

Alex Murshteyn, Site Acquisition
c/o T-Mobile Northeast LLC ("T-Mobile")
Centerline Communications, LLC
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Raynham, MA 02767
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May 19, 2017

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

**RE: Notice of Exempt Modification // Site Number: CT11769B (ATC: 302481)
289H Mountain Road (aka Mountain Street), Hartford, CT 06106
N 41.20328 // W -73.14863**

Dear Ms. Bachman:

T-Mobile Northeast LLC ("T-Mobile") currently maintains 6 antennas at the 87-foot mount and 91-foot rad level on the existing 110-foot monopole tower at 289H Mountain Road, Hartford, CT. The tower is owned by AT&T Mobility (fka Springwich Cellular Tower Holdings LLC), but subleased to American Tower Corporation. The property is owned by The Metropolitan District. T-Mobile now intends to replace 3 of its existing antennas with 3 new LTE (L700) antennas and also install 3 new PCS/AWS (L2100/1900) antennas for its PCS/AWS upgrade. Note that existing LTE (L700) antennas' technology will remain on Commscope LNX panels, although a smaller set of LNX-6514DS models will replace the 3 existing LNX-6515DS antennas, which will be removed; see construction drawings sheet C-501 for complete detail. All antennas will continue to be installed at 91-foot rad level on the tower. Additionally, T-Mobile will install 3 new Smart Bias Ts with its antennas, as well as 1 new hybrid fiber (HCS) cable.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Luke Bronin, Mayor for the City of Hartford, the City's Planning & Zoning office, American Tower and AT&T, the tower owner, and the ground owner, The Metropolitan District.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Enclosed to accommodate this filing are construction drawings dated May 18, 2017 by ATC Tower Services, a structural analysis dated April 7, 2017 by A.T. Engineering Service, PLLC and an RF Emissions Analysis Report dated April 21, 2017 by EBI Consulting.

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the new antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading, as shown in the attached structural analysis by A.T. Engineering Service, PLLC, dated April 7, 2017.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Alex Murshteyn, Site Acquisition
c/o T-Mobile Northeast LLC
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 821-0159
AMurshteyn@centerlinecommunications.com

Attachments

cc: Luke Bronin, Mayor, City of Hartford - as elected official
City of Hartford Planning & Zoning office - as P&Z officials
American Tower Corporation - as tower owner (sublessee)
AT&T Mobility Corporation - as tower owner (sublessor)
The Metropolitan District - as property owner



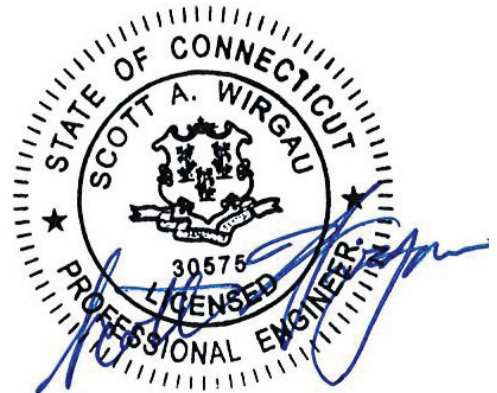
AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 110 ft Monopole
ATC Site Name : Hrfr - South, CT
ATC Site Number : 302481
Engineering Number : OAA697002_C3_02
Proposed Carrier : T-Mobile
Carrier Site Name : CT769/SSite Hartford #2
Carrier Site Number : CT11769B
Site Location : Mountain Road
Hartford, CT 06106-4121
41.726600,-72.708200
County : Hartford
Date : April 4, 2017
Max Usage : 100%
Result : Pass

Prepared By:
Felix Buabeng
Structural Engineer I

Reviewed By:



Apr 7 2017 4:04 PM **cosign**

COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 110 ft monopole to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	Mapped by Smith Cullum Site #CT-0017(A), dated June 6, 2001
Foundation Drawing	Girard & Co Engineering Job #39902, dated April 29, 1988
Geotechnical Report	TEP Project #071162.01, dated July 23, 2007
Modifications	ATC Project #42719232, dated January 12, 2009 ATC Project #43595333, dated July 1, 2009 ATC Project #43930034, dated September 15, 2009 ATC Project #44662232, dated March 30, 2010

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:	97 mph (3-Second Gust, V_{asd}) / 125 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	4
Crest Height:	36 ft
Spectral Response:	$S_s = 0.18$, $S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

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

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



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
110.0	110.0	3	DragonWave Horizon Compact	Side Arms	(6) 5/16" Coax (3) 1/2" Coax (1) 2" Conduit	Clearwire
		1	12" x 12" Junction Box			
		1	DragonWave A-ANT-23G-1-C			
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		2	DragonWave A-ANT-11G-2.5-C			
100.0	105.0	1	10' Omni	Platform w/ Handrails	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" Conduit	AT&T Mobility
	100.0	6	Powerwave 7020.00 Dual Band RET			
		6	CCI TPX-070821			
		6	Powerwave LGP21401			
		2	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS-11			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		2	Quintel QS66512-2			
		2	CCI OPA-65R-LCUU-H6			
		1	CCI OPA-65R-LCUU-H8			
1	CCI TPA-65R-LCUUUU-H8					
87.0	91.0	3	Kathrein Smart Bias Tee	Low Profile Platform	(18) 1 5/8" Coax	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson KRY 112 489/1			
		3	RFS APX16DWV-16DWV-S-E-ACU			
80.0	80.0	3	Alcatel-Lucent RRH2X60-AWS	Low Profile Platform	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex Cable	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		6	Antel BXA-171063-12CF-EDIN-5			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Antel BXA-70063-6CF-EDIN-2			
75.0	75.0	1	Scala 840 10212	Stand Offs	(1) 7/8" Coax	Town Of West Hartford
		1	TX RX Systems 421-86A-10-18-12-N			
70.0	70.0	3	72" x 6" Panel	Side Arms	(6) 1 5/8" Coax	Metro PCS
60.0	60.0	1	Radio/ODU	Stand Off	(1) 1/4" Coax (1) 7/8" Coax	Town Of West Hartford
		1	Scala 840 10212			
		1	Radio Waves SP2-4.7 w/ Radome			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
91.0	91.0	3	Commscope LNX-6515DS-VTM	-	-	T-Mobile



Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
87.0	91.0	3	Ericsson AIR32 B66Aa/B2a	Low Profile Platform	(1) 1.58" Hybrid	T-Mobile
		3	Commscope LNX-6514DS-A1M			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	40%	Pass
Shaft	99%	Pass
Base Plate	74%	Pass
Flanges	23%	Pass
Reinforcement	100%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,735.5	94%
Axial (Kips)	31.4	13%
Shear (Kips)	25.1	4%

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) (°)
110.0	DragonWave A-ANT-23G-1-C	Clearwire	1.609	1.462
	DragonWave A-ANT-11G-2.5-C			
87.0	Ericsson AIR32 B66Aa/B2a	T-Mobile	1.042	1.284
	Commscope LNX-6514DS-A1M			
60.0	Radio Waves SP2-4.7 w/ Radome	Town of West Hartford	0.531	0.942

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



Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

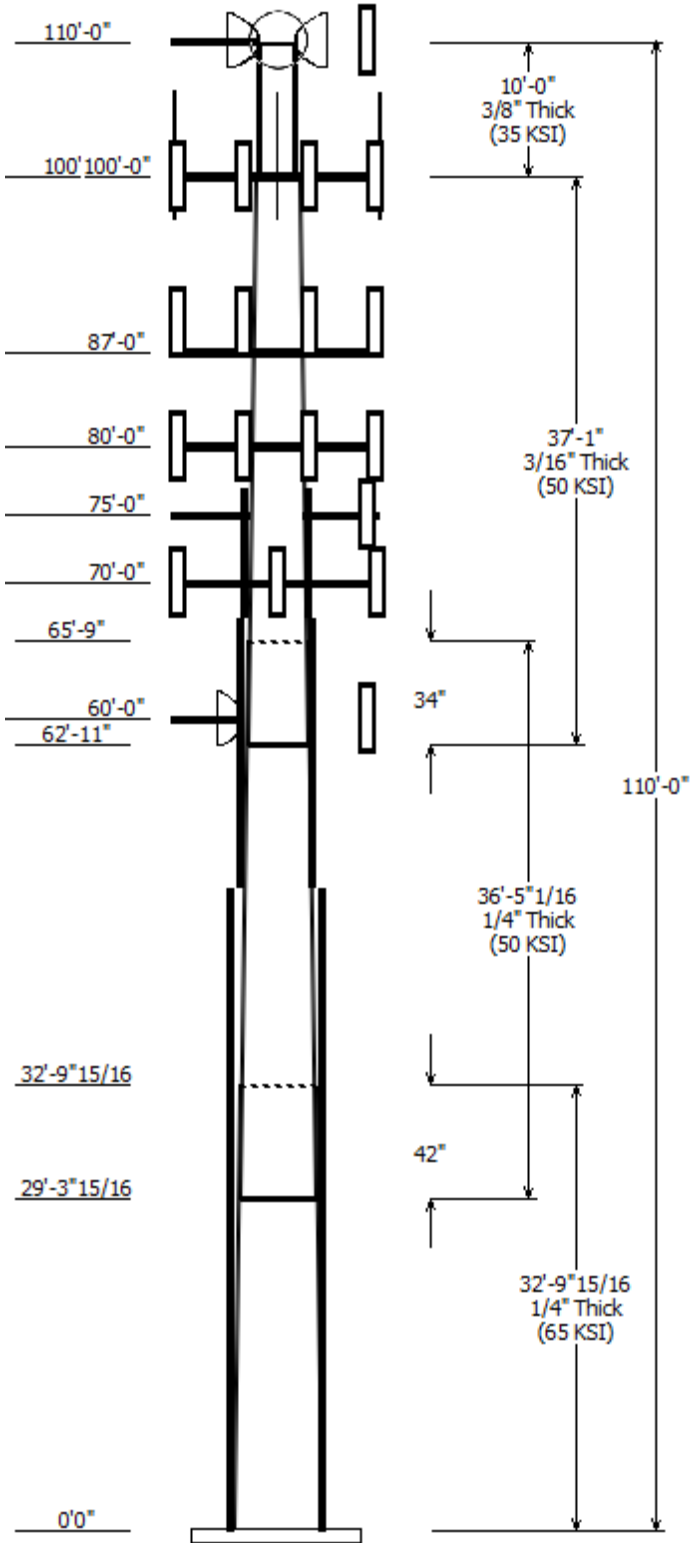
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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

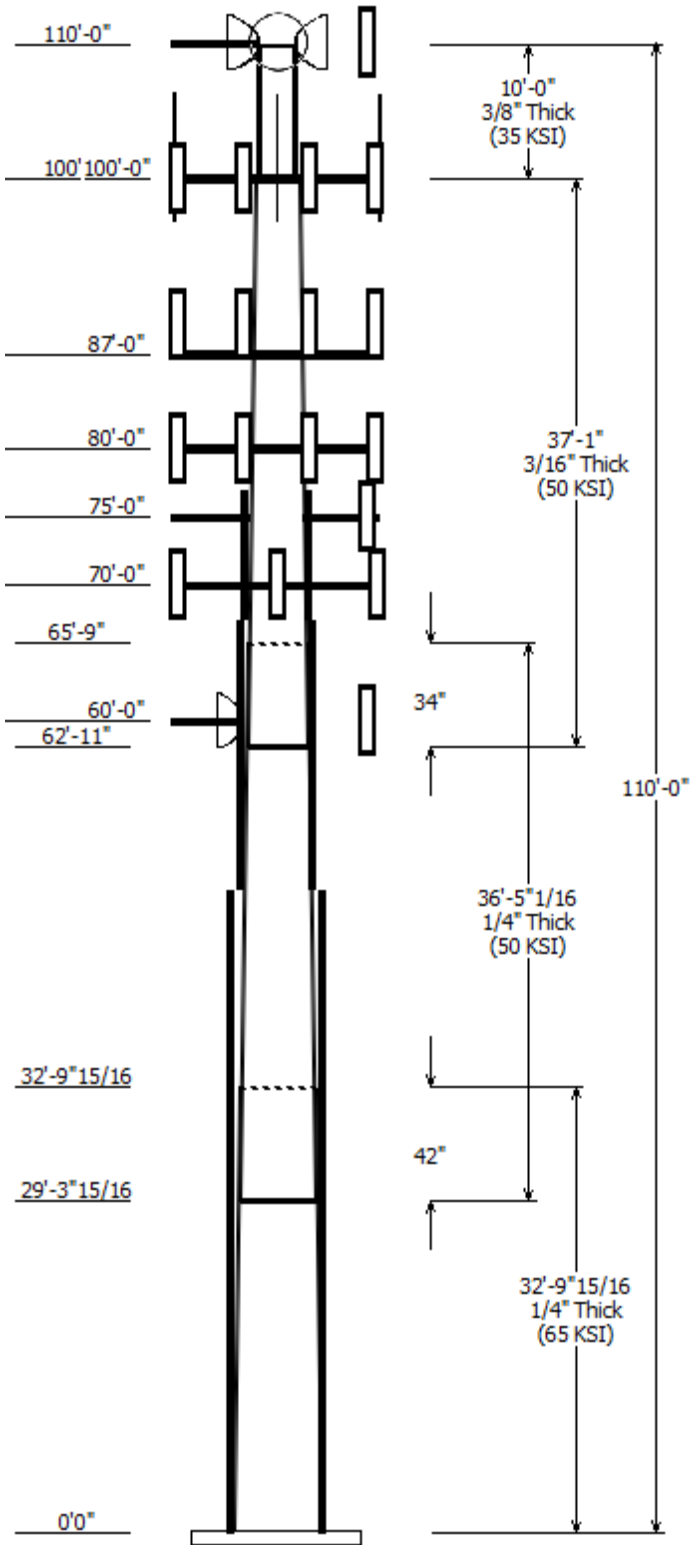
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Job Information	
Pole :	302481
Code :	ANSI/TIA-222-G
Description :	110 ft ITT Meyer Monopole
Client :	T-MOBILE
Struct Class :	II
Location :	Hrfr - South, CT
Shape :	12 Sides
Exposure :	B
Height :	110.00 (ft)
Topo :	4
Base Elev (ft):	0.00
Taper:	0.16400@in/ft)



Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Taper (in/ft)	Steel Grade (ksi)
		Accross Top	Flats Bottom					
1	32.830	24.62	30.00	0.250		0.000	0.163700	65
2	36.420	19.73	25.69	0.250	Slip Joint	42.000	0.163700	50
3	37.083	14.50	20.57	0.188	Slip Joint	34.000	0.163700	50
4	10.000	12.75	12.75	0.375	Butt Joint	0.000	0.000000	35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
110.000	110.000	1	DragonWave A-ANT-11G-2.5-C
110.000	110.000	3	DragonWave Horizon Compact
110.000	110.000	1	Side Arms
110.000	110.000	1	DragonWave A-ANT-23G-1-C
110.000	110.000	3	Argus LLPX310R
110.000	110.000	3	NextNet BTS-2500
110.000	110.000	1	DragonWave A-ANT-11G-2.5-C
110.000	110.000	1	12" x 12" Junction Box
100.000	100.000	6	CCI TPX-070821
100.000	105.000	1	10' Omni
100.000	100.000	1	CCI TPA-65R-LCUUUU-H8
100.000	100.000	2	Quintel QS66512-2
100.000	100.000	3	Ericsson RRUS 32 B2
100.000	100.000	6	Powerwave Allgon 7020.00
100.000	100.000	3	Ericsson RRUS-11
100.000	100.000	1	CCI OPA-65R-LCUU-H8
100.000	100.000	2	CCI OPA-65R-LCUU-H6
100.000	100.000	3	Ericsson RRUS-32
100.000	100.000	2	Raycap DC6-48-60-18-8F
100.000	100.000	3	Powerwave Allgon 7770.00
100.000	100.000	1	Flat Platform w/ Handrails
100.000	100.000	6	Powerwave LGP21401
87.000	91.000	3	Kathrein Smart Bias Tee
87.000	87.000	1	Flat Low Profile Platform
87.000	91.000	3	Commscope LNX-6514DS-A1M
87.000	91.000	3	RFS APX16DWV-16DWV-S-E-
87.000	91.000	3	Ericsson KRY 112 489/1
87.000	91.000	3	Ericsson KRY 112 144/1
87.000	91.000	3	Ericsson AIR32 B66Aa/B2a
80.000	80.000	1	Round Low Profile Platform
80.000	80.000	3	Alcatel-Lucent RRH2x60 700
80.000	80.000	3	Alcatel-Lucent RRH2X60-AWS
80.000	80.000	2	RFS DB-T1-6Z-8AB-0Z
80.000	80.000	6	Antel BXA-70063-6CF-EDIN-2
80.000	80.000	6	Antel BXA-171063-12CF-EDIN-5
75.000	75.000	2	Stand Offs
75.000	75.000	1	TX RX Systems 421-86A-10-18-
75.000	75.000	1	Scala 840 10212
70.000	70.000	3	Round Side Arms
70.000	70.000	3	72" x 6" Panel
60.000	60.000	1	Radio/ODU
60.000	60.000	1	Stand Off
60.000	60.000	1	Scala 840 10212
60.000	60.000	1	Radio Waves SP2-4.7 w/



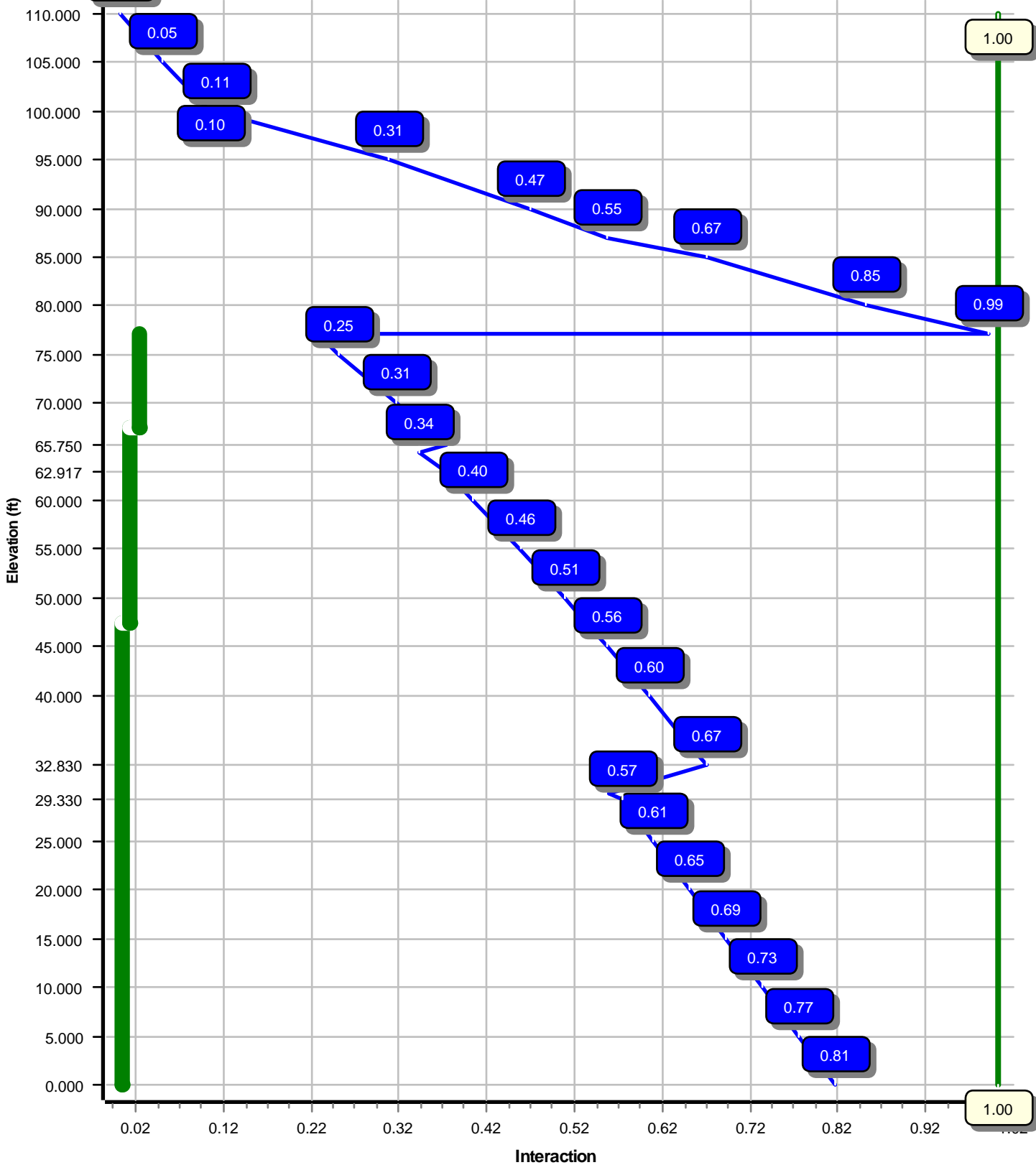
Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	60.000	1/4" Coax	Yes
0.000	60.000	7/8" Coax	Yes
0.000	70.000	1 5/8" Coax	Yes
0.000	75.000	7/8" Coax	Yes
0.000	80.000	1 5/8" Coax	Yes
0.000	80.000	1 5/8" Hybriflex	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	87.000	1 5/8" Coax	Yes
0.000	87.000	1.58" Hybrid	Yes
0.000	100.0	0.39" Fiber Trunk	No
0.000	100.0	0.78" 8 AWG 6	No
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Coax	Yes
0.000	100.0	3" Conduit	No
0.000	110.0	1/2" Coax	Yes
0.000	110.0	2" Conduit	Yes
0.000	110.0	5/16" Coax	No

Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	1735.48	25.08	31.36
0.9D + 1.6W	1704.62	24.98	23.50
1.2D + 1.0Di + 1.0Wi	513.53	6.91	83.71
(1.2 + 0.2Sds) * DL + E ELFM	94.87	1.08	31.18
(1.2 + 0.2Sds) * DL + E EMAM	110.70	1.26	31.18
(0.9 - 0.2Sds) * DL + E ELFM	93.23	1.08	21.68
(0.9 - 0.2Sds) * DL + E EMAM	108.65	1.26	21.68
1.0D + 1.0W	410.27	6.00	26.20

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	60.00	6.373	0.941
1.0D + 1.0W	110.00	19.309	1.463
1.0D + 1.0W	110.00	19.309	1.463
1.0D + 1.0W	110.00	19.309	1.463

Load Case : 1.2D + 1.6W
Max Ratio 98.81% at 77.0 ft



Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:29 AM

Customer: T-MOBILE

Analysis Parameters

Location:	HARTFORD County, CT	Height (ft):	110
Code:	ANSI/TIA-222-G	Base Diameter (in):	30.00
Shape:	12 Sides. Sect 4: Round	Top Diameter (in):	12.75
Pole Type:	Custom	Taper (in/ft) :	0.164
Pole Manufacturer:	ITT Meyer	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	4	Operational Wind Speed:	60 mph
Crest Height:	36.4 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.17		
T _L (sec):	6	p:	1.3
S _s :	0.181	S ₁ :	0.064
F _a :	1.600	F _v :	2.400
S _{ds} :	0.193	S _{d1} :	0.102
		C _s :	0.031
		C _s Max:	0.031
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:29 AM

Customer: T-MOBILE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top							
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)	
1-12	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	29.47	120.00	24.62	32.83	19.62	1487.9	23.71	98.50	0.163750	
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.49	1693.2	24.86	102.79	19.73	65.75	15.68	759.9	18.47	78.93	0.163750	
3-12	37.083	0.1875	50	Slip	34.00	1,322	20.57	62.92	12.31	652.8	26.72	109.72	14.50	100.00	8.64	225.9	18.04	77.33	0.163750	
4-R	10.000	0.3750	35	Butt	0.00	496	12.75	100.00	14.58	279.3	0.00	34.00	12.75	110.00	14.58	279.3	0.00	34.00	0.000000	
Shaft Weight						6,493														

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor		
110.00	12" x 12" Junction Box	1	10.00	1.400	0.50	83.53	1.828	0.50	0.000	0.000
110.00	Argus LLPX310R	3	28.60	4.290	0.63	178.50	5.481	0.63	0.000	0.000
110.00	DragonWave A-ANT-11G-2.5-	1	47.60	8.670	0.99	213.26	10.914	0.99	0.000	0.000
110.00	DragonWave A-ANT-11G-2.5-	1	47.60	8.670	0.57	213.26	10.914	0.57	0.000	0.000
110.00	DragonWave A-ANT-23G-1-C	1	15.00	1.610	0.64	60.90	2.594	0.64	0.000	0.000
110.00	DragonWave Horizon	3	10.60	0.430	0.50	54.59	0.772	0.50	0.000	0.000
110.00	NextNet BTS-2500	3	35.00	1.820	0.50	115.53	2.551	0.50	0.000	0.000
110.00	Side Arms	1	500.00	7.000	1.00	1,043.09	14.603	1.00	0.000	0.000
100.00	10' Omni	1	25.00	3.000	1.00	216.58	6.567	1.00	0.000	5.000
100.00	CCI OPA-65R-LCUU-H6	2	73.00	9.660	0.66	386.34	11.449	0.66	0.000	0.000
100.00	CCI OPA-65R-LCUU-H8	1	88.00	12.750	0.67	469.44	14.867	0.67	0.000	0.000
100.00	CCI TPA-65R-LCUUUU-H8	1	81.60	13.300	0.69	594.16	19.456	0.69	0.000	0.000
100.00	CCI TPX-070821	6	7.50	0.550	0.50	41.12	1.031	0.50	0.000	0.000
100.00	Ericsson RRUS 32 B2	3	53.00	2.740	0.50	174.38	3.704	0.50	0.000	0.000
100.00	Ericsson RRUS-11	3	50.00	2.570	0.50	162.11	3.424	0.50	0.000	0.000
100.00	Ericsson RRUS-32	3	77.00	3.310	0.50	202.47	4.964	0.50	0.000	0.000
100.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,833.54	69.457	1.00	0.000	0.000
100.00	Powerwave Allgon 7020.00	6	2.20	0.400	0.50	5.77	0.625	0.50	0.000	0.000
100.00	Powerwave Allgon 7770.00	3	35.00	5.510	0.65	220.58	6.897	0.65	0.000	0.000
100.00	Powerwave LGP21401	6	14.10	1.100	0.50	62.42	1.718	0.50	0.000	0.000
100.00	Quintel QS66512-2	2	111.00	8.130	0.74	418.48	9.835	0.74	0.000	0.000
100.00	Raycap DC6-48-60-18-8F	2	32.80	1.280	0.75	160.37	2.146	0.75	0.000	0.000
87.00	Commscope LNX-6514DS-	3	38.80	8.170	0.69	312.69	9.871	0.69	0.000	4.000
87.00	Ericsson AIR32 B66Aa/B2a	3	132.20	6.510	0.71	378.54	7.975	0.71	0.000	4.000
87.00	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	35.26	0.734	0.50	0.000	4.000
87.00	Ericsson KRY 112 489/1	3	15.40	0.650	0.50	51.14	1.026	0.50	0.000	4.000
87.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,329.49	50.543	1.00	0.000	0.000
87.00	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	14.23	0.312	0.50	0.000	4.000
87.00	RFS APX16DWV-16DWV-S-E-	3	39.60	6.080	0.60	216.28	7.482	0.60	0.000	4.000
80.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.50	167.11	2.966	0.50	0.000	0.000
80.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.50	138.50	2.654	0.50	0.000	0.000
80.00	Antel BXA-171063-12CF-EDIN-	6	12.80	4.800	0.72	178.78	6.394	0.72	0.000	0.000
80.00	Antel BXA-70063-6CF-EDIN-2	6	17.00	7.570	0.66	251.70	9.210	0.66	0.000	0.000
80.00	RFS DB-T1-6Z-8AB-OZ	2	44.00	4.800	0.50	235.83	5.932	0.50	0.000	0.000
80.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,325.80	46.171	1.00	0.000	0.000
75.00	Scala 840 10212	1	6.70	2.170	0.63	92.96	3.041	0.63	0.000	0.000
75.00	Stand Offs	2	75.00	2.500	1.00	121.47	3.739	1.00	0.000	0.000
75.00	TX RX Systems 421-86A-10-	1	15.00	2.220	0.67	85.93	3.016	0.67	0.000	0.000
70.00	72" x 6" Panel	3	40.00	4.700	0.69	870.04	20.015	0.69	0.000	0.000
70.00	Round Side Arms	3	100.00	4.000	0.67	161.86	6.651	0.67	0.000	0.000
60.00	Radio Waves SP2-4.7 w/	1	26.00	2.710	0.78	154.90	3.188	0.78	0.000	0.000
60.00	Radio/ODU	1	30.00	1.600	0.50	114.82	2.294	0.50	0.000	0.000
60.00	Scala 840 10212	1	6.70	2.170	0.63	92.43	3.036	0.63	0.000	0.000
60.00	Stand Off	1	75.00	2.500	1.00	121.27	4.152	1.00	0.000	0.000
Totals		108	9278.03			28,290.57			Number of Loadings : 44	

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:29 AM

Customer: T-MOBILE

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	110.00	3	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
0.00	110.00	1	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire
0.00	110.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	100.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	100.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N	3.96	Y	AT&T Mobility
0.00	100.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	87.00	18	1 5/8" Coax	1.98	0.82	N	1.12	Y	T-Mobile
0.00	87.00	1	1.58" Hybrid	1.58	1.61	N	0.00	Y	T-Mobile
0.00	81.00	4	#20 DYWIDAG	8.00	0.00	N	1.00	Y	--
0.00	80.00	12	1 5/8" Coax	1.98	0.82	N	0.00	Y	Verizon
0.00	80.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	Y	Verizon
0.00	75.00	1	7/8" Coax	1.09	0.33	N	0.00	Y	West Hartford
0.00	70.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Metro PCS
0.00	60.00	1	1/4" Coax	0.34	0.06	N	0.00	Y	West Hartford
0.00	60.00	1	7/8" Coax	1.09	0.33	N	0.00	Y	West Hartford

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	— Intermediate Connections —			Connectors	Continuation?
					Description	Spacing (in)	Len (in)			
0.00	47.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	39.0	3.31	5/8" A36 U-Bolt	Yes
47.50	67.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
67.50	77.04	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:29 AM

Customer: T-MOBILE

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	29.47	120.00	72.6	174.2	0.0	0.0	19.64	3,462	0.0
5.00		0.2500	29.181	23.290	2,488.2	28.60	116.72	73.5	164.7	0.0	401.9	19.64	3,308	334.0
10.00		0.2500	28.362	22.631	2,282.9	27.72	113.45	74.5	155.5	0.0	390.6	19.64	3,157	334.0
15.00		0.2500	27.544	21.971	2,089.2	26.84	110.18	75.4	146.5	0.0	379.4	19.64	3,010	334.0
20.00		0.2500	26.725	21.312	1,906.7	25.96	106.90	76.4	137.8	0.0	368.2	19.64	2,866	334.0
25.00		0.2500	25.906	20.653	1,735.2	25.09	103.63	77.4	129.4	0.0	357.0	19.64	2,726	334.0
29.33	Bot - Section 2	0.2500	25.197	20.083	1,595.3	24.33	100.79	78.2	122.3	0.0	300.1	19.64	2,607	289.2
30.00		0.2500	25.087	19.994	1,574.4	24.21	100.35	78.3	121.2	0.0	92.3	19.64	2,672	44.8
32.83	Top - Section 1	0.2500	25.124	20.024	1,581.3	24.25	100.50	62.7	121.6	0.0	385.4	19.64	2,595	189.0
35.00		0.2500	24.769	19.738	1,514.5	23.87	99.07	63.0	118.1	0.0	146.8	19.64	2,537	145.0
40.00		0.2500	23.950	19.078	1,367.8	22.99	95.80	63.0	110.3	0.0	330.2	19.64	2,405	334.0
45.00		0.2500	23.131	18.419	1,230.9	22.11	92.53	63.0	102.8	0.0	319.0	19.64	2,277	334.0
47.50	Reinf. Top Reinf	0.2500	22.722	18.090	1,166.0	21.67	90.89	63.0	99.1	0.0	155.3	19.64	2,214	167.0
50.00		0.2500	22.313	17.760	1,103.4	21.23	89.25	63.0	95.5	0.0	152.5	19.64	2,152	167.0
55.00		0.2500	21.494	17.101	985.1	20.36	85.97	63.0	88.5	0.0	296.6	19.64	2,031	334.0
60.00		0.2500	20.675	16.442	875.5	19.48	82.70	63.0	81.8	0.0	285.4	19.64	1,913	334.0
62.92	Bot - Section 3	0.2500	20.197	16.058	815.5	18.97	80.79	63.0	78.0	0.0	161.3	19.64	1,846	194.8
65.00		0.2500	19.856	15.783	774.4	18.60	79.43	63.0	75.3	0.0	199.4	19.64	1,850	139.2
65.75	Top - Section 2	0.1875	20.108	12.027	609.2	26.06	107.25	61.4	58.5	0.0	70.9	19.64	1,833	50.1
67.50	Reinf. Top Reinf	0.1875	19.822	11.854	583.3	25.65	105.72	61.7	56.8	0.0	71.1	19.64	1,794	116.9
70.00		0.1875	19.413	11.607	547.6	25.06	103.53	62.1	54.5	0.0	99.8	19.64	1,738	167.0
75.00		0.1875	18.594	11.113	480.6	23.89	99.17	63.0	49.9	0.0	193.3	19.64	1,629	334.0
77.04	Reinf. Top	0.1875	18.259	10.911	454.8	23.41	97.38	63.0	48.1	0.0	76.5	19.64	1,586	136.4
80.00		0.1875	17.775	10.618	419.2	22.72	94.80	63.0	45.6	0.0	108.4			
85.00		0.1875	16.956	10.124	363.4	21.55	90.43	63.0	41.4	0.0	176.5			
87.00		0.1875	16.629	9.926	342.5	21.08	88.69	63.0	39.8	0.0	68.2			
90.00		0.1875	16.138	9.630	312.7	20.38	86.07	63.0	37.4	0.0	99.8			
95.00		0.1875	15.319	9.135	267.0	19.21	81.70	63.0	33.7	0.0	159.6			
100.0	Top - Section 3	0.1875	14.500	8.641	225.9	18.04	77.33	63.0	30.1	0.0	151.2			
100.0	Bot - Section 4	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
105.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
110.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
											6,492.7		5,146.3	

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:29 AM

Customer: T-MOBILE

Load Case: 1.2D + 1.6W	97 mph with No Ice	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		542.1	0.0					0.0	0.0	542.1	0.0	0.0	0.0
5.00		999.3	482.2					265.0	753.3	1,264.3	1,235.5	0.0	0.0
10.00		849.7	468.8					236.6	753.3	1,086.2	1,222.0	0.0	0.0
15.00		734.9	455.3					214.6	753.3	949.4	1,208.6	0.0	0.0
20.00		645.5	441.9					197.4	753.3	842.9	1,195.1	0.0	0.0
25.00		540.1	428.4					183.9	753.3	724.0	1,181.7	0.0	0.0
29.33	Bot - Section 2	272.6	360.1					150.6	652.3	423.2	1,012.4	0.0	0.0
30.00		182.8	110.8					22.7	101.0	205.5	211.7	0.0	0.0
32.83	Top - Section 1	257.5	462.4					94.9	426.3	352.4	888.8	0.0	0.0
35.00		355.9	176.2					72.2	326.9	428.1	503.1	0.0	0.0
40.00		480.6	396.2					164.8	753.3	645.4	1,149.5	0.0	0.0
45.00		348.9	382.8					163.2	753.3	512.0	1,136.1	0.0	0.0
47.50	Reinf. Top Reinf	225.5	186.3					81.2	376.6	306.6	563.0	0.0	0.0
50.00		328.3	183.0					81.0	376.6	409.3	559.6	0.0	0.0
55.00		425.3	355.9					161.7	753.3	587.0	1,109.2	0.0	0.0
60.00	Appertunance(s)	326.7	342.4	259.4	0.0	0.0	165.2	161.7	753.3	747.8	1,260.9	0.0	0.0
62.92	Bot - Section 3	202.5	193.5					94.5	438.0	297.0	631.6	0.0	0.0
65.00		114.5	239.3					67.6	312.9	182.1	552.2	0.0	0.0
65.75	Top - Section 2	99.6	85.1					24.4	112.6	124.0	197.7	0.0	0.0
67.50	Reinf. Top Reinf	167.4	85.3					56.9	262.8	224.3	348.2	0.0	0.0
70.00	Appertunance(s)	288.3	119.8	610.7	0.0	0.0	504.0	81.5	375.5	980.5	999.2	0.0	0.0
75.00	Appertunance(s)	266.2	231.9	305.2	0.0	0.0	206.0	163.8	721.4	735.1	1,159.4	0.0	0.0
77.04	Reinf. Top	183.5	91.8					67.2	293.8	250.8	385.6	0.0	0.0
80.00	Appertunance(s)	284.5	130.0	2,777.9	0.0	0.0	2,482.7	97.8	188.5	3,160.1	2,801.3	0.0	0.0
85.00		245.5	211.7					150.6	244.0	396.1	455.7	0.0	0.0
87.00	Appertunance(s)	169.9	81.9	2,422.4	0.0	5,551.7	2,665.1	59.0	97.6	2,651.3	2,844.6	0.0	0.0
90.00		264.1	119.8					75.6	87.5	339.7	207.3	0.0	0.0
95.00		319.1	191.6					126.9	145.8	446.0	337.4	0.0	0.0
100.00	Top - Section 3	238.1	181.5	3,906.4	0.0	461.8	4,099.2	128.0	145.8	4,272.5	4,426.5	0.0	0.0
105.00		164.9	297.7					0.0	26.4	164.9	324.1	0.0	0.0
110.00	Appertunance(s)	82.9	297.7	1,177.4	0.0	0.0	1,011.4	0.0	26.4	1,260.2	1,335.4	0.0	0.0
Totals:										25,510.8	31,443.2	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

