



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 150 ft Monopole
ATC Site Name : Woods Chapel, MO
ATC Site Number : 306042
Engineering Number : 13618801_C3_06
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : WOODS CHAPEL
Carrier Site Number : KS4070
Site Location : 1204 N.e. Woods Chapel Road
Lees Summit, MO 64064-1989
38.9832, -94.3501
County : Jackson
Date : September 9, 2021
Max Usage : 100%
Result : Pass

Prepared By:

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Structural Engineer

Reviewed By:



COA : 2006031326

Table of Contents

Introduction	3
Supporting Documents	3
Analysis	3
Conclusion	3
Existing and Reserved Equipment.....	4
Equipment to be Removed	4
Proposed Equipment	5
Structure Usages.....	5
Foundations	6
Deflection and Sway*	6
Standard Conditions	7
Calculations	Attached

Introduction

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

Supporting Documents

Tower Drawings	Valmont Drawing #DC2215Z, dated March 3, 1995
Foundation Drawing	Valmont Drawing #2721, dated March 8, 1995
Geotechnical Report	Terracon Project #02955036, dated February 24, 1995

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:	109 mph (3-second gust)
Basic Wind Speed w/ Ice:	40 mph (3-second gust) w/ 1.50" radial ice concurrent
Code:	ANSI/TIA-222-H / 2018 IBC
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	$S_s = 0.10$, $S_i = 0.07$
Site Class:	D - Stiff Soil - Default

Conclusion

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

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

Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
152.0	3	Alcatel-Lucent RRH4X25-WCS	Triangular Platform with Handrails	(1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (9) 1 5/8" Coax (1) 2" conduit (1) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8C			
	1	Raycap DC6-48-60-18-8F(32.8 lbs)			
	3	Powerwave Allgon TT08-19DB111-001			
	3	Commscope JAH4-65C-R4			
140.0	3	Antel BXA-80063/8CF	Triangular Platform with Handrails	(2) 1 1/4" Hybriflex Cable (12) 1 5/8" Coax	VERIZON WIRELESS
	6	Powerwave Allgon LGP 13901			
	3	Ericsson AIR 6449 B77D/ C-Band			
	2	Raycap RRFDC-3315-PF-48			
	3	Ericsson 8843 Rev 2			
	6	Commscope NHH-65C-R2B			
	3	Ericsson Radio 4449 - B13&B5			
126.0	3	Commscope FFHH-65C-R3	Triangular Platform with Handrails	(5) 1 5/8" Coax (2) 1.46" (37.1mm) Hybrid (6) 7/8" Coax	T-MOBILE
	1	Raycap ASU9338TYP01			
	3	Nokia AHFIG 70.55 lbs			
	3	Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA			
	1	Commscope HELIAX FiberFeed 12 RRU Pendant Connect			
	3	Nokia AEHC			
122.0	9	Generic 48" x 12" Panel	Triangular Platform with Handrails	(9) 1 1/4" Coax	SPRINT NEXTEL
115.0	3	Argus LLPX310R	Flush	(2) 1/2" Coax (1) 2" conduit	CLEARWIRE CORPORATION
	2	Andrew Microwaves VHLP2.5			
	2	DragonWave Horizon DUO (Radio)			
	3	Samsung 2.5GHz nRRHv2			
105.0	1	Commscope RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	3	JMA Wireless MX08FRO665-21			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
152.0	6	CSS XDUO6-80-R	-	(3) 1 5/8" Coax	AT&T MOBILITY
	1	Powerwave Allgon P65-16-XLH-RR			
	2	Powerwave Allgon P65-17-XLH-RR			
	6	Andrew ETD819G-12UB			
	3	Alcatel-Lucent RRH2X60-1900A-4R			
	3	Alcatel-Lucent RRH2x40W-07L (700)			

Proposed Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
152.0	6	CCI TPA65R-BU8D	Triangular Platform with Handrails	(1) 2" conduit (2) 0.78" (19.7mm) 8 AWG 6 (1) 0.39" (10mm) Fiber Trunk	AT&T MOBILITY
	3	Nokia AEQK AirScale MAA 64T64R 192AE n77 200W			
	1	Raycap DC6-48-60-18-8C			
	3	Nokia AirScale RRH 4T4R B5 160W AHCA			
	3	Nokia AirScale Dual RRH 4T4R B25/66 320W AHFIB			
	3	Nokia AHLBBA			

¹ 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.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	100%	Pass
Shaft	53%	Pass
Reinforcement	16%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3898.7	63%
Axial (Kips)	69.1	3%
Shear (Kips)	36.4	53%

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) (°)
152.0	CCI TPA65R-BU8D	AT&T MOBILITY	1.424	0.990
	Nokia AEQK AirScale MAA 64T64R 192AE n77 200W			
	Raycap DC6-48-60-18-8C			
	Nokia AirScale RRH 4T4R B5 160W AHCA			
	Nokia AirScale Dual RRH 4T4R B25/66 320W AHFIB			
	Nokia AHLBBA			
115.0	Andrew Microwaves VHLP2.5	CLEARWIRE CORPORATION	0.845	0.870

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

Standard Conditions

All engineering services performed by ATC Tower Services 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

It is the responsibility of the client to ensure that the information provided to ATC Tower Services 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, 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 is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset : 306042, Woods Chapel
 Client : AT&T MOBILITY
 Code : ANSI/TIA-222-H

Height : 150 ft
 Base Width : 60.5
 Shape : 12 Sides

SITE PARAMETERS

Base Elev (ft): 0.00 Structure Class: II
 Taper : 0.24800 (In/ft) Exposure : C
 Topographic Category : 1 Topographic Feature:
 Topo Method : Method 1

SECTION PROPERTIES

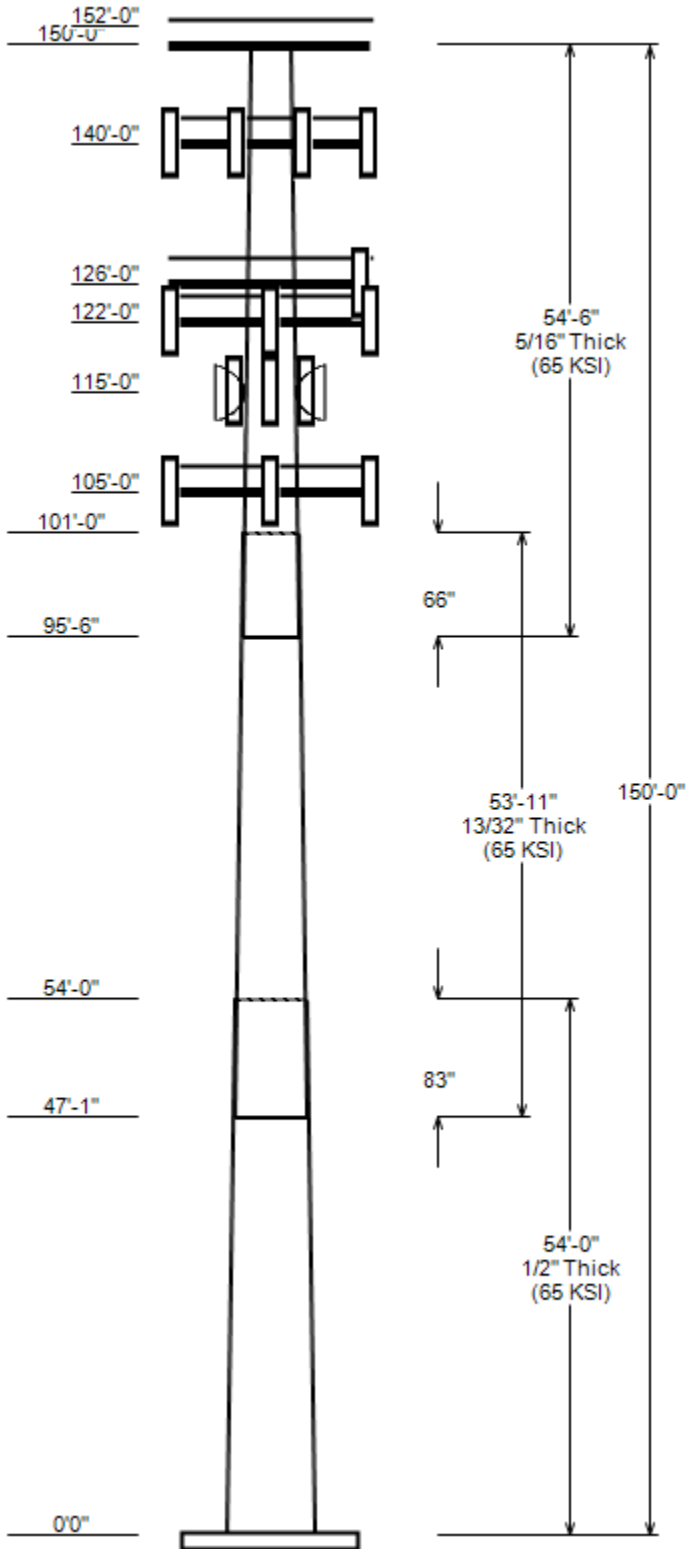
Shaft Section	Length (ft)	Diameter (in) Across Flats		Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
		Top	Bottom					
1	54.000	47.11	60.50	0.500		0.000	12 Sides	65
2	53.917	36.27	49.64	0.406	Slip Joint	83.000	12 Sides	65
3	54.500	24.74	38.26	0.312	Slip Joint	66.000	12 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
152.0	152.0	3	Powerwave Allgon TT08-19DB111-
152.0	152.0	3	Nokia AirScale RRH 4T4R B5 160
152.0	152.0	1	Raycap DC6-48-60-18-8F(32.8 lb
152.0	152.0	1	Raycap DC6-48-60-0-8C
152.0	152.0	1	Raycap DC6-48-60-18-8C
152.0	152.0	3	Nokia AHLBBA
152.0	152.0	3	Alcatel-Lucent RRH4X25-WCS
152.0	152.0	3	Nokia AirScale Dual RRH 4T4R B
152.0	152.0	3	Nokia AEQK AirScale MAA 64T64R
152.0	152.0	3	Commscope JAH4-65C-R4
152.0	152.0	6	CCI TPA65R-BU8D
150.0	150.0	1	Generic Mount Reinforcement
150.0	150.0	1	Generic Round Platform with Ha
140.0	140.0	6	Powerwave Allgon LGP 13901
140.0	140.0	3	Ericsson Radio 4449 - B13&B5
140.0	140.0	3	Ericsson 8843 Rev 2
140.0	140.0	2	Raycap RRFDC-3315-PF-48
140.0	140.0	3	Ericsson AIR 6449 B77D/ C-Band
140.0	140.0	3	Antel BXA-80063/8CF
140.0	140.0	6	Commscope NHH-65C-R2B
140.0	140.0	1	Generic Round Platform with Ha
126.0	126.0	1	Commscope HELIAX FiberFeed 12
126.0	126.0	3	Nokia AirScale Dual RRH 4T4R B
126.0	126.0	3	Nokia AHFIG 70.55 lbs
126.0	126.0	1	Raycap ASU9338TYP01
126.0	126.0	3	Nokia AEHC
126.0	126.0	3	Commscope FFHH-65C-R3
126.0	126.0	1	Generic Round Platform with Ha
122.0	122.0	9	Generic 48" x 12" Panel
122.0	122.0	1	Generic Flat Platform with Han
115.0	115.0	2	DragonWave Horizon DUO (Radio)
115.0	115.0	3	Samsung 2.5GHz nRRHv2
115.0	115.0	3	Argus LLPX310R
115.0	115.0	2	Andrew Microwaves VHLP2.5
115.0	115.0	1	Side Arms
105.0	105.0	1	Commscope RDIDC-9181-PF-48
105.0	105.0	3	Fujitsu TA08025-B605
105.0	105.0	3	Fujitsu TA08025-B604
105.0	105.0	3	JMA Wireless MX08FRO665-21
105.0	105.0	1	Generic Round Platform with Ha

