



Structural Analysis Report

Structure : 125 ft Self Support Tower
ATC Asset Name : Morley 2
ATC Asset Number : 383496
Engineering Number : 14761323_C3_02
Proposed Carrier : T-MOBILE
Carrier Site Name : DN04253A
Carrier Site Number : DN04253A
Site Location : 15743 Phantom Canyon View
Colorado Springs, CO 80926
38.6125° N, 104.9351° W
County : El Paso
Date : March 8, 2024
Max Usage : 78%
Analysis Result : Pass

Created By:

Lucas Tait
Structural Engineer II

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 125 ft Self Support tower to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower:	Mapping by Hightower Solutions, Site #CO-9009, dated June 25, 2015
Foundation:	Mapping by Geotel Engineering, Report #E15-247-F, dated July 27, 2015
Geotechnical:	Geotel Engineering Report #E15-247-G, dated July 27, 2015
Site Specific Study:	ICE Climatic Evaluation Site #383496, dated March 6, 2024

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:	130 mph (3-second gust)
Basic Wind Speed w/ Ice:	89 mph (3-second gust) w/ 0.50" radial ice concurrent
Code(s):	ANSI/TIA-222-H / 2015 IBC
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 3
Topographic Category:	1
Feature:	Flat
Crest Height (H):	0 ft
Spectral Response:	$S_s = 0.18$, $S_i = 0.06$
Site Class:	D - Stiff Soil - Default

**Wind pressures have been determined per the site-specific climatic study in accordance with ASCE 7-16 Section 26.5.3, IBC Section 1609.3, and TIA-222-H Section 2.6.6.2.3.*

**Ice thickness and wind pressures have been determined per the site-specific climatic study in accordance with ASCE 7-16 Section 10.1.1, IBC Section 1614, and TIA-222-H Section 2.6.4.1.*

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 reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact Engineering@americantower.com. Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

Structure Usages

Structural Component	Usage	Control	Location	Result
Leg	78.0%	Member X	Section 2	Pass
Diagonal	68.0%	Block Shear	Section 5	Pass
Horizontal	8.0%	Block Shear	Section 7	Pass
Bolt	66.7%	-	Section 1	Pass
Serviceability Usage	8.1%	Deflection	Elevation 125 ft	Pass
Mat & Pier	33.6%	Moment [Soil]	Node 1	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Uplift (k)	Shear (k)
Self Support Base (Global)	1,488.5	21.1	-	20.8
Self Support Base (Local)	-	139.2	120.6	13.4

**Reactions shown are maximum overall and not limited by Load Case*

Structure base reactions were analyzed using available geotechnical and foundation information.

T-MOBILE Final Loading

Elev (ft)	Qty	Equipment	Lines
109.0	1	Ceragon RFU-D-HP	(2) 1.55" (39.5mm) Hybrid (1) 3/8" (0.38"- 9.5mm) RET Control Cable (1) 5/8" Hybriflex
	1	Commscope VHLP2-11W/A	
	2	Commscope FFVV-65C-R3-V1	
	2	Commscope HELIAX FiberFeed 12 RRU Pendant Connect	
	2	Nokia AEHC	
	2	Nokia AHFIG	
	2	Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	
	2	Perfect Vision PV-SFA-B	

Install proposed lines alongside existing T-MOBILE lines.

Other Existing/Reserved Loading

Elev (ft)	Qty	Equipment	Lines	Carrier
123.0	1	36" x 10" Panel	(18) 7/8" Coax	VERIZON WIRELESS
	2	42" x 10" Panel		
	3	Light Sector Frame		
	4	72" x 10" Panel		
	9	48" x 10" Panel		
81.2	2	Empty Side Arm	-	-
66.0	1	4' Dish w/ Radome	(1) EW63	OTHER
60.0	1	4' HP Dish	(1) EW63	OTHER
50.0	1	4' HP Dish	(1) EW65	VERIZON WIRELESS
48.0	1	4' Dish w/ Radome	(1) EW63	OTHER

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



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.

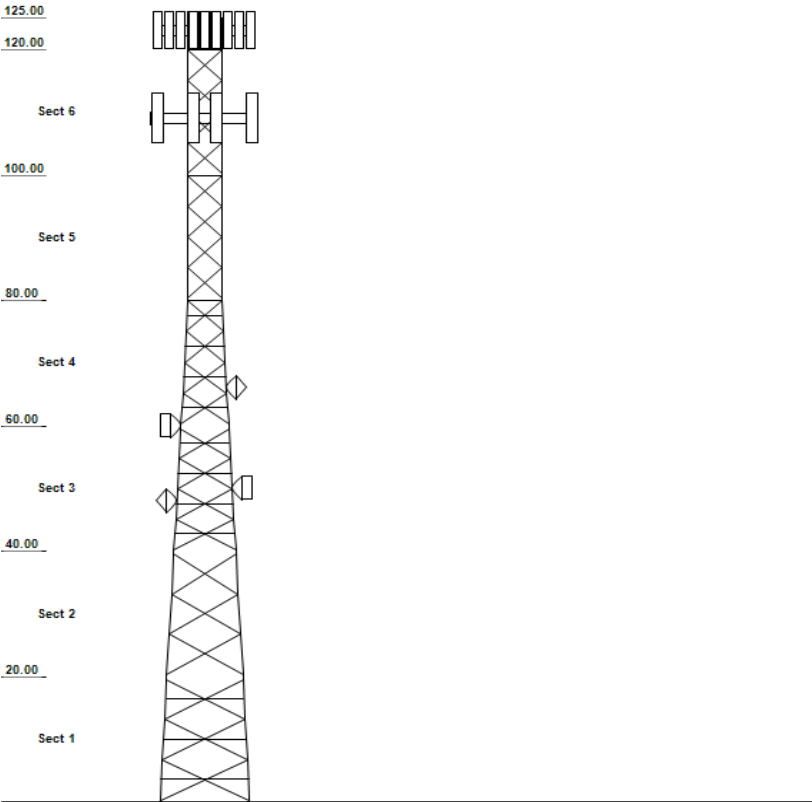
Unless explicitly agreed by both the client and ATC Tower Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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.

ANALYSIS PARAMETERS			
Nominal Wind:	130 mph	Ice Wind:	89 mph w/ 0.5" ice
Risk Category:	II	Exposure:	C
Topo Category:	1	Topo Factor:	Method 3
Structure Height:	125 ft	Base Elevation:	0 ft
Base Width:	13 ft	Top Width:	5 ft
		Service Wind:	60 mph
		S _s :	0.185
		S _t :	0.059
		Topo Feature:	
		Shape:	Triangle

Quadrant 1

Tower Elevation View



GLOBAL BASE REACTIONS			INDIVIDUAL BASE REACTIONS	
	DL+WL	DL+WL+IL		
Moment (k-ft):	1488.51	870.94	Comp (k):	139.24
Axial (k):	21.10	30.81	Uplift (k):	120.57
Shear (k):	20.80	12.28	Shear (k):	13.42

TOWER SECTION PROPERTIES			
Section	Leg Members	Diagonal Members	Horizontal Members
1	PSP 50 ksi 5.563OD x	SAE 36 ksi 2.5X2.5X0.25	
2	PSP 50 ksi 4.5" OD x	SAE 36 ksi 2X2X0.1875	
3	PST 50 ksi 4" DIA PIP	SAE 36 ksi 1.75X1.75X0.1875	
4	PX 50 ksi 3" DIA PIPE	SAE 36 ksi 1.75X1.75X0.1875	SAE 36 ksi 1.75X1.75X0.1875
5	PSP 50 ksi 2.875" OD	SAE 36 ksi 1.75X1.75X0.1875	SAE 36 ksi 1.75X1.75X0.1875
6 - 7	PST 50 ksi 2-1/2" DIA	SAE 36 ksi 1.75X1.75X0.1875	SAE 36 ksi 1.75X1.75X0.1875

SECONDARY BRACING MEMBERS			
Section	Sub Horizontal 1	Sub Horizontal 2	Sub Horizontal 3
1	D2.5X2.5X0.25	-	-
3 - 4	S2.5X2.5X0.25	-	-

DISCRETE APPURTENANCE		LINEAR APPURTENANCE	
Elev (ft)	Description	Elev To (ft)	Description
123.0	(9) Generic 48" x 10" Panel	125.0	(1) Waveguide
123.0	(4) Generic 72" x 10" Panel	123.0	(18) 7/8" Coax
123.0	(3) Generic Flat Light Sector Fram	109.0	(2) 1.55" (39.5mm) Hybrid
123.0	(2) Generic 42" x 10" Panel	109.0	(1) 5/8" Hybriflex
123.0	(1) Generic 36" x 10" Panel	109.0	(1) 3/8" (0.38"- 9.5mm) RET Contr
109.0	(2) Commscope FFVV-65C-R3-V1	105.0	(1) Waveguide
109.0	(2) Nokia AEHC	66.0	(1) EW63
109.0	(2) Nokia AHFIG	60.0	(1) Waveguide
109.0	(2) Nokia AirScale Dual RRH 4T4R B	60.0	(1) EW63
109.0	(2) Commscope HELIAX FiberFeed 12	50.0	(1) EW65
109.0	(2) Perfect Vision PV-SFA-B	48.0	(1) EW63
109.0	(1) Ceragon RFU-D-HP		
109.0	(1) Commscope VHLP2-11W/A		
81.2	(2) Empty Flat Side Arm		
66.0	(1) Generic 4' Dish w/ Radome		
60.0	(1) Generic 4' HP Dish		
50.0	(1) Generic 4' HP Dish		
48.0	(1) Generic 4' Dish w/ Radome		

