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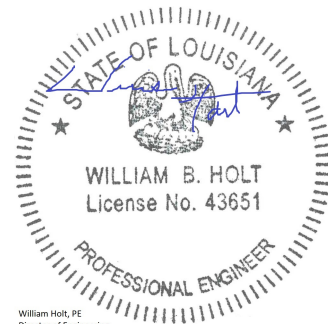
Structural Analysis Report

Structure : 145 ft Monopole
ATC Site Name : Uno,LA
ATC Site Number : 304786
Engineering Number : 14124633_C3_01
Proposed Carrier : T-MOBILE
Carrier Site Name : NO01093B
Carrier Site Number : NO01093B
Site Location : 6920 Franklin Ave, # A
NEW ORLEANS, LA 70122-5706
30.0292, -90.0533
Parish : Orleans
Date : July 14, 2022
Max Usage : 104%
Result : Pass

Prepared By:

Temitope Olaniyan
CLS

Reviewed By:



William Holt, PE
Director of Engineering
License No. 43651 Expires: 03/31/2024
COAR: EF.0004959 Expires: 03/31/2024

Table of Contents

Introduction	3
Supporting Documents	3
Analysis	3
Conclusion	3
Existing and Reserved Equipment.....	4
Equipment to be Removed	5
Proposed Equipment	5
Structure Usages.....	6
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 145 ft Monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	EEL Job#3188, dated November 12, 1997
Foundation Drawing	EEL Job#3188, dated June 16, 1998
Geotechnical Report	STE File#98-1024, dated June 5, 1998
Modifications	SpectraSite Drawing #LA-0002-M1, dated December 11, 2003 ATC Job #26152832, dated May 18, 2006 ATC Job #45029732, dated May 19, 2010 ATC Job #49229732, dated May 8, 2012

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:	142 mph (3-second gust)
Basic Wind Speed w/ Ice:	30 mph (3-second gust) w/ 0.25" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC
Exposure Category:	D
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	$S_s = 0.09$, $S_i = 0.05$
Site Class:	D - Stiff Soil - Default

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

Conclusion

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

If 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
142.0	3	Ericsson RRUS 31	Triangular Platform with Handrails	(3) 1 1/4" Hybriflex Cable (1) 1.3" (33mm) Hybrid	SPRINT NEXTEL
	2	RFS APXV9ERR18-C-A20			
	1	KMW ET-X-TU-42-15-37-18-iR-SP			
	3	Ericsson AIR 6488 B41 (112.4 lbs)			
	3	Ericsson RRUS-11 800 MHz			
135.0	3	Commscope TMAT19-11-43	Sector Frame	(6) 1 5/8" Coax	T-MOBILE
	3	Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA			
	3	Commscope FFHH-65C-R3			
105.0	3	Alcatel-Lucent B25 RRH4x30-4R	Sector Frame	(10) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Nokia AHBCC AirScale Dual RRH 4T4R B5/13 320W			
	3	Alcatel-Lucent B66A RRH 4x45			
	1	Raycap RCMD-6627-PF-48			
	6	Andrew SBNHH-1D65C			
84.0	6	Antel LPA-80063/8CF ___ 2°	Sector Frame	(4) 7/8" Coax	
	1	Ericsson RRUS-4478 B12A			
	1	Ericsson RRUS 4478 B14			
	1	Ericsson RRUS 4478 B5			
	1	Ericsson RRUS 4426 B66			
	1	Raycap DC6-48-60-18-8F(32.8 lbs)			
	1	Commscope CBC78T-DS-43-2X			
	1	Ericsson RRUS 32 B2			
	1	Powerwave Allgon 7750.00			
	1	Ericsson Air 6449 B77D			
	1	Ericsson AIR 6419 B77G			
	2	Commscope NNH4-65D-R6			
1	Ericsson RRUS 32 B30 (53 lbs)				
77.0	2	Ericsson AIR 6419 B77G	Triangular Platform with Handrails	(7) 1 1/2" Carflex Non-Metallic Conduit (6) 0.76" (19.2mm) 8 AWG 6 (4) 0.39" (10mm) Fiber Trunk (6) 0.82" (20.8mm) 8 AWG 6 (2) 0.96" (24.3mm) Cable (7) 1 1/2" conduit (1) 3/8" (0.38"-9.5mm) RET Control Cable (8) 7/8" Coax	AT&T MOBILITY
75.0	2	Ericsson RRUS 4426 B66			
	2	Ericsson RRUS 4478 B5			
	2	Ericsson RRUS 4478 B14			
	2	Ericsson RRUS-4478 B12A			
	2	Ericsson RRUS 32 B30 (53 lbs)			
	4	Commscope NNH4-65D-R6			
	2	Powerwave Allgon 7750.00			
	1	Raycap DC6-48-60-18-8C-EV			
	2	Ericsson Air 6449 B77D			
	2	Ericsson RRUS 32 B2			
	2	Raycap DC6-48-60-18-8F(32.8 lbs)			
	2	Commscope CBC78T-DS-43-2X			
	3	Andrew ATM200-A20			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
135.0	3	Nokia AirScale MAA 16T16R B25/B66 200W AAFIA	-	(1) 1.58" (40.1mm) Hybrid	T-MOBILE
	1	Nokia ASU9338TYP01			

Proposed Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
135.0	3	Commscope HELIAX FiberFeed 12 RRU Pendant Connect	Sector Frame	(3) 1.55" (39.5mm) Hybrid	T-MOBILE
	6	Andrew HBXX-3319DS-A2M			
	6	Nokia AHFIG			
	3	Nokia AEHC			

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	88%	Pass
Shaft	99%	Pass
Base Plate	88%	Pass
Flange	32%	Pass
Reinforcement	98%	Pass

Foundation

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5506.7	104%

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) (°)
135.0	Commscope HELIAX FiberFeed 12 RRU Pendant Connect	T-MOBILE	1.563	1.350
	Nokia AEHC			
	Nokia AHFIG			
	Andrew HBXX-3319DS-A2M			

*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 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.

Asset : 304786, Uno
 Client : T-MOBILE
 Code : ANSI/TIA-222-H

Height : 145 ft
 Base Width : 51.5
 Shape : 12 Sides

SITE PARAMETERS

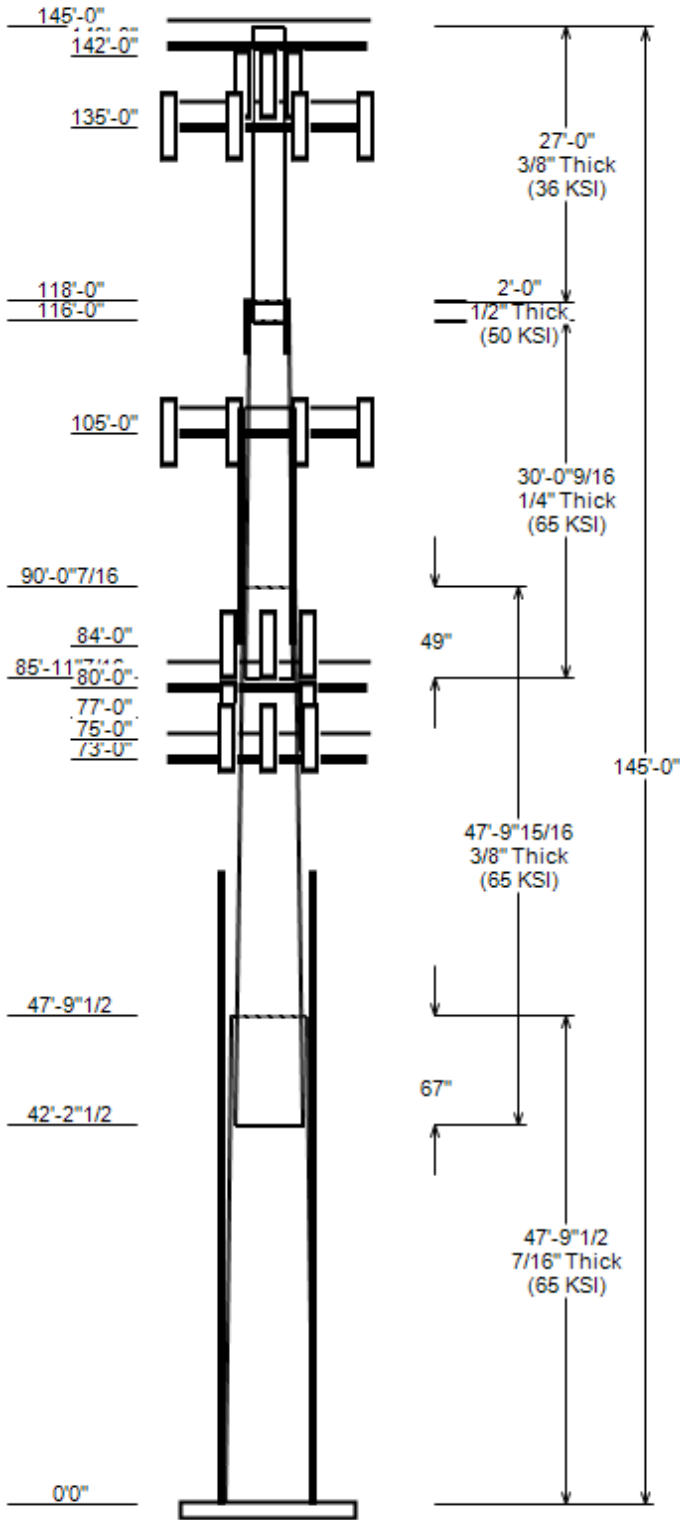
Nominal Wind: 138.40 mph wind with no ic **Topo Category:** 1
Ice Wind: 29.24 mph wind with 0.212" **Topo Method:** Method 1
Base Elev (ft): 0.00 **Taper :** 0.28600(ln/ft) **Topo Feature:**
Structure Class: II **Exposure :** D **S_s :** 0.086 **S₁ :** 0.054

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade (ksi)
		Across Flats Top	Across Flats Bottom			
1	47.790	37.83	51.50	0.438	0.000	12 Sides 65
2	47.830	26.49	40.18	0.375	67.000	12 Sides 65
3	30.047	19.56	28.16	0.250	49.000	12 Sides 65
4	2.000	18.00	18.00	0.500	0.000	Round 50
5	27.000	18.00	18.00	0.375	0.000	Round 36

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
143.0	143.0	1	Generic Round Platform with Ha
142.0	139.0	3	Ericsson RRUS 31
142.0	139.0	3	Ericsson RRUS-11 800 MHz
142.0	139.0	3	Ericsson AIR 6488 B41 (112.4 I
142.0	139.0	1	KMW ET-X-TU-42-15-37-18-iR-SP
142.0	139.0	2	RFS APXV9ERR18-C-A20
135.0	135.0	3	Commscope TMTAT19-11-43
135.0	135.0	3	Commscope HELIAX FiberFeed 12
135.0	135.0	3	Nokia AirScale Dual RRH 4T4R B
135.0	135.0	6	Nokia AHFIG
135.0	135.0	3	Nokia AEHC
135.0	135.0	6	Andrew HBXX-3319DS-A2M
135.0	135.0	3	Generic Round Sector Frame
135.0	135.0	3	Commscope FFHH-65C-R3
105.0	105.0	3	Alcatel-Lucent B25 RRH4x30-4R
105.0	105.0	3	Nokia AHBC AirScale Dual RRH
105.0	105.0	3	Alcatel-Lucent B66A RRH 4x45
105.0	105.0	1	Raycap RCMD-6627-PF-48
105.0	105.0	6	Andrew SBNHH-1D65C
105.0	105.0	6	Antel LPA-80063/8CF ___ 2°
105.0	105.0	3	Generic Round Sector Frame
84.0	84.0	1	Commscope CBC78T-DS-43-2X
84.0	84.0	1	Raycap DC6-48-60-18-8F(32.8 lb
84.0	84.0	1	Ericsson RRUS 4426 B66
84.0	84.0	1	Ericsson RRUS 4478 B5
84.0	84.0	1	Ericsson RRUS 4478 B14
84.0	84.0	1	Ericsson RRUS-4478 B12A
84.0	84.0	1	Ericsson RRUS 32 B30 (53 lbs)
84.0	84.0	1	Ericsson RRUS 32 B2
84.0	84.0	1	Ericsson AIR 6419 B77G
84.0	84.0	1	Ericsson Air 6449 B77D
84.0	84.0	1	Powerwave Allgon 7750.00
84.0	84.0	2	Commscope NNH4-65D-R6
80.0	80.0	1	Round Sector Frame
77.0	77.0	2	Ericsson AIR 6419 B77G
75.0	75.0	3	Andrew ATM200-A20
75.0	75.0	2	Commscope CBC78T-DS-43-2X
75.0	75.0	2	Raycap DC6-48-60-18-8F(32.8 lb
75.0	75.0	2	Ericsson RRUS 4426 B66
75.0	75.0	2	Ericsson RRUS 4478 B5
75.0	75.0	2	Ericsson RRUS 4478 B14
75.0	75.0	2	Ericsson RRUS-4478 B12A



