0	93.5	1,374.0	0.0	0.0
25.00		84.0	1,133.7					12.0	216.0	96.0	1,349.7	0.0	0.0
30.00		84.9	1,106.2					12.7	216.8	97.6	1,323.0	0.0	0.0
35.00		85.2	1,077.2					13.3	217.6	98.5	1,294.7	0.0	0.0
40.00		81.9	1,047.0					13.8	218.2	95.7	1,265.2	0.0	0.0
44.63	Bot - Section 2	42.5	941.3					13.2	202.3	55.7	1,143.6	0.0	0.0
45.00		36.9	116.7					1.1	16.4	38.0	133.1	0.0	0.0
48.95	Reinf Bottom	37.3	1,208.6					12.5	187.5	49.8	1,396.1	0.0	0.0
49.38	Top - Section 1	8.9	128.5					1.4	52.2	10.3	180.7	0.0	0.0
50.00		47.5	107.5					2.1	76.8	49.6	184.3	0.0	0.0
55.00		83.8	839.7					17.2	614.7	101.0	1,454.3	0.0	0.0
60.00		82.4	811.7					18.1	615.4	100.5	1,427.2	0.0	0.0
65.00		80.9	783.4					19.0	616.2	99.9	1,399.5	0.0	0.0
70.00		79.2	754.6					19.8	616.8	99.0	1,371.5	0.0	0.0
75.00		50.7	725.6					20.6	617.5	71.4	1,343.0	0.0	0.0
76.50	Reinf. Top Reinf	38.2	213.2					6.4	185.4	44.6	398.6	0.0	0.0
80.00		63.8	485.5					15.1	432.7	78.9	918.2	0.0	0.0
85.00		73.2	666.6					22.3	618.6	95.5	1,285.2	0.0	0.0
90.00		37.8	636.7					23.1	619.2	61.0	1,255.9	0.0	0.0
90.25	Bot - Section 3	26.6	31.3					1.2	31.0	27.8	62.3	0.0	0.0
93.75	Top - Section 2	33.6	625.0					16.7	433.8	50.3	1,058.8	0.0	0.0
95.00		43.0	130.2					6.0	155.0	49.0	285.2	0.0	0.0
100.00		63.3	500.1					24.6	620.2	88.0	1,120.3	0.0	0.0
104.41	Reinf. Top	33.0	420.5					22.4	547.4	55.3	967.9	0.0	0.0
105.00		29.2	55.3					3.0	29.9	32.3	85.2	0.0	0.0
109.00	Appurtenance(s)	31.7	362.0	1,004.4	0.0	1,427.2	9,662.0	17.0	187.7	1,053.1	10,211.7	0.0	0.0
110.00		36.5	88.7					3.7	17.8	40.2	106.5	0.0	0.0
115.00		32.1	422.7					18.6	89.1	50.7	511.8	0.0	0.0
115.30		28.9	24.9					1.1	5.4	30.0	30.2	0.0	0.0
120.00		54.6	372.4					17.7	83.9	72.4	456.3	0.0	0.0
125.00		53.5	370.3					19.1	89.5	72.6	459.8	0.0	0.0
130.00	Appurtenance(s)	26.0	343.9	784.3	0.0	465.5	7,131.3	19.3	89.7	829.6	7,564.9	0.0	0.0
Totals:										4,197.47	47,517.5	0.00	0.00

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:36 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi	40 mph with 0.75 in Radial Ice	24 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Calculated Forces

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	-50.20	-4.43	0.00	-445.44	0.00	445.44	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.189
5.00	-48.90	-4.40	0.00	-423.30	0.00	423.30	2,831.95	1,415.98	4,948.02	2,477.69	0.03	-0.06	0.188
10.00	-47.48	-4.35	0.00	-401.32	0.00	401.32	2,781.89	1,390.94	4,723.74	2,365.38	0.13	-0.12	0.187
15.00	-46.08	-4.31	0.00	-379.56	0.00	379.56	2,730.15	1,365.07	4,501.64	2,254.16	0.29	-0.18	0.185
20.00	-44.71	-4.26	0.00	-358.02	0.00	358.02	2,676.74	1,338.37	4,281.95	2,144.16	0.51	-0.25	0.184
25.00	-43.35	-4.21	0.00	-336.71	0.00	336.71	2,621.66	1,310.83	4,064.92	2,035.48	0.81	-0.31	0.182
30.00	-42.02	-4.16	0.00	-315.67	0.00	315.67	2,564.92	1,282.46	3,850.80	1,928.26	1.17	-0.38	0.180
35.00	-40.73	-4.10	0.00	-294.89	0.00	294.89	2,506.50	1,253.25	3,639.84	1,822.62	1.61	-0.45	0.178
40.00	-39.46	-4.04	0.00	-274.40	0.00	274.40	2,446.41	1,223.20	3,432.28	1,718.69	2.13	-0.53	0.176
44.63	-38.31	-4.00	0.00	-255.71	0.00	255.71	2,389.33	1,194.67	3,243.53	1,624.17	2.67	-0.60	0.173
45.00	-38.18	-3.98	0.00	-254.21	0.00	254.21	2,384.64	1,192.32	3,228.36	1,616.58	2.72	-0.60	0.173
48.95	-36.78	-3.94	0.00	-238.48	0.00	238.48	2,334.67	1,167.34	3,070.02	1,537.29	3.25	-0.66	0.171
49.38	-36.60	-3.93	0.00	-236.81	0.00	236.81	1,762.19	881.09	2,355.38	1,179.44	3.30	-0.67	0.127
50.00	-36.41	-3.90	0.00	-234.35	0.00	234.35	1,756.99	878.50	2,337.64	1,170.55	3.39	-0.68	0.126
55.00	-34.95	-3.81	0.00	-214.86	0.00	214.86	1,714.48	857.24	2,196.77	1,100.02	4.13	-0.73	0.121
60.00	-33.53	-3.72	0.00	-195.80	0.00	195.80	1,670.31	835.15	2,058.03	1,030.54	4.93	-0.78	0.116
65.00	-32.12	-3.63	0.00	-177.18	0.00	177.18	1,624.46	812.23	1,921.66	962.26	5.78	-0.84	0.110
70.00	-30.75	-3.54	0.00	-159.01	0.00	159.01	1,576.94	788.47	1,787.90	895.28	6.68	-0.89	0.104
75.00	-29.41	-3.47	0.00	-141.29	0.00	141.29	1,527.75	763.88	1,657.01	829.73	7.65	-0.95	0.098
76.50	-29.01	-3.43	0.00	-136.09	0.00	136.09	1,512.67	756.34	1,618.33	810.37	7.95	-0.96	0.096
76.50	-29.01	-3.43	0.00	-136.09	0.00	136.09	1,512.67	756.34	1,618.33	810.37	7.95	-0.96	0.096
80.00	-28.09	-3.36	0.00	-124.08	0.00	124.08	1,476.89	738.45	1,529.22	765.75	8.67	-1.00	0.091
85.00	-26.80	-3.26	0.00	-107.29	0.00	107.29	1,418.51	709.25	1,399.01	700.55	9.74	-1.05	0.084
90.00	-25.55	-3.19	0.00	-90.97	0.00	90.97	1,348.50	674.25	1,263.66	632.77	10.87	-1.10	0.078
90.25	-25.48	-3.17	0.00	-90.18	0.00	90.18	1,345.00	672.50	1,257.07	629.47	10.93	-1.10	0.077
93.75	-24.42	-3.11	0.00	-79.09	0.00	79.09	937.32	468.66	863.14	432.21	11.75	-1.14	0.084
95.00	-24.14	-3.07	0.00	-75.20	0.00	75.20	928.80	464.40	843.88	422.57	12.05	-1.15	0.081
100.00	-23.02	-2.97	0.00	-59.87	0.00	59.87	893.68	446.84	768.02	384.58	13.27	-1.19	0.070
104.41	-22.05	-2.90	0.00	-46.77	0.00	46.77	861.32	430.66	702.85	351.95	14.39	-1.23	0.059
104.41	-22.05	-2.90	0.00	-46.77	0.00	46.77	861.32	430.66	702.85	351.95	14.39	-1.23	0.159
105.00	-21.96	-2.89	0.00	-45.06	0.00	45.06	856.89	428.44	694.27	347.65	14.55	-1.23	0.155
109.00	-11.78	-1.61	0.00	-32.09	0.00	32.09	826.25	413.13	636.94	318.94	15.61	-1.31	0.115
110.00	-11.67	-1.58	0.00	-30.47	0.00	30.47	818.43	409.21	622.86	311.89	15.89	-1.33	0.112
115.00	-11.16	-1.53	0.00	-22.56	0.00	22.56	768.20	384.10	546.86	273.84	17.33	-1.41	0.097
115.30	-11.06	-1.49	0.00	-22.10	0.00	22.10	765.05	382.53	542.36	271.58	17.42	-1.41	0.096
120.00	-10.61	-1.42	0.00	-15.08	0.00	15.08	715.70	357.85	474.29	237.50	18.84	-1.48	0.078
125.00	-10.15	-1.34	0.00	-7.98	0.00	7.98	663.20	331.60	406.89	203.75	20.42	-1.53	0.054
130.00	0.00	-1.07	0.00	-1.27	0.00	1.27	610.70	305.35	344.65	172.58	22.04	-1.55	0.007