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
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JOB INFORMATION

Asset : 306042, Woods Chapel
 Client : AT&T MOBILITY
 Code : ANSI/TIA-222-H

Height : 150 ft
 Base Width : 60.5
 Shape : 12 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
5.0	152.0	2" conduit	No
5.0	152.0	1 5/8" Coax	No
5.0	152.0	0.78" (19.7mm) 8 AWG 6	No
0.0	152.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
0.0	152.0	0.39" (10mm) Fiber Trunk	No
5.0	140.0	1 5/8" Coax	Yes
5.0	140.0	1 5/8" Coax	No
5.0	140.0	1 1/4" Hybriflex Cable	Yes
0.0	126.0	7/8" Coax	Yes
0.0	126.0	1.46" (37.1mm) Hybrid	Yes
0.0	126.0	1 5/8" Coax	Yes
0.0	126.0	1 5/8" Coax	Yes
0.0	126.0	1 5/8" Coax	Yes
0.0	122.0	1 1/4" Coax	No
5.0	115.0	2" conduit	Yes
0.0	115.0	1/2" Coax	Yes
0.0	105.0	1.60" (40.6mm) Hybrid	No

LOAD CASES

1.2D + 1.0W Normal	109 mph wind with no ice
0.9D + 1.0W Normal	109 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	40 mph wind with 1.5" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	3898.71	36.38	69.05
0.9D + 1.0W Normal	3859.31	36.36	51.78
1.2D + 1.0Di + 1.0Wi Normal	786.78	7.02	109.14
1.2D + 1.0Ev + 1.0Eh Normal	232.16	1.87	68.21
0.9D - 1.0Ev + 1.0Eh Normal	229.49	1.87	49.10
1.0D + 1.0W Service Normal	1050.37	9.86	57.58

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W Service Normal	115.00	10.140	0.865

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

ANALYSIS PARAMETERS

Location:	Jackson County,MO	Height:	150 ft
Type and Shape:	Taper, 12 Sides	Base Diameter:	60.50 in
Manufacturer:	Valmont	Top Diameter:	24.74 in
K _d (non-service):	0.95	Taper:	0.2480 in/ft
K _e :	0.97	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	C	Design Wind Speed w/o Ice:	109 mph
Risk Category:	II	Design Wind Speed w/Ice:	40 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.50 in
Crest Height:	0 ft	HMSL:	973.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	2.24
T _L (sec):	12	P:	1
S _S :	0.099	S ₁ :	0.068
F _a :	1.600	F _v :	2.400
S _{ds} :	0.106	S _{d1} :	0.109
		C _s :	0.032
		C _s Max:	0.032
		C _s Min:	0.030

LOAD CASES

1.2D + 1.0W Normal	109 mph wind with no ice
0.9D + 1.0W Normal	109 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	40 mph wind with 1.5" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Bottom							Top						
						Weight (lb)	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	54.00	0.5000	65		0.00	15,769	60.50	0.000	96.60	44,388.0	29.74	121.00	47.11	54.00	75.04	20,807.7	22.57	94.22	0.2480
2-12	53.92	0.4060	65	Slip	83.00	10,204	49.64	47.083	64.36	19,909.7	30.08	122.26	36.27	101.00	46.88	7,694.8	21.26	89.33	0.2480
3-12	54.50	0.3125	65	Slip	66.00	5,819	38.26	95.500	38.18	7,015.6	30.12	122.42	24.74	150.00	24.58	1,872.1	18.53	79.17	0.2480

Shaft Weight 31,792

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice			Ice		
					Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor
152.00	Nokia AEQK AirScale MAA 64T64R	3	0.75	0.000	99.20	4.351	0.67	215.34	5.752	0.67
152.00	Nokia AirScale Dual RRH 4T4R B	3	0.75	0.000	88.20	3.683	0.50	191.28	4.995	0.50
152.00	CCI TPA65R-BU8D	6	0.75	0.000	82.50	18.089	0.63	427.41	21.783	0.63
152.00	Commscope JAH4-65C-R4	3	0.75	0.000	87.30	12.862	0.67	352.02	16.609	0.67
152.00	Alcatel-Lucent RRH4X25-WCS	3	0.75	0.000	70.00	3.165	0.50	161.42	4.464	0.50
152.00	Nokia AHLBBA	3	0.75	0.000	94.80	2.820	0.50	172.03	3.956	0.50
152.00	Raycap DC6-48-60-0-8C	1	0.75	0.000	16.00	2.030	1.00	65.04	2.790	1.00
152.00	Raycap DC6-48-60-18-8C	1	0.75	0.000	16.00	2.030	1.00	74.24	2.790	1.00
152.00	Raycap DC6-48-60-18-8F(32.8 lb	1	0.75	0.000	32.80	1.470	1.00	94.52	2.169	1.00
152.00	Nokia AirScale RRH 4T4R B5 160	3	0.75	0.000	36.80	1.286	0.50	76.09	1.322	0.50
152.00	Powerwave Allgon TT08-19DB111-	3	0.75	0.000	22.00	0.793	0.50	48.57	1.429	0.50
150.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	393.60	14.990	1.00
150.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	4120.32	51.653	1.00
140.00	Commscope NHH-65C-R2B	6	0.75	0.000	51.60	11.389	0.70	278.60	14.597	0.70
140.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	4108.99	51.482	1.00
140.00	Antel BXA-80063/8CF	3	0.75	0.000	24.00	10.660	0.65	208.87	13.810	0.65
140.00	Ericsson AIR 6449 B77D/ C-Band	3	0.75	0.000	81.60	4.028	0.70	197.31	5.391	0.70
140.00	Raycap RRFDC-3315-PF-48	2	0.75	0.000	26.90	2.512	0.67	106.04	3.546	0.67
140.00	Ericsson 8843 Rev 2	3	0.75	0.000	75.00	1.650	0.50	136.66	2.494	0.50
140.00	Ericsson Radio 4449 - B13&B5	3	0.75	0.000	70.00	1.650	0.50	125.95	2.492	0.50
140.00	Powerwave Allgon LGP 13901	6	0.75	0.000	9.90	0.503	0.50	24.53	0.985	0.50
126.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	4094.36	51.262	1.00
126.00	Commscope FFHH-65C-R3	3	0.75	0.000	125.70	21.138	0.63	534.37	24.805	0.63
126.00	Nokia AEHC	3	0.75	0.000	103.60	6.844	0.62	255.78	8.581	0.62
126.00	Raycap ASU9338TYP01	1	0.75	0.000	14.90	3.213	1.00	88.40	4.365	1.00
126.00	Nokia AHFIG 70.55 lbs	3	0.75	0.000	70.60	2.763	0.67	135.18	3.919	0.67
126.00	Commscope HELIAX FiberFeed 12	1	0.75	0.000	20.00	0.944	1.00	48.16	1.647	1.00
126.00	Nokia AirScale Dual RRH 4T4R B	3	0.75	0.000	83.80	2.218	0.67	146.50	3.219	0.67
122.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	4242.28	62.968	1.00
122.00	Generic 48" x 12" Panel	9	0.75	0.000	30.00	5.067	0.66	141.03	6.902	0.66
115.00	Andrew Microwaves VHLP2.5	2	1.00	0.000	47.60	8.430	1.00	215.39	10.088	1.00
115.00	Side Arms	1	1.00	0.000	560.00	8.500	1.00	939.84	14.265	1.00
115.00	DragonWave Horizon DUO (Radio)	2	1.00	0.000	7.00	0.200	1.00	19.73	0.454	1.00
115.00	Samsung 2.5GHz nRRHv2	3	1.00	0.000	50.70	2.496	0.67	120.20	3.530	0.67
115.00	Argus LLPX310R	3	1.00	0.000	28.60	4.292	0.63	116.34	5.902	0.63
105.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	4063.17	50.791	1.00
105.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	120.18	2.850	0.50
105.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	135.46	2.850	0.50
105.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	312.55	15.201	0.64
105.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	76.82	2.736	1.00

Totals Num Loadings: 40 106 18,924.50 40,030.87

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : 0.00_

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
5.00	152.00	9	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	152.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	152.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	152.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	152.00	1	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	140.00	9	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
5.00	140.00	3	1 5/8" Coax	1.98	0.82	N	3	0.5	0.5	120	0.5	Y	VERIZON WIREL