JOB INFORMATION

Asset : 304786, Uno
 Client : T-MOBILE
 Code : ANSI/TIA-222-H

Height : 145 ft
 Base Width : 51.5
 Shape : 12 Sides

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
75.0	75.0	2	Ericsson RRUS 32 B30 (53 lbs)
75.0	75.0	2	Ericsson RRUS 32 B2
75.0	75.0	2	Ericsson Air 6449 B77D
75.0	75.0	1	Raycap DC6-48-60-18-8C-EV
75.0	75.0	2	Powerwave Allgon 7750.00
75.0	75.0	4	Commscope NNH4-65D-R6
73.0	73.0	1	Generic Flat Platform with Han

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	142.0	1.3" (33mm) Hybrid	No
0.0	142.0	1 1/4" Hybriflex Cable	No
0.0	135.0	1.55" (39.5mm) Hybrid	No
0.0	135.0	1 5/8" Coax	No
108.0	124.3	#20 w/ W Brackets	Yes
108.0	124.3	#20 w/ W Brackets	Yes
108.0	124.3	#20 w/ W Brackets	Yes
119.5	123.2	Transition bracket	Yes
119.5	123.2	Transition bracket	Yes
119.5	123.2	Transition bracket	Yes
108.0	111.7	Transition bracket	Yes
108.0	111.7	Transition bracket	Yes
108.0	111.7	Transition bracket	Yes
81.8	109.5	1" Thick Flat Plate	Yes
81.8	109.5	1" Thick Flat Plate	Yes
81.8	109.5	1" Thick Flat Plate	Yes
81.8	109.5	1" Thick Flat Plate	Yes
81.8	109.5	1" Thick Flat Plate	Yes
81.8	109.5	1" Thick Flat Plate	Yes
0.0	105.0	1 5/8" Hybriflex	Yes
0.0	105.0	1 5/8" Coax	No
0.0	105.0	1 5/8" Coax	Yes
0.0	84.0	7/8" Coax	No
0.0	78.0	1 1/2" Carflex Non-Metallic Conduit	No
0.0	77.0	0.76" (19.2mm) 8 AWG 6	No
0.0	75.0	7/8" Coax	No
0.0	75.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
0.0	75.0	1 1/2" conduit	No
0.0	75.0	0.96" (24.3mm) Cable	No
0.0	75.0	0.82" (20.8mm) 8 AWG 6	No
0.0	75.0	0.39" (10mm) Fiber Trunk	No
0.0	69.5	#20 w/ Angle Brackets	Yes
0.0	69.5	#20 w/ Angle Brackets	Yes
0.0	69.5	#20 w/ Angle Brackets	Yes
0.0	69.5	#20 w/ Angle Brackets	Yes

LOAD CASES

1.2D + 1.0W	138.40 mph wind with no ice
0.9D + 1.0W	138.40 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	29.24 mph wind with 0.212" radial
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W	5506.67	64.29	57.54
0.9D + 1.0W	5457.91	64.29	43.15

JOB INFORMATION

Asset : 304786, Uno
 Client : T-MOBILE
 Code : ANSI/TIA-222-H

Height : 145 ft
 Base Width : 51.5
 Shape : 12 Sides

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0Di + 1.0Wi	277.31	3.06	59.63
1.2D + 1.0Ev + 1.0Eh	160.89	1.44	57.98
0.9D - 1.0Ev + 1.0Eh	159.08	1.44	41.96
1.0D + 1.0W	925.56	10.87	47.98

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
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ASSET: 304786, Uno
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
ENG NO: 14124633_C3_01

ANALYSIS PARAMETERS

Location:	Orleans Parish,LA	Height:	145 ft
Type and Shape:	Custom, Round	Base Diameter:	51.50 in
Manufacturer:	EEI	Top Diameter:	18.00 in
K_d (non-service):	0.95	Taper:	0.2860 in/ft
K_e:	1.00	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	D	Design Wind Speed w/o Ice:	138 mph
Risk Category:	II	Design Wind Speed w/Ice:	29 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	0.21 in
Crest Height:	0 ft	HMSL:	7.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	2.12
T_L (sec):	12	P:	1
S_s:	0.086	S₁:	0.054
F_a:	1.600	F_v:	2.400
S_{ds}:	0.092	S_{dt}:	0.086
		C_s:	0.030
		C_s Max:	0.030
		C_s Min:	0.030

LOAD CASES

1.2D + 1.0W	138.40 mph wind with no ice
0.9D + 1.0W	138.40 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	29.24 mph wind with 0.212" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

ASSET: 304786, Uno
 CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
 ENG NO: 14124633_C3_01

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 (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	47.79	0.4375	65		0.00	10,132	51.50	0.000	71.93	23,940.1	28.86	117.71	37.83	47.79	52.67	9,399.0	20.49	86.46	0.2861
2-12	47.83	0.3750	65	Slip	67.00	6,477	40.18	42.210	48.06	9,716.6	26.03	107.13	26.49	90.04	31.53	2,745.2	16.25	70.64	0.2861
3-12	30.05	0.2500	65	Slip	49.00	1,943	28.16	85.953	22.47	2,233.6	27.50	112.64	19.56	116.00	15.55	740.1	18.29	78.25	0.2861
								116.00								1,053.1			
4-R	2.00	0.5000	50	Butt	0.00	187	18.00	0	27.49	1,053.1	0.00	36.00	18.00	118.00	27.49		0.00	36.00	0.0000
								118.00								806.9			
5-R	27.00	0.3750	36	Butt	0.00	1,908	18.00	0	20.76	806.9	0.00	48.00	18.00	145.00	20.76		0.00	48.00	0.0000
Shaft Weight						20,647													

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
143.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	2728.22	30.644	1.00
142.00	RFS APXV9ERR18-C-A20	2	0.75	-3.000	62.00	8.024	0.78	87.50	8.417	0.78
142.00	KMW ET-X-TU-42-15-37-18-iR-SP	1	0.75	-3.000	50.00	7.281	0.63	72.45	7.557	0.63
142.00	Ericsson AIR 6488 B41 (112.4 I	3	0.75	-3.000	112.40	5.979	0.63	132.54	6.210	0.63
142.00	Ericsson RRUS-11 800 MHz	3	0.75	-3.000	54.00	2.522	0.50	64.61	2.668	0.50
142.00	Ericsson RRUS 31	3	0.75	-3.000	56.10	1.623	0.50	63.99	1.743	0.50
135.00	Nokia AHFIG	6	0.80	0.000	79.40	3.082	0.50	90.40	3.253	0.50
135.00	Commscope FFHH-65C-R3	3	0.80	0.000	125.70	21.138	0.63	183.86	21.660	0.63
135.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	351.53	16.719	0.67
135.00	Andrew HBXX-3319DS-A2M	6	0.80	0.000	38.10	10.571	0.58	65.59	10.898	0.58
135.00	Nokia AEHC	3	0.80	0.000	103.60	6.844	0.62	125.26	7.091	0.62
135.00	Nokia AirScale Dual RRH 4T4R B	3	0.80	0.000	83.80	2.218	0.50	92.72	2.360	0.50
135.00	Commscope HELIAX FiberFeed 12	3	0.80	0.000	20.00	0.944	0.50	24.01	1.044	0.50
135.00	Commscope TMAT19-11-43	3	0.80	0.000	13.20	0.570	0.50	15.61	0.643	0.50
105.00	Alcatel-Lucent B66A RRH 4x45	3	0.80	0.000	67.00	2.580	0.50	76.72	2.734	0.50
105.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	0.50	49.36	4.242	0.50
105.00	Antel LPA-80063/8CF ___ 2°	6	0.80	0.000	38.00	13.618	0.76	83.38	13.831	0.76
105.00	Andrew SBNHH-1D65C	6	0.80	0.000	66.10	11.350	0.70	97.22	11.791	0.70
105.00	Alcatel-Lucent B25 RRH4x30-4R	3	0.80	0.000	51.00	2.140	0.50	59.31	2.276	0.50
105.00	Nokia AHBCC AirScale Dual RRH	3	0.80	0.000	83.80	2.218	0.50	92.45	2.357	0.50
105.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	350.24	16.661	0.67
84.00	Powerwave Allgon 7750.00	1	0.90	0.000	27.00	5.555	1.00	42.18	5.841	1.00
84.00	Commscope NNH4-65D-R6	2	0.90	0.000	121.30	19.135	0.73	169.34	19.678	0.73
84.00	Ericsson Air 6449 B77D	1	0.90	0.000	81.60	4.028	1.00	95.34	4.212	1.00
84.00	Ericsson AIR 6419 B77G	1	0.90	0.000	66.10	3.797	1.00	79.06	3.973	1.00
84.00	Ericsson RRUS 32 B30 (53 lbs)	1	0.90	0.000	53.00	2.743	0.50	62.82	2.899	0.50
84.00	Ericsson RRUS 32 B2	1	0.90	0.000	53.00	2.743	0.50	62.82	2.899	0.50
84.00	Ericsson RRUS-4478 B12A	1	0.90	0.000	59.40	2.021	0.50	67.60	2.147	0.50
84.00	Ericsson RRUS 4478 B14	1	0.90	0.000	59.40	2.021	0.50	67.60	2.147	0.50
84.00	Ericsson RRUS 4478 B5	1	0.90	0.000	59.90	1.842	0.50	67.29	1.962	0.50
84.00	Ericsson RRUS 4426 B66	1	0.90	0.000	48.40	1.650	0.50	54.36	1.763	0.50
84.00	Raycap DC6-48-60-18-8F(32.8 lb	1	0.90	0.000	32.80	1.470	0.50	41.04	1.563	0.50
84.00	Commscope CBC78T-DS-43-2X	1	0.90	0.000	20.70	0.552	0.50	23.65	0.620	0.50
80.00	Round Sector Frame	1	1.00	0.000	300.00	14.400	1.00	348.89	16.600	1.00
77.00	Ericsson AIR 6419 B77G	2	0.75	0.000	66.10	3.797	0.74	78.95	3.971	0.74
75.00	Powerwave Allgon 7750.00	2	0.75	0.000	27.00	5.555	0.74	42.01	5.838	0.74
75.00	Commscope NNH4-65D-R6	4	0.75	0.000	121.30	19.135	0.64	168.79	19.672	0.64
75.00	Raycap DC6-48-60-18-8C-EV	1	0.75	0.000	16.00	4.788	0.50	33.05	4.982	0.50
75.00	Ericsson Air 6449 B77D	2	0.75	0.000	81.60	4.028	0.74	95.18	4.210	0.74
75.00	Ericsson RRUS 32 B2	2	0.75	0.000	53.00	2.743	0.50	62.71	2.897	0.50
75.00	Ericsson RRUS 32 B30 (53 lbs)	2	0.75	0.000	53.00	2.743	0.50	62.71	2.897	0.50
75.00	Ericsson RRUS-4478 B12A	2	0.75	0.000	59.40	2.021	0.50	67.50	2.146	0.50
75.00	Ericsson RRUS 4478 B14	2	0.75	0.000	59.40	2.021	0.50	67.50	2.146	0.50
75.00	Ericsson RRUS 4478 B5	2	0.75	0.000	59.90	1.842	0.50	67.20	1.960	0.50
75.00	Ericsson RRUS 4426 B66	2	0.75	0.000	48.40	1.650	0.50	54.30	1.762	0.50
75.00	Raycap DC6-48-60-18-8F(32.8 lb	2	0.75	0.000	32.80	1.470	1.00	40.95	1.562	1.00
75.00	Commscope CBC78T-DS-43-2X	2	0.75	0.000	20.70	0.552	0.50	23.62	0.619	0.50
75.00	Andrew ATM200-A20	3	0.75	0.000	0.50	0.120	0.50	1.19	0.149	0.50
73.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	2733.95	45.162	1.00
Totals	Num Loadings: 49	113			13,376.60			16,065.44		

LINEAR APPURTENANCE PROPERTIES

ASSET: 304786, Uno
 CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
 ENG NO: 14124633_C3_01