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:36 PM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W	Serviceability 60 mph	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor 1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		43.7	0.0					0.0	0.0	43.7	0.0	0.0	0.0
5.00		86.2	727.2					0.0	86.8	86.2	814.0	0.0	0.0
10.00		83.8	707.2					0.0	146.5	83.8	853.6	0.0	0.0
15.00		82.7	687.1					0.0	146.5	82.7	833.6	0.0	0.0
20.00		83.7	667.1					0.0	146.5	83.7	813.5	0.0	0.0
25.00		85.2	647.1					0.0	146.5	85.2	793.5	0.0	0.0
30.00		85.8	627.0					0.0	146.5	85.8	773.5	0.0	0.0
35.00		85.8	607.0					0.0	146.5	85.8	753.4	0.0	0.0
40.00		82.1	586.9					0.0	146.5	82.1	733.4	0.0	0.0
44.63	Bot - Section 2	42.5	525.1					0.0	135.5	42.5	660.5	0.0	0.0
45.00		36.9	75.8					0.0	11.0	36.9	86.8	0.0	0.0
48.95	Reinf Bottom	37.3	786.6					0.0	115.7	37.3	902.3	0.0	0.0
49.38	Top - Section 1	8.9	83.3					0.0	38.5	8.9	121.8	0.0	0.0
50.00		47.2	54.8					0.0	56.6	47.2	111.3	0.0	0.0
55.00		83.1	429.0					0.0	452.7	83.1	881.8	0.0	0.0
60.00		81.4	413.0					0.0	452.7	81.4	865.7	0.0	0.0
65.00		79.6	397.0					0.0	452.7	79.6	849.7	0.0	0.0
70.00		77.5	381.0					0.0	452.7	77.5	833.7	0.0	0.0
75.00		49.5	364.9					0.0	452.7	49.5	817.6	0.0	0.0
76.50	Reinf. Top Reinf	37.1	106.4					0.0	135.8	37.1	242.2	0.0	0.0
80.00		61.7	242.5					0.0	316.9	61.7	559.4	0.0	0.0
85.00		70.5	332.9					0.0	452.7	70.5	785.6	0.0	0.0
90.00		36.3	316.8					0.0	452.7	36.3	769.5	0.0	0.0
90.25	Bot - Section 3	25.4	15.4					0.0	22.6	25.4	38.1	0.0	0.0
93.75	Top - Section 2	32.1	373.5					0.0	316.9	32.1	690.4	0.0	0.0
95.00		40.7	56.4					0.0	113.2	40.7	169.6	0.0	0.0
100.00		59.8	218.0					0.0	452.7	59.8	670.7	0.0	0.0
104.41	Reinf. Top	30.9	182.3					0.0	399.3	30.9	581.6	0.0	0.0
105.00		27.3	23.7					0.0	17.3	27.3	41.0	0.0	0.0
109.00	Appurtenance(s)	29.5	156.1	1,519.1	0.0	2,280.9	4,005.9	0.0	117.2	1,548.5	4,279.2	0.0	0.0
110.00		33.7	37.8					0.0	6.9	33.7	44.7	0.0	0.0
115.00		29.5	181.9					0.0	34.5	29.5	216.4	0.0	0.0
115.30		26.3	10.5					0.0	2.1	26.3	12.6	0.0	0.0
120.00		49.4	159.4					0.0	32.4	49.4	191.8	0.0	0.0
125.00		47.7	157.9					0.0	34.5	47.7	192.3	0.0	0.0
130.00	Appurtenance(s)	23.0	145.9	1,148.9	0.0	726.3	3,140.5	0.0	34.5	1,171.9	3,320.8	0.0	0.0
Totals:										4,591.91	25,305.5	0.00	0.00

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

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	-26.48	-4.90	0.00	-501.53	0.00	501.53	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.203
5.00	-25.67	-4.84	0.00	-477.02	0.00	477.02	2,831.95	1,415.98	4,948.02	2,477.69	0.04	-0.07	0.202
10.00	-24.81	-4.79	0.00	-452.80	0.00	452.80	2,781.89	1,390.94	4,723.74	2,365.38	0.14	-0.14	0.200
15.00	-23.97	-4.73	0.00	-428.85	0.00	428.85	2,730.15	1,365.07	4,501.64	2,254.16	0.32	-0.21	0.199
20.00	-23.15	-4.68	0.00	-405.18	0.00	405.18	2,676.74	1,338.37	4,281.95	2,144.16	0.58	-0.28	0.198
25.00	-22.35	-4.62	0.00	-381.79	0.00	381.79	2,621.66	1,310.83	4,064.92	2,035.48	0.91	-0.36	0.196
30.00	-21.57	-4.56	0.00	-358.71	0.00	358.71	2,564.92	1,282.46	3,850.80	1,928.26	1.32	-0.43	0.194
35.00	-20.81	-4.49	0.00	-335.92	0.00	335.92	2,506.50	1,253.25	3,639.84	1,822.62	1.82	-0.51	0.193
40.00	-20.07	-4.43	0.00	-313.45	0.00	313.45	2,446.41	1,223.20	3,432.28	1,718.69	2.40	-0.60	0.191
44.63	-19.41	-4.40	0.00	-292.95	0.00	292.95	2,389.33	1,194.67	3,243.53	1,624.17	3.02	-0.68	0.189
45.00	-19.32	-4.37	0.00	-291.30	0.00	291.30	2,384.64	1,192.32	3,228.36	1,616.58	3.08	-0.68	0.188
48.95	-18.41	-4.34	0.00	-274.02	0.00	274.02	2,334.67	1,167.34	3,070.02	1,537.29	3.67	-0.75	0.186
49.38	-18.29	-4.33	0.00	-272.18	0.00	272.18	1,762.19	881.09	2,355.38	1,179.44	3.74	-0.76	0.138
50.00	-18.18	-4.29	0.00	-269.47	0.00	269.47	1,756.99	878.50	2,337.64	1,170.55	3.84	-0.77	0.137
55.00	-17.29	-4.22	0.00	-248.01	0.00	248.01	1,714.48	857.24	2,196.77	1,100.02	4.68	-0.83	0.132
60.00	-16.42	-4.14	0.00	-226.94	0.00	226.94	1,670.31	835.15	2,058.03	1,030.54	5.58	-0.89	0.126
65.00	-15.57	-4.06	0.00	-206.25	0.00	206.25	1,624.46	812.23	1,921.66	962.26	6.55	-0.96	0.121
70.00	-14.74	-3.99	0.00	-185.94	0.00	185.94	1,576.94	788.47	1,787.90	895.28	7.59	-1.02	0.114
75.00	-13.92	-3.93	0.00	-166.00	0.00	166.00	1,527.75	763.88	1,657.01	829.73	8.69	-1.08	0.108
76.50	-13.67	-3.90	0.00	-160.11	0.00	160.11	1,512.67	756.34	1,618.33	810.37	9.03	-1.10	0.106
76.50	-13.67	-3.90	0.00	-160.11	0.00	160.11	1,512.67	756.34	1,618.33	810.37	9.03	-1.10	0.106
80.00	-13.11	-3.84	0.00	-146.46	0.00	146.46	1,476.89	738.45	1,529.22	765.75	9.85	-1.14	0.101
85.00	-12.32	-3.76	0.00	-127.28	0.00	127.28	1,418.51	709.25	1,399.01	700.55	11.08	-1.20	0.093
90.00	-11.55	-3.72	0.00	-108.46	0.00	108.46	1,348.50	674.25	1,263.66	632.77	12.38	-1.26	0.085
90.25	-11.51	-3.69	0.00	-107.53	0.00	107.53	1,345.00	672.50	1,257.07	629.47	12.44	-1.27	0.085
93.75	-10.82	-3.65	0.00	-94.60	0.00	94.60	937.32	468.66	863.14	432.21	13.39	-1.31	0.092
95.00	-10.65	-3.61	0.00	-90.04	0.00	90.04	928.80	464.40	843.88	422.57	13.73	-1.32	0.089
100.00	-9.98	-3.55	0.00	-71.97	0.00	71.97	893.68	446.84	768.02	384.58	15.14	-1.38	0.076
104.41	-9.40	-3.51	0.00	-56.32	0.00	56.32	861.32	430.66	702.85	351.95	16.44	-1.42	0.063
104.41	-9.40	-3.51	0.00	-56.32	0.00	56.32	861.32	430.66	702.85	351.95	16.44	-1.42	0.171
105.00	-9.35	-3.49	0.00	-54.25	0.00	54.25	856.89	428.44	694.27	347.65	16.61	-1.43	0.167
109.00	-5.11	-1.83	0.00	-38.03	0.00	38.03	826.25	413.13	636.94	318.94	17.85	-1.52	0.125
110.00	-5.07	-1.80	0.00	-36.19	0.00	36.19	818.43	409.21	622.86	311.89	18.17	-1.54	0.122
115.00	-4.85	-1.77	0.00	-27.18	0.00	27.18	768.20	384.10	546.86	273.84	19.83	-1.63	0.106
115.30	-4.82	-1.74	0.00	-26.64	0.00	26.64	765.05	382.53	542.36	271.58	19.94	-1.64	0.104
120.00	-4.63	-1.69	0.00	-18.48	0.00	18.48	715.70	357.85	474.29	237.50	21.59	-1.72	0.084
125.00	-4.43	-1.64	0.00	-10.03	0.00	10.03	663.20	331.60	406.89	203.75	23.42	-1.78	0.056
130.00	0.00	-1.50	0.00	-1.84	0.00	1.84	610.70	305.35	344.65	172.58	25.31	-1.81	0.011