ANALYSIS PARAMETERS			
Location:	El Paso County, CO	Height:	125 ft
Type and Shape:	Self Support, Triangle	Base Elevation:	0.00 ft
Manufacturer:	Sabre	Bottom Face Width:	13.00 ft
Kd	0.85	Top Face Width:	5.00 ft
Ke:	0.75	Anchor Bolt Detail Type:	c

ICE & WIND PARAMETERS			
Exposure Category:	C	Design Wind Speed Without Ice:	130 mph
Risk Category:	II	Design Wind Speed with Ice:	89 mph
Topographic Factor Procedure:	Method 3	Operational Windspeed:	60 mph
Topographic Category:	Flat	Design Ice Thickness:	0.50 in
Crest Height:	0 ft	HMSL:	7924 ft

SEISMIC PARAMETERS					
Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):		1.08	
T _L (sec):	6	P:	1.3	C _s :	0.030
S _s :	0.185	S ₁ :	0.059	C _{s, Max} :	0.030
F _a :	1.600	F _v :	2.400	C _{s, Min} :	0.030
S _{ds} :	0.197	S _{d1} :	0.094		

LOAD CASES	
1.2D + 1.0W Normal	1.2D + 1.0W Normal - 130 mph Wind with No Ice
1.2D + 1.0W 60°	1.2D + 1.0W 60° - 130 mph Wind with No Ice
1.2D + 1.0W 90°	1.2D + 1.0W 90° - 130 mph Wind with No Ice
0.9D + 1.0W Normal	0.9D + 1.0W Normal - 130 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 60°	0.9D + 1.0W 60° - 130 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 90°	0.9D + 1.0W 90° - 130 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	1.2D + 1.0Di + 1.0Wi Normal - 89 mph Wind with 0.5" Radial Ice
1.2D + 1.0Di + 1.0Wi 60°	1.2D + 1.0Di + 1.0Wi 60° - 89 mph Wind with 0.5" Radial Ice
1.2D + 1.0Di + 1.0Wi 90°	1.2D + 1.0Di + 1.0Wi 90° - 89 mph Wind with 0.5" Radial Ice
1.2D + 1.0Ev + 1.0Eh Normal	1.2D + 1.0Ev + 1.0Eh Normal - Seismic
1.2D + 1.0Ev + 1.0Eh 60°	1.2D + 1.0Ev + 1.0Eh 60° - Seismic
1.2D + 1.0Ev + 1.0Eh 90°	1.2D + 1.0Ev + 1.0Eh 90° - Seismic
0.9D - 1.0Ev + 1.0Eh Normal	0.9D - 1.0Ev + 1.0Eh Normal - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 60°	0.9D - 1.0Ev + 1.0Eh 60° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 90°	0.9D - 1.0Ev + 1.0Eh 90° - Seismic (Reduced DL)
1.0D + 1.0W Service Normal	1.0D + 1.0W Service Normal - 60 mph Wind with No Ice
1.0D + 1.0W Service 60°	1.0D + 1.0W Service 60° - 60 mph Wind with No Ice
1.0D + 1.0W Service 90°	1.0D + 1.0W Service 90° - 60 mph Wind with No Ice

ASSET: 383496, Morley 2

CODE: ANSI/TIA-222-H

CUSTOMER: T-MOBILE

PROJECT: 14761323_C3_02

TOWER LOADING – DISCRETE APPURTENANCE

Discrete Appurtenance Properties for LC: 1.2D + 1.0W

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc. (ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
123.0	Generic 36" x 10" Panel	1	20	3.1	3.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	52	24
123.0	Generic 42" x 10" Panel	2	20	3.7	3.5	10.0	5.0	0.80	0.67	0.0	0.00	36.49	124	48
123.0	Generic 48" x 10" Panel	9	20	4.3	4.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	650	216
123.0	Generic 72" x 10" Panel	4	40	7.0	6.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	468	192
123.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	36.49	837	2880
109.0	Commscope HELIAX FiberFeed 12	2	20	0.9	1.4	6.7	4.7	0.90	0.50	0.0	0.00	35.58	26	48
109.0	Ceragon RFU-D-HP	1	27	1.2	1.0	11.3	4.2	0.90	1.00	0.0	0.00	35.58	32	32
109.0	Nokia AirScale Dual RRH 4T4R B	2	84	2.2	1.8	12.1	7.4	0.90	0.50	0.0	0.00	35.58	60	201
109.0	Nokia AHFIG	2	79	3.1	2.3	13.4	6.8	0.90	0.50	0.0	0.00	35.58	84	191
109.0	Commscope VHL2-11W/A	1	17	4.6	2.2	26.0	9.9	0.90	0.77	0.0	0.00	35.58	97	20
109.0	Nokia AEHC	2	104	6.8	3.2	21.5	8.1	0.90	0.71	0.0	0.00	35.58	264	249
109.0	Commscope FFFV-65C-R3-V1	2	125	21.1	8.0	25.2	9.3	0.90	0.72	0.0	0.00	35.58	827	299
109.0	Perfect Vision PV-SFA-B	2	717	25.1	0.0	0.0	0.0	0.90	0.90	0.0	0.00	35.58	1228	1721
81.2	Empty Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.00	33.44	290	360
66.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	32.01	295	144
60.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	31.37	423	204
50.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	30.19	407	204
48.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	29.93	276	144
Totals		39	5,980	321.8									6,440	7,176

Discrete Appurtenance Properties for LC: 0.9D + 1.0W

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc. (ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
123.0	Generic 36" x 10" Panel	1	20	3.1	3.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	52	18
123.0	Generic 42" x 10" Panel	2	20	3.7	3.5	10.0	5.0	0.80	0.67	0.0	0.00	36.49	124	36
123.0	Generic 48" x 10" Panel	9	20	4.3	4.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	650	162
123.0	Generic 72" x 10" Panel	4	40	7.0	6.0	10.0	5.0	0.80	0.67	0.0	0.00	36.49	468	144
123.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	36.49	837	2160
109.0	Commscope HELIAX FiberFeed 12	2	20	0.9	1.4	6.7	4.7	0.90	0.50	0.0	0.00	35.58	26	36
109.0	Ceragon RFU-D-HP	1	27	1.2	1.0	11.3	4.2	0.90	1.00	0.0	0.00	35.58	32	24
109.0	Nokia AirScale Dual RRH 4T4R B	2	84	2.2	1.8	12.1	7.4	0.90	0.50	0.0	0.00	35.58	60	151
109.0	Nokia AHFIG	2	79	3.1	2.3	13.4	6.8	0.90	0.50	0.0	0.00	35.58	84	143
109.0	Commscope VHL2-11W/A	1	17	4.6	2.2	26.0	9.9	0.90	0.77	0.0	0.00	35.58	97	15
109.0	Nokia AEHC	2	104	6.8	3.2	21.5	8.1	0.90	0.71	0.0	0.00	35.58	264	186
109.0	Commscope FFFV-65C-R3-V1	2	125	21.1	8.0	25.2	9.3	0.90	0.72	0.0	0.00	35.58	827	224
109.0	Perfect Vision PV-SFA-B	2	717	25.1	0.0	0.0	0.0	0.90	0.90	0.0	0.00	35.58	1228	1291
81.2	Empty Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.00	33.44	290	270
66.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	32.01	295	108
60.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	31.37	423	153
50.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	30.19	407	153
48.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	29.93	276	108
Totals		39	5,980	321.8									6,440	5,382

