



Alex Murshteyn, Site Acquisition Consultant  
c/o Cellco Partnership d/b/a Verizon Wireless  
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October 22, 2018

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

**RE: Notice of Exempt Modification // Site: Hartford N CT (ATC: 302466)  
305 West Service Road, Hartford, CT 06120  
N 41.79952 // W 72.6567**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless currently maintains 12 antennas at the 115-foot mount on the existing 147.9-foot monopole tower, located at 305 West Service Road, Hartford, CT. The tower is owned by American Tower. The property is owned by the 305 W Service Rd Associates LLC. Verizon Wireless now intends install a Monopole Platform Handrail Kit and replace 6 of its remote radio head units (RRUs) and 1 of its over-voltage protectors (OVPs) for the LTE (700/850/1900/2100 MHz) replacements for its PCS/AWS/LTE upgrade. Additionally, Verizon Wireless will remove certain cabling; altogether updating leased equipment rights, as reflected by the final configuration outlined in the structural analysis and proposed hereby.

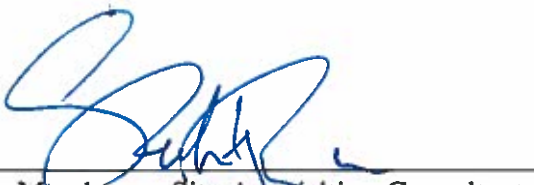
Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Luke Bronin, Mayor for the City of Hartford, its Acting Director of Development Services Kiley Gosselin, including for the Planning & Zoning department, American Tower, the tower owner, and to the ground owner, 305 W Service Rd Associates LLC.

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 August 28, 2018 and a structural analysis dated June 27, 2018 by A.T. Engineering Service, PLLC, a structural mount analysis by Trylon Engineering Services dated July 26, 2018 and radio frequency (RF) analysis table showing worst-case RF emission calculation by Verizon Wireless RF Design Engineering.

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 analyses by A.T. Engineering Service, PLLC, dated June 27, 2018 and Trylon Engineering Services, dated July 26, 2018.

For the foregoing reasons, Verizon Wireless 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 Consultant  
c/o Cellco Partnership d/b/a Verizon Wireless  
Centerline Communications, LLC  
750 West Center Street, Floor 3  
West Bridgewater, MA 02379  
Mobile: (508) 821-0159  
[AMurshteyn@centerlinecommunications.com](mailto:AMurshteyn@centerlinecommunications.com)

Attachments

cc: Luke Bronin, Mayor - as chief elected official - 1Z9Y45030322754775  
Kiley Gosselin, Acting Director of Development Services - as P&Z official - 1Z9Y45030323975383  
American Tower Corporation - as tower owner - 1Z9Y45030331988998  
305 W Service Rd Associates LLC - as property owner - 1Z9Y45030337695605



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CORPORATION

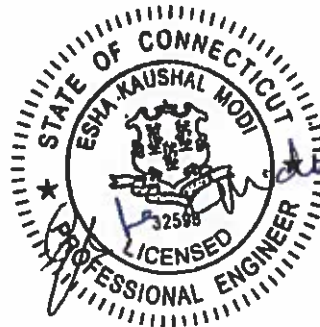
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## Structural Analysis Report

**Structure** : 147.9 ft Monopole  
**ATC Site Name** : West Service Road, CT  
**ATC Site Number** : 302466  
**Engineering Number** : OAA735527\_C3\_01  
**Proposed Carrier** : Verizon  
**Carrier Site Name** : Hartford N CT  
**Carrier Site Number** : PSLC# 467518 / PROJ# 15207931  
**Site Location** : 305 W. Service Rd.  
Hartford, CT 06120-0001  
41.799500,-72.656700  
**County** : Hartford  
**Date** : June 27, 2018  
**Max Usage** : 67%  
**Result** : Pass

Prepared By:  
Tyler Ferguson, E.I.  
Structural Engineer I

Reviewed By:



Authorized by "EOR"  
Jun 27 2018 5:28 PM

COA: PEC.0001553



**AMERICAN TOWER\***  
CORPORATION

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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 147.9 ft monopole to reflect the change in loading by Verizon.

## Supporting Documents

<b>Tower Drawings</b>	FWT Job #18053, dated September 10, 1998
<b>Foundation Drawing</b>	FWT Job #18054, dated September 10, 1998
<b>Geotechnical Report</b>	Gibble Norden Champion Project #98134.09, dated September 8, 1998

## 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.

<b>Basic Wind Speed:</b>	97 mph (3-Second Gust, $V_{acd}$ ) / 125 mph (3-second Gust, $V_{ult}$ )
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	C
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.18$ , $S_1 = 0.06$
<b>Site Class:</b>	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](mailto: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 <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	8	Andrew DB844H90E-XY	Platform w/ Handrails	(12) 1 1/4" Coax	Sprint Nextel
		4	Andrew 844G65VTZASX			
135.0	138.0	9	48" x 4" Panel	Low Profile Platform	(9) 1 5/8" Coax	AT&T Mobility
125.0	126.0	3	Ericsson KRY 112 144/1	T-Arms	(12) 1 5/8" Coax (1) 1 5/8" Fiber (1) 1 5/8" Hybriflex	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR-32 B2A/B66Aa			
		3	Andrew LNX-6515DS-VTM			
115.0	115.0	1	RFS DB-T1-6Z-8AB-0Z	Low Profile Platform	(6) 1 5/8" Coax (2) 1 5/8" Fiber	Verizon
		6	Antel BXA-70063-6CF-EDIN-X			
		6	Commscope SBNHH-1D65B			
101.0	107.0	1	Antel BCD-87010_25	Stand-Off	(1) 7/8" Coax	Sensus USA
90.0	90.0	2	DragonWave Horizon Compact	T-Arms	(6) 5/16" Coax (3) 1 1/4" Hybriflex (2) 2" conduit (2) 1/2" Coax (1) 1.7" Hybrid	Clearwire
		6	Alcatel-Lucent RRH2x50-08			
		3	Alcatel-Lucent 1900MHz RRH (65MHz) w/ solar shield			
		1	18" x 18" x 4" Junction Box			
		3	Nokia 2.5G MAA - AAHC(64T64R)			
		2	Andrew VHLP2-18			
		3	Commscope NNVV-65B-R4			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
115.0	115.0	3	Alcatel-Lucent RRH2x60 700	-	(12) 1 5/8" Coax	Verizon
		3	Alcatel-Lucent RRH2X60-1900			
		3	Alcatel-Lucent B66A RRH 4x45			
		1	RFS DB-T1-6Z-8AB-0Z			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
115.0	115.0	3	Samsung 700/850MHz Dual Band RRH	Low Profile Platform	-	Verizon
		3	Samsung PCS/AWS Dual Band RRH			
		1	Raycap RVZDC-6627-PF-48			

<sup>1</sup>Mount 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).

Remove the (6) 1 5/8" coax installed outside the pole shaft and (6) of the 1 5/8" coax installed inside the pole shaft.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	63%	Pass
Shaft	67%	Pass
Base Plate	22%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,307.0	67%
Axial (Kips)	49.1	4%
Shear (Kips)	32.4	48%

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) (°)
115.0	Samsung PCS/AWS Dual Band RRH	Verizon	0.905	0.828
	Samsung 700/850MHz Dual Band RRH			
	Raycap RVZDC-6627-PF-48			
90.0	Andrew VHLP2-18	Clearwire	0.570	0.697

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



## **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.

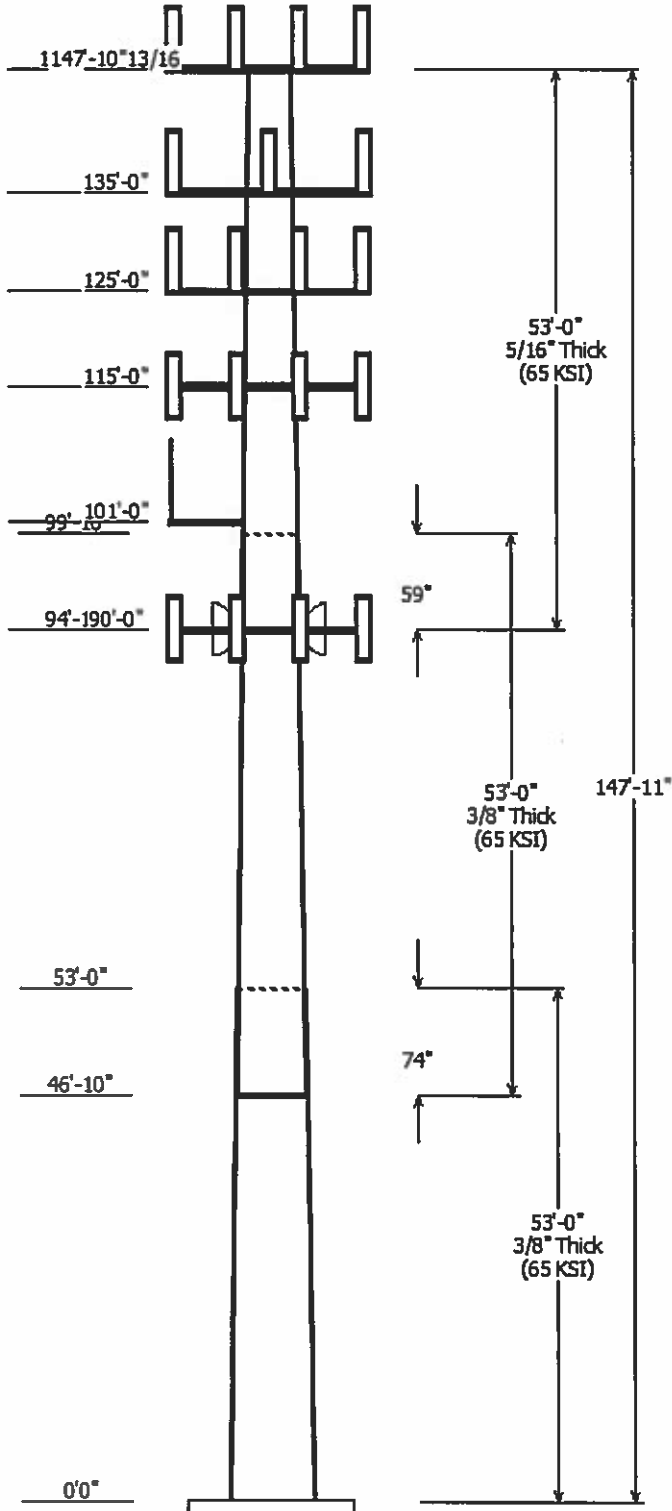
All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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



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Job Information	
Pole : 302466	Code: ANSI/TIA-222-G
Location : West Service Road, CT	
Description :	
Client : VERIZON WIRELESS	Struct Class : II
Shape : 18 Sides	Exposure : C
Height : 147.92 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.214564(in/ft)	

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade	Shape
		Across Top	Flats Bottom					
1	53.000	45.20	56.58	0.375		0.000	18 Sides	65
2	53.000	35.90	47.28	0.375	Slip Joint	74.000	18 Sides	65
3	53.000	26.21	37.58	0.313	Slip Joint	59.000	18 Sides	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
147.900	150.000	1	Flat Platform w/ Handrails
147.900	150.000	4	Andrew 844G65VTZASX
147.900	150.000	8	Andrew DB844H90E-XY
135.000	135.000	1	Flat Low Profile Platform
135.000	138.000	9	48" x 4" Panel
125.000	126.000	3	Ericsson RRUS 11 B12
125.000	126.000	3	Andrew LNX-6515DS-VTM
125.000	126.000	3	Ericsson AIR-32 B2A/B66Aa
125.000	126.000	3	Ericsson AIR 21, 1.3 M, B2A B4
125.000	126.000	3	Ericsson KRY 112 144/1
125.000	125.000	3	Round T-Arm
115.000	115.000	1	Raycap RVZDC-6627-PF-48
115.000	115.000	3	Samsung 700/850MHz Dual
115.000	115.000	3	Samsung PCS/AWS Dual Band
115.000	115.000	6	Commscope SBNHH-1D65B
115.000	115.000	1	RFS DB-T1-6Z-8AB-0Z
115.000	115.000	6	Amphenol Antel BXA-70063-
115.000	115.000	1	Flat Low Profile Platform
101.000	107.000	1	Antel BCD-87010 __ 25
101.000	101.000	1	Stand-Off
90.000	90.000	3	Commscope NNVV-65B-R4
90.000	90.000	3	Nokia 2.5G MAA -
90.000	90.000	1	18" x 18" x 4" Junction Box
90.000	90.000	2	Andrew VHLP2-18
90.000	90.000	3	Alcatel-Lucent 1900MHz RRH
90.000	90.000	6	Alcatel-Lucent RRH2x50-08
90.000	90.000	3	Flat T-Arm
90.000	90.000	2	DragonWave Horizon Compact

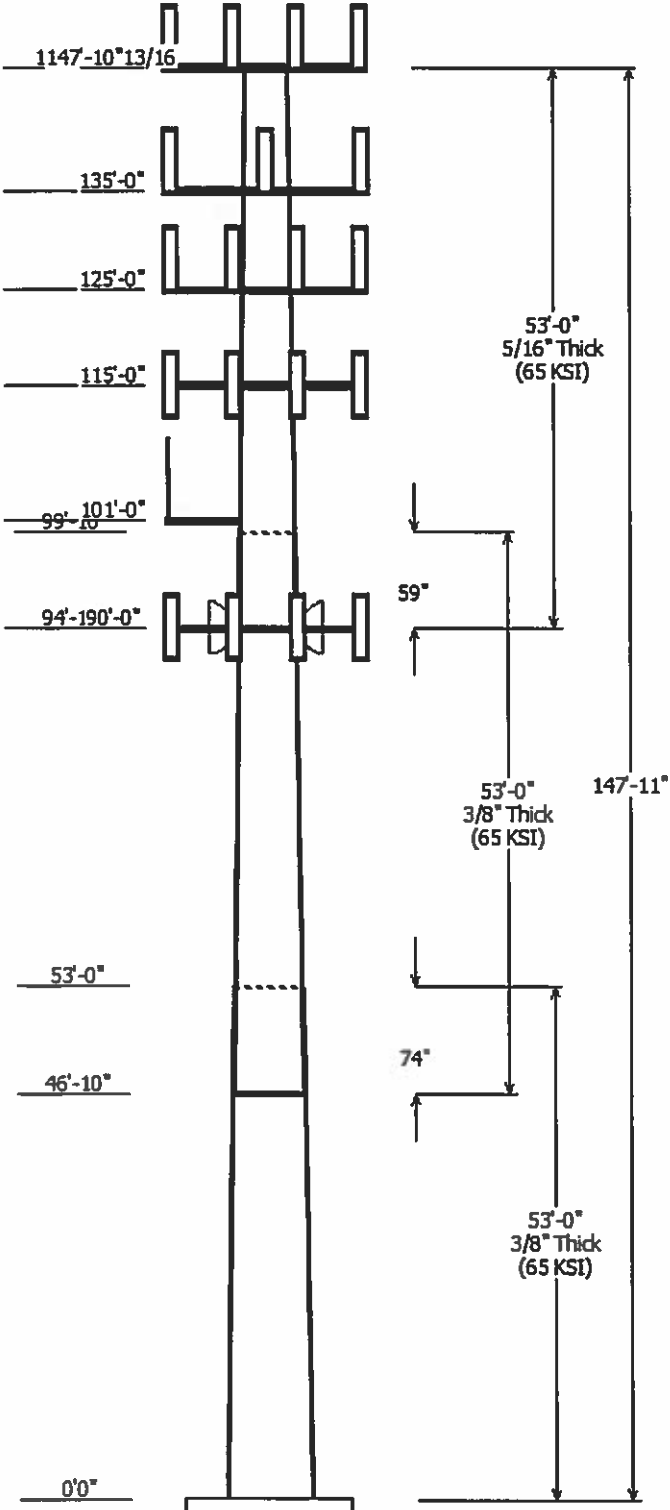
Linear Appurtenance			
Elev (ft)	From To		Exposed To Wind
	From	To	
5.000	90.000	1 1/4" Hybriflex	No
5.000	90.000	1.7" (43.2mm)	No
5.000	90.000	1/2" Coax	Yes
5.000	90.000	2" conduit	Yes
5.000	90.000	5/16" (0.31")	No
5.000	101.0	7/8" Coax	Yes
5.000	115.0	1 5/8" (1.63")	Yes
5.000	115.0	1 5/8" Coax	No
5.000	125.0	1 5/8" (1.63")	No

5.000	125.0	1 5/8" Coax	Yes
5.000	125.0	1 5/8" Coax	No
5.000	125.0	1 5/8" Hybriflex	Yes
5.000	135.0	1 5/8" Coax	No
5.000	147.9	1 1/4" Coax	No

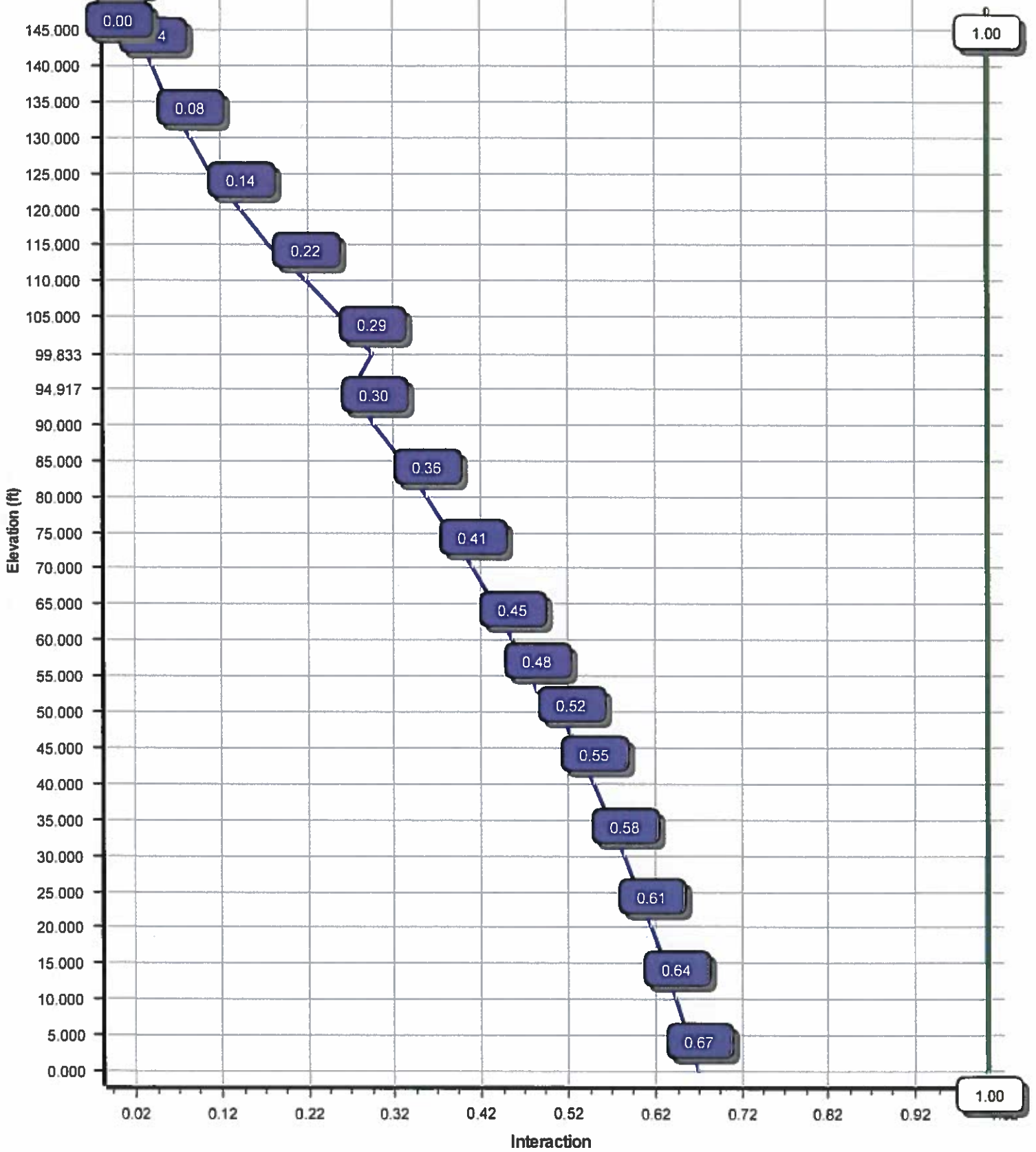
Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (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	3307.03	32.35	49.08
0.9D + 1.6W	3233.92	31.84	36.80
1.2D + 1.0Di + 1.0Wi	964.71	9.35	90.74
(1.2 + 0.2Sds) * DL + E ELFM	204.45	1.79	49.31
(1.2 + 0.2Sds) * DL + E EMAM	242.39	2.11	49.31
(0.9 - 0.2Sds) * DL + E ELFM	202.21	1.79	34.30
(0.9 - 0.2Sds) * DL + E EMAM	239.53	2.11	34.30
1.0D + 1.0W	776.11	7.61	40.94

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	90.00	6.845	0.697



Load Case : 1.2D + 1.6W  
Max Ratio 66.88% at 0.0 ft



Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

### Analysis Parameters

Location :	HARTFORD County, CT	Height (ft) :	147.9167
Code :	ANSI/TIA-222-G	Base Diameter (In) :	56.58
Shape :	18 Sides	Top Diameter (In) :	26.22
Pole Type :	Taper	Taper (In/ft) :	0.215
Pole Manufacturer :	FWT	Rotation (deg) :	0.00

### Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	C	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 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):	2.04		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.181	S <sub>1</sub> :	0.064
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.193	S <sub>d1</sub> :	0.102
		C <sub>s</sub> :	0.034
		C <sub>s</sub> Max:	0.034
		C <sub>s</sub> 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 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom						Top						
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.000	0.3750	65		0.00	10,844	56.58	0.00	66.90	26698.9	24.84	150.88	45.20	53.00	53.36	13550.7	19.49	120.55	0.214564
2-18	53.000	0.3750	65	Slip	74.00	8,848	47.28	46.83	55.83	15518.8	20.47	126.08	35.90	99.83	42.29	6747.0	15.12	95.76	0.214564
3-18	53.000	0.3125	65	Slip	59.00	5,651	37.58	94.92	36.97	6490.8	19.45	120.28	26.21	147.92	25.69	2178.3	13.03	83.89	0.214564
Shaft Weight						25,343													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
147.90	Andrew 844G65VTASX	4	0.000	2.100	16.00	5.310	0.71
147.90	Andrew DB844H90E-XY	8	0.000	2.100	14.00	3.610	0.74
147.90	Flat Platform w/ Handrails	1	0.000	2.100	2000.00	42.400	1.00
135.00	48" x 4" Panel	9	0.000	3.000	20.00	2.090	0.69
135.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
125.00	Andrew LNX-6515DS-VTM	3	0.000	1.000	51.30	11.430	0.70
125.00	Ericsson AIR 21, 1.3 M, B2A B4	3	0.000	1.000	83.00	6.050	0.71
125.00	Ericsson AIR-32 B2A/B66Aa	3	0.000	1.000	132.20	6.510	0.71
125.00	Ericsson KRY 112 144/1	3	0.000	1.000	11.00	0.410	0.50
125.00	Ericsson RRUS 11 B12	3	0.000	1.000	50.70	2.790	0.50
125.00	Round T-Arm	3	0.000	0.000	250.00	9.700	0.67
115.00	Amphenol Antel BXA-70063-6CF-	6	0.000	0.000	17.00	7.570	0.66
115.00	Commscope SBNHH-1D65B	6	0.000	0.000	50.70	8.170	0.69
115.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
115.00	Raycap RVZDC-6627-PF-48	1	0.000	0.000	32.00	3.780	0.50
115.00	RFS DB-T1-6Z-8AB-0Z	1	0.000	0.000	44.00	4.800	0.50
115.00	Samsung 700/850MHz Dual Band	3	0.000	0.000	70.30	1.880	0.50
115.00	Samsung PCS/AWS Dual Band	3	0.000	0.000	84.40	1.880	0.50
101.00	Antel BCD-87010 ___ 25	1	0.000	6.000	26.50	2.900	1.00
101.00	Stand-Off	1	0.000	0.000	75.00	2.500	1.00
90.00	18" x 18" x 4" Junction Box	1	0.000	0.000	21.00	2.700	0.50
90.00	Alcatel-Lucent 1900MHz RRH (65	3	0.000	0.000	60.00	2.580	0.50
90.00	Alcatel-Lucent RRH2x50-08	6	0.000	0.000	52.90	1.700	0.50
90.00	Andrew VHLP2-18	2	0.000	0.000	27.00	4.680	1.00
90.00	Commscope NNVV-65B-R4	3	0.000	0.000	77.40	12.270	0.64
90.00	DragonWave Horizon Compact	2	0.000	0.000	10.60	0.430	0.50
90.00	Flat T-Arm	3	0.000	0.000	250.00	12.900	0.67
90.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.000	0.000	103.60	4.200	0.64
Totals	Num Loadings:28	87			10025.00		