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
5.00	140.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	2	0.5	0.5	140	0.5	Y	VERIZON WIREL
0.00	126.00	6	7/8" Coax	1.09	0.33	N	3	0.5	3.25	17	0.5	Y	T-MOBILE
0.00	126.00	2	1.46" (37.1mm) Hybrid	1.46	1.7	N	1	0.5	0.5	25	2.6	Y	T-MOBILE
0.00	126.00	2	1 5/8" Coax	1.98	0.82	N	2	0.88	0.5	17	0.5	Y	T-MOBILE
0.00	126.00	2	1 5/8" Coax	1.98	0.82	N	2	0.88	0.5	29	0.5	Y	T-MOBILE
0.00	126.00	1	1 5/8" Coax	1.98	0.82	N	1	0.88	0.5	5	0.5	Y	T-MOBILE
0.00	122.00	9	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	SPRINT NEXTEL
0.00	115.00	2	1/2" Coax	0.63	0.15	N	2	0.5	0.5	240	0.5	Y	CLEARWIRE COR
5.00	115.00	1	2" conduit	2.38	3.65	N	1	0.5	0.5	245	0.5	Y	CLEARWIRE COR
0.00	105.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS

ASSET: 306042, Woods Chapel
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 ENG NO:

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)
0.00		0.5000	60.500	96.600	44,388.00	29.74	121.00	72.3	1417.4	0.0	0.0
5.00		0.5000	59.260	94.604	41,692.60	29.08	118.52	73	1359.2	0.0	1,626.6
10.00		0.5000	58.020	92.608	39,108.70	28.41	116.04	73.7	1302.2	0.0	1,592.6
15.00		0.5000	56.780	90.611	36,633.70	27.75	113.56	74.5	1246.4	0.0	1,558.6
20.00		0.5000	55.540	88.615	34,265.50	27.08	111.08	75.2	1191.8	0.0	1,524.7
25.00		0.5000	54.301	86.619	32,001.50	26.42	108.60	75.9	1138.5	0.0	1,490.7
30.00		0.5000	53.061	84.623	29,839.60	25.76	106.12	76.6	1086.4	0.0	1,456.7
35.00		0.5000	51.821	82.626	27,777.30	25.09	103.64	77.3	1035.5	0.0	1,422.8
40.00		0.5000	50.581	80.630	25,812.20	24.43	101.16	78.1	985.9	0.0	1,388.8
45.00		0.5000	49.341	78.634	23,942.10	23.76	98.68	78.8	937.4	0.0	1,354.8
47.08	Bot - Section 2	0.5000	48.824	77.802	23,190.40	23.49	97.65	79.1	917.6	0.0	554.5
50.00		0.5000	48.101	76.638	22,164.60	23.10	96.20	79.5	890.2	0.0	1,400.5
54.00	Top - Section 1	0.4060	47.921	62.117	17,900.40	28.95	118.03	73.1	721.6	0.0	1,886.6
55.00		0.4060	47.673	61.793	17,621.60	28.78	117.42	73.3	714.1	0.0	210.8
60.00		0.4060	46.433	60.172	16,270.90	27.97	114.37	74.2	677.0	0.0	1,037.6
65.00		0.4060	45.193	58.551	14,991.10	27.15	111.31	75.1	640.8	0.0	1,010.0
70.00		0.4060	43.953	56.930	13,780.20	26.33	108.26	76	605.7	0.0	982.4
75.00		0.4060	42.714	55.309	12,636.30	25.51	105.21	76.9	571.5	0.0	954.8
80.00		0.4060	41.474	53.688	11,557.60	24.69	102.15	77.8	538.4	0.0	927.2
85.00		0.4060	40.234	52.068	10,542.00	23.87	99.10	78.7	506.2	0.0	899.7
90.00		0.4060	38.994	50.447	9,587.80	23.06	96.04	79.6	475.0	0.0	872.1
95.00		0.4060	37.754	48.826	8,692.90	22.24	92.99	80.5	444.8	0.0	844.5
95.50	Bot - Section 3	0.4060	37.630	48.664	8,606.60	22.16	92.68	80.6	441.8	0.0	82.9
100.00		0.4060	36.514	47.205	7,855.60	21.42	89.94	81.4	415.6	0.0	1,310.0
101.00	Top - Section 2	0.3125	36.891	36.807	6,285.90	28.95	118.05	73.1	329.2	0.0	285.8
105.00		0.3125	35.899	35.809	5,788.30	28.10	114.88	74.1	311.5	0.0	494.2
110.00		0.3125	34.659	34.561	5,204.10	27.04	110.91	75.2	290.1	0.0	598.6
115.00		0.3125	33.419	33.314	4,660.60	25.98	106.94	76.4	269.4	0.0	577.4
120.00		0.3125	32.179	32.066	4,156.30	24.91	102.97	77.5	249.5	0.0	556.2
122.00		0.3125	31.683	31.567	3,965.30	24.49	101.39	78	241.8	0.0	216.5
125.00		0.3125	30.940	30.818	3,689.80	23.85	99.01	78.7	230.4	0.0	318.4
126.00		0.3125	30.692	30.569	3,600.90	23.64	98.21	78.9	226.7	0.0	104.4
130.00		0.3125	29.700	29.571	3,259.60	22.79	95.04	79.9	212.0	0.0	409.3
135.00		0.3125	28.460	28.323	2,864.20	21.72	91.07	81	194.4	0.0	492.5
140.00		0.3125	27.220	27.075	2,502.10	20.66	87.10	81.9	177.6	0.0	471.3
145.00		0.3125	25.980	25.828	2,171.90	19.60	83.14	81.9	161.5	0.0	450.0
150.00		0.3125	24.740	24.580	1,872.10	18.53	79.17	81.9	146.2	0.0	428.8
Totals:										31,793.3	

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

Load Case: 1.2D + 1.0W Normal	109 mph wind with no ice	21 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 1.20		
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	-69.05	-36.38	0.00	-3,898.7	0.00	3,898.71	6,283.69	1,695.33	9,595.43	7,683.17	0	0	0.519
5.00	-66.92	-35.88	0.00	-3,716.8	0.00	3,716.83	6,215.54	1,660.30	9,203.06	7,441.50	0.07	-0.12	0.511
10.00	-64.62	-35.40	0.00	-3,537.4	0.00	3,537.42	6,144.79	1,625.26	8,818.88	7,200.24	0.26	-0.25	0.502
15.00	-62.37	-34.91	0.00	-3,360.4	0.00	3,360.44	6,071.43	1,590.23	8,442.89	6,959.61	0.59	-0.37	0.494
20.00	-60.15	-34.40	0.00	-3,185.9	0.00	3,185.91	5,995.47	1,555.19	8,075.09	6,719.80	1.04	-0.5	0.485
25.00	-57.98	-33.86	0.00	-3,013.9	0.00	3,013.94	5,916.91	1,520.16	7,715.48	6,481.00	1.63	-0.63	0.475
30.00	-55.86	-33.31	0.00	-2,844.6	0.00	2,844.64	5,835.74	1,485.13	7,364.06	6,243.42	2.36	-0.76	0.466
35.00	-53.77	-32.74	0.00	-2,678.1	0.00	2,678.09	5,751.97	1,450.09	7,020.83	6,007.26	3.23	-0.89	0.456
40.00	-51.73	-32.17	0.00	-2,514.4	0.00	2,514.38	5,665.59	1,415.06	6,685.80	5,772.72	4.23	-1.02	0.445
45.00	-49.75	-31.74	0.00	-2,353.5	0.00	2,353.54	5,576.61	1,380.02	6,358.95	5,539.99	5.37	-1.16	0.434
47.08	-48.92	-31.45	0.00	-2,287.4	0.00	2,287.41	5,538.76	1,365.43	6,225.18	5,443.60	5.89	-1.21	0.430
50.00	-47.02	-31.02	0.00	-2,195.7	0.00	2,195.68	5,485.02	1,344.99	6,040.30	5,309.27	6.66	-1.29	0.423
54.00	-44.48	-30.68	0.00	-2,071.6	0.00	2,071.58	4,089.14	1,090.16	4,886.38	3,958.64	7.79	-1.4	0.535
55.00	-44.13	-30.35	0.00	-2,040.9	0.00	2,040.90	4,077.72	1,084.47	4,835.52	3,926.82	8.08	-1.43	0.531
60.00	-42.51	-29.76	0.00	-1,889.2	0.00	1,889.17	4,019.09	1,056.02	4,585.23	3,767.96	9.67	-1.59	0.513
65.00	-40.92	-29.17	0.00	-1,740.4	0.00	1,740.36	3,957.85	1,027.58	4,341.60	3,609.72	11.42	-1.75	0.493
70.00	-39.37	-28.59	0.00	-1,594.5	0.00	1,594.50	3,894.01	999.13	4,104.61	3,452.29	13.34	-1.91	0.473
75.00	-37.86	-28.00	0.00	-1,451.6	0.00	1,451.57	3,827.57	970.68	3,874.27	3,295.88	15.42	-2.06	0.451
80.00	-36.39	-27.42	0.00	-1,311.6	0.00	1,311.57	3,758.52	942.23	3,650.59	3,140.67	17.66	-2.22	0.428
85.00	-34.96	-26.83	0.00	-1,174.5	0.00	1,174.50	3,686.86	913.79	3,433.55	2,986.87	20.07	-2.37	0.404
90.00	-33.56	-26.26	0.00	-1,040.3	0.00	1,040.33	3,612.61	885.34	3,223.17	2,834.68	22.64	-2.52	0.377
95.00	-32.21	-25.91	0.00	-909.0	0.00	909.05	3,535.75	856.89	3,019.43	2,684.29	25.36	-2.67	0.349
95.50	-32.07	-25.65	0.00	-896.1	0.00	896.10	3,527.92	854.05	2,999.42	2,669.36	25.64	-2.68	0.346
100.00	-30.20	-25.27	0.00	-780.7	0.00	780.69	3,456.28	828.44	2,822.35	2,535.92	28.23	-2.81	0.318
101.00	-29.78	-24.99	0.00	-755.4	0.00	755.42	2,422.80	645.97	2,228.95	1,805.62	28.82	-2.83	0.432
105.00	-25.26	-22.30	0.00	-655.5	0.00	655.46	2,386.99	628.45	2,109.74	1,730.29	31.24	-2.94	0.391
110.00	-24.22	-21.75	0.00	-544.0	0.00	543.95	2,339.89	606.55	1,965.33	1,636.54	34.39	-3.09	0.344
115.00	-22.22	-19.58	0.00	-435.2	0.00	435.23	2,290.19	584.66	1,826.04	1,543.43	37.7	-3.22	0.293
120.00	-21.28	-19.18	0.00	-337.3	0.00	337.33	2,237.88	562.76	1,691.86	1,451.17	41.13	-3.34	0.243
122.00	-17.75	-16.09	0.00	-299.0	0.00	298.97	2,216.23	554.00	1,639.63	1,414.54	42.54	-3.38	0.220
125.00	-17.22	-15.86	0.00	-250.7	0.00	250.70	2,182.97	540.86	1,562.81	1,359.95	44.68	-3.44	0.193
126.00	-12.83	-12.20	0.00	-234.8	0.00	234.83	2,171.67	536.48	1,537.61	1,341.85	45.41	-3.46	0.181
130.00	-12.21	-11.73	0.00	-186.0	0.00	186.05	2,125.45	518.97	1,438.88	1,269.97	48.33	-3.53	0.153
135.00	-11.46	-11.21	0.00	-127.4	0.00	127.42	2,065.33	497.07	1,320.06	1,181.43	52.06	-3.59	0.114
140.00	-6.58	-6.58	0.00	-71.4	0.00	71.39	1,995.73	475.17	1,206.37	1,090.78	55.85	-3.64	0.069
145.00	-5.95	-6.09	0.00	-38.5	0.00	38.49	1,903.77	453.28	1,097.79	992.02	59.68	-3.67	0.042
150.00	0.00	-5.70	0.00	-8.0	0.00	8.02	1,811.80	431.38	994.33	897.94	63.54	-3.69	0.009