Discrete Appurtenance Properties for LC: 1.2D + 1.0Di + 1.0Wi

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc. (ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
123.0	Generic 36" x 10" Panel	1	44	3.6	3.0	10.0	5.0	0.80	0.67	0.0	0.00	17.10	28	48
123.0	Generic 42" x 10" Panel	2	47	4.3	3.5	10.0	5.0	0.80	0.67	0.0	0.00	17.10	66	103
123.0	Generic 48" x 10" Panel	9	51	5.0	4.0	10.0	5.0	0.80	0.67	0.0	0.00	17.10	347	493
123.0	Generic 72" x 10" Panel	4	85	7.9	6.0	10.0	5.0	0.80	0.67	0.0	0.00	17.10	247	372
123.0	Generic Flat Light Sector Fram	3	1165	22.8	0.0	0.0	0.0	0.75	0.67	0.0	0.00	17.10	501	3975
109.0	Commscope HELIAX FiberFeed 12	2	29	1.2	1.4	6.7	4.7	0.90	0.50	0.0	0.00	16.67	15	67
109.0	Ceragon RFU-D-HP	1	36	1.4	1.0	11.3	4.2	0.90	1.00	0.0	0.00	16.67	18	42
109.0	Nokia AirScale Dual RRH 4T4R B	2	104	2.5	1.8	12.1	7.4	0.90	0.50	0.0	0.00	16.67	32	242
109.0	Nokia AHFIG	2	105	3.5	2.3	13.4	6.8	0.90	0.50	0.0	0.00	16.67	44	241
109.0	Commscope VHL2-11W/A	1	46	5.1	2.2	26.0	9.9	0.90	0.77	0.0	0.00	16.67	50	50
109.0	Nokia AEHC	2	154	7.4	3.2	21.5	8.1	0.90	0.71	0.0	0.00	16.67	134	349
109.0	Commscope FFFV-65C-R3-V1	2	258	22.3	8.0	25.2	9.3	0.90	0.72	0.0	0.00	16.67	410	567
109.0	Perfect Vision PV-SFA-B	2	885	30.7	0.0	0.0	0.0	0.90	0.90	0.0	0.00	16.67	705	2057
81.2	Empty Flat Side Arm	2	173	7.1	0.0	0.0	0.0	0.90	0.90	0.0	0.00	15.67	153	406
66.0	Generic 4' Dish w/ Radome	1	219	11.3	4.0	48.0	0.0	1.00	1.00	0.0	0.00	15.00	145	243
60.0	Generic 4' HP Dish	1	266	16.6	4.0	48.0	0.0	1.00	1.00	0.0	0.00	14.70	207	300
50.0	Generic 4' HP Dish	1	266	16.6	4.0	48.0	0.0	1.00	1.00	0.0	0.00	14.15	199	300
48.0	Generic 4' Dish w/ Radome	1	216	11.3	4.0	48.0	0.0	1.00	1.00	0.0	0.00	14.03	135	240
Totals		39	8,896	368.5									3436	10,092

Discrete Appurtenance Properties for LC: 1.0D + 1.0W Service

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc. (ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
123.0	Generic 36" x 10" Panel	1	20	3.1	3.0	10.0	5.0	0.80	0.67	0.0	0.00	7.77	11	20
123.0	Generic 42" x 10" Panel	2	20	3.7	3.5	10.0	5.0	0.80	0.67	0.0	0.00	7.77	26	40

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc. (ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
123.0	Generic 48" x 10" Panel	9	20	4.3	4.0	10.0	5.0	0.80	0.67	0.0	0.00	7.77	138	180
123.0	Generic 72" x 10" Panel	4	40	7.0	6.0	10.0	5.0	0.80	0.67	0.0	0.00	7.77	100	160
123.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	7.77	178	2400
109.0	Commscope HELIAX FiberFeed 12	2	20	0.9	1.4	6.7	4.7	0.90	0.50	0.0	0.00	7.58	5	40
109.0	Ceragon RFU-D-HP	1	27	1.2	1.0	11.3	4.2	0.90	1.00	0.0	0.00	7.58	7	26
109.0	Nokia AirScale Dual RRH 4T4R B	2	84	2.2	1.8	12.1	7.4	0.90	0.50	0.0	0.00	7.58	13	168
109.0	Nokia AHFIG	2	79	3.1	2.3	13.4	6.8	0.90	0.50	0.0	0.00	7.58	18	159
109.0	Commscope VHLP2-11W/A	1	17	4.6	2.2	26.0	9.9	0.90	0.77	0.0	0.00	7.58	21	17
109.0	Nokia AEHC	2	104	6.8	3.2	21.5	8.1	0.90	0.71	0.0	0.00	7.58	56	207
109.0	Commscope FFVV-65C-R3-V1	2	125	21.1	8.0	25.2	9.3	0.90	0.72	0.0	0.00	7.58	176	249
109.0	Perfect Vision PV-SFA-B	2	717	25.1	0.0	0.0	0.0	0.90	0.90	0.0	0.00	7.58	262	1434
81.2	Empty Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.00	7.12	62	300
66.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	6.82	63	120
60.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	6.68	90	170
50.0	Generic 4' HP Dish	1	170	15.9	4.0	48.0	0.0	1.00	1.00	0.0	0.00	6.43	87	170
48.0	Generic 4' Dish w/ Radome	1	120	10.8	4.0	48.0	0.0	1.00	1.00	0.0	0.00	6.38	59	120
Totals		39	5,980	321.8									1,372	5,980

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

TOWER LOADING – LINEAR APPURTENANCE

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	% In Wind	Spread On Faces	Bundling	Cluster Dia (in)	Out of Zone	Spacing (in)	Orient. Factor	K _a Override
0.0	125.0	Waveguide	1	1.25	6.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	123.0	7/8" Coax	18	1.09	0.33	33	2	Block	0.00	N	1.00	1.00	0.00
0.0	109.0	3/8" (0.38"- 9.5mm) RET Contro	1	0.38	0.23	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	109.0	5/8" Hybriflex	1	0.84	0.70	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	109.0	1.55" (39.5mm) Hybrid	2	1.55	0.55	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	105.0	Waveguide	1	1.25	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	66.0	EW63	1	2.01	0.51	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	60.0	EW63	1	2.01	0.51	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	60.0	Waveguide	1	1.25	6.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	50.0	EW65	1	2.01	0.57	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	48.0	EW63	1	2.01	0.51	100	2	Individual	0.00	N	1.00	1.00	0.00

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

SECTION FORCES

1.2D + 1.0W Normal
130 mph Wind with No Ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	1.00	1.00	0.0	3.98	10.46	0.00	304	0	324	100	424
6	110	35.64	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	1227	0	1144	690	1834
5	90	34.17	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	1667	0	1097	799	1895
4	70	32.41	14.358	11.686	0.00	0.207	2.57	1.00	1.00	0.0	21.06	54.19	0.00	2086	0	1493	777	2270
3	50	30.19	17.121	15.025	0.00	0.192	2.62	1.00	1.00	0.0	25.26	66.26	0.00	2480	0	1700	949	2650
2	30	27.11	11.512	15.025	0.00	0.128	2.85	1.00	1.00	0.0	19.65	56.09	0.00	2309	0	1293	914	2206
1	10	23.46	42.504	0.000	0.00	0.170	2.70	1.00	1.00	0.0	42.50	114.65	0.00	3847	0	2287	791	3077
Totals														13,919	0			14,357

1.2D + 1.0W 60°
130 mph Wind with No Ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	0.80	1.00	0.0	3.46	9.09	0.00	304	0	282	100	382
6	110	35.64	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	1227	0	1004	690	1694
5	90	34.17	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	1667	0	963	799	1761
4	70	32.41	14.358	11.686	0.00	0.207	2.57	0.80	1.00	0.0	18.19	46.80	0.00	2086	0	1289	777	2067
3	50	30.19	17.121	15.025	0.00	0.192	2.62	0.80	1.00	0.0	21.83	57.28	0.00	2480	0	1470	949	2419
2	30	27.11	11.512	15.025	0.00	0.128	2.85	0.80	1.00	0.0	17.35	49.52	0.00	2309	0	1141	914	2055
1	10	23.46	42.504	0.000	0.00	0.170	2.70	0.80	1.00	0.0	34.00	91.72	0.00	3847	0	1829	791	2620
Totals														13,919	0			12,997

1.2D + 1.0W 90°
130 mph Wind with No Ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	0.85	1.00	0.0	3.59	9.43	0.00	304	0	292	100	392
6	110	35.64	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	1227	0	1039	690	1729
5	90	34.17	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	1667	0	996	799	1795
4	70	32.41	14.358	11.686	0.00	0.207	2.57	0.85	1.00	0.0	18.91	48.65	0.00	2086	0	1340	777	2117
3	50	30.19	17.121	15.025	0.00	0.192	2.62	0.85	1.00	0.0	22.69	59.52	0.00	2480	0	1528	949	2477
2	30	27.11	11.512	15.025	0.00	0.128	2.85	0.85	1.00	0.0	17.92	51.16	0.00	2309	0	1179	914	2093
1	10	23.46	42.504	0.000	0.00	0.170	2.70	0.85	1.00	0.0	36.13	97.45	0.00	3847	0	1944	791	2734
Totals														13,919	0			13,337

0.9D + 1.0W Normal
130 mph Wind with No Ice (Reduced DL)
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	1.00	1.00	0.0	3.98	10.46	0.00	228	0	324	100	424
6	110	35.64	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	920	0	1144	690	1834
5	90	34.17	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	1250	0	1097	799	1895
4	70	32.41	14.358	11.686	0.00	0.207	2.57	1.00	1.00	0.0	21.06	54.19	0.00	1564	0	1493	777	2270
3	50	30.19	17.121	15.025	0.00	0.192	2.62	1.00	1.00	0.0	25.26	66.26	0.00	1860	0	1700	949	2650
2	30	27.11	11.512	15.025	0.00	0.128	2.85	1.00	1.00	0.0	19.65	56.09	0.00	1732	0	1293	914	2206
1	10	23.46	42.504	0.000	0.00	0.170	2.70	1.00	1.00	0.0	42.50	114.65	0.00	2885	0	2287	791	3077
Totals														10,439	0			14,357