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number: 13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.13
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.06
Long-Period Transition Period (T_L):	12
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.13
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.55
Redundancy Factor (p):	1.00
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	26.49 k
Seismic Base Shear (E):	0.79 k

Load Case (1.2 + 0.2Sds) * DL + E ELFM

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
35	127.50	180	2,931	0.015	12	221
34	122.50	192	2,886	0.015	12	236
33	117.65	192	2,654	0.014	11	235
32	115.15	13	167	0.001	1	15
31	112.50	216	2,739	0.014	11	265
30	109.50	45	536	0.003	2	55
29	107.00	273	3,129	0.016	13	335
28	104.71	41	449	0.002	2	50
27	102.21	582	6,075	0.031	25	713
26	97.50	671	6,376	0.033	26	823
25	94.38	170	1,510	0.008	6	208
24	92.00	690	5,844	0.030	24	847
23	90.13	38	309	0.002	1	47
22	87.50	770	5,892	0.030	24	944
21	82.50	786	5,347	0.027	22	964
20	78.25	559	3,425	0.017	14	686
19	75.75	242	1,390	0.007	6	297
18	72.50	818	4,298	0.022	17	1,003
17	67.50	834	3,798	0.019	15	1,023
16	62.50	850	3,319	0.017	13	1,042
15	57.50	866	2,862	0.015	12	1,062
14	52.50	882	2,430	0.012	10	1,082
13	49.69	111	275	0.001	1	137

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

12	49.16	122	294	0.002	1	149
11	46.97	902	1,991	0.010	8	1,107
10	44.81	87	174	0.001	1	107
9	42.31	661	1,183	0.006	5	810
8	37.50	733	1,031	0.005	4	900
7	32.50	753	796	0.004	3	924
6	27.50	773	585	0.003	2	949
5	22.50	794	402	0.002	2	973
4	17.50	814	249	0.001	1	998
3	12.50	834	130	0.001	1	1,023
2	7.50	854	48	0.000	0	1,047
1	2.50	814	5	0.000	0	999
Nokia AZQC AirScale	130.00	40	679	0.003	3	49
Alcatel-Lucent B25 R	130.00	306	5,171	0.026	21	375
Nokia AHBCC AirScale	130.00	251	4,249	0.022	17	308
Raycap RCMD-3315-PF	130.00	21	362	0.002	1	26
Alcatel-Lucent B66A	130.00	511	8,639	0.044	35	627
Commscope RC3DC-3315	130.00	32	541	0.003	2	39
VZW Unused Reserve (	130.00	0	0	0.000	0	0
Commscope VVSSP-65S-	130.00	46	771	0.004	3	56
Andrew SBNHH-1D65C	130.00	595	10,054	0.051	41	730
Generic Flat Platfor	130.00	2,500	42,250	0.215	171	3,067
Raycap DC6-48-60-18-	115.30	20	266	0.001	1	25
Nokia AirScale RRH 4	109.00	106	1,258	0.006	5	130
Nokia AirScale Dual	109.00	198	2,356	0.012	10	243
Nokia AirScale Dual	109.00	304	3,614	0.018	15	373
Alcatel-Lucent RRH4x	109.00	273	3,244	0.017	13	335
Nokia AEQK AirScale	109.00	298	3,536	0.018	14	365
Raycap DC9-48-60-24-	109.00	16	190	0.001	1	20
Andrew SBNHH-1D65C	109.00	198	2,356	0.012	10	243
Commscope NNH4-65C-R	109.00	613	7,278	0.037	29	751
Flat Platform w/ Han	109.00	2,000	23,762	0.121	96	2,453
		26,488	196,106	1.000	795	32,492

Load Case (0.9 - 0.2Sds) * DL + E EFLM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
35	127.50	180	2,931	0.015	12	157
34	122.50	192	2,886	0.015	12	168
33	117.65	192	2,654	0.014	11	167
32	115.15	13	167	0.001	1	11
31	112.50	216	2,739	0.014	11	189
30	109.50	45	536	0.003	2	39
29	107.00	273	3,129	0.016	13	239
28	104.71	41	449	0.002	2	36
27	102.21	582	6,075	0.031	25	508
26	97.50	671	6,376	0.033	26	586
25	94.38	170	1,510	0.008	6	148
24	92.00	690	5,844	0.030	24	603
23	90.13	38	309	0.002	1	33
22	87.50	770	5,892	0.030	24	672
21	82.50	786	5,347	0.027	22	686
20	78.25	559	3,425	0.017	14	489
19	75.75	242	1,390	0.007	6	211
18	72.50	818	4,298	0.022	17	714
17	67.50	834	3,798	0.019	15	728
16	62.50	850	3,319	0.017	13	742
15	57.50	866	2,862	0.015	12	756
14	52.50	882	2,430	0.012	10	770

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

13	49.69	111	275	0.001	1	97
12	49.16	122	294	0.002	1	106
11	46.97	902	1,991	0.010	8	788
10	44.81	87	174	0.001	1	76
9	42.31	661	1,183	0.006	5	577
8	37.50	733	1,031	0.005	4	640
7	32.50	753	796	0.004	3	658
6	27.50	773	585	0.003	2	675
5	22.50	794	402	0.002	2	693
4	17.50	814	249	0.001	1	710
3	12.50	834	130	0.001	1	728
2	7.50	854	48	0.000	0	745
1	2.50	814	5	0.000	0	711
Nokia AZQC AirScale	130.00	40	679	0.003	3	35
Alcatel-Lucent B25 R	130.00	306	5,171	0.026	21	267
Nokia AHBCC AirScale	130.00	251	4,249	0.022	17	220
Raycap RCMD-3315-PF	130.00	21	362	0.002	1	19
Alcatel-Lucent B66A	130.00	511	8,639	0.044	35	446
Commscope RC3DC-3315	130.00	32	541	0.003	2	28
VZW Unused Reserve (	130.00	0	0	0.000	0	0
Commscope VVSSP-65S-	130.00	46	771	0.004	3	40
Andrew SBNHH-1D65C	130.00	595	10,054	0.051	41	520
Generic Flat Platfor	130.00	2,500	42,250	0.215	171	2,183
Raycap DC6-48-60-18-	115.30	20	266	0.001	1	17
Nokia AirScale RRH 4	109.00	106	1,258	0.006	5	92
Nokia AirScale Dual	109.00	198	2,356	0.012	10	173
Nokia AirScale Dual	109.00	304	3,614	0.018	15	266
Alcatel-Lucent RRH4x	109.00	273	3,244	0.017	13	238
Nokia AEQK AirScale	109.00	298	3,536	0.018	14	260
Raycap DC9-48-60-24-	109.00	16	190	0.001	1	14
Andrew SBNHH-1D65C	109.00	198	2,356	0.012	10	173
Commscope NNH4-65C-R	109.00	613	7,278	0.037	29	535
Flat Platform w/ Han	109.00	2,000	23,762	0.121	96	1,747
		26,488	196,106	1.000	795	23,133