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width (in)	Exposed To Wind	Carrier
5.00	147.90	12	1 1/4" Coax	1.55	0.63	N 0.00	N	Sprint Nextel
5.00	135.00	9	1 5/8" Coax	1.98	0.82	N 0.00	N	AT&T Mobillity
5.00	125.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N 0.00	N	T-Mobile
5.00	125.00	6	1 5/8" Coax	1.98	0.82	N 3.96	Y	T-Mobile
5.00	125.00	6	1 5/8" Coax	1.98	0.82	N 0.00	N	T-Mobile
5.00	125.00	1	1 5/8" Hybriflex	1.98	1.30	N 0.00	Y	T-Mobile
5.00	115.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N 0.00	Y	Verizon
5.00	115.00	6	1 5/8" Coax	1.98	0.82	N 0.00	N	Verizon

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Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:05 PM

Customer: VERIZON WIRELESS

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5.00	101.00	1 7/8" Coax	1.09	0.33	N	1.09	Y	Sensus USA
5.00	90.00	3 1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	Clearwire
5.00	90.00	1 1.7" (43.2mm) Hybrid	1.70	1.78	N	0.00	N	Clearwire
5.00	90.00	2 1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
5.00	90.00	2 2" conduit	2.38	3.65	N	0.00	Y	Clearwire
5.00	90.00	6 5/16" (0.31"-7.9mm)	0.31	0.05	N	0.00	N	Clearwire

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:05 PM

Customer: VERIZON WIRELESS

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.3750	56.580	66.895	26,698.9	24.84	150.88	72.2	929.4	0.0	0.0
5.00		0.3750	55.507	65.618	25,199.0	24.34	148.02	72.8	894.2	0.0	1,127.3
10.00		0.3750	54.434	64.341	23,756.4	23.83	145.16	73.4	859.6	0.0	1,105.6
15.00		0.3750	53.361	63.065	22,369.9	23.33	142.30	74.0	825.7	0.0	1,083.8
20.00		0.3750	52.288	61.788	21,038.5	22.82	139.44	74.6	792.5	0.0	1,062.1
25.00		0.3750	51.216	60.511	19,760.9	22.32	136.57	75.2	760.0	0.0	1,040.4
30.00		0.3750	50.143	59.234	18,536.2	21.81	133.71	75.7	728.1	0.0	1,018.7
35.00		0.3750	49.070	57.957	17,363.1	21.31	130.85	76.3	696.9	0.0	996.9
40.00		0.3750	47.997	56.680	16,240.6	20.81	127.99	76.9	666.5	0.0	975.2
45.00		0.3750	46.924	55.403	15,167.5	20.30	125.13	77.5	636.6	0.0	953.5
46.83	Bot - Section 2	0.3750	46.531	54.935	14,786.3	20.12	124.08	77.7	625.9	0.0	344.2
50.00		0.3750	45.851	54.126	14,142.8	19.80	122.27	78.1	607.5	0.0	1,184.8
53.00	Top - Section 1	0.3750	45.958	54.253	14,242.2	19.85	122.55	78.1	610.4	0.0	1,106.4
55.00		0.3750	45.529	53.742	13,843.8	19.64	121.41	78.3	598.9	0.0	367.5
60.00		0.3750	44.456	52.465	12,880.3	19.14	118.55	78.9	570.7	0.0	903.5
65.00		0.3750	43.383	51.188	11,962.6	18.64	115.69	79.5	543.1	0.0	881.8
70.00		0.3750	42.310	49.912	11,089.5	18.13	112.83	80.1	516.2	0.0	860.1
75.00		0.3750	41.237	48.635	10,260.0	17.63	109.97	80.7	490.0	0.0	838.3
80.00		0.3750	40.165	47.358	9,472.9	17.12	107.11	81.3	464.5	0.0	816.6
85.00		0.3750	39.092	46.081	8,727.1	16.62	104.24	81.9	439.7	0.0	794.9
90.00		0.3750	38.019	44.804	8,021.6	16.11	101.38	82.4	415.6	0.0	773.2
94.92	Bot - Section 3	0.3750	36.964	43.548	7,365.9	15.62	98.57	82.6	392.5	0.0	739.1
95.00		0.3750	36.946	43.527	7,355.1	15.61	98.52	82.6	392.1	0.0	22.8
99.83	Top - Section 2	0.3125	36.534	35.926	5,955.2	18.85	116.91	79.2	321.1	0.0	1,305.1
100.0		0.3125	36.498	35.890	5,937.6	18.83	116.79	79.3	320.4	0.0	20.4
101.0		0.3125	36.284	35.678	5,832.6	18.71	116.11	79.4	316.6	0.0	121.8
105.0		0.3125	35.425	34.826	5,425.0	18.23	113.36	80.0	301.6	0.0	479.8
110.0		0.3125	34.353	33.762	4,942.7	17.62	109.93	80.7	283.4	0.0	583.5
115.0		0.3125	33.280	32.698	4,490.0	17.01	106.50	81.4	265.7	0.0	565.4
120.0		0.3125	32.207	31.634	4,065.8	16.41	103.06	82.1	248.6	0.0	547.3
125.0		0.3125	31.134	30.570	3,669.1	15.80	99.63	82.6	232.1	0.0	529.2
130.0		0.3125	30.061	29.506	3,299.2	15.20	96.20	82.6	216.2	0.0	511.1
135.0		0.3125	28.989	28.442	2,955.0	14.59	92.76	82.6	200.8	0.0	493.0
140.0		0.3125	27.916	27.378	2,635.6	13.99	89.33	82.6	186.0	0.0	474.9
145.0		0.3125	26.843	26.314	2,340.0	13.38	85.90	82.6	171.7	0.0	456.8
147.9		0.3125	26.221	25.697	2,179.2	13.03	83.91	82.6	163.7	0.0	256.6
147.9		0.3125	26.217	25.693	2,178.3	13.03	83.89	82.6	163.7	0.0	1.5
											25,342.5

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:05 PM

Customer: VERIZON WIRELESS

**Load Case: 1.2D + 1.6W**

**97 mph with No Ice**

**22 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		263.8	0.0					0.0	0.0	263.8	0.0	0.0	0.0
5.00		522.6	1,352.7					0.0	0.0	522.6	1,352.7	0.0	0.0
10.00		512.5	1,326.7					0.0	293.0	512.5	1,619.7	0.0	0.0
15.00		510.2	1,300.6					0.0	293.0	510.2	1,593.6	0.0	0.0
20.00		521.5	1,274.5					0.0	293.0	521.5	1,567.6	0.0	0.0
25.00		535.6	1,248.5					0.0	293.0	535.6	1,541.5	0.0	0.0
30.00		545.3	1,222.4					0.0	293.0	545.3	1,515.4	0.0	0.0
35.00		553.4	1,196.3					0.0	293.0	553.4	1,489.3	0.0	0.0
40.00		560.5	1,170.3					0.0	293.0	560.5	1,463.3	0.0	0.0
45.00		385.7	1,144.2					0.0	293.0	385.7	1,437.2	0.0	0.0
46.83	Bot - Section 2	286.9	413.0					0.0	107.4	286.9	520.4	0.0	0.0
50.00		356.9	1,421.8					0.0	185.6	356.9	1,607.3	0.0	0.0
53.00	Top - Section 1	289.5	1,327.6					0.0	175.8	289.5	1,503.5	0.0	0.0
55.00		405.1	441.0					0.0	117.2	405.1	558.2	0.0	0.0
60.00		579.4	1,084.2					0.0	293.0	579.4	1,377.2	0.0	0.0
65.00		579.7	1,058.1					0.0	293.0	579.7	1,351.2	0.0	0.0
70.00		579.0	1,032.1					0.0	293.0	579.0	1,325.1	0.0	0.0
75.00		577.6	1,006.0					0.0	293.0	577.6	1,299.0	0.0	0.0
80.00		575.5	979.9					0.0	293.0	575.5	1,272.9	0.0	0.0
85.00		572.7	953.9					0.0	293.0	572.7	1,246.9	0.0	0.0
90.00	Appurtenance(s)	564.6	927.8	3,126.0	0.0	0.0	2,263.9	0.0	293.0	3,690.6	3,484.7	0.0	0.0
94.92	Bot - Section 3	283.8	886.9					0.0	213.3	283.8	1,100.2	0.0	0.0
95.00		281.8	27.4					0.0	3.6	281.8	31.0	0.0	0.0
99.83	Top - Section 2	286.5	1,566.1					0.0	209.7	286.5	1,775.8	0.0	0.0
100.00		66.1	24.4					0.0	7.2	66.1	31.7	0.0	0.0
101.00	Appurtenance(s)	264.3	146.1	277.6	0.0	899.6	121.8	0.0	43.4	541.9	311.3	0.0	0.0
105.00		464.7	575.8					0.0	172.0	464.7	747.8	0.0	0.0
110.00		511.2	700.2					0.0	215.0	511.2	915.1	0.0	0.0
115.00	Appurtenance(s)	505.2	678.5	4,466.4	0.0	0.0	2,935.6	0.0	215.0	4,971.5	3,829.0	0.0	0.0
120.00		498.8	656.7					0.0	166.1	498.8	822.9	0.0	0.0
125.00	Appurtenance(s)	473.4	635.0	3,159.5	0.0	2,378.3	2,081.5	0.0	166.1	3,633.0	2,882.6	0.0	0.0
130.00		445.3	613.3					0.0	89.6	445.3	702.9	0.0	0.0
135.00	Appurtenance(s)	432.8	591.6	1,983.5	0.0	1,699.1	2,016.0	0.0	89.6	2,416.3	2,697.2	0.0	0.0
140.00		420.0	569.8					0.0	45.4	420.0	615.2	0.0	0.0
145.00		323.6	548.1					0.0	45.4	323.6	593.5	0.0	0.0
147.90		117.5	307.9					0.0	26.3	117.5	334.3	0.0	0.0
147.92		0.7	1.8					0.0	0.0	0.7	1.8	0.0	0.0
<b>Totals:</b>										<b>28,666.7</b>	<b>46,518.9</b>	<b>0.00</b>	<b>0.00</b>



Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:09 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

97 mph with No Ice

22 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	-49.08	-32.35	0.00	-3,307.03	0.00	3,307.03	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.669
5.00	-47.63	-31.97	0.00	-3,145.29	0.00	3,145.29	4,297.95	2,148.97	9,746.71	4,880.60	0.09	-0.17	0.656
10.00	-45.92	-31.59	0.00	-2,985.45	0.00	2,985.45	4,248.67	2,124.33	9,446.21	4,730.12	0.37	-0.34	0.642
15.00	-44.23	-31.20	0.00	-2,827.52	0.00	2,827.52	4,198.03	2,099.01	9,147.11	4,580.35	0.82	-0.52	0.628
20.00	-42.58	-30.79	0.00	-2,671.52	0.00	2,671.52	4,146.02	2,073.01	8,849.60	4,431.38	1.46	-0.69	0.613
25.00	-40.95	-30.36	0.00	-2,517.56	0.00	2,517.56	4,092.65	2,046.33	8,553.86	4,283.29	2.28	-0.87	0.598
30.00	-39.35	-29.91	0.00	-2,365.76	0.00	2,365.76	4,037.92	2,018.96	8,260.08	4,136.18	3.29	-1.05	0.582
35.00	-37.79	-29.44	0.00	-2,216.20	0.00	2,216.20	3,981.83	1,990.91	7,968.43	3,990.14	4.48	-1.22	0.565
40.00	-36.25	-28.96	0.00	-2,068.98	0.00	2,068.98	3,924.37	1,962.18	7,679.09	3,845.25	5.85	-1.40	0.548
45.00	-34.76	-28.61	0.00	-1,924.18	0.00	1,924.18	3,865.54	1,932.77	7,392.26	3,701.62	7.41	-1.57	0.529
46.83	-34.21	-28.36	0.00	-1,871.72	0.00	1,871.72	3,843.63	1,921.82	7,287.75	3,649.29	8.02	-1.64	0.522
50.00	-32.56	-28.02	0.00	-1,781.91	0.00	1,781.91	3,805.35	1,902.68	7,108.10	3,559.34	9.15	-1.75	0.509
53.00	-31.02	-27.73	0.00	-1,697.85	0.00	1,697.85	3,811.38	1,905.69	7,136.14	3,573.37	10.28	-1.85	0.483
55.00	-30.42	-27.37	0.00	-1,642.39	0.00	1,642.39	3,786.98	1,893.49	7,023.15	3,516.80	11.07	-1.92	0.475
60.00	-28.99	-26.82	0.00	-1,505.54	0.00	1,505.54	3,725.02	1,862.51	6,742.75	3,376.39	13.17	-2.08	0.454
65.00	-27.59	-26.27	0.00	-1,371.42	0.00	1,371.42	3,661.69	1,830.85	6,465.46	3,237.53	15.44	-2.24	0.431
70.00	-26.22	-25.71	0.00	-1,240.08	0.00	1,240.08	3,597.00	1,798.50	6,191.44	3,100.32	17.87	-2.40	0.407
75.00	-24.88	-25.14	0.00	-1,111.55	0.00	1,111.55	3,530.95	1,765.48	5,920.88	2,964.84	20.47	-2.55	0.382
80.00	-23.58	-24.56	0.00	-985.86	0.00	985.86	3,463.54	1,731.77	5,653.97	2,831.19	23.22	-2.70	0.355
85.00	-22.30	-23.98	0.00	-863.04	0.00	863.04	3,394.76	1,697.38	5,390.88	2,699.44	26.11	-2.83	0.326
90.00	-18.96	-20.16	0.00	-743.12	0.00	743.12	3,324.61	1,662.31	5,131.80	2,569.71	29.15	-2.96	0.295
94.92	-17.86	-19.84	0.00	-643.99	0.00	643.99	3,235.43	1,617.72	4,852.80	2,430.01	32.27	-3.09	0.271
95.00	-17.82	-19.58	0.00	-642.33	0.00	642.33	3,233.85	1,616.93	4,848.03	2,427.62	32.32	-3.09	0.270
99.83	-16.05	-19.21	0.00	-547.72	0.00	547.72	2,561.72	1,280.86	3,809.84	1,907.75	35.51	-3.20	0.294
100.00	-16.02	-19.14	0.00	-544.52	0.00	544.52	2,559.96	1,279.98	3,803.43	1,904.54	35.62	-3.20	0.292
101.00	-15.71	-18.60	0.00	-524.48	0.00	524.48	2,549.35	1,274.68	3,765.02	1,885.31	36.29	-3.23	0.285
105.00	-14.96	-18.12	0.00	-450.07	0.00	450.07	2,506.38	1,253.19	3,612.47	1,808.92	39.04	-3.32	0.255
110.00	-14.05	-17.58	0.00	-359.46	0.00	359.46	2,451.44	1,225.72	3,424.37	1,714.73	42.58	-3.43	0.216
115.00	-10.51	-12.40	0.00	-271.54	0.00	271.54	2,395.13	1,197.56	3,239.31	1,622.06	46.22	-3.52	0.172
120.00	-9.71	-11.87	0.00	-209.53	0.00	209.53	2,337.45	1,168.73	3,057.47	1,531.01	49.94	-3.60	0.141
125.00	-7.05	-8.06	0.00	-147.82	0.00	147.82	2,271.21	1,135.60	2,869.92	1,437.09	53.75	-3.66	0.106
130.00	-6.37	-7.58	0.00	-107.50	0.00	107.50	2,192.15	1,096.08	2,672.64	1,338.31	57.60	-3.71	0.083
135.00	-3.84	-5.00	0.00	-67.90	0.00	67.90	2,113.10	1,056.55	2,482.39	1,243.04	61.51	-3.75	0.056
140.00	-3.25	-4.54	0.00	-42.93	0.00	42.93	2,034.04	1,017.02	2,299.16	1,151.29	65.44	-3.77	0.039
145.00	-2.68	-4.18	0.00	-20.24	0.00	20.24	1,954.99	977.49	2,122.95	1,063.05	69.40	-3.79	0.020
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	71.71	-3.80	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	71.72	-3.80	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:09 PM

Customer: VERIZON WIRELESS

**Load Case: 0.9D + 1.6W**

**97 mph with No Ice (Reduced DL)**

**22 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		263.8	0.0					0.0	0.0	263.8	0.0	0.0	0.0
5.00		522.6	1,014.6					0.0	0.0	522.6	1,014.6	0.0	0.0
10.00		512.5	995.0					0.0	219.8	512.5	1,214.8	0.0	0.0
15.00		510.2	975.5					0.0	219.8	510.2	1,195.2	0.0	0.0
20.00		521.5	955.9					0.0	219.8	521.5	1,175.7	0.0	0.0
25.00		535.6	936.3					0.0	219.8	535.6	1,156.1	0.0	0.0
30.00		545.1	916.8					0.0	219.8	545.1	1,136.6	0.0	0.0
35.00		551.1	897.2					0.0	219.8	551.1	1,117.0	0.0	0.0
40.00		554.5	877.7					0.0	219.8	554.5	1,097.5	0.0	0.0
45.00		379.7	858.1					0.0	219.8	379.7	1,077.9	0.0	0.0
46.83	Bot - Section 2	280.8	309.8					0.0	80.6	280.8	390.3	0.0	0.0
50.00		348.1	1,066.3					0.0	139.2	348.1	1,205.5	0.0	0.0
53.00	Top - Section 1	281.9	995.7					0.0	131.9	281.9	1,127.6	0.0	0.0
55.00		393.3	330.7					0.0	87.9	393.3	418.6	0.0	0.0
60.00		559.5	813.2					0.0	219.8	559.5	1,032.9	0.0	0.0
65.00		555.3	793.6					0.0	219.8	555.3	1,013.4	0.0	0.0
70.00		550.1	774.0					0.0	219.8	550.1	993.8	0.0	0.0
75.00		544.0	754.5					0.0	219.8	544.0	974.3	0.0	0.0
80.00		537.1	734.9					0.0	219.8	537.1	954.7	0.0	0.0
85.00		529.5	715.4					0.0	219.8	529.5	935.2	0.0	0.0
90.00	Appurtenance(s)	516.9	695.8	3,126.0	0.0	0.0	1,697.9	0.0	219.8	3,642.9	2,613.5	0.0	0.0
94.92	Bot - Section 3	258.5	665.2					0.0	160.0	258.5	825.2	0.0	0.0
95.00		254.0	20.5					0.0	2.7	254.0	23.3	0.0	0.0
99.83	Top - Section 2	258.2	1,174.5					0.0	157.3	258.2	1,331.8	0.0	0.0
100.00		59.6	18.3					0.0	5.4	59.6	23.8	0.0	0.0
101.00	Appurtenance(s)	253.4	109.6	277.6	0.0	899.6	91.3	0.0	32.5	531.0	233.5	0.0	0.0
105.00		450.6	431.8					0.0	129.0	450.6	560.8	0.0	0.0
110.00		491.2	525.1					0.0	161.2	491.2	686.4	0.0	0.0
115.00	Appurtenance(s)	480.4	508.8	4,466.4	0.0	0.0	2,201.7	0.0	161.2	4,946.7	2,871.7	0.0	0.0
120.00		469.1	492.5					0.0	124.6	469.1	617.1	0.0	0.0
125.00	Appurtenance(s)	457.4	476.3	3,159.5	0.0	2,378.3	1,561.1	0.0	124.6	3,616.9	2,162.0	0.0	0.0
130.00		445.3	460.0					0.0	67.2	445.3	527.2	0.0	0.0
135.00	Appurtenance(s)	432.8	443.7	1,983.5	0.0	1,699.1	1,512.0	0.0	67.2	2,416.3	2,022.9	0.0	0.0
140.00		420.0	427.4					0.0	34.0	420.0	461.4	0.0	0.0
145.00		323.6	411.1					0.0	34.0	323.6	445.1	0.0	0.0
147.90		117.5	231.0					0.0	19.7	117.5	250.7	0.0	0.0
147.92		0.7	1.3					0.0	0.0	0.7	1.3	0.0	0.0
<b>Totals:</b>										<b>28,178.1</b>	<b>34,889.2</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:13 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