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

Load Case: 0.9D + 1.0W Normal	109 mph wind with no ice	21 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 0.90		
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	-51.78	-36.36	0.00	-3,859.3	0.00	3,859.31	6,283.69	1,695.33	9,595.43	7,683.17	0	0	0.511
5.00	-50.16	-35.83	0.00	-3,677.5	0.00	3,677.54	6,215.54	1,660.30	9,203.06	7,441.50	0.07	-0.12	0.503
10.00	-48.42	-35.31	0.00	-3,498.4	0.00	3,498.40	6,144.79	1,625.26	8,818.88	7,200.24	0.26	-0.24	0.494
15.00	-46.71	-34.78	0.00	-3,321.9	0.00	3,321.87	6,071.43	1,590.23	8,442.89	6,959.61	0.58	-0.37	0.485
20.00	-45.04	-34.24	0.00	-3,148.0	0.00	3,147.96	5,995.47	1,555.19	8,075.09	6,719.80	1.03	-0.49	0.476
25.00	-43.39	-33.68	0.00	-2,976.8	0.00	2,976.76	5,916.91	1,520.16	7,715.48	6,481.00	1.62	-0.62	0.467
30.00	-41.78	-33.10	0.00	-2,808.4	0.00	2,808.37	5,835.74	1,485.13	7,364.06	6,243.42	2.34	-0.75	0.457
35.00	-40.20	-32.51	0.00	-2,642.9	0.00	2,642.87	5,751.97	1,450.09	7,020.83	6,007.26	3.19	-0.88	0.447
40.00	-38.66	-31.91	0.00	-2,480.3	0.00	2,480.33	5,665.59	1,415.06	6,685.80	5,772.72	4.18	-1.01	0.437
45.00	-37.16	-31.47	0.00	-2,320.8	0.00	2,320.78	5,576.61	1,380.02	6,358.95	5,539.99	5.31	-1.14	0.426
47.08	-36.54	-31.17	0.00	-2,255.2	0.00	2,255.21	5,538.76	1,365.43	6,225.18	5,443.60	5.82	-1.2	0.421
50.00	-35.10	-30.73	0.00	-2,164.3	0.00	2,164.30	5,485.02	1,344.99	6,040.30	5,309.27	6.58	-1.28	0.415
54.00	-33.19	-30.39	0.00	-2,041.4	0.00	2,041.37	4,089.14	1,090.16	4,886.38	3,958.64	7.7	-1.39	0.525
55.00	-32.91	-30.04	0.00	-2,011.0	0.00	2,010.98	4,077.72	1,084.47	4,835.52	3,926.82	7.99	-1.41	0.521
60.00	-31.68	-29.43	0.00	-1,860.8	0.00	1,860.78	4,019.09	1,056.02	4,585.23	3,767.96	9.55	-1.57	0.503
65.00	-30.48	-28.83	0.00	-1,713.6	0.00	1,713.62	3,957.85	1,027.58	4,341.60	3,609.72	11.28	-1.73	0.483
70.00	-29.31	-28.22	0.00	-1,569.5	0.00	1,569.49	3,894.01	999.13	4,104.61	3,452.29	13.17	-1.88	0.463
75.00	-28.16	-27.62	0.00	-1,428.4	0.00	1,428.37	3,827.57	970.68	3,874.27	3,295.88	15.23	-2.04	0.442
80.00	-27.05	-27.03	0.00	-1,290.3	0.00	1,290.27	3,758.52	942.23	3,650.59	3,140.67	17.44	-2.19	0.419
85.00	-25.96	-26.43	0.00	-1,155.1	0.00	1,155.14	3,686.86	913.79	3,433.55	2,986.87	19.82	-2.34	0.395
90.00	-24.91	-25.85	0.00	-1,023.0	0.00	1,022.98	3,612.61	885.34	3,223.17	2,834.68	22.35	-2.49	0.369
95.00	-23.89	-25.50	0.00	-893.8	0.00	893.75	3,535.75	856.89	3,019.43	2,684.29	25.03	-2.63	0.341
95.50	-23.78	-25.23	0.00	-881.0	0.00	881.00	3,527.92	854.05	2,999.42	2,669.36	25.31	-2.64	0.338
100.00	-22.37	-24.87	0.00	-767.5	0.00	767.46	3,456.28	828.44	2,822.35	2,535.92	27.86	-2.77	0.310
101.00	-22.06	-24.59	0.00	-742.6	0.00	742.59	2,422.80	645.97	2,228.95	1,805.62	28.44	-2.79	0.422
105.00	-18.69	-21.94	0.00	-644.2	0.00	644.25	2,386.99	628.45	2,109.74	1,730.29	30.83	-2.9	0.381
110.00	-17.91	-21.38	0.00	-534.6	0.00	534.55	2,339.89	606.55	1,965.33	1,636.54	33.94	-3.04	0.336
115.00	-16.42	-19.23	0.00	-427.6	0.00	427.64	2,290.19	584.66	1,826.04	1,543.43	37.19	-3.17	0.285
120.00	-15.71	-18.84	0.00	-331.5	0.00	331.48	2,237.88	562.76	1,691.86	1,451.17	40.58	-3.29	0.237
122.00	-13.10	-15.80	0.00	-293.8	0.00	293.81	2,216.23	554.00	1,639.63	1,414.54	41.97	-3.33	0.214
125.00	-12.71	-15.58	0.00	-246.4	0.00	246.40	2,182.97	540.86	1,562.81	1,359.95	44.08	-3.39	0.188
126.00	-9.46	-11.98	0.00	-230.8	0.00	230.82	2,171.67	536.48	1,537.61	1,341.85	44.79	-3.41	0.177
130.00	-9.00	-11.52	0.00	-182.9	0.00	182.90	2,125.45	518.97	1,438.88	1,269.97	47.67	-3.47	0.149
135.00	-8.44	-11.01	0.00	-125.3	0.00	125.32	2,065.33	497.07	1,320.06	1,181.43	51.35	-3.54	0.111
140.00	-4.84	-6.46	0.00	-70.3	0.00	70.28	1,995.73	475.17	1,206.37	1,090.78	55.08	-3.59	0.067
145.00	-4.38	-5.99	0.00	-38.0	0.00	37.96	1,903.77	453.28	1,097.79	992.02	58.86	-3.62	0.041
150.00	0.00	-5.70	0.00	-8.0	0.00	8.02	1,811.80	431.38	994.33	897.94	62.65	-3.63	0.009

ASSET: 306042, Woods Chapel
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 ENG NO:

Load Case: 1.2D + 1.0Di + 1.0Wi Normal				40 mph wind with 1.5" radial ice				20 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											