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
0.00	142.00	3	1 1/4" Hybriflex Cabl	1.54	1	N	0	0	0	0	0	N	SPRINT NEXTEL
0.00	142.00	1	1.3" (33mm) Hybrid	1.3	0.88	N	0	0	0	0	0	N	SPRINT NEXTEL
0.00	135.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	T-MOBILE
0.00	135.00	3	1.55" (39.5mm) Hybrid	1.55	0.55	N	0	0	0	0	0	N	T-MOBILE
108.0	124.30	1	#20 w/ W Brackets	2.5	0	N	1	1	1	240	8.12	Y	
108.0	124.30	1	#20 w/ W Brackets	2.5	0	N	1	1	1	0	8.12	Y	
108.0	124.30	1	#20 w/ W Brackets	2.5	0	N	1	1	1	120	8.12	Y	
119.5	123.20	1	Transition bracket	4.06	6.3	Y	1	1	1	240	2	Y	
119.5	123.20	1	Transition bracket	4.06	6.3	Y	1	1	1	120	2	Y	
119.5	123.20	1	Transition bracket	4.06	6.3	Y	1	1	1	0	2	Y	
108.0	111.70	1	Transition bracket	4.06	6.3	Y	1	1	1	240	2	Y	
108.0	111.70	1	Transition bracket	4.06	6.3	Y	1	1	1	0	2	Y	
108.0	111.70	1	Transition bracket	4.06	6.3	Y	1	1	1	120	2	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	210	0	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	150	0	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	90	0	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	30	0	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	270	0	Y	
81.80	109.50	1	1" Thick Flat Plate	1	0	Y	1	0	0	330	0	Y	
0.00	105.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	105.00	4	1 5/8" Coax	1.98	0.82	N	3	1	1	30	1	Y	VERIZON WIREL
0.00	105.00	2	1 5/8" Hybriflex	1.98	1.3	N	2	1	1	30	1.98	Y	VERIZON WIREL
0.00	84.00	4	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	78.00	7	1 1/2" Carflex Non-Me	1.88	0.48	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	77.00	6	0.76" (19.2mm) 8 AWG	0.76	0.53	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	8	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	7	1 1/2" conduit	1.9	2.7	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	6	0.82" (20.8mm) 8 AWG	0.82	0.62	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	4	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	2	0.96" (24.3mm) Cable	0.96	0.88	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	75.00	1	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	69.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	270	0	Y	
0.00	69.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	0	0	Y	
0.00	69.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	90	0	Y	
0.00	69.50	1	#20 w/ Angle Brackets	4	4.68	N	1	0	0	180	0	Y	

ADDITIONAL STEEL

Intermediate Connectors

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	62.17	4	SOL #20 All Thread Bar	80	2.19	5/8" Hollo Bolt	30.00	3.31	5/8" A36 U-Bolt	N
84.33	107.50	6	PL PL 6" x 1"	50	0.00	5/8" Hollo Bolt	9.00	4.00	5/8" Hollo Bolt	N
112.79	118.21	3	SOL #20 All Thread Bar	80	8.15	5/8" Hollo Bolt	30.00	3.31	5/8" A36 U-Bolt	N

SEGMENT PROPERTIES

(Max Len: 1.ft)

Additional Reinforcing

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)	Area (in ²)	Ix (in ⁴)	Weight (lb)
57.00		0.3750	35.942	42.948	6,934.70	23.00	95.85	79.6	372.7	0.0	146.7	19.640	4,509.50	66.8
58.00		0.3750	35.656	42.602	6,768.70	22.80	95.08	79.9	366.7	0.0	145.6	19.640	4,449.60	66.8
59.00		0.3750	35.370	42.257	6,605.30	22.59	94.32	80.1	360.8	0.0	144.4	19.640	4,390.00	66.8
60.00		0.3750	35.084	41.911	6,444.70	22.39	93.56	80.3	354.9	0.0	143.2	19.640	4,330.90	66.8
61.00		0.3750	34.798	41.566	6,286.60	22.18	92.79	80.5	349.0	0.0	142.0	19.640	4,272.10	66.8
62.00		0.3750	34.512	41.220	6,131.10	21.98	92.03	80.7	343.2	0.0	140.9	19.640	4,213.80	66.8
62.17	Reinf. Top	0.3750	34.463	41.161	6,105.00	21.95	91.90	80.8	342.2	0.0	23.8	19.640	4,203.90	11.4
63.00		0.3750	34.226	40.875	5,978.30	21.78	91.27	81	337.4	0.0	115.8			
64.00		0.3750	33.940	40.529	5,828.00	21.57	90.51	81.2	331.7	0.0	138.5			
65.00		0.3750	33.654	40.184	5,680.20	21.37	89.74	81.4	326.1	0.0	137.3			
66.00		0.3750	33.367	39.838	5,535.00	21.16	88.98	81.6	320.5	0.0	136.1			
67.00		0.3750	33.081	39.493	5,392.20	20.96	88.22	81.9	314.9	0.0	135.0			
68.00		0.3750	32.795	39.147	5,251.90	20.75	87.45	81.9	309.4	0.0	133.8			
69.00		0.3750	32.509	38.802	5,114.10	20.55	86.69	81.9	303.9	0.0	132.6			
70.00		0.3750	32.223	38.456	4,978.70	20.34	85.93	81.9	298.5	0.0	131.4			
71.00		0.3750	31.937	38.111	4,845.80	20.14	85.17	81.9	293.1	0.0	130.3			
72.00		0.3750	31.651	37.766	4,715.20	19.94	84.40	81.9	287.8	0.0	129.1			
73.00		0.3750	31.365	37.420	4,587.00	19.73	83.64	81.9	282.5	0.0	127.9			
74.00		0.3750	31.079	37.075	4,461.10	19.53	82.88	81.9	277.3	0.0	126.7			
75.00		0.3750	30.793	36.729	4,337.50	19.32	82.11	81.9	272.1	0.0	125.6			
76.00		0.3750	30.506	36.384	4,216.30	19.12	81.35	81.9	267.0	0.0	124.4			
77.00		0.3750	30.220	36.038	4,097.30	18.91	80.59	81.9	261.9	0.0	123.2			
78.00		0.3750	29.934	35.693	3,980.60	18.71	79.82	81.9	256.9	0.0	122.0			
79.00		0.3750	29.648	35.347	3,866.20	18.50	79.06	81.9	251.9	0.0	120.9			
80.00		0.3750	29.362	35.002	3,753.90	18.30	78.30	81.9	247.0	0.0	119.7			
81.00		0.3750	29.076	34.656	3,643.80	18.10	77.54	81.9	242.1	0.0	118.5			
82.00		0.3750	28.790	34.311	3,536.00	17.89	76.77	81.9	237.3	0.0	117.3			
83.00		0.3750	28.504	33.965	3,430.20	17.69	76.01	81.9	232.5	0.0	116.2			
84.00		0.3750	28.218	33.620	3,326.60	17.48	75.25	81.9	227.7	0.0	115.0			
84.33	Reinf Bottom	0.3750	28.123	33.506	3,292.90	17.42	75.00	81.9	226.2	0.0	37.7			
85.00		0.3750	27.932	33.274	3,225.10	17.28	74.48	81.9	223.1	0.0	76.1	30.991	3,200.20	82.1
85.95	Bot - Section 3	0.3750	27.659	32.945	3,130.30	17.08	73.76	81.9	218.6	0.0	107.4	30.991	3,141.60	116.8
86.00		0.3750	27.645	32.929	3,125.70	17.07	73.72	81.9	218.4	0.0	8.8	30.991	3,246.50	5.7
87.00		0.3750	27.359	32.584	3,028.40	16.87	72.96	81.9	213.8	0.0	187.5	30.991	3,184.60	122.5
88.00		0.3750	27.073	32.238	2,933.00	16.67	72.20	81.9	209.3	0.0	185.5	30.991	3,123.30	122.5
89.00		0.3750	26.787	31.893	2,839.80	16.46	71.43	81.9	204.8	0.0	183.6	30.991	3,062.60	122.5
90.00		0.3750	26.501	31.547	2,748.50	16.26	70.67	81.9	200.4	0.0	181.6	30.991	3,002.50	122.5
90.04	Top - Section 2	0.2500	26.991	21.526	1,964.70	26.25	107.96	76.1	140.6	0.0	6.6	30.991	3,000.30	4.5
91.00		0.2500	26.715	21.304	1,904.60	25.95	106.86	76.4	137.7	0.0	70.2	30.991	2,943.00	118.0
92.00		0.2500	26.429	21.074	1,843.40	25.65	105.72	76.7	134.7	0.0	72.1	30.991	2,884.20	122.5
93.00		0.2500	26.143	20.844	1,783.70	25.34	104.57	77.1	131.8	0.0	71.3	30.991	2,825.90	122.5
94.00		0.2500	25.857	20.613	1,725.20	25.03	103.43	77.4	128.9	0.0	70.5	30.991	2,768.20	122.5
95.00		0.2500	25.571	20.383	1,668.00	24.73	102.28	77.7	126.0	0.0	69.8	30.991	2,711.20	122.5
96.00		0.2500	25.284	20.153	1,612.10	24.42	101.14	78.1	123.2	0.0	69.0	30.991	2,654.70	122.5
97.00		0.2500	24.998	19.922	1,557.50	24.11	99.99	78.4	120.4	0.0	68.2	30.991	2,598.90	122.5
98.00		0.2500	24.712	19.692	1,504.10	23.81	98.85	78.7	117.6	0.0	67.4	30.991	2,543.70	122.5
99.00		0.2500	24.426	19.462	1,451.90	23.50	97.70	79.1	114.8	0.0	66.6	30.991	2,489.00	122.5
100.00		0.2500	24.140	19.231	1,401.00	23.19	96.56	79.4	112.1	0.0	65.8	30.991	2,435.00	122.5
101.00		0.2500	23.854	19.001	1,351.20	22.89	95.42	79.8	109.4	0.0	65.0	30.991	2,381.60	122.5
102.00		0.2500	23.568	18.771	1,302.70	22.58	94.27	80.1	106.8	0.0	64.3	30.991	2,328.80	122.5
103.00		0.2500	23.282	18.541	1,255.30	22.27	93.13	80.4	104.2	0.0	63.5	30.991	2,276.60	122.5
104.00		0.2500	22.996	18.310	1,209.10	21.97	91.98	80.8	101.6	0.0	62.7	30.991	2,225.00	122.5
105.00		0.2500	22.710	18.080	1,164.10	21.66	90.84	81.1	99.0	0.0	61.9	30.991	2,174.00	122.5
106.00		0.2500	22.423	17.850	1,120.20	21.35	89.69	81.4	96.5	0.0	61.1	30.991	2,123.60	122.5
107.00		0.2500	22.137	17.619	1,077.40	21.05	88.55	81.8	94.0	0.0	60.3	30.991	2,073.80	122.5
107.50	Reinf. Top	0.2500	21.994	17.504	1,056.40	20.89	87.98	81.9	92.8	0.0	29.9	30.991	2,049.10	61.3
108.00		0.2500	21.851	17.389	1,035.70	20.74	87.40	81.9	91.6	0.0	29.7			
109.00		0.2500	21.565	17.159	995.00	20.43	86.26	81.9	89.1	0.0	58.8			
110.00		0.2500	21.279	16.928	955.50	20.13	85.12	81.9	86.7	0.0	58.0			

SEGMENT PROPERTIES

(Max Len: 1.ft)

Additional Reinforcing

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)	Area (in ²)	Ix (in ⁴)	Weight (lb)
111.00		0.2500	20.993	16.698	917.00	19.82	83.97	81.9	84.4	0.0	57.2			
112.00		0.2500	20.707	16.468	879.60	19.51	82.83	81.9	82.1	0.0	56.4			
112.79	Reinf Bottom	0.2500	20.481	16.286	850.80	19.27	81.92	81.9	80.3	0.0	44.0			
113.00		0.2500	20.421	16.237	843.20	19.21	81.68	81.9	79.8	0.0	11.6	14.730	2,838.10	10.5
114.00		0.2500	20.135	16.007	807.90	18.90	80.54	81.9	77.5	0.0	54.9	14.730	2,796.90	50.1
115.00		0.2500	19.849	15.777	773.50	18.59	79.39	81.9	75.3	0.0	54.1	14.730	2,756.00	50.1
116.00	Top - Section 3	0.2500	19.562	15.546	740.10	18.29	78.25	81.9	73.1	0.0	53.3	14.730	2,715.50	50.1
116.00	Bot - Section 4	0.5000	18.000	27.489	1,053.10	0.00	36.00	50	117.0	153.2		14.730	2,715.50	
117.00		0.5000	18.000	27.489	1,053.10	0.00	36.00	50	117.0	153.2	93.5	14.730	2,499.20	50.1
118.00	Top - Section 4	0.5000	18.000	27.489	1,053.10	0.00	36.00	50	117.0	153.2	93.5	14.730	2,499.20	50.1
118.00	Bot - Section 5	0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5		14.730	2,499.20	
118.21	Reinf. Top	0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	14.8	14.730	2,499.20	10.5
119.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	55.8			
120.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
121.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
122.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
123.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
124.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
125.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
126.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
127.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
128.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
129.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
130.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
131.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
132.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
133.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
134.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
135.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
136.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
137.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
138.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
139.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
140.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
141.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
142.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
143.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
144.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			
145.00		0.3750	18.000	20.764	806.90	0.00	48.00	36	89.7	116.5	70.7			