22 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	-36.80	-31.84	0.00	-3,233.92	0.00	3,233.92	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.651
5.00	-35.69	-31.42	0.00	-3,074.72	0.00	3,074.72	4,297.95	2,148.97	9,746.71	4,880.60	0.09	-0.17	0.639
10.00	-34.39	-31.01	0.00	-2,917.62	0.00	2,917.62	4,248.67	2,124.33	9,446.21	4,730.12	0.36	-0.34	0.625
15.00	-33.11	-30.59	0.00	-2,762.59	0.00	2,762.59	4,198.03	2,099.01	9,147.11	4,580.35	0.80	-0.51	0.611
20.00	-31.85	-30.15	0.00	-2,609.67	0.00	2,609.67	4,146.02	2,073.01	8,849.60	4,431.38	1.43	-0.68	0.597
25.00	-30.61	-29.69	0.00	-2,458.94	0.00	2,458.94	4,092.65	2,046.33	8,553.86	4,283.29	2.23	-0.85	0.582
30.00	-29.39	-29.21	0.00	-2,310.50	0.00	2,310.50	4,037.92	2,018.96	8,260.08	4,136.18	3.21	-1.02	0.566
35.00	-28.20	-28.72	0.00	-2,164.44	0.00	2,164.44	3,981.83	1,990.91	7,968.43	3,990.14	4.37	-1.19	0.550
40.00	-27.03	-28.23	0.00	-2,020.83	0.00	2,020.83	3,924.37	1,962.18	7,679.09	3,845.25	5.72	-1.36	0.533
45.00	-25.91	-27.87	0.00	-1,879.70	0.00	1,879.70	3,865.54	1,932.77	7,392.26	3,701.62	7.24	-1.54	0.515
46.83	-25.48	-27.62	0.00	-1,828.60	0.00	1,828.60	3,843.63	1,921.82	7,267.75	3,649.29	7.84	-1.60	0.508
50.00	-24.24	-27.28	0.00	-1,741.14	0.00	1,741.14	3,805.35	1,902.68	7,108.10	3,559.34	8.94	-1.71	0.496
53.00	-23.08	-27.00	0.00	-1,659.30	0.00	1,659.30	3,811.38	1,905.69	7,136.14	3,573.37	10.04	-1.81	0.471
55.00	-22.62	-26.64	0.00	-1,605.30	0.00	1,605.30	3,786.98	1,893.49	7,023.15	3,516.80	10.82	-1.88	0.463
60.00	-21.54	-26.10	0.00	-1,472.12	0.00	1,472.12	3,725.02	1,862.51	6,742.75	3,376.39	12.87	-2.04	0.442
65.00	-20.48	-25.56	0.00	-1,341.61	0.00	1,341.61	3,661.69	1,830.85	6,465.46	3,237.53	15.09	-2.19	0.420
70.00	-19.44	-25.03	0.00	-1,213.79	0.00	1,213.79	3,597.00	1,798.50	6,191.44	3,100.32	17.46	-2.34	0.397
75.00	-18.43	-24.49	0.00	-1,088.65	0.00	1,088.65	3,530.95	1,765.48	5,920.88	2,964.84	20.00	-2.49	0.373
80.00	-17.44	-23.95	0.00	-966.21	0.00	966.21	3,463.54	1,731.77	5,653.97	2,831.19	22.69	-2.63	0.347
85.00	-16.48	-23.42	0.00	-846.45	0.00	846.45	3,394.76	1,697.38	5,390.88	2,699.44	25.52	-2.77	0.319
90.00	-14.00	-19.68	0.00	-729.37	0.00	729.37	3,324.61	1,662.31	5,131.80	2,569.71	28.49	-2.90	0.288
94.92	-13.17	-19.39	0.00	-632.61	0.00	632.61	3,235.43	1,617.72	4,852.80	2,430.01	31.54	-3.02	0.265
95.00	-13.14	-19.15	0.00	-631.00	0.00	631.00	3,233.85	1,616.93	4,848.03	2,427.62	31.59	-3.02	0.264
99.83	-11.81	-18.83	0.00	-538.43	0.00	538.43	2,561.72	1,280.86	3,809.84	1,907.75	34.70	-3.13	0.287
100.00	-11.79	-18.78	0.00	-535.30	0.00	535.30	2,559.96	1,279.98	3,803.43	1,904.54	34.81	-3.13	0.286
101.00	-11.56	-18.24	0.00	-515.62	0.00	515.62	2,549.35	1,274.68	3,765.02	1,885.31	35.47	-3.16	0.278
105.00	-11.00	-17.78	0.00	-442.65	0.00	442.65	2,506.38	1,253.19	3,612.47	1,808.92	38.16	-3.25	0.249
110.00	-10.31	-17.27	0.00	-353.74	0.00	353.74	2,451.44	1,225.72	3,424.37	1,714.73	41.62	-3.36	0.211
115.00	-7.72	-12.17	0.00	-267.39	0.00	267.39	2,395.13	1,197.56	3,239.31	1,622.06	45.18	-3.45	0.168
120.00	-7.12	-11.68	0.00	-206.53	0.00	206.53	2,337.45	1,168.73	3,057.47	1,531.01	48.83	-3.52	0.138
125.00	-5.18	-7.94	0.00	-145.77	0.00	145.77	2,271.21	1,135.60	2,869.92	1,437.09	52.55	-3.58	0.104
130.00	-4.67	-7.46	0.00	-106.09	0.00	106.09	2,192.15	1,096.08	2,672.64	1,338.31	56.33	-3.63	0.081
135.00	-2.81	-4.92	0.00	-67.09	0.00	67.09	2,113.10	1,056.55	2,482.39	1,243.04	60.15	-3.67	0.055
140.00	-2.37	-4.48	0.00	-42.47	0.00	42.47	2,034.04	1,017.02	2,299.16	1,151.29	64.00	-3.70	0.038
145.00	-1.95	-4.12	0.00	-20.09	0.00	20.09	1,954.99	977.49	2,122.95	1,063.05	67.88	-3.71	0.020
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	70.14	-3.72	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	70.15	-3.72	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:13 PM

Customer: VERIZON WIRELESS

**Load Case: 1.2D + 1.0Di + 1.0Wi**

**50 mph with 1.00 in Radial Ice**

**22 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		85.3	0.0					0.0	0.0	85.3	0.0	0.0	0.0
5.00		169.5	1,904.9					0.0	0.0	169.5	1,904.9	0.0	0.0
10.00		167.2	1,933.3					0.0	583.8	167.2	2,517.1	0.0	0.0
15.00		167.1	1,927.9					0.0	604.0	167.1	2,531.9	0.0	0.0
20.00		171.3	1,911.3					0.0	618.3	171.3	2,529.6	0.0	0.0
25.00		176.5	1,889.1					0.0	629.4	176.5	2,518.5	0.0	0.0
30.00		180.1	1,863.3					0.0	638.7	180.1	2,502.0	0.0	0.0
35.00		182.6	1,835.0					0.0	646.6	182.6	2,481.6	0.0	0.0
40.00		184.2	1,804.9					0.0	653.5	184.2	2,458.4	0.0	0.0
45.00		126.4	1,773.3					0.0	659.7	126.4	2,433.1	0.0	0.0
46.83	Bot - Section 2	93.6	643.7					0.0	243.3	93.6	887.0	0.0	0.0
50.00		116.1	1,823.0					0.0	422.0	116.1	2,245.0	0.0	0.0
53.00	Top - Section 1	94.2	1,705.2					0.0	401.7	94.2	2,106.9	0.0	0.0
55.00		131.7	691.6					0.0	268.8	131.7	960.4	0.0	0.0
60.00		187.7	1,700.8					0.0	675.3	187.7	2,376.1	0.0	0.0
65.00		186.8	1,665.8					0.0	679.7	186.8	2,345.5	0.0	0.0
70.00		185.6	1,630.2					0.0	683.8	185.6	2,314.0	0.0	0.0
75.00		184.1	1,594.1					0.0	687.7	184.1	2,281.8	0.0	0.0
80.00		182.3	1,557.5					0.0	691.4	182.3	2,248.9	0.0	0.0
85.00		180.3	1,520.5					0.0	694.9	180.3	2,215.3	0.0	0.0
90.00	Appurtenance(s)	176.6	1,483.1	740.6	0.0	0.0	5,867.0	0.0	698.2	917.2	8,048.3	0.0	0.0
94.92	Bot - Section 3	88.5	1,421.7					0.0	499.7	88.5	1,921.5	0.0	0.0
95.00		87.1	36.6					0.0	8.5	87.1	45.1	0.0	0.0
99.83	Top - Section 2	88.5	2,088.9					0.0	493.3	88.5	2,582.2	0.0	0.0
100.00		20.5	42.5					0.0	17.0	20.5	59.5	0.0	0.0
101.00	Appurtenance(s)	87.2	254.0	94.9	0.0	378.2	208.8	0.0	102.3	182.1	565.0	0.0	0.0
105.00		155.4	998.6					0.0	375.9	155.4	1,374.5	0.0	0.0
110.00		170.1	1,216.0					0.0	471.3	170.1	1,687.3	0.0	0.0
115.00	Appurtenance(s)	167.0	1,181.5	1,077.4	0.0	0.0	7,668.9	0.0	472.8	1,244.4	9,323.3	0.0	0.0
120.00		163.8	1,146.9					0.0	363.0	163.8	1,509.8	0.0	0.0
125.00	Appurtenance(s)	160.5	1,112.0	759.9	0.0	485.8	5,702.6	0.0	364.0	920.4	7,178.6	0.0	0.0
130.00		157.0	1,076.9					0.0	89.6	157.0	1,166.6	0.0	0.0
135.00	Appurtenance(s)	153.5	1,041.7	607.6	0.0	435.3	3,428.9	0.0	89.6	761.0	4,560.2	0.0	0.0
140.00		149.8	1,006.2					0.0	45.4	149.8	1,051.6	0.0	0.0
145.00		115.9	970.6					0.0	45.4	115.9	1,016.0	0.0	0.0
147.90		42.2	548.5					0.0	26.3	42.2	574.8	0.0	0.0
147.92		0.2	3.1					0.0	0.0	0.2	3.1	0.0	0.0
<b>Totals:</b>										<b>8,416.74</b>	<b>84,525.4</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:17 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

22 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	-90.74	-9.35	0.00	-964.71	0.00	964.71	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.213
5.00	-88.82	-9.26	0.00	-917.96	0.00	917.96	4,297.95	2,148.97	9,746.71	4,880.60	0.03	-0.05	0.209
10.00	-86.30	-9.16	0.00	-871.68	0.00	871.68	4,248.67	2,124.33	9,446.21	4,730.12	0.11	-0.10	0.205
15.00	-83.76	-9.06	0.00	-825.86	0.00	825.86	4,198.03	2,099.01	9,147.11	4,580.35	0.24	-0.15	0.200
20.00	-81.22	-8.96	0.00	-780.54	0.00	780.54	4,146.02	2,073.01	8,849.60	4,431.38	0.43	-0.20	0.196
25.00	-78.70	-8.84	0.00	-735.75	0.00	735.75	4,092.65	2,046.33	8,553.86	4,283.29	0.67	-0.25	0.191
30.00	-76.19	-8.72	0.00	-691.54	0.00	691.54	4,037.92	2,018.96	8,260.08	4,136.18	0.96	-0.31	0.186
35.00	-73.70	-8.59	0.00	-647.95	0.00	647.95	3,981.83	1,990.91	7,968.43	3,990.14	1.31	-0.36	0.181
40.00	-71.23	-8.45	0.00	-605.02	0.00	605.02	3,924.37	1,962.18	7,679.09	3,845.25	1.71	-0.41	0.176
45.00	-68.80	-8.35	0.00	-562.77	0.00	562.77	3,865.54	1,932.77	7,392.26	3,701.62	2.16	-0.46	0.170
46.83	-67.91	-8.28	0.00	-547.46	0.00	547.46	3,843.63	1,921.82	7,287.75	3,649.29	2.34	-0.48	0.168
50.00	-65.66	-8.18	0.00	-521.25	0.00	521.25	3,805.35	1,902.68	7,108.10	3,559.34	2.67	-0.51	0.164
53.00	-63.55	-8.09	0.00	-496.72	0.00	496.72	3,811.38	1,905.69	7,136.14	3,573.37	3.00	-0.54	0.156
55.00	-62.59	-7.99	0.00	-480.54	0.00	480.54	3,786.98	1,893.49	7,023.15	3,516.80	3.23	-0.56	0.153
60.00	-60.20	-7.83	0.00	-440.59	0.00	440.59	3,725.02	1,862.51	6,742.75	3,376.39	3.85	-0.61	0.147
65.00	-57.86	-7.66	0.00	-401.46	0.00	401.46	3,661.69	1,830.85	6,465.46	3,237.53	4.51	-0.66	0.140
70.00	-55.54	-7.49	0.00	-363.16	0.00	363.16	3,597.00	1,798.50	6,191.44	3,100.32	5.22	-0.70	0.133
75.00	-53.25	-7.32	0.00	-325.71	0.00	325.71	3,530.95	1,765.48	5,920.88	2,964.84	5.98	-0.75	0.125
80.00	-51.00	-7.14	0.00	-289.11	0.00	289.11	3,463.54	1,731.77	5,653.97	2,831.19	6.79	-0.79	0.117
85.00	-48.78	-6.97	0.00	-253.40	0.00	253.40	3,394.76	1,697.38	5,390.88	2,699.44	7.63	-0.83	0.108
90.00	-40.75	-5.96	0.00	-218.58	0.00	218.58	3,324.61	1,662.31	5,131.80	2,569.71	8.52	-0.87	0.097
94.92	-38.83	-5.85	0.00	-189.30	0.00	189.30	3,235.43	1,617.72	4,852.80	2,430.01	9.43	-0.90	0.090
95.00	-38.78	-5.77	0.00	-188.81	0.00	188.81	3,233.85	1,616.93	4,848.03	2,427.62	9.45	-0.90	0.090
99.83	-36.20	-5.65	0.00	-160.91	0.00	160.91	2,561.72	1,280.86	3,809.84	1,907.75	10.38	-0.94	0.098
100.00	-36.14	-5.63	0.00	-159.97	0.00	159.97	2,559.96	1,279.98	3,803.43	1,904.54	10.41	-0.94	0.098
101.00	-35.57	-5.45	0.00	-153.95	0.00	153.95	2,549.35	1,274.68	3,765.02	1,885.31	10.61	-0.94	0.096
105.00	-34.20	-5.29	0.00	-132.14	0.00	132.14	2,506.38	1,253.19	3,612.47	1,808.92	11.42	-0.97	0.087
110.00	-32.51	-5.11	0.00	-105.67	0.00	105.67	2,451.44	1,225.72	3,424.37	1,714.73	12.45	-1.00	0.075
115.00	-23.21	-3.71	0.00	-80.12	0.00	80.12	2,395.13	1,197.56	3,239.31	1,622.06	13.52	-1.03	0.059
120.00	-21.70	-3.53	0.00	-61.56	0.00	61.56	2,337.45	1,168.73	3,057.47	1,531.01	14.61	-1.05	0.050
125.00	-14.54	-2.48	0.00	-43.44	0.00	43.44	2,271.21	1,135.60	2,869.92	1,437.09	15.72	-1.07	0.037
130.00	-13.38	-2.30	0.00	-31.05	0.00	31.05	2,192.15	1,096.08	2,672.64	1,338.31	16.85	-1.09	0.029
135.00	-8.83	-1.46	0.00	-19.10	0.00	19.10	2,113.10	1,056.55	2,482.39	1,243.04	18.00	-1.10	0.020
140.00	-7.79	-1.29	0.00	-11.82	0.00	11.82	2,034.04	1,017.02	2,299.16	1,151.29	19.15	-1.10	0.014
145.00	-6.77	-1.15	0.00	-5.39	0.00	5.39	1,954.99	977.49	2,122.95	1,063.05	20.31	-1.11	0.009
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	20.98	-1.11	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	20.99	-1.11	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:17 PM

Customer: VERIZON WIRELESS

**Load Case: 1.0D + 1.0W**

**Serviceability 60 mph**

**21 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		63.1	0.0					0.0	0.0	63.1	0.0	0.0	0.0
5.00		125.0	1,127.3					0.0	0.0	125.0	1,127.3	0.0	0.0
10.00		122.5	1,105.6					0.0	244.2	122.5	1,349.7	0.0	0.0
15.00		122.0	1,083.8					0.0	244.2	122.0	1,328.0	0.0	0.0
20.00		124.7	1,062.1					0.0	244.2	124.7	1,306.3	0.0	0.0
25.00		128.1	1,040.4					0.0	244.2	128.1	1,284.6	0.0	0.0
30.00		130.3	1,018.7					0.0	244.2	130.3	1,262.8	0.0	0.0
35.00		131.8	996.9					0.0	244.2	131.8	1,241.1	0.0	0.0
40.00		132.6	975.2					0.0	244.2	132.6	1,219.4	0.0	0.0
45.00		90.8	953.5					0.0	244.2	90.8	1,197.7	0.0	0.0
46.83	Bot - Section 2	67.1	344.2					0.0	89.5	67.1	433.7	0.0	0.0
50.00		83.2	1,184.8					0.0	154.7	83.2	1,339.5	0.0	0.0
53.00	Top - Section 1	67.4	1,106.4					0.0	146.5	67.4	1,252.9	0.0	0.0
55.00		94.1	367.5					0.0	97.7	94.1	465.2	0.0	0.0
60.00		133.8	903.5					0.0	244.2	133.8	1,147.7	0.0	0.0
65.00		132.8	881.8					0.0	244.2	132.8	1,126.0	0.0	0.0
70.00		131.5	860.1					0.0	244.2	131.5	1,104.2	0.0	0.0
75.00		130.1	838.3					0.0	244.2	130.1	1,082.5	0.0	0.0
80.00		128.4	816.6					0.0	244.2	128.4	1,060.8	0.0	0.0
85.00		126.6	794.9					0.0	244.2	126.6	1,039.1	0.0	0.0
90.00	Appurtenance(s)	123.6	773.2	747.5	0.0	0.0	1,886.6	0.0	244.2	871.1	2,903.9	0.0	0.0
94.92	Bot - Section 3	61.8	739.1					0.0	177.8	61.8	916.9	0.0	0.0
95.00		60.7	22.8					0.0	3.0	60.7	25.8	0.0	0.0
99.83	Top - Section 2	61.7	1,305.1					0.0	174.8	61.7	1,479.8	0.0	0.0
100.00		14.3	20.4					0.0	6.0	14.3	26.4	0.0	0.0
101.00	Appurtenance(s)	60.6	121.8	66.4	0.0	215.1	101.5	0.0	36.2	127.0	259.4	0.0	0.0
105.00		107.7	479.8					0.0	143.3	107.7	623.1	0.0	0.0
110.00		117.5	583.5					0.0	179.1	117.5	762.6	0.0	0.0
115.00	Appurtenance(s)	114.9	565.4	1,068.1	0.0	0.0	2,446.3	0.0	179.1	1,182.9	3,190.8	0.0	0.0
120.00		112.2	547.3					0.0	138.4	112.2	685.7	0.0	0.0
125.00	Appurtenance(s)	109.4	529.2	755.5	0.0	568.7	1,734.6	0.0	138.4	864.9	2,402.2	0.0	0.0
130.00		106.5	511.1					0.0	74.7	106.5	585.8	0.0	0.0
135.00	Appurtenance(s)	103.5	493.0	474.3	0.0	406.3	1,680.0	0.0	74.7	577.8	2,247.7	0.0	0.0
140.00		100.4	474.9					0.0	37.8	100.4	512.7	0.0	0.0
145.00		77.4	456.8					0.0	37.8	77.4	494.6	0.0	0.0
147.90		28.1	256.6					0.0	21.9	28.1	278.5	0.0	0.0
147.92		0.2	1.5					0.0	0.0	0.2	1.5	0.0	0.0
<b>Totals:</b>										<b>6,738.31</b>	<b>38,765.8</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:21 PM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

21 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	-40.94	-7.61	0.00	-776.11	0.00	776.11	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.164
5.00	-39.81	-7.52	0.00	-738.04	0.00	738.04	4,297.95	2,148.97	9,746.71	4,880.60	0.02	-0.04	0.160
10.00	-38.45	-7.42	0.00	-700.45	0.00	700.45	4,248.67	2,124.33	9,446.21	4,730.12	0.09	-0.08	0.157
15.00	-37.12	-7.32	0.00	-663.35	0.00	663.35	4,198.03	2,099.01	9,147.11	4,580.35	0.19	-0.12	0.154
20.00	-35.81	-7.22	0.00	-626.73	0.00	626.73	4,146.02	2,073.01	8,849.60	4,431.38	0.34	-0.16	0.150
25.00	-34.52	-7.11	0.00	-590.63	0.00	590.63	4,092.65	2,046.33	8,553.86	4,283.29	0.54	-0.20	0.146
30.00	-33.25	-7.00	0.00	-555.06	0.00	555.06	4,037.92	2,018.96	8,260.08	4,136.18	0.77	-0.25	0.142
35.00	-32.01	-6.89	0.00	-520.05	0.00	520.05	3,981.83	1,990.91	7,968.43	3,990.14	1.05	-0.29	0.138
40.00	-30.78	-6.77	0.00	-485.61	0.00	485.61	3,924.37	1,962.18	7,679.09	3,845.25	1.37	-0.33	0.134
45.00	-29.58	-6.69	0.00	-451.76	0.00	451.76	3,865.54	1,932.77	7,392.26	3,701.62	1.74	-0.37	0.130
46.83	-29.15	-6.63	0.00	-439.50	0.00	439.50	3,843.63	1,921.82	7,287.75	3,649.29	1.88	-0.38	0.128
50.00	-27.80	-6.55	0.00	-418.51	0.00	418.51	3,805.35	1,902.68	7,108.10	3,559.34	2.15	-0.41	0.125
53.00	-26.55	-6.48	0.00	-398.87	0.00	398.87	3,811.38	1,905.69	7,136.14	3,573.37	2.41	-0.43	0.119
55.00	-26.08	-6.40	0.00	-385.91	0.00	385.91	3,786.98	1,893.49	7,023.15	3,516.80	2.60	-0.45	0.117
60.00	-24.93	-6.27	0.00	-353.94	0.00	353.94	3,725.02	1,862.51	6,742.75	3,376.39	3.09	-0.49	0.112
65.00	-23.80	-6.14	0.00	-322.60	0.00	322.60	3,661.69	1,830.85	6,465.46	3,237.53	3.62	-0.53	0.106
70.00	-22.70	-6.01	0.00	-291.89	0.00	291.89	3,597.00	1,798.50	6,191.44	3,100.32	4.20	-0.56	0.100
75.00	-21.61	-5.89	0.00	-261.83	0.00	261.83	3,530.95	1,765.48	5,920.88	2,964.84	4.80	-0.60	0.094
80.00	-20.55	-5.76	0.00	-232.40	0.00	232.40	3,463.54	1,731.77	5,653.97	2,831.19	5.45	-0.63	0.088
85.00	-19.51	-5.63	0.00	-203.61	0.00	203.61	3,394.76	1,697.38	5,390.88	2,699.44	6.13	-0.67	0.081
90.00	-16.61	-4.73	0.00	-175.47	0.00	175.47	3,324.61	1,662.31	5,131.80	2,569.71	6.85	-0.70	0.073
94.92	-15.69	-4.66	0.00	-152.20	0.00	152.20	3,235.43	1,617.72	4,852.80	2,430.01	7.58	-0.73	0.067
95.00	-15.67	-4.61	0.00	-151.81	0.00	151.81	3,233.85	1,616.93	4,848.03	2,427.62	7.59	-0.73	0.067
99.83	-14.19	-4.53	0.00	-129.54	0.00	129.54	2,561.72	1,280.86	3,809.84	1,907.75	8.34	-0.75	0.073
100.00	-14.16	-4.52	0.00	-128.79	0.00	128.79	2,559.96	1,279.98	3,803.43	1,904.54	8.37	-0.75	0.073
101.00	-13.90	-4.39	0.00	-124.06	0.00	124.06	2,549.35	1,274.68	3,765.02	1,885.31	8.52	-0.76	0.071
105.00	-13.28	-4.28	0.00	-106.51	0.00	106.51	2,506.38	1,253.19	3,612.47	1,808.92	9.17	-0.78	0.064
110.00	-12.52	-4.15	0.00	-85.12	0.00	85.12	2,451.44	1,225.72	3,424.37	1,714.73	10.00	-0.81	0.055
115.00	-9.34	-2.93	0.00	-64.34	0.00	64.34	2,395.13	1,197.56	3,239.31	1,622.06	10.86	-0.83	0.044
120.00	-8.66	-2.81	0.00	-49.69	0.00	49.69	2,337.45	1,168.73	3,057.47	1,531.01	11.74	-0.85	0.036
125.00	-6.27	-1.91	0.00	-35.08	0.00	35.08	2,271.21	1,135.60	2,869.92	1,437.09	12.63	-0.86	0.027
130.00	-5.68	-1.80	0.00	-25.52	0.00	25.52	2,192.15	1,096.08	2,672.64	1,338.31	13.54	-0.87	0.022
135.00	-3.45	-1.19	0.00	-16.13	0.00	16.13	2,113.10	1,056.55	2,482.39	1,243.04	14.46	-0.88	0.015
140.00	-2.93	-1.08	0.00	-10.21	0.00	10.21	2,034.04	1,017.02	2,299.16	1,151.29	15.39	-0.89	0.010
145.00	-2.44	-0.99	0.00	-4.82	0.00	4.82	1,954.99	977.49	2,122.95	1,063.05	16.32	-0.89	0.006
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	16.86	-0.89	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	16.86	-0.89	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:21 PM