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	-109.14	-7.02	0.00	-786.8	0.00	786.78	6,283.69	1,695.33	9,595.43	7,683.17	0	0	0.120
5.00	-106.44	-6.95	0.00	-751.7	0.00	751.68	6,215.54	1,660.30	9,203.06	7,441.50	0.01	-0.02	0.118
10.00	-103.43	-6.89	0.00	-716.9	0.00	716.91	6,144.79	1,625.26	8,818.88	7,200.24	0.05	-0.05	0.116
15.00	-100.44	-6.82	0.00	-682.5	0.00	682.48	6,071.43	1,590.23	8,442.89	6,959.61	0.12	-0.08	0.115
20.00	-97.47	-6.75	0.00	-648.4	0.00	648.38	5,995.47	1,555.19	8,075.09	6,719.80	0.21	-0.1	0.113
25.00	-94.54	-6.67	0.00	-614.6	0.00	614.65	5,916.91	1,520.16	7,715.48	6,481.00	0.33	-0.13	0.111
30.00	-91.63	-6.59	0.00	-581.3	0.00	581.31	5,835.74	1,485.13	7,364.06	6,243.42	0.48	-0.15	0.109
35.00	-88.77	-6.50	0.00	-548.4	0.00	548.37	5,751.97	1,450.09	7,020.83	6,007.26	0.65	-0.18	0.107
40.00	-85.94	-6.41	0.00	-515.9	0.00	515.86	5,665.59	1,415.06	6,685.80	5,772.72	0.86	-0.21	0.105
45.00	-83.16	-6.35	0.00	-483.8	0.00	483.79	5,576.61	1,380.02	6,358.95	5,539.99	1.09	-0.24	0.102
47.08	-82.01	-6.30	0.00	-470.6	0.00	470.57	5,538.76	1,365.43	6,225.18	5,443.60	1.2	-0.25	0.101
50.00	-79.65	-6.23	0.00	-452.2	0.00	452.19	5,485.02	1,344.99	6,040.30	5,309.27	1.35	-0.26	0.100
54.00	-76.45	-6.18	0.00	-427.2	0.00	427.25	4,089.14	1,090.16	4,886.38	3,958.64	1.58	-0.29	0.127
55.00	-75.97	-6.13	0.00	-421.1	0.00	421.07	4,077.72	1,084.47	4,835.52	3,926.82	1.64	-0.29	0.126
60.00	-73.56	-6.04	0.00	-390.4	0.00	390.43	4,019.09	1,056.02	4,585.23	3,767.96	1.97	-0.32	0.122
65.00	-71.20	-5.94	0.00	-360.2	0.00	360.25	3,957.85	1,027.58	4,341.60	3,609.72	2.33	-0.36	0.118
70.00	-68.88	-5.85	0.00	-330.5	0.00	330.52	3,894.01	999.13	4,104.61	3,452.29	2.72	-0.39	0.113
75.00	-66.59	-5.76	0.00	-301.3	0.00	301.27	3,827.57	970.68	3,874.27	3,295.88	3.15	-0.42	0.109
80.00	-64.35	-5.66	0.00	-272.5	0.00	272.50	3,758.52	942.23	3,650.59	3,140.67	3.61	-0.46	0.104
85.00	-62.14	-5.56	0.00	-244.2	0.00	244.20	3,686.86	913.79	3,433.55	2,986.87	4.1	-0.49	0.099
90.00	-59.98	-5.46	0.00	-216.4	0.00	216.40	3,612.61	885.34	3,223.17	2,834.68	4.63	-0.52	0.093
95.00	-57.86	-5.40	0.00	-189.1	0.00	189.08	3,535.75	856.89	3,019.43	2,684.29	5.19	-0.55	0.087
95.50	-57.65	-5.36	0.00	-186.4	0.00	186.39	3,527.92	854.05	2,999.42	2,669.36	5.24	-0.55	0.086
100.00	-55.09	-5.27	0.00	-162.3	0.00	162.28	3,456.28	828.44	2,822.35	2,535.92	5.78	-0.58	0.080
101.00	-54.52	-5.22	0.00	-157.0	0.00	157.01	2,422.80	645.97	2,228.95	1,805.62	5.9	-0.58	0.110
105.00	-46.99	-4.63	0.00	-136.1	0.00	136.11	2,386.99	628.45	2,109.74	1,730.29	6.4	-0.6	0.098
110.00	-45.20	-4.52	0.00	-113.0	0.00	112.95	2,339.89	606.55	1,965.33	1,636.54	7.05	-0.64	0.088
115.00	-41.33	-4.09	0.00	-90.4	0.00	90.36	2,290.19	584.66	1,826.04	1,543.43	7.73	-0.66	0.077
120.00	-39.68	-4.00	0.00	-69.9	0.00	69.91	2,237.88	562.76	1,691.86	1,451.17	8.44	-0.69	0.066
122.00	-33.36	-3.36	0.00	-61.9	0.00	61.92	2,216.23	554.00	1,639.63	1,414.54	8.73	-0.7	0.059
125.00	-32.42	-3.30	0.00	-51.8	0.00	51.84	2,182.97	540.86	1,562.81	1,359.95	9.17	-0.71	0.053
126.00	-24.48	-2.54	0.00	-48.5	0.00	48.54	2,171.67	536.48	1,537.61	1,341.85	9.32	-0.71	0.047
130.00	-23.49	-2.44	0.00	-38.4	0.00	38.40	2,125.45	518.97	1,438.88	1,269.97	9.92	-0.73	0.041
135.00	-22.28	-2.34	0.00	-26.2	0.00	26.18	2,065.33	497.07	1,320.06	1,181.43	10.69	-0.74	0.033
140.00	-12.89	-1.36	0.00	-14.5	0.00	14.47	1,995.73	475.17	1,206.37	1,090.78	11.47	-0.75	0.020
145.00	-11.93	-1.26	0.00	-7.7	0.00	7.68	1,903.77	453.28	1,097.79	992.02	12.26	-0.76	0.014
150.00	0.00	-1.10	0.00	-1.4	0.00	1.36	1,811.80	431.38	994.33	897.94	13.06	-0.76	0.002

ASSET: 306042, Woods Chapel
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 ENG NO:

Load Case: 1.0D + 1.0W Service Normal	60 mph Wind with No Ice	20 Iterations
Gust Response Factor: 1.10		
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	-57.58	-9.86	0.00	-1,050.4	0.00	1,050.37	6,283.69	1,695.33	9,595.43	7,683.17	0	0	0.146
5.00	-55.85	-9.72	0.00	-1,001.1	0.00	1,001.08	6,215.54	1,660.30	9,203.06	7,441.50	0.02	-0.03	0.144
10.00	-54.00	-9.58	0.00	-952.5	0.00	952.49	6,144.79	1,625.26	8,818.88	7,200.24	0.07	-0.07	0.141
15.00	-52.17	-9.44	0.00	-904.6	0.00	904.59	6,071.43	1,590.23	8,442.89	6,959.61	0.16	-0.1	0.139
20.00	-50.38	-9.30	0.00	-857.4	0.00	857.39	5,995.47	1,555.19	8,075.09	6,719.80	0.28	-0.13	0.136
25.00	-48.63	-9.15	0.00	-810.9	0.00	810.90	5,916.91	1,520.16	7,715.48	6,481.00	0.44	-0.17	0.133
30.00	-46.91	-8.99	0.00	-765.2	0.00	765.17	5,835.74	1,485.13	7,364.06	6,243.42	0.64	-0.2	0.131
35.00	-45.22	-8.84	0.00	-720.2	0.00	720.20	5,751.97	1,450.09	7,020.83	6,007.26	0.87	-0.24	0.128
40.00	-43.57	-8.68	0.00	-676.0	0.00	676.03	5,665.59	1,415.06	6,685.80	5,772.72	1.14	-0.27	0.125
45.00	-41.95	-8.56	0.00	-632.6	0.00	632.65	5,576.61	1,380.02	6,358.95	5,539.99	1.45	-0.31	0.122
47.08	-41.29	-8.48	0.00	-614.8	0.00	614.82	5,538.76	1,365.43	6,225.18	5,443.60	1.59	-0.33	0.120
50.00	-39.73	-8.36	0.00	-590.1	0.00	590.10	5,485.02	1,344.99	6,040.30	5,309.27	1.79	-0.35	0.118
54.00	-37.64	-8.27	0.00	-556.7	0.00	556.66	4,089.14	1,090.16	4,886.38	3,958.64	2.1	-0.38	0.150
55.00	-37.37	-8.17	0.00	-548.4	0.00	548.39	4,077.72	1,084.47	4,835.52	3,926.82	2.18	-0.39	0.149
60.00	-36.07	-8.01	0.00	-507.5	0.00	507.52	4,019.09	1,056.02	4,585.23	3,767.96	2.6	-0.43	0.144
65.00	-34.79	-7.85	0.00	-467.5	0.00	467.46	3,957.85	1,027.58	4,341.60	3,609.72	3.07	-0.47	0.138
70.00	-33.55	-7.69	0.00	-428.2	0.00	428.21	3,894.01	999.13	4,104.61	3,452.29	3.59	-0.51	0.133
75.00	-32.33	-7.53	0.00	-389.8	0.00	389.77	3,827.57	970.68	3,874.27	3,295.88	4.15	-0.56	0.127
80.00	-31.14	-7.37	0.00	-352.1	0.00	352.14	3,758.52	942.23	3,650.59	3,140.67	4.75	-0.6	0.120
85.00	-29.98	-7.21	0.00	-315.3	0.00	315.30	3,686.86	913.79	3,433.55	2,986.87	5.4	-0.64	0.114
90.00	-28.84	-7.05	0.00	-279.3	0.00	279.26	3,612.61	885.34	3,223.17	2,834.68	6.09	-0.68	0.107
95.00	-27.74	-6.96	0.00	-244.0	0.00	244.01	3,535.75	856.89	3,019.43	2,684.29	6.82	-0.72	0.099
95.50	-27.63	-6.88	0.00	-240.5	0.00	240.53	3,527.92	854.05	2,999.42	2,669.36	6.9	-0.72	0.098
100.00	-26.08	-6.79	0.00	-209.6	0.00	209.55	3,456.28	828.44	2,822.35	2,535.92	7.59	-0.75	0.090
101.00	-25.75	-6.71	0.00	-202.8	0.00	202.77	2,422.80	645.97	2,228.95	1,805.62	7.75	-0.76	0.123
105.00	-21.92	-5.99	0.00	-175.9	0.00	175.93	2,386.99	628.45	2,109.74	1,730.29	8.4	-0.79	0.111
110.00	-21.07	-5.84	0.00	-146.0	0.00	145.99	2,339.89	606.55	1,965.33	1,636.54	9.25	-0.83	0.098
115.00	-19.34	-5.25	0.00	-116.8	0.00	116.81	2,290.19	584.66	1,826.04	1,543.43	10.14	-0.87	0.084
120.00	-18.56	-5.15	0.00	-90.5	0.00	90.54	2,237.88	562.76	1,691.86	1,451.17	11.06	-0.9	0.071
122.00	-15.49	-4.32	0.00	-80.2	0.00	80.25	2,216.23	554.00	1,639.63	1,414.54	11.44	-0.91	0.064
125.00	-15.06	-4.26	0.00	-67.3	0.00	67.30	2,182.97	540.86	1,562.81	1,359.95	12.02	-0.92	0.056
126.00	-11.24	-3.27	0.00	-63.0	0.00	63.04	2,171.67	536.48	1,537.61	1,341.85	12.21	-0.93	0.052
130.00	-10.71	-3.15	0.00	-50.0	0.00	49.95	2,125.45	518.97	1,438.88	1,269.97	13	-0.95	0.044
135.00	-10.07	-3.01	0.00	-34.2	0.00	34.22	2,065.33	497.07	1,320.06	1,181.43	14	-0.97	0.034
140.00	-5.79	-1.77	0.00	-19.2	0.00	19.18	1,995.73	475.17	1,206.37	1,090.78	15.02	-0.98	0.021
145.00	-5.25	-1.64	0.00	-10.4	0.00	10.35	1,903.77	453.28	1,097.79	992.02	16.05	-0.99	0.013
150.00	0.00	-1.54	0.00	-2.2	0.00	2.18	1,811.80	431.38	994.33	897.94	17.09	-0.99	0.002

EQUIVALENT LATERAL FORCES METHOD ANALYSIS
(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.099
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.068
Long-Period Transition Period (T_L – Seconds):	12
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}):	0.106
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.109
Seismic Response Coefficient (C_s):	0.032
Upper Limit C_s :	0.032
Lower Limit C_s :	0.030
Period based on Rayleigh Method (sec):	2.240
Redundancy Factor (ρ):	1.000
Seismic Force Distribution Exponent (k):	1.870
Total Unfactored Dead Load:	57.580 k
Seismic Base Shear (E):	1.870 k