Totals: 20,647.5 7,262.9

ASSET: 304786, Uno
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
ENG NO: 14124633_C3_01

126.00	-7.02	-14.60	0.00	-167.6	0.00	167.56	672.75	201.83	312.74	314.57	96.78	-7.77	0.548
127.00	-6.92	-14.53	0.00	-153.0	0.00	152.96	672.75	201.83	312.74	314.57	98.41	-7.83	0.502
128.00	-6.82	-14.45	0.00	-138.4	0.00	138.43	672.75	201.83	312.74	314.57	100.05	-7.88	0.455
129.00	-6.72	-14.37	0.00	-124.0	0.00	123.98	672.75	201.83	312.74	314.57	101.7	-7.93	0.409
130.00	-6.63	-14.30	0.00	-109.6	0.00	109.61	672.75	201.83	312.74	314.57	103.36	-7.97	0.363
131.00	-6.53	-14.22	0.00	-95.3	0.00	95.31	672.75	201.83	312.74	314.57	105.03	-8	0.318
132.00	-6.44	-14.14	0.00	-81.1	0.00	81.09	672.75	201.83	312.74	314.57	106.7	-8.04	0.272
133.00	-6.35	-14.06	0.00	-67.0	0.00	66.96	672.75	201.83	312.74	314.57	108.38	-8.06	0.227
134.00	-6.25	-13.98	0.00	-52.9	0.00	52.90	672.75	201.83	312.74	314.57	110.07	-8.08	0.182
135.00	-4.17	-5.40	0.00	-38.9	0.00	38.92	672.75	201.83	312.74	314.57	111.76	-8.1	0.131
136.00	-4.09	-5.32	0.00	-33.5	0.00	33.52	672.75	201.83	312.74	314.57	113.45	-8.11	0.113
137.00	-4.01	-5.24	0.00	-28.2	0.00	28.20	672.75	201.83	312.74	314.57	115.15	-8.12	0.096
138.00	-3.93	-5.16	0.00	-23.0	0.00	22.97	672.75	201.83	312.74	314.57	116.84	-8.13	0.080
139.00	-3.85	-5.07	0.00	-17.8	0.00	17.81	672.75	201.83	312.74	314.57	118.54	-8.14	0.063
140.00	-3.77	-4.99	0.00	-12.7	0.00	12.74	672.75	201.83	312.74	314.57	120.24	-8.14	0.047
141.00	-3.69	-4.91	0.00	-7.8	0.00	7.75	672.75	201.83	312.74	314.57	121.94	-8.15	0.031
142.00	-2.90	-2.70	0.00	-2.8	0.00	2.84	672.75	201.83	312.74	314.57	123.64	-8.15	0.014
143.00	-0.16	-0.10	0.00	-0.1	0.00	0.14	672.75	201.83	312.74	314.57	125.34	-8.15	0.001
144.00	-0.08	-0.04	0.00	-0.0	0.00	0.04	672.75	201.83	312.74	314.57	127.04	-8.15	0.000
145.00	0.00	-0.03	0.00	0.0	0.00	0.00	672.75	201.83	312.74	314.57	128.75	-8.15	0.000

ASSET: 304786, Uno
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
ENG NO: 14124633_C3_01

123.00	-5.06	-14.64	0.00	-206.9	0.00	206.91	672.75	201.83	312.74	314.57	90.72	-7.45	0.671
124.00	-5.00	-14.43	0.00	-192.3	0.00	192.27	672.75	201.83	312.74	314.57	92.28	-7.52	0.624
125.00	-4.92	-14.36	0.00	-177.8	0.00	177.84	672.75	201.83	312.74	314.57	93.86	-7.59	0.578
126.00	-4.84	-14.29	0.00	-163.5	0.00	163.48	672.75	201.83	312.74	314.57	95.45	-7.65	0.532
127.00	-4.76	-14.21	0.00	-149.2	0.00	149.19	672.75	201.83	312.74	314.57	97.05	-7.7	0.486
128.00	-4.69	-14.14	0.00	-135.0	0.00	134.98	672.75	201.83	312.74	314.57	98.67	-7.75	0.441
129.00	-4.61	-14.06	0.00	-120.8	0.00	120.84	672.75	201.83	312.74	314.57	100.29	-7.8	0.396
130.00	-4.54	-13.99	0.00	-106.8	0.00	106.77	672.75	201.83	312.74	314.57	101.92	-7.84	0.351
131.00	-4.47	-13.91	0.00	-92.8	0.00	92.79	672.75	201.83	312.74	314.57	103.56	-7.87	0.306
132.00	-4.40	-13.84	0.00	-78.9	0.00	78.87	672.75	201.83	312.74	314.57	105.21	-7.9	0.262
133.00	-4.33	-13.76	0.00	-65.0	0.00	65.04	672.75	201.83	312.74	314.57	106.86	-7.93	0.218
134.00	-4.27	-13.68	0.00	-51.3	0.00	51.28	672.75	201.83	312.74	314.57	108.52	-7.95	0.174
135.00	-2.97	-5.22	0.00	-37.6	0.00	37.60	672.75	201.83	312.74	314.57	110.18	-7.96	0.125
136.00	-2.91	-5.14	0.00	-32.4	0.00	32.38	672.75	201.83	312.74	314.57	111.85	-7.98	0.108
137.00	-2.86	-5.06	0.00	-27.2	0.00	27.24	672.75	201.83	312.74	314.57	113.51	-7.99	0.091
138.00	-2.80	-4.98	0.00	-22.2	0.00	22.18	672.75	201.83	312.74	314.57	115.18	-8	0.075
139.00	-2.74	-4.91	0.00	-17.2	0.00	17.19	672.75	201.83	312.74	314.57	116.85	-8	0.059
140.00	-2.69	-4.83	0.00	-12.3	0.00	12.28	672.75	201.83	312.74	314.57	118.52	-8.01	0.044
141.00	-2.63	-4.75	0.00	-7.5	0.00	7.46	672.75	201.83	312.74	314.57	120.2	-8.01	0.028
142.00	-2.10	-2.57	0.00	-2.7	0.00	2.71	672.75	201.83	312.74	314.57	121.87	-8.01	0.012
143.00	-0.11	-0.10	0.00	-0.1	0.00	0.13	672.75	201.83	312.74	314.57	123.54	-8.01	0.001
144.00	-0.06	-0.04	0.00	-0.0	0.00	0.04	672.75	201.83	312.74	314.57	125.21	-8.01	0.000
145.00	0.00	-0.03	0.00	0.0	0.00	0.00	672.75	201.83	312.74	314.57	126.89	-8.01	0.000

ASSET: 304786, Uno
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
ENG NO: 14124633_C3_01

123.00	-9.33	-0.79	0.00	-11.1	0.00	11.09	672.75	201.83	312.74	314.57	4.78	-0.4	0.049
124.00	-9.22	-0.78	0.00	-10.3	0.00	10.30	672.75	201.83	312.74	314.57	4.87	-0.4	0.046
125.00	-9.12	-0.77	0.00	-9.5	0.00	9.52	672.75	201.83	312.74	314.57	4.95	-0.4	0.044
126.00	-9.01	-0.77	0.00	-8.7	0.00	8.74	672.75	201.83	312.74	314.57	5.03	-0.41	0.041
127.00	-8.91	-0.76	0.00	-8.0	0.00	7.98	672.75	201.83	312.74	314.57	5.12	-0.41	0.039
128.00	-8.81	-0.75	0.00	-7.2	0.00	7.22	672.75	201.83	312.74	314.57	5.21	-0.41	0.036
129.00	-8.70	-0.75	0.00	-6.5	0.00	6.47	672.75	201.83	312.74	314.57	5.29	-0.41	0.034
130.00	-8.60	-0.74	0.00	-5.7	0.00	5.72	672.75	201.83	312.74	314.57	5.38	-0.42	0.031
131.00	-8.50	-0.73	0.00	-5.0	0.00	4.98	672.75	201.83	312.74	314.57	5.47	-0.42	0.028
132.00	-8.40	-0.73	0.00	-4.2	0.00	4.25	672.75	201.83	312.74	314.57	5.56	-0.42	0.026
133.00	-8.29	-0.72	0.00	-3.5	0.00	3.52	672.75	201.83	312.74	314.57	5.64	-0.42	0.024
134.00	-8.19	-0.71	0.00	-2.8	0.00	2.80	672.75	201.83	312.74	314.57	5.73	-0.42	0.021
135.00	-4.93	-0.30	0.00	-2.1	0.00	2.09	672.75	201.83	312.74	314.57	5.82	-0.42	0.014
136.00	-4.84	-0.29	0.00	-1.8	0.00	1.79	672.75	201.83	312.74	314.57	5.91	-0.42	0.013
137.00	-4.75	-0.28	0.00	-1.5	0.00	1.50	672.75	201.83	312.74	314.57	6	-0.43	0.012
138.00	-4.65	-0.28	0.00	-1.2	0.00	1.22	672.75	201.83	312.74	314.57	6.09	-0.43	0.011
139.00	-4.56	-0.27	0.00	-0.9	0.00	0.94	672.75	201.83	312.74	314.57	6.18	-0.43	0.010
140.00	-4.46	-0.26	0.00	-0.7	0.00	0.68	672.75	201.83	312.74	314.57	6.27	-0.43	0.009
141.00	-4.37	-0.25	0.00	-0.4	0.00	0.41	672.75	201.83	312.74	314.57	6.36	-0.43	0.008
142.00	-3.27	-0.15	0.00	-0.2	0.00	0.16	672.75	201.83	312.74	314.57	6.44	-0.43	0.005
143.00	-0.18	-0.01	0.00	-0.0	0.00	0.01	672.75	201.83	312.74	314.57	6.53	-0.43	0.000
144.00	-0.09	0.00	0.00	0.0	0.00	0.00	672.75	201.83	312.74	314.57	6.62	-0.43	0.000
145.00	0.00	0.00	0.00	0.0	0.00	0.00	672.75	201.83	312.74	314.57	6.71	-0.43	0.000

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CODE: ANSI/TIA-222-H
ENG NO: 14124633_C3_01

123.00	-7.64	-2.50	0.00	-35.4	0.00	35.38	672.75	201.83	312.74	314.57	15.43	-1.27	0.124
124.00	-7.56	-2.46	0.00	-32.9	0.00	32.88	672.75	201.83	312.74	314.57	15.7	-1.28	0.116
125.00	-7.48	-2.45	0.00	-30.4	0.00	30.42	672.75	201.83	312.74	314.57	15.96	-1.29	0.108
126.00	-7.40	-2.44	0.00	-28.0	0.00	27.97	672.75	201.83	312.74	314.57	16.24	-1.3	0.100
127.00	-7.31	-2.43	0.00	-25.5	0.00	25.53	672.75	201.83	312.74	314.57	16.51	-1.31	0.092
128.00	-7.23	-2.42	0.00	-23.1	0.00	23.10	672.75	201.83	312.74	314.57	16.79	-1.32	0.084
129.00	-7.15	-2.40	0.00	-20.7	0.00	20.68	672.75	201.83	312.74	314.57	17.06	-1.33	0.077
130.00	-7.07	-2.39	0.00	-18.3	0.00	18.28	672.75	201.83	312.74	314.57	17.34	-1.33	0.069
131.00	-6.99	-2.38	0.00	-15.9	0.00	15.89	672.75	201.83	312.74	314.57	17.62	-1.34	0.061
132.00	-6.91	-2.37	0.00	-13.5	0.00	13.51	672.75	201.83	312.74	314.57	17.9	-1.34	0.053
133.00	-6.83	-2.35	0.00	-11.2	0.00	11.15	672.75	201.83	312.74	314.57	18.18	-1.35	0.046
134.00	-6.75	-2.34	0.00	-8.8	0.00	8.79	672.75	201.83	312.74	314.57	18.47	-1.35	0.038
135.00	-4.06	-0.90	0.00	-6.4	0.00	6.45	672.75	201.83	312.74	314.57	18.75	-1.35	0.027
136.00	-3.98	-0.88	0.00	-5.6	0.00	5.56	672.75	201.83	312.74	314.57	19.03	-1.36	0.024
137.00	-3.91	-0.87	0.00	-4.7	0.00	4.68	672.75	201.83	312.74	314.57	19.32	-1.36	0.021
138.00	-3.83	-0.86	0.00	-3.8	0.00	3.81	672.75	201.83	312.74	314.57	19.6	-1.36	0.018
139.00	-3.76	-0.84	0.00	-3.0	0.00	2.95	672.75	201.83	312.74	314.57	19.89	-1.36	0.015
140.00	-3.68	-0.83	0.00	-2.1	0.00	2.11	672.75	201.83	312.74	314.57	20.17	-1.36	0.012
141.00	-3.61	-0.82	0.00	-1.3	0.00	1.28	672.75	201.83	312.74	314.57	20.46	-1.36	0.009
142.00	-2.70	-0.44	0.00	-0.5	0.00	0.47	672.75	201.83	312.74	314.57	20.75	-1.36	0.006
143.00	-0.14	-0.02	0.00	-0.0	0.00	0.02	672.75	201.83	312.74	314.57	21.03	-1.36	0.000
144.00	-0.07	-0.01	0.00	-0.0	0.00	0.01	672.75	201.83	312.74	314.57	21.32	-1.36	0.000
145.00	0.00	0.00	0.00	0.0	0.00	0.00	672.75	201.83	312.74	314.57	21.6	-1.36	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.086
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
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}):	0.092
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_s :	0.030
Lower Limit C_s :	0.030
Period based on Rayleigh Method (sec):	2.120
Redundancy Factor (ρ):	1.000
Seismic Force Distribution Exponent (k):	1.810
Total Unfactored Dead Load:	47.980 k
Seismic Base Shear (E):	1.440 k