Customer: VERIZON WIRELESS

**Equivalent Lateral Forces Method Analysis**

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

Spectral Response Acceleration for Short Period ( $S_{ps}$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_{p1}$ ):	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):	2.04
Redundancy Factor ( $\rho$ ):	1.30
Seismic Force Distribution Exponent (k):	1.77
Total Unfactored Dead Load:	40.94 k
Seismic Base Shear (E):	1.78 k

**Load Case (1.2 + 0.2Sds) \* DL + E ELM**

**Seismic Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
36	147.91	1	10	0.000	0	2
35	146.45	279	1,881	0.017	31	345
34	142.50	495	3,182	0.029	52	613
33	137.50	513	3,097	0.028	50	635
32	132.50	568	3,211	0.029	52	703
31	127.50	586	3,096	0.028	50	726
30	122.50	668	3,288	0.030	54	827
29	117.50	686	3,137	0.029	51	849
28	112.50	745	3,154	0.029	51	922
27	107.50	763	2,981	0.027	49	945
26	103.00	623	2,258	0.021	37	772
25	100.50	158	548	0.005	9	196
24	99.92	26	91	0.001	1	33
23	97.42	1,480	4,860	0.044	79	1,833
22	94.96	26	81	0.001	1	32
21	92.46	917	2,745	0.025	45	1,136
20	87.50	1,017	2,763	0.025	45	1,260
19	82.50	1,039	2,543	0.023	41	1,287
18	77.50	1,061	2,325	0.021	38	1,314
17	72.50	1,083	2,109	0.019	34	1,341
16	67.50	1,104	1,896	0.017	31	1,368
15	62.50	1,126	1,687	0.015	27	1,395
14	57.50	1,148	1,484	0.014	24	1,422



Site Number: 302466

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

13	54.00	465	538	0.005	9	576
12	51.50	1,253	1,333	0.012	22	1,552
11	48.42	1,339	1,278	0.012	21	1,659
10	45.92	434	377	0.003	6	537
9	42.50	1,198	907	0.008	15	1,483
8	37.50	1,219	740	0.007	12	1,510
7	32.50	1,241	585	0.005	10	1,537
6	27.50	1,263	443	0.004	7	1,564
5	22.50	1,285	316	0.003	5	1,591
4	17.50	1,306	206	0.002	3	1,618
3	12.50	1,328	116	0.001	2	1,645
2	7.50	1,350	48	0.000	1	1,672
1	2.50	1,127	6	0.000	0	1,396
Andrew DB844H90E-XY	147.90	112	770	0.007	13	139
Andrew 844G65VTZASX	147.90	64	440	0.004	7	79
Flat Platform w/ Han	147.90	2,000	13,743	0.126	224	2,477
48" x 4" Panel	135.00	180	1,053	0.010	17	223
Flat Low Profile Pla	135.00	1,500	8,771	0.080	143	1,858
Ericsson KRY 112 144	125.00	33	168	0.002	3	41
Ericsson RRUS 11 B12	125.00	152	776	0.007	13	188
Ericsson AIR 21, 1.3	125.00	249	1,271	0.012	21	308
Ericsson AIR-32 B2A/	125.00	397	2,024	0.018	33	491
Round T-Arm	125.00	750	3,828	0.035	62	929
Andrew LNX-6515DS-VT	125.00	154	785	0.007	13	191
Samsung PCS/AWS Dual	115.00	253	1,115	0.010	18	314
Samsung 700/850MHz D	115.00	211	929	0.008	15	261
Raycap RVZDC-6627-PF	115.00	32	141	0.001	2	40
RFS DB-T1-6Z-8AB-0Z	115.00	44	194	0.002	3	54
Amphenol Antel BXA-7	115.00	102	449	0.004	7	126
Commscope SBNHH-1D65	115.00	304	1,340	0.012	22	377
Flat Low Profile Pla	115.00	1,500	6,606	0.060	108	1,858
Stand-Off	101.00	75	263	0.002	4	93
Antel BCD-87010	101.00	26	93	0.001	2	33
DragonWave Horizon C	90.00	21	61	0.001	1	26
Alcatel-Lucent RRH2x	90.00	317	906	0.008	15	393
Alcatel-Lucent 1900M	90.00	180	514	0.005	8	223
18" x 18" x 4" Junct	90.00	21	60	0.001	1	26
Nokia 2.5G MAA - AAH	90.00	311	887	0.008	14	385
Andrew VHLP2-18	90.00	54	154	0.001	3	67
Commscope NNVV-65B-R	90.00	232	663	0.006	11	288
Flat T-Arm	90.00	750	2,141	0.020	35	929
		40,942	109,462	1.000	1,784	50,711

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

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
36	147.91	1	10	0.000	0	1
35	146.45	279	1,881	0.017	31	240
34	142.50	495	3,182	0.029	52	426
33	137.50	513	3,097	0.028	50	442
32	132.50	568	3,211	0.029	52	489
31	127.50	586	3,096	0.028	50	505
30	122.50	668	3,288	0.030	54	575
29	117.50	686	3,137	0.029	51	591
28	112.50	745	3,154	0.029	51	641
27	107.50	763	2,981	0.027	49	657
26	103.00	623	2,258	0.021	37	537
25	100.50	158	548	0.005	9	136
24	99.92	26	91	0.001	1	23

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

23	97.42	1,480	4,860	0.044	79	1,275
22	94.96	26	81	0.001	1	22
21	92.46	917	2,745	0.025	45	790
20	87.50	1,017	2,763	0.025	45	876
19	82.50	1,039	2,543	0.023	41	895
18	77.50	1,061	2,325	0.021	38	914
17	72.50	1,083	2,109	0.019	34	932
16	67.50	1,104	1,896	0.017	31	951
15	62.50	1,126	1,687	0.015	27	970
14	57.50	1,148	1,484	0.014	24	989
13	54.00	465	538	0.005	9	401
12	51.50	1,253	1,333	0.012	22	1,079
11	48.42	1,339	1,278	0.012	21	1,154
10	45.92	434	377	0.003	6	374
9	42.50	1,198	907	0.008	15	1,032
8	37.50	1,219	740	0.007	12	1,050
7	32.50	1,241	585	0.005	10	1,069
6	27.50	1,263	443	0.004	7	1,088
5	22.50	1,285	316	0.003	5	1,107
4	17.50	1,306	206	0.002	3	1,125
3	12.50	1,328	116	0.001	2	1,144
2	7.50	1,350	48	0.000	1	1,163
1	2.50	1,127	6	0.000	0	971
Andrew DB844H90E-XY	147.90	112	770	0.007	13	96
Andrew 844G65VTASX	147.90	64	440	0.004	7	55
Flat Platform w/ Han	147.90	2,000	13,743	0.126	224	1,723
48" x 4" Panel	135.00	180	1,053	0.010	17	155
Flat Low Profile Pla	135.00	1,500	8,771	0.080	143	1,292
Ericsson KRY 112 144	125.00	33	168	0.002	3	28
Ericsson RRUS 11 B12	125.00	152	776	0.007	13	131
Ericsson AIR 21, 1.3	125.00	249	1,271	0.012	21	214
Ericsson AIR-32 B2A/	125.00	397	2,024	0.018	33	342
Round T-Arm	125.00	750	3,828	0.035	62	646
Andrew LNX-6515DS-VT	125.00	154	785	0.007	13	133
Samsung PCS/AWS Dual	115.00	253	1,115	0.010	18	218
Samsung 700/850MHz D	115.00	211	929	0.008	15	182
Raycap RVZDC-6627-PF	115.00	32	141	0.001	2	28
RFS DB-T1-6Z-8AB-0Z	115.00	44	194	0.002	3	38
Amphenol Antel BXA-7	115.00	102	449	0.004	7	88
Commscope SBNHH-1D65	115.00	304	1,340	0.012	22	262
Flat Low Profile Pla	115.00	1,500	6,606	0.060	108	1,292
Stand-Off	101.00	75	263	0.002	4	65
Antel BCD-87010	101.00	26	93	0.001	2	23
DragonWave Horizon C	90.00	21	61	0.001	1	18
Alcatel-Lucent RRH2x	90.00	317	906	0.008	15	273
Alcatel-Lucent 1900M	90.00	180	514	0.005	8	155
18" x 18" x 4" Junct	90.00	21	60	0.001	1	18
Nokia 2.5G MAA - AAH	90.00	311	887	0.008	14	268
Andrew VHLP2-18	90.00	54	154	0.001	3	47
Commscope NNVV-65B-R	90.00	232	663	0.006	11	200
Flat T-Arm	90.00	750	2,141	0.020	35	646
		40,942	109,462	1.000	1,784	35,267

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.31	-1.79	0.00	-204.45	0.00	204.45	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.052
5.00	-47.64	-1.80	0.00	-195.51	0.00	195.51	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.051
10.00	-46.00	-1.80	0.00	-186.53	0.00	186.53	4,248.67	2,124.33	9,446.21	4,730.12	0.02	-0.02	0.050
15.00	-44.38	-1.81	0.00	-177.52	0.00	177.52	4,198.03	2,099.01	9,147.11	4,580.35	0.05	-0.03	0.049
20.00	-42.79	-1.81	0.00	-168.49	0.00	168.49	4,146.02	2,073.01	8,849.60	4,431.38	0.09	-0.04	0.048
25.00	-41.22	-1.81	0.00	-159.44	0.00	159.44	4,092.65	2,046.33	8,553.86	4,283.29	0.14	-0.05	0.047
30.00	-39.69	-1.80	0.00	-150.40	0.00	150.40	4,037.92	2,018.96	8,260.08	4,136.18	0.21	-0.07	0.046
35.00	-38.17	-1.80	0.00	-141.38	0.00	141.38	3,981.83	1,990.91	7,968.43	3,990.14	0.28	-0.08	0.045
40.00	-36.69	-1.79	0.00	-132.39	0.00	132.39	3,924.37	1,962.18	7,679.09	3,845.25	0.37	-0.09	0.044
45.00	-36.15	-1.79	0.00	-123.45	0.00	123.45	3,865.54	1,932.77	7,392.26	3,701.62	0.46	-0.10	0.043
46.83	-34.49	-1.77	0.00	-120.17	0.00	120.17	3,843.63	1,921.82	7,287.75	3,649.29	0.50	-0.10	0.042
50.00	-32.94	-1.75	0.00	-114.58	0.00	114.58	3,805.35	1,902.68	7,108.10	3,559.34	0.57	-0.11	0.041
53.00	-32.37	-1.74	0.00	-109.34	0.00	109.34	3,811.38	1,905.69	7,136.14	3,573.37	0.65	-0.12	0.039
55.00	-30.94	-1.72	0.00	-105.87	0.00	105.87	3,786.98	1,893.49	7,023.15	3,516.80	0.70	-0.12	0.038
60.00	-29.55	-1.69	0.00	-97.29	0.00	97.29	3,725.02	1,862.51	6,742.75	3,376.39	0.83	-0.13	0.037
65.00	-28.18	-1.66	0.00	-88.84	0.00	88.84	3,661.69	1,830.85	6,465.46	3,237.53	0.97	-0.14	0.035
70.00	-26.84	-1.63	0.00	-80.53	0.00	80.53	3,597.00	1,798.50	6,191.44	3,100.32	1.13	-0.15	0.033
75.00	-25.53	-1.59	0.00	-72.39	0.00	72.39	3,530.96	1,765.48	5,920.88	2,964.84	1.29	-0.16	0.032
80.00	-24.24	-1.55	0.00	-64.44	0.00	64.44	3,463.54	1,731.77	5,653.97	2,831.19	1.47	-0.17	0.030
85.00	-22.98	-1.50	0.00	-56.69	0.00	56.69	3,394.76	1,697.38	5,390.88	2,699.44	1.65	-0.18	0.028
90.00	-19.51	-1.36	0.00	-49.17	0.00	49.17	3,324.61	1,662.31	5,131.80	2,569.71	1.85	-0.19	0.025
94.92	-19.47	-1.36	0.00	-42.47	0.00	42.47	3,235.43	1,617.72	4,852.80	2,430.01	2.05	-0.20	0.023
95.00	-17.64	-1.28	0.00	-42.35	0.00	42.35	3,233.85	1,616.93	4,848.03	2,427.62	2.05	-0.20	0.023
99.83	-17.61	-1.28	0.00	-36.17	0.00	36.17	2,561.72	1,280.86	3,809.84	1,907.75	2.26	-0.21	0.026
100.00	-17.41	-1.27	0.00	-35.96	0.00	35.96	2,559.96	1,279.98	3,803.43	1,904.54	2.26	-0.21	0.026
101.00	-16.52	-1.22	0.00	-34.69	0.00	34.69	2,549.35	1,274.68	3,765.02	1,885.31	2.31	-0.21	0.025
105.00	-15.57	-1.17	0.00	-29.79	0.00	29.79	2,506.38	1,253.19	3,612.47	1,808.92	2.48	-0.21	0.023
110.00	-14.65	-1.12	0.00	-23.92	0.00	23.92	2,451.44	1,225.72	3,424.37	1,714.73	2.71	-0.22	0.020
115.00	-10.77	-0.88	0.00	-18.32	0.00	18.32	2,395.13	1,197.56	3,239.31	1,622.06	2.94	-0.23	0.016
120.00	-9.94	-0.82	0.00	-13.91	0.00	13.91	2,337.45	1,168.73	3,057.47	1,531.01	3.18	-0.23	0.013
125.00	-7.07	-0.62	0.00	-9.79	0.00	9.79	2,271.21	1,135.60	2,869.92	1,437.09	3.43	-0.24	0.010
130.00	-6.37	-0.56	0.00	-6.70	0.00	6.70	2,192.15	1,096.08	2,672.64	1,338.31	3.68	-0.24	0.008
135.00	-3.65	-0.34	0.00	-3.88	0.00	3.88	2,113.10	1,056.55	2,482.39	1,243.04	3.93	-0.24	0.005
140.00	-3.04	-0.29	0.00	-2.18	0.00	2.18	2,034.04	1,017.02	2,299.16	1,151.29	4.18	-0.24	0.003
145.00	-2.70	-0.26	0.00	-0.74	0.00	0.74	1,954.99	977.49	2,122.95	1,063.05	4.44	-0.24	0.002
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	4.58	-0.24	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	4.59	-0.24	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

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	-34.30	-1.79	0.00	-202.21	0.00	202.21	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.048
5.00	-33.13	-1.79	0.00	-193.27	0.00	193.27	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.047
10.00	-31.99	-1.80	0.00	-184.31	0.00	184.31	4,248.67	2,124.33	9,446.21	4,730.12	0.02	-0.02	0.046
15.00	-30.86	-1.80	0.00	-175.34	0.00	175.34	4,198.03	2,099.01	9,147.11	4,580.35	0.05	-0.03	0.046
20.00	-29.76	-1.80	0.00	-166.35	0.00	166.35	4,146.02	2,073.01	8,849.60	4,431.38	0.09	-0.04	0.045
25.00	-28.67	-1.79	0.00	-157.36	0.00	157.36	4,092.65	2,046.33	8,553.86	4,283.29	0.14	-0.05	0.044
30.00	-27.60	-1.79	0.00	-148.39	0.00	148.39	4,037.92	2,018.96	8,260.08	4,136.18	0.20	-0.06	0.043
35.00	-26.55	-1.78	0.00	-139.44	0.00	139.44	3,981.83	1,990.91	7,968.43	3,990.14	0.28	-0.08	0.042
40.00	-25.52	-1.77	0.00	-130.54	0.00	130.54	3,924.37	1,962.18	7,679.09	3,845.25	0.36	-0.09	0.040
45.00	-25.14	-1.77	0.00	-121.69	0.00	121.69	3,865.54	1,932.77	7,392.26	3,701.62	0.46	-0.10	0.039
46.83	-23.99	-1.75	0.00	-118.45	0.00	118.45	3,843.63	1,921.82	7,287.75	3,649.29	0.50	-0.10	0.039
50.00	-22.91	-1.72	0.00	-112.92	0.00	112.92	3,805.35	1,902.68	7,108.10	3,559.34	0.57	-0.11	0.038
53.00	-22.51	-1.72	0.00	-107.75	0.00	107.75	3,811.38	1,905.69	7,136.14	3,573.37	0.64	-0.12	0.036
55.00	-21.52	-1.69	0.00	-104.32	0.00	104.32	3,786.98	1,893.49	7,023.15	3,516.80	0.69	-0.12	0.035
60.00	-20.55	-1.67	0.00	-95.85	0.00	95.85	3,725.02	1,862.51	6,742.75	3,376.39	0.82	-0.13	0.034
65.00	-19.60	-1.64	0.00	-87.50	0.00	87.50	3,661.69	1,830.85	6,465.46	3,237.53	0.96	-0.14	0.032
70.00	-18.66	-1.60	0.00	-79.31	0.00	79.31	3,597.00	1,798.50	6,191.44	3,100.32	1.11	-0.15	0.031
75.00	-17.75	-1.57	0.00	-71.29	0.00	71.29	3,530.95	1,765.48	5,920.88	2,964.84	1.28	-0.16	0.029
80.00	-16.86	-1.53	0.00	-63.45	0.00	63.45	3,463.54	1,731.77	5,653.97	2,831.19	1.45	-0.17	0.027
85.00	-15.98	-1.48	0.00	-55.82	0.00	55.82	3,394.76	1,697.38	5,390.88	2,699.44	1.63	-0.18	0.025
90.00	-13.56	-1.34	0.00	-48.42	0.00	48.42	3,324.61	1,662.31	5,131.80	2,569.71	1.82	-0.19	0.023
94.92	-13.54	-1.34	0.00	-41.82	0.00	41.82	3,235.43	1,617.72	4,852.80	2,430.01	2.02	-0.19	0.021
95.00	-12.27	-1.26	0.00	-41.70	0.00	41.70	3,233.85	1,616.93	4,848.03	2,427.62	2.02	-0.19	0.021
99.83	-12.25	-1.26	0.00	-35.62	0.00	35.62	2,561.72	1,280.86	3,809.84	1,907.75	2.23	-0.20	0.023
100.00	-12.11	-1.25	0.00	-35.41	0.00	35.41	2,559.96	1,279.98	3,803.43	1,904.54	2.23	-0.20	0.023
101.00	-11.48	-1.21	0.00	-34.16	0.00	34.16	2,549.35	1,274.68	3,765.02	1,885.31	2.28	-0.20	0.023
105.00	-10.83	-1.16	0.00	-29.34	0.00	29.34	2,506.38	1,253.19	3,612.47	1,808.92	2.45	-0.21	0.021
110.00	-10.19	-1.10	0.00	-23.56	0.00	23.56	2,451.44	1,225.72	3,424.37	1,714.73	2.67	-0.22	0.018
115.00	-7.49	-0.87	0.00	-18.04	0.00	18.04	2,395.13	1,197.56	3,239.31	1,622.06	2.90	-0.22	0.014
120.00	-6.91	-0.81	0.00	-13.71	0.00	13.71	2,337.45	1,168.73	3,057.47	1,531.01	3.14	-0.23	0.012
125.00	-4.92	-0.61	0.00	-9.65	0.00	9.65	2,271.21	1,135.60	2,869.92	1,437.09	3.38	-0.23	0.009
130.00	-4.43	-0.56	0.00	-6.60	0.00	6.60	2,192.15	1,096.08	2,672.64	1,338.31	3.63	-0.24	0.007
135.00	-2.54	-0.34	0.00	-3.83	0.00	3.83	2,113.10	1,056.55	2,482.39	1,243.04	3.88	-0.24	0.004
140.00	-2.11	-0.28	0.00	-2.15	0.00	2.15	2,034.04	1,017.02	2,299.16	1,151.29	4.12	-0.24	0.003
145.00	-1.87	-0.25	0.00	-0.73	0.00	0.73	1,954.99	977.49	2,122.95	1,063.05	4.38	-0.24	0.002
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	4.52	-0.24	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	4.52	-0.24	0.000

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

### 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 ( $S_{sa}$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_{s1}$ ):	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 ( $S_{dsa}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{ds1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.04
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)					Horizontal Force (lb)	Vertical Force (lb)
			a	b	c	Saz		
36	147.91	1	1.890	1.979	1.140	0.370	0	2
35	146.45	279	1.853	1.789	1.071	0.346	84	345
34	142.50	495	1.754	1.338	0.900	0.286	123	613
33	137.50	513	1.633	0.885	0.716	0.217	96	635
32	132.50	568	1.517	0.543	0.563	0.157	77	703
31	127.50	586	1.404	0.292	0.436	0.105	53	726
30	122.50	668	1.296	0.115	0.333	0.062	36	827
29	117.50	686	1.193	-0.002	0.249	0.027	16	849
28	112.50	745	1.093	-0.074	0.183	0.000	0	922
27	107.50	763	0.998	-0.110	0.131	-0.018	-12	945
26	103.00	623	0.916	-0.121	0.094	-0.028	-15	772
25	100.50	158	0.872	-0.121	0.077	-0.031	-4	196
24	99.92	26	0.862	-0.120	0.074	-0.032	-1	33
23	97.42	1,480	0.820	-0.115	0.060	-0.032	-41	1,833
22	94.96	26	0.779	-0.108	0.048	-0.031	-1	32
21	92.46	917	0.738	-0.098	0.038	-0.028	-23	1,136
20	87.50	1,017	0.661	-0.074	0.023	-0.019	-17	1,260
19	82.50	1,039	0.588	-0.049	0.013	-0.006	-5	1,287
18	77.50	1,061	0.519	-0.023	0.008	0.009	8	1,314
17	72.50	1,083	0.454	0.000	0.006	0.022	21	1,341
16	67.50	1,104	0.394	0.020	0.007	0.033	32	1,368
15	62.50	1,126	0.337	0.036	0.009	0.041	40	1,395
14	57.50	1,148	0.286	0.048	0.014	0.046	46	1,422
13	54.00	465	0.252	0.055	0.017	0.048	19	576
12	51.50	1,253	0.229	0.059	0.020	0.049	53	1,552
11	48.42	1,339	0.202	0.062	0.023	0.049	57	1,659
10	45.92	434	0.182	0.065	0.026	0.049	18	537
9	42.50	1,198	0.156	0.067	0.029	0.048	50	1,483
8	37.50	1,219	0.121	0.070	0.034	0.047	50	1,510
7	32.50	1,241	0.091	0.071	0.038	0.046	49	1,537
6	27.50	1,263	0.065	0.072	0.041	0.045	49	1,564
5	22.50	1,285	0.044	0.071	0.042	0.043	48	1,591
4	17.50	1,306	0.026	0.067	0.040	0.040	46	1,618
3	12.50	1,328	0.013	0.059	0.035	0.036	42	1,645