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

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	-31.49	-0.80	0.00	-90.11	0.00	90.11	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.046
5.00	-30.45	-0.80	0.00	-86.12	0.00	86.12	2,831.95	1,415.98	4,948.02	2,477.69	0.01	-0.01	0.046
10.00	-29.42	-0.81	0.00	-82.11	0.00	82.11	2,781.89	1,390.94	4,723.74	2,365.38	0.03	-0.02	0.045
15.00	-28.42	-0.81	0.00	-78.06	0.00	78.06	2,730.15	1,365.07	4,501.64	2,254.16	0.06	-0.04	0.045
20.00	-27.45	-0.82	0.00	-73.99	0.00	73.99	2,676.74	1,338.37	4,281.95	2,144.16	0.10	-0.05	0.045
25.00	-26.50	-0.82	0.00	-69.91	0.00	69.91	2,621.66	1,310.83	4,064.92	2,035.48	0.16	-0.06	0.044
30.00	-25.58	-0.82	0.00	-65.80	0.00	65.80	2,564.92	1,282.46	3,850.80	1,928.26	0.24	-0.08	0.044
35.00	-24.68	-0.82	0.00	-61.68	0.00	61.68	2,506.50	1,253.25	3,639.84	1,822.62	0.33	-0.09	0.044
40.00	-23.87	-0.82	0.00	-57.56	0.00	57.56	2,446.41	1,223.20	3,432.28	1,718.69	0.44	-0.11	0.043
44.63	-23.76	-0.83	0.00	-53.75	0.00	53.75	2,389.33	1,194.67	3,243.53	1,624.17	0.55	-0.12	0.043
45.00	-22.65	-0.82	0.00	-53.44	0.00	53.44	2,384.64	1,192.32	3,228.36	1,616.58	0.56	-0.12	0.043
48.95	-22.50	-0.82	0.00	-50.21	0.00	50.21	2,334.67	1,167.34	3,070.02	1,537.29	0.67	-0.14	0.042
49.38	-22.37	-0.82	0.00	-49.86	0.00	49.86	1,762.19	881.09	2,355.38	1,179.44	0.68	-0.14	0.032
50.00	-21.29	-0.81	0.00	-49.35	0.00	49.35	1,756.99	878.50	2,337.64	1,170.55	0.70	-0.14	0.031
55.00	-20.22	-0.80	0.00	-45.30	0.00	45.30	1,714.48	857.24	2,196.77	1,100.02	0.85	-0.15	0.030
60.00	-19.18	-0.79	0.00	-41.31	0.00	41.31	1,670.31	835.15	2,058.03	1,030.54	1.02	-0.16	0.029
65.00	-18.16	-0.77	0.00	-37.37	0.00	37.37	1,624.46	812.23	1,921.66	962.26	1.19	-0.17	0.027
70.00	-17.16	-0.75	0.00	-33.52	0.00	33.52	1,576.94	788.47	1,787.90	895.28	1.38	-0.19	0.026
75.00	-16.86	-0.75	0.00	-29.74	0.00	29.74	1,527.75	763.88	1,657.01	829.73	1.58	-0.20	0.024
76.50	-16.17	-0.74	0.00	-28.62	0.00	28.62	1,512.67	756.34	1,618.33	810.37	1.65	-0.20	0.024
76.50	-16.17	-0.74	0.00	-28.62	0.00	28.62	1,512.67	756.34	1,618.33	810.37	1.65	-0.20	0.024
80.00	-15.21	-0.71	0.00	-26.04	0.00	26.04	1,476.89	738.45	1,529.22	765.75	1.80	-0.21	0.022
85.00	-14.27	-0.69	0.00	-22.48	0.00	22.48	1,418.51	709.25	1,399.01	700.55	2.02	-0.22	0.021
90.00	-14.22	-0.69	0.00	-19.04	0.00	19.04	1,348.50	674.25	1,263.66	632.77	2.26	-0.23	0.020
90.25	-13.37	-0.66	0.00	-18.87	0.00	18.87	1,345.00	672.50	1,257.07	629.47	2.27	-0.23	0.019
93.75	-13.16	-0.66	0.00	-16.55	0.00	16.55	937.32	468.66	863.14	432.21	2.44	-0.24	0.021
95.00	-12.34	-0.63	0.00	-15.73	0.00	15.73	928.80	464.40	843.88	422.57	2.50	-0.24	0.020
100.00	-11.63	-0.60	0.00	-12.59	0.00	12.59	893.68	446.84	768.02	384.58	2.76	-0.25	0.018
104.41	-11.58	-0.60	0.00	-9.94	0.00	9.94	861.32	430.66	702.85	351.95	2.99	-0.26	0.016
104.41	-11.58	-0.60	0.00	-9.94	0.00	9.94	861.32	430.66	702.85	351.95	2.99	-0.26	0.042
105.00	-11.24	-0.59	0.00	-9.58	0.00	9.58	856.89	428.44	694.27	347.65	3.02	-0.26	0.041
109.00	-6.27	-0.37	0.00	-7.23	0.00	7.23	826.25	413.13	636.94	318.94	3.25	-0.27	0.030
110.00	-6.01	-0.36	0.00	-6.86	0.00	6.86	818.43	409.21	622.86	311.89	3.30	-0.28	0.029
115.00	-5.97	-0.36	0.00	-5.05	0.00	5.05	768.20	384.10	546.86	273.84	3.60	-0.30	0.026
115.30	-5.73	-0.35	0.00	-4.94	0.00	4.94	765.05	382.53	542.36	271.58	3.62	-0.30	0.026
120.00	-5.50	-0.34	0.00	-3.31	0.00	3.31	715.70	357.85	474.29	237.50	3.92	-0.31	0.022
125.00	-5.28	-0.32	0.00	-1.62	0.00	1.62	663.20	331.60	406.89	203.75	4.26	-0.32	0.016
130.00	0.00	-0.29	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	4.60	-0.33	0.000

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number: 13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Load Case (0.9 - 0.2Sds) * DL + E ELMF

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

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	-22.42	-0.80	0.00	-88.49	0.00	88.49	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.042
5.00	-21.68	-0.80	0.00	-84.51	0.00	84.51	2,831.95	1,415.98	4,948.02	2,477.69	0.01	-0.01	0.042
10.00	-20.95	-0.80	0.00	-80.50	0.00	80.50	2,781.89	1,390.94	4,723.74	2,365.38	0.03	-0.02	0.042
15.00	-20.24	-0.81	0.00	-76.48	0.00	76.48	2,730.15	1,365.07	4,501.64	2,254.16	0.06	-0.04	0.041
20.00	-19.54	-0.81	0.00	-72.45	0.00	72.45	2,676.74	1,338.37	4,281.95	2,144.16	0.10	-0.05	0.041
25.00	-18.87	-0.81	0.00	-68.40	0.00	68.40	2,621.66	1,310.83	4,064.92	2,035.48	0.16	-0.06	0.041
30.00	-18.21	-0.81	0.00	-64.34	0.00	64.34	2,564.92	1,282.46	3,850.80	1,928.26	0.24	-0.08	0.040
35.00	-17.57	-0.81	0.00	-60.29	0.00	60.29	2,506.50	1,253.25	3,639.84	1,822.62	0.32	-0.09	0.040
40.00	-16.99	-0.81	0.00	-56.23	0.00	56.23	2,446.41	1,223.20	3,432.28	1,718.69	0.43	-0.11	0.040
44.63	-16.92	-0.81	0.00	-52.49	0.00	52.49	2,389.33	1,194.67	3,243.53	1,624.17	0.54	-0.12	0.039
45.00	-16.13	-0.80	0.00	-52.18	0.00	52.18	2,384.64	1,192.32	3,228.36	1,616.58	0.55	-0.12	0.039
48.95	-16.02	-0.80	0.00	-49.01	0.00	49.01	2,334.67	1,167.34	3,070.02	1,537.29	0.65	-0.13	0.039
49.38	-15.92	-0.80	0.00	-48.67	0.00	48.67	1,762.19	881.09	2,355.38	1,179.44	0.67	-0.14	0.029
50.00	-15.15	-0.79	0.00	-48.17	0.00	48.17	1,756.99	878.50	2,337.64	1,170.55	0.68	-0.14	0.029
55.00	-14.40	-0.78	0.00	-44.20	0.00	44.20	1,714.48	857.24	2,196.77	1,100.02	0.83	-0.15	0.027
60.00	-13.66	-0.77	0.00	-40.29	0.00	40.29	1,670.31	835.15	2,058.03	1,030.54	1.00	-0.16	0.026
65.00	-12.93	-0.75	0.00	-36.44	0.00	36.44	1,624.46	812.23	1,921.66	962.26	1.17	-0.17	0.025
70.00	-12.21	-0.74	0.00	-32.67	0.00	32.67	1,576.94	788.47	1,787.90	895.28	1.35	-0.18	0.023
75.00	-12.00	-0.73	0.00	-28.99	0.00	28.99	1,527.75	763.88	1,657.01	829.73	1.55	-0.19	0.022
76.50	-11.51	-0.72	0.00	-27.89	0.00	27.89	1,512.67	756.34	1,618.33	810.37	1.61	-0.20	0.022
76.50	-11.51	-0.72	0.00	-27.89	0.00	27.89	1,512.67	756.34	1,618.33	810.37	1.61	-0.20	0.022
80.00	-10.83	-0.70	0.00	-25.38	0.00	25.38	1,476.89	738.45	1,529.22	765.75	1.76	-0.20	0.020
85.00	-10.16	-0.67	0.00	-21.90	0.00	21.90	1,418.51	709.25	1,399.01	700.55	1.98	-0.21	0.019
90.00	-10.12	-0.67	0.00	-18.54	0.00	18.54	1,348.50	674.25	1,263.66	632.77	2.21	-0.22	0.018
90.25	-9.52	-0.65	0.00	-18.38	0.00	18.38	1,345.00	672.50	1,257.07	629.47	2.22	-0.22	0.017
93.75	-9.37	-0.64	0.00	-16.12	0.00	16.12	937.32	468.66	863.14	432.21	2.39	-0.23	0.019
95.00	-8.79	-0.61	0.00	-15.32	0.00	15.32	928.80	464.40	843.88	422.57	2.45	-0.23	0.018
100.00	-8.28	-0.59	0.00	-12.26	0.00	12.26	893.68	446.84	768.02	384.58	2.70	-0.24	0.016
104.41	-8.24	-0.59	0.00	-9.67	0.00	9.67	861.32	430.66	702.85	351.95	2.92	-0.25	0.014
104.41	-8.24	-0.59	0.00	-9.67	0.00	9.67	861.32	430.66	702.85	351.95	2.92	-0.25	0.037
105.00	-8.00	-0.57	0.00	-9.33	0.00	9.33	856.89	428.44	694.27	347.65	2.96	-0.25	0.036
109.00	-4.47	-0.36	0.00	-7.03	0.00	7.03	826.25	413.13	636.94	318.94	3.17	-0.27	0.027
110.00	-4.28	-0.35	0.00	-6.67	0.00	6.67	818.43	409.21	622.86	311.89	3.23	-0.27	0.027
115.00	-4.25	-0.35	0.00	-4.91	0.00	4.91	768.20	384.10	546.86	273.84	3.52	-0.29	0.023
115.30	-4.08	-0.34	0.00	-4.81	0.00	4.81	765.05	382.53	542.36	271.58	3.54	-0.29	0.023
120.00	-3.91	-0.33	0.00	-3.21	0.00	3.21	715.70	357.85	474.29	237.50	3.84	-0.30	0.019
125.00	-3.76	-0.32	0.00	-1.58	0.00	1.58	663.20	331.60	406.89	203.75	4.16	-0.31	0.013
130.00	0.00	-0.29	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	4.49	-0.32	0.000