1.2D + 1.0Ev + 1.0Eh Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
154	144.5	71	575	0.004	6	86
153	143.5	71	568	0.004	6	86
152	142.5	71	560	0.004	6	86
151	141.5	75	584	0.004	6	91
150	140.5	75	576	0.004	6	91
149	139.5	75	569	0.004	6	91
148	138.5	75	561	0.004	6	91
147	137.5	75	554	0.004	6	91
146	136.5	75	547	0.004	6	91
145	135.5	75	540	0.004	6	91
144	134.5	81	579	0.004	6	99
143	133.5	81	572	0.004	6	99
142	132.5	81	564	0.004	6	99
141	131.5	81	556	0.004	6	99
140	130.5	81	549	0.004	6	99
139	129.5	81	541	0.004	6	99
138	128.5	81	533	0.004	6	99
137	127.5	81	526	0.004	6	99
136	126.5	81	519	0.004	6	99
135	125.5	81	511	0.004	6	99
134	124.5	81	504	0.004	5	99
133	123.5	85	520	0.004	6	103
132	122.5	100	603	0.005	7	122
131	121.5	100	594	0.004	6	122
130	120.5	100	586	0.004	6	122
129	119.5	91	522	0.004	6	110
128	118.605	64	365	0.003	4	78
127	118.105	28	156	0.001	2	34
126	117.5	154	862	0.006	9	188
125	116.5	154	849	0.006	9	188
124	115.5	114	617	0.005	7	139
123	114.5	115	612	0.005	7	140
122	113.5	115	606	0.005	7	141
121	112.895	24	127	0.001	1	30

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
120	112.395	52	270	0.002	3	64
119	111.5	80	408	0.003	4	98
118	110.5	87	433	0.003	5	105
117	109.5	87	430	0.003	5	106
116	108.5	88	427	0.003	5	107
115	107.75	35	167	0.001	2	43
114	107.25	96	457	0.004	5	117
113	106.5	193	905	0.007	10	236
112	105.5	194	893	0.007	10	236
111	104.5	206	930	0.007	10	251
110	103.5	206	918	0.007	10	252
109	102.5	207	905	0.007	10	252
108	101.5	208	893	0.007	10	253
107	100.5	209	880	0.007	10	254
106	99.5	210	868	0.007	9	255
105	98.5	210	855	0.006	9	256
104	97.5	211	843	0.006	9	257
103	96.5	212	830	0.006	9	258
102	95.5	213	818	0.006	9	259
101	94.5	214	805	0.006	9	260
100	93.5	214	793	0.006	9	261
99	92.5	215	780	0.006	8	262
98	91.5	216	768	0.006	8	263
97	90.5182	209	728	0.006	8	254
96	90.0182	12	41	0.000	0	14
95	89.5	325	1,112	0.008	12	396
94	88.5	327	1,096	0.008	12	399
93	87.5	329	1,080	0.008	12	401
92	86.5	331	1,064	0.008	12	404
91	85.9766	16	49	0.000	1	19
90	85.4766	244	768	0.006	8	298
89	84.665	172	533	0.004	6	210
88	84.165	45	137	0.001	1	54
87	83.5	138	415	0.003	5	168
86	82.5	139	409	0.003	4	169
85	81.5	140	404	0.003	4	170
84	80.5	141	398	0.003	4	172
83	79.5	142	392	0.003	4	173
82	78.5	143	387	0.003	4	175
81	77.5	148	390	0.003	4	180
80	76.5	152	392	0.003	4	186
79	75.5	154	386	0.003	4	187
78	74.5	182	447	0.003	5	222
77	73.5	183	439	0.003	5	223
76	72.5	185	431	0.003	5	225
75	71.5	186	423	0.003	5	226
74	70.5	187	415	0.003	5	228
73	69.5	197	427	0.003	5	241
72	68.5	208	438	0.003	5	253
71	67.5	209	429	0.003	5	255
70	66.5	210	420	0.003	5	256
69	65.5	211	411	0.003	4	258
68	64.5	213	402	0.003	4	259
67	63.5	214	393	0.003	4	261
66	62.585	178	319	0.002	3	217
65	62.085	48	85	0.001	1	58
64	61.5	283	490	0.004	5	345
63	60.5	284	478	0.004	5	346
62	59.5	285	466	0.004	5	348
61	58.5	286	453	0.003	5	349
60	57.5	288	441	0.003	5	350
59	56.5	289	429	0.003	5	352
58	55.5	290	417	0.003	5	353
57	54.5	291	405	0.003	4	355
56	53.5	292	394	0.003	4	356
55	52.5	294	382	0.003	4	358
54	51.5	295	370	0.003	4	359
53	50.5	296	359	0.003	4	361
52	49.5	297	347	0.003	4	362
51	48.5	298	336	0.002	4	363

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
50	47.895	63	69	0.000	1	77
49	47.395	379	409	0.003	4	461
48	46.5	482	503	0.004	5	587
47	45.5	484	486	0.004	5	590
46	44.5	487	469	0.004	5	593
45	43.5	489	453	0.003	5	596
44	42.6033	390	348	0.003	4	475
43	42.1033	68	59	0.000	1	83
42	41.5	330	280	0.002	3	402
41	40.5	331	269	0.002	3	404
40	39.5	333	259	0.002	3	405
39	38.5	334	248	0.002	3	407
38	37.5	335	237	0.002	3	409
37	36.5	337	227	0.002	2	410
36	35.5	338	217	0.002	2	412
35	34.5	340	207	0.002	2	414
34	33.5	341	197	0.002	2	415
33	32.5	342	187	0.001	2	417
32	31.5	344	177	0.001	2	419
31	30.5	345	168	0.001	2	420
30	29.5	346	159	0.001	2	422
29	28.5	348	150	0.001	2	424
28	27.5	349	141	0.001	2	425
27	26.5	351	132	0.001	1	427
26	25.5	352	124	0.001	1	429
25	24.5	353	116	0.001	1	430
24	23.5	355	108	0.001	1	432
23	22.5	356	100	0.001	1	434
22	21.5	357	92	0.001	1	435
21	20.5	359	85	0.001	1	437
20	19.5	360	78	0.001	1	439
19	18.5	362	71	0.000	1	440
18	17.5	363	65	0.000	1	442
17	16.5	364	58	0.000	1	444
16	15.5	366	52	0.000	1	445
15	14.5	367	46	0.000	1	447
14	13.5	368	41	0.000	0	449
13	12.5	370	36	0.000	0	450
12	11.5	371	31	0.000	0	452
11	10.5	372	26	0.000	0	454
10	9.5	374	22	0.000	0	455
9	8.5	375	18	0.000	0	457
8	7.5	377	14	0.000	0	459
7	6.5	378	11	0.000	0	461
6	5.5	379	8	0.000	0	462
5	4.5	381	6	0.000	0	464
4	3.5	382	4	0.000	0	466
3	2.5	383	2	0.000	0	467
2	1.5	385	1	0.000	0	469
1	0.5	386	0	0.000	0	471
Generic Round Platform with Handrails	143	2,500	19,956	0.151	217	3,046
Ericsson RRUS 31	142	168	1,326	0.010	14	205
Ericsson RRUS-11 800 MHz	142	162	1,277	0.010	14	197
Ericsson AIR 6488 B41 (112.4 lbs)	142	337	2,658	0.020	29	411
KMW ET-X-TU-42-15-37-18-iR-SP	142	50	394	0.003	4	61
RFS APXV9ERR18-C-A20	142	124	977	0.007	11	151
Commscope TMAT19-11-43	135	40	285	0.002	3	48
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	135	60	432	0.003	5	73
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	135	251	1,808	0.014	20	306
Nokia AHFIG	135	476	3,426	0.026	37	580
Nokia AEHC	135	311	2,235	0.017	24	379
Andrew HBXX-3319DS-A2M	135	229	1,644	0.012	18	279
Generic Round Sector Frame	135	900	6,473	0.049	70	1,097
Generic Round Sector Frame	105	900	4,107	0.031	45	1,097
Commscope FFHH-65C-R3	135	377	2,712	0.020	30	459
Alcatel-Lucent B25 RRH4x30-4R	105	153	698	0.005	8	186
Nokia AHGCC AirScale Dual RRH 4T4R B5/13 320W	105	251	1,147	0.009	12	306

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)			
Alcatel-Lucent B66A RRH 4x45	105	201	917	0.007	10	245			
Raycap RCMD-6627-PF-48	105	32	146	0.001	2	39			
Andrew SBNHH-1D65C	105	397	1,810	0.014	20	483			
Antel LPA-80063/8CF ____ 2°	105	228	1,040	0.008	11	278			
Commscope CBC78T-DS-43-2X	84	21	63	0.000	1	25			
Commscope CBC78T-DS-43-2X	75	41	103	0.001	1	50			
Raycap DC6-48-60-18-8F(32.8 lbs)	84	33	100	0.001	1	40			
Raycap DC6-48-60-18-8F(32.8 lbs)	75	66	163	0.001	2	80			
Ericsson RRUS 4426 B66	84	48	147	0.001	2	59			
Ericsson RRUS 4426 B66	75	97	240	0.002	3	118			
Ericsson RRUS 4478 B5	84	60	182	0.001	2	73			
Ericsson RRUS 4478 B5	75	120	297	0.002	3	146			
Ericsson RRUS 4478 B14	84	59	181	0.001	2	72			
Ericsson RRUS 4478 B14	75	119	295	0.002	3	145			
Ericsson RRUS-4478 B12A	84	59	181	0.001	2	72			
Ericsson RRUS-4478 B12A	75	119	295	0.002	3	145			
Ericsson RRUS 32 B2	84	53	161	0.001	2	65			
Ericsson RRUS 32 B2	75	106	263	0.002	3	129			
Ericsson RRUS 32 B30 (53 lbs)	84	53	161	0.001	2	65			
Ericsson RRUS 32 B30 (53 lbs)	75	106	263	0.002	3	129			
Ericsson AIR 6419 B77G	84	66	201	0.002	2	81			
Ericsson AIR 6419 B77G	77	132	344	0.003	4	161			
Ericsson Air 6449 B77D	84	82	249	0.002	3	99			
Ericsson Air 6449 B77D	75	163	405	0.003	4	199			
Powerwave Allgon 7750.00	84	27	82	0.001	1	33			
Powerwave Allgon 7750.00	75	54	134	0.001	1	66			
Commscope NNH4-65D-R6	84	243	739	0.006	8	296			
Commscope NNH4-65D-R6	75	485	1,204	0.009	13	591			
Round Sector Frame	80	300	837	0.006	9	366			
Andrew ATM200-A20	75	2	4	0.000	0	2			
Raycap DC6-48-60-18-8C-EV	75	16	40	0.000	0	19			
Generic Flat Platform with Handrails	73	2,500	5,907	0.045	64	3,046			
47,979						132,280	1.000	1,439	58,455

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

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
154	144.5	71	575	0.004	6	62
153	143.5	71	568	0.004	6	62
152	142.5	71	560	0.004	6	62
151	141.5	75	584	0.004	6	66
150	140.5	75	576	0.004	6	66
149	139.5	75	569	0.004	6	66
148	138.5	75	561	0.004	6	66
147	137.5	75	554	0.004	6	66
146	136.5	75	547	0.004	6	66
145	135.5	75	540	0.004	6	66
144	134.5	81	579	0.004	6	72
143	133.5	81	572	0.004	6	72
142	132.5	81	564	0.004	6	72
141	131.5	81	556	0.004	6	72
140	130.5	81	549	0.004	6	72
139	129.5	81	541	0.004	6	72
138	128.5	81	533	0.004	6	72
137	127.5	81	526	0.004	6	72
136	126.5	81	519	0.004	6	72
135	125.5	81	511	0.004	6	72
134	124.5	81	504	0.004	5	72
133	123.5	85	520	0.004	6	75
132	122.5	100	603	0.005	7	88
131	121.5	100	594	0.004	6	88
130	120.5	100	586	0.004	6	88