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

2	7.50	1,350	0.005	0.044	0.025	0.028	33	1,672
1	2.50	1,127	0.001	0.018	0.010	0.013	12	1,396
Andrew DB844H90E-XY	147.90	112	1.890	1.978	1.139	0.370	36	139
Andrew 844G65VTZASX	147.90	64	1.890	1.978	1.139	0.370	21	79
Flat Platform w/ Han	147.90	2,000	1.890	1.978	1.139	0.370	641	2,477
48" x 4" Panel	135.00	180	1.574	0.701	0.636	0.186	29	223
Flat Low Profile Pla	135.00	1,500	1.574	0.701	0.636	0.186	242	1,858
Ericsson KRY 112 144	125.00	33	1.350	0.195	0.382	0.083	2	41
Ericsson RRUS 11 B12	125.00	152	1.350	0.195	0.382	0.083	11	188
Ericsson AIR 21, 1.3	125.00	249	1.350	0.195	0.382	0.083	18	308
Ericsson AIR-32 B2A/	125.00	397	1.350	0.195	0.382	0.083	28	491
Round T-Arm	125.00	750	1.350	0.195	0.382	0.083	54	929
Andrew LNX-6515DS-VT	125.00	154	1.350	0.195	0.382	0.083	11	191
Samsung PCS/AWS	115.00	253	1.142	-0.043	0.214	0.013	3	314
Samsung 700/850MHz D	115.00	211	1.142	-0.043	0.214	0.013	2	261
Raycap RVZDC-6627-PF	115.00	32	1.142	-0.043	0.214	0.013	0	40
RFS DB-T1-6Z-8AB-0Z	115.00	44	1.142	-0.043	0.214	0.013	0	54
Amphenol Antel BXA-7	115.00	102	1.142	-0.043	0.214	0.013	1	126
Commscope SBNHH-	115.00	304	1.142	-0.043	0.214	0.013	3	377
Flat Low Profile Pla	115.00	1,500	1.142	-0.043	0.214	0.013	16	1,858
Stand-Off	101.00	75	0.881	-0.121	0.080	-0.031	-2	93
Antel BCD-87010 ____	101.00	26	0.881	-0.121	0.080	-0.031	-1	33
DragonWave Horizon C	90.00	21	0.700	-0.087	0.030	-0.024	0	26
Alcatel-Lucent RRH2x	90.00	317	0.700	-0.087	0.030	-0.024	-7	393
Alcatel-Lucent 1900M	90.00	180	0.700	-0.087	0.030	-0.024	-4	223
18" x 18" x 4" Junct	90.00	21	0.700	-0.087	0.030	-0.024	0	26
Nokia 2.5G MAA - AAH	90.00	311	0.700	-0.087	0.030	-0.024	-7	385
Andrew VHLP2-18	90.00	54	0.700	-0.087	0.030	-0.024	-1	67
Commscope NNVV-	90.00	232	0.700	-0.087	0.030	-0.024	-5	288
Flat T-Arm	90.00	750	0.700	-0.087	0.030	-0.024	-16	929
		40,942	56.520	14.082	15.447	3.845	2,116	50,711

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)
36	147.91	1	1.890	1.979	1.140	0.370	0	1
35	146.45	279	1.853	1.789	1.071	0.346	84	240
34	142.50	495	1.754	1.338	0.900	0.286	123	426
33	137.50	513	1.633	0.885	0.716	0.217	96	442
32	132.50	568	1.517	0.543	0.563	0.157	77	489
31	127.50	586	1.404	0.292	0.436	0.105	53	505
30	122.50	668	1.296	0.115	0.333	0.062	36	575
29	117.50	686	1.193	-0.002	0.249	0.027	16	591
28	112.50	745	1.093	-0.074	0.183	0.000	0	641
27	107.50	763	0.998	-0.110	0.131	-0.018	-12	657
26	103.00	623	0.916	-0.121	0.094	-0.028	-15	537
25	100.50	158	0.872	-0.121	0.077	-0.031	-4	136
24	99.92	26	0.862	-0.120	0.074	-0.032	-1	23
23	97.42	1,480	0.820	-0.115	0.060	-0.032	-41	1,275
22	94.96	26	0.779	-0.108	0.048	-0.031	-1	22
21	92.46	917	0.738	-0.098	0.038	-0.028	-23	790
20	87.50	1,017	0.661	-0.074	0.023	-0.019	-17	876
19	82.50	1,039	0.588	-0.049	0.013	-0.006	-5	895
18	77.50	1,061	0.519	-0.023	0.008	0.009	8	914
17	72.50	1,083	0.454	0.000	0.006	0.022	21	932
16	67.50	1,104	0.394	0.020	0.007	0.033	32	951
15	62.50	1,126	0.337	0.036	0.009	0.041	40	970
14	57.50	1,148	0.286	0.048	0.014	0.046	46	989

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

13	54.00	465	0.252	0.055	0.017	0.048	19	401
12	51.50	1,253	0.229	0.059	0.020	0.049	53	1,079
11	48.42	1,339	0.202	0.062	0.023	0.049	57	1,154
10	45.92	434	0.182	0.065	0.026	0.049	18	374
9	42.50	1,198	0.156	0.067	0.029	0.048	50	1,032
8	37.50	1,219	0.121	0.070	0.034	0.047	50	1,050
7	32.50	1,241	0.091	0.071	0.038	0.046	49	1,069
6	27.50	1,263	0.065	0.072	0.041	0.045	49	1,088
5	22.50	1,285	0.044	0.071	0.042	0.043	48	1,107
4	17.50	1,306	0.026	0.067	0.040	0.040	46	1,125
3	12.50	1,328	0.013	0.059	0.035	0.036	42	1,144
2	7.50	1,350	0.005	0.044	0.025	0.028	33	1,163
1	2.50	1,127	0.001	0.018	0.010	0.013	12	971
Andrew DB844H90E-XY	147.90	112	1.890	1.978	1.139	0.370	36	96
Andrew 844G65VTZASX	147.90	64	1.890	1.978	1.139	0.370	21	55
Flat Platform w/ Han	147.90	2,000	1.890	1.978	1.139	0.370	641	1,723
48" x 4" Panel	135.00	180	1.574	0.701	0.636	0.186	29	155
Flat Low Profile Pla	135.00	1,500	1.574	0.701	0.636	0.186	242	1,292
Ericsson KRY 112 144	125.00	33	1.350	0.195	0.382	0.083	2	28
Ericsson RRUS 11 B12	125.00	152	1.350	0.195	0.382	0.083	11	131
Ericsson AIR 21, 1.3	125.00	249	1.350	0.195	0.382	0.083	18	214
Ericsson AIR-32 B2A/	125.00	397	1.350	0.195	0.382	0.083	28	342
Round T-Arm	125.00	750	1.350	0.195	0.382	0.083	54	646
Andrew LNX-6515DS-VT	125.00	154	1.350	0.195	0.382	0.083	11	133
Samsung PCS/AWS	115.00	253	1.142	-0.043	0.214	0.013	3	218
Samsung 700/850MHz D	115.00	211	1.142	-0.043	0.214	0.013	2	182
Raycap RVZDC-6627-PF	115.00	32	1.142	-0.043	0.214	0.013	0	28
RFS DB-T1-6Z-8AB-0Z	115.00	44	1.142	-0.043	0.214	0.013	0	38
Amphenol Antel BXA-7	115.00	102	1.142	-0.043	0.214	0.013	1	88
Commscope SBNHH-	115.00	304	1.142	-0.043	0.214	0.013	3	262
Flat Low Profile Pla	115.00	1,500	1.142	-0.043	0.214	0.013	16	1,292
Stand-Off	101.00	75	0.881	-0.121	0.080	-0.031	-2	65
Antel BCD-87010	101.00	26	0.881	-0.121	0.080	-0.031	-1	23
DragonWave Horizon C	90.00	21	0.700	-0.087	0.030	-0.024	0	18
Alcatel-Lucent RRH2x	90.00	317	0.700	-0.087	0.030	-0.024	-7	273
Alcatel-Lucent 1900M	90.00	180	0.700	-0.087	0.030	-0.024	-4	155
18" x 18" x 4" Junct	90.00	21	0.700	-0.087	0.030	-0.024	0	18
Nokia 2.5G MAA - AAH	90.00	311	0.700	-0.087	0.030	-0.024	-7	268
Andrew VHLP2-18	90.00	54	0.700	-0.087	0.030	-0.024	-1	47
Commscope NNVV-	90.00	232	0.700	-0.087	0.030	-0.024	-5	200
Flat T-Arm	90.00	750	0.700	-0.087	0.030	-0.024	-16	646
		40,942	56.520	14.082	15.447	3.845	2,116	35,267

Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-49.31	-2.11	0.00	-242.39	0.00	242.39	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.060
5.00	-47.64	-2.08	0.00	-231.85	0.00	231.85	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.059
10.00	-46.00	-2.05	0.00	-221.43	0.00	221.43	4,248.67	2,124.33	9,446.21	4,730.12	0.03	-0.03	0.058
15.00	-44.38	-2.02	0.00	-211.16	0.00	211.16	4,198.03	2,099.01	9,147.11	4,580.35	0.06	-0.04	0.057
20.00	-42.79	-1.98	0.00	-201.08	0.00	201.08	4,146.02	2,073.01	8,849.60	4,431.38	0.11	-0.05	0.056
25.00	-41.22	-1.94	0.00	-191.19	0.00	191.19	4,092.65	2,046.33	8,553.86	4,283.29	0.17	-0.06	0.055
30.00	-39.68	-1.89	0.00	-181.51	0.00	181.51	4,037.92	2,018.96	8,260.08	4,136.18	0.24	-0.08	0.054
35.00	-38.17	-1.85	0.00	-172.04	0.00	172.04	3,981.83	1,990.91	7,968.43	3,990.14	0.33	-0.09	0.053
40.00	-36.69	-1.81	0.00	-162.78	0.00	162.78	3,924.37	1,962.18	7,679.09	3,845.25	0.44	-0.11	0.052
45.00	-36.15	-1.79	0.00	-153.75	0.00	153.75	3,865.54	1,932.77	7,392.26	3,701.62	0.55	-0.12	0.051
46.83	-34.49	-1.74	0.00	-150.46	0.00	150.46	3,843.63	1,921.82	7,287.75	3,649.29	0.60	-0.12	0.050
50.00	-32.94	-1.69	0.00	-144.95	0.00	144.95	3,805.35	1,902.68	7,108.10	3,559.34	0.69	-0.13	0.049
53.00	-32.37	-1.67	0.00	-139.89	0.00	139.89	3,811.38	1,905.69	7,136.14	3,573.37	0.77	-0.14	0.048
55.00	-30.94	-1.63	0.00	-136.55	0.00	136.55	3,786.98	1,893.49	7,023.15	3,516.80	0.83	-0.15	0.047
60.00	-29.55	-1.59	0.00	-128.42	0.00	128.42	3,725.02	1,862.51	6,742.75	3,376.39	1.00	-0.16	0.046
65.00	-28.18	-1.56	0.00	-120.47	0.00	120.47	3,661.69	1,830.85	6,465.46	3,237.53	1.17	-0.18	0.045
70.00	-26.84	-1.54	0.00	-112.67	0.00	112.67	3,597.00	1,798.50	6,191.44	3,100.32	1.36	-0.19	0.044
75.00	-25.53	-1.54	0.00	-104.95	0.00	104.95	3,530.95	1,765.48	5,920.88	2,964.84	1.57	-0.20	0.043
80.00	-24.24	-1.54	0.00	-97.27	0.00	97.27	3,463.54	1,731.77	5,653.97	2,831.19	1.79	-0.22	0.041
85.00	-22.98	-1.56	0.00	-89.56	0.00	89.56	3,394.76	1,697.38	5,390.88	2,699.44	2.02	-0.23	0.040
90.00	-19.50	-1.61	0.00	-81.75	0.00	81.75	3,324.61	1,662.31	5,131.80	2,569.71	2.27	-0.25	0.038
94.92	-19.47	-1.62	0.00	-73.82	0.00	73.82	3,235.43	1,617.72	4,852.80	2,430.01	2.53	-0.26	0.036
95.00	-17.64	-1.65	0.00	-73.69	0.00	73.69	3,233.85	1,616.93	4,848.03	2,427.62	2.54	-0.26	0.036
99.83	-17.61	-1.65	0.00	-65.71	0.00	65.71	2,561.72	1,280.86	3,809.84	1,907.75	2.81	-0.27	0.041
100.00	-17.41	-1.66	0.00	-65.43	0.00	65.43	2,559.96	1,279.98	3,803.43	1,904.54	2.82	-0.27	0.041
101.00	-16.51	-1.67	0.00	-63.78	0.00	63.78	2,549.35	1,274.68	3,765.02	1,885.31	2.87	-0.28	0.040
105.00	-15.57	-1.68	0.00	-57.08	0.00	57.08	2,506.38	1,253.19	3,612.47	1,808.92	3.11	-0.29	0.038
110.00	-14.64	-1.68	0.00	-48.66	0.00	48.66	2,451.44	1,225.72	3,424.37	1,714.73	3.42	-0.30	0.034
115.00	-10.77	-1.62	0.00	-40.24	0.00	40.24	2,395.13	1,197.56	3,239.31	1,622.06	3.74	-0.31	0.029
120.00	-9.94	-1.58	0.00	-32.13	0.00	32.13	2,337.45	1,168.73	3,057.47	1,531.01	4.08	-0.33	0.025
125.00	-7.07	-1.39	0.00	-24.21	0.00	24.21	2,271.21	1,135.60	2,869.92	1,437.09	4.42	-0.34	0.020
130.00	-6.36	-1.31	0.00	-17.26	0.00	17.26	2,192.15	1,096.08	2,672.64	1,338.31	4.78	-0.34	0.016
135.00	-3.65	-0.93	0.00	-10.71	0.00	10.71	2,113.10	1,056.55	2,482.39	1,243.04	5.14	-0.35	0.010
140.00	-3.04	-0.80	0.00	-6.08	0.00	6.08	2,034.04	1,017.02	2,299.16	1,151.29	5.51	-0.35	0.007
145.00	-2.69	-0.71	0.00	-2.07	0.00	2.07	1,954.99	977.49	2,122.95	1,063.05	5.88	-0.36	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	6.10	-0.36	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	6.10	-0.36	0.000



Site Number: 302466

Code: ANSI/TIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

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Customer: VERIZON WIRELESS

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	-34.30	-2.11	0.00	-239.53	0.00	239.53	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.055
5.00	-33.13	-2.08	0.00	-229.00	0.00	229.00	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.055
10.00	-31.99	-2.04	0.00	-218.60	0.00	218.60	4,248.67	2,124.33	9,446.21	4,730.12	0.03	-0.03	0.054
15.00	-30.86	-2.01	0.00	-208.38	0.00	208.38	4,198.03	2,099.01	9,147.11	4,580.35	0.06	-0.04	0.053
20.00	-29.76	-1.96	0.00	-198.35	0.00	198.35	4,146.02	2,073.01	8,849.60	4,431.38	0.11	-0.05	0.052
25.00	-28.67	-1.92	0.00	-188.53	0.00	188.53	4,092.65	2,046.33	8,553.86	4,283.29	0.17	-0.06	0.051
30.00	-27.60	-1.88	0.00	-178.93	0.00	178.93	4,037.92	2,018.96	8,260.08	4,136.18	0.24	-0.08	0.050
35.00	-26.55	-1.83	0.00	-169.55	0.00	169.55	3,981.83	1,990.91	7,968.43	3,990.14	0.33	-0.09	0.049
40.00	-25.52	-1.78	0.00	-160.40	0.00	160.40	3,924.37	1,962.18	7,679.09	3,845.25	0.43	-0.10	0.048
45.00	-25.14	-1.77	0.00	-151.47	0.00	151.47	3,865.54	1,932.77	7,392.26	3,701.62	0.55	-0.12	0.047
46.83	-23.99	-1.71	0.00	-148.23	0.00	148.23	3,843.63	1,921.82	7,287.75	3,649.29	0.59	-0.12	0.047
50.00	-22.91	-1.66	0.00	-142.80	0.00	142.80	3,805.35	1,902.68	7,108.10	3,559.34	0.68	-0.13	0.046
53.00	-22.51	-1.64	0.00	-137.81	0.00	137.81	3,811.38	1,905.69	7,136.14	3,573.37	0.76	-0.14	0.044
55.00	-21.52	-1.60	0.00	-134.52	0.00	134.52	3,786.98	1,893.49	7,023.15	3,516.80	0.82	-0.15	0.044
60.00	-20.55	-1.56	0.00	-126.52	0.00	126.52	3,725.02	1,862.51	6,742.75	3,376.39	0.98	-0.16	0.043
65.00	-19.60	-1.53	0.00	-118.71	0.00	118.71	3,661.69	1,830.85	6,465.46	3,237.53	1.16	-0.17	0.042
70.00	-18.66	-1.51	0.00	-111.05	0.00	111.05	3,597.00	1,798.50	6,191.44	3,100.32	1.35	-0.19	0.041
75.00	-17.75	-1.51	0.00	-103.48	0.00	103.48	3,530.95	1,765.48	5,920.88	2,964.84	1.55	-0.20	0.040
80.00	-16.85	-1.51	0.00	-95.94	0.00	95.94	3,463.54	1,731.77	5,653.97	2,831.19	1.77	-0.21	0.039
85.00	-15.98	-1.53	0.00	-88.38	0.00	88.38	3,394.76	1,697.38	5,390.88	2,699.44	2.00	-0.23	0.037
90.00	-13.56	-1.59	0.00	-80.72	0.00	80.72	3,324.61	1,662.31	5,131.80	2,569.71	2.24	-0.24	0.035
94.92	-13.54	-1.59	0.00	-72.93	0.00	72.93	3,235.43	1,617.72	4,852.80	2,430.01	2.50	-0.26	0.034
95.00	-12.26	-1.63	0.00	-72.79	0.00	72.79	3,233.85	1,616.93	4,848.03	2,427.62	2.50	-0.26	0.034
99.83	-12.24	-1.63	0.00	-64.94	0.00	64.94	2,561.72	1,280.86	3,809.84	1,907.75	2.77	-0.27	0.039
100.00	-12.11	-1.63	0.00	-64.67	0.00	64.67	2,559.96	1,279.98	3,803.43	1,904.54	2.78	-0.27	0.039
101.00	-11.48	-1.65	0.00	-63.04	0.00	63.04	2,549.35	1,274.68	3,765.02	1,885.31	2.84	-0.27	0.038
105.00	-10.82	-1.66	0.00	-56.44	0.00	56.44	2,506.38	1,253.19	3,612.47	1,808.92	3.07	-0.28	0.036
110.00	-10.18	-1.66	0.00	-48.14	0.00	48.14	2,451.44	1,225.72	3,424.37	1,714.73	3.37	-0.30	0.032
115.00	-7.48	-1.60	0.00	-39.85	0.00	39.85	2,395.13	1,197.56	3,239.31	1,622.06	3.69	-0.31	0.028
120.00	-6.91	-1.57	0.00	-31.83	0.00	31.83	2,337.45	1,168.73	3,057.47	1,531.01	4.02	-0.32	0.024
125.00	-4.91	-1.38	0.00	-24.01	0.00	24.01	2,271.21	1,135.60	2,869.92	1,437.09	4.36	-0.33	0.019
130.00	-4.42	-1.30	0.00	-17.12	0.00	17.12	2,192.15	1,096.08	2,672.64	1,338.31	4.71	-0.34	0.015
135.00	-2.54	-0.92	0.00	-10.63	0.00	10.63	2,113.10	1,056.55	2,482.39	1,243.04	5.07	-0.34	0.010
140.00	-2.11	-0.79	0.00	-6.03	0.00	6.03	2,034.04	1,017.02	2,299.16	1,151.29	5.44	-0.35	0.006
145.00	-1.87	-0.71	0.00	-2.06	0.00	2.06	1,954.99	977.49	2,122.95	1,063.05	5.80	-0.35	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	6.02	-0.35	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	6.02	-0.35	0.000

Site Number: 302466

Code: ANSITIA-222-G

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Site Name: West Service Road, CT

Engineering Number: OAA735527\_C3\_01

6/27/2018 4:02:21 PM

Customer: VERIZON WIRELESS

### 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	32.35	0.00	49.08	0.00	0.00	3307.03	0.00	0.67
0.9D + 1.6W	31.84	0.00	36.80	0.00	0.00	3233.92	0.00	0.65
1.2D + 1.0Di + 1.0Wi	9.35	0.00	90.74	0.00	0.00	964.71	0.00	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.79	0.00	49.31	0.00	0.00	204.45	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.11	0.00	49.31	0.00	0.00	242.39	0.00	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.79	0.00	34.30	0.00	0.00	202.21	0.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.11	0.00	34.30	0.00	0.00	239.53	0.00	0.06
1.0D + 1.0W	7.61	0.00	40.94	0.00	0.00	776.11	0.00	0.16

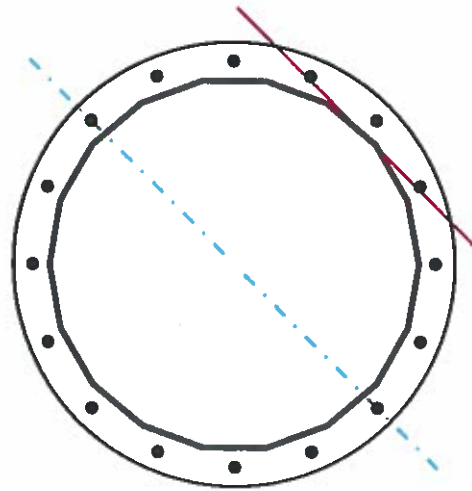
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	56.58	in
Thickness	0.375	in
Orientation Offset		*

Base Reactions		
Moment, Mu	3307.0	k-ft
Axial, Pu	49.1	k
Shear, Vu	32.4	k
Neutral Axis	315	*

Report Capacities		
Component	Capacity	Result
Base Plate	22%	Pass
Anchor Rods	63%	Pass
Dwyldag	-	-

Base Plate		
Shape	Round	-
Diameter, $\phi$	69	in
Thickness	2 1/2	in
Grade	Other	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	N/A	in
Orientation Offset		*
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3.5	in
Applied Moment, Mu	699.1	k
Bending Stress, $\phi Mn$	3169.7	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	63	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset		*
Applied Force, Pu	160.5	k
Anchor Rods, $\phi Pn$	259.8	k

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
	k	k-ft	-
Base Forces	32.4	3307.0	1.00
Anchor Rod Forces	32.4	3307.0	1.00
Additional Bolt (Grp1) Forces			
Additional Bolt (Grp2) Forces			
Dywidag Forces			
Stiffener Forces			

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	65.8793	3.6600	0.1721		26017.20
Bolt	3.9761	3.2477	0.8393	4.5	25793.59
Bolt1					
Bolt2					
Dywidag					
Stiffener					

Base Plate		
Shape	Round	-
Diameter, D	69	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	39.493	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3.5	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	63	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	160.5	k
Applied Shear, Vu	1.2	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.618	OK
Interaction Capacity	0.627	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	0.0	k
Applied Horizontal Force, Vu	0.00	k

External Base Plate		
Chord Length AA	32.567	in
Additional AA	5.000	in
Section Modulus, Z	58.698	in <sup>3</sup>
Applied Moment, Mu	699.1	k-ft
Bending Capacity, φMn	3169.7	k-ft
Capacity, Mu/φMn	0.221	OK

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn	0.0	k
Interaction Capacity		

Vertical Weld		
Vert.-to-Stiffener a=e <sub>v</sub> /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, φPn	#DIV/0!	k
Vert.-to-Plate a=e <sub>v</sub> /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, φVn	#DIV/0!	k
P <sub>u</sub> /φ <sub>p</sub> P <sub>n</sub> + V <sub>u</sub> /φ <sub>v</sub> V <sub>n</sub>		-

Chord Length AB	30.987	in
Additional AB	5.000	in
Section Modulus, Z	56.230	in <sup>3</sup>
Applied Moment, Mu	498.6	k-ft
Bending Capacity, φMn	3036.4	k-ft
Capacity, Mu/φMn	0.164	OK

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn	0.0	k
Interaction Capacity		

Horizontal Weld		
Horz.-to-Stiffener a=e <sub>h</sub> /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Effective Fillet	0.000	in
Compressive Capacity, φPn	#DIV/0!	k
Horz.-to-Pole a=e <sub>h</sub> /l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, φVn	#DIV/0!	k
P <sub>u</sub> /φ <sub>p</sub> P <sub>n</sub> + V <sub>u</sub> /φ <sub>v</sub> V <sub>n</sub>		-

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

Dywidag Reinforcement		
Dywidag Quantity, N	0	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	63.46	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	0.0	k
Compressive Capacity, φPn	0.0	k
Capacity, Pu/φPn		

Plate Tension		
Gross Cross Section	0.000	in <sup>2</sup>
Net Cross Section	0.000	in <sup>2</sup>
Tensile Capacity, φTn	0.0	k
Capacity, Tu/φTn		-

Plate Compression		
Radius of Gyration	#DIV/0!	in <sup>3</sup>
kl/r	#DIV/0!	-
4.71 √(E/Fy)	0.00	-
Buckling Stress(F <sub>e</sub> )	0.0	-
Crit. Buckling Stress(F <sub>cr</sub> )	0.0	ksi
Compressive Capacity, φPn	0.0	k
Capacity, Pu/φPn		-

Site Name: West Service Road,CT  
 Site Number: 302466  
 Engineer: Tyler.Ferguson  
 Engineering Number: OAA735527  
 Date: 06/27/18

Program Last Updated: 5/13/2014  
 American Tower Corporation

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

Analyze or Design a Foundation?