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Customer: T-MOBILE

Load Case: 1.2D + 1.6W

97 mph with No Ice

23 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-31.36	-25.08	0.00	-1,735.48	0.00	1,735.48	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.815
5.00	-29.97	-24.01	0.00	-1,610.10	0.00	1,610.10	1,541.15	770.57	1,839.28	908.35	0.21	-0.39	0.772
10.00	-28.60	-23.10	0.00	-1,490.05	0.00	1,490.05	1,517.03	758.51	1,758.81	868.61	0.82	-0.77	0.731
15.00	-27.27	-22.31	0.00	-1,374.55	0.00	1,374.55	1,491.77	745.88	1,678.72	829.06	1.82	-1.14	0.690
20.00	-25.95	-21.60	0.00	-1,263.02	0.00	1,263.02	1,465.38	732.69	1,599.10	789.74	3.22	-1.51	0.649
25.00	-24.67	-20.99	0.00	-1,155.01	0.00	1,155.01	1,437.85	718.93	1,520.09	750.71	4.99	-1.87	0.608
29.33	-23.61	-20.60	0.00	-1,064.14	0.00	1,064.14	1,413.10	706.55	1,452.23	717.20	6.83	-2.18	0.572
30.00	-23.37	-20.44	0.00	-1,050.33	0.00	1,050.33	1,409.19	704.59	1,441.78	712.04	7.14	-2.22	0.556
32.83	-22.43	-20.12	0.00	-992.50	0.00	992.50	1,130.07	565.03	1,157.93	571.86	8.52	-2.42	0.668
35.00	-21.87	-19.76	0.00	-948.85	0.00	948.85	1,119.12	559.56	1,130.17	558.15	9.65	-2.56	0.647
40.00	-20.65	-19.17	0.00	-850.07	0.00	850.07	1,081.75	540.88	1,055.58	521.31	12.51	-2.88	0.602
45.00	-19.47	-18.67	0.00	-754.24	0.00	754.24	1,044.38	522.19	983.54	485.73	15.69	-3.18	0.555
47.50	-18.88	-18.38	0.00	-707.56	0.00	707.56	1,025.69	512.85	948.47	468.42	17.39	-3.33	0.531
47.50	-18.88	-18.38	0.00	-707.56	0.00	707.56	1,025.69	512.85	948.47	468.42	17.39	-3.33	0.531
50.00	-18.28	-18.01	0.00	-661.60	0.00	661.60	1,007.01	503.50	914.04	451.41	19.18	-3.47	0.507
55.00	-17.13	-17.43	0.00	-571.57	0.00	571.57	969.64	484.82	847.10	418.35	22.96	-3.74	0.456
60.00	-15.87	-16.65	0.00	-484.42	0.00	484.42	932.27	466.13	782.69	386.54	27.02	-3.99	0.402
62.92	-15.22	-16.34	0.00	-435.86	0.00	435.86	910.47	455.23	746.30	368.57	29.50	-4.13	0.371
65.00	-14.67	-16.13	0.00	-401.82	0.00	401.82	894.90	447.45	720.84	355.99	31.32	-4.22	0.342
65.75	-14.47	-16.01	0.00	-389.72	0.00	389.72	664.38	332.19	545.54	269.42	31.99	-4.25	0.371
67.50	-14.11	-15.78	0.00	-361.70	0.00	361.70	658.03	329.02	532.49	262.98	33.56	-4.33	0.348
67.50	-14.11	-15.78	0.00	-361.70	0.00	361.70	658.03	329.02	532.49	262.98	33.56	-4.33	0.348
70.00	-13.15	-14.76	0.00	-322.25	0.00	322.25	648.81	324.41	513.97	253.83	35.85	-4.43	0.314
75.00	-12.03	-13.96	0.00	-248.45	0.00	248.45	629.79	314.90	477.45	235.80	40.59	-4.61	0.249
77.04	-11.65	-13.69	0.00	-219.94	0.00	219.94	618.65	309.32	460.40	227.38	42.57	-4.67	0.224
77.04	-11.65	-13.69	0.00	-219.94	0.00	219.94	618.65	309.32	460.40	227.38	42.57	-4.67	0.988
80.00	-9.06	-10.36	0.00	-179.43	0.00	179.43	602.07	301.03	435.93	215.29	45.49	-4.75	0.850
85.00	-8.58	-9.98	0.00	-127.61	0.00	127.61	574.04	287.02	396.08	195.61	50.76	-5.27	0.669
87.00	-5.97	-7.10	0.00	-102.09	0.00	102.09	562.83	281.41	380.68	188.00	53.00	-5.46	0.554
90.00	-5.76	-6.77	0.00	-80.80	0.00	80.80	546.01	273.01	358.14	176.87	56.50	-5.69	0.468
95.00	-5.45	-6.31	0.00	-46.97	0.00	46.97	517.98	258.99	322.12	159.08	62.62	-5.98	0.306
100.00	-1.50	-1.60	0.00	-14.96	0.00	14.96	489.95	244.98	288.00	142.23	68.97	-6.14	0.108
100.00	-1.50	-1.60	0.00	-14.96	0.00	14.96	459.24	229.62	229.69	150.79	68.97	-6.14	0.103
105.00	-1.19	-1.40	0.00	-6.99	0.00	6.99	459.24	229.62	229.69	150.79	75.43	-6.21	0.049
110.00	0.00	-1.26	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	81.94	-6.23	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:31 AM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		542.1	0.0					0.0	0.0	542.1	0.0	0.0	0.0
5.00		999.3	361.7					265.0	565.0	1,264.3	926.6	0.0	0.0
10.00		849.7	351.6					236.6	565.0	1,086.2	916.5	0.0	0.0
15.00		734.9	341.5					214.6	565.0	949.4	906.4	0.0	0.0
20.00		645.5	331.4					197.4	565.0	842.9	896.4	0.0	0.0
25.00		540.1	321.3					183.9	565.0	724.0	886.3	0.0	0.0
29.33	Bot - Section 2	272.6	270.1					150.6	489.2	423.2	759.3	0.0	0.0
30.00		182.8	83.1					22.7	75.7	205.5	158.8	0.0	0.0
32.83	Top - Section 1	257.5	346.8					94.9	319.8	352.4	666.6	0.0	0.0
35.00		355.9	132.1					72.2	245.2	428.1	377.3	0.0	0.0
40.00		480.6	297.2					164.8	565.0	645.4	862.1	0.0	0.0
45.00		348.9	287.1					163.2	565.0	512.0	852.1	0.0	0.0
47.50	Reinf. Top Reinf	225.5	139.8					81.2	282.5	306.6	422.2	0.0	0.0
50.00		328.3	137.2					81.0	282.5	409.3	419.7	0.0	0.0
55.00		425.3	266.9					161.7	565.0	587.0	831.9	0.0	0.0
60.00	Appertunance(s)	326.7	256.8	259.4	0.0	0.0	123.9	161.7	565.0	747.8	945.7	0.0	0.0
62.92	Bot - Section 3	202.5	145.1					94.5	328.5	297.0	473.7	0.0	0.0
65.00		114.5	179.5					67.6	234.7	182.1	414.1	0.0	0.0
65.75	Top - Section 2	99.6	63.8					24.4	84.5	124.0	148.3	0.0	0.0
67.50	Reinf. Top Reinf	167.4	64.0					56.9	197.1	224.3	261.1	0.0	0.0
70.00	Appertunance(s)	288.3	89.8	610.7	0.0	0.0	378.0	81.5	281.6	980.5	749.4	0.0	0.0
75.00	Appertunance(s)	266.2	173.9	305.2	0.0	0.0	154.5	163.8	541.1	735.1	869.5	0.0	0.0
77.04	Reinf. Top	183.5	68.9					67.2	220.3	250.8	289.2	0.0	0.0
80.00	Appertunance(s)	284.5	97.5	2,777.9	0.0	0.0	1,862.0	97.8	141.4	3,160.1	2,100.9	0.0	0.0
85.00		245.5	158.8					150.6	183.0	396.1	341.8	0.0	0.0
87.00	Appertunance(s)	169.9	61.4	2,422.4	0.0	5,551.7	1,998.8	59.0	73.2	2,651.3	2,133.4	0.0	0.0
90.00		264.1	89.8					75.6	65.6	339.7	155.4	0.0	0.0
95.00		319.1	143.7					126.9	109.3	446.0	253.0	0.0	0.0
100.00	Top - Section 3	221.1	136.1	3,906.4	0.0	461.8	3,074.4	128.0	109.3	4,255.5	3,319.8	0.0	0.0
105.00		130.9	223.2					0.0	19.8	130.9	243.0	0.0	0.0
110.00	Appertunance(s)	65.8	223.2	1,177.4	0.0	0.0	758.5	0.0	19.8	1,243.1	1,001.6	0.0	0.0
Totals:										25,442.7	23,582.4	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:34 AM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-23.50	-24.98	0.00	-1,704.62	0.00	1,704.62	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.798
5.00	-22.42	-23.86	0.00	-1,579.72	0.00	1,579.72	1,541.15	770.57	1,839.28	908.35	0.21	-0.38	0.755
10.00	-21.37	-22.90	0.00	-1,460.42	0.00	1,460.42	1,517.03	758.51	1,758.81	868.61	0.80	-0.75	0.714
15.00	-20.34	-22.07	0.00	-1,345.91	0.00	1,345.91	1,491.77	745.88	1,678.72	829.06	1.79	-1.12	0.673
20.00	-19.33	-21.33	0.00	-1,235.56	0.00	1,235.56	1,465.38	732.69	1,599.10	789.74	3.16	-1.48	0.633
25.00	-18.34	-20.68	0.00	-1,128.93	0.00	1,128.93	1,437.85	718.93	1,520.09	750.71	4.90	-1.83	0.592
29.33	-17.54	-20.28	0.00	-1,039.39	0.00	1,039.39	1,413.10	706.55	1,452.23	717.20	6.70	-2.13	0.557
30.00	-17.35	-20.11	0.00	-1,025.79	0.00	1,025.79	1,409.19	704.59	1,441.78	712.04	7.00	-2.18	0.541
32.83	-16.64	-19.78	0.00	-968.89	0.00	968.89	1,130.07	565.03	1,157.93	571.86	8.35	-2.37	0.650
35.00	-16.20	-19.40	0.00	-925.96	0.00	925.96	1,119.12	559.56	1,130.17	558.15	9.46	-2.51	0.629
40.00	-15.27	-18.80	0.00	-828.97	0.00	828.97	1,081.75	540.88	1,055.58	521.31	12.25	-2.82	0.585
45.00	-14.38	-18.29	0.00	-734.99	0.00	734.99	1,044.38	522.19	983.54	485.73	15.37	-3.11	0.539
47.50	-13.93	-18.00	0.00	-689.25	0.00	689.25	1,025.69	512.85	948.47	468.42	17.03	-3.26	0.515
47.50	-13.93	-18.00	0.00	-689.25	0.00	689.25	1,025.69	512.85	948.47	468.42	17.03	-3.26	0.515
50.00	-13.47	-17.61	0.00	-644.25	0.00	644.25	1,007.01	503.50	914.04	451.41	18.78	-3.40	0.491
55.00	-12.60	-17.03	0.00	-556.18	0.00	556.18	969.64	484.82	847.10	418.35	22.48	-3.66	0.442
60.00	-11.66	-16.26	0.00	-471.01	0.00	471.01	932.27	466.13	782.69	386.54	26.44	-3.90	0.389
62.92	-11.17	-15.96	0.00	-423.58	0.00	423.58	910.47	455.23	746.30	368.57	28.87	-4.03	0.359
65.00	-10.76	-15.76	0.00	-390.34	0.00	390.34	894.90	447.45	720.84	355.99	30.65	-4.13	0.330
65.75	-10.60	-15.63	0.00	-378.53	0.00	378.53	664.38	332.19	545.54	269.42	31.30	-4.16	0.359
67.50	-10.34	-15.40	0.00	-351.17	0.00	351.17	658.03	329.02	532.49	262.98	32.83	-4.23	0.336
67.50	-10.34	-15.40	0.00	-351.17	0.00	351.17	658.03	329.02	532.49	262.98	32.83	-4.23	0.336
70.00	-9.63	-14.39	0.00	-312.66	0.00	312.66	648.81	324.41	513.97	253.83	35.07	-4.33	0.302
75.00	-8.79	-13.61	0.00	-240.70	0.00	240.70	629.79	314.90	477.45	235.80	39.70	-4.50	0.239
77.04	-8.50	-13.35	0.00	-212.91	0.00	212.91	618.65	309.32	460.40	227.38	41.64	-4.56	0.215
77.04	-8.50	-13.35	0.00	-212.91	0.00	212.91	618.65	309.32	460.40	227.38	41.64	-4.56	0.952
80.00	-6.61	-10.07	0.00	-173.42	0.00	173.42	602.07	301.03	435.93	215.29	44.49	-4.64	0.818
85.00	-6.25	-9.68	0.00	-123.10	0.00	123.10	574.04	287.02	396.08	195.61	49.62	-5.14	0.641
87.00	-4.34	-6.86	0.00	-98.19	0.00	98.19	562.83	281.41	380.68	188.00	51.81	-5.32	0.531
90.00	-4.19	-6.52	0.00	-77.62	0.00	77.62	546.01	273.01	358.14	176.87	55.22	-5.54	0.447
95.00	-3.96	-6.07	0.00	-45.00	0.00	45.00	517.98	258.99	322.12	159.08	61.18	-5.82	0.291
100.00	-1.09	-1.50	0.00	-14.19	0.00	14.19	489.95	244.98	288.00	142.23	67.36	-5.98	0.102
100.00	-1.09	-1.50	0.00	-14.19	0.00	14.19	459.24	229.62	229.69	150.79	67.36	-5.98	0.097
105.00	-0.86	-1.34	0.00	-6.71	0.00	6.71	459.24	229.62	229.69	150.79	73.65	-6.04	0.046
110.00	0.00	-1.24	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	79.98	-6.06	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:34 AM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	23 Iterations
Gust Response Factor : 1.10	Ice Dead Load Factor : 1.00	Wind Importance Factor : 1.00
Dead Load Factor : 1.20		Ice Importance Factor : 1.00
Wind Load Factor : 1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		102.6	0.0					0.0	0.0	102.6	0.0	0.0	0.0
5.00		190.0	914.1					150.0	2,327.8	340.0	3,241.9	0.0	0.0
10.00		162.9	917.2					135.5	2,435.8	298.4	3,353.0	0.0	0.0
15.00		141.5	895.4					120.3	2,450.4	261.9	3,345.8	0.0	0.0
20.00		124.7	868.1					107.9	2,443.4	232.6	3,311.5	0.0	0.0
25.00		104.7	839.6					98.0	2,430.6	202.7	3,270.2	0.0	0.0
29.33	Bot - Section 2	52.9	704.7					78.6	2,094.2	131.5	2,798.9	0.0	0.0
30.00		35.5	164.7					11.7	323.3	47.2	488.0	0.0	0.0
32.83	Top - Section 1	50.1	685.7					49.0	1,363.1	99.1	2,048.9	0.0	0.0
35.00		69.4	344.7					37.2	1,043.1	106.7	1,387.8	0.0	0.0
40.00		94.1	771.4					84.8	2,397.3	178.8	3,168.6	0.0	0.0
45.00		68.5	744.8					83.7	2,390.9	152.3	3,135.7	0.0	0.0
47.50	Reinf. Top Reinf	44.5	364.1					41.6	1,193.9	86.1	1,557.9	0.0	0.0
50.00		65.0	357.6					41.5	1,193.2	106.5	1,550.8	0.0	0.0
55.00		84.6	693.2					82.8	2,385.2	167.4	3,078.4	0.0	0.0
60.00	Appertunance(s)	65.3	668.1	61.6	0.0	0.0	484.5	82.8	2,385.2	209.7	3,537.7	0.0	0.0
62.92	Bot - Section 3	40.6	379.6					48.4	1,348.4	89.0	1,728.1	0.0	0.0
65.00		23.0	372.5					34.6	963.7	57.6	1,336.2	0.0	0.0
65.75	Top - Section 2	20.1	132.8					12.5	347.0	32.6	479.8	0.0	0.0
67.50	Reinf. Top Reinf	33.8	195.3					29.2	810.0	63.0	1,005.3	0.0	0.0
70.00	Appertunance(s)	58.5	274.0	298.1	0.0	0.0	2,904.0	41.8	1,157.7	398.4	4,335.8	0.0	0.0
75.00	Appertunance(s)	54.2	529.3	73.6	0.0	0.0	606.2	84.1	2,146.7	212.0	3,282.2	0.0	0.0
77.04	Reinf. Top	37.7	211.5					34.6	860.5	72.2	1,072.0	0.0	0.0
80.00	Appertunance(s)	58.8	299.6	708.3	0.0	0.0	6,511.0	50.3	1,011.0	817.4	7,821.6	0.0	0.0
85.00		51.0	487.3					71.5	983.0	122.5	1,470.3	0.0	0.0
87.00	Appertunance(s)	35.6	190.5	619.1	0.0	1,145.8	5,598.1	27.4	360.7	682.1	6,149.3	0.0	0.0
90.00		55.7	278.7					30.2	234.1	86.0	512.8	0.0	0.0
95.00		68.0	445.3					50.9	391.0	118.8	836.3	0.0	0.0
100.00	Top - Section 3	62.7	424.3	951.4	0.0	167.9	9,715.9	51.5	392.1	1,065.6	10,532.3	0.0	0.0
105.00		58.9	504.2					0.0	128.8	58.9	633.0	0.0	0.0
110.00	Appertunance(s)	29.6	505.1	293.1	0.0	0.0	2,616.6	0.0	129.4	322.7	3,251.0	0.0	0.0
Totals:										6,922.31	83,720.8	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:36 AM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

23 Iterations

Gust Response Factor : 1.10

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-83.71	-6.91	0.00	-513.53	0.00	513.53	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.267
5.00	-80.46	-6.72	0.00	-479.00	0.00	479.00	1,541.15	770.57	1,839.28	908.35	0.06	-0.11	0.255
10.00	-77.09	-6.57	0.00	-445.40	0.00	445.40	1,517.03	758.51	1,758.81	868.61	0.24	-0.23	0.242
15.00	-73.74	-6.43	0.00	-412.57	0.00	412.57	1,491.77	745.88	1,678.72	829.06	0.54	-0.34	0.230
20.00	-70.42	-6.31	0.00	-380.42	0.00	380.42	1,465.38	732.69	1,599.10	789.74	0.96	-0.45	0.218
25.00	-67.14	-6.20	0.00	-348.87	0.00	348.87	1,437.85	718.93	1,520.09	750.71	1.49	-0.56	0.205
29.33	-64.33	-6.09	0.00	-322.05	0.00	322.05	1,413.10	706.55	1,452.23	717.20	2.04	-0.65	0.194
30.00	-63.84	-6.08	0.00	-317.96	0.00	317.96	1,409.19	704.59	1,441.78	712.04	2.13	-0.67	0.188
32.83	-61.79	-6.01	0.00	-300.75	0.00	300.75	1,130.07	565.03	1,157.93	571.86	2.55	-0.73	0.227
35.00	-60.40	-5.96	0.00	-287.70	0.00	287.70	1,119.12	559.56	1,130.17	558.15	2.89	-0.77	0.220
40.00	-57.22	-5.83	0.00	-257.89	0.00	257.89	1,081.75	540.88	1,055.58	521.31	3.74	-0.87	0.206
45.00	-54.08	-5.69	0.00	-228.72	0.00	228.72	1,044.38	522.19	983.54	485.73	4.70	-0.96	0.190
47.50	-52.52	-5.62	0.00	-214.48	0.00	214.48	1,025.69	512.85	948.47	468.42	5.21	-1.00	0.183
47.50	-52.52	-5.62	0.00	-214.48	0.00	214.48	1,025.69	512.85	948.47	468.42	5.21	-1.00	0.183
50.00	-50.97	-5.54	0.00	-200.43	0.00	200.43	1,007.01	503.50	914.04	451.41	5.75	-1.05	0.175
55.00	-47.88	-5.38	0.00	-172.71	0.00	172.71	969.64	484.82	847.10	418.35	6.89	-1.13	0.158
60.00	-44.35	-5.15	0.00	-145.78	0.00	145.78	932.27	466.13	782.69	386.54	8.11	-1.20	0.140
62.92	-42.62	-5.05	0.00	-130.77	0.00	130.77	910.47	455.23	746.30	368.57	8.86	-1.24	0.130
65.00	-41.28	-4.97	0.00	-120.26	0.00	120.26	894.90	447.45	720.84	355.99	9.41	-1.27	0.120
65.75	-40.80	-4.94	0.00	-116.53	0.00	116.53	664.38	332.19	545.54	269.42	9.61	-1.28	0.131
67.50	-39.79	-4.87	0.00	-107.88	0.00	107.88	658.03	329.02	532.49	262.98	10.08	-1.30	0.124
67.50	-39.79	-4.87	0.00	-107.88	0.00	107.88	658.03	329.02	532.49	262.98	10.08	-1.30	0.124
70.00	-35.47	-4.40	0.00	-95.70	0.00	95.70	648.81	324.41	513.97	253.83	10.78	-1.33	0.111
75.00	-32.19	-4.13	0.00	-73.69	0.00	73.69	629.79	314.90	477.45	235.80	12.20	-1.39	0.090
77.04	-31.12	-4.05	0.00	-65.25	0.00	65.25	618.65	309.32	460.40	227.38	12.80	-1.40	0.082
77.04	-31.12	-4.05	0.00	-65.25	0.00	65.25	618.65	309.32	460.40	227.38	12.80	-1.40	0.337
80.00	-23.31	-3.07	0.00	-53.28	0.00	53.28	602.07	301.03	435.93	215.29	13.68	-1.43	0.286
85.00	-21.84	-2.95	0.00	-37.92	0.00	37.92	574.04	287.02	396.08	195.61	15.26	-1.58	0.232
87.00	-15.71	-2.11	0.00	-30.88	0.00	30.88	562.83	281.41	380.68	188.00	15.94	-1.64	0.192
90.00	-15.20	-2.03	0.00	-24.54	0.00	24.54	546.01	273.01	358.14	176.87	16.99	-1.71	0.167
95.00	-14.36	-1.91	0.00	-14.38	0.00	14.38	517.98	258.99	322.12	159.08	18.83	-1.80	0.118
100.00	-3.87	-0.51	0.00	-4.68	0.00	4.68	489.95	244.98	288.00	142.23	20.74	-1.85	0.041
100.00	-3.87	-0.51	0.00	-4.68	0.00	4.68	459.24	229.62	229.69	150.79	20.74	-1.85	0.039
105.00	-3.24	-0.43	0.00	-2.14	0.00	2.14	459.24	229.62	229.69	150.79	22.69	-1.87	0.021
110.00	0.00	-0.32	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	24.65	-1.87	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:36 AM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		129.6	0.0					0.0	0.0	129.6	0.0	0.0	0.0
5.00		239.0	401.9					71.6	627.7	310.6	1,029.6	0.0	0.0
10.00		203.2	390.6					62.1	627.7	265.3	1,018.4	0.0	0.0
15.00		175.7	379.4					54.9	627.7	230.6	1,007.2	0.0	0.0
20.00		154.4	368.2					49.3	627.7	203.7	995.9	0.0	0.0
25.00		129.2	357.0					45.0	627.7	174.2	984.7	0.0	0.0
29.33	Bot - Section 2	65.2	300.1					36.2	543.6	101.4	843.7	0.0	0.0
30.00		43.7	92.3					5.4	84.1	49.1	176.4	0.0	0.0
32.83	Top - Section 1	61.6	385.4					22.7	355.3	84.3	740.6	0.0	0.0
35.00		85.1	146.8					17.3	272.4	102.4	419.3	0.0	0.0
40.00		114.9	330.2					39.4	627.7	154.3	957.9	0.0	0.0
45.00		83.4	319.0					39.0	627.7	122.4	946.7	0.0	0.0
47.50	Reinf. Top Reinf	53.9	155.3					19.4	313.9	73.3	469.2	0.0	0.0
50.00		78.5	152.5					19.4	313.9	97.9	466.4	0.0	0.0
55.00		101.7	296.6					38.7	627.7	140.4	924.3	0.0	0.0
60.00	Appertunance(s)	78.1	285.4	62.0	0.0	0.0	137.7	38.7	627.7	178.8	1,050.8	0.0	0.0
62.92	Bot - Section 3	48.4	161.3					22.6	365.0	71.0	526.3	0.0	0.0
65.00		27.4	199.4					16.2	260.8	43.5	460.1	0.0	0.0
65.75	Top - Section 2	23.8	70.9					5.8	93.9	29.6	164.8	0.0	0.0
67.50	Reinf. Top Reinf	40.0	71.1					13.6	219.0	53.6	290.1	0.0	0.0
70.00	Appertunance(s)	68.9	99.8	146.0	0.0	0.0	420.0	19.5	312.9	234.5	832.7	0.0	0.0
75.00	Appertunance(s)	63.7	193.3	73.0	0.0	0.0	171.7	39.2	601.2	175.8	966.2	0.0	0.0
77.04	Reinf. Top	43.9	76.5					16.1	244.8	60.0	321.3	0.0	0.0
80.00	Appertunance(s)	68.0	108.4	664.3	0.0	0.0	2,068.9	23.4	157.1	755.7	2,334.4	0.0	0.0
85.00		58.7	176.5					36.0	203.3	94.7	379.8	0.0	0.0
87.00	Appertunance(s)	40.6	68.2	579.3	0.0	1,327.6	2,220.9	14.1	81.3	634.0	2,370.5	0.0	0.0
90.00		63.2	99.8					18.1	72.9	81.2	172.7	0.0	0.0
95.00		76.3	159.6					30.4	121.5	106.7	281.1	0.0	0.0
100.00	Top - Section 3	52.9	151.2	934.1	0.0	110.4	3,416.0	30.7	121.5	1,017.7	3,688.7	0.0	0.0
105.00		31.3	248.0					0.0	22.0	31.3	270.0	0.0	0.0
110.00	Appertunance(s)	15.7	248.0	281.6	0.0	0.0	842.8	0.0	22.0	297.3	1,112.8	0.0	0.0
Totals:										6,104.96	26,202.7	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:39 AM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.20	-6.00	0.00	-410.27	0.00	410.27	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.199
5.00	-25.16	-5.72	0.00	-380.29	0.00	380.29	1,541.15	770.57	1,839.28	908.35	0.05	-0.09	0.189
10.00	-24.13	-5.49	0.00	-351.67	0.00	351.67	1,517.03	758.51	1,758.81	868.61	0.19	-0.18	0.178
15.00	-23.12	-5.30	0.00	-324.20	0.00	324.20	1,491.77	745.88	1,678.72	829.06	0.43	-0.27	0.168
20.00	-22.12	-5.12	0.00	-297.72	0.00	297.72	1,465.38	732.69	1,599.10	789.74	0.76	-0.36	0.158
25.00	-21.13	-4.97	0.00	-272.12	0.00	272.12	1,437.85	718.93	1,520.09	750.71	1.18	-0.44	0.149
29.33	-20.28	-4.87	0.00	-250.62	0.00	250.62	1,413.10	706.55	1,452.23	717.20	1.61	-0.51	0.140
30.00	-20.10	-4.83	0.00	-247.35	0.00	247.35	1,409.19	704.59	1,441.78	712.04	1.69	-0.52	0.136
32.83	-19.36	-4.75	0.00	-233.68	0.00	233.68	1,130.07	565.03	1,157.93	571.86	2.01	-0.57	0.163
35.00	-18.94	-4.67	0.00	-223.36	0.00	223.36	1,119.12	559.56	1,130.17	558.15	2.28	-0.60	0.158
40.00	-17.97	-4.52	0.00	-200.03	0.00	200.03	1,081.75	540.88	1,055.58	521.31	2.95	-0.68	0.147
45.00	-17.02	-4.41	0.00	-177.41	0.00	177.41	1,044.38	522.19	983.54	485.73	3.70	-0.75	0.136
47.50	-16.55	-4.34	0.00	-166.40	0.00	166.40	1,025.69	512.85	948.47	468.42	4.10	-0.78	0.130
47.50	-16.55	-4.34	0.00	-166.40	0.00	166.40	1,025.69	512.85	948.47	468.42	4.10	-0.78	0.130
50.00	-16.09	-4.25	0.00	-155.56	0.00	155.56	1,007.01	503.50	914.04	451.41	4.52	-0.82	0.124
55.00	-15.16	-4.11	0.00	-134.33	0.00	134.33	969.64	484.82	847.10	418.35	5.42	-0.88	0.112
60.00	-14.11	-3.92	0.00	-113.80	0.00	113.80	932.27	466.13	782.69	386.54	6.37	-0.94	0.099
62.92	-13.58	-3.85	0.00	-102.36	0.00	102.36	910.47	455.23	746.30	368.57	6.96	-0.97	0.092
65.00	-13.12	-3.80	0.00	-94.34	0.00	94.34	894.90	447.45	720.84	355.99	7.39	-0.99	0.085
65.75	-12.96	-3.77	0.00	-91.49	0.00	91.49	664.38	332.19	545.54	269.42	7.55	-1.00	0.092
67.50	-12.67	-3.72	0.00	-84.89	0.00	84.89	658.03	329.02	532.49	262.98	7.92	-1.02	0.087
67.50	-12.67	-3.72	0.00	-84.89	0.00	84.89	658.03	329.02	532.49	262.98	7.92	-1.02	0.087
70.00	-11.83	-3.47	0.00	-75.59	0.00	75.59	648.81	324.41	513.97	253.83	8.46	-1.04	0.078
75.00	-10.87	-3.29	0.00	-58.22	0.00	58.22	629.79	314.90	477.45	235.80	9.57	-1.08	0.063
77.04	-10.55	-3.22	0.00	-51.51	0.00	51.51	618.65	309.32	460.40	227.38	10.04	-1.10	0.057
77.04	-10.55	-3.22	0.00	-51.51	0.00	51.51	618.65	309.32	460.40	227.38	10.04	-1.10	0.244
80.00	-8.23	-2.43	0.00	-41.97	0.00	41.97	602.07	301.03	435.93	215.29	10.73	-1.12	0.209
85.00	-7.85	-2.34	0.00	-29.81	0.00	29.81	574.04	287.02	396.08	195.61	11.97	-1.24	0.166
87.00	-5.49	-1.66	0.00	-23.80	0.00	23.80	562.83	281.41	380.68	188.00	12.50	-1.28	0.136
90.00	-5.32	-1.58	0.00	-18.82	0.00	18.82	546.01	273.01	358.14	176.87	13.32	-1.34	0.116
95.00	-5.04	-1.47	0.00	-10.92	0.00	10.92	517.98	258.99	322.12	159.08	14.76	-1.40	0.078
100.00	-1.37	-0.36	0.00	-3.44	0.00	3.44	489.95	244.98	288.00	142.23	16.26	-1.44	0.027
100.00	-1.37	-0.36	0.00	-3.44	0.00	3.44	459.24	229.62	229.69	150.79	16.26	-1.44	0.026
105.00	-1.10	-0.33	0.00	-1.63	0.00	1.63	459.24	229.62	229.69	150.79	17.78	-1.46	0.013
110.00	0.00	-0.30	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	19.31	-1.46	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:39 AM