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
129	119.5	91	522	0.004	6	80
128	118.605	64	365	0.003	4	56
127	118.105	28	156	0.001	2	24
126	117.5	154	862	0.006	9	136
125	116.5	154	849	0.006	9	136
124	115.5	114	617	0.005	7	100
123	114.5	115	612	0.005	7	101
122	113.5	115	606	0.005	7	102
121	112.895	24	127	0.001	1	21
120	112.395	52	270	0.002	3	46
119	111.5	80	408	0.003	4	71
118	110.5	87	433	0.003	5	76
117	109.5	87	430	0.003	5	77
116	108.5	88	427	0.003	5	78
115	107.75	35	167	0.001	2	31
114	107.25	96	457	0.004	5	85
113	106.5	193	905	0.007	10	170
112	105.5	194	893	0.007	10	171
111	104.5	206	930	0.007	10	181
110	103.5	206	918	0.007	10	182
109	102.5	207	905	0.007	10	183
108	101.5	208	893	0.007	10	183
107	100.5	209	880	0.007	10	184
106	99.5	210	868	0.007	9	185
105	98.5	210	855	0.006	9	185
104	97.5	211	843	0.006	9	186
103	96.5	212	830	0.006	9	187
102	95.5	213	818	0.006	9	188
101	94.5	214	805	0.006	9	188
100	93.5	214	793	0.006	9	189
99	92.5	215	780	0.006	8	190
98	91.5	216	768	0.006	8	190
97	90.5182	209	728	0.006	8	184
96	90.0182	12	41	0.000	0	10
95	89.5	325	1,112	0.008	12	287
94	88.5	327	1,096	0.008	12	289
93	87.5	329	1,080	0.008	12	290
92	86.5	331	1,064	0.008	12	292
91	85.9766	16	49	0.000	1	14
90	85.4766	244	768	0.006	8	215
89	84.665	172	533	0.004	6	152
88	84.165	45	137	0.001	1	39
87	83.5	138	415	0.003	5	121
86	82.5	139	409	0.003	4	122
85	81.5	140	404	0.003	4	123
84	80.5	141	398	0.003	4	124
83	79.5	142	392	0.003	4	125
82	78.5	143	387	0.003	4	126
81	77.5	148	390	0.003	4	130
80	76.5	152	392	0.003	4	134
79	75.5	154	386	0.003	4	135
78	74.5	182	447	0.003	5	161
77	73.5	183	439	0.003	5	162
76	72.5	185	431	0.003	5	163
75	71.5	186	423	0.003	5	164
74	70.5	187	415	0.003	5	165
73	69.5	197	427	0.003	5	174
72	68.5	208	438	0.003	5	183
71	67.5	209	429	0.003	5	184
70	66.5	210	420	0.003	5	185
69	65.5	211	411	0.003	4	186
68	64.5	213	402	0.003	4	187
67	63.5	214	393	0.003	4	189
66	62.585	178	319	0.002	3	157
65	62.085	48	85	0.001	1	42
64	61.5	283	490	0.004	5	249
63	60.5	284	478	0.004	5	251
62	59.5	285	466	0.004	5	252
61	58.5	286	453	0.003	5	253
60	57.5	288	441	0.003	5	254

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
59	56.5	289	429	0.003	5	255
58	55.5	290	417	0.003	5	256
57	54.5	291	405	0.003	4	257
56	53.5	292	394	0.003	4	258
55	52.5	294	382	0.003	4	259
54	51.5	295	370	0.003	4	260
53	50.5	296	359	0.003	4	261
52	49.5	297	347	0.003	4	262
51	48.5	298	336	0.002	4	263
50	47.895	63	69	0.000	1	55
49	47.395	379	409	0.003	4	334
48	46.5	482	503	0.004	5	425
47	45.5	484	486	0.004	5	427
46	44.5	487	469	0.004	5	429
45	43.5	489	453	0.003	5	431
44	42.6033	390	348	0.003	4	344
43	42.1033	68	59	0.000	1	60
42	41.5	330	280	0.002	3	291
41	40.5	331	269	0.002	3	292
40	39.5	333	259	0.002	3	293
39	38.5	334	248	0.002	3	295
38	37.5	335	237	0.002	3	296
37	36.5	337	227	0.002	2	297
36	35.5	338	217	0.002	2	298
35	34.5	340	207	0.002	2	299
34	33.5	341	197	0.002	2	301
33	32.5	342	187	0.001	2	302
32	31.5	344	177	0.001	2	303
31	30.5	345	168	0.001	2	304
30	29.5	346	159	0.001	2	305
29	28.5	348	150	0.001	2	307
28	27.5	349	141	0.001	2	308
27	26.5	351	132	0.001	1	309
26	25.5	352	124	0.001	1	310
25	24.5	353	116	0.001	1	311
24	23.5	355	108	0.001	1	313
23	22.5	356	100	0.001	1	314
22	21.5	357	92	0.001	1	315
21	20.5	359	85	0.001	1	316
20	19.5	360	78	0.001	1	318
19	18.5	362	71	0.000	1	319
18	17.5	363	65	0.000	1	320
17	16.5	364	58	0.000	1	321
16	15.5	366	52	0.000	1	322
15	14.5	367	46	0.000	1	324
14	13.5	368	41	0.000	0	325
13	12.5	370	36	0.000	0	326
12	11.5	371	31	0.000	0	327
11	10.5	372	26	0.000	0	328
10	9.5	374	22	0.000	0	330
9	8.5	375	18	0.000	0	331
8	7.5	377	14	0.000	0	332
7	6.5	378	11	0.000	0	333
6	5.5	379	8	0.000	0	334
5	4.5	381	6	0.000	0	336
4	3.5	382	4	0.000	0	337
3	2.5	383	2	0.000	0	338
2	1.5	385	1	0.000	0	339
1	0.5	386	0	0.000	0	341
Generic Round Platform with Handrails	143	2,500	19,956	0.151	217	2,204
Ericsson RRUS 31	142	168	1,326	0.010	14	148
Ericsson RRUS-11 800 MHz	142	162	1,277	0.010	14	143
Ericsson AIR 6488 B41 (112.4 lbs)	142	337	2,658	0.020	29	297
KMW ET-X-TU-42-15-37-18-iR-SP	142	50	394	0.003	4	44
RFS APXV9ERR18-C-A20	142	124	977	0.007	11	109
Commscope TMAT19-11-43	135	40	285	0.002	3	35
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	135	60	432	0.003	5	53
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	135	251	1,808	0.014	20	222

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
Nokia AHFIG	135	476	3,426	0.026	37	420
Nokia AEHC	135	311	2,235	0.017	24	274
Andrew HBXX-3319DS-A2M	135	229	1,644	0.012	18	202
Generic Round Sector Frame	135	900	6,473	0.049	70	793
Generic Round Sector Frame	105	900	4,107	0.031	45	793
Commscope FFHH-65C-R3	135	377	2,712	0.020	30	332
Alcatel-Lucent B25 RRH4x30-4R	105	153	698	0.005	8	135
Nokia AHBCC AirScale Dual RRH 4T4R B5/13 320W	105	251	1,147	0.009	12	222
Alcatel-Lucent B66A RRH 4x45	105	201	917	0.007	10	177
Raycap RCMD-6627-PF-48	105	32	146	0.001	2	28
Andrew SBNHH-1D65C	105	397	1,810	0.014	20	350
Antel LPA-80063/8CF ____ 2°	105	228	1,040	0.008	11	201
Commscope CBC78T-DS-43-2X	84	21	63	0.000	1	18
Commscope CBC78T-DS-43-2X	75	41	103	0.001	1	37
Raycap DC6-48-60-18-8F(32.8 lbs)	84	33	100	0.001	1	29
Raycap DC6-48-60-18-8F(32.8 lbs)	75	66	163	0.001	2	58
Ericsson RRUS 4426 B66	84	48	147	0.001	2	43
Ericsson RRUS 4426 B66	75	97	240	0.002	3	85
Ericsson RRUS 4478 B5	84	60	182	0.001	2	53
Ericsson RRUS 4478 B5	75	120	297	0.002	3	106
Ericsson RRUS 4478 B14	84	59	181	0.001	2	52
Ericsson RRUS 4478 B14	75	119	295	0.002	3	105
Ericsson RRUS-4478 B12A	84	59	181	0.001	2	52
Ericsson RRUS-4478 B12A	75	119	295	0.002	3	105
Ericsson RRUS 32 B2	84	53	161	0.001	2	47
Ericsson RRUS 32 B2	75	106	263	0.002	3	93
Ericsson RRUS 32 B30 (53 lbs)	84	53	161	0.001	2	47
Ericsson RRUS 32 B30 (53 lbs)	75	106	263	0.002	3	93
Ericsson AIR 6419 B77G	84	66	201	0.002	2	58
Ericsson AIR 6419 B77G	77	132	344	0.003	4	117
Ericsson Air 6449 B77D	84	82	249	0.002	3	72
Ericsson Air 6449 B77D	75	163	405	0.003	4	144
Powerwave Allgon 7750.00	84	27	82	0.001	1	24
Powerwave Allgon 7750.00	75	54	134	0.001	1	48
Commscope NNH4-65D-R6	84	243	739	0.006	8	214
Commscope NNH4-65D-R6	75	485	1,204	0.009	13	428
Round Sector Frame	80	300	837	0.006	9	264
Andrew ATM200-A20	75	2	4	0.000	0	1
Raycap DC6-48-60-18-8C-EV	75	16	40	0.000	0	14
Generic Flat Platform with Handrails	73	2,500	5,907	0.045	64	2,204
		47,979	132,280	1.000	1,439	42,301

1.2D + 1.0Ev + 1.0Eh

Seismic

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.98	-1.44	0.00	-160.89	0.00	160.89	4,741.39	1,262.45	6,081	4,932.66	0.00	0.00	0.03
1.00	-57.52	-1.44	0.00	-159.45	0.00	159.45	4,727.13	1,255.37	6,013	4,890.03	0.00	0.00	0.03
2.00	-57.05	-1.44	0.00	-158.01	0.00	158.01	4,712.73	1,248.30	5,946	4,847.43	0.00	0.00	0.03
3.00	-56.58	-1.44	0.00	-156.57	0.00	156.57	4,698.19	1,241.23	5,878	4,804.86	0.00	0.00	0.03
4.00	-56.12	-1.44	0.00	-155.13	0.00	155.13	4,683.51	1,234.15	5,812	4,762.31	0.00	-0.01	0.03
5.00	-55.66	-1.44	0.00	-153.69	0.00	153.69	4,668.69	1,227.08	5,745	4,719.80	0.00	-0.01	0.03
6.00	-55.20	-1.45	0.00	-152.25	0.00	152.25	4,653.74	1,220.01	5,679	4,677.33	0.01	-0.01	0.03
7.00	-54.74	-1.45	0.00	-150.80	0.00	150.80	4,638.64	1,212.93	5,614	4,634.89	0.01	-0.01	0.03
8.00	-54.28	-1.45	0.00	-149.36	0.00	149.36	4,623.41	1,205.86	5,548	4,592.49	0.01	-0.01	0.03
9.00	-53.82	-1.45	0.00	-147.91	0.00	147.91	4,608.04	1,198.79	5,483	4,550.13	0.01	-0.01	0.03
10.00	-53.37	-1.45	0.00	-146.46	0.00	146.46	4,592.53	1,191.71	5,419	4,507.82	0.02	-0.01	0.03
11.00	-52.92	-1.45	0.00	-145.01	0.00	145.01	4,576.88	1,184.64	5,355	4,465.56	0.02	-0.02	0.03
12.00	-52.47	-1.45	0.00	-143.56	0.00	143.56	4,561.09	1,177.57	5,291	4,423.34	0.02	-0.02	0.03
13.00	-52.02	-1.45	0.00	-142.11	0.00	142.11	4,545.16	1,170.49	5,228	4,381.18	0.03	-0.02	0.03
14.00	-51.57	-1.45	0.00	-140.66	0.00	140.66	4,529.10	1,163.42	5,165	4,339.07	0.03	-0.02	0.03
15.00	-51.13	-1.45	0.00	-139.20	0.00	139.20	4,512.90	1,156.35	5,102	4,297.01	0.03	-0.02	0.03

ASSET: 304786, Uno
 CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
 ENG NO: 14124633_C3_01