Foundation Mapped:

Moment (M):

Shear/Leg (V):

Axial Load (P):

Uplift/Leg (U):

Tower Type (GT / SST / MP):

Diameter of Caisson (d):

Caisson Embedment (L-h):

Caisson Height Above Ground (h):

Depth Below Ground Surface to Water Table (w):

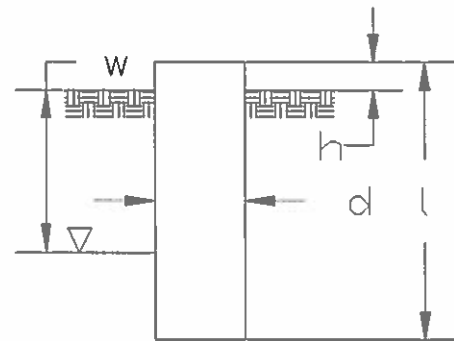
Unit Weight of Concrete:

Unit Weight of Water:

Tension Skin Friction/Compression Skin Friction:

Pullout Angle:

Analyze  
 N  
 3307.0 k-ft  
 32.4 k  
 49.1 k  
 0 k  
 MP



7 ft  
 33.5 ft  
 0.5 ft  
 7.5 ft  
 150 pcf  
 62.4 pcf  
 1  
 30 degrees

**Engineer Notes**

**Soil Mechanical Properties**

Depth (ft)		$\gamma_{soil}$ (pcf)	Cohesion (psf)	$\phi$ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
Top	Bottom					
0	4	105	0	0	0	0
4	7.5	105	0	28	151	0
7.5	14	106	0	29	412	0
14	17	120	0	33	1180	0
17	19.5	134	0	40	1276	0
19.5	27	133	0	40	1534	0
27	34.5	140	0	40	1738	58590

Required Embedment:

Volume of Concrete:

Weight of Concrete (Buoyancy Effect Considered):

Average Soil Unit Weight:

Skin Friction Resistance:

Compressive Bearing Resistance:

Pullout Weight (Minus Concrete Weight):

Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ):

Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ):

$P_u$ :

$T_u/\phi_s T_n$ :

$P_u/\phi_s P_n$ :

Total Lateral Resistance:

Inflection Point (Below Ground Surface):

Design Overturning Moment At Inflection Point ( $M_D$ ):

Nominal Moment Capacity ( $\phi_s M_n$ ):

$M_D/\phi_s M_n$ :

$\phi_s$ :

23.4 ft - OK, Caisson Embedment Satisfactory

1308.5 ft<sup>3</sup> = 48.5 yd<sup>3</sup>

133.8 k

73.3 pcf

720.0 k

2254.8 k

1484.8 k

640.3 k

2231.1 k

92.8 k

0.00 Result: OK

0.04 Result: OK

2962.6 k

24.8 ft

4125.7 k-ft

13686.4 k-ft

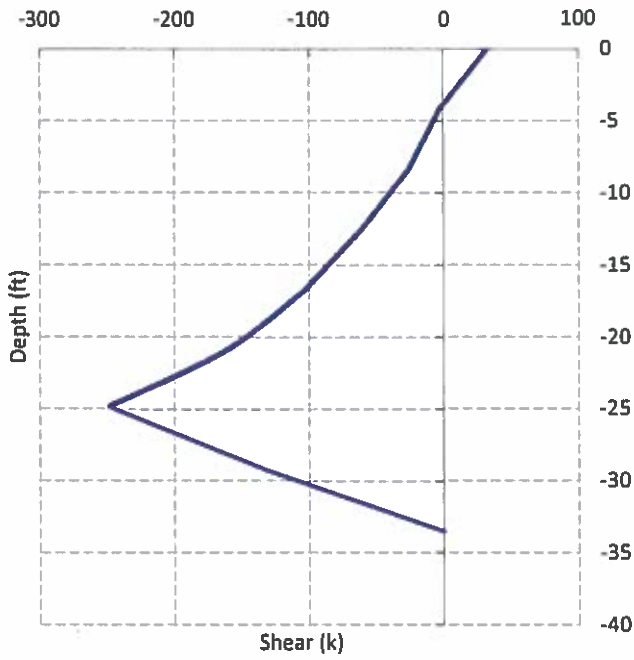
0.30 Result: OK

0.75

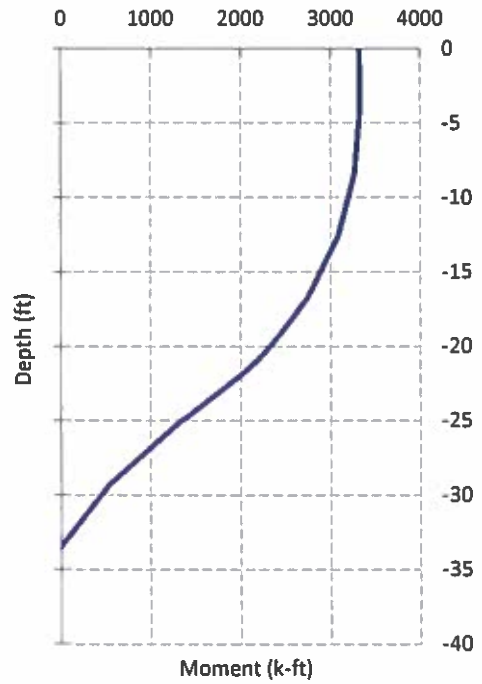
## Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in <sup>2</sup>
# of Vertical Steel Rebars:	21
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Design Horizontal Tie / Stirrup Spacing:	18 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	40 ksi
Rebar Cage Diameter:	76.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.85 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor ( $\phi_C$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	3328.8 k-ft
Nominal Moment Capacity ( $\phi_B M_n$ ):	4963.4 k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$ :	0.67 Result: OK
Design Shear ( $V_u$ ):	248.6 k
Nominal Shear Capacity ( $\phi_V V_n$ ):	518.3 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$ :	0.48 Result: OK
Design Tension ( $T_u$ ):	0.0 k
Nominal Tension Capacity ( $\phi_T T_n$ ):	1769.0 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$ :	0.00 Result: OK
Design Compression ( $P_u$ ):	92.8 k
Nominal Compression Capacity ( $\phi_P P_n$ ):	7304.9 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$ :	0.01 Result: OK
Bending Reinforcement Ratio:	0.006 ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$ :	0.67 Result: OK

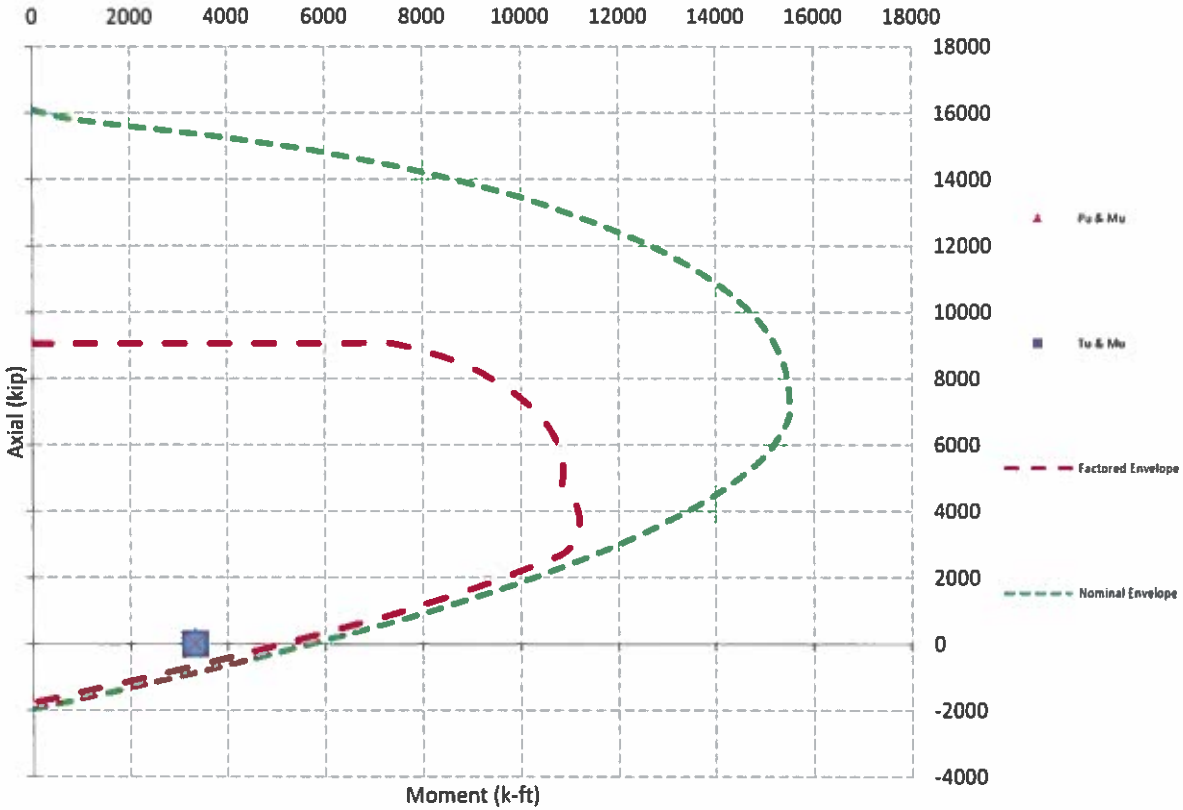
Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads





# Trylon

Prepared For



**AMERICAN TOWER®**

## Mount Analysis



**Michael F. Plahovinsak, P.E.**

*Sole Proprietor - Independent Engineer*

18301 SR 161, Plain City, Ohio

614-398-6250 / mike@mfpeng.com

**MFP Project #23218-232**

HARTFORD N CT-West Service  
Road

ATC SITE #302466

07/26/2018

Passing with Reinforcements





## MOUNT ANALYSIS REPORT

### American Tower Corporation

10 Presidential Way  
Woburn, MA 01801

**Attention:** Mr. Blake Paynter

**Reference:** Analysis of the **existing Platform** installed at 115-ft elevation.

ATC Site Name:	West Service Road
ATC Asset Number:	302466
Verizon Site Name:	HARTFORD N CT
Verizon Site Number:	PSLC# 467518 / PROJ# 15207931
Site Address:	305 West Service Rd, Hartford, CT 06120
Tower Profile:	Monopole

**Dear Sir:**

We have been provided with RF information, photos and sketches of the structure for above-referenced site. Verizon is proposing to change the equipment configuration on the existing mounting hardware.

A revised antenna, coax and miscellaneous equipment schematic have been provided to us. We have been asked to evaluate this information to determine whether or not the existing mounting apparatus are adequate to safely support the proposed loading change. The structural evaluation refers to the existing Platform installed at 115-ft elevation on the Monopole located at 305 West Service Rd, Hartford, CT 06120.

The proposed changes were provided to us in a RFDS package dated 06/12/2018. The antennas are located at 115-ft elevation on all sectors.

**According to the RFDS document, the final configuration consists of:**

- (1) SBNHH-1D65B antenna (72.7" x 11.9" x 7.1" – 50.7 lbs.) on each sector in position #1;
- (1) BXA-70063-6CFEDIN-X antennas (71" x 11.2" x 5.2" – 17lbs.) on each sector in position #2;
- (1) SBNHH-1D65B antenna (72.7" x 11.9" x 7.1" – 50.7 lbs.) on each sector in position #3;
- (1) BXA-70063-6CFEDIN-X antennas (71" x 11.2" x 5.2" – 17lbs.) on each sector in position #4;

**Additional equipment:** (1) 700/850MHz Dual Band RRH Samsung and (1) PCS/AWS Dual Band RRH Samsung on each sector.

**Additional equipment:** (1) RVZDC-6627-PF-48 Raycap and (1) DB-T1-6Z-8AB-0Z RFS on the site.

The member's dimensions that we considered in our evaluation are as per sketches and pictures. The structural members that we considered in our analysis are presented in the attached model sketches.



Steel grades have been assumed as follows, unless noted otherwise:

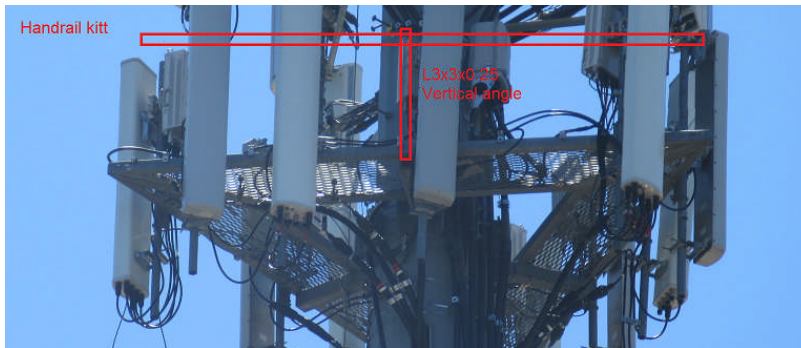
Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

**CONCLUSIONS AND RECOMMENDATIONS**

Based on information provided, our calculations conclude that the Verizon existing **Platform** located at 115-ft elevation on the existing Monopole at the specified address **IS NOT ADEQUATE** to safely support the proposed equipment as it is failing at 269%, subject to the attached Standard Conditions on page 3. The mount would be adequate to take the proposed load if the reinforcements listed below is installed.

**We recommend reinforcing the existing platform as follows:**

- **Install a Monopole Platform Handrail Kit 14' 6", for Antenna Pipes 2 3/8" OD (12) ( PV-PHK14-12 by Perfect Vison at about 30" above the existing rail;**
- **Install a L3x3x0.25 vertical angle to connect the middle of the existing rail and the middle of the new handrail for each side of the platform; The new angle will be bolted to the existing rail and fixed with a bracket to the new handrail; See below sketch**
- **Also center the antennas and the antennas pipes between the two rails.**



Should you have any questions, comments or require additional information, please do not hesitate to call.

Sincerely,

Analysis performed by:

Laurentiu Banu

Reviewed by:

*Michael Plahovinsak*  
 Michael Plahovinsak, P.E.



## **Standard Conditions for Providing Structural Consulting Services on Existing Structures**

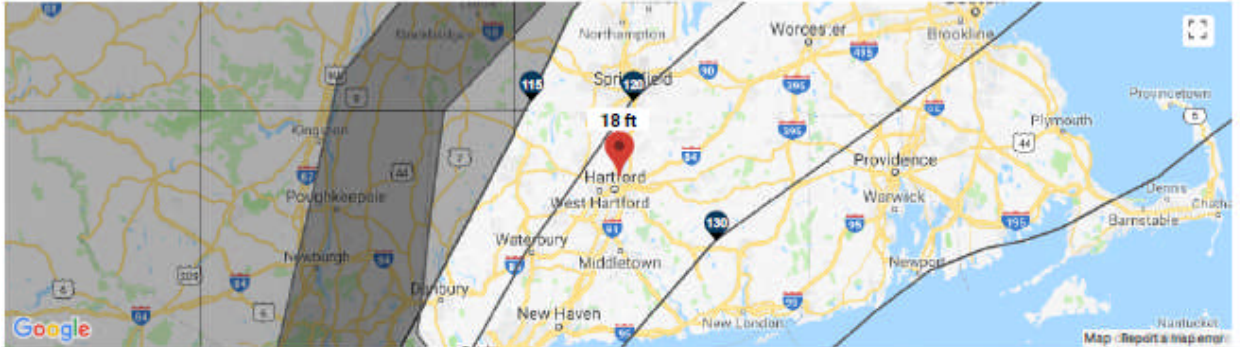
1. Mounting hardware is analyzed to the best of our ability using all information that is provided or can be obtained during fieldwork (if authorized by client). If the existing conditions are not as we have represented in this analysis, we should be contacted to evaluate the significance of the deviation and revise the assessment accordingly.
2. The structural analysis has been performed assuming that hardware is in “like new” condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, misaligned parts, or any reduction in strength due to the age or fatigue of the product.
3. The structural analysis provided is an assessment of the primary load carrying capacity of the hardware. We provide a limited scope of service. In some cases we cannot verify the capacity of every weld, plate, connection detail, etc. In some cases, structural fabrication details are unknown at the time of our analysis, and the detailed field measurement of some of the required details may not be possible. In instances where we cannot perform connection capacity calculations, it is assumed that the existing manufactured connections develop the full capacity of the primary members being connected.
4. We cannot be held responsible for mounting hardware that is installed improperly or hardware that is loose or has a tendency of working loose over the lifetime of the mounting hardware. Our analysis has been performed assuming fully tightened connections, and proper installation and symmetry of the mounting hardware per manufacturer’s instructions.
5. The structural analysis has been performed using information currently provided by the client and potentially field verified. We have been provided with a mounting arrangement for all telecommunications equipment, including antennas RRH’s, TMA’s, RRU’s, diplexers, surge protection devices, etc. Our analysis has been based upon a particular mounting arrangement. We are not responsible for deviations in the mounting arrangement that may occur over time. If deviations in equipment type or mounting arrangements are proposed, then we should be contacted to revise the recommendations of this structural report.
6. We cannot be held responsible for temporary and unbalanced loads on mounting hardware. Our analysis is based on a particular mounting arrangement or as-built field condition. We are not responsible for the methods and means of how the mounting arrangement is accomplished by the contractor. These methods and means may include rigging of equipment or hardware to lift and locate, temporary hanging of equipment in locations other than the final arrangement, movement and tie off of tower riggers, personnel, and their equipment, etc.
7. Steel grade and strength is unknown and cannot be field tested. We cannot be held responsible for equipment manufactured from inferior steel or bolts. Our analysis assumes that standard structural grade steel has been used by the equipment manufacturer for all assembled parts of the mounting apparatus. Acceptable steels and connection components are specified by the American Institute of Steel Construction. It is assumed all welded connections are performed in the shop under the latest American Welding Society Code. No field welds are permitted or assumed for the existing pre-manufactured equipment.



### Search Information

Coordinates: 41.798055, -72.655833  
 Timestamp: 2018-07-26T07:12:03.929Z  
 Hazard Type: Wind

### Map Results



### Text Results

#### ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	97 mph
Risk Category I	108 mph
Risk Category II	117 mph
Risk Category III	127 mph
Risk Category IV	▲ 131 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

#### ASCE 7-10

MRI 10-Year	77 mph
MRI 25-Year	87 mph
MRI 50-Year	93 mph
MRI 100-Year	100 mph
Risk Category I	112 mph
Risk Category II	123 mph
Risk Category III-IV	▲ 132 mph



**General Info**

Site Code : ATC 302466  
 Site Name : VZW HARTFORD N CT West Service Road  
 State : Connecticut  
 County : Hartford  
 Trylon job number: 141456  
 Design by: LB



**Analysis Criteria**

Standard 2015 IBC / ASCE 7-10 / TIA-222-G

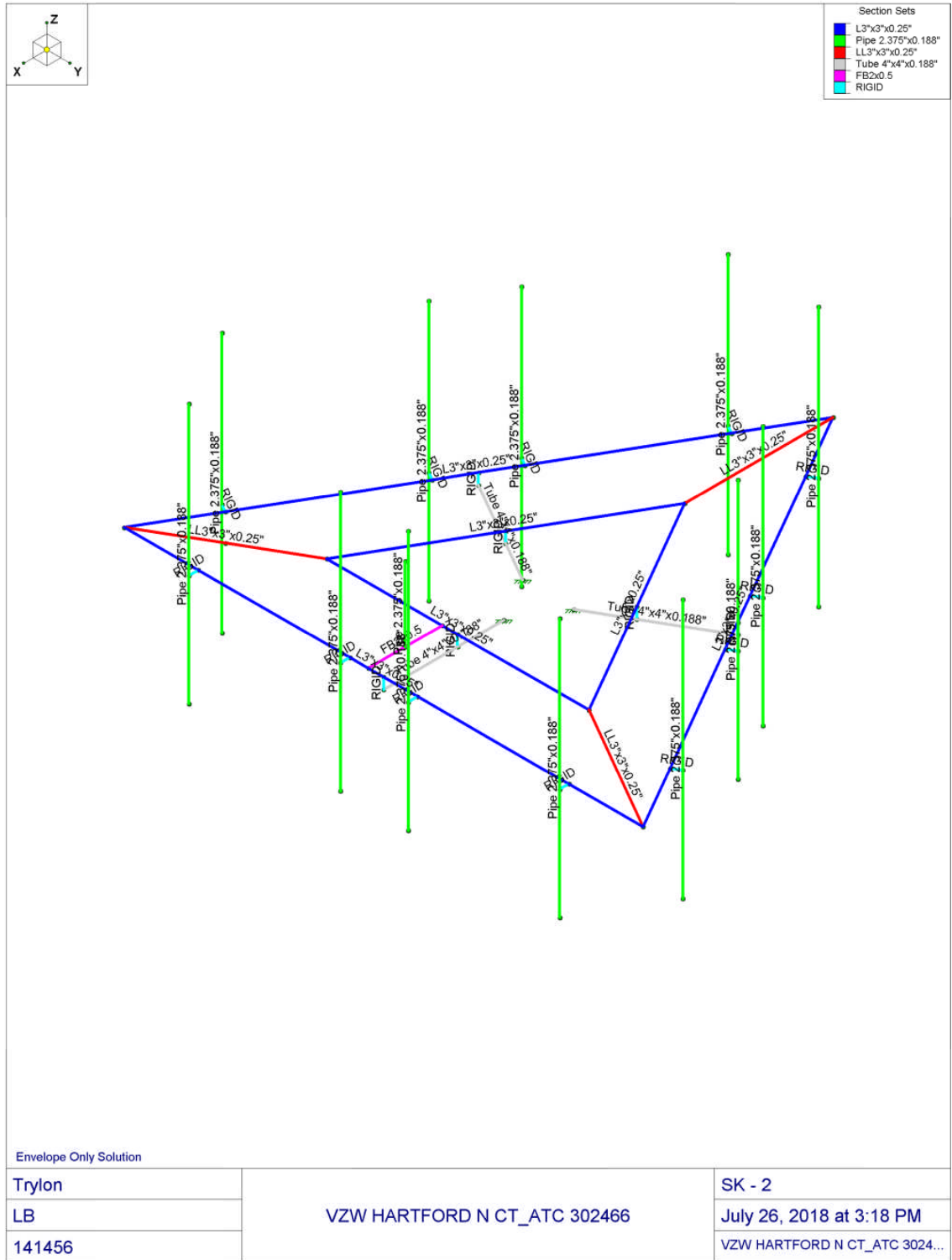
The mount structural analysis was performed in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Supporting structure using a 3-second gust wind speed of 95.3 mph with no ice, 50.0 mph with 1.00 inch escalated ice thickness, Exposure Category C and Topographic Category 1 with a crest height of 0 ft.