Customer: T-MOBILE

Equivalent Lateral Forces Method Analysis

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

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):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.17
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.83
Total Unfactored Dead Load:	26.20 k
Seismic Base Shear (E):	1.07 k

Load Case $(1.2 + 0.2S_{ds}) * DL + E$ ELFM

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
30	107.50	270	1,440	0.024	26	334
29	102.50	270	1,319	0.022	24	334
28	97.50	273	1,215	0.020	22	338
27	92.50	281	1,138	0.019	21	348
26	88.50	173	644	0.011	12	214
25	86.00	150	529	0.009	10	185
24	82.50	380	1,246	0.021	22	470
23	78.52	265	795	0.013	14	329
22	76.02	321	907	0.015	16	398
21	72.50	794	2,056	0.035	37	984
20	68.75	413	969	0.016	17	511
19	66.62	290	643	0.011	12	359
18	65.37	165	353	0.006	6	204
17	63.96	460	946	0.016	17	570
16	61.46	526	1,006	0.017	18	652
15	57.50	913	1,544	0.026	28	1,131
14	52.50	924	1,323	0.022	24	1,145
13	48.75	466	583	0.010	11	578
12	46.25	469	532	0.009	10	581
11	42.50	947	920	0.015	17	1,173
10	37.50	958	740	0.012	13	1,187
9	33.91	419	269	0.005	5	519
8	31.41	741	413	0.007	7	917

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Site Name: Hrfr - South, CT

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Customer: T-MOBILE

7	29.66	176	89	0.001	2	219
6	27.16	844	361	0.006	7	1,045
5	22.50	985	298	0.005	5	1,220
4	17.50	996	190	0.003	3	1,234
3	12.50	1,007	104	0.002	2	1,247
2	7.50	1,018	41	0.001	1	1,261
1	2.50	1,030	6	0.000	0	1,275
DragonWave Horizon C	110.00	32	177	0.003	3	39
12" x 12" Junction B	110.00	10	56	0.001	1	12
DragonWave A-ANT-23G	110.00	15	83	0.001	2	19
NextNet BTS-2500	110.00	105	584	0.010	11	130
Argus LLPX310R	110.00	86	477	0.008	9	106
Side Arms	110.00	500	2,780	0.047	50	619
DragonWave A-ANT-11G	110.00	48	265	0.004	5	59
DragonWave A-ANT-11G	110.00	48	265	0.004	5	59
Powerwave Allgon 702	100.00	13	62	0.001	1	16
CCI TPX-070821	100.00	45	210	0.004	4	56
Powerwave LGP21401	100.00	85	395	0.007	7	105
Raycap DC6-48-60-18-	100.00	66	306	0.005	6	81
Ericsson RRUS-11	100.00	150	700	0.012	13	186
Ericsson RRUS 32 B2	100.00	159	742	0.012	13	197
10' Omni	100.00	25	117	0.002	2	31
Ericsson RRUS-32	100.00	231	1,078	0.018	19	286
Powerwave Allgon 777	100.00	105	490	0.008	9	130
Quintel QS66512-2	100.00	222	1,036	0.017	19	275
CCI OPA-65R-LCUU-H6	100.00	146	682	0.011	12	181
CCI OPA-65R-LCUU-H8	100.00	88	411	0.007	7	109
CCI TPA-65R-LCUUUU-H	100.00	82	381	0.006	7	101
Flat Platform w/ Han	100.00	2,000	9,337	0.157	168	2,477
Kathrein Smart Bias	87.00	10	36	0.001	1	12
Ericsson KRY 112 144	87.00	33	119	0.002	2	41
Ericsson KRY 112 489	87.00	46	167	0.003	3	57
RFS APX16DWV-16DWV-S	87.00	119	430	0.007	8	147
Ericsson AIR32 B66Aa	87.00	397	1,434	0.024	26	491
Commscope LNX-6514DS	87.00	116	421	0.007	8	144
Flat Low Profile Pla	87.00	1,500	5,424	0.091	98	1,858
Alcatel-Lucent RRH2X	80.00	132	409	0.007	7	163
Alcatel-Lucent RRH2x	80.00	170	527	0.009	10	211
Antel BXA-171063-12C	80.00	77	238	0.004	4	95
RFS DB-T1-6Z-8AB-0Z	80.00	88	273	0.005	5	109
Antel BXA-70063-6CF-	80.00	102	316	0.005	6	126
Round Low Profile PI	80.00	1,500	4,650	0.078	84	1,858
Scala 840 10212	75.00	7	18	0.000	0	8
TX RX Systems 421-86	75.00	15	41	0.001	1	19
Stand Offs	75.00	150	413	0.007	7	186
Round Side Arms	70.00	300	728	0.012	13	372
72" x 6" Panel	70.00	120	291	0.005	5	149
Radio/ODU	60.00	30	55	0.001	1	37
Scala 840 10212	60.00	7	12	0.000	0	8
Stand Off	60.00	75	137	0.002	2	93
Radio Waves SP2-4.7	60.00	26	48	0.001	1	32
		26,203	59,441	1.000	1,072	32,455

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
30	107.50	270	1,440	0.024	26	233
29	102.50	270	1,319	0.022	24	233
28	97.50	273	1,215	0.020	22	235

Site Number: 302481

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Customer: T-MOBILE

27	92.50	281	1,138	0.019	21	242
26	88.50	173	644	0.011	12	149
25	86.00	150	529	0.009	10	129
24	82.50	380	1,246	0.021	22	327
23	78.52	265	795	0.013	14	229
22	76.02	321	907	0.015	16	277
21	72.50	794	2,056	0.035	37	684
20	68.75	413	969	0.016	17	355
19	66.62	290	643	0.011	12	250
18	65.37	165	353	0.006	6	142
17	63.96	460	946	0.016	17	396
16	61.46	526	1,006	0.017	18	453
15	57.50	913	1,544	0.026	28	787
14	52.50	924	1,323	0.022	24	796
13	48.75	466	583	0.010	11	402
12	46.25	469	532	0.009	10	404
11	42.50	947	920	0.015	17	815
10	37.50	958	740	0.012	13	825
9	33.91	419	269	0.005	5	361
8	31.41	741	413	0.007	7	638
7	29.66	176	89	0.001	2	152
6	27.16	844	361	0.006	7	727
5	22.50	985	298	0.005	5	848
4	17.50	996	190	0.003	3	858
3	12.50	1,007	104	0.002	2	868
2	7.50	1,018	41	0.001	1	877
1	2.50	1,030	6	0.000	0	887
DragonWave Horizon C	110.00	32	177	0.003	3	27
12" x 12" Junction B	110.00	10	56	0.001	1	9
DragonWave A-ANT-23G	110.00	15	83	0.001	2	13
NextNet BTS-2500	110.00	105	584	0.010	11	90
Argus LLPX310R	110.00	86	477	0.008	9	74
Side Arms	110.00	500	2,780	0.047	50	431
DragonWave A-ANT-11G	110.00	48	265	0.004	5	41
DragonWave A-ANT-11G	110.00	48	265	0.004	5	41
Powerwave Allgon 702	100.00	13	62	0.001	1	11
CCI TPX-070821	100.00	45	210	0.004	4	39
Powerwave LGP21401	100.00	85	395	0.007	7	73
Raycap DC6-48-60-18-	100.00	66	306	0.005	6	57
Ericsson RRUS-11	100.00	150	700	0.012	13	129
Ericsson RRUS 32 B2	100.00	159	742	0.012	13	137
10' Omni	100.00	25	117	0.002	2	22
Ericsson RRUS-32	100.00	231	1,078	0.018	19	199
Powerwave Allgon 777	100.00	105	490	0.008	9	90
Quintel QS66512-2	100.00	222	1,036	0.017	19	191
CCI OPA-65R-LCUU-H6	100.00	146	682	0.011	12	126
CCI OPA-65R-LCUU-H8	100.00	88	411	0.007	7	76
CCI TPA-65R-LCUUUU-H	100.00	82	381	0.006	7	70
Flat Platform w/ Han	100.00	2,000	9,337	0.157	168	1,723
Kathrein Smart Bias	87.00	10	36	0.001	1	9
Ericsson KRY 112 144	87.00	33	119	0.002	2	28
Ericsson KRY 112 489	87.00	46	167	0.003	3	40
RFS APX16DWV-16DWV-S	87.00	119	430	0.007	8	102
Ericsson AIR32 B66Aa	87.00	397	1,434	0.024	26	342
Commscope LNX-6514DS	87.00	116	421	0.007	8	100
Flat Low Profile Pla	87.00	1,500	5,424	0.091	98	1,292
Alcatel-Lucent RRH2X	80.00	132	409	0.007	7	114
Alcatel-Lucent RRH2x	80.00	170	527	0.009	10	147
Antel BXA-171063-12C	80.00	77	238	0.004	4	66
RFS DB-T1-6Z-8AB-OZ	80.00	88	273	0.005	5	76
Antel BXA-70063-6CF-	80.00	102	316	0.005	6	88
Round Low Profile PI	80.00	1,500	4,650	0.078	84	1,292
Scala 840 10212	75.00	7	18	0.000	0	6
TX RX Systems 421-86	75.00	15	41	0.001	1	13

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Customer: T-MOBILE

Stand Offs	75.00	150	413	0.007	7	129
Round Side Arms	70.00	300	728	0.012	13	258
72" x 6" Panel	70.00	120	291	0.005	5	103
Radio/ODU	60.00	30	55	0.001	1	26
Scala 840 10212	60.00	7	12	0.000	0	6
Stand Off	60.00	75	137	0.002	2	65
Radio Waves SP2-4.7	60.00	26	48	0.001	1	22
		26,203	59,441	1.000	1,072	22,571

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

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Customer: T-MOBILE

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

Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-31.18	-1.08	0.00	-94.87	0.00	94.87	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.055
5.00	-29.92	-1.09	0.00	-89.48	0.00	89.48	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.053
10.00	-28.67	-1.10	0.00	-84.04	0.00	84.04	1,517.03	758.51	1,758.81	868.61	0.05	-0.04	0.051
15.00	-27.44	-1.10	0.00	-78.57	0.00	78.57	1,491.77	745.88	1,678.72	829.06	0.10	-0.06	0.049
20.00	-26.22	-1.10	0.00	-73.06	0.00	73.06	1,465.38	732.69	1,599.10	789.74	0.18	-0.08	0.046
25.00	-25.17	-1.10	0.00	-67.54	0.00	67.54	1,437.85	718.93	1,520.09	750.71	0.28	-0.11	0.044
29.33	-24.95	-1.11	0.00	-62.76	0.00	62.76	1,413.10	706.55	1,452.23	717.20	0.38	-0.12	0.042
30.00	-24.03	-1.10	0.00	-62.02	0.00	62.02	1,409.19	704.59	1,441.78	712.04	0.40	-0.13	0.041
32.83	-23.51	-1.10	0.00	-58.91	0.00	58.91	1,130.07	565.03	1,157.93	571.86	0.48	-0.14	0.050
35.00	-22.33	-1.09	0.00	-56.52	0.00	56.52	1,119.12	559.56	1,130.17	558.15	0.55	-0.15	0.048
40.00	-21.16	-1.07	0.00	-51.09	0.00	51.09	1,081.75	540.88	1,055.58	521.31	0.71	-0.17	0.045
45.00	-20.57	-1.07	0.00	-45.72	0.00	45.72	1,044.38	522.19	983.54	485.73	0.89	-0.18	0.043
47.50	-20.00	-1.06	0.00	-43.05	0.00	43.05	1,025.69	512.85	948.47	468.42	0.99	-0.19	0.041
47.50	-20.00	-1.06	0.00	-43.05	0.00	43.05	1,025.69	512.85	948.47	468.42	0.99	-0.19	0.041
50.00	-18.85	-1.03	0.00	-40.40	0.00	40.40	1,007.01	503.50	914.04	451.41	1.10	-0.20	0.039
55.00	-17.72	-1.01	0.00	-35.22	0.00	35.22	969.64	484.82	847.10	418.35	1.32	-0.22	0.036
60.00	-16.90	-0.99	0.00	-30.18	0.00	30.18	932.27	466.13	782.69	386.54	1.55	-0.23	0.033
62.92	-16.33	-0.97	0.00	-27.31	0.00	27.31	910.47	455.23	746.30	368.57	1.70	-0.24	0.031
65.00	-16.12	-0.96	0.00	-25.29	0.00	25.29	894.90	447.45	720.84	355.99	1.81	-0.25	0.029
65.75	-15.76	-0.95	0.00	-24.57	0.00	24.57	664.38	332.19	545.54	269.42	1.85	-0.25	0.032
67.50	-15.25	-0.93	0.00	-22.91	0.00	22.91	658.03	329.02	532.49	262.98	1.94	-0.25	0.030
67.50	-15.25	-0.93	0.00	-22.91	0.00	22.91	658.03	329.02	532.49	262.98	1.94	-0.25	0.030
70.00	-13.75	-0.87	0.00	-20.58	0.00	20.58	648.81	324.41	513.97	253.83	2.07	-0.26	0.027
75.00	-13.14	-0.85	0.00	-16.22	0.00	16.22	629.79	314.90	477.45	235.80	2.35	-0.27	0.023
77.04	-12.81	-0.83	0.00	-14.50	0.00	14.50	618.65	309.32	460.40	227.38	2.47	-0.28	0.022
77.04	-12.81	-0.83	0.00	-14.50	0.00	14.50	618.65	309.32	460.40	227.38	2.47	-0.28	0.084
80.00	-9.78	-0.68	0.00	-12.04	0.00	12.04	602.07	301.03	435.93	215.29	2.64	-0.28	0.072
85.00	-9.59	-0.67	0.00	-8.63	0.00	8.63	574.04	287.02	396.08	195.61	2.96	-0.32	0.061
87.00	-6.63	-0.50	0.00	-7.28	0.00	7.28	562.83	281.41	380.68	188.00	3.10	-0.33	0.051
90.00	-6.28	-0.48	0.00	-5.77	0.00	5.77	546.01	273.01	358.14	176.87	3.31	-0.35	0.044
95.00	-5.94	-0.46	0.00	-3.36	0.00	3.36	517.98	258.99	322.12	159.08	3.68	-0.37	0.033
100.00	-1.38	-0.12	0.00	-1.06	0.00	1.06	489.95	244.98	288.00	142.23	4.07	-0.38	0.010
100.00	-1.38	-0.12	0.00	-1.06	0.00	1.06	459.24	229.62	229.69	150.79	4.07	-0.38	0.010
105.00	-1.04	-0.09	0.00	-0.46	0.00	0.46	459.24	229.62	229.69	150.79	4.47	-0.38	0.005
110.00	0.00	-0.08	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	4.88	-0.38	0.000