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number: 13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.13
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.13
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.55
Redundancy Factor (ρ):	1.00

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	127.50	180	1.818	1.622	1.009	0.226	27	221
34	122.50	192	1.678	1.041	0.782	0.170	22	236
33	117.65	192	1.548	0.626	0.602	0.122	16	235
32	115.15	13	1.483	0.460	0.523	0.100	1	15
31	112.50	216	1.415	0.314	0.448	0.079	11	265
30	109.50	45	1.341	0.181	0.373	0.058	2	55
29	107.00	273	1.280	0.094	0.319	0.043	8	335
28	104.71	41	1.226	0.031	0.275	0.030	1	50
27	102.21	582	1.168	-0.023	0.232	0.018	7	713
26	97.50	671	1.063	-0.088	0.165	0.000	0	823
25	94.38	170	0.996	-0.111	0.129	-0.008	-1	208
24	92.00	690	0.947	-0.119	0.106	-0.012	-5	847
23	90.13	38	0.908	-0.122	0.091	-0.014	0	47
22	87.50	770	0.856	-0.120	0.071	-0.016	-8	944
21	82.50	786	0.761	-0.104	0.043	-0.015	-8	964
20	78.25	559	0.685	-0.082	0.027	-0.010	-4	686
19	75.75	242	0.642	-0.068	0.020	-0.006	-1	297
18	72.50	818	0.588	-0.049	0.013	0.001	0	1,003
17	67.50	834	0.510	-0.020	0.007	0.010	6	1,023
16	62.50	850	0.437	0.006	0.006	0.019	11	1,042
15	57.50	866	0.370	0.027	0.008	0.026	15	1,062
14	52.50	882	0.308	0.043	0.012	0.030	18	1,082
13	49.69	111	0.276	0.050	0.014	0.031	2	137
12	49.16	122	0.270	0.052	0.015	0.031	3	149
11	46.97	902	0.247	0.056	0.017	0.032	19	1,107
10	44.81	87	0.225	0.059	0.020	0.032	2	107
9	42.31	661	0.200	0.063	0.023	0.032	14	810
8	37.50	733	0.157	0.067	0.029	0.032	16	900
7	32.50	753	0.118	0.070	0.035	0.031	16	924
6	27.50	773	0.085	0.071	0.039	0.030	15	949
5	22.50	794	0.057	0.071	0.042	0.029	15	973
4	17.50	814	0.034	0.069	0.041	0.027	15	998
3	12.50	834	0.017	0.062	0.037	0.024	14	1,023
2	7.50	854	0.006	0.048	0.027	0.019	11	1,047

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

1	2.50	814	0.001	0.021	0.011	0.009	5	999
Nokia AZQC AirScale	130.00	40	1.890	1.980	1.140	0.258	7	49
Alcatel-Lucent B25 R	130.00	306	1.890	1.980	1.140	0.258	53	375
Nokia AHBCC AirScale	130.00	251	1.890	1.980	1.140	0.258	43	308
Raycap RCMD-3315-PF	130.00	21	1.890	1.980	1.140	0.258	4	26
Alcatel-Lucent B66A	130.00	511	1.890	1.980	1.140	0.258	88	627
Commscope RC3DC-	130.00	32	1.890	1.980	1.140	0.258	6	39
VZW Unused Reserve (	130.00	0	1.890	1.980	1.140	0.258	0	0
Commscope VVSSP-	130.00	46	1.890	1.980	1.140	0.258	8	56
Andrew SBNHH-1D65C	130.00	595	1.890	1.980	1.140	0.258	102	730
Generic Flat Platfor	130.00	2,500	1.890	1.980	1.140	0.258	430	3,067
Raycap DC6-48-60-18-	115.30	20	1.487	0.469	0.527	0.101	1	25
Nokia AirScale RRH 4	109.00	106	1.329	0.162	0.362	0.055	4	130
Nokia AirScale Dual	109.00	198	1.329	0.162	0.362	0.055	7	243
Nokia AirScale Dual	109.00	304	1.329	0.162	0.362	0.055	11	373
Alcatel-Lucent RRH4x	109.00	273	1.329	0.162	0.362	0.055	10	335
Nokia AEQK AirScale	109.00	298	1.329	0.162	0.362	0.055	11	365
Raycap DC9-48-60-24-	109.00	16	1.329	0.162	0.362	0.055	1	20
Andrew SBNHH-1D65C	109.00	198	1.329	0.162	0.362	0.055	7	243
Commscope NNH4-65C-	109.00	613	1.329	0.162	0.362	0.055	22	751
Flat Platform w/ Han	109.00	2,000	1.329	0.162	0.362	0.055	73	2,453
		26,488	56.067	26.030	20.797	4.386	1,150	32,492

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	127.50	180	1.818	1.622	1.009	0.226	27	157
34	122.50	192	1.678	1.041	0.782	0.170	22	168
33	117.65	192	1.548	0.626	0.602	0.122	16	167
32	115.15	13	1.483	0.460	0.523	0.100	1	11
31	112.50	216	1.415	0.314	0.448	0.079	11	189
30	109.50	45	1.341	0.181	0.373	0.058	2	39
29	107.00	273	1.280	0.094	0.319	0.043	8	239
28	104.71	41	1.226	0.031	0.275	0.030	1	36
27	102.21	582	1.168	-0.023	0.232	0.018	7	508
26	97.50	671	1.063	-0.088	0.165	0.000	0	586
25	94.38	170	0.996	-0.111	0.129	-0.008	-1	148
24	92.00	690	0.947	-0.119	0.106	-0.012	-5	603
23	90.13	38	0.908	-0.122	0.091	-0.014	0	33
22	87.50	770	0.856	-0.120	0.071	-0.016	-8	672
21	82.50	786	0.761	-0.104	0.043	-0.015	-8	686
20	78.25	559	0.685	-0.082	0.027	-0.010	-4	489
19	75.75	242	0.642	-0.068	0.020	-0.006	-1	211
18	72.50	818	0.588	-0.049	0.013	0.001	0	714
17	67.50	834	0.510	-0.020	0.007	0.010	6	728
16	62.50	850	0.437	0.006	0.006	0.019	11	742
15	57.50	866	0.370	0.027	0.008	0.026	15	756
14	52.50	882	0.308	0.043	0.012	0.030	18	770
13	49.69	111	0.276	0.050	0.014	0.031	2	97
12	49.16	122	0.270	0.052	0.015	0.031	3	106
11	46.97	902	0.247	0.056	0.017	0.032	19	788
10	44.81	87	0.225	0.059	0.020	0.032	2	76
9	42.31	661	0.200	0.063	0.023	0.032	14	577
8	37.50	733	0.157	0.067	0.029	0.032	16	640
7	32.50	753	0.118	0.070	0.035	0.031	16	658
6	27.50	773	0.085	0.071	0.039	0.030	15	675
5	22.50	794	0.057	0.071	0.042	0.029	15	693
4	17.50	814	0.034	0.069	0.041	0.027	15	710