0.9D + 1.0W 60°
130 mph Wind with No Ice (Reduced DL)
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	0.80	1.00	0.0	3.46	9.09	0.00	228	0	282	100	382
6	110	35.64	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	920	0	1004	690	1694
5	90	34.17	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	1250	0	963	799	1761
4	70	32.41	14.358	11.686	0.00	0.207	2.57	0.80	1.00	0.0	18.19	46.80	0.00	1564	0	1289	777	2067
3	50	30.19	17.121	15.025	0.00	0.192	2.62	0.80	1.00	0.0	21.83	57.28	0.00	1860	0	1470	949	2419
2	30	27.11	11.512	15.025	0.00	0.128	2.85	0.80	1.00	0.0	17.35	49.52	0.00	1732	0	1141	914	2055
1	10	23.46	42.504	0.000	0.00	0.170	2.70	0.80	1.00	0.0	34.00	91.72	0.00	2885	0	1829	791	2620
Totals														10,439	0			12,997

0.9D + 1.0W 90°
130 mph Wind with No Ice (Reduced DL)
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _r	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	36.46	2.611	2.396	0.00	0.191	2.63	0.85	1.00	0.0	3.59	9.43	0.00	228	0	292	100	392
6	110	35.64	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	920	0	1039	690	1729
5	90	34.17	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	1250	0	996	799	1795
4	70	32.41	14.358	11.686	0.00	0.207	2.57	0.85	1.00	0.0	18.91	48.65	0.00	1564	0	1340	777	2117
3	50	30.19	17.121	15.025	0.00	0.192	2.62	0.85	1.00	0.0	22.69	59.52	0.00	1860	0	1528	949	2477
2	30	27.11	11.512	15.025	0.00	0.128	2.85	0.85	1.00	0.0	17.92	51.16	0.00	1732	0	1179	914	2093
1	10	23.46	42.504	0.000	0.00	0.170	2.70	0.85	1.00	0.0	36.13	97.45	0.00	2885	0	1944	791	2734
Totals														10,439	0			12,997

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

SECTION FORCES

0.9D + 1.0W 90° Gust Response Factor (Gh): 0.85
130 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
Totals														10,439	0			13,337

1.2D + 1.0Di + 1.0Wi Normal Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
89 mph Wind with 0.5" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	17.09	2.611	5.115	2.72	0.290	2.32	1.00	1.00	0.6	5.66	13.15	2.72	493	189	191	59	250
6	110	16.71	8.587	19.081	9.50	0.259	2.41	1.00	1.00	0.6	19.79	47.70	9.50	2071	843	677	438	1115
5	90	16.02	8.587	18.892	9.31	0.258	2.41	1.00	1.00	0.6	19.68	47.51	9.31	2561	895	647	563	1210
4	70	15.19	14.358	21.302	9.62	0.279	2.35	1.00	1.00	0.5	26.99	63.48	9.62	3191	1105	820	542	1362
3	50	14.15	17.121	24.997	9.97	0.249	2.44	1.00	1.00	0.5	31.74	77.47	9.97	3786	1306	932	706	1638
2	30	12.71	11.512	24.219	9.19	0.171	2.70	1.00	1.00	0.5	25.32	68.26	9.19	3467	1158	737	712	1449
1	10	11.00	42.504	9.003	9.00	0.205	2.58	1.00	1.00	0.4	51.51	132.79	9.00	5147	1300	1241	583	1824
Totals														20,715	6,796			8,848

1.2D + 1.0Di + 1.0Wi 60° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
89 mph Wind with 0.5" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	17.09	2.611	5.115	2.72	0.290	2.32	0.80	1.00	0.6	5.14	11.94	2.72	493	189	173	59	232
6	110	16.71	8.587	19.081	9.50	0.259	2.41	0.80	1.00	0.6	18.08	43.56	9.50	2071	843	619	438	1056
5	90	16.02	8.587	18.892	9.31	0.258	2.41	0.80	1.00	0.6	17.96	43.36	9.31	2561	895	590	563	1153
4	70	15.19	14.358	21.302	9.62	0.279	2.35	0.80	1.00	0.5	24.11	56.72	9.62	3191	1105	732	542	1275
3	50	14.15	17.121	24.997	9.97	0.249	2.44	0.80	1.00	0.5	28.31	69.11	9.97	3786	1306	831	706	1537
2	30	12.71	11.512	24.219	9.19	0.171	2.70	0.80	1.00	0.5	23.01	62.05	9.19	3467	1158	670	712	1382
1	10	11.00	42.504	9.003	9.00	0.205	2.58	0.80	1.00	0.4	43.01	110.87	9.00	5147	1300	1036	583	1620
Totals														20,715	6,796			8,255

1.2D + 1.0Di + 1.0Wi 90° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
89 mph Wind with 0.5" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	17.09	2.611	5.115	2.72	0.290	2.32	0.85	1.00	0.6	5.27	12.24	2.72	493	189	178	59	237
6	110	16.71	8.587	19.081	9.50	0.259	2.41	0.85	1.00	0.6	18.51	44.59	9.50	2071	843	633	438	1071
5	90	16.02	8.587	18.892	9.31	0.258	2.41	0.85	1.00	0.6	18.39	44.40	9.31	2561	895	604	563	1168
4	70	15.19	14.358	21.302	9.62	0.279	2.35	0.85	1.00	0.5	24.83	58.41	9.62	3191	1105	754	542	1297
3	50	14.15	17.121	24.997	9.97	0.249	2.44	0.85	1.00	0.5	29.17	71.20	9.97	3786	1306	856	706	1562
2	30	12.71	11.512	24.219	9.19	0.171	2.70	0.85	1.00	0.5	23.59	63.60	9.19	3467	1158	687	712	1399
1	10	11.00	42.504	9.003	9.00	0.205	2.58	0.85	1.00	0.4	45.13	116.35	9.00	5147	1300	1088	583	1671
Totals														20,715	6,796			8,404

1.0D + 1.0W Service Normal Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	7.77	2.611	2.396	0.00	0.191	2.63	1.00	1.00	0.0	3.98	10.46	0.00	253	0	69	21	90
6	110	7.59	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	1023	0	244	147	391
5	90	7.28	8.587	9.583	0.00	0.173	2.69	1.00	1.00	0.0	14.05	37.76	0.00	1389	0	234	170	404
4	70	6.90	14.358	11.686	0.00	0.207	2.57	1.00	1.00	0.0	21.09	54.25	0.00	1738	0	318	166	484
3	50	6.43	17.121	15.025	0.00	0.192	2.62	1.00	1.00	0.0	25.73	67.50	0.00	2067	0	369	202	571
2	30	5.78	11.512	15.025	0.00	0.128	2.85	1.00	1.00	0.0	20.01	57.12	0.00	1924	0	280	195	475
1	10	5.00	42.504	0.000	0.00	0.170	2.70	1.00	1.00	0.0	42.50	114.65	0.00	3206	0	487	168	655
Totals														11,599	0			3,070

1.0D + 1.0W Service 60° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	7.77	2.611	2.396	0.00	0.191	2.63	0.80	1.00	0.0	3.46	9.09	0.00	253	0	60	21	81
6	110	7.59	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	1023	0	214	147	361
5	90	7.28	8.587	9.583	0.00	0.173	2.69	0.80	1.00	0.0	12.34	33.15	0.00	1389	0	205	170	375
4	70	6.90	14.358	11.686	0.00	0.207	2.57	0.80	1.00	0.0	18.21	46.86	0.00	1738	0	275	166	441
3	50	6.43	17.121	15.025	0.00	0.192	2.62	0.80	1.00	0.0	22.31	58.52	0.00	2067	0	320	202	522
2	30	5.78	11.512	15.025	0.00	0.128	2.85	0.80	1.00	0.0	17.71	50.55	0.00	1924	0	248	195	443
1	10	5.00	42.504	0.000	0.00	0.170	2.70	0.80	1.00	0.0	34.00	91.72	0.00	3206	0	390	168	558
Totals														11,599	0			2,781

1.0D + 1.0W Service 90° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _Z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
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ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