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

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Customer: T-MOBILE

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-21.68	-1.08	0.00	-93.23	0.00	93.23	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.051
5.00	-20.81	-1.08	0.00	-87.86	0.00	87.86	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.049
10.00	-19.94	-1.09	0.00	-82.44	0.00	82.44	1,517.03	758.51	1,758.81	868.61	0.04	-0.04	0.047
15.00	-19.08	-1.09	0.00	-77.01	0.00	77.01	1,491.77	745.88	1,678.72	829.06	0.10	-0.06	0.045
20.00	-18.23	-1.09	0.00	-71.56	0.00	71.56	1,465.38	732.69	1,599.10	789.74	0.18	-0.08	0.043
25.00	-17.50	-1.09	0.00	-66.11	0.00	66.11	1,437.85	718.93	1,520.09	750.71	0.27	-0.10	0.040
29.33	-17.35	-1.09	0.00	-61.40	0.00	61.40	1,413.10	706.55	1,452.23	717.20	0.38	-0.12	0.039
30.00	-16.71	-1.08	0.00	-60.67	0.00	60.67	1,409.19	704.59	1,441.78	712.04	0.39	-0.12	0.038
32.83	-16.35	-1.08	0.00	-57.61	0.00	57.61	1,130.07	565.03	1,157.93	571.86	0.47	-0.14	0.045
35.00	-15.53	-1.07	0.00	-55.26	0.00	55.26	1,119.12	559.56	1,130.17	558.15	0.53	-0.14	0.044
40.00	-14.71	-1.05	0.00	-49.92	0.00	49.92	1,081.75	540.88	1,055.58	521.31	0.70	-0.16	0.041
45.00	-14.31	-1.05	0.00	-44.65	0.00	44.65	1,044.38	522.19	983.54	485.73	0.88	-0.18	0.039
47.50	-13.91	-1.04	0.00	-42.04	0.00	42.04	1,025.69	512.85	948.47	468.42	0.97	-0.19	0.037
47.50	-13.91	-1.04	0.00	-42.04	0.00	42.04	1,025.69	512.85	948.47	468.42	0.97	-0.19	0.037
50.00	-13.11	-1.01	0.00	-39.45	0.00	39.45	1,007.01	503.50	914.04	451.41	1.07	-0.20	0.036
55.00	-12.32	-0.99	0.00	-34.38	0.00	34.38	969.64	484.82	847.10	418.35	1.29	-0.21	0.033
60.00	-11.75	-0.96	0.00	-29.45	0.00	29.45	932.27	466.13	782.69	386.54	1.52	-0.23	0.030
62.92	-11.35	-0.95	0.00	-26.65	0.00	26.65	910.47	455.23	746.30	368.57	1.66	-0.24	0.028
65.00	-11.21	-0.94	0.00	-24.68	0.00	24.68	894.90	447.45	720.84	355.99	1.77	-0.24	0.026
65.75	-10.96	-0.93	0.00	-23.97	0.00	23.97	664.38	332.19	545.54	269.42	1.81	-0.24	0.028
67.50	-10.61	-0.91	0.00	-22.35	0.00	22.35	658.03	329.02	532.49	262.98	1.90	-0.25	0.027
67.50	-10.61	-0.91	0.00	-22.35	0.00	22.35	658.03	329.02	532.49	262.98	1.90	-0.25	0.027
70.00	-9.56	-0.85	0.00	-20.07	0.00	20.07	648.81	324.41	513.97	253.83	2.03	-0.26	0.024
75.00	-9.14	-0.83	0.00	-15.82	0.00	15.82	629.79	314.90	477.45	235.80	2.30	-0.27	0.021
77.04	-8.91	-0.81	0.00	-14.13	0.00	14.13	618.65	309.32	460.40	227.38	2.42	-0.27	0.019
77.04	-8.91	-0.81	0.00	-14.13	0.00	14.13	618.65	309.32	460.40	227.38	2.42	-0.27	0.077
80.00	-6.80	-0.67	0.00	-11.73	0.00	11.73	602.07	301.03	435.93	215.29	2.59	-0.28	0.066
85.00	-6.67	-0.66	0.00	-8.41	0.00	8.41	574.04	287.02	396.08	195.61	2.90	-0.31	0.055
87.00	-4.61	-0.49	0.00	-7.09	0.00	7.09	562.83	281.41	380.68	188.00	3.03	-0.32	0.046
90.00	-4.37	-0.47	0.00	-5.62	0.00	5.62	546.01	273.01	358.14	176.87	3.24	-0.34	0.040
95.00	-4.13	-0.45	0.00	-3.27	0.00	3.27	517.98	258.99	322.12	159.08	3.60	-0.36	0.029
100.00	-0.96	-0.12	0.00	-1.03	0.00	1.03	489.95	244.98	288.00	142.23	3.99	-0.37	0.009
100.00	-0.96	-0.12	0.00	-1.03	0.00	1.03	459.24	229.62	229.69	150.79	3.99	-0.37	0.009
105.00	-0.73	-0.09	0.00	-0.45	0.00	0.45	459.24	229.62	229.69	150.79	4.38	-0.37	0.005
110.00	0.00	-0.08	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	4.77	-0.38	0.000

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

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Customer: T-MOBILE

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.17
Redundancy Factor (ρ):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
30	107.50	270	1.805	1.562	0.986	0.315	74	334
29	102.50	270	1.641	0.911	0.727	0.220	51	334
28	97.50	273	1.485	0.464	0.525	0.140	33	338
27	92.50	281	1.336	0.174	0.369	0.075	18	348
26	88.50	173	1.223	0.028	0.273	0.034	5	214
25	86.00	150	1.155	-0.033	0.223	0.013	2	185
24	82.50	380	1.063	-0.088	0.165	-0.010	-3	470
23	78.52	265	0.963	-0.117	0.114	-0.028	-6	329
22	76.02	321	0.903	-0.122	0.088	-0.034	-9	398
21	72.50	794	0.821	-0.115	0.060	-0.037	-25	984
20	68.75	413	0.738	-0.098	0.038	-0.033	-12	511
19	66.62	290	0.693	-0.085	0.029	-0.028	-7	359
18	65.37	165	0.668	-0.077	0.024	-0.024	-3	204
17	63.96	460	0.639	-0.067	0.020	-0.020	-8	570
16	61.46	526	0.590	-0.049	0.013	-0.010	-5	652
15	57.50	913	0.516	-0.022	0.008	0.006	5	1,131
14	52.50	924	0.431	0.008	0.006	0.026	20	1,145
13	48.75	466	0.371	0.027	0.008	0.036	15	578
12	46.25	469	0.334	0.037	0.010	0.042	17	581
11	42.50	947	0.282	0.049	0.014	0.047	39	1,173
10	37.50	958	0.220	0.060	0.021	0.050	41	1,187
9	33.91	419	0.180	0.065	0.026	0.050	18	519
8	31.41	741	0.154	0.068	0.030	0.050	32	917
7	29.66	176	0.137	0.069	0.032	0.049	8	219
6	27.16	844	0.115	0.070	0.035	0.048	35	1,045
5	22.50	985	0.079	0.072	0.040	0.047	40	1,220
4	17.50	996	0.048	0.071	0.042	0.045	39	1,234
3	12.50	1,007	0.024	0.066	0.039	0.042	36	1,247
2	7.50	1,018	0.009	0.053	0.031	0.034	30	1,261
1	2.50	1,030	0.001	0.024	0.013	0.017	15	1,275
DragonWave Horizon C	110.00	32	1.890	1.980	1.140	0.369	10	39
12" x 12" Junction B	110.00	10	1.890	1.980	1.140	0.369	3	12
DragonWave A-ANT-23G	110.00	15	1.890	1.980	1.140	0.369	5	19
NextNet BTS-2500	110.00	105	1.890	1.980	1.140	0.369	34	130

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Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

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Customer: T-MOBILE

Argus LLPX310R	110.00	86	1.890	1.980	1.140	0.369	27	106
Side Arms	110.00	500	1.890	1.980	1.140	0.369	160	619
DragonWave A-ANT-11G	110.00	48	1.890	1.980	1.140	0.369	15	59
DragonWave A-ANT-11G	110.00	48	1.890	1.980	1.140	0.369	15	59
Powerwave Allgon 702	100.00	13	1.562	0.666	0.620	0.178	2	16
CCI TPX-070821	100.00	45	1.562	0.666	0.620	0.178	7	56
Powerwave LGP21401	100.00	85	1.562	0.666	0.620	0.178	13	105
Raycap DC6-48-60-18-	100.00	66	1.562	0.666	0.620	0.178	10	81
Ericsson RRUS-11	100.00	150	1.562	0.666	0.620	0.178	23	186
Ericsson RRUS 32 B2	100.00	159	1.562	0.666	0.620	0.178	24	197
10' Omni	100.00	25	1.562	0.666	0.620	0.178	4	31
Ericsson RRUS-32	100.00	231	1.562	0.666	0.620	0.178	36	286
Powerwave Allgon 777	100.00	105	1.562	0.666	0.620	0.178	16	130
Quintel QS66512-2	100.00	222	1.562	0.666	0.620	0.178	34	275
CCI OPA-65R-LCUU-H6	100.00	146	1.562	0.666	0.620	0.178	22	181
CCI OPA-65R-LCUU-H8	100.00	88	1.562	0.666	0.620	0.178	14	109
CCI TPA-65R-LCUUUU-H	100.00	82	1.562	0.666	0.620	0.178	13	101
Flat Platform w/ Han	100.00	2,000	1.562	0.666	0.620	0.178	308	2,477
Kathrein Smart Bias	87.00	10	1.182	-0.011	0.242	0.021	0	12
Ericsson KRY 112 144	87.00	33	1.182	-0.011	0.242	0.021	1	41
Ericsson KRY 112 489	87.00	46	1.182	-0.011	0.242	0.021	1	57
RFS APX16DWV-16DWV-	87.00	119	1.182	-0.011	0.242	0.021	2	147
Ericsson AIR32 B66Aa	87.00	397	1.182	-0.011	0.242	0.021	7	491
Commscope LNX-	87.00	116	1.182	-0.011	0.242	0.021	2	144
Flat Low Profile Pla	87.00	1,500	1.182	-0.011	0.242	0.021	27	1,858
Alcatel-Lucent RRH2X	80.00	132	1.000	-0.110	0.131	-0.022	-3	163
Alcatel-Lucent RRH2x	80.00	170	1.000	-0.110	0.131	-0.022	-3	211
Antel BXA-171063-12C	80.00	77	1.000	-0.110	0.131	-0.022	-1	95
RFS DB-T1-6Z-8AB-OZ	80.00	88	1.000	-0.110	0.131	-0.022	-2	109
Antel BXA-70063-6CF-	80.00	102	1.000	-0.110	0.131	-0.022	-2	126
Round Low Profile PI	80.00	1,500	1.000	-0.110	0.131	-0.022	-29	1,858
Scala 840 10212	75.00	7	0.879	-0.121	0.079	-0.036	0	8
TX RX Systems 421-86	75.00	15	0.879	-0.121	0.079	-0.036	0	19
Stand Offs	75.00	150	0.879	-0.121	0.079	-0.036	-5	186
Round Side Arms	70.00	300	0.765	-0.105	0.044	-0.035	-9	372
72" x 6" Panel	70.00	120	0.765	-0.105	0.044	-0.035	-4	149
Radio/ODU	60.00	30	0.562	-0.039	0.011	-0.004	0	37
Scala 840 10212	60.00	7	0.562	-0.039	0.011	-0.004	0	8
Stand Off	60.00	75	0.562	-0.039	0.011	-0.004	0	93
Radio Waves SP2-4.7	60.00	26	0.562	-0.039	0.011	-0.004	0	32
		26,203	76.303	26.693	24.651	6.420	1,272	32,455

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

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
30	107.50	270	1.805	1.562	0.986	0.315	74	233
29	102.50	270	1.641	0.911	0.727	0.220	51	233
28	97.50	273	1.485	0.464	0.525	0.140	33	235
27	92.50	281	1.336	0.174	0.369	0.075	18	242
26	88.50	173	1.223	0.028	0.273	0.034	5	149
25	86.00	150	1.155	-0.033	0.223	0.013	2	129
24	82.50	380	1.063	-0.088	0.165	-0.010	-3	327
23	78.52	265	0.963	-0.117	0.114	-0.028	-6	229
22	76.02	321	0.903	-0.122	0.088	-0.034	-9	277
21	72.50	794	0.821	-0.115	0.060	-0.037	-25	684
20	68.75	413	0.738	-0.098	0.038	-0.033	-12	355
19	66.62	290	0.693	-0.085	0.029	-0.028	-7	250
18	65.37	165	0.668	-0.077	0.024	-0.024	-3	142

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17	63.96	460	0.639	-0.067	0.020	-0.020	-8	396
16	61.46	526	0.590	-0.049	0.013	-0.010	-5	453
15	57.50	913	0.516	-0.022	0.008	0.006	5	787
14	52.50	924	0.431	0.008	0.006	0.026	20	796
13	48.75	466	0.371	0.027	0.008	0.036	15	402
12	46.25	469	0.334	0.037	0.010	0.042	17	404
11	42.50	947	0.282	0.049	0.014	0.047	39	815
10	37.50	958	0.220	0.060	0.021	0.050	41	825
9	33.91	419	0.180	0.065	0.026	0.050	18	361
8	31.41	741	0.154	0.068	0.030	0.050	32	638
7	29.66	176	0.137	0.069	0.032	0.049	8	152
6	27.16	844	0.115	0.070	0.035	0.048	35	727
5	22.50	985	0.079	0.072	0.040	0.047	40	848
4	17.50	996	0.048	0.071	0.042	0.045	39	858
3	12.50	1,007	0.024	0.066	0.039	0.042	36	868
2	7.50	1,018	0.009	0.053	0.031	0.034	30	877
1	2.50	1,030	0.001	0.024	0.013	0.017	15	887
DragonWave Horizon C	110.00	32	1.890	1.980	1.140	0.369	10	27
12" x 12" Junction B	110.00	10	1.890	1.980	1.140	0.369	3	9
DragonWave A-ANT-23G	110.00	15	1.890	1.980	1.140	0.369	5	13
NextNet BTS-2500	110.00	105	1.890	1.980	1.140	0.369	34	90
Argus LLPX310R	110.00	86	1.890	1.980	1.140	0.369	27	74
Side Arms	110.00	500	1.890	1.980	1.140	0.369	160	431
DragonWave A-ANT-11G	110.00	48	1.890	1.980	1.140	0.369	15	41
DragonWave A-ANT-11G	110.00	48	1.890	1.980	1.140	0.369	15	41
Powerwave Allgon 702	100.00	13	1.562	0.666	0.620	0.178	2	11
CCI TPX-070821	100.00	45	1.562	0.666	0.620	0.178	7	39
Powerwave LGP21401	100.00	85	1.562	0.666	0.620	0.178	13	73
Raycap DC6-48-60-18-	100.00	66	1.562	0.666	0.620	0.178	10	57
Ericsson RRUS-11	100.00	150	1.562	0.666	0.620	0.178	23	129
Ericsson RRUS 32 B2	100.00	159	1.562	0.666	0.620	0.178	24	137
10' Omni	100.00	25	1.562	0.666	0.620	0.178	4	22
Ericsson RRUS-32	100.00	231	1.562	0.666	0.620	0.178	36	199
Powerwave Allgon 777	100.00	105	1.562	0.666	0.620	0.178	16	90
Quintel QS66512-2	100.00	222	1.562	0.666	0.620	0.178	34	191
CCI OPA-65R-LCUU-H6	100.00	146	1.562	0.666	0.620	0.178	22	126
CCI OPA-65R-LCUU-H8	100.00	88	1.562	0.666	0.620	0.178	14	76
CCI TPA-65R-LCUUUU-H	100.00	82	1.562	0.666	0.620	0.178	13	70
Flat Platform w/ Han	100.00	2,000	1.562	0.666	0.620	0.178	308	1,723
Kathrein Smart Bias	87.00	10	1.182	-0.011	0.242	0.021	0	9
Ericsson KRY 112 144	87.00	33	1.182	-0.011	0.242	0.021	1	28
Ericsson KRY 112 489	87.00	46	1.182	-0.011	0.242	0.021	1	40
RFS APX16DWV-16DWV-	87.00	119	1.182	-0.011	0.242	0.021	2	102
Ericsson AIR32 B66Aa	87.00	397	1.182	-0.011	0.242	0.021	7	342
Commscope LNX-	87.00	116	1.182	-0.011	0.242	0.021	2	100
Flat Low Profile Pla	87.00	1,500	1.182	-0.011	0.242	0.021	27	1,292
Alcatel-Lucent RRH2X	80.00	132	1.000	-0.110	0.131	-0.022	-3	114
Alcatel-Lucent RRH2x	80.00	170	1.000	-0.110	0.131	-0.022	-3	147
Antel BXA-171063-12C	80.00	77	1.000	-0.110	0.131	-0.022	-1	66
RFS DB-T1-6Z-8AB-0Z	80.00	88	1.000	-0.110	0.131	-0.022	-2	76
Antel BXA-70063-6CF-	80.00	102	1.000	-0.110	0.131	-0.022	-2	88
Round Low Profile PI	80.00	1,500	1.000	-0.110	0.131	-0.022	-29	1,292
Scala 840 10212	75.00	7	0.879	-0.121	0.079	-0.036	0	6
TX RX Systems 421-86	75.00	15	0.879	-0.121	0.079	-0.036	0	13
Stand Offs	75.00	150	0.879	-0.121	0.079	-0.036	-5	129
Round Side Arms	70.00	300	0.765	-0.105	0.044	-0.035	-9	258
72" x 6" Panel	70.00	120	0.765	-0.105	0.044	-0.035	-4	103
Radio/ODU	60.00	30	0.562	-0.039	0.011	-0.004	0	26
Scala 840 10212	60.00	7	0.562	-0.039	0.011	-0.004	0	6
Stand Off	60.00	75	0.562	-0.039	0.011	-0.004	0	65
Radio Waves SP2-4.7	60.00	26	0.562	-0.039	0.011	-0.004	0	22
		26,203	76.303	26.693	24.651	6.420	1,272	22,571

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

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total	Rotation	
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	(deg)	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)		
0.00	-31.18	-1.26	0.00	-110.70	0.00	110.70	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.062
5.00	-29.92	-1.25	0.00	-104.39	0.00	104.39	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.060
10.00	-28.67	-1.22	0.00	-98.17	0.00	98.17	1,517.03	758.51	1,758.81	868.61	0.05	-0.05	0.058
15.00	-27.44	-1.19	0.00	-92.06	0.00	92.06	1,491.77	745.88	1,678.72	829.06	0.12	-0.07	0.055
20.00	-26.22	-1.16	0.00	-86.10	0.00	86.10	1,465.38	732.69	1,599.10	789.74	0.21	-0.10	0.053
25.00	-25.17	-1.13	0.00	-80.29	0.00	80.29	1,437.85	718.93	1,520.09	750.71	0.33	-0.12	0.051
29.33	-24.95	-1.13	0.00	-75.38	0.00	75.38	1,413.10	706.55	1,452.23	717.20	0.45	-0.15	0.049
30.00	-24.03	-1.10	0.00	-74.62	0.00	74.62	1,409.19	704.59	1,441.78	712.04	0.47	-0.15	0.047
32.83	-23.51	-1.09	0.00	-71.50	0.00	71.50	1,130.07	565.03	1,157.93	571.86	0.56	-0.16	0.058
35.00	-22.33	-1.05	0.00	-69.15	0.00	69.15	1,119.12	559.56	1,130.17	558.15	0.64	-0.17	0.056
40.00	-21.15	-1.02	0.00	-63.90	0.00	63.90	1,081.75	540.88	1,055.58	521.31	0.83	-0.20	0.054
45.00	-20.57	-1.00	0.00	-58.83	0.00	58.83	1,044.38	522.19	983.54	485.73	1.05	-0.22	0.052
47.50	-20.00	-0.99	0.00	-56.32	0.00	56.32	1,025.69	512.85	948.47	468.42	1.17	-0.23	0.051
47.50	-20.00	-0.99	0.00	-56.32	0.00	56.32	1,025.69	512.85	948.47	468.42	1.17	-0.23	0.051
50.00	-18.85	-0.97	0.00	-53.85	0.00	53.85	1,007.01	503.50	914.04	451.41	1.30	-0.24	0.049
55.00	-17.72	-0.97	0.00	-49.00	0.00	49.00	969.64	484.82	847.10	418.35	1.56	-0.27	0.047
60.00	-16.90	-0.97	0.00	-44.17	0.00	44.17	932.27	466.13	782.69	386.54	1.85	-0.29	0.044
62.92	-16.33	-0.98	0.00	-41.33	0.00	41.33	910.47	455.23	746.30	368.57	2.03	-0.30	0.042
65.00	-16.12	-0.98	0.00	-39.29	0.00	39.29	894.90	447.45	720.84	355.99	2.17	-0.31	0.041
65.75	-15.76	-0.99	0.00	-38.55	0.00	38.55	664.38	332.19	545.54	269.42	2.21	-0.31	0.045
67.50	-15.25	-1.00	0.00	-36.82	0.00	36.82	658.03	329.02	532.49	262.98	2.33	-0.32	0.043
67.50	-15.25	-1.00	0.00	-36.82	0.00	36.82	658.03	329.02	532.49	262.98	2.33	-0.32	0.043
70.00	-13.75	-1.04	0.00	-34.31	0.00	34.31	648.81	324.41	513.97	253.83	2.50	-0.33	0.040
75.00	-13.14	-1.05	0.00	-29.13	0.00	29.13	629.79	314.90	477.45	235.80	2.86	-0.35	0.036
77.04	-12.81	-1.06	0.00	-26.98	0.00	26.98	618.65	309.32	460.40	227.38	3.01	-0.36	0.034
77.04	-12.81	-1.06	0.00	-26.98	0.00	26.98	618.65	309.32	460.40	227.38	3.01	-0.36	0.139
80.00	-9.77	-1.09	0.00	-23.86	0.00	23.86	602.07	301.03	435.93	215.29	3.23	-0.37	0.127
85.00	-9.59	-1.09	0.00	-18.42	0.00	18.42	574.04	287.02	396.08	195.61	3.66	-0.44	0.111
87.00	-6.62	-1.03	0.00	-16.23	0.00	16.23	562.83	281.41	380.68	188.00	3.85	-0.47	0.098
90.00	-6.27	-1.01	0.00	-13.15	0.00	13.15	546.01	273.01	358.14	176.87	4.16	-0.50	0.086
95.00	-5.93	-0.98	0.00	-8.09	0.00	8.09	517.98	258.99	322.12	159.08	4.71	-0.55	0.062
100.00	-1.37	-0.36	0.00	-3.19	0.00	3.19	489.95	244.98	288.00	142.23	5.31	-0.58	0.025
100.00	-1.37	-0.36	0.00	-3.19	0.00	3.19	459.24	229.62	229.69	150.79	5.31	-0.58	0.024
105.00	-1.04	-0.28	0.00	-1.40	0.00	1.40	459.24	229.62	229.69	150.79	5.93	-0.60	0.012
110.00	0.00	-0.27	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	6.55	-0.60	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-21.68	-1.26	0.00	-108.65	0.00	108.65	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.058
5.00	-20.81	-1.24	0.00	-102.34	0.00	102.34	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.056
10.00	-19.94	-1.21	0.00	-96.15	0.00	96.15	1,517.03	758.51	1,758.81	868.61	0.05	-0.05	0.053
15.00	-19.08	-1.18	0.00	-90.10	0.00	90.10	1,491.77	745.88	1,678.72	829.06	0.12	-0.07	0.051
20.00	-18.23	-1.15	0.00	-84.20	0.00	84.20	1,465.38	732.69	1,599.10	789.74	0.21	-0.10	0.049
25.00	-17.50	-1.12	0.00	-78.47	0.00	78.47	1,437.85	718.93	1,520.09	750.71	0.32	-0.12	0.047
29.33	-17.35	-1.11	0.00	-73.64	0.00	73.64	1,413.10	706.55	1,452.23	717.20	0.44	-0.14	0.045
30.00	-16.71	-1.08	0.00	-72.90	0.00	72.90	1,409.19	704.59	1,441.78	712.04	0.46	-0.15	0.044
32.83	-16.35	-1.06	0.00	-69.84	0.00	69.84	1,130.07	565.03	1,157.93	571.86	0.55	-0.16	0.054
35.00	-15.53	-1.03	0.00	-67.53	0.00	67.53	1,119.12	559.56	1,130.17	558.15	0.63	-0.17	0.052
40.00	-14.71	-0.99	0.00	-62.40	0.00	62.40	1,081.75	540.88	1,055.58	521.31	0.82	-0.19	0.050
45.00	-14.31	-0.98	0.00	-57.45	0.00	57.45	1,044.38	522.19	983.54	485.73	1.03	-0.22	0.048
47.50	-13.90	-0.96	0.00	-55.01	0.00	55.01	1,025.69	512.85	948.47	468.42	1.15	-0.23	0.047
47.50	-13.90	-0.96	0.00	-55.01	0.00	55.01	1,025.69	512.85	948.47	468.42	1.15	-0.23	0.047
50.00	-13.11	-0.94	0.00	-52.60	0.00	52.60	1,007.01	503.50	914.04	451.41	1.27	-0.24	0.046
55.00	-12.32	-0.94	0.00	-47.89	0.00	47.89	969.64	484.82	847.10	418.35	1.53	-0.26	0.043
60.00	-11.75	-0.94	0.00	-43.19	0.00	43.19	932.27	466.13	782.69	386.54	1.81	-0.28	0.041
62.92	-11.35	-0.95	0.00	-40.44	0.00	40.44	910.47	455.23	746.30	368.57	1.99	-0.29	0.039
65.00	-11.21	-0.96	0.00	-38.45	0.00	38.45	894.90	447.45	720.84	355.99	2.12	-0.30	0.037
65.75	-10.96	-0.96	0.00	-37.73	0.00	37.73	664.38	332.19	545.54	269.42	2.17	-0.31	0.041
67.50	-10.60	-0.98	0.00	-36.05	0.00	36.05	658.03	329.02	532.49	262.98	2.28	-0.31	0.040
67.50	-10.60	-0.98	0.00	-36.05	0.00	36.05	658.03	329.02	532.49	262.98	2.28	-0.31	0.040
70.00	-9.56	-1.01	0.00	-33.61	0.00	33.61	648.81	324.41	513.97	253.83	2.45	-0.32	0.037
75.00	-9.13	-1.02	0.00	-28.56	0.00	28.56	629.79	314.90	477.45	235.80	2.80	-0.34	0.033
77.04	-8.90	-1.03	0.00	-26.47	0.00	26.47	618.65	309.32	460.40	227.38	2.94	-0.35	0.031
77.04	-8.90	-1.03	0.00	-26.47	0.00	26.47	618.65	309.32	460.40	227.38	2.94	-0.35	0.131
80.00	-6.79	-1.07	0.00	-23.42	0.00	23.42	602.07	301.03	435.93	215.29	3.16	-0.36	0.120
85.00	-6.66	-1.07	0.00	-18.09	0.00	18.09	574.04	287.02	396.08	195.61	3.58	-0.43	0.104
87.00	-4.60	-1.01	0.00	-15.95	0.00	15.95	562.83	281.41	380.68	188.00	3.77	-0.46	0.093
90.00	-4.36	-0.99	0.00	-12.92	0.00	12.92	546.01	273.01	358.14	176.87	4.07	-0.49	0.081
95.00	-4.12	-0.96	0.00	-7.95	0.00	7.95	517.98	258.99	322.12	159.08	4.61	-0.54	0.058
100.00	-0.96	-0.35	0.00	-3.15	0.00	3.15	489.95	244.98	288.00	142.23	5.20	-0.57	0.024
100.00	-0.96	-0.35	0.00	-3.15	0.00	3.15	459.24	229.62	229.69	150.79	5.20	-0.57	0.023
105.00	-0.72	-0.28	0.00	-1.38	0.00	1.38	459.24	229.62	229.69	150.79	5.80	-0.58	0.011
110.00	0.00	-0.27	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	6.42	-0.59	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: OAA697002_C3_02