Site Number: 413306

Code: ANSI/TIA-222-G

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Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

3	12.50	834	0.017	0.062	0.037	0.024	14	728
2	7.50	854	0.006	0.048	0.027	0.019	11	745
1	2.50	814	0.001	0.021	0.011	0.009	5	711
Nokia AZQC AirScale	130.00	40	1.890	1.980	1.140	0.258	7	35
Alcatel-Lucent B25 R	130.00	306	1.890	1.980	1.140	0.258	53	267
Nokia AHBCC AirScale	130.00	251	1.890	1.980	1.140	0.258	43	220
Raycap RCMD-3315-PF	130.00	21	1.890	1.980	1.140	0.258	4	19
Alcatel-Lucent B66A	130.00	511	1.890	1.980	1.140	0.258	88	446
Commscope RC3DC-	130.00	32	1.890	1.980	1.140	0.258	6	28
VZW Unused Reserve (	130.00	0	1.890	1.980	1.140	0.258	0	0
Commscope VVSSP-	130.00	46	1.890	1.980	1.140	0.258	8	40
Andrew SBNHH-1D65C	130.00	595	1.890	1.980	1.140	0.258	102	520
Generic Flat Platfor	130.00	2,500	1.890	1.980	1.140	0.258	430	2,183
Raycap DC6-48-60-18-	115.30	20	1.487	0.469	0.527	0.101	1	17
Nokia AirScale RRH 4	109.00	106	1.329	0.162	0.362	0.055	4	92
Nokia AirScale Dual	109.00	198	1.329	0.162	0.362	0.055	7	173
Nokia AirScale Dual	109.00	304	1.329	0.162	0.362	0.055	11	266
Alcatel-Lucent RRH4x	109.00	273	1.329	0.162	0.362	0.055	10	238
Nokia AEQK AirScale	109.00	298	1.329	0.162	0.362	0.055	11	260
Raycap DC9-48-60-24-	109.00	16	1.329	0.162	0.362	0.055	1	14
Andrew SBNHH-1D65C	109.00	198	1.329	0.162	0.362	0.055	7	173
Commscope NNH4-65C-	109.00	613	1.329	0.162	0.362	0.055	22	535
Flat Platform w/ Han	109.00	2,000	1.329	0.162	0.362	0.055	73	1,747
		26,488	56.067	26.030	20.797	4.386	1,150	23,133

Site Number: 413306

Code: ANSI/TIA-222-G

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

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	-31.49	-1.15	0.00	-136.20	0.00	136.20	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.064
5.00	-30.45	-1.15	0.00	-130.45	0.00	130.45	2,831.95	1,415.98	4,948.02	2,477.69	0.01	-0.02	0.063
10.00	-29.42	-1.14	0.00	-124.71	0.00	124.71	2,781.89	1,390.94	4,723.74	2,365.38	0.04	-0.04	0.063
15.00	-28.42	-1.14	0.00	-118.99	0.00	118.99	2,730.15	1,365.07	4,501.64	2,254.16	0.09	-0.06	0.063
20.00	-27.45	-1.13	0.00	-113.29	0.00	113.29	2,676.74	1,338.37	4,281.95	2,144.16	0.16	-0.08	0.063
25.00	-26.50	-1.13	0.00	-107.63	0.00	107.63	2,621.66	1,310.83	4,064.92	2,035.48	0.25	-0.10	0.063
30.00	-25.58	-1.12	0.00	-102.00	0.00	102.00	2,564.92	1,282.46	3,850.80	1,928.26	0.36	-0.12	0.063
35.00	-24.68	-1.11	0.00	-96.41	0.00	96.41	2,506.50	1,253.25	3,639.84	1,822.62	0.50	-0.14	0.063
40.00	-23.87	-1.10	0.00	-90.86	0.00	90.86	2,446.41	1,223.20	3,432.28	1,718.69	0.67	-0.17	0.063
44.63	-23.76	-1.11	0.00	-85.75	0.00	85.75	2,389.33	1,194.67	3,243.53	1,624.17	0.84	-0.19	0.063
45.00	-22.65	-1.09	0.00	-85.34	0.00	85.34	2,384.64	1,192.32	3,228.36	1,616.58	0.86	-0.19	0.062
48.95	-22.50	-1.09	0.00	-81.04	0.00	81.04	2,334.67	1,167.34	3,070.02	1,537.29	1.02	-0.21	0.062
49.38	-22.37	-1.09	0.00	-80.57	0.00	80.57	1,762.19	881.09	2,355.38	1,179.44	1.04	-0.22	0.046
50.00	-21.28	-1.07	0.00	-79.89	0.00	79.89	1,756.99	878.50	2,337.64	1,170.55	1.07	-0.22	0.046
55.00	-20.22	-1.06	0.00	-74.54	0.00	74.54	1,714.48	857.24	2,196.77	1,100.02	1.31	-0.24	0.045
60.00	-19.18	-1.05	0.00	-69.25	0.00	69.25	1,670.31	835.15	2,058.03	1,030.54	1.57	-0.26	0.043
65.00	-18.16	-1.04	0.00	-64.01	0.00	64.01	1,624.46	812.23	1,921.66	962.26	1.84	-0.27	0.042
70.00	-17.15	-1.05	0.00	-58.78	0.00	58.78	1,576.94	788.47	1,787.90	895.28	2.14	-0.29	0.041
75.00	-16.86	-1.05	0.00	-53.55	0.00	53.55	1,527.75	763.88	1,657.01	829.73	2.46	-0.31	0.039
76.50	-16.17	-1.05	0.00	-51.98	0.00	51.98	1,512.67	756.34	1,618.33	810.37	2.56	-0.32	0.038
76.50	-16.17	-1.05	0.00	-51.98	0.00	51.98	1,512.67	756.34	1,618.33	810.37	2.56	-0.32	0.038
80.00	-15.21	-1.06	0.00	-48.30	0.00	48.30	1,476.89	738.45	1,529.22	765.75	2.80	-0.33	0.037
85.00	-14.26	-1.07	0.00	-43.01	0.00	43.01	1,418.51	709.25	1,399.01	700.55	3.16	-0.35	0.035
90.00	-14.21	-1.07	0.00	-37.69	0.00	37.69	1,348.50	674.25	1,263.66	632.77	3.54	-0.37	0.033
90.25	-13.37	-1.07	0.00	-37.42	0.00	37.42	1,345.00	672.50	1,257.07	629.47	3.56	-0.38	0.033
93.75	-13.16	-1.07	0.00	-33.67	0.00	33.67	937.32	468.66	863.14	432.21	3.84	-0.39	0.037
95.00	-12.34	-1.07	0.00	-32.33	0.00	32.33	928.80	464.40	843.88	422.57	3.95	-0.39	0.036
100.00	-11.62	-1.06	0.00	-26.99	0.00	26.99	893.68	446.84	768.02	384.58	4.37	-0.42	0.032
104.41	-11.57	-1.06	0.00	-22.32	0.00	22.32	861.32	430.66	702.85	351.95	4.76	-0.43	0.029
104.41	-11.57	-1.06	0.00	-22.32	0.00	22.32	861.32	430.66	702.85	351.95	4.76	-0.43	0.077
105.00	-11.24	-1.05	0.00	-21.69	0.00	21.69	856.89	428.44	694.27	347.65	4.82	-0.43	0.076
109.00	-6.27	-0.87	0.00	-17.47	0.00	17.47	826.25	413.13	636.94	318.94	5.20	-0.47	0.062
110.00	-6.00	-0.86	0.00	-16.60	0.00	16.60	818.43	409.21	622.86	311.89	5.30	-0.48	0.061
115.00	-5.96	-0.86	0.00	-12.30	0.00	12.30	768.20	384.10	546.86	273.84	5.83	-0.53	0.053
115.30	-5.73	-0.84	0.00	-12.05	0.00	12.05	765.05	382.53	542.36	271.58	5.86	-0.53	0.052
120.00	-5.49	-0.82	0.00	-8.08	0.00	8.08	715.70	357.85	474.29	237.50	6.40	-0.56	0.042
125.00	-5.27	-0.79	0.00	-3.97	0.00	3.97	663.20	331.60	406.89	203.75	7.00	-0.59	0.027
130.00	0.00	-0.74	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	7.63	-0.60	0.000