SECTION FORCES

1.0D + 1.0W Service 90°
60 mph Wind with No Ice

Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q _z (psf)	A _r (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (sf)	EPA _a (sf)	EPA _{ai} (sf)	Wt (lb)	Ice Wt (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
7	122	7.77	2.611	2.396	0.00	0.191	2.63	0.85	1.00	0.0	3.59	9.43	0.00	253	0	62	21	84
6	110	7.59	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	1023	0	221	147	368
5	90	7.28	8.587	9.583	0.00	0.173	2.69	0.85	1.00	0.0	12.76	34.30	0.00	1389	0	212	170	382
4	70	6.90	14.358	11.686	0.00	0.207	2.57	0.85	1.00	0.0	18.93	48.71	0.00	1738	0	286	166	451
3	50	6.43	17.121	15.025	0.00	0.192	2.62	0.85	1.00	0.0	23.16	60.76	0.00	2067	0	332	202	534
2	30	5.78	11.512	15.025	0.00	0.128	2.85	0.85	1.00	0.0	18.28	52.19	0.00	1924	0	256	195	451
1	10	5.00	42.504	0.000	0.00	0.170	2.70	0.85	1.00	0.0	36.13	97.45	0.00	3206	0	414	168	582
Totals														11,599	0			2,853

EQUIVALENT LATERAL FORCE METHOD	
Spectral Response Acceleration for Short Period (S _S):	0.18
Spectral Response Acceleration at 1.0 Second Period (S ₁):	0.06
Long-Period Transition Period (T _L – Seconds):	6
Importance Factor (I _e):	1.00
Site Coefficient F _a :	1.60
Site Coefficient F _v :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S _{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S _{d1}):	0.09
Seismic Response Coefficient (C _s):	0.03
Upper Limit C _s :	0.03
Lower Limit C _s :	0.03
Period based on Rayleigh Method (sec):	1.08
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.29
Total Unfactored Dead Load:	17.58 k
Seismic Base Shear (E):	0.69 k

SEISMIC FORCES						
0.9D - 1.0Ev + 1.0Eh						
Section/Appurtenance	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
7	122.50	253	125,544	0.028	19	218
6	110.00	1,023	441,465	0.097	66	880
5	90.00	1,389	462,700	0.102	70	1,195
4	70.00	1,738	418,646	0.092	63	1,496
3	50.00	2,067	322,392	0.071	48	1,778
2	30.00	1,924	155,245	0.034	23	1,656
1	10.00	3,206	62,631	0.014	9	2,759
Generic 36" x 10" Panel	123.00	20	9,973	0.002	2	17
Generic 42" x 10" Panel	123.00	40	19,945	0.004	3	34
Generic 48" x 10" Panel	123.00	180	89,753	0.020	13	155
Generic 72" x 10" Panel	123.00	160	79,780	0.018	12	138
Generic Flat Light Sector Frame	123.00	2,400	1,196,702	0.262	180	2,065
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	109.00	40	17,064	0.004	3	34
Ceragon RFU-D-HP	109.00	26	11,305	0.002	2	23
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	109.00	168	71,500	0.016	11	144
Nokia AHFIG	109.00	159	67,746	0.015	10	137
Commscope VHLP2-11W/A	109.00	17	7,252	0.002	1	15
Nokia AEHC	109.00	207	88,394	0.019	13	178
Commscope FFVV-65C-R3-V1	109.00	249	106,312	0.023	16	214
Perfect Vision PV-SFA-B	109.00	1,434	611,760	0.134	92	1,234
Empty Flat Side Arm	81.20	300	87,517	0.019	13	258
Generic 4' Dish w/ Radome	66.00	120	26,789	0.006	4	103
Generic 4' HP Dish	60.00	170	33,558	0.007	5	146
Generic 4' HP Dish	50.00	170	26,520	0.006	4	146
Generic 4' Dish w/ Radome	48.00	120	17,759	0.004	3	103
Totals		17,580	4,558,253	1.000	686	15,128

1.2D + 1.0Ev + 1.0Eh						
Section/Appurtenance	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
7	122.50	253	125,544	0.028	19	314
6	110.00	1,023	441,465	0.097	66	1,268
5	90.00	1,389	462,700	0.102	70	1,721
4	70.00	1,738	418,646	0.092	63	2,154
3	50.00	2,067	322,392	0.071	48	2,561
2	30.00	1,924	155,245	0.034	23	2,385
1	10.00	3,206	62,631	0.014	9	3,973
Generic 36" x 10" Panel	123.00	20	9,973	0.002	2	25
Generic 42" x 10" Panel	123.00	40	19,945	0.004	3	50
Generic 48" x 10" Panel	123.00	180	89,753	0.020	13	223
Generic 72" x 10" Panel	123.00	160	79,780	0.018	12	198

Generic Flat Light Sector Frame	123.00	2,400	1,196,702	0.262	180	2,975
Commscope HELIAX FiberFeed 12 RRU Pendant Connect	109.00	40	17,064	0.004	3	50
Ceragon RFU-D-HP	109.00	26	11,305	0.002	2	33
Nokia AirScale Dual RRH 4T4R B12/71 240W AHLOA	109.00	168	71,500	0.016	11	208
Nokia AHFIG	109.00	159	67,746	0.015	10	197
Commscope VHLP2-11W/A	109.00	17	7,252	0.002	1	21
Nokia AEHC	109.00	207	88,394	0.019	13	257
Commscope FFVV-65C-R3-V1	109.00	249	106,312	0.023	16	309
Perfect Vision PV-SFA-B	109.00	1,434	611,760	0.134	92	1,777
Empty Flat Side Arm	81.20	300	87,517	0.019	13	372
Generic 4' Dish w/ Radome	66.00	120	26,789	0.006	4	149
Generic 4' HP Dish	60.00	170	33,558	0.007	5	211
Generic 4' HP Dish	50.00	170	26,520	0.006	4	211
Generic 4' Dish w/ Radome	48.00	120	17,759	0.004	3	149
Totals		17,580	4,558,253	1.000	686	21,789

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

FORCE/STRESS SUMMARY

Section 1 – 0.0' to 20.00'

													Shear		
Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F _y (ksi)	Φ _c P _n (kip)	ΦR _{nv} (kip)	Bear ΦR _n (kip)	# Bolt	# Hole	Use %	Controls
L PSP - 5.563OD x 0.22"	-139.56	1.2D + 1.0W N	0.376	50	50	50	1.19	50.00	184.59	0.00	0.00	0	0	75	Member X
D SAE - 2.5X2.5X0.25	-3.41	1.2D + 1.0W N	14.178	50	50	50	173.26	36.00	11.35	13.81	17.40	1	1	30	Member Z
Member Tension	Pu (kip)	Load Case	F _y (ksi)	F _u (ksi)	Φ _c P _n (kip)	Shear ΦR _{nv} (kip)	Bear ΦR _n (kip)	Blk Shear Φ _t P _n (kip)	# Bolt	# Hole	Use %	Controls			
L PSP - 5.563OD x 0.22"	119.78	1.2D + 1.0W 60°	50.0	65	166.14	0.00	0.00		0	0	72	Member			
D SAE - 2.5X2.5X0.25	3.20	1.2D + 1.0W 90°	36.0	58	33.22	13.81	10.44	11.83	1	1	30	Bolt Bear			
Max Splice Forces	Pu (kip)	Load Case	ΦR _{nt} (kip)	Use %	Num Bolts	Bolt Type									
Bot Tension	121.21	0.9D + 1.0W 60°	272.58	67	4	1" F1554-105									
Bot Compression	139.57	1.2D + 1.0W N	254.41	43	0										

Section 2 – 20.0' to 40.00'

										Shear					
Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			F _y (ksi)	Φ _c P _n (kip)	ΦR _{nv} (kip)	Bear ΦR _n (kip)	# Bolt	# Hole	Use %	Controls	
	X			Y	Z	KL/R									
L PSP - 4.5" OD x 0.3125"	-118.98	1.2D + 1.0W N	6.427	100	100	100	51.94	50.00	151.84	0.00	0.00	0	0	78	Member X
D SAE - 2X2X0.1875	-2.96	1.2D + 1.0W 90°	12.428	50	50	50	189.26	36.00	5.71	13.81	13.05	1	1	51	Member Z
Member Tension	Pu (kip)	Load Case	F _y (ksi)	F _u (ksi)	Φ _c P _n (kip)	Shear ΦR _{nv} (kip)	Bear ΦR _n (kip)	Blk Shear Φ _t P _n (kip)	# Bolt	# Hole	Use %	Controls			
L PSP - 4.5" OD x 0.3125"	105.84	1.2D + 1.0W 60°	50.0	65	184.95	0.00	0.00		0	0	57	Member			
D SAE - 2X2X0.1875	3.04	1.2D + 1.0W 90°	36.0	58	19.12	13.81	7.83	6.83	1	1	44	Blk Shear			
Max Splice Forces	Pu (kip)	Load Case	ΦR _{nt} (kip)	Use %	Num Bolts	Bolt Type									
Bot Tension	106.82	0.9D + 1.0W 60°	348.88	31	4	1.25" A325									

Section 3 – 40.0' to 60.00'