4/7/2017 11:23:39 AM

Customer: T-MOBILE

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	25.08	0.00	31.36	0.00	0.00	1735.48	77.04	0.99
0.9D + 1.6W	24.98	0.00	23.50	0.00	0.00	1704.62	77.04	0.95
1.2D + 1.0Di + 1.0Wi	6.91	0.00	83.71	0.00	0.00	513.53	77.04	0.34
(1.2 + 0.2Sds) * DL + E ELFM	1.08	0.00	31.18	0.00	0.00	94.87	77.04	0.08
(1.2 + 0.2Sds) * DL + E EMAM	1.26	0.00	31.18	0.00	0.00	110.70	77.04	0.14
(0.9 - 0.2Sds) * DL + E ELFM	1.08	0.00	21.68	0.00	0.00	93.23	77.04	0.08
(0.9 - 0.2Sds) * DL + E EMAM	1.26	0.00	21.68	0.00	0.00	108.65	77.04	0.13
1.0D + 1.0W	6.00	0.00	26.20	0.00	0.00	410.27	77.04	0.24

Additional Steel Summary

Elev From (ft)	Elev To (ft)	(4) SOL-#20 All Thre Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	47.5	(4) SOL-#20 All Thre	400.3	15.6	16.8	0.0	12.0	0	0	0.0	12.0	0	0	314.5	315.5	0.997
47.5	67.5	(4) SOL-#20 All Thre	439.6	13.2	16.8	0.0	12.0	0	0	0.0	12.0	0	0	187.3	330.5	0.567
67.5	77.0	(4) SOL-#20 All Thre	439.6	13.2	16.8	80.5	12.0	7	7	0.0	12.0	0	0	123.1	330.5	0.372

Base/Flange Plate	Plate Type	Baseplate
	Pole Diameter	30 in
	Pole Thickness	0.25 in
	Plate Length	44 in
	Plate Thickness	2 in
	Plate Fy	60 ksi
	Weld Length	0.1875 in
	ϕ_s Resistance	1598.36 k-in
	Applied	1181.01 k-in
Stiffeners	#	0

Code Rev. **G**

Moment **1735.5 k-ft**

Axial **31.4 k**

Date **4/7/2017**

Engineer **Felix.Buabeng**

Site # **302481**

Carrier **T-MOBILE**

Bolts	#	8
	Bolt Circle	44 in
	(R)adial / (S)quare	S
	Bolt Gap	6 in
	Diameter	2.25 in
	Hole Diameter	2.375 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance	259.82 k
Applied	104.98 k	
Reinforcement	#	4
	DYW. Circle	38.6 in
	Offset Angle	0°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
Extra Bolts O	#	0

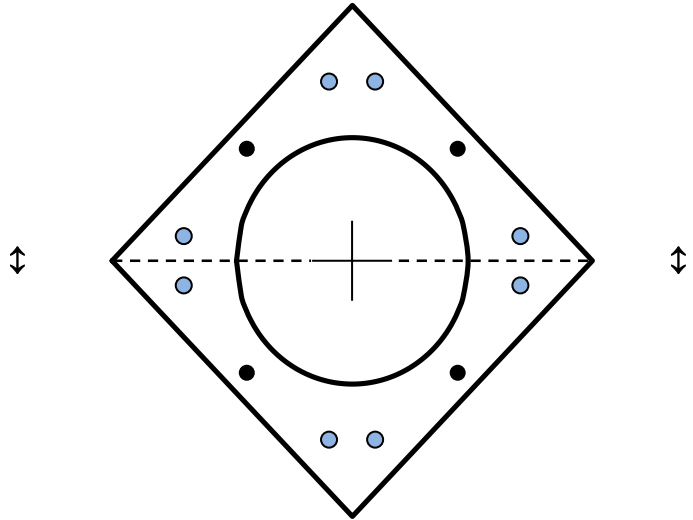


Plate Stress Ratio:
0.74 (Pass)

Bolt Stress Ratio:
0.40 (Pass)

Base/Flange Plate	Plate Type	Flange @ 100.0 ft
	Pole Diameter	12.75 in
	Pole Thickness	0.375 in
	Plate Diameter	28.5 in
	Plate Thickness	1.5 in
	Plate Fy	36 ksi
	Weld Length	0.25 in
	ϕ_s Resistance	60.83 k-in
	Applied	14.13 k-in
	Stiffeners	#

Code Rev. **G**

Date **3/9/2017**
 Engineer **John.Bigham**
 Site # **302481**
 Carrier **T-MOBILE**

Moment **15.0 k-ft**
 Axial **1.5 k**

Required Flange Thickness:

0.72 in OK

Bolts	#	12
	Bolt Circle	26 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
	Applied	2.42 k
Reinforcement	#	0
Extra Bolts	#	0

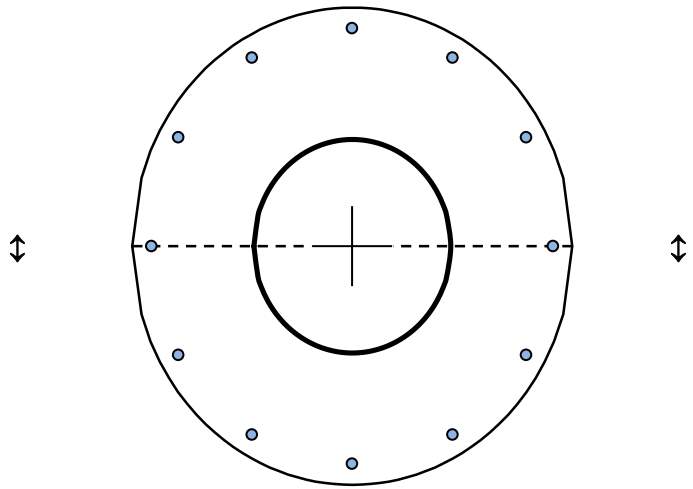


Plate Stress Ratio:

0.23 (Pass)

Bolt Stress Ratio:

0.04 (Pass)

Site Name: Hfr-South, CT
 Site Number: 302481
 Engineering Number: OAA697002
 Engineer: Felix.Buabeng
 Date: 4/7/2017

Design Base Loads (Factored) - Design per TIA-222-G Standard

Moment (Overturning) (M_u): 1735.5 k-ft
 Shear (V_u): 25.1 k
 Axial (P_u): 31.4 k
 k

Tower Type (GT / SST / MP):

MP

Length / Width of Block:	6.0	9.0 ft
Thickness of Block:	6.0	ft
Block Height Above Ground:	0.5	ft
Depth Below Ground Surface to Water Table (w):	99.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil:	125.0	pcf
Unit Weight of Water:	62.4	pcf
Ultimate Compressive Bearing Pressure:	10000	psf
Capacity Increase (Due to Transient Loads):	1.00	
Pullout Angle:	30.0	degrees
Rod Diameter:	1.00	in
Rod Ultimate Strength:	105	ksi
Original Rod Net Area:	0.76	in ²
New Rod Net Area:	0.78	in ²
Number of Rods:	18	
Diameter of Cored Hole:	2.00	in
Ultimate Grout / Rock Interface Bond Strength:	200	psi
Ultimate Grout / Rock Anchor Interface Bond Strength:	600	psi
Overall Rod Embedment Length:	72	in
Rod Exposure Above Lock Off Nut in Foundation:	60	in
Rod Embedment Circle:	96	in
Free Stress Length:	0	in
Soil / Concrete Friction Coefficient:	0.44	
Rock Anchor Design Plastic or Elastic:	Elastic	
Ignore Pullout Weight Resistance (Y/N):	Y	
Volume of Concrete:	324.0	ft ³
Compressive Bearing Resistance:	424.1	k
Soil Strength Reduction Factor (ϕ_s):	0.75	
Factored Nominal Moment Capacity per Leg ($\phi_s M_n$):	2089.2	k
Factored Nominal Uplift Capacity per Leg ($\phi_s T_n$):	1144.6	k
Factored Nominal Compressive Capacity per Leg ($\phi_s P_n$):	318.1	k
Factored Nominal Shear Capacity per Leg ($\phi_s V_n$):	660.0	k
M_u :	1886.0	k-ft
T_u :	0.0	k
P_u :	40.3	k
V_u :	25.1	k
$T_u / \phi_s T_n + M_u / \phi_s M_n$:	0.90	Result: OK
$P_u / \phi_s P_n$:	0.13	Result: OK
$V_u / \phi_s V_n$:	0.04	Result: OK

Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in ²
# of Vertical Steel Rebars:	78 Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in ²
Horizontal Tie / Stirrup Spacing:	11.0 in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60 ksi
Rod Bearing Plate Diameter:	8.0 in
Rod Bearing Plate Thickness:	1.0 in
Anchor Bearing Plate Yield Strength:	36 ksi
Anchor Rod Nut Diameter:	2.02 in
Rebar Cage Diameter:	82.0 in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75 ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ($\phi_{P/B}$):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment (M_u):	1886.0 k-ft
Factored Nominal Moment Capacity ($\phi_B M_n$):	21953.2 k-ft - ACI318-05 - 10.2
$M_u/\phi_B M_n$:	0.09 Result: OK
Design Shear (V_u):	471.3 k
Factored Nominal Shear Capacity ($\phi_V V_n$):	502.8 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.94 Result: OK
Design Tension (T_u):	0.0 k
Factored Nominal Tension Capacity ($\phi_T T_n$):	6570.7 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00 Result: OK
Design Compression (P_u):	31.4 k
Factored Nominal Compression Capacity ($\phi_P P_n$):	6161.7 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.01 Result: OK

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11769B

CT769/Ssite Hartford #2
289H Mountain Road
Hartford, CT 06106

April 21, 2017

EBI Project Number: 6217001771

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	33.17 %

April 21, 2017

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11769B – CT769/Ssite Hartford #2**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **289H Mountain Road, Hartford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **289H Mountain Road, Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

- 7) Since the 1900 MHz UMTS & GSM, 2100 MHz UMTS & the 700 MHz LTE radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 0.62 dB of additional cable loss for all ground mounted 700 MHz LTE Channels, 113 dB of additional cable loss for all ground mounted 1900 MHz UMTS & GSM channels and 1.46 dB of additional cable loss for all ground mounted 2100 UMTS MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 110 feet of 1-5/8" coax cable on each path.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the **Ericsson AIR32 B66Aa/B2A & RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6514DS-A1M** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6514DS-A1M** has a maximum gain of **13.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is **91 feet** above ground level (AGL).
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 13) All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	91	Height (AGL):	91	Height (AGL):	91
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	4.65	Antenna B1 MPE%	4.65	Antenna C1 MPE%	4.65
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	91	Height (AGL):	91	Height (AGL):	91
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	5,901.24	ERP (W):	5,901.24	ERP (W):	5,901.24
Antenna A2 MPE%	2.94	Antenna B2 MPE%	2.94	Antenna C2 MPE%	2.94
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6514DS-A1M	Make / Model:	Commscope LNX-6514DS-A1M	Make / Model:	Commscope LNX-6514DS-A1M
Gain:	13.6 dBd	Gain:	13.6 dBd	Gain:	13.6 dBd
Height (AGL):	91	Height (AGL):	91	Height (AGL):	91
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	595.83	ERP (W):	595.83	ERP (W):	595.83
Antenna A3 MPE%	0.63	Antenna B3 MPE%	0.63	Antenna C3 MPE%	0.63

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	8.22 %
AT&T	7.91 %
Clearwire	0.17 %
MetroPCS	2.97 %
Town of W. Hfd	0.98 %
Verizon Wireless	12.92 %
Site Total MPE %:	33.17 %

T-Mobile Sector A Total:	8.22 %
T-Mobile Sector B Total:	8.22 %
T-Mobile Sector C Total:	8.22 %
Site Total:	33.17 %

T-Mobile _Max Values per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	91	23.23	AWS - 2100 MHz	1000	2.32%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	91	23.23	PCS - 1900 MHz	1000	2.32%
T-Mobile AWS - 2100 MHz UMTS	2	977.51	91	9.73	AWS - 2100 MHz	1000	0.97%
T-Mobile PCS - 1900 MHz UMTS	2	986.55	91	9.82	PCS - 1900 MHz	1000	0.98%
T-Mobile PCS - 1900 MHz GSM	2	986.55	91	9.82	PCS - 1900 MHz	1000	0.98%
	1	595.83	91	2.96	700 MHz	467	0.63%
						Total*:	8.22%

*NOTE: Totals may vary due to summing of remainders

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

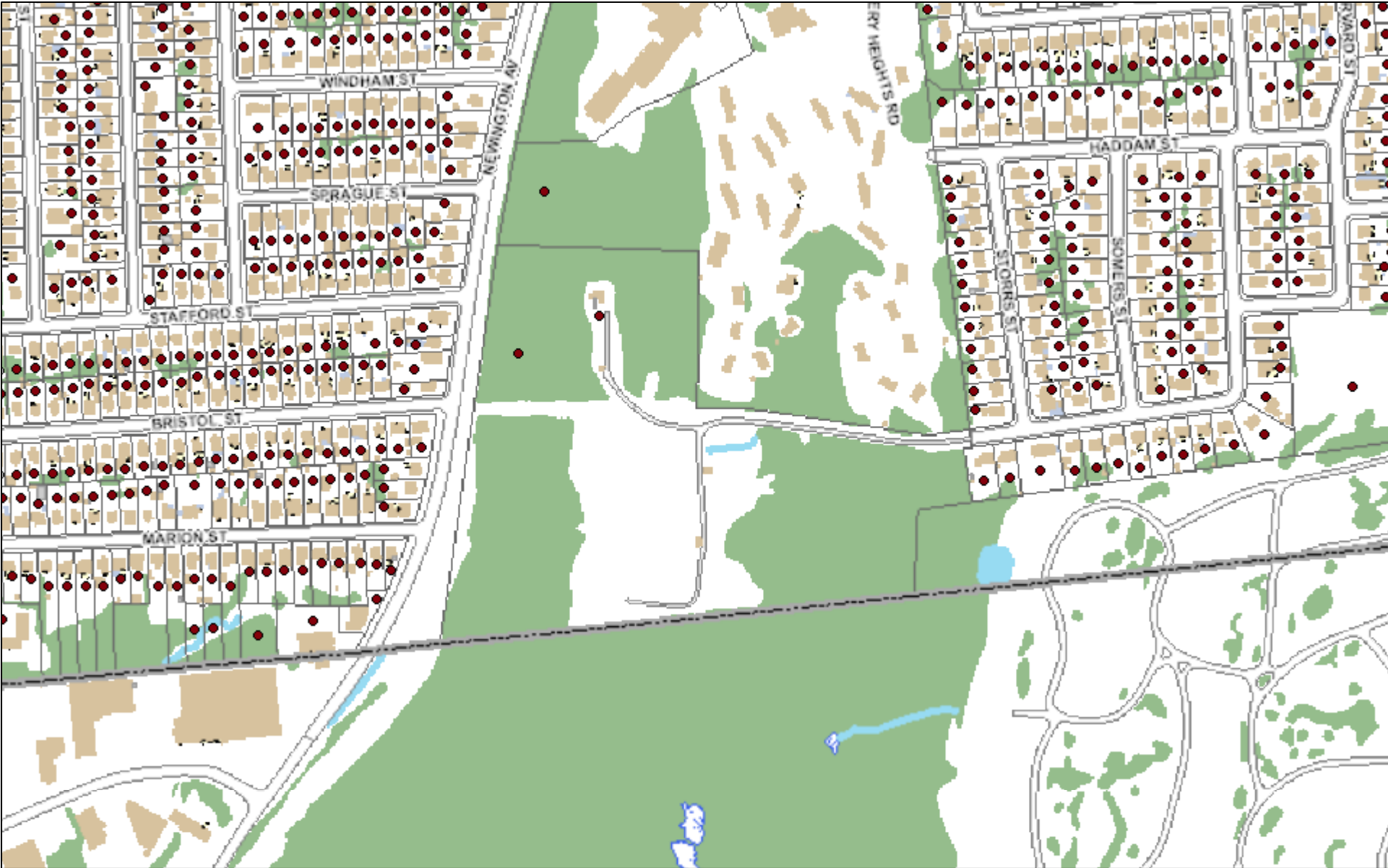
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	8.22 %
Sector B:	8.22 %
Sector C:	8.22 %
T-Mobile Per Sector Maximum:	8.22 %
Site Total:	33.17 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **33.17%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

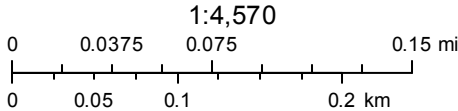
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

289H Mountain St (aka Rd), Hartford



May 16, 2017

- Parcels
- Parcel Labels





City of Hartford Assessor Map

Legend

- ▲ Parcel ID
- ◆ Duplicate Parcel ID
- Exempt ID
- Building ID
- ▲ Air Right ID
- Parcel
- Tax Map Grid
- City Boundary Line
- ▭ Building
- ▭ Building Under Construction
- ▭ House Trailer
- ▭ Foundation
- ▭ Greenhouse
- ▭ Cement Pad
- ▭ Deck
- ▭ Patio
- ▭ Pool
- ▭ Golf Course
- ▭ Fairway
- ▭ Sand Trap
- ▭ Tee
- ▭ Swamp
- ▭ Water
- ▭ River or Stream
- ▭ Tree
- ▭ Hedge
- ▭ Vegetation
- 181507165 Parcel ID
- 7500 s/r/a/c Parcel Area
- BE Street Address
- 11-18 Condo Lot Range
- 71D Condo Unit
- Driveway and Parking Lot Paved
- Driveway and Parking Lot Unpaved
- Sidewalk
- Private Sidewalk and Steps
- Runway
- Bridge
- Road Edge Paved
- Road Edge Unpaved
- Wharf and Pier
- Fuel Tank
- Water Tank
- Tunnel
- Trail
- Railroad
- Abandoned Railroad
- Fence
- Ruins

120	143	166
121	144	167
122	145	168

Key Map

DISCLAIMER
 The planimetric and topographic information depicted on this map was compiled by The James Stewart Company and is based on an aerial flight performed in April 2009. In addition, the City of Hartford has been updating building information features based on information on file in various City departments. The parcel and property information depicted on this map has been compiled from recorded deeds, maps, assessor records, and other public records on file in the City of Hartford. The intent of this map is to depict a graphical representation of real property information relative to the planimetric features for the City of Hartford and is subject to change as a more accurate survey may obtain. The City of Hartford and the mapping contractor assume no legal responsibility for the information contained in this data.

THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY.
 Horizontal Datum: Conventional State Plane Coordinates (NAD 83 feet)
 Vertical Datum: North American Vertical Datum (NAVD 88 feet)

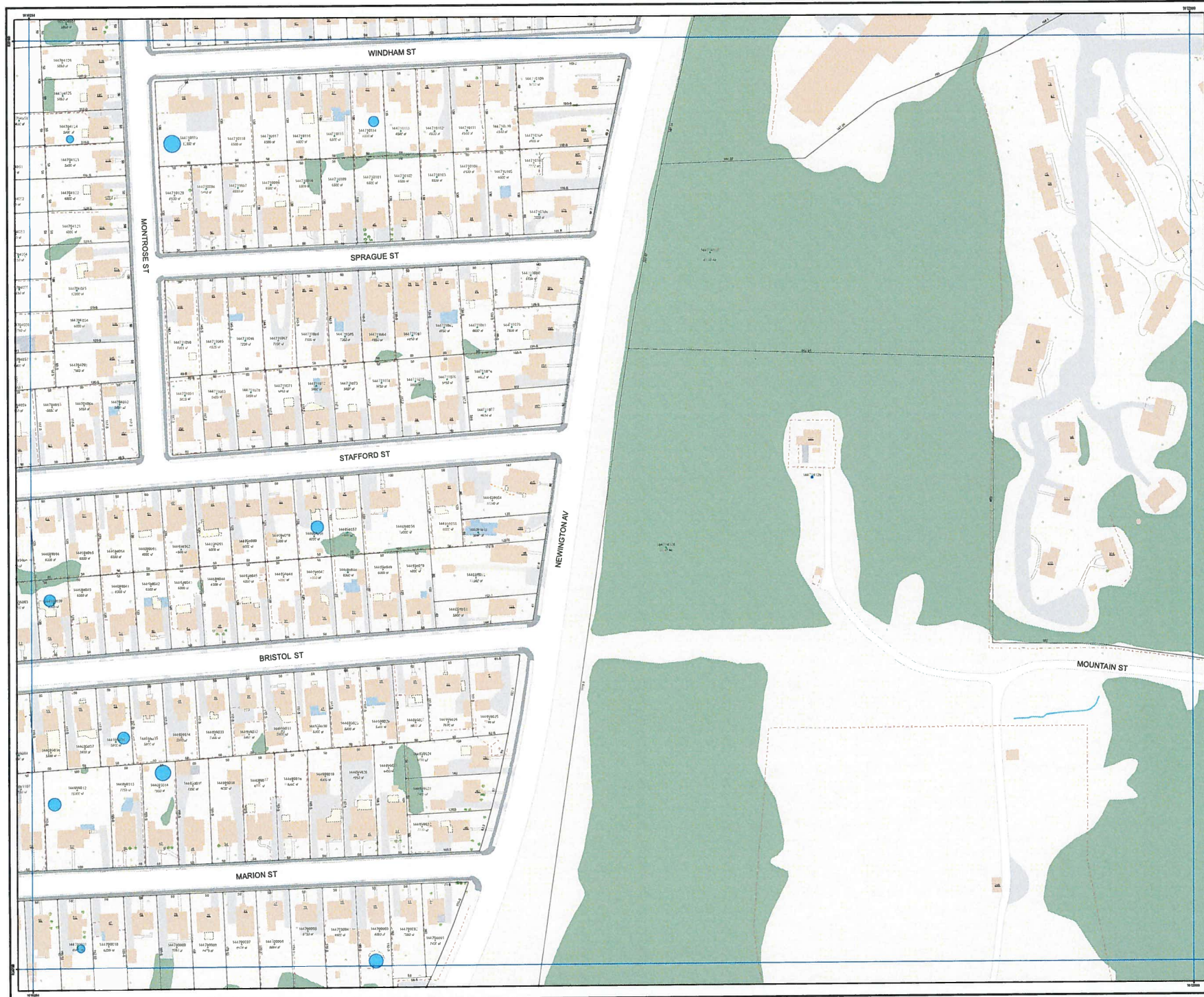


Date: February 21, 2015



1 inch = 50 feet

Map Sheet 144



Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel Identification **144-714-128**
Property Owner **METROPOLITAN DISTRICT BUREAU OF PUBLIC WORKS**
Mailing Address **555 MAIN ST**
City **HARTFORD**
Mailing State **CT** Zip **06103-2915**
ParcelZoning **CAMP**

Property Location **0289 MOUNTAIN ST HARTFORD**
Property Use **WATER SUPPLY**
Most Recent Sale Date **5/1/1990**
Legal Reference **03061 0053**
Grantor **PRACHNIAKEDWARD J.**
Sale Price **250**
Land Area **22.470 acres**

Current Property Assessment

Fiscal Year **2016** Total Value **2,626,260**
Land Value **2,616,180** Building Value **5,110**

Building Description

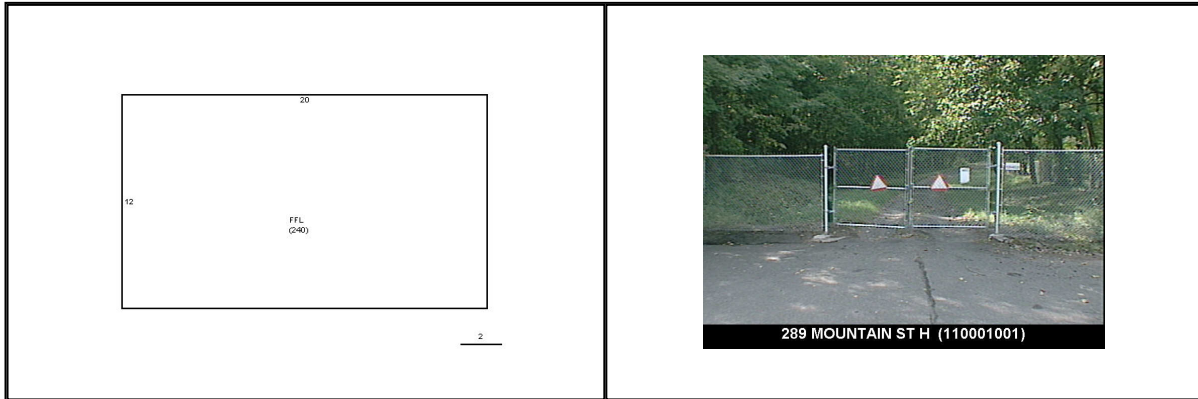
Building Style MFG/PROCESS	Foundation Type Concrete	Flooring Type CONCRETE
# of Living Units 0	Frame Type Wood Frame	Basement Floor N/A
Year Built 1960	Roof Structure GABLE/HIP	Heating Type None
Building Grade Good	Roof Cover Asphalt	Heating Fuel None
Building Condition Average	Siding Brick	Air Conditioning 0%
Finished Area (SF) 240	Interior Walls AVERAGE	# of Bsmt Garages 0
Number Rooms 0	Number Beds 0	# of Full Baths 0
# of 3/4 Baths 0	# of 1/2 Baths 0	# of Other Fixtures 0

Legal Description

Narrative Description of Property

This property contains 22.470 acres of land mainly classified as WATER SUPPLY with a(n) MFG/PROCESS style building, built about 1960 , having Brick exterior and Asphalt roof cover, with 0 unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted.

Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel Identification **144-714-129**

Property Owner **SPRINGWHICH CELLULAR TOWER HOLDINGS LLC**

Mailing Address **AT & T MOBILITY LLC
909 CHESTNUT, RM 36-M-1**

City **ST LOUIS**

Mailing State **MO** Zip **63101**

ParcelZoning **CAMP**

Property Location **0289 MOUNTAIN ST HARTFORD**

Property Use **OTHER UTILITY**

Most Recent Sale Date **7/7/2003**

Legal Reference **04797-0166**

Grantor **METROPOLITAN DISTRICT,BUREAU OF PUBLIC WORKS**

Sale Price **0**

Land Area **0.000 acres**

Current Property Assessment

Fiscal Year **2016**

Land Value **0**

Total Value **18,970**

Building Value **18,970**

Building Description

Building Style **MFG/PROCESS**
of Living Units **0**
Year Built **1984**
Building Grade **Good**
Building Condition **Average**
Finished Area (SF) **682**
Number Rooms **0**
of 3/4 Baths **0**

Foundation Type **Concrete**
Frame Type **Wood Frame**
Roof Structure **FLAT**
Roof Cover **Membrane**
Siding **Brick**
Interior Walls **DRYWALL**
Number Beds **0**
of 1/2 Baths **0**

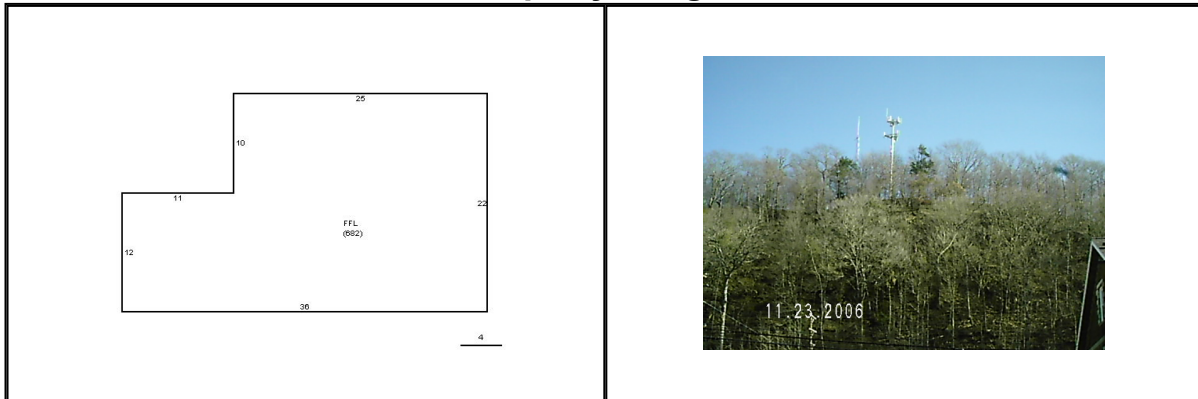
Flooring Type **COMBINATION**
Basement Floor **N/A**
Heating Type **N/A**
Heating Fuel **N/A**
Air Conditioning **0%**
of Bsmt Garages **0**
of Full Baths **0**
of Other Fixtures **0**

Legal Description

Narrative Description of Property

This property contains 0.000 acres of land mainly classified as OTHER UTILITY with a(n) MFG/PROCESS style building, built about 1984 , having Brick exterior and Membrane roof cover, with 0 unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted.

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

27. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
28. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
 - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
 - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
 - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
 - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
 - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
 - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
 - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
 - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
 - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
 - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
 - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.



THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
△	FOR CONSTRUCTION	AMM	04/11/17
△			
△			
△			
△			

ATC SITE NUMBER:

302481

ATC SITE NAME:

HRFR - SOUTH

SITE ADDRESS:

289 H MOUNTAIN ROAD
HARTFORD, CT 06106

SEAL:



May 18 2017 2:43 PM **cosign**



DRAWN BY:	AMM
APPROVED BY:	PPB
DATE DRAWN:	04/11/17
ATC JOB NO:	12042289

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AMM	04/11/17
1	TOWER EQ REV PER CLIENT	AMM	05/02/17
3	PER CLIENTS COMMENTS	KL	05/17/17

ATC SITE NUMBER:

302481

ATC SITE NAME:

HRFR - SOUTH

SITE ADDRESS:

289 H MOUNTAIN ROAD
 HARTFORD, CT 06106

SEAL:



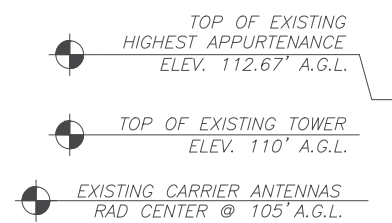
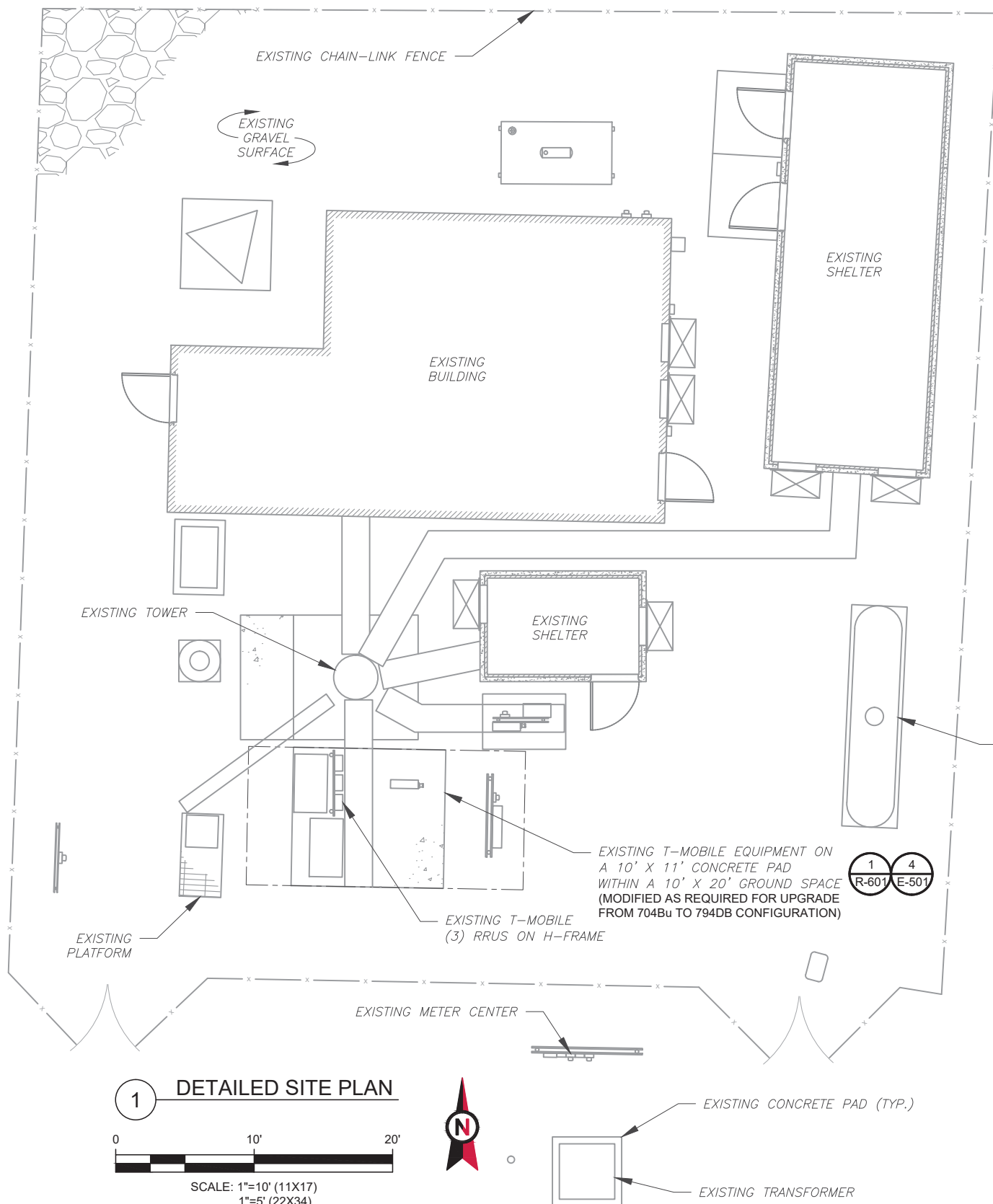
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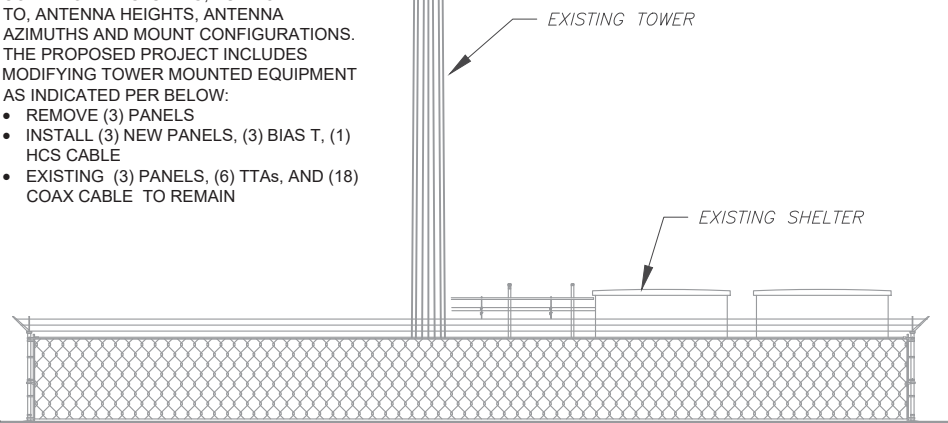
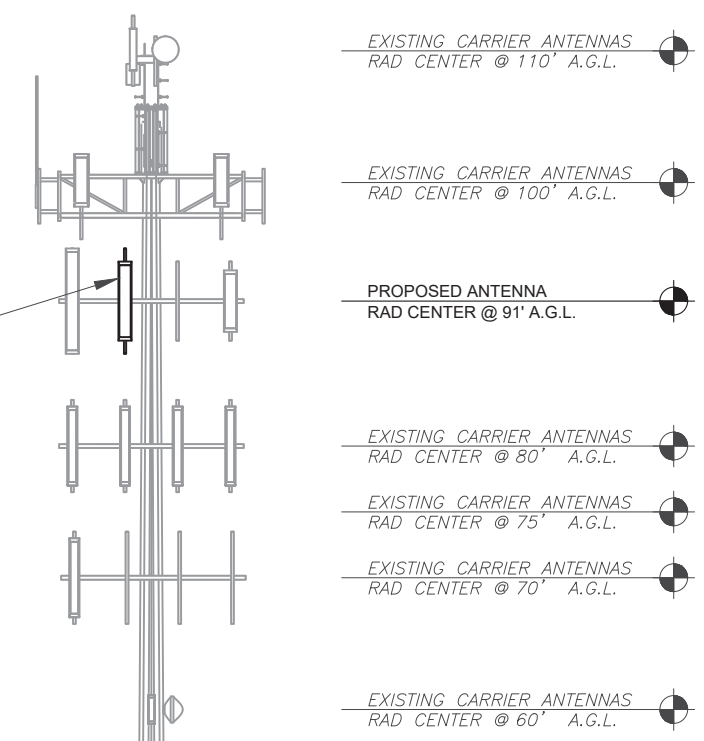
DRAWN BY:	AMM
APPROVED BY:	PPB
DATE DRAWN:	04/11/17
ATC JOB NO:	12042289

DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-101	3



- TOWER NOTE:**
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
 - ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATIONS.
 - THE PROPOSED PROJECT INCLUDES MODIFYING TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:
 - REMOVE (3) PANELS
 - INSTALL (3) NEW PANELS, (3) BIAS T, (1) HCS CABLE
 - EXISTING (3) PANELS, (6) TTAs, AND (18) COAX CABLE TO REMAIN



2 TOWER ELEVATION
 SCALE: NOT TO SCALE

- SITE PLAN NOTES:**
- THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
 - ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AMM	04/11/17
1	TOWER EQ REV PER CLIENT	AMM	05/02/17
2	TOWER EQ REV PER CLIENT	AMM	05/05/17
3	PER CLIENTS COMMENTS	KL	05/17/17

ATC SITE NUMBER:

302481

ATC SITE NAME:

HRFR - SOUTH

SITE ADDRESS:

289 H MOUNTAIN ROAD
 HARTFORD, CT 06106

SEAL:



May 18 2017 2:43 PM cosign

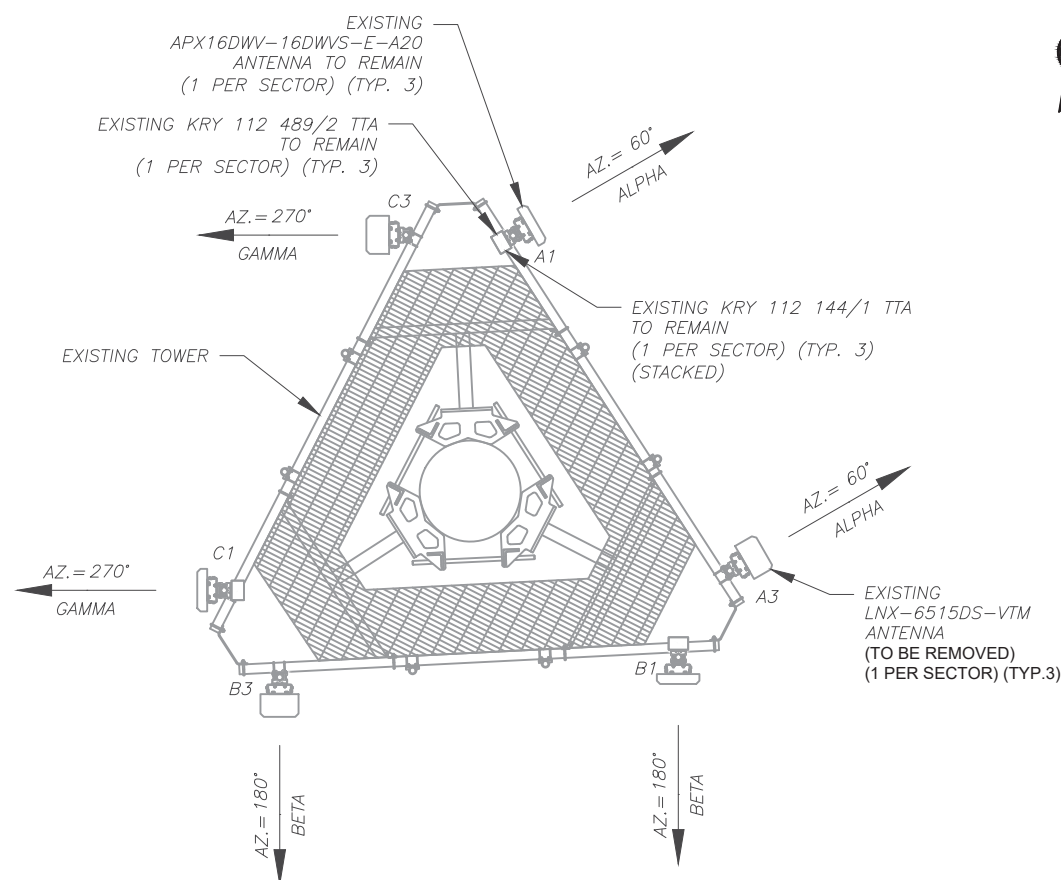
T-Mobile

DRAWN BY:	AMM
APPROVED BY:	PPB
DATE DRAWN:	04/11/17
ATC JOB NO:	12042289

ANTENNA INFORMATION & SCHEDULE

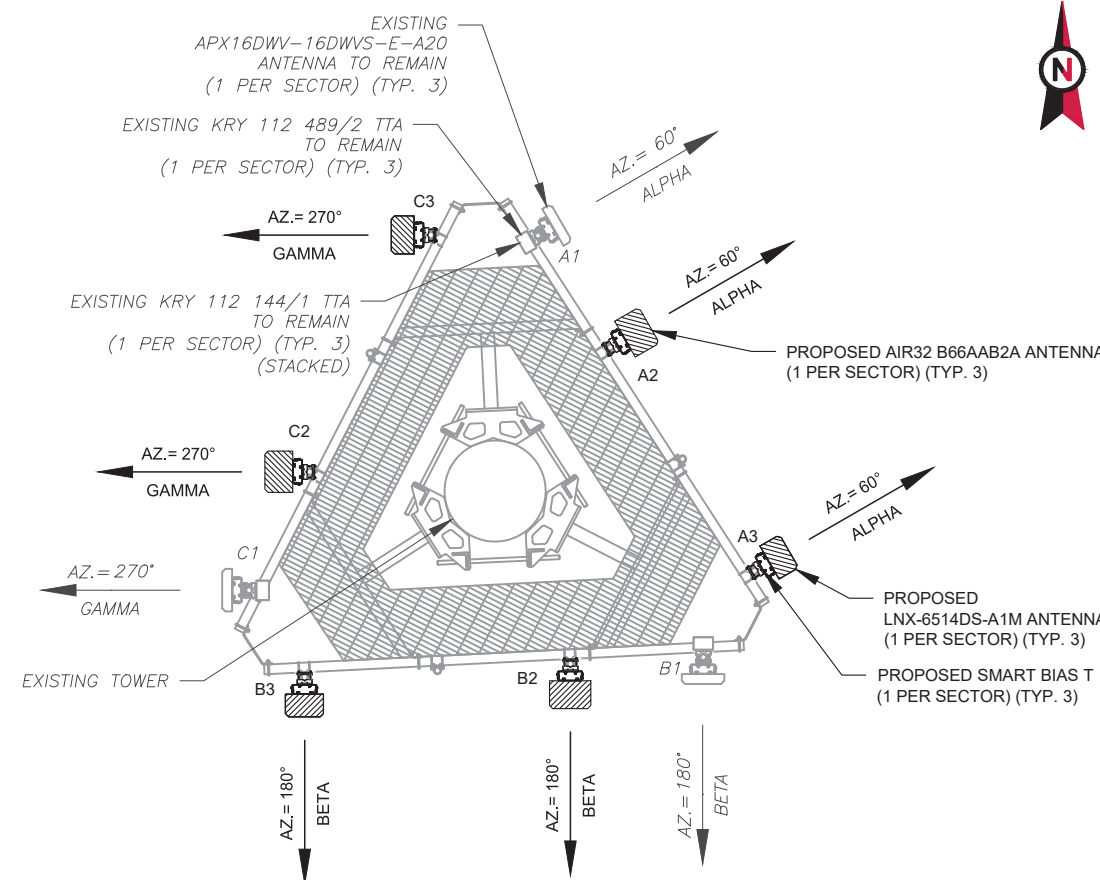
SHEET NUMBER:
C-501

REVISION:
3



1 EXISTING ANTENNA PLAN

NOTES:
 1. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.



2 FINAL ANTENNA PLAN

NOTES:
 1. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH THE ATC CM.
 2. SPACING OF PROPOSED EQUIPMENT SHALL BE CONFIRMED FOR TOWER CONFLICTS AND PROPOSED MOUNTS SHALL NOT IMPEDE TOWER CLIMBING PEGS.

EXISTING ANTENNA/ COAX SCHEDULE

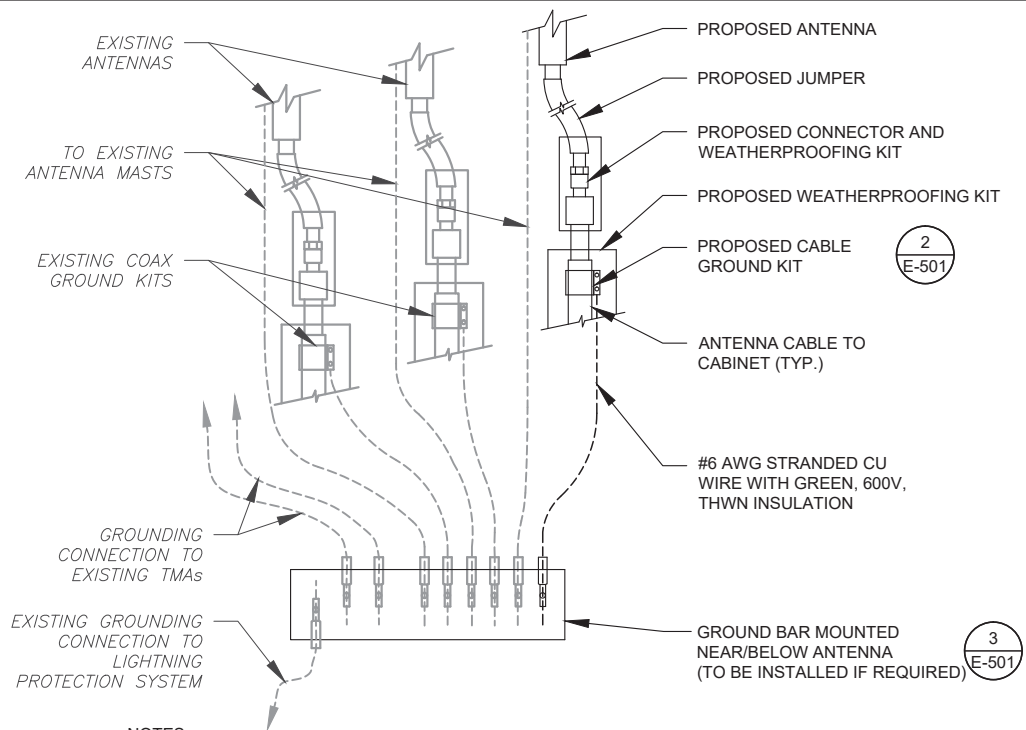
SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT	ANTENNA COAX DESCRIPTION
ALPHA	A1	APX16DWV-16DWVS-E-A20	91'-0"	60°	2°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
ALPHA	A2	-	-	-	-	-	-	-
ALPHA	A3	LNX-6515DS-VTM	91'-0"	60°	0°	2°	-	(2) 1-5/8"
BETA	B1	APX16DWV-16DWVS-E-A20	91'-0"	180°	2°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
BETA	B2	-	-	-	-	-	-	-
BETA	B3	LNX-6515DS-VTM	91'-0"	180°	0°	2°	-	(2) 1-5/8"
GAMMA	C1	APX16DWV-16DWVS-E-A20	91'-0"	270°	2°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
GAMMA	C2	-	-	-	-	-	-	-
GAMMA	C3	LNX-6515DS-VTM	91'-0"	270°	0°	2°	-	(2) 1-5/8"

FINAL ANTENNA/ COAX SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT	ANTENNA COAX DESCRIPTION
ALPHA	A1	APX16DWV-16DWVS-E-A20	91'-0"	60°	0°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
ALPHA	A2	AIR32 B66AAB2A	91'-0"	60°	0°	8°	-	-
ALPHA	A3	LNX-6514DS-A1M	91'-0"	60°	0°	2°	SMART BIAS T	(2) 1-5/8"
BETA	B1	APX16DWV-16DWVS-E-A20	91'-0"	180°	2°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
BETA	B2	AIR32 B66AAB2A	91'-0"	180°	0°	8°	-	-
BETA	B3	LNX-6514DS-A1M	91'-0"	180°	0°	2°	SMART BIAS T	(2) 1-5/8"
GAMMA	C1	APX16DWV-16DWVS-E-A20	91'-0"	270°	2°	8°	KRY 112 489/2, KRY 12 144/1	(4) 1-5/8"
GAMMA	C2	AIR32 B66AAB2A	91'-0"	270°	0°	8°	-	-
GAMMA	C3	LNX-6514DS-A1M	91'-0"	270°	0°	2°	SMART BIAS T	(2) 1-5/8"

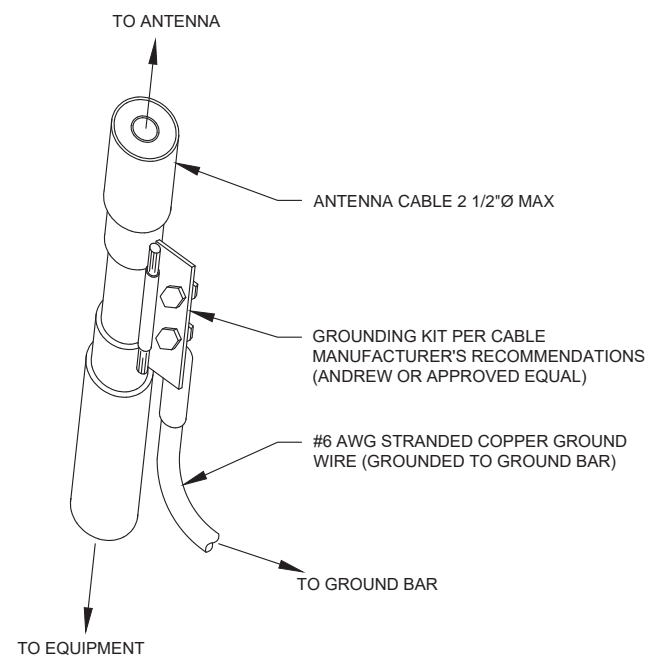
1. BASED ON APPROVED ATC APPLICATION OAA697002, DATED 03-17-17. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS.
 2. (1) PROPOSED HCS CABLE.

3 ANTENNA SCHEDULE



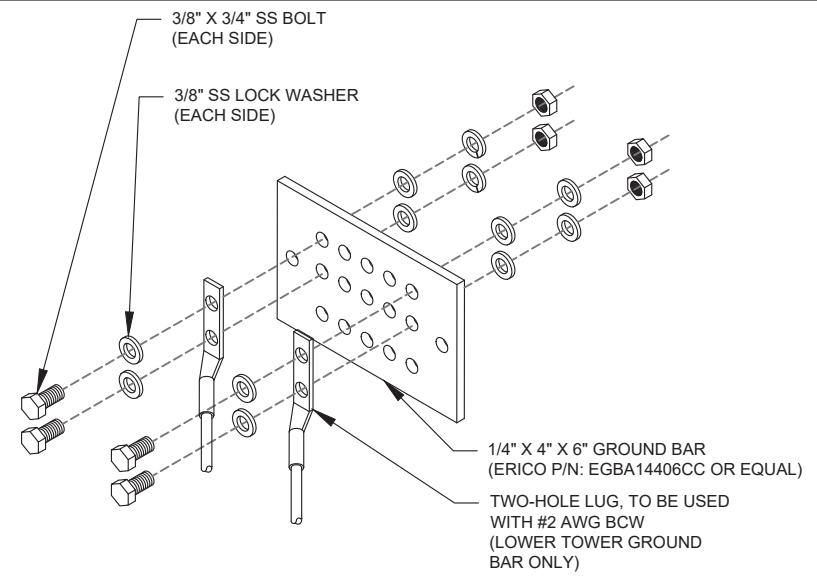
- NOTES:**
1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
 2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION, WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



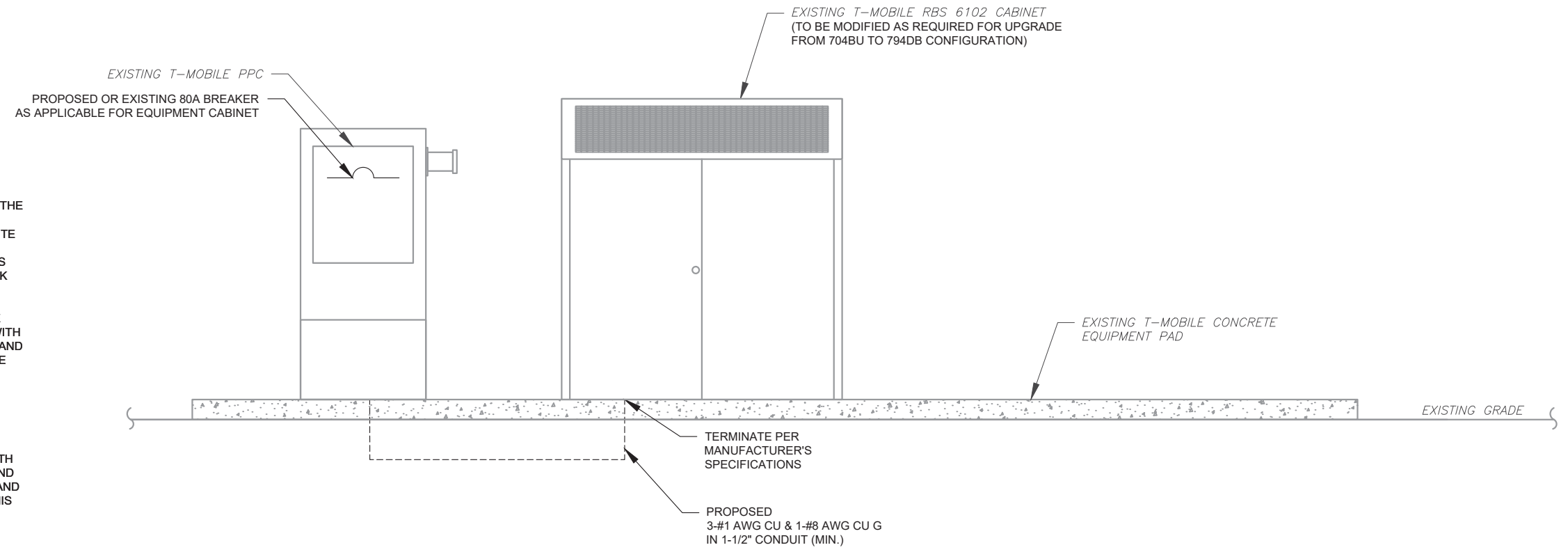
- GROUND KIT NOTES:**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: NOT TO SCALE



- GROUND BAR NOTES:**
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
 2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: NOT TO SCALE



- ELECTRICAL NOTES:**
1. THIS DIAGRAM REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
 2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
 3. ATC HAS NOT YET VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER.

4 ELECTRICAL UPGRADE DIAGRAM
SCALE: NOT TO SCALE

AMERICAN TOWER®
ATC TOWER SERVICES
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: 6260F

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AMM	04/11/17

ATC SITE NUMBER:
302481

ATC SITE NAME:
HRFR - SOUTH

SITE ADDRESS:
289 H MOUNTAIN ROAD
HARTFORD, CT 06106

SEAL:

Patrick P. Barry

May 18 2017 2:43 PM cosign



DRAWN BY:	AMM
APPROVED BY:	PPB
DATE DRAWN:	04/11/17
ATC JOB NO:	12042289

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

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Section 5 - RAN Equipment

Existing RAN Equipment

Template: 704Bu

Enclosure	1	2
Enclosure Type	RBS 6102	RBS 3106
Baseband	DJW30 (x2) DUS41 DUG20	
Radio	RJS01 B2 (x6) RJS01 B4 (x6)	

Proposed RAN Equipment

Template: 794DB Outdoor (evolved from 4B)

Enclosure	1	2
Enclosure Type	RBS 6102	Ancillary Equipment
Baseband	DJW30 (x2) DUS41 DUG20	
Hybrid Cable System		Ericsson 6x12 HCS "S elect Length & AWG"
Radio	RJS01 B2 (x6) RJS01 B4 (x6)	RRJS11 B12 (x3)

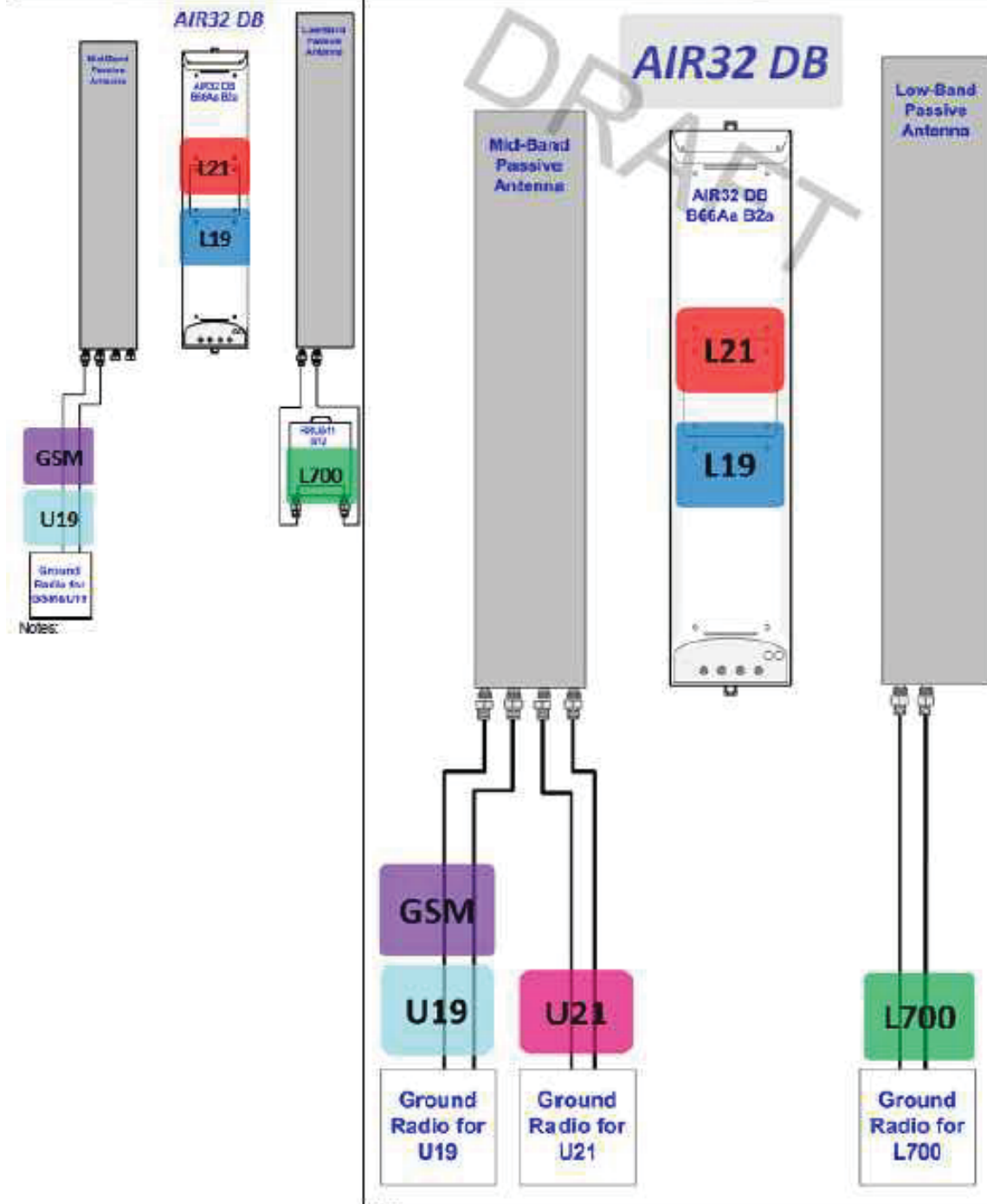
RAN Scope of Work:

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

Section 3 - Proposed Template Images

794DB_RAN_evolved_from_4B.png

1xAIR_1xQP_1DP.png



2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

SUPPLEMENTAL

SHEET NUMBER: R-601
REVISION: 0

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.