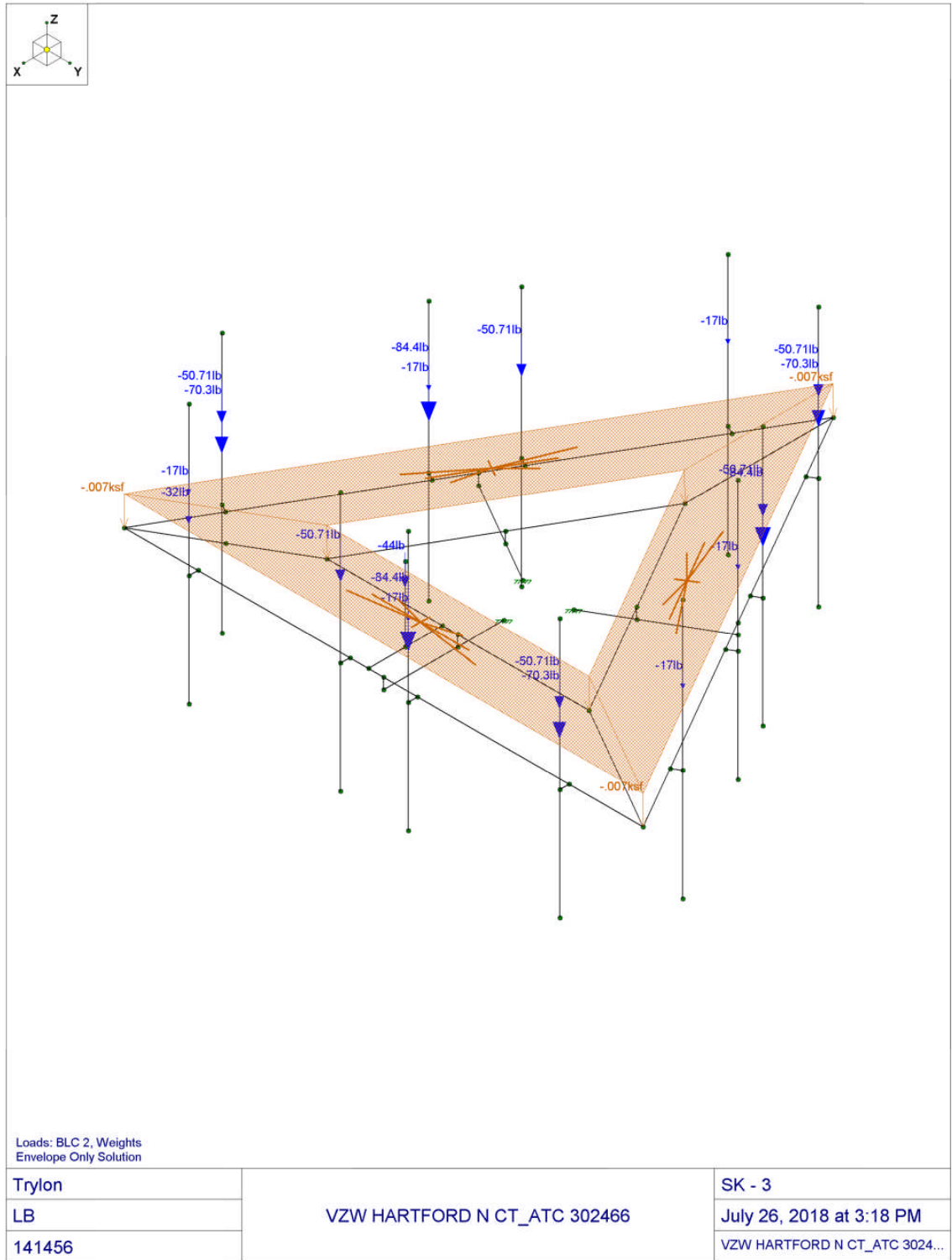
In addition, the platform has been analysed for various live loading conditions consisting of a 250-pound man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust wind speed of 30 mph.

**Design Loads**

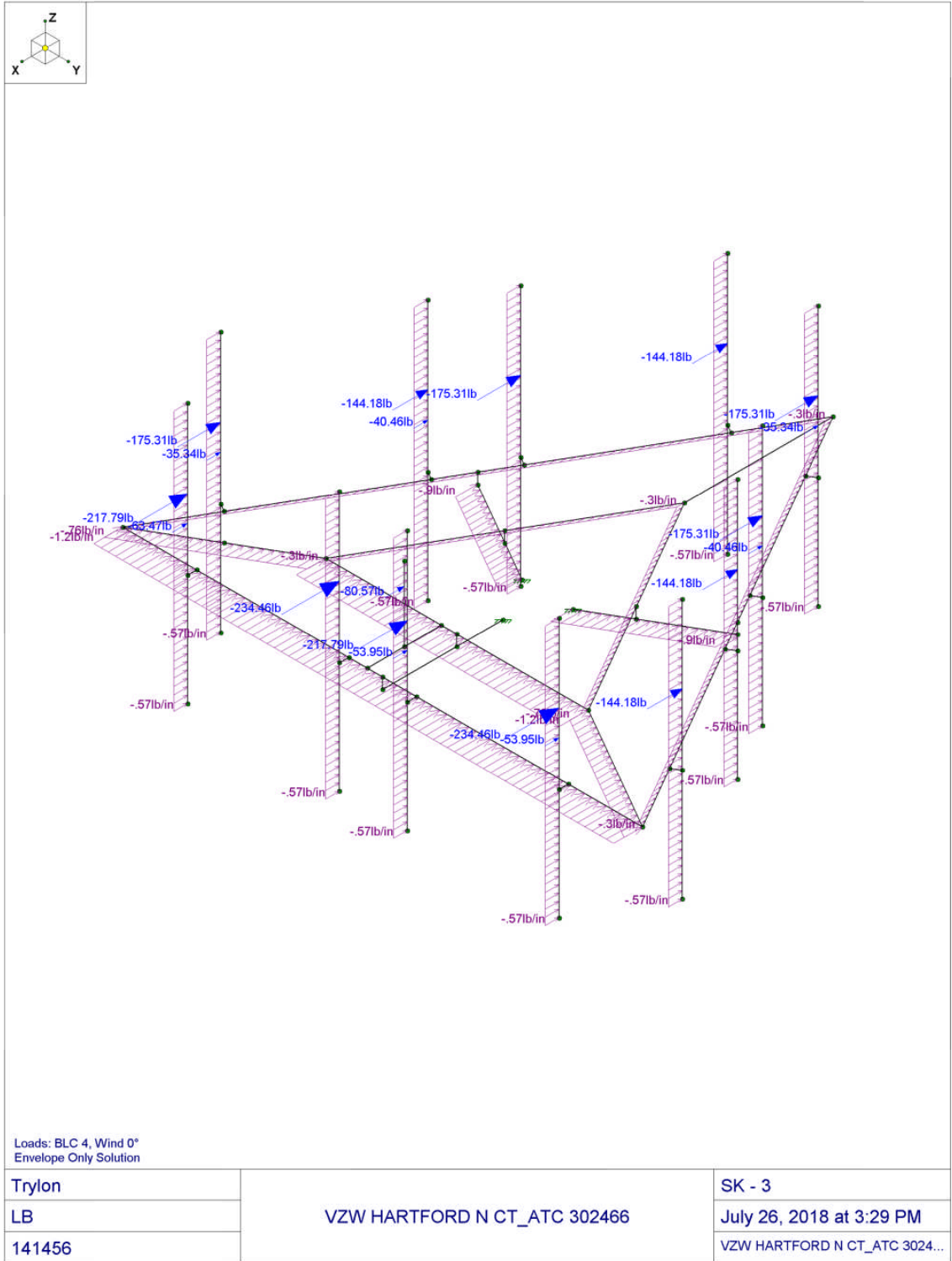
Appurtenances			Dimensions				Wind Forces without ice					Wind Forces with ice			
No.	Manufacturer	Model	Height [in]	Width [in]	Thk. [in]	Weight [lbs]	ICE				0° [lbs]	30° [lbs]	60° [lbs]	90° [lbs]	
							Weight [lbs]	0° [lbs]	30° [lbs]	60° [lbs]					90° [lbs]
6	Commscope	SBNHH-1D65B	72.7	11.9	7.1	50.7	269.8	234.5	214.7	175.3	155.6	90.4	84.9	73.9	68.4
6	Amphenol Intel	BXA-70063-6CFEDIN-X	71.0	11.2	5.2	17.0	239.4	217.8	193.3	144.2	119.6	85.2	78.3	64.5	57.7
3	Samsung	700/850MHz Dual Band RRH	15.0	15.0	8.1	70.3	66.8	54.0	47.7	35.3	29.1	25.2	23.0	18.5	16.3
3	Samsung	PCS/AWS Dual Band RRH	15.0	15.0	10.0	84.4	70.2	54.0	49.5	40.5	36.0	25.2	23.6	20.4	18.7
1	RFS	DB-T1-6Z-8AB-0Z	24.0	24.0	10.0	44.0	145.4	80.6	68.8	45.3	33.6	31.4	27.5	19.8	16.0
1	Raycap	RVZDC-6627-PF-48	28.9	15.7	10.3	32.0	119.8	63.5	58.1	47.4	42.0	26.1	24.3	20.8	19.1

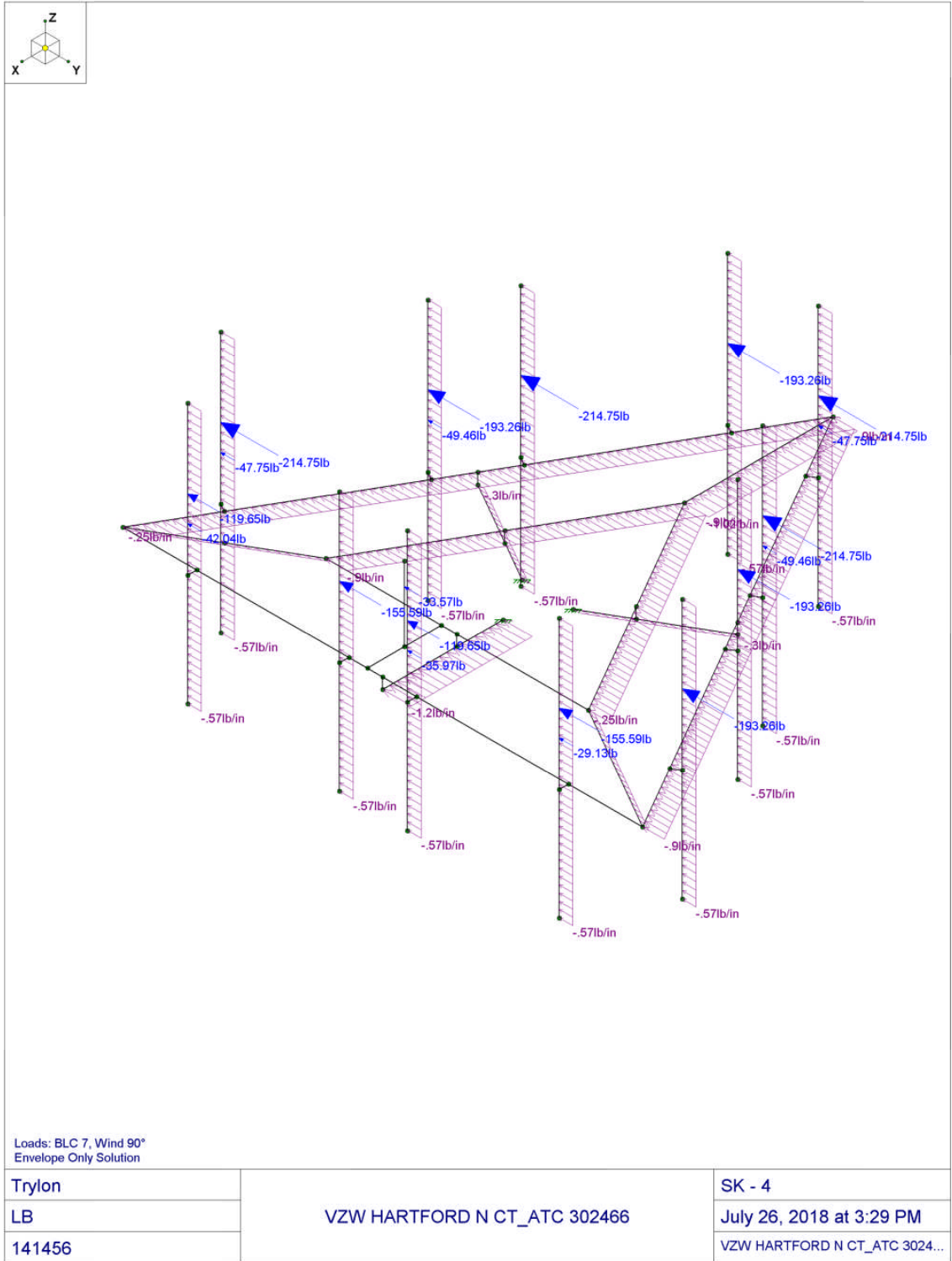


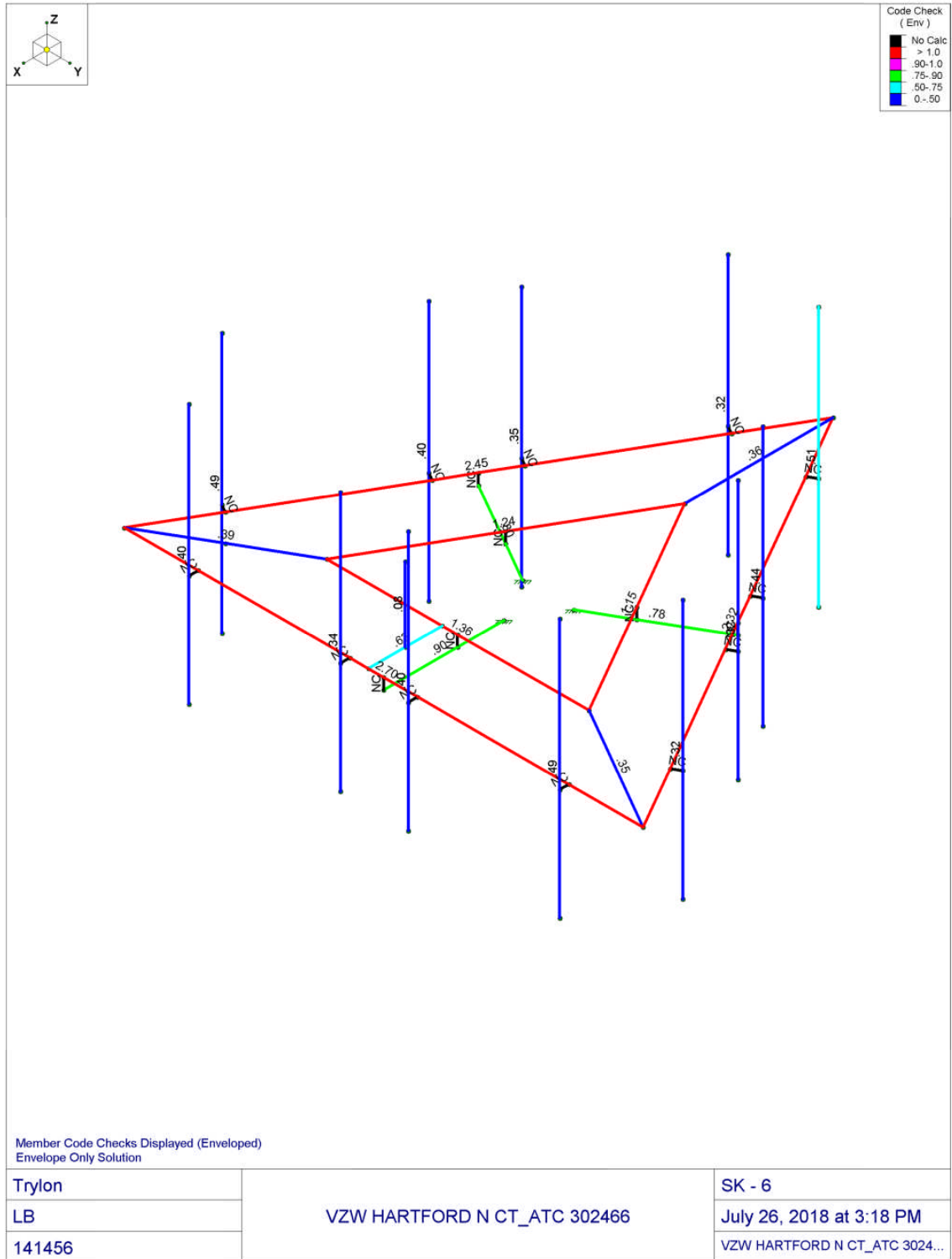


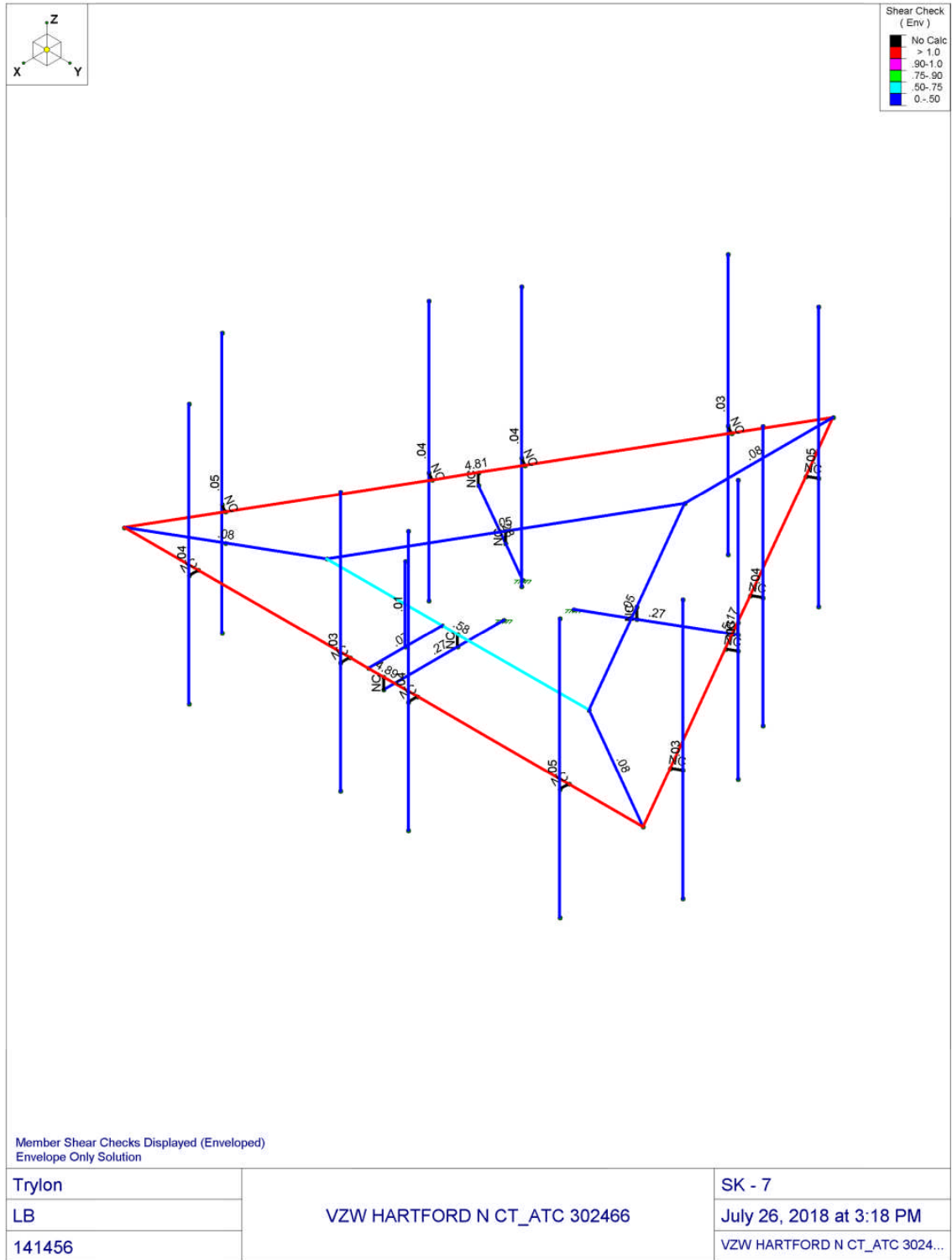












General Power Density

Site Name: Hartford N, CT  
 Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm <sup>2</sup> )	(mW/cm <sup>2</sup> )	(%)
VZW PCS	1970	1	4900	4900	115	0.1332	1.0	13.32%
VZW Cellular LTE	869	1	3500	3500	115	0.0952	0.5793333333	16.43%
VZW Cellular	869	3	391	1173	115	0.0319	0.5793333333	5.51%
VZW AWS	2145	1	7200	7200	115	0.1958	1.0	19.58%
VZW 700	746	1	2200	2200	115	0.0598	0.4973333333	12.03%

**Total Percentage of Maximum Permissible Exposure** 66.87%

\*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz

mW/cm<sup>2</sup> = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:

1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.