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
124.00	-6.64	-0.65	0.00	-9.47	0.00	9.47	672.75	201.83	313	314.57	3.16	-0.28	0.04
125.00	-6.56	-0.64	0.00	-8.82	0.00	8.82	672.75	201.83	313	314.57	3.22	-0.28	0.04
126.00	-6.49	-0.64	0.00	-8.18	0.00	8.18	672.75	201.83	313	314.57	3.28	-0.29	0.04
127.00	-6.42	-0.63	0.00	-7.54	0.00	7.54	672.75	201.83	313	314.57	3.34	-0.29	0.03
128.00	-6.35	-0.63	0.00	-6.91	0.00	6.91	672.75	201.83	313	314.57	3.40	-0.29	0.03
129.00	-6.28	-0.62	0.00	-6.28	0.00	6.28	672.75	201.83	313	314.57	3.46	-0.30	0.03
130.00	-6.21	-0.61	0.00	-5.66	0.00	5.66	672.75	201.83	313	314.57	3.52	-0.30	0.03
131.00	-6.14	-0.61	0.00	-5.05	0.00	5.05	672.75	201.83	313	314.57	3.58	-0.30	0.03
132.00	-6.06	-0.60	0.00	-4.44	0.00	4.44	672.75	201.83	313	314.57	3.65	-0.30	0.02
133.00	-5.99	-0.59	0.00	-3.84	0.00	3.84	672.75	201.83	313	314.57	3.71	-0.30	0.02
134.00	-5.92	-0.59	0.00	-3.24	0.00	3.24	672.75	201.83	313	314.57	3.77	-0.30	0.02
135.00	-3.53	-0.36	0.00	-2.66	0.00	2.66	672.75	201.83	313	314.57	3.84	-0.31	0.01
136.00	-3.46	-0.36	0.00	-2.29	0.00	2.29	672.75	201.83	313	314.57	3.90	-0.31	0.01
137.00	-3.39	-0.35	0.00	-1.94	0.00	1.94	672.75	201.83	313	314.57	3.97	-0.31	0.01
138.00	-3.33	-0.34	0.00	-1.59	0.00	1.59	672.75	201.83	313	314.57	4.03	-0.31	0.01
139.00	-3.26	-0.34	0.00	-1.24	0.00	1.24	672.75	201.83	313	314.57	4.09	-0.31	0.01
140.00	-3.20	-0.33	0.00	-0.90	0.00	0.90	672.75	201.83	313	314.57	4.16	-0.31	0.01
141.00	-3.13	-0.32	0.00	-0.57	0.00	0.57	672.75	201.83	313	314.57	4.22	-0.31	0.01
142.00	-2.33	-0.24	0.00	-0.25	0.00	0.25	672.75	201.83	313	314.57	4.29	-0.31	0.00
143.00	-0.06	-0.01	0.00	-0.01	0.00	0.01	672.75	201.83	313	314.57	4.35	-0.31	0.00
144.00	0.00	0.00	0.00	0.00	0.00	0.00	672.75	201.83	313	314.57	4.42	-0.31	0.00
145.00	0.00	0.00	0.00	0.00	0.00	0.00	672.75	201.83	313	314.57	4.48	-0.31	0.00

ASSET: 304786, Uno
 CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
 ENG NO: 14124633_C3_01

ANALYSIS SUMMARY

Load Case	Reactions						Max Usage	
	Shear FX	Shear FZ	Axial FY	Moment MX	Moment MY	Moment MZ	Elev (ft)	Interaction Ratio
	(kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)		
1.2D + 1.0W	64.29	0.00	57.54	0.00	0.00	5506.67	62.17	0.99
0.9D + 1.0W	64.29	0.00	43.15	0.00	0.00	5457.91	62.17	0.97
1.2D + 1.0Di + 1.0Wi	3.06	0.00	59.63	0.00	0.00	277.31	118.21	0.06
1.2D + 1.0Ev + 1.0Eh	1.46	0.00	57.98	0.00	0.00	160.89	118.21	0.06
0.9D - 1.0Ev + 1.0Eh	1.45	0.00	41.96	0.00	0.00	159.08	118.21	0.05
1.0D + 1.0W	10.87	0.00	47.98	0.00	0.00	925.56	62.17	0.17

ADDITIONAL STEEL SUMMARY

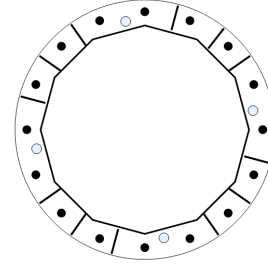
Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors				Max member			
			VQ/I	Shear Applied (kips)	Shear (phiVn) (kips)	Ratio	Pu (kip)	PhiPn (kip)	Ratio	
0.00	62.17	SOL #20 All Thread Bar	463.6	13.9	25.3	0.5503	296.2	330.5	0.8962	
84.33	107.50	PL PL 6" x 1"	575.7	5.2	25.3	0.205	189.4	265.5	0.7131	
112.79	118.21	SOL #20 All Thread Bar	442.3	13.3	25.3	0.525	118.9	330.5	0.3598	

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors					Lower Termination Connectors				
			MQ/I	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kip)	Num Reqd	Num Actual	Ratio
0.00	62.17	SOL #20 All Thread Bar	238.9705	12	20	22	0.9052	0	12	0	0	0.0000
84.33	107.50	PL PL 6" x 1"	124.5382	25.27	5	8	0.6160	178.6765	25.27	8	10	0.7071
112.79	118.21	SOL #20 All Thread Bar	94.0707	12	8	8	0.9799	117.5358	12	10	10	0.9795

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 20001)

Diameter: 66 in
 Shape: Round
 Thickness: 2.25 in
 Grade: A871-60
 Yield Strength: 60 ksi
 Tensile Strength: 75 ksi
 Rod Detail Type: d
 Clear Distance: 3.5 in
 Base Weld Size: 0.125 in
 Orientation Offset: - °
 Analysis Type: Elastic
 Neutral Axis: 26 °



ANCHOR ROD PARAMETERS

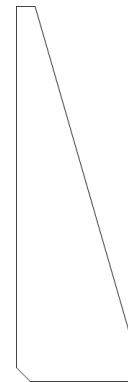
Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 20519]	Radial	16	2.25	60	A615-75	75	100	-	-

DYWIDAG BAR PARAMETERS

Quantity	Bar Size	Bar Diameter (in)	Fy (ksi)	Fu (ksi)	Bracket Type	Bracket Offset (in)	Circle (in)	Offset (°)
4 [ID# 1587]	#20	2.5	80	100	Angle	2.19	58.38	10

STIFFENER PARAMETERS

Arrangement: Radial
 Quantity: 12
 Height: 20 in
 Width: 6.5 in
 Thickness: 0.375 in
 Notch: 0.75 in
 Grade: A572-50
 Yield Strength: 50 ksi
 Tensile Strength: 65 ksi
 Horizontal Weld Type: Fillet
 Horizontal Weld Fillet Size: 0.313 in
 Vertical Weld Fillet Size: 0.625 in
 Weld Strength: 70 ksi
 Orientation Offset: - °



ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (16) 2.25"Ø [ID 20519]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)	Shear Load (k)
1	0.393	27.72	11.48	-1.751	10.801	-10.20	6.32
2	0.785	21.21	21.21	9.340	284.137	71.00	5.98
3	1.178	11.48	27.72	19.009	1174.355	141.78	4.74
4	1.571	0.00	30.00	25.784	2159.977	191.38	2.77
5	1.963	-11.48	27.72	28.634	2663.638	212.24	0.39
6	2.356	-21.21	21.21	27.125	2390.301	201.19	2.06
7	2.749	-27.72	11.48	21.486	1500.083	159.91	4.19
8	3.142	-30.00	0.00	12.576	514.462	94.69	5.69
9	3.534	-27.72	-11.48	1.751	10.801	15.44	6.32
10	3.927	-21.21	-21.21	-9.340	284.137	-65.75	5.98
11	4.320	-11.48	-27.72	-19.009	1174.355	-136.53	4.74
12	4.712	0.00	-30.00	-25.784	2159.977	-186.13	2.77
13	5.105	11.48	-27.72	-28.634	2663.638	-206.99	0.39
14	5.498	21.21	-21.21	-27.125	2390.301	-195.94	2.06
15	5.890	27.72	-11.48	-21.486	1500.083	-154.66	4.19
16	6.283	30.00	0.00	-12.576	514.462	-89.44	5.69

DYWIDAG BAR GEOMETRY AND APPLIED LOADS --- (4) #20 [ID 1587]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)
1	1.745	-5.07	28.75	28.059	3866.667	297.57
2	3.316	-28.75	-5.07	8.046	319.688	88.10
3	4.887	5.07	-28.75	-28.059	3866.667	-289.80
4	0.175	28.75	5.07	-8.046	319.688	-80.33

STIFFENER GEOMETRY AND APPLIED LOADS

Position	Radians	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)	Shear Load (k)
1	0.611	4.532	47.584	14.05	2.44
2	0.908	12.700	316.466	37.50	2.22
3	1.309	21.864	921.609	63.80	1.62
4	2.182	28.613	1572.487	83.17	0.39
5	2.531	25.338	1234.866	73.77	1.20
6	2.880	19.006	698.462	55.59	1.86
7	3.752	-4.532	47.584	-11.96	2.44
8	4.102	-14.045	385.205	-39.26	2.16
9	4.451	-21.864	921.609	-61.70	1.62
10	5.323	-28.613	1572.487	-81.07	0.39
11	5.672	-25.338	1234.866	-71.67	1.20
12	6.021	-19.006	698.462	-53.50	1.86

ASSET: 304786, Uno
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-G
 ENG NO: OAA773032

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	51.5"Ø x 0.4375" (12 Sides)	4019.0	57.54	64.29	0.730
Bolt Group	Original (16) 2.25"Ø	4019.0	-	64.29	0.730
Dywidag Group	(4) #20	1487.7	-	-	0.270
Stiffeners	(12) 20"H x 6.5"W x 0.375"T	1202.0	-	19.23	0.218
TOTALS		5506.67	57.54	64.29	

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	51.5"Ø x 0.4375" (12 Sides)	69.3837	-	-	22618.15	-
Bolt Group	Original (16) 2.25"Ø	3.9761	3.2477	0.8393	21395.51	4.5
Dywidag Group	(4) #20	4.9087	4.9087	1.9175	8372.71	-
Stiffeners	(12) 20"H x 6.5"W x 0.375"T	2.1338	1.9204	33.3863	9651.68	-

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter: 51.62 in
 Point-to-Point Diameter: 53.45 in
 Flat Width: 13.833 in
 Flat Radians: 0.524 rad

PLATE PROPERTIES

Neutral Axis: 26 °
 Bend Line Lower Limit: 1.737 rad
 Bend Line Upper Limit: 2.582 rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment Mu (k-in)	Moment Capacity φMn (k-in)	Ratio
Flat	36.785	5.30	53.259	862.8	2876.0	0.300
Corner	34.085	3.70	47.817	486.4	2582.1	0.188
Circumferential	39.138	12.06	64.805	812.2	3499.4	0.232

ELASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity φPn (k)	Ratio	Interaction
Original	16	2.25	212.2	0.4	243.6	0.871	0.875

DYWIDAG BAR ANALYSIS

Group Quantity	Bar Size	Bar Circle (in)	Applied Axial Load Pu (k)	Compressive Capacity φPn (k)	Ratio
4	#20	58.38	297.6	368.2	0.808

BASE PLATE STIFFENER ANALYSIS

Quantity:	12	
Height:	20	in
Width:	6.5	in
Effective Width:	6.440	in
Thickness:	0.375	in
Notch:	0.75	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Horizontal Weld Type:	Fillet	
Horizontal Weld Fillet Size:	0.313	in
Horizontal Weld Bevel Size:		in
Vertical Weld Fillet Size:	0.625	in
Weld Strength:	70	ksi
Electrode Coefficient:	1.000	

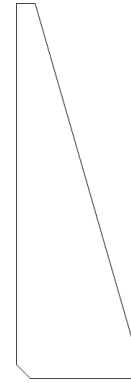


PLATE COMPRESSION

Radius of Gyration:	0.108	in ³
kl/r:	110.85	
4.71 √(E/Fy):	113.43	
Buckling Stress, Fe:	23.29	ksi
Crit. Buckling Stress, Fcr:	20.43	ksi
Applied Compression, Pu:	83.17	k
Compressive Capacity, φPn:	39.64	k
Pu/φPn:	1.049	

PLATE TENSION

Gross Cross Section:	2.1338	in ²
Net Cross Section:	1.9204	in ²
Applied Tension, Tu:	81.07	k
Tensile Capacity, φTn:	94.61	k
Tu/φTn:	0.428	

VERTICAL WELD TO POLE

Vertical Eccentricity Ratio, a=e _x /l:	0.108	
Spacing Ratio, k:	0.019	
Weld Coefficient, C:	3.720	
Applied Compression, Pu:	83.17	k
Compressive Capacity, φPn:	558.00	k
Horizontal Eccentricity Ratio, a=e _y /l:	0.333	
Weld Coefficient, C:	2.940	
Applied Shear, Vu:	0.39	k
Shear Capacity, φVn:	441.00	k
Pu/φPn + Vu/φVn:	0.150	