										Shear					
Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			F _y (ksi)	Φ _c P _n (kip)	ΦR _{nv} (kip)	Bear ΦR _n (kip)	# Bolt	# Hole	Use %	Controls	
L PST - 4" DIA PIPE	-103.81	1.2D + 1.0W N	0.376	X	Y	Z	KL/R								
D SAE - 1.75X1.75X0.1875	-2.76	1.2D + 1.0W 90°	9.963	50	50	50	1.49	50.00	142.63	0.00	0	0	72	Member X	
				50	50	50	174.27	36.00	5.85	13.81	13.05	1	1	47	Member Z
Member Tension	Pu (kip)	Load Case	F _y (ksi)	F _u (ksi)	Φ _c P _n (kip)	Shear ΦR _{nv} (kip)	Bear ΦR _n (kip)	Blk Shear Φ _t P _n (kip)	# Bolt	# Hole	Use %	Controls			
L PST - 4" DIA PIPE	90.16	1.2D + 1.0W 60°	50.0	65	142.65	0.00	0.00		0	0	63	Member			
D SAE - 1.75X1.75X0.1875	2.69	1.2D + 1.0W 90°	36.0	58	16.05	13.81	7.83	5.81	1	1	46	Blk Shear			
Max Splice Forces	Pu (kip)	Load Case	ΦR _{nt} (kip)	Use %	Num Bolts	Bolt Type									
Bot Tension	90.97	0.9D + 1.0W 60°	218.07	42	4	1 A325									

Section 4 – 60.0' to 80.00'

Member Compression	Pu	Load Case	Len (ft)	Bracing %			F _y (ksi)	Φ _c P _n (kip)	Shear					Controls	
	(kip)			X	Y	Z			KL/R	ΦR _{nv} (kip)	Bear ΦR _n (kip)	# Bolt	# Hole		Use %
L PX - 3" DIA PIPE	-81.54	1.2D + 1.0W N	4.914	50	50	50	25.87	50.00	129.41	0.00	0	0	63	Member X	
H SAE - 1.75X1.75X0.1875	-0.18	1.2D + 1.0W 60°	5	100	100	100	174.93	36.00	5.81	13.81	13.05	1	1	3	Member Z
D SAE - 1.75X1.75X0.1875	-2.00	1.2D + 1.0W 90°	8.319	50	50	50	145.53	36.00	8.39	13.81	13.05	1	1	23	Member Z
Member Tension	Pu	Load Case	F _y (ksi)	F _u (ksi)	Φ _c P _n (kip)	Shear ΦR _{nv} (kip)	Bear ΦR _n (kip)	Blk Shear Φ _t P _n (kip)	# Bolt	# Hole	Use %	Controls			
	(kip)														
L PX - 3" DIA PIPE	73.51	1.2D + 1.0W 60°	50.0	65	135.90	0.00	0.00		0	0	54	Member			
H SAE - 1.75X1.75X0.1875	0.04	1.2D + 1.0W N	36.0	58	16.05	13.81	7.83	5.81	1	1	0	Blk Shear			
D SAE - 1.75X1.75X0.1875	2.13	1.2D + 1.0W 60°	36.0	58	16.05	13.81	7.83	5.81	1	1	36	Blk Shear			

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

FORCE/STRESS SUMMARY

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	74.03	0.9D + 1.0W 60°	218.07	34	4	1 A325

Section 5 – 80.0' to 100.00'

										Shear					
Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			F'y (ksi)	Φc Pn (kip)	ΦRnv (kip)	Bear ΦRn (kip)	# Bolt	# Hole	Use %	Controls	
L PSP - 2.875" OD x 0.375"	-60.06	1.2D + 1.0W N	4.906	100	100	100	65.86	50.00	96.67	0.00	0.00	0	0	62	Member X
H SAE - 1.75X1.75X0.1875	-0.00	1.2D + 1.0W 90°	5	100	100	100	174.93	36.00	5.81	13.81	13.05	1	1	0	Member Z
D SAE - 1.75X1.75X0.1875	-4.10	1.2D + 1.0W 90°	7.005	50	50	50	122.54	36.00	11.80	13.81	13.05	1	1	34	Member Z
Member Tension	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	ΦcPn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	Blk Shear Φt Pn (kip)	# Bolt	# Hole	Use %	Controls			
L PSP - 2.875" OD x 0.375"	57.68	1.2D + 1.0W 60°	50.0	65	132.75	0.00	0.00		0	0	43	Member			
H SAE - 1.75X1.75X0.1875	0.04	1.2D + 1.0W N	36.0	58	16.05	13.81	7.83	5.81	1	1	0	Blk Shear			
D SAE - 1.75X1.75X0.1875	3.99	1.2D + 1.0W 90°	36.0	58	16.05	13.81	7.83	5.81	1	1	68	Blk Shear			
Max Splice Forces	Pu (kip)	Load Case	ΦRnt (kip)	Use %	Num Bolts	Bolt Type									
Bot Tension	58.03	0.9D + 1.0W 60°	120.41	48	4	0.75" A325									

Section 6 – 100.0' to 120.00'

Member Compression	Pu	Load Case	Len	Bracing %			F' y	Φc Pn	Shear	Bear	#	#	Use	Controls									
	(kip)			(ft)	X	Y			Z						KL/R	(ksi)	Φc Pn	(kip)	ΦRnv	ΦRn (kip)	Bolt	Hole	%
L PST - 2-1/2" DIA PIPE	-23.62	1.2D + 1.0W N	4.906	100	100	100	62.17	50.00	57.80	0.00	0.00	0	0	40	Member X								
H SAE - 1.75X1.75X0.1875	-0.17	0.9D + 1.0W 60°	5	100	100	100	174.93	36.00	5.81	13.81	13.05	1	1	3	Member Z								
D SAE - 1.75X1.75X0.1875	-3.21	1.2D + 1.0W 90°	7.005	50	50	50	122.54	36.00	11.80	13.81	13.05	1	1	27	Member Z								
Member Tension	Pu	Load Case	Fy	Fu	ΦcPn	Shear	Bear	Blk Shear	#	#	Use	Controls											
	(kip)												(ksi)	(kip)	ΦRnv	ΦRn	Φt Pn	Bolt	Hole	%			
L PST - 2-1/2" DIA PIPE	22.67	0.9D + 1.0W 60°	50.0	65	76.68	0.00	0.00		0	0	29	Member											
H SAE - 1.75X1.75X0.1875	0.30	1.2D + 1.0W N	36.0	58	16.05	13.81	7.83	5.81	1	1	5	Blk Shear											
D SAE - 1.75X1.75X0.1875	3.17	1.2D + 1.0W 90°	36.0	58	16.05	13.81	7.83	5.81	1	1	54	Blk Shear											
Max Splice Forces	Pu	Load Case	ΦRnt	Use	Num	Bolt Type																	
	(kip)						(kip)	%	Bolts														
Bot Tension	22.57	0.9D + 1.0W 60°	120.41	19	4	0.75" A325																	

Section 7 – 120.0' to 125.00'

										Shear					
Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F' _y (ksi)	Φ _c P _n (kip)	ΦR _{nv} (kip)	Bear ΦR _n (kip)	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	-3.89	1.2D + 1.0W N	0.375	100	100	100	4.75	50.00	76.55	0.00	0.00	0	0	5	Member X
H SAE - 1.75X1.75X0.1875	-0.36	0.9D + 1.0W 60°	5	100	100	100	174.93	36.00	5.81	13.81	13.05	1	1	6	Member Z
D SAE - 1.75X1.75X0.1875	-1.22	1.2D + 1.0W 90°	6.811	50	50	50	119.36	36.00	12.34	13.81	13.05	1	1	9	Member Z
Member Tension	Pu (kip)	Load Case	F _y (ksi)	F _u (ksi)	Φ _c P _n (kip)	Shear ΦR _{nv} (kip)	Bear ΦR _n (kip)	Blk Shear Φ _t P _n (kip)	# Bolt	# Hole	Use %	Controls			
L PST - 2-1/2" DIA PIPE	1.75	0.9D + 1.0W 60°	50.0	65	76.68	0.00	0.00		0	0	2	Member			
H SAE - 1.75X1.75X0.1875	0.48	1.2D + 1.0W N	36.0	58	16.05	13.81	7.83	5.81	1	1	8	Blk Shear			
D SAE - 1.75X1.75X0.1875	1.05	1.2D + 1.0W 90°	36.0	58	16.05	13.81	7.83	5.81	1	1	18	Blk Shear			
Max Splice Forces	Pu (kip)	Load Case	ΦR _{nt} (kip)	Use %	Num Bolts	Bolt Type									
Bot Tension	1.69	0.9D + 1.0W 60°	120.41	1	4	0.75" A325									