1.2D + 1.0Ev + 1.0Eh Normal Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
36	147.5	522	5,890	0.021	39	637
35	142.5	543	5,747	0.020	38	663
34	137.5	623	6,173	0.022	41	761
33	132.5	645	5,956	0.021	39	787
32	128	531	4,599	0.016	30	648
31	125.5	144	1,205	0.004	8	176
30	123.5	438	3,550	0.013	23	535
29	121	308	2,399	0.008	16	376
28	117.5	784	5,788	0.020	38	957
27	112.5	825	5,615	0.020	37	1,007
26	107.5	846	5,290	0.019	35	1,033
25	103	702	4,049	0.014	27	857
24	100.5	338	1,861	0.007	12	412
23	97.75	1,543	8,078	0.029	53	1,885
22	95.25	109	543	0.002	4	133
21	92.5	1,104	5,211	0.018	34	1,348
20	87.5	1,131	4,815	0.017	32	1,381
19	82.5	1,159	4,418	0.016	29	1,415
18	77.5	1,186	4,025	0.014	27	1,449
17	72.5	1,214	3,636	0.013	24	1,483
16	67.5	1,242	3,254	0.012	22	1,516
15	62.5	1,269	2,880	0.010	19	1,550
14	57.5	1,297	2,518	0.009	17	1,584
13	54.5	263	461	0.002	3	321
12	52	2,094	3,370	0.012	22	2,557
11	48.5417	1,552	2,196	0.008	15	1,895
10	46.0417	663	849	0.003	6	809
9	42.5	1,614	1,782	0.006	12	1,971
8	37.5	1,648	1,440	0.005	10	2,012
7	32.5	1,682	1,125	0.004	7	2,054
6	27.5	1,716	840	0.003	6	2,095
5	22.5	1,750	589	0.002	4	2,137
4	17.5	1,784	375	0.001	2	2,178
3	12.5	1,818	204	0.001	1	2,220

ASSET: 306042, Woods Chapel
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 ENG NO:

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
2	7.5	1,852	80	0.000	1	2,261
1	2.5	1,717	10	0.000	0	2,097
Powerwave Allgon TT08-19DB111-001	150	66	769	0.003	5	81
Nokia AirScale RRH 4T4R B5 160W AHCA	150	110	1,286	0.005	9	135
Raycap DC6-48-60-18-8F(32.8 lbs)	150	33	382	0.001	3	40
Raycap DC6-48-60-18-8C	150	16	186	0.001	1	20
Raycap DC6-48-60-0-8C	150	16	186	0.001	1	20
Nokia AHLBBA	150	284	3,314	0.012	22	347
Alcatel-Lucent RRH4X25-WCS	150	210	2,447	0.009	16	256
Nokia AirScale Dual RRH 4T4R B25/66 320W AHFIB	150	265	3,083	0.011	20	323
Nokia AEQK AirScale MAA 64T64R 192AE n77 200W	150	298	3,468	0.012	23	363
Commscope JAH4-65C-R4	150	262	3,052	0.011	20	320
CCI TPA65R-BU8D	150	495	5,768	0.020	38	604
Generic Mount Reinforcement	150	200	2,330	0.008	15	244
Generic Round Platform with Handrails	150	2,500	29,129	0.103	193	3,053
Generic Round Platform with Handrails	140	2,500	25,606	0.091	170	3,053
Generic Round Platform with Handrails	126	2,500	21,030	0.075	139	3,053
Generic Round Platform with Handrails	105	2,500	14,958	0.053	99	3,053
Powerwave Allgon LGP 13901	140	59	608	0.002	4	73
Ericsson Radio 4449 - B13&B5	140	210	2,151	0.008	14	256
Ericsson 8843 Rev 2	140	225	2,305	0.008	15	275
Raycap RRFDC-3315-PF-48	140	54	551	0.002	4	66
Ericsson AIR 6449 B77D/ C-Band	140	245	2,507	0.009	17	299
Antel BXA-80063/8CF	140	72	737	0.003	5	88
Commscope NHH-65C-R2B	140	310	3,171	0.011	21	378
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	126	20	168	0.001	1	24
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	126	251	2,115	0.008	14	307
Nokia AHFIG 70.55 lbs	126	212	1,782	0.006	12	259
Raycap ASU9338TYP01	126	15	125	0.000	1	18
Nokia AEHC	126	311	2,614	0.009	17	380
Commscope FFHH-65C-R3	126	377	3,172	0.011	21	460
Generic 48" x 12" Panel	122	270	2,138	0.008	14	330
Generic Flat Platform with Handrails	122	2,500	19,799	0.070	131	3,053
DragonWave Horizon DUO (Radio)	115	14	99	0.000	1	17
Samsung 2.5GHz nRRHv2	115	152	1,079	0.004	7	186
Argus LLPX310R	115	86	608	0.002	4	105
Andrew Microwaves VHLP2.5	115	95	675	0.002	4	116
Side Arms	115	560	3,971	0.014	26	684
Commscope RDIDC-9181-PF-48	105	22	131	0.000	1	27
Fujitsu TA08025-B604	105	192	1,147	0.004	8	234
Fujitsu TA08025-B605	105	225	1,346	0.005	9	275
JMA Wireless MX08FRO665-21	105	194	1,158	0.004	8	236
		57,579	281,973	1.000	1,867	70,310

0.9D - 1.0Ev + 1.0Eh Normal

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
36	147.5	522	5,890	0.021	39	458
35	142.5	543	5,747	0.020	38	477
34	137.5	623	6,173	0.022	41	548
33	132.5	645	5,956	0.021	39	566
32	128	531	4,599	0.016	30	467
31	125.5	144	1,205	0.004	8	127
30	123.5	438	3,550	0.013	23	385
29	121	308	2,399	0.008	16	270
28	117.5	784	5,788	0.020	38	689
27	112.5	825	5,615	0.020	37	725
26	107.5	846	5,290	0.019	35	744

ASSET: 306042, Woods Chapel
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
 ENG NO:

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
25	103	702	4,049	0.014	27	617
24	100.5	338	1,861	0.007	12	297
23	97.75	1,543	8,078	0.029	53	1,356
22	95.25	109	543	0.002	4	96
21	92.5	1,104	5,211	0.018	34	970
20	87.5	1,131	4,815	0.017	32	994
19	82.5	1,159	4,418	0.016	29	1,019
18	77.5	1,186	4,025	0.014	27	1,043
17	72.5	1,214	3,636	0.013	24	1,067
16	67.5	1,242	3,254	0.012	22	1,091
15	62.5	1,269	2,880	0.010	19	1,115
14	57.5	1,297	2,518	0.009	17	1,140
13	54.5	263	461	0.002	3	231
12	52	2,094	3,370	0.012	22	1,840
11	48.5417	1,552	2,196	0.008	15	1,364
10	46.0417	663	849	0.003	6	582
9	42.5	1,614	1,782	0.006	12	1,419
8	37.5	1,648	1,440	0.005	10	1,448
7	32.5	1,682	1,125	0.004	7	1,478
6	27.5	1,716	840	0.003	6	1,508
5	22.5	1,750	589	0.002	4	1,538
4	17.5	1,784	375	0.001	2	1,568
3	12.5	1,818	204	0.001	1	1,598
2	7.5	1,852	80	0.000	1	1,628
1	2.5	1,717	10	0.000	0	1,509
Powerwave Allgon TT08-19DB111-001	150	66	769	0.003	5	58
Nokia AirScale RRH 4T4R B5 160W AHCA	150	110	1,286	0.005	9	97
Raycap DC6-48-60-18-8F(32.8 lbs)	150	33	382	0.001	3	29
Raycap DC6-48-60-18-8C	150	16	186	0.001	1	14
Raycap DC6-48-60-0-8C	150	16	186	0.001	1	14
Nokia AHLBBA	150	284	3,314	0.012	22	250
Alcatel-Lucent RRH4X25-WCS	150	210	2,447	0.009	16	185
Nokia AirScale Dual RRH 4T4R B25/66 320W AHFIB	150	265	3,083	0.011	20	233
Nokia AEQK AirScale MAA 64T64R 192AE n77 200W	150	298	3,468	0.012	23	262
Commscope JAH4-65C-R4	150	262	3,052	0.011	20	230
CCI TPA65R-BU8D	150	495	5,768	0.020	38	435
Generic Mount Reinforcement	150	200	2,330	0.008	15	176
Generic Round Platform with Handrails	150	2,500	29,129	0.103	193	2,197
Generic Round Platform with Handrails	140	2,500	25,606	0.091	170	2,197
Generic Round Platform with Handrails	126	2,500	21,030	0.075	139	2,197
Generic Round Platform with Handrails	105	2,500	14,958	0.053	99	2,197
Powerwave Allgon LGP 13901	140	59	608	0.002	4	52
Ericsson Radio 4449 - B13&B5	140	210	2,151	0.008	14	185
Ericsson 8843 Rev 2	140	225	2,305	0.008	15	198
Raycap RRFDC-3315-PF-48	140	54	551	0.002	4	47
Ericsson AIR 6449 B77D/ C-Band	140	245	2,507	0.009	17	215
Antel BXA-80063/8CF	140	72	737	0.003	5	63
Commscope NHH-65C-R2B	140	310	3,171	0.011	21	272
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	126	20	168	0.001	1	18
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	126	251	2,115	0.008	14	221
Nokia AHFIG 70.55 lbs	126	212	1,782	0.006	12	186
Raycap ASU9338TYP01	126	15	125	0.000	1	13
Nokia AEHC	126	311	2,614	0.009	17	273
Commscope FFHH-65C-R3	126	377	3,172	0.011	21	331
Generic 48" x 12" Panel	122	270	2,138	0.008	14	237
Generic Flat Platform with Handrails	122	2,500	19,799	0.070	131	2,197
DragonWave Horizon DUO (Radio)	115	14	99	0.000	1	12
Samsung 2.5GHz nRRHv2	115	152	1,079	0.004	7	134
Argus LLPX310R	115	86	608	0.002	4	75
Andrew Microwaves VHLP2.5	115	95	675	0.002	4	84
Side Arms	115	560	3,971	0.014	26	492
Commscope RDIDC-9181-PF-48	105	22	131	0.000	1	19
Fujitsu TA08025-B604	105	192	1,147	0.004	8	168
Fujitsu TA08025-B605	105	225	1,346	0.005	9	198
JMA Wireless MX08FRO665-21	105	194	1,158	0.004	8	170