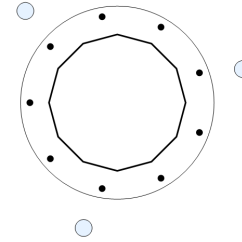
HORIZONTAL WELD TO PLATE

Horizontal Eccentricity Ratio, a=e _x /l:	0.167	
Spacing Ratio, k:	0.058	
Weld Coefficient, C:	3.900	
Effective Fillet Size:	0.313	in
Applied Compression, Pu:	83.17	k
Compressive Capacity, φPn:	95.21	k
Vertical Eccentricity Ratio, a=e _y /l:	0.513	
Weld Coefficient, C:	2.300	
Applied Shear, Vu:	0.39	k
Shear Capacity, φVn:	56.15	k
Pu/φPn + Vu/φVn:	0.880	

LOWER FLANGE PLATE ANALYSIS @ 115.9999 FT

PLATE PARAMETERS (ID# 20009)

Diameter:	28.5	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	330	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 20527]	Radial	9	1	25.75	A325	92	120	-	-

DYWIDAG BAR PARAMETERS

Quantity	Bar Size	Bar Diameter (in)	Fy (ksi)	Fu (ksi)	Bracket Type	Bracket Offset (in)	Circle (in)	Offset (°)
3 [ID# 1591]	#20	2.5	80	100	Not Listed	8.12	38.30	15

FLANGE BOLT GEOMETRY AND APPLIED LOADS --- ORIGINAL (9) 1"Ø [ID 20527]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)	Shear Load (k)
1	0.349	12.10	4.40	9.384	53.371	11.23	1.81
2	1.047	6.44	11.15	12.250	90.929	14.60	0.00
3	1.745	-2.24	12.68	9.384	53.371	11.23	1.81
4	2.443	-9.86	8.28	2.127	2.770	2.69	2.78
5	3.142	-12.88	0.00	-6.125	22.754	-7.02	2.44
6	3.840	-9.86	-8.28	-11.511	80.296	-13.36	0.96
7	4.538	-2.24	-12.68	-11.511	80.296	-13.36	0.96
8	5.236	6.44	-11.15	-6.125	22.754	-7.02	2.44
9	5.934	12.10	-4.40	2.127	2.770	2.69	2.78

DYWIDAG BAR GEOMETRY AND APPLIED LOADS --- (3) #20 [ID 1591]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)
1	2.356	-13.54	13.54	4.957	122.519	29.84
2	4.451	-4.96	-18.50	-18.499	1681.686	-101.04
3	0.262	18.50	4.96	13.542	902.103	77.74

ASSET: 304786, Uno
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-G
 ENG NO: OAA773032

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	19.5624"ø x 0.25" (12 Sides)	66.2	8.22	16.23	0.205
Bolt Group	Original (9) 1"ø	66.2	-	16.23	0.205
Dywidag Group	(3) #20	256.4	-	-	0.795
TOTALS		322.61	8.22	16.23	

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	19.5624"ø x 0.25" (12 Sides)	14.9953	-	-	699.41	-
Bolt Group	Original (9) 1"ø	0.7854	0.6057	0.0292	409.31	8.0
Dywidag Group	(3) #20	4.9087	4.9087	1.9175	2706.31	-

EXTERNAL LOWER FLANGE PLATE BEND LINE ANALYSIS @ 115.9999 FT

POLE PROPERTIES

Flat-to-Flat Diameter: 19.69 in
 Point-to-Point Diameter: 20.38 in
 Flat Width: 5.275 in
 Flat Radians: 0.524 rad

PLATE PROPERTIES

Neutral Axis: 330 °
 Bend Line Lower Limit: 0.676 rad
 Bend Line Upper Limit: 1.418 rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment Mu (k-in)	Moment Capacity φMn (k-in)	Ratio
Flat	18.949	0.00	10.659	35.1	479.6	0.073
Corner	18.200	0.00	10.237	30.1	460.7	0.065
Circumferential	18.451	0.00	10.378	30.1	467.0	0.064

ELASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity φPn (k)	Ratio	Interaction
Original	9	1	14.6	0.0	54.5	0.268	0.268

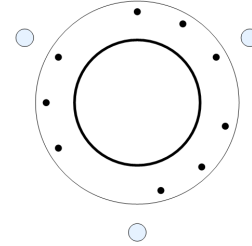
DYWIDAG BAR ANALYSIS

Group Quantity	Bar Size	Bar Circle (in)	Applied Axial Load Pu (k)	Compressive Capacity φPn (k)	Ratio
3	#20	38.30	77.7	368.2	0.211

UPPER FLANGE PLATE ANALYSIS @ 117.9999 FT

PLATE PARAMETERS (ID# 20008)

Diameter:	28.75	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	358	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 20526]	Radial	9	1	25.75	A325	92	120	-	-

DYWIDAG BAR PARAMETERS

Quantity	Bar Size	Bar Diameter (in)	Fy (ksi)	Fu (ksi)	Bracket Type	Bracket Offset (in)	Circle (in)	Offset (°)
3 [ID# 1590]	#20	2.5	80	100	Not Listed	8.12	36.74	30

FLANGE BOLT GEOMETRY AND APPLIED LOADS --- ORIGINAL (9) 1"Ø [ID 20526]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)	Shear Load (k)
1	0.524	11.15	6.44	6.492	25.555	9.45	2.57
2	1.047	6.44	11.15	10.816	70.894	15.60	1.42
3	1.571	0.00	12.88	12.243	90.818	17.63	0.11
4	2.618	-11.15	6.44	5.751	20.064	8.39	2.67
5	3.142	-12.88	0.00	-0.428	0.140	-0.39	3.02
6	3.665	-11.15	-6.44	-6.492	25.555	-9.02	2.57
7	4.974	3.33	-12.44	-11.715	83.159	-16.45	0.88
8	5.498	9.10	-9.10	-8.354	42.309	-11.67	2.21
9	6.021	12.44	-3.33	-2.756	4.629	-3.70	2.95

DYWIDAG BAR GEOMETRY AND APPLIED LOADS --- (3) #20 [ID 1590]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in ⁴)	Axial Load (k)
1	2.618	-15.91	9.18	8.624	367.013	46.69
2	4.712	0.00	-18.37	-18.359	1656.388	-93.20
3	0.524	15.91	9.18	9.735	467.083	52.45

ASSET: 304786, Uno
 CUSTOMER: AT&T MOBILITY

CODE: ANSI/TIA-222-G
 ENG NO: OAA773032

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	18"Ø x 0.375" (Round)	71.0	7.86	16.07	0.245
Bolt Group	Original (9) 1"Ø	71.0	-	16.07	0.245
Dywidag Group	(3) #20	219.2	-	-	0.755
TOTALS		290.25	7.86	16.07	

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	18"Ø x 0.375" (Round)	20.7637	-	-	807.24	-
Bolt Group	Original (9) 1"Ø	0.7854	0.6057	0.0292	363.12	8.0
Dywidag Group	(3) #20	4.9087	4.9087	1.9175	2490.48	-

EXTERNAL UPPER FLANGE PLATE BEND LINE ANALYSIS @ 117.9999 FT

POLE PROPERTIES

Flat-to-Flat Diameter: 18.12 in
 Point-to-Point Diameter: 18.12 in
 Flat Width: 0.158 in
 Flat Radians: 0.017 rad

PLATE PROPERTIES

Neutral Axis: 358 °
 Bend Line Lower Limit: 0.983 rad
 Bend Line Upper Limit: 2.159 rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment Mu (k-in)	Moment Capacity φMn (k-in)	Ratio
Flat	20.448	0.00	11.502	83.4	517.6	0.161
Corner	20.448	0.00	11.502	83.4	517.6	0.161
Circumferential	23.843	0.00	13.412	105.9	603.5	0.175

ELASTIC FLANGE BOLT ANALYSIS

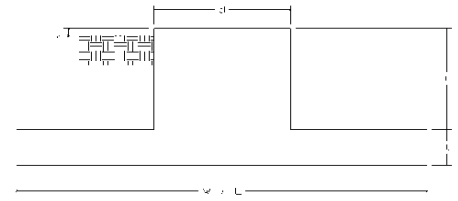
Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity φPn (k)	Ratio	Interaction
Original	9	1	17.6	0.1	54.5	0.323	0.323

DYWIDAG BAR ANALYSIS

Group Quantity	Bar Size	Bar Circle (in)	Applied Axial Load Pu (k)	Compressive Capacity φPn (k)	Ratio
3	#20	36.74	52.4	368.2	0.142

Site Name: Uno, LA
 Site Number: 304786
 Engineering Number: Structural
 Engineer: Temitope.Olaniyan
 Date: 07/14/22
 Tower Type: MP

Program Last Updated: 5/13/2014



Design Loads (Factored) - Analysis per TIA-222-G Standards

Design / Analysis / Mapping:	Analysis		
Compression/Leg:	57.5 k	Concrete Strength (f'_c):	4000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	44.0 in
Total Shear:	64.3 k	ϕ_{Shear} :	0.75
Moment:	5506.7 k-ft	$\phi_{\text{Flexure / Tension}}$:	0.9
Tower + Appurtenance Weight:	57.6 k	$\phi_{\text{Compression}}$:	0.65
Depth to Base of Foundation (l + t - h):	8.67 ft	β :	0.85
Diameter of Pier (d):	7 ft	Bottom Pad Rebar Size #:	8
Height of Pier above Ground (h):	1.83 ft	# of Bottom Pad Rebar:	30
Width of Pad (W):	14 ft	Pad Bottom Steel Area:	23.7 in ²
Length of Pad (L):	14 ft	Pad Steel F_y :	60000 psi
Thickness of Pad (t):	4 ft	Top Pad Rebar Size #:	8
Tower Leg Center to Center:	0 ft	# of Top Pad Rebar:	30
Number of Tower Legs:	1 (1 if MP or GT)	Pad Top Steel Area:	23.7 in ²
Tower Center from Mat Center:	0 ft	Pier Rebar Size #:	8
Depth Below Ground Surface to Water Table:	5 ft	Pier Steel Area (Single Bar):	0.79 in ²
Unit Weight of Concrete:	150 pcf	# of Pier Rebar:	45
Unit Weight of Soil Above Water Table:	110 pcf	Pier Steel F_y :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	76.0 in
Unit Weight of Soil Below Water Table:	47.6 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	15 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.35	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	6000 psf	Tie Steel Area (Single Bar):	0.2 in ²
Ultimate Passive Pressure on Pad Face:	800 psf	Tie Spacing:	12 in
$\phi_{\text{Soil and Concrete Weight}}$:	0.9	Tie Steel F_y :	60000 psi
ϕ_{Soil} :	0.75		
Design OTM:		6181.7 k-ft	
Total Weight (Foundation, Soil, Tower):		239.2 k	

Sliding Factor of Safety

Total Factored Sliding Resistance: 93.0 k
 Sliding Design / Sliding Resistance: 0.69 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear due to Pile Group (V_u):	697.9 k
Factored One Way Shear (V_u):	697.9 k
One Way Shear Capacity (ϕV_c):	701.3 k - ACI11.3.1.1
$V_u / \phi V_c$:	1.00 Result: OK
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge
Moment from Pile Group:	1046.9 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	4579.8 k-ft - ACI10.3
$M_u / \phi M_n$:	0.23 Result: OK
Upper Steel Pad Factored Moment (M_u):	133.2 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	4579.8 k-ft
$M_u / \phi M_n$:	0.03 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0032 #DIV/0!
Upper Pad Flexural Reinforcement Ratio:	0.0032 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	3357.1 k - ACI11.12.2.1
$V_u / \phi V_c$:	0.00 Result: OK
Factored Moment in Pier (M_u):	5924.6 k-ft
Pier Moment Capacity (ϕM_n):	5678.6 k-ft
$M_u / \phi M_n$:	1.04 Result: Acceptable
Factored Shear in Pier (V_u):	64.3 k
Pier Shear Capacity (ϕV_n):	528.5 k
$V_u / \phi V_c$:	0.12 Result: OK
Pier Shear Reinforcement Ratio:	0.0004 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0 k
Pier Tension Capacity (ϕT_n):	1919.7 k
$T_u / \phi T_n$:	0.00 Result: OK
Factored Compression in Pier (P_u):	57.5 k
Pier Compression Capacity (ϕP_n):	9735.0 k - ACI10.3.6.2
$P_u / \phi P_n$:	0.01 Result: OK
Pier Compression Reinforcement Ratio:	0.006 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	1.04 Result: Acceptable

Nominal and Design Moment Capacity and Factored Design Loads