ASSET: 383496, Morley 2

CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H

PROJECT: 14761323_C3_02

DEFLECTIONS AND ROTATIONS					
Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	50.00	0.045	0.0006	0.1035	0.1035
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	60.00	0.0651	0.0008	0.1392	0.1392
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	65.28	0.0775	0.0004	0.1391	0.1391
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	80.38	0.1199	0.0016	0.2041	0.2041
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	110.19	0.2329	0.0006	0.2411	0.2411
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	125.00	0.2952	0.0004	0.2399	0.2399
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	50.00	0.0445	0.0008	0.1028	0.1028
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	60.00	0.0644	0.0011	0.1399	0.1399
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	65.28	0.0766	0.0003	0.1366	0.1366
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	80.38	0.1187	0.0014	0.2050	0.205
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	110.19	0.2307	0.0005	0.2396	0.2396
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	125.00	0.2925	0.0003	0.2359	0.2359
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	50.00	0.0467	0.0006	0.1072	0.1072
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	60.00	0.0674	0.0009	0.1453	0.1453
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	65.28	0.0802	0.0001	0.1424	0.1424
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	80.38	0.1237	0.0011	0.2143	0.2143
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	110.19	0.2397	0.0003	0.2474	0.2474
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	125.00	0.3037	0.0001	0.2464	0.2464
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	50.00	0.0102	-0.0002	0.0247	0.0247
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	60.00	0.0151	-0.0003	0.0336	0.0336
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	65.28	0.0182	0.0001	0.0353	0.0353
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	80.38	0.029	0.0000	0.0542	0.0542
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	110.19	0.0595	-0.0002	0.0666	0.0666
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	125.00	0.0767	-0.0002	0.0655	0.0655
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	50.00	0.0099	0.0002	0.0242	0.0242
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	60.00	0.0147	0.0003	0.0333	0.0333
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	65.28	0.0177	0.0002	0.0342	0.0342
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	80.38	0.0285	0.0001	0.0530	0.053
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	110.19	0.0583	0.0002	0.0654	0.0654
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	125.00	0.0753	0.0002	0.0638	0.0638
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	50.00	0.0102	0.0002	0.0247	0.0247
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	60.00	0.0151	0.0003	0.0332	0.0332
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	65.28	0.0182	0.0001	0.0352	0.0352
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	80.38	0.029	0.0000	0.0554	0.0554
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	110.19	0.0595	0.0001	0.0665	0.0665
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	125.00	0.0767	0.0002	0.0655	0.0655
1.2D + 1.0Ev + 1.0Eh 90° Seismic	50.00	0.0102	-0.0002	0.0248	0.0248
1.2D + 1.0Ev + 1.0Eh 90° Seismic	60.00	0.0151	-0.0003	0.0339	0.0339
1.2D + 1.0Ev + 1.0Eh 90° Seismic	65.28	0.0183	0.0001	0.0354	0.0354
1.2D + 1.0Ev + 1.0Eh 90° Seismic	80.38	0.0291	0.0000	0.0547	0.0547
1.2D + 1.0Ev + 1.0Eh 90° Seismic	110.19	0.0597	-0.0002	0.0670	0.067
1.2D + 1.0Ev + 1.0Eh 90° Seismic	125.00	0.0771	-0.0002	0.0658	0.0658
1.2D + 1.0Ev + 1.0Eh 60° Seismic	50.00	0.01	0.0002	0.0243	0.0243
1.2D + 1.0Ev + 1.0Eh 60° Seismic	60.00	0.0148	0.0003	0.0336	0.0336
1.2D + 1.0Ev + 1.0Eh 60° Seismic	65.28	0.0178	0.0002	0.0343	0.0343
1.2D + 1.0Ev + 1.0Eh 60° Seismic	80.38	0.0286	0.0001	0.0530	0.053
1.2D + 1.0Ev + 1.0Eh 60° Seismic	110.19	0.0585	0.0002	0.0658	0.0658
1.2D + 1.0Ev + 1.0Eh 60° Seismic	125.00	0.0756	0.0002	0.0645	0.0645
1.2D + 1.0Ev + 1.0Eh Normal Seismic	50.00	0.0103	0.0002	0.0247	0.0247
1.2D + 1.0Ev + 1.0Eh Normal Seismic	60.00	0.0152	0.0003	0.0331	0.0331
1.2D + 1.0Ev + 1.0Eh Normal Seismic	65.28	0.0183	0.0001	0.0354	0.0354
1.2D + 1.0Ev + 1.0Eh Normal Seismic	80.38	0.0291	0.0000	0.0559	0.0559
1.2D + 1.0Ev + 1.0Eh Normal Seismic	110.19	0.0597	0.0001	0.0669	0.0669
1.2D + 1.0Ev + 1.0Eh Normal Seismic	125.00	0.0771	0.0002	0.0660	0.066
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	50.00	0.1261	0.0010	0.2885	0.2885
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	60.00	0.182	0.0010	0.3872	0.3872
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	65.28	0.2163	0.0045	0.3872	0.3873
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	80.38	0.3343	0.0090	0.5672	0.5672
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	110.19	0.6469	0.0085	0.6667	0.6667

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

DEFLECTIONS AND ROTATIONS					
Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Di + 1.0Wi 90° 89 mph Wind with 0.5" Radial Ice	125.00	0.8192	0.0084	0.6639	0.6639
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	50.00	0.1255	0.0006	0.2865	0.2865
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	60.00	0.181	0.0010	0.3901	0.3901
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	65.28	0.2151	0.0035	0.3813	0.3813
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	80.38	0.3322	0.0070	0.5715	0.5715
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	110.19	0.6426	0.0062	0.6637	0.6637
1.2D + 1.0Di + 1.0Wi 60° 89 mph Wind with 0.5" Radial Ice	125.00	0.8143	0.0061	0.6554	0.6554
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	50.00	0.1286	0.0002	0.2965	0.2965
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	60.00	0.1858	0.0000	0.4025	0.4025
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	65.28	0.2207	0.0030	0.3928	0.3929
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	80.38	0.3417	0.0069	0.5911	0.5911
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	110.19	0.6606	0.0062	0.6792	0.6792
1.2D + 1.0Di + 1.0Wi Normal 89 mph Wind with 0.5" Radial Ice	125.00	0.8364	0.0060	0.6760	0.676
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	50.00	0.2125	0.0022	0.4888	0.4888
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	60.00	0.3074	0.0019	0.6577	0.6577
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	65.28	0.3658	0.0082	0.6580	0.6581
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	80.38	0.5666	0.0160	0.9643	0.9643
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	110.19	1.1008	0.0158	1.1377	1.1377
0.9D + 1.0W 90° 130 mph Wind with No Ice (Reduced DL)	125.00	1.3951	0.0158	1.1339	1.134
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	50.00	0.2106	0.0016	0.4855	0.4855
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	60.00	0.3047	0.0015	0.6581	0.6581
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	65.28	0.3626	0.0068	0.6466	0.6467
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	80.38	0.5613	0.0126	0.9702	0.9702
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	110.19	1.0903	0.0124	1.1295	1.1295
0.9D + 1.0W 60° 130 mph Wind with No Ice (Reduced DL)	125.00	1.3825	0.0124	1.1189	1.1189
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	50.00	0.2199	0.0009	0.5064	0.5064
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	60.00	0.3176	0.0007	0.6901	0.6901
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	65.28	0.378	0.0057	0.6720	0.672
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	80.38	0.584	0.0129	1.0119	1.0119
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	110.19	1.1315	0.0124	1.1666	1.1666
0.9D + 1.0W Normal 130 mph Wind with No Ice (Reduced DL)	125.00	1.4335	0.0122	1.1584	1.1584
1.2D + 1.0W 90° 130 mph Wind with No Ice	50.00	0.213	0.0022	0.4903	0.4903
1.2D + 1.0W 90° 130 mph Wind with No Ice	60.00	0.3083	0.0020	0.6596	0.6596
1.2D + 1.0W 90° 130 mph Wind with No Ice	65.28	0.3668	0.0082	0.6603	0.6604
1.2D + 1.0W 90° 130 mph Wind with No Ice	80.38	0.5683	0.0161	0.9682	0.9682
1.2D + 1.0W 90° 130 mph Wind with No Ice	110.19	1.1048	0.0159	1.1428	1.1428
1.2D + 1.0W 90° 130 mph Wind with No Ice	125.00	1.4003	0.0158	1.1389	1.139
1.2D + 1.0W 60° 130 mph Wind with No Ice	50.00	0.2111	0.0017	0.4870	0.487
1.2D + 1.0W 60° 130 mph Wind with No Ice	60.00	0.3055	0.0014	0.6603	0.6603
1.2D + 1.0W 60° 130 mph Wind with No Ice	65.28	0.3637	0.0068	0.6489	0.6489
1.2D + 1.0W 60° 130 mph Wind with No Ice	80.38	0.5631	0.0126	0.9738	0.9738
1.2D + 1.0W 60° 130 mph Wind with No Ice	110.19	1.0942	0.0124	1.1347	1.1347
1.2D + 1.0W 60° 130 mph Wind with No Ice	125.00	1.3877	0.0125	1.1235	1.1235
1.2D + 1.0W Normal 130 mph Wind with No Ice	50.00	0.2204	0.0009	0.5079	0.5079
1.2D + 1.0W Normal 130 mph Wind with No Ice	60.00	0.3185	0.0007	0.6920	0.692
1.2D + 1.0W Normal 130 mph Wind with No Ice	65.28	0.3791	0.0057	0.6744	0.6745
1.2D + 1.0W Normal 130 mph Wind with No Ice	80.38	0.5858	0.0130	1.0161	1.0161
1.2D + 1.0W Normal 130 mph Wind with No Ice	110.19	1.1356	0.0125	1.1716	1.1716
1.2D + 1.0W Normal 130 mph Wind with No Ice	125.00	1.439	0.0122	1.1639	1.1639