Site Number: 413306

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

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	-22.42	-1.15	0.00	-133.57	0.00	133.57	2,880.35	1,440.17	5,174.22	2,590.95	0.00	0.00	0.059
5.00	-21.68	-1.14	0.00	-127.83	0.00	127.83	2,831.95	1,415.98	4,948.02	2,477.69	0.01	-0.02	0.059
10.00	-20.95	-1.14	0.00	-122.11	0.00	122.11	2,781.89	1,390.94	4,723.74	2,365.38	0.04	-0.04	0.059
15.00	-20.24	-1.13	0.00	-116.42	0.00	116.42	2,730.15	1,365.07	4,501.64	2,254.16	0.09	-0.06	0.059
20.00	-19.54	-1.12	0.00	-110.78	0.00	110.78	2,676.74	1,338.37	4,281.95	2,144.16	0.15	-0.08	0.059
25.00	-18.87	-1.11	0.00	-105.18	0.00	105.18	2,621.66	1,310.83	4,064.92	2,035.48	0.25	-0.10	0.059
30.00	-18.21	-1.10	0.00	-99.63	0.00	99.63	2,564.92	1,282.46	3,850.80	1,928.26	0.36	-0.12	0.059
35.00	-17.57	-1.09	0.00	-94.13	0.00	94.13	2,506.50	1,253.25	3,639.84	1,822.62	0.49	-0.14	0.059
40.00	-16.99	-1.08	0.00	-88.68	0.00	88.68	2,446.41	1,223.20	3,432.28	1,718.69	0.65	-0.16	0.059
44.63	-16.91	-1.08	0.00	-83.68	0.00	83.68	2,389.33	1,194.67	3,243.53	1,624.17	0.82	-0.19	0.059
45.00	-16.13	-1.06	0.00	-83.27	0.00	83.27	2,384.64	1,192.32	3,228.36	1,616.58	0.84	-0.19	0.058
48.95	-16.02	-1.06	0.00	-79.07	0.00	79.07	2,334.67	1,167.34	3,070.02	1,537.29	1.00	-0.21	0.058
49.38	-15.92	-1.06	0.00	-78.61	0.00	78.61	1,762.19	881.09	2,355.38	1,179.44	1.02	-0.21	0.043
50.00	-15.15	-1.04	0.00	-77.95	0.00	77.95	1,756.99	878.50	2,337.64	1,170.55	1.05	-0.21	0.043
55.00	-14.40	-1.03	0.00	-72.72	0.00	72.72	1,714.48	857.24	2,196.77	1,100.02	1.28	-0.23	0.042
60.00	-13.65	-1.02	0.00	-67.57	0.00	67.57	1,670.31	835.15	2,058.03	1,030.54	1.53	-0.25	0.041
65.00	-12.93	-1.02	0.00	-62.46	0.00	62.46	1,624.46	812.23	1,921.66	962.26	1.80	-0.27	0.039
70.00	-12.21	-1.02	0.00	-57.37	0.00	57.37	1,576.94	788.47	1,787.90	895.28	2.09	-0.29	0.038
75.00	-12.00	-1.02	0.00	-52.28	0.00	52.28	1,527.75	763.88	1,657.01	829.73	2.41	-0.31	0.037
76.50	-11.51	-1.02	0.00	-50.75	0.00	50.75	1,512.67	756.34	1,618.33	810.37	2.50	-0.31	0.036
76.50	-11.51	-1.02	0.00	-50.75	0.00	50.75	1,512.67	756.34	1,618.33	810.37	2.50	-0.31	0.036
80.00	-10.82	-1.03	0.00	-47.17	0.00	47.17	1,476.89	738.45	1,529.22	765.75	2.74	-0.33	0.035
85.00	-10.15	-1.04	0.00	-42.02	0.00	42.02	1,418.51	709.25	1,399.01	700.55	3.09	-0.35	0.033
90.00	-10.12	-1.04	0.00	-36.83	0.00	36.83	1,348.50	674.25	1,263.66	632.77	3.46	-0.37	0.031
90.25	-9.52	-1.04	0.00	-36.57	0.00	36.57	1,345.00	672.50	1,257.07	629.47	3.48	-0.37	0.031
93.75	-9.37	-1.04	0.00	-32.92	0.00	32.92	937.32	468.66	863.14	432.21	3.76	-0.38	0.035
95.00	-8.78	-1.04	0.00	-31.61	0.00	31.61	928.80	464.40	843.88	422.57	3.86	-0.39	0.034
100.00	-8.27	-1.03	0.00	-26.40	0.00	26.40	893.68	446.84	768.02	384.58	4.27	-0.41	0.030
104.41	-8.24	-1.03	0.00	-21.84	0.00	21.84	861.32	430.66	702.85	351.95	4.65	-0.42	0.026
104.41	-8.24	-1.03	0.00	-21.84	0.00	21.84	861.32	430.66	702.85	351.95	4.65	-0.42	0.072
105.00	-8.00	-1.03	0.00	-21.23	0.00	21.23	856.89	428.44	694.27	347.65	4.71	-0.42	0.070
109.00	-4.46	-0.85	0.00	-17.12	0.00	17.12	826.25	413.13	636.94	318.94	5.08	-0.46	0.059
110.00	-4.27	-0.84	0.00	-16.27	0.00	16.27	818.43	409.21	622.86	311.89	5.18	-0.47	0.057
115.00	-4.24	-0.84	0.00	-12.05	0.00	12.05	768.20	384.10	546.86	273.84	5.69	-0.51	0.050
115.30	-4.08	-0.83	0.00	-11.80	0.00	11.80	765.05	382.53	542.36	271.58	5.73	-0.52	0.049
120.00	-3.91	-0.81	0.00	-7.92	0.00	7.92	715.70	357.85	474.29	237.50	6.25	-0.55	0.039
125.00	-3.75	-0.78	0.00	-3.89	0.00	3.89	663.20	331.60	406.89	203.75	6.84	-0.58	0.025
130.00	0.00	-0.74	0.00	0.00	0.00	0.00	610.70	305.35	344.65	172.58	7.46	-0.59	0.000

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Site Name: CLMB 118 OH, OH

Engineering Number:13625925_C3_03

4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	19.78	0.00	31.74	0.00	0.00	2041.79	0.00	0.80
0.9D + 1.6W	19.71	0.00	23.79	0.00	0.00	2003.22	0.00	0.78
1.2D + 1.0Di + 1.0Wi	4.43	0.00	50.20	0.00	0.00	445.44	0.00	0.19
(1.2 + 0.2Sds) * DL + E ELFM	0.80	0.00	31.49	0.00	0.00	90.11	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	1.15	0.00	31.49	0.00	0.00	136.20	104.41	0.08
(0.9 - 0.2Sds) * DL + E ELFM	0.80	0.00	22.42	0.00	0.00	88.49	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	1.15	0.00	22.42	0.00	0.00	133.57	104.41	0.07
1.0D + 1.0W	4.90	0.00	26.48	0.00	0.00	501.53	0.00	0.20

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Site Name: CLMB 118 OH, OH

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4/23/2021 1:22:38 PM

Customer: AT&T MOBILITY

Additional Steel Summary

			Intermediate Connectors				Max Member		
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
48.95	76.50	(3) PL-PL 6" x 1"	374.4	6.9	38.3	0.181	225.8	251.6	0.897
76.50	104.41	(3) PL-PL 6" x 1"	558.3	8.9	38.3	0.233	186.8	256.1	0.729

			Upper Termination Connectors				Lower Termination Connectors					
Elev From (ft)	Elev To (ft)	Member	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
48.95	76.50	(3) PL-PL 6" x 1"	0.0	38.3	0	11	0.000	202.4	38.3	6	11	0.481
76.50	104.41	(3) PL-PL 6" x 1"	107.7	38.3	3	8	0.352	0.0	38.3	0	10	0.000

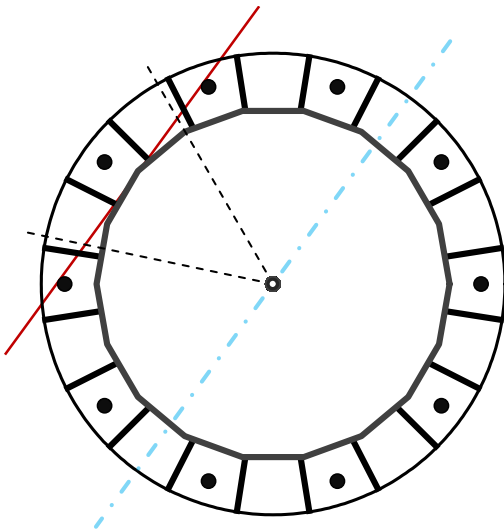
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	44	in
Thickness	5/16	in
Orientation Offset		°