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
		57,579	281,973	1.000	1,867	50,605

1.2D + 1.0Ev + 1.0Eh Normal Seismic

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 (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.21	-1.87	0.00	-232.16	0.00	232.16	6,283.69	1,695.33	9,595	7,683.17	0.00	0.00	0.04
5.00	-65.95	-1.88	0.00	-222.81	0.00	222.81	6,215.54	1,660.30	9,203	7,441.50	0.00	-0.01	0.04
10.00	-63.73	-1.89	0.00	-213.42	0.00	213.42	6,144.79	1,625.26	8,819	7,200.24	0.02	-0.01	0.04
15.00	-61.55	-1.89	0.00	-203.99	0.00	203.99	6,071.43	1,590.23	8,443	6,959.61	0.04	-0.02	0.04
20.00	-59.42	-1.89	0.00	-194.54	0.00	194.54	5,995.47	1,555.19	8,075	6,719.80	0.06	-0.03	0.04
25.00	-57.32	-1.89	0.00	-185.08	0.00	185.08	5,916.91	1,520.16	7,715	6,481.00	0.10	-0.04	0.04
30.00	-55.27	-1.89	0.00	-175.60	0.00	175.60	5,835.74	1,485.13	7,364	6,243.42	0.14	-0.05	0.04
35.00	-53.25	-1.89	0.00	-166.14	0.00	166.14	5,751.97	1,450.09	7,021	6,007.26	0.19	-0.05	0.04
40.00	-51.28	-1.88	0.00	-156.69	0.00	156.69	5,665.59	1,415.06	6,686	5,772.72	0.26	-0.06	0.04
45.00	-50.47	-1.88	0.00	-147.27	0.00	147.27	5,576.61	1,380.02	6,359	5,539.99	0.33	-0.07	0.04
47.08	-48.58	-1.87	0.00	-143.35	0.00	143.35	5,538.76	1,365.43	6,225	5,443.60	0.36	-0.07	0.04
50.00	-46.02	-1.85	0.00	-137.90	0.00	137.90	5,485.02	1,344.99	6,040	5,309.27	0.40	-0.08	0.03
54.00	-45.70	-1.85	0.00	-130.51	0.00	130.51	4,089.14	1,090.16	4,886	3,958.64	0.47	-0.09	0.04
55.00	-44.12	-1.83	0.00	-128.66	0.00	128.66	4,077.72	1,084.47	4,836	3,926.82	0.49	-0.09	0.04
60.00	-42.57	-1.82	0.00	-119.50	0.00	119.50	4,019.09	1,056.02	4,585	3,767.96	0.59	-0.10	0.04
65.00	-41.05	-1.80	0.00	-110.40	0.00	110.40	3,957.85	1,027.58	4,342	3,609.72	0.70	-0.11	0.04
70.00	-39.57	-1.78	0.00	-101.39	0.00	101.39	3,894.01	999.13	4,105	3,452.29	0.82	-0.12	0.04
75.00	-38.12	-1.76	0.00	-92.48	0.00	92.48	3,827.57	970.68	3,874	3,295.88	0.95	-0.13	0.04
80.00	-36.70	-1.73	0.00	-83.69	0.00	83.69	3,758.52	942.23	3,651	3,140.67	1.09	-0.14	0.04
85.00	-35.32	-1.70	0.00	-75.03	0.00	75.03	3,686.86	913.79	3,434	2,986.87	1.24	-0.15	0.04
90.00	-33.97	-1.67	0.00	-66.51	0.00	66.51	3,612.61	885.34	3,223	2,834.68	1.40	-0.16	0.03
95.00	-33.84	-1.67	0.00	-58.16	0.00	58.16	3,535.75	856.89	3,019	2,684.29	1.57	-0.17	0.03
95.50	-31.95	-1.61	0.00	-57.32	0.00	57.32	3,527.92	854.05	2,999	2,669.36	1.58	-0.17	0.03
100.00	-31.54	-1.60	0.00	-50.06	0.00	50.06	3,456.28	828.44	2,822	2,535.92	1.74	-0.18	0.03
101.00	-30.69	-1.58	0.00	-48.46	0.00	48.46	2,422.80	645.97	2,229	1,805.62	1.78	-0.18	0.04
105.00	-25.83	-1.40	0.00	-42.16	0.00	42.16	2,386.99	628.45	2,110	1,730.29	1.93	-0.18	0.04
110.00	-24.82	-1.37	0.00	-35.14	0.00	35.14	2,339.89	606.55	1,965	1,636.54	2.13	-0.19	0.03
115.00	-22.76	-1.28	0.00	-28.30	0.00	28.30	2,290.19	584.66	1,826	1,543.43	2.34	-0.20	0.03
120.00	-22.38	-1.27	0.00	-21.88	0.00	21.88	2,237.88	562.76	1,692	1,451.17	2.56	-0.21	0.03
122.00	-18.46	-1.09	0.00	-19.34	0.00	19.34	2,216.23	554.00	1,640	1,414.54	2.64	-0.21	0.02
125.00	-18.29	-1.08	0.00	-16.09	0.00	16.09	2,182.97	540.86	1,563	1,359.95	2.78	-0.22	0.02
126.00	-13.14	-0.82	0.00	-15.01	0.00	15.01	2,171.67	536.48	1,538	1,341.85	2.82	-0.22	0.02
130.00	-12.35	-0.78	0.00	-11.71	0.00	11.71	2,125.45	518.97	1,439	1,269.97	3.01	-0.22	0.02
135.00	-11.59	-0.74	0.00	-7.80	0.00	7.80	2,065.33	497.07	1,320	1,181.43	3.24	-0.23	0.01
140.00	-6.44	-0.43	0.00	-4.11	0.00	4.11	1,995.73	475.17	1,206	1,090.78	3.48	-0.23	0.01
145.00	-5.80	-0.39	0.00	-1.95	0.00	1.95	1,903.77	453.28	1,098	992.02	3.72	-0.23	0.01
150.00	0.00	-0.37	0.00	0.00	0.00	0.00	1,811.80	431.38	994	897.94	3.97	-0.23	0.00

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

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 (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.10	-1.87	0.00	-229.49	0.00	229.49	6,283.69	1,695.33	9,595	7,683.17	0.00	0.00	0.04
5.00	-47.47	-1.87	0.00	-220.14	0.00	220.14	6,215.54	1,660.30	9,203	7,441.50	0.00	-0.01	0.04
10.00	-45.87	-1.88	0.00	-210.77	0.00	210.77	6,144.79	1,625.26	8,819	7,200.24	0.02	-0.01	0.04
15.00	-44.30	-1.88	0.00	-201.37	0.00	201.37	6,071.43	1,590.23	8,443	6,959.61	0.03	-0.02	0.04
20.00	-42.76	-1.88	0.00	-191.96	0.00	191.96	5,995.47	1,555.19	8,075	6,719.80	0.06	-0.03	0.04
25.00	-41.25	-1.88	0.00	-182.55	0.00	182.55	5,916.91	1,520.16	7,715	6,481.00	0.10	-0.04	0.04
30.00	-39.78	-1.88	0.00	-173.14	0.00	173.14	5,835.74	1,485.13	7,364	6,243.42	0.14	-0.05	0.04
35.00	-38.33	-1.87	0.00	-163.74	0.00	163.74	5,751.97	1,450.09	7,021	6,007.26	0.19	-0.05	0.03
40.00	-36.91	-1.87	0.00	-154.37	0.00	154.37	5,665.59	1,415.06	6,686	5,772.72	0.25	-0.06	0.03
45.00	-36.33	-1.86	0.00	-145.04	0.00	145.04	5,576.61	1,380.02	6,359	5,539.99	0.32	-0.07	0.03
47.08	-34.96	-1.85	0.00	-141.16	0.00	141.16	5,538.76	1,365.43	6,225	5,443.60	0.35	-0.07	0.03
50.00	-33.12	-1.83	0.00	-135.76	0.00	135.76	5,485.02	1,344.99	6,040	5,309.27	0.40	-0.08	0.03