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down		
					FX* (kip)	FY* (kip)	FZ* (kip)
1.2D + 1.0W Normal	7.51	0.00	0	1	0.00	139.24	-13.42
	7.51	0.00	120	1a	4.84	-59.07	-3.69
	7.51	0.00	240	1b	-4.84	-59.07	-3.69
1.2D + 1.0W 60°	7.51	0.00	0	1	-0.69	70.11	-6.54
	7.51	0.00	120	1a	-6.00	70.09	2.70
	7.51	0.00	240	1b	-10.14	-119.10	-5.87
1.2D + 1.0W 90°	7.51	0.00	0	1	-0.82	7.05	-0.45
	7.51	0.00	120	1a	-9.88	117.56	5.25
	7.51	0.00	240	1b	-9.08	-103.52	-4.80
0.9D + 1.0W Normal	7.51	0.00	0	1	0.00	137.19	-13.29
	7.51	0.00	120	1a	4.94	-60.68	-3.75
	7.51	0.00	240	1b	-4.94	-60.68	-3.75
0.9D + 1.0W 60°	7.51	0.00	0	1	-0.70	68.20	-6.42
	7.51	0.00	120	1a	-5.89	68.19	2.63
	7.51	0.00	240	1b	-10.24	-120.57	-5.93
0.9D + 1.0W 90°	7.51	0.00	0	1	-0.83	5.29	-0.33
	7.51	0.00	120	1a	-9.77	115.56	5.18
	7.51	0.00	240	1b	-9.18	-105.02	-4.86
1.2D + 1.0Di + 1.0Wi Normal	7.51	0.00	0	1	0.00	87.63	-7.20
	7.51	0.00	120	1a	3.49	-28.41	-2.54
	7.51	0.00	240	1b	-3.49	-28.41	-2.54
1.2D + 1.0Di + 1.0Wi 60°	7.51	0.00	0	1	-0.42	47.66	-3.20
	7.51	0.00	120	1a	-2.97	47.62	1.25
	7.51	0.00	240	1b	-6.73	-64.47	-3.89
1.2D + 1.0Di + 1.0Wi 90°	7.51	0.00	0	1	-0.50	10.29	0.46
	7.51	0.00	120	1a	-5.27	75.54	2.77
	7.51	0.00	240	1b	-6.07	-55.02	-3.23
1.2D + 1.0Ev + 1.0Eh Normal	7.51	0.00	0	1	0.00	12.94	-0.96
	7.51	0.00	120	1a	-0.24	4.09	0.15
	7.51	0.00	240	1b	0.24	4.09	0.15
1.2D + 1.0Ev + 1.0Eh 60°	7.51	0.00	0	1	0.01	9.93	-0.73
	7.51	0.00	120	1a	-0.63	9.93	0.37
	7.51	0.00	240	1b	0.06	1.27	0.03
1.2D + 1.0Ev + 1.0Eh 90°	7.51	0.00	0	1	0.01	7.04	-0.51
	7.51	0.00	120	1a	-0.78	12.15	0.45
	7.51	0.00	240	1b	0.10	1.94	0.05
0.9D - 1.0Ev + 1.0Eh Normal	7.51	0.00	0	1	0.00	10.77	-0.80
	7.51	0.00	120	1a	-0.10	1.95	0.07
	7.51	0.00	240	1b	0.10	1.95	0.07
0.9D - 1.0Ev + 1.0Eh 60°	7.51	0.00	0	1	0.01	7.77	-0.57
	7.51	0.00	120	1a	-0.49	7.77	0.29
	7.51	0.00	240	1b	-0.08	-0.87	-0.05
0.9D - 1.0Ev + 1.0Eh 90°	7.51	0.00	0	1	0.01	4.89	-0.35
	7.51	0.00	120	1a	-0.64	9.98	0.38
	7.51	0.00	240	1b	-0.03	-0.20	-0.02
1.0D + 1.0W Service Normal	7.51	0.00	0	1	0.00	33.82	-3.16
	7.51	0.00	120	1a	0.76	-8.12	-0.63
	7.51	0.00	240	1b	-0.76	-8.12	-0.63
1.0D + 1.0W Service 60°	7.51	0.00	0	1	-0.15	19.20	-1.70
	7.51	0.00	120	1a	-1.54	19.19	0.73
	7.51	0.00	240	1b	-1.88	-20.81	-1.09
1.0D + 1.0W Service 90°	7.51	0.00	0	1	-0.18	5.87	-0.41
	7.51	0.00	120	1a	-2.36	29.22	1.27
	7.51	0.00	240	1b	-1.66	-17.51	-0.86

ASSET: 383496, Morley 2
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
PROJECT: 14761323_C3_02

MAXIMUM REACTIONS SUMMARY

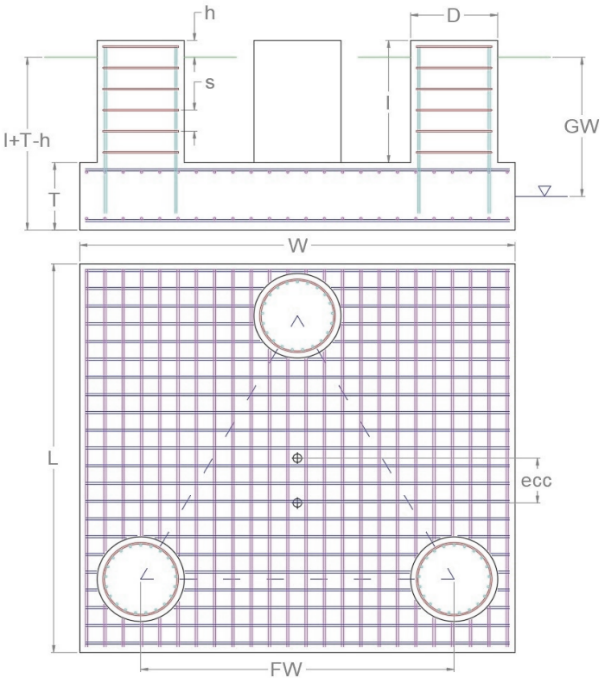
Individual		Global (DL+WL+IL)		Global (DL+WL)	
Max Uplift:	120.57 (kip)	Moment Ice:	870.94 (kip-ft)	Moment:	1488.51 (kip-ft)
Max Down:	139.24 (kip)	Total Down Ice:	30.81 (kip)	Total Down:	21.1 (kip)
Max Shear:	13.42 (kip)	Total Shear Ice:	12.28 (kip)	Total Shear:	20.8 (kip)
1.2D + 1.0W Normal					

MONOLITHIC MAT & PIER FOUNDATION ANALYSIS

APPLIED REACTIONS				
GLOBAL (PER FOUNDATION)			LOCAL (PER LEG)	
Moment (k-ft)	Axial (k)	Shear (k)	Compression (k)	Uplift (k)
1,488.51	21.10	20.80	139.24	120.57

FOUNDATION PARAMETERS			
Mat Length:	L	22	ft
Mat Width:	W	22	ft
Mat Thickness:	T	4	ft
Base Depth:	L+T-h	6.42	ft
Pier Shape:		Square	
Pier Width:	D	3	ft
Pier Height above Grade:	h	1.58	ft
Tower Eccentricity:	ecc	0.75	ft
Tower Face Width	FW	13	ft
Tower Leg Count		3	

SOIL PARAMETERS			
Water Table Depth [BGL]:	GW	-	ft
Soil Unit Weight:		127	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		20,600	psf
Bearing Pressure Type:		Net	
Coefficient of Shear Friction:		0.3	



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

SOIL OVERTURNING ANALYSIS		
Design Moment, $M_{u,Design}$ (k-ft)	Nominal Overturning Capacity, $\Phi_m M_n$ (k-ft)	Soil Overturning Usage, $M_{u,Design} / \Phi_m M_n$
1,654.91	4,923.34	33.6% ✓

SOIL BEARING ANALYSIS			
Net Bearing Pressure, $P_{u,Net}$ (psf)	Nominal Bearing Capacity, $\Phi_b P_n$ (k-ft)	Bearing Pressure Controlling Load Direction	Soil Bearing Usage, $P_{u,net} / \Phi_b P_n$
1,324.00	16,061.00	Diagonal to Pad Edge	8.2% ✓

SOIL SLIDING SHEAR ANALYSIS					
Applied Shear Force, V_u (k)	Friction Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Nominal Shear Capacity, $\Phi_s V_n$ (k)	Soil Sliding Shear Usage, $V_u / \Phi_s V_n$
20.80	0.00	561.3	49.40	141.59	15.0% ✓