14



## Identify



Clear

### Parcels

GIS Parcel ID: 304074014  
 Owner Full Name: 305 W SERVICE RD  
 ASSOC LLC  
 Owner2 First Name:  
 Owner2 Last Name:  
 Owner3 First Name:  
 Owner3 Last Name:  
 Mailing Address 1: 79 RYE ST  
 Mailing Address 2:  
 Mailing Street:  
 City: BROAD BROOK  
 State: CT  
 Zip: 06016-9555  
 Living Units: Null  
 Year Built: 1960  
 Total Acreage: 85813  
 Story Height: 1.0  
 Bedrooms: Null



### Parcels

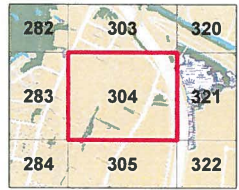
GIS Parcel ID: 304074014



# City of Hartford Assessor Map

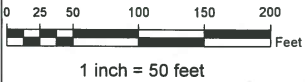
### Legend

- ▲ Parcel ID
- ◆ Duplicate Parcel ID
- Exempt ID
- Building ID
- Parcels
- Tax Map Grid
- City Boundary Line
- Building
- Foundation
- Greenhouse
- Cement Pad
- Deck
- Patio
- Pool
- Tunnel
- Trail
- Railroad
- Fence
- Ruins
- Coniferous Tree
- Deciduous Tree
- Hedge and Brush
- Treeline
- 161507185 Parcel ID
- 7500 sf or Ac Parcel Area
- 88 Street Address
- 11-19 Condo Lot Range
- 11D Condo Unit
- Driveway and Parking Lot Paved
- Driveway and Parking Lot Unpaved
- Sidewalk
- Stairs and Ramps
- Runway
- Bridge
- Road Edge Paved
- Road Edge Unpaved
- Wharf and Pier
- Tank
- Golf Course
- Fairway
- Green
- Sand Trap
- Tee
- Swamp
- Water
- River or Stream

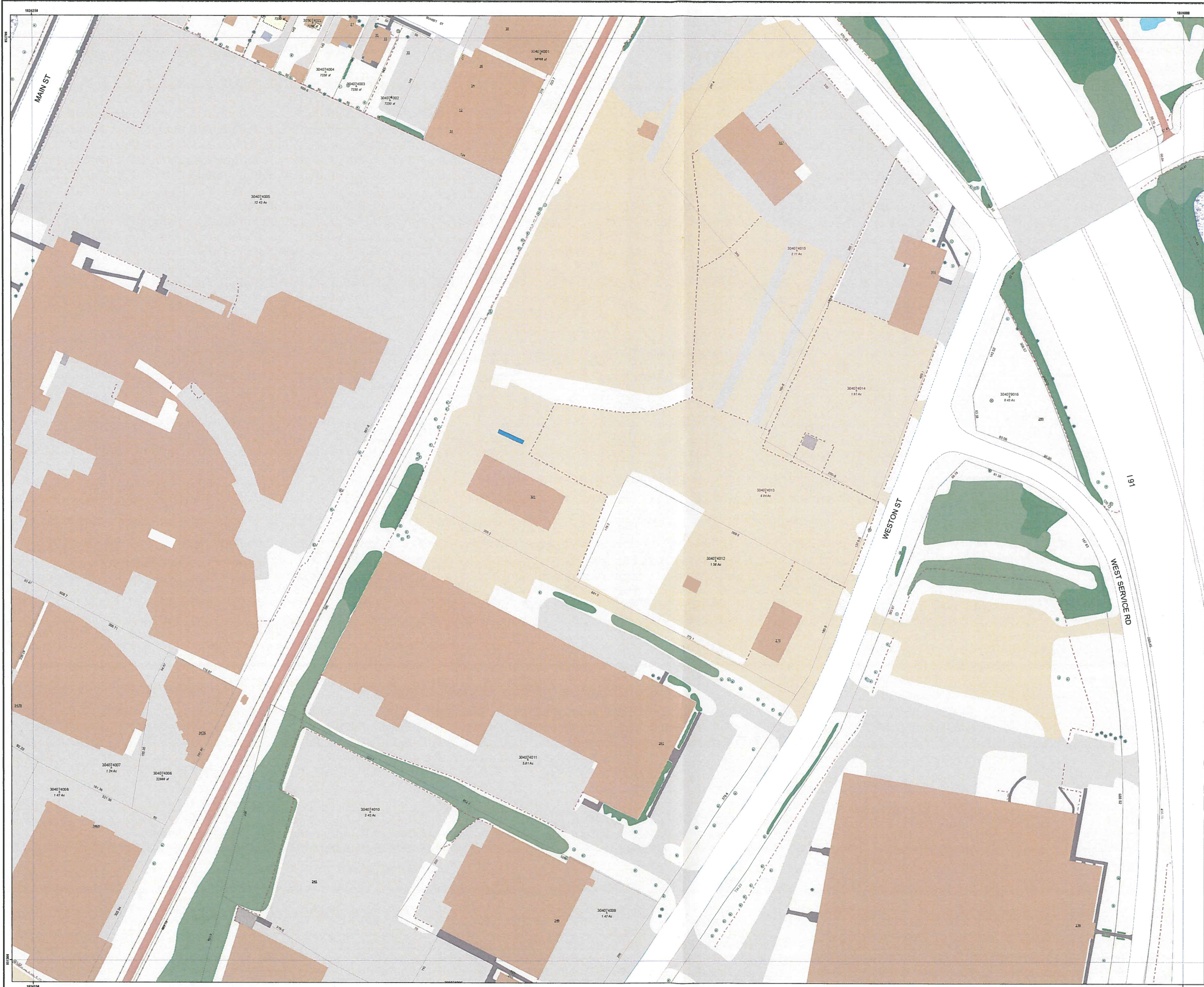


**DISCLAIMER:**  
 The planimetric information depicted on this map was compiled by The Sanborn Map Company and is based on an aerial flight performed in April 2015. In addition, the City's GIS staff has been updating limited planimetric features based on information on file in various City departments. 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 disclose.  
 The City of Hartford and the mapping company 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: Connecticut State Plane Coordinates (NAD 83 feet)

Date: October 16, 2016



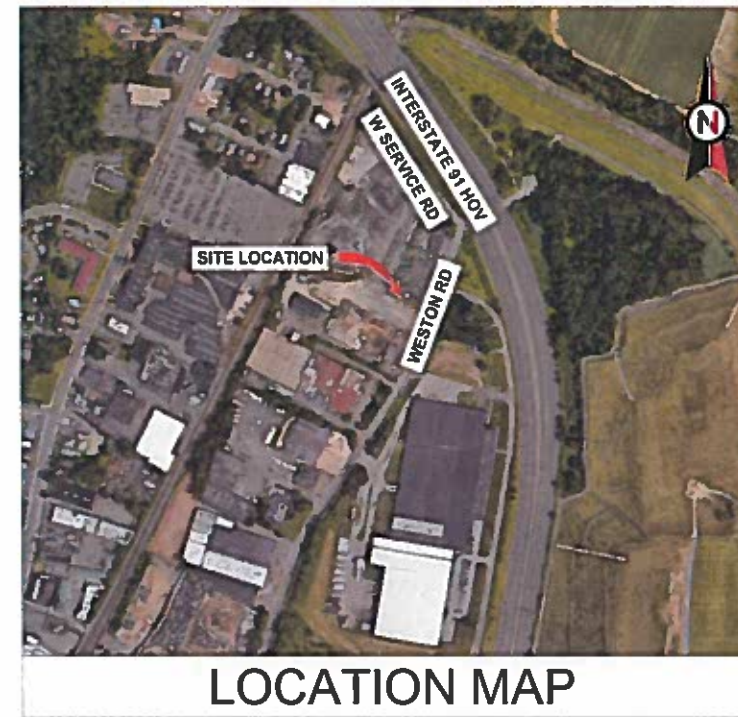
Map Sheet 304





**AMERICAN TOWER®**

ATC SITE NAME: WEST SERVICE ROAD  
 ATC SITE NUMBER: 302466  
 VERIZON SITE NAME: HARTFORD N CT  
 VERIZON SITE NUMBER: 467518  
 SITE ADDRESS: 305 W. SERVICE RD.  
 HARTFORD, CT 06120



**VERIZON WIRELESS  
 ANTENNA AMENDMENT DRAWINGS**

**AMERICAN TOWER®**  
**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 COA: PEC.0001553

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	TC	08/28/18

ATC SITE NUMBER:  
**302466**

ATC SITE NAME:  
**WEST SERVICE ROAD**

SITE ADDRESS:  
 305 W. SERVICE RD.  
 HARTFORD, CT 06120



Authorized by "EOR"  
 Aug 28 2018 5:59 PM cosign



DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**COVER SHEET**

SHEET NUMBER:  
**G-001**

REVISION:  
**0**

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.  1. INTERNATIONAL BUILDING CODE (IBC) 2. NATIONAL ELECTRIC CODE (NEC) 3. LOCAL BUILDING CODE 4. CITY/COUNTY ORDINANCES	<u>SITE ADDRESS:</u> 305 W. SERVICE RD. HARTFORD, CT 06120 COUNTY: HARTFORD  <u>GEOGRAPHIC COORDINATES:</u> LATITUDE: 41.79953889 LONGITUDE: -72.65669722 GROUND ELEVATION: 20' AMSL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:  REMOVE (6) RRU's, (12) 1-5/8" COAX CABLES, AND (1) OVP  INSTALL (6) RRU's, (1) L3'X3'X0.25" VERTICAL ANGLE, (1) HANDRAIL KIT, AND (1) OVP  EXISTING (12) PANELS, (6) 1-5/8" COAX CABLES, (2) 1-5/8" HYBRID CABLES, AND (1) OVP TO REMAIN	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<u>PROJECT TEAM</u>  <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801  <u>ENGINEER:</u> ATC TOWER SERVICES, LLC 3500 REGENCY PKWY STE 100 CARY, NC 27518  <u>PROPERTY OWNER:</u> 305 WEST SERVICES RD ASSOC LLC 79 RYE STREET BROAD BROOK, CT 06016  <u>APPLICANT:</u> VERIZON WIRELESS 20 ALEXANDER DRIVE, 2ND FLOOR WALLINGFORD, CT 06492	<u>PROJECT NOTES</u>  1. THE FACILITY IS UNMANNED.  2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.  3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.  4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.  5. HANDICAP ACCESS IS NOT REQUIRED.	G-001	COVER SHEET	0	08/28/18	TC
		<u>PROJECT LOCATION DIRECTIONS</u>  FROM HARTFORD, CT:  HEAD EAST ON CENTRAL ROW. AFTER 325 FEET CONTINUE ONTO AMERICAN ROW. AFTER 177 FEET TURN LEFT ONTO MARKET ST. AFTER 0.6 MILES CONTINUE ONTO REVEREND MOODY OVERPASS. AFTER 0.7 MILES CONTINUE ONTO WESTON ST. YOU WILL ARRIVE AT YOUR DESTINATION AFTER 1.2 MILES	C-101	DETAILED SITE PLAN AND TOWER ELEVATION	0	08/28/18	TC
<u>UTILITY COMPANIES</u>  POWER COMPANY: C. L. & P. PHONE: (800) 286-2000  TELEPHONE COMPANY: AT&T PHONE: (800) 288-2020  			C-501	RF SCHEDULE AND ANTENNA INSTALLATION	0	08/28/18	TC
			C-502	CONSTRUCTION DETAILS	0	08/28/18	TC
			C-503	MOUNTING DETAIL	0	08/28/18	TC
			R-601	SUPPLEMENTAL			

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**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 VERIZON WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE VERIZON WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE VERIZON 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 VERIZON 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 VERIZON 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 VERIZON 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 VERIZON 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 VERIZON WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY VERIZON WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH VERIZON WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO VERIZON WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO VERIZON 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 VERIZON 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 VERIZON WIRELESS REP. ANY WORK FOUND BY THE VERIZON 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.



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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/28/18

ATC SITE NUMBER:  
**302466**  
 ATC SITE NAME:  
**WEST SERVICE ROAD**  
 SITE ADDRESS:  
 305 W. SERVICE RD.  
 HARTFORD, CT 06120

SEAL:



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 Aug 28 2018 5:59 PM **cosign**



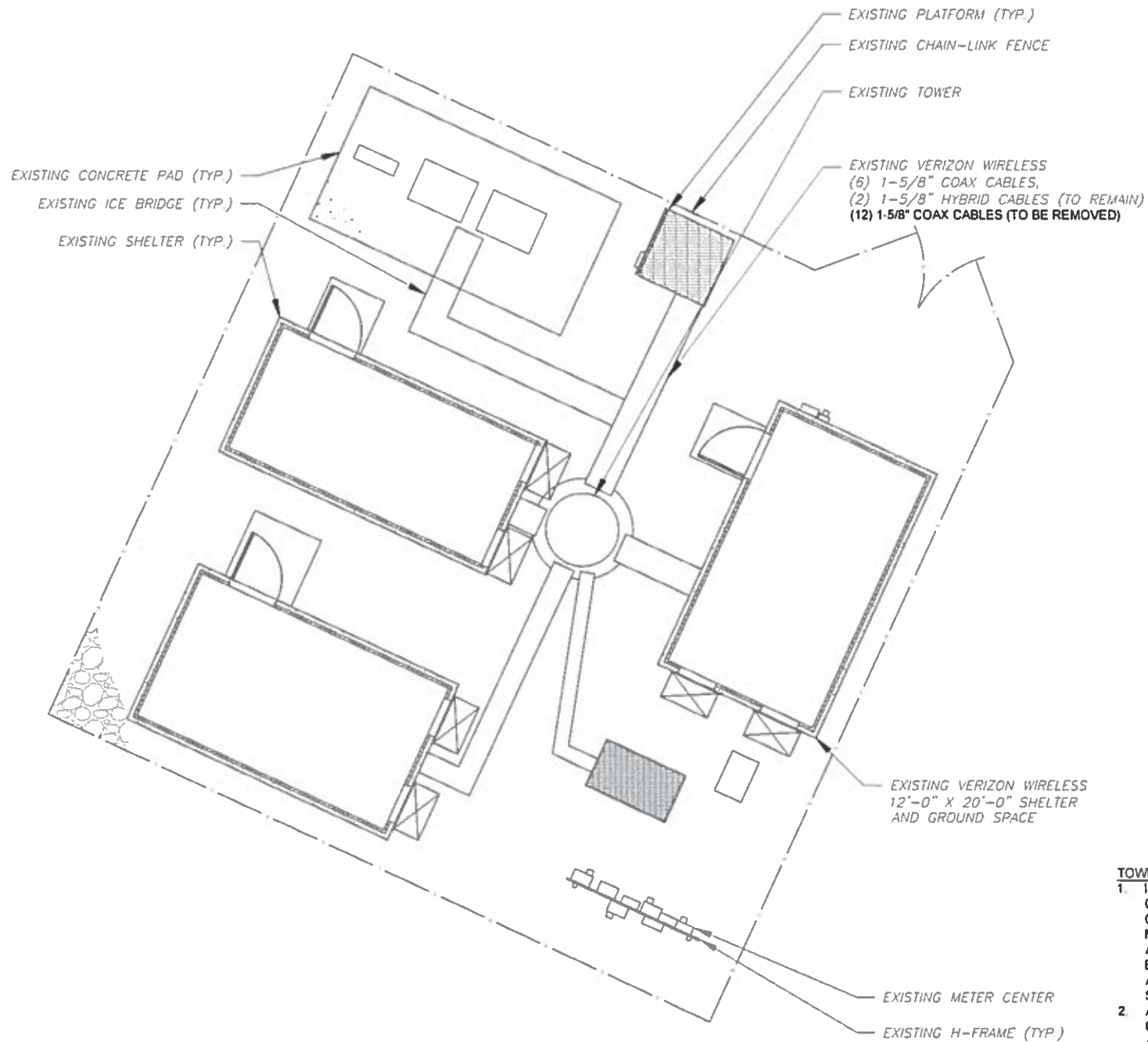
DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**GENERAL NOTES**

SHEET NUMBER:	REVISION:
<b>G-002</b>	<b>0</b>

**SITE PLAN NOTES**

1. 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.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, CABLE SUPPORTS, AND CABLES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE INSTALLING NEW CABLE SUPPORT STRUCTURES, COAX PORTS, OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ATC CONSTRUCTION MANAGER 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.



TOP OF EXISTING HIGHEST APPURTENANCE  
ELEV. 154' A.G.L.

PROPOSED L3X3'X0.25' VERTICAL ANGLE TO CONNECT THE MIDDLE OF THE EXISTING RAIL AND THE MIDDLE OF THE NEW HANDRAIL FOR EACH SIDE OF THE PLATFORM; THE NEW ANGLE WILL BE BOLTED TO THE EXISTING RAIL AND FIXED WITH A BRACKET TO THE NEW HANDRAIL PER TRYLON MOUNT ANALYSIS DATED 07/26/18.

EXISTING AND PROPOSED VERIZON WIRELESS EQUIPMENT

EXISTING CARRIER ANTENNAS  
RAD CENTER @ 150' A.G.L.

EXISTING CARRIER ANTENNAS  
RAD CENTER @ 137' A.G.L.

EXISTING CARRIER ANTENNAS  
RAD CENTER @ 125' A.G.L.

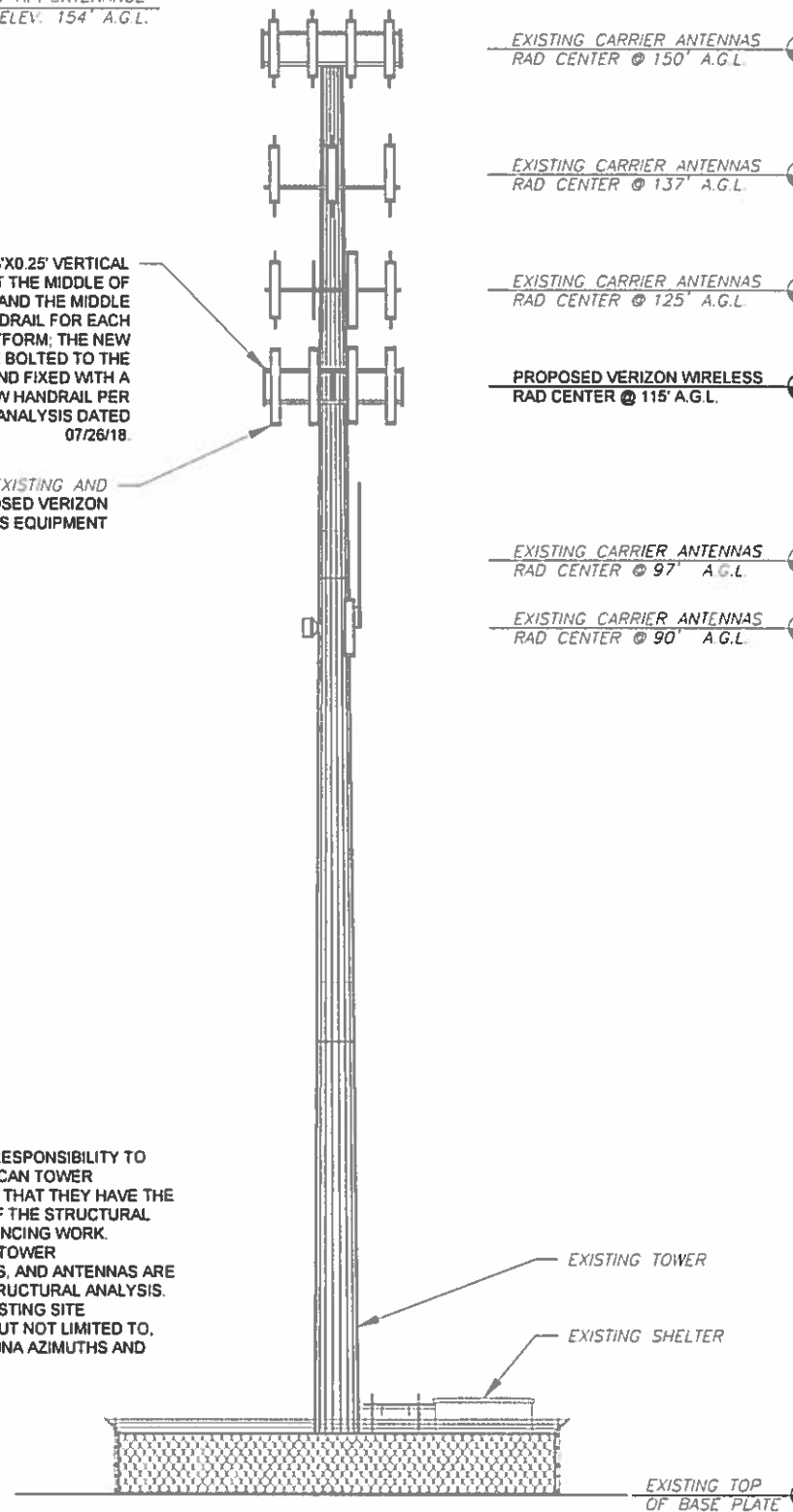
PROPOSED VERIZON WIRELESS  
RAD CENTER @ 115' A.G.L.

EXISTING CARRIER ANTENNAS  
RAD CENTER @ 97' A.G.L.

EXISTING CARRIER ANTENNAS  
RAD CENTER @ 90' A.G.L.

**TOWER NOTE**

1. 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.
2. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATIONS.



**2 TOWER ELEVATION**  
SCALE: NOT TO SCALE

**1 DETAILED SITE PLAN**

SCALE: 1"=20' (11X17)  
1"=10' (22X34)



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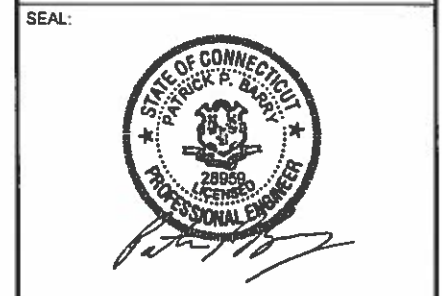
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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/28/18

ATC SITE NUMBER:  
**302466**

ATC SITE NAME:  
**WEST SERVICE ROAD**

SITE ADDRESS  
305 W. SERVICE RD.  
HARTFORD, CT 06120



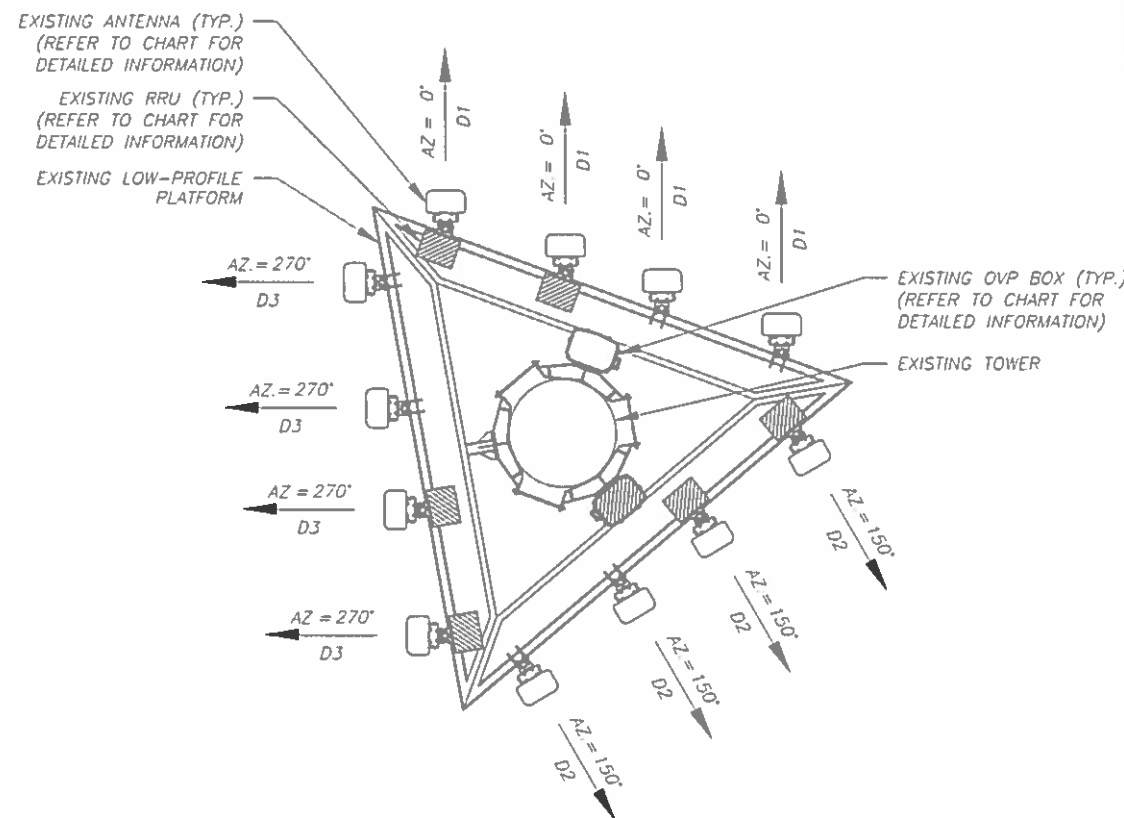
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