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

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 (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
54.00	-32.89	-1.83	0.00	-128.45	0.00	128.45	4,089.14	1,090.16	4,886	3,958.64	0.47	-0.09	0.04
55.00	-31.75	-1.81	0.00	-126.62	0.00	126.62	4,077.72	1,084.47	4,836	3,926.82	0.49	-0.09	0.04
60.00	-30.64	-1.80	0.00	-117.56	0.00	117.56	4,019.09	1,056.02	4,585	3,767.96	0.58	-0.10	0.04
65.00	-29.54	-1.78	0.00	-108.58	0.00	108.58	3,957.85	1,027.58	4,342	3,609.72	0.69	-0.11	0.04
70.00	-28.48	-1.76	0.00	-99.68	0.00	99.68	3,894.01	999.13	4,105	3,452.29	0.81	-0.12	0.04
75.00	-27.43	-1.73	0.00	-90.90	0.00	90.90	3,827.57	970.68	3,874	3,295.88	0.93	-0.13	0.04
80.00	-26.41	-1.71	0.00	-82.23	0.00	82.23	3,758.52	942.23	3,651	3,140.67	1.07	-0.14	0.03
85.00	-25.42	-1.68	0.00	-73.70	0.00	73.70	3,686.86	913.79	3,434	2,986.87	1.22	-0.15	0.03
90.00	-24.45	-1.64	0.00	-65.32	0.00	65.32	3,612.61	885.34	3,223	2,834.68	1.38	-0.15	0.03
95.00	-24.35	-1.64	0.00	-57.11	0.00	57.11	3,535.75	856.89	3,019	2,684.29	1.54	-0.16	0.03
95.50	-23.00	-1.59	0.00	-56.29	0.00	56.29	3,527.92	854.05	2,999	2,669.36	1.56	-0.17	0.03
100.00	-22.70	-1.57	0.00	-49.15	0.00	49.15	3,456.28	828.44	2,822	2,535.92	1.72	-0.17	0.03
101.00	-22.08	-1.55	0.00	-47.58	0.00	47.58	2,422.80	645.97	2,229	1,805.62	1.76	-0.17	0.04
105.00	-18.59	-1.38	0.00	-41.39	0.00	41.39	2,386.99	628.45	2,110	1,730.29	1.91	-0.18	0.03
110.00	-17.86	-1.34	0.00	-34.49	0.00	34.49	2,339.89	606.55	1,965	1,636.54	2.10	-0.19	0.03
115.00	-16.38	-1.26	0.00	-27.78	0.00	27.78	2,290.19	584.66	1,826	1,543.43	2.30	-0.20	0.03
120.00	-16.11	-1.24	0.00	-21.48	0.00	21.48	2,237.88	562.76	1,692	1,451.17	2.52	-0.21	0.02
122.00	-13.29	-1.07	0.00	-18.99	0.00	18.99	2,216.23	554.00	1,640	1,414.54	2.60	-0.21	0.02
125.00	-13.16	-1.06	0.00	-15.80	0.00	15.80	2,182.97	540.86	1,563	1,359.95	2.74	-0.21	0.02
126.00	-9.46	-0.81	0.00	-14.74	0.00	14.74	2,171.67	536.48	1,538	1,341.85	2.78	-0.21	0.02
130.00	-8.89	-0.77	0.00	-11.50	0.00	11.50	2,125.45	518.97	1,439	1,269.97	2.96	-0.22	0.01
135.00	-8.34	-0.73	0.00	-7.66	0.00	7.66	2,065.33	497.07	1,320	1,181.43	3.19	-0.22	0.01
140.00	-4.64	-0.42	0.00	-4.04	0.00	4.04	1,995.73	475.17	1,206	1,090.78	3.43	-0.23	0.01
145.00	-4.18	-0.38	0.00	-1.92	0.00	1.92	1,903.77	453.28	1,098	992.02	3.67	-0.23	0.00
150.00	0.00	-0.37	0.00	0.00	0.00	0.00	1,811.80	431.38	994	897.94	3.90	-0.23	0.00

ASSET: 306042, Woods Chapel
CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-H
ENG NO:

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 + 1.0W Normal	36.38	0.00	69.05	0.00	0.00	3898.71	54.00	0.53
0.9D + 1.0W Normal	36.36	0.00	51.78	0.00	0.00	3859.31	54.00	0.52
1.2D + 1.0Di + 1.0Wi Normal	7.02	0.00	109.14	0.00	0.00	786.78	54.00	0.13
1.2D + 1.0Ev + 1.0Eh Normal	1.89	0.00	68.21	0.00	0.00	232.16	54.00	0.04
0.9D - 1.0Ev + 1.0Eh Normal	1.88	0.00	49.10	0.00	0.00	229.49	54.00	0.04
1.0D + 1.0W Service Normal	9.86	0.00	57.58	0.00	0.00	1050.37	54.00	0.15



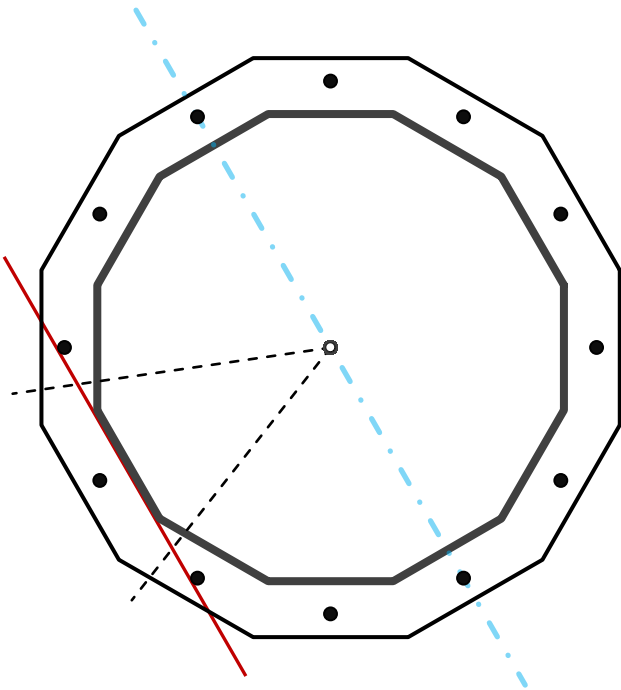
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	60.5	in
Thickness	1/2	in
Orientation Offset	15	°

Base Reactions		
Moment, Mu	3,898.7	k-ft
Axial, Pu	69.1	k
Shear, Vu	36.4	k
Neutral Axis	120	°

Report Capacities		
Component	Capacity	Result
Base Plate	16%	Pass
Anchor Rods	100%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	12	-
Diameter, ø	75.14	in
Thickness	2 5/8	in
Grade	A871-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	15	°
Anchor Rod Detail	c	η=0.55
Clear Distance	N/A	in
Applied Moment, Mu	734.4	k
Bending Stress, φMn	4733.9	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	12	-
Diameter, ø	2 1/4	in
Bolt Circle	69.14	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	18.1	in
Orientation Offset	0	°
Applied Force, Pu	239.2	k
Anchor Rods, φPn	243.6	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	36.4	3898.7	1.00
Anchor Rod Forces	36.4	3898.7	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	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	93.1749	7.7646	0.6497		41936.48
Bolt	3.9761	3.2477	0.8393	4.5	21725.25
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	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	12	-
Width, W	75.14	in
Thickness, t	2.625	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	44.562	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	12	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	69.14	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	239.2	k
Applied Shear, Vu	2.4	k
Compressive Capacity, ϕP_n	243.6	k
Tensile Capacity, ϕR_{nt}	0.982	OK
Interaction Capacity	1.000	OK

External Base Plate		
Chord Length AA	45.639	in
Additional AA	5.250	in
Section Modulus, Z	87.664	in ³
Applied Moment, Mu	734.4	k-ft
Bending Capacity, ϕM_n	4733.9	k-ft
Capacity, Mu/ ϕM_n	0.155	OK

Chord Length AB	43.500	in
Additional AB	5.250	in
Section Modulus, Z	83.980	in ³
Applied Moment, Mu	478.6	k-ft
Bending Capacity, ϕM_n	4534.9	k-ft
Capacity, Mu/ ϕM_n	0.106	OK

Bend Line Length	163.294	in
Additional Bend Line	0.000	in
Section Modulus, Z	281.299	in ³
Applied Moment, Mu	734.4	k-ft
Bending Capacity, ϕM_n	15190.1	k-ft
Capacity, Mu/ ϕM_n	0.048	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, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

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

Foundation Analysis Parameters

Pier Diameter	D	8.00	ft
Pier Embedment	$L-h$	33.0	ft
Pier Height above Ground	H	0.50	ft
Water Table Depth [BGL]	GW	18	ft
Pullout Angle	Θ	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		1.000	

Reactions

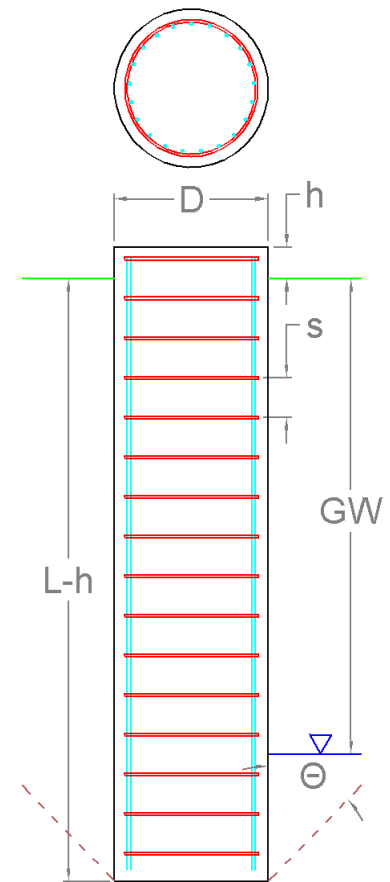
Moment, M_u	3,898.7	k-ft
Shear, V_u	36.4	k
Axial, P_u	69.0	k
Uplift, T_u	0.0	k

Soil Properties

Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	2.0	105	0	0	0	0
2.0	7.0	123	250	0	0	0
7.0	10.5	125	250	0	134	0
10.5	12.0	136	5,986	0	2,693	0
12.0	18.0	136	6,198	0	2,789	0
18.0	18.5	100	1,598	0	7,194	0
18.5	34.0	100	17,611	0	7,925	41,530

Soil Strength Capacities

Volume of Concrete	1,683.9	ft ³
Weight of Concrete [Buoyancy Considered]	205.5	k
Average Soil Unit Weight	86.3	pcf
Skin Friction Resistance	3,512.4	k
Compressive Bearing Resistance	2,087.5	k
Pullout Weight [Minus Concrete Weight]	1,763.6	k
Compressive Force, P_u	139.5	k
Nominal Compressive Capacity, $\phi_s P_n$	4,199.9	k
$P_u / \phi_s P_n$	3.3%	
Total Lateral Resistance	17,222.2	k
Inflection Point [BGL]	24.5	ft
Moment at Inflection Point, M_D	4,809.3	k-ft
Nominal Moment Capacity, $\phi_s M_n$	62,703.5	k-ft
$M_D / \phi_s M_n$	7.7%	



Pier Strength Capacities		
Concrete Compressive Strength, f'_c	3,000	psi
Rebar Size #	9	
Rebar Area (Single)	1.00	in ²
Rebar Quantity	32	
Rebar Yield Strength, F_y	60	ksi
Vertical Rebar Clear Cover	3	in
Tie Rebar Size #	4	
Tie Rebar Area (Single)	0.20	in ²
Tie Rebar Spacing	12.0	in
Tie Rebar Yield Strength, F_y	60	ksi
Rebar Cage Diameter	87.87	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	3,917.7	k-ft
Moment Capacity, $\phi_B M_n$	6,190.9	k-ft
$M_u / \phi_B M_n$	63.3%	
Design Shear, V_u	380.0	k
Shear Capacity, $\phi_V V_n$	712.7	k
$V_u / \phi_V V_n$	53.3%	
Design Compression, P_u	139.5	k
Compression Capacity, $\phi_P P_n$	10,553.9	k
$P_u / \phi_P P_n$	1.3%	
Bending Reinforcement Ratio	0.004	