Base Reactions		
Moment, Mu	2,041.8	k-ft
Axial, Pu	31.7	k
Shear, Vu	19.8	k
Neutral Axis	54	°

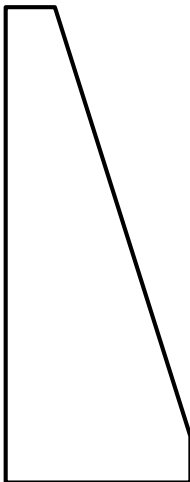
Report Capacities		
Component	Capacity	Result
Base Plate	43%	Pass
Anchor Rods	76%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ϕ	59	in
Thickness	1 1/2	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	626.7	k
Bending Stress, ϕMn	1463.7	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	10	-
Diameter, ϕ	2 1/4	in
Bolt Circle	53	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	16.7	in
Orientation Offset		°
Applied Force, Pu	196.6	k
Anchor Rods, ϕPn	259.8	k

Stiffeners		
Arrangement	Radial	-
Quantity	20	-
Height	20.5	in
Width	7.5	in
Effective Width	7.500	in
Thickness	1	in
Effective Thickness	1.000	in
Notch	0	in
Flat Edge	2	in
Grade	A36	-
Yield Strength, Fy	36	ksi
Tensile Strength, Fu	58	ksi
Horizontal Weld	Fillet	
Horizontal Fillet Size	5/16	in
Bevel Depth	0	in
Vertical Weld	Fillet	
Vertical Fillet Size	5/16	in
Weld Strength	70	ksi
Electrode Coefficient	1	-
Orientation Offset		°
Vertical Weld, ϕRn	286.0	k
Horz. Weld, ϕRn	110.8	k
Ten. Capacity, ϕTn	243.0	k
Comp. Capacity, ϕPn	933.3	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	19.8	2041.8	1.00
Anchor Rod Forces	19.8	2041.8	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	16.1	1665.8	0.82

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	42.6727	2.3707	0.0774		10182.02
Bolt	3.9761	3.2477	0.8393	4.5	10412.73
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	7.5000	6.7500	140.6250		45114.53

Base Plate		
Shape	Round	-
Diameter, D	59	in
Thickness, t	1.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	39.306	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	10	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	53	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	196.6	k
Applied Shear, Vu	0.9	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.757	OK
Interaction Capacity	0.763	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	77.4	k
Applied Horizontal Force, Vu	0.40	k

Vertical Weld		
Vert.-to-Stiffener a=e _x /l	0.122	-
Spacing Ratio, k	0.049	-
Weld Coefficient, C	3.720	-
Compressive Capacity, φPn	286.0	k
Vert.-to-Plate a=e _x /l	0.333	-
Spacing Ratio, k	0.049	-
Weld Coefficient, C	2.940	-
Shear Capacity, φVn	226.0	k
P _u /φ _p P _n + V _u /φ _v V _n	0.272	OK

External Base Plate		
Chord Length AA	33.499	in
Additional AA	14.688	in
Section Modulus, Z	27.105	in ³
Applied Moment, Mu	626.7	k-ft
Bending Capacity, φMn	1463.7	k-ft
Capacity, Mu/φMn	0.428	OK

Chord Length AB	32.578	in
Additional AB	13.416	in
Section Modulus, Z	25.871	in ³
Applied Moment, Mu	559.6	k-ft
Bending Capacity, φMn	1397.1	k-ft
Capacity, Mu/φMn	0.401	OK

Bend Line Length	25.180	in
Additional Bend Line	89.864	in
Section Modulus, Z	64.712	in ³
Applied Moment, Mu	626.7	k-ft
Bending Capacity, φMn	3494.5	k-ft
Capacity, Mu/φMn	0.179	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Horizontal Weld		
Horz.-to-Stiffener a=e _x /l	0.167	-
Spacing Ratio, k	0.133	-
Weld Coefficient, C	3.940	-
Effective Fillet	0.313	in
Compressive Capacity, φPn	110.8	k
Horz.-to-Pole a=e _x /l	0.456	-
Spacing Ratio, k	0.133	-
Weld Coefficient, C	2.670	-
Shear Capacity, φVn	75.1	k
P _u /φ _p P _n + V _u /φ _v V _n	0.704	OK

Plate Tension		
Gross Cross Section	7.500	in ²
Net Cross Section	6.750	in ²
Tensile Capacity, φTn	243.0	k
Capacity, Tu/φTn	0.159	OK

Plate Compression		
Radius of Gyration	0.289	in ³
kl/r	42.61	-
4.71 √(E/Fy)	133.68	-
Buckling Stress(Fe)	157.7	-
Crit. Buckling Stress(Fcr)	138.3	ksi
Compressive Capacity, φPn	933.3	k
Capacity, Pu/φPn	0.041	OK

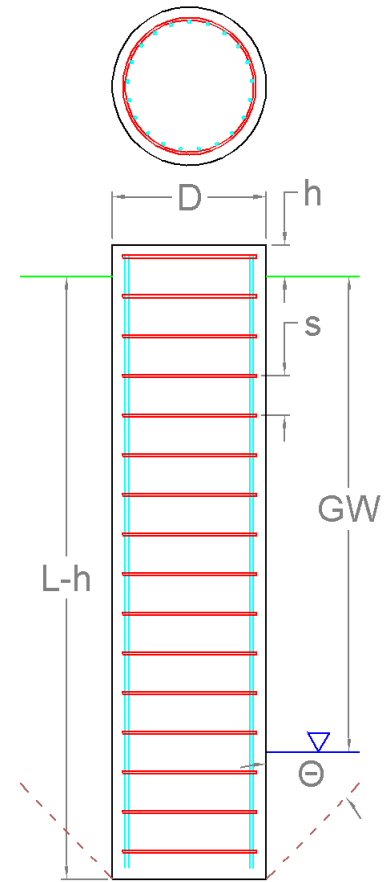
Pier Foundation Analysis (ANSI/TIA-222-G)

Foundation Analysis Parameters			
Pier Diameter	D	6.50	ft
Pier Embedment	$L-h$	22.0	ft
Pier Height above Ground	H	1.00	ft
Water Table Depth [BGL]	GW	17	ft
Pullout Angle	Θ	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		1.000	

Reactions		
Moment, M_u	2,041.8	k-ft
Shear, V_u	19.8	k
Axial, P_u	31.7	k
Uplift, T_u	0.0	k

Soil Properties						
Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	3.0	120	0	0	0	0
3.0	12.0	125	300	20	730	0
12.0	17.0	130	300	25	1,320	0
17.0	23.0	130	300	25	1,320	15,000

Soil Strength Capacities		
Volume of Concrete	763.2	ft ³
Weight of Concrete [Buoyancy Considered]	104.1	k
Average Soil Unit Weight	112.4	pcf
Skin Friction Resistance	403.7	k
Compressive Bearing Resistance	497.8	k
Pullout Weight [Minus Concrete Weight]	738.5	k
Compressive Force, P_u	52.2	k
Nominal Compressive Capacity, $\phi_s P_n$	676.1	k
$P_u / \phi_s P_n$	7.7%	
Total Lateral Resistance	1,514.1	k
Inflection Point [BGL]	15.3	ft
Moment at Inflection Point, M_D	2,363.4	k-ft
Nominal Moment Capacity, $\phi_s M_n$	4,858.6	k-ft
$M_D / \phi_s M_n$	48.6%	



Pier Strength Capacities

Concrete Compressive Strength, f'_c	4,000	psi
Rebar Size #	11	
Rebar Area (Single)	1.56	in ²
Rebar Quantity	16	
Rebar Yield Strength, F_y	60	ksi
Vertical Rebar Clear Cover	4	in
Tie Rebar Size #	5	
Tie Rebar Area (Single)	0.31	in ²
Tie Rebar Spacing	12.0	in
Tie Rebar Yield Strength, F_y	60	ksi
Rebar Cage Diameter	67.34	in
Strength Bending/Tension Reduction Factor, ϕ_B	0.90	
Strength Shear Reduction Factor, ϕ_V	0.75	
Strength Compression Reduction Factor, ϕ_C	0.65	
Steel Elastic Modulus	29,000	ksi
Design Moment, M_u	2,064.5	k-ft
Moment Capacity, $\phi_B M_n$	3,712.9	k-ft
$M_u / \phi_B M_n$	55.6%	
Design Shear, V_u	239.8	k
Shear Capacity, $\phi_V V_n$	599.9	k
$V_u / \phi_V V_n$	40.0%	
Design Compression, P_u	52.2	k
Compression Capacity, $\phi_P P_n$	9,182.8	k
$P_u / \phi_P P_n$	0.6%	
Bending Reinforcement Ratio	0.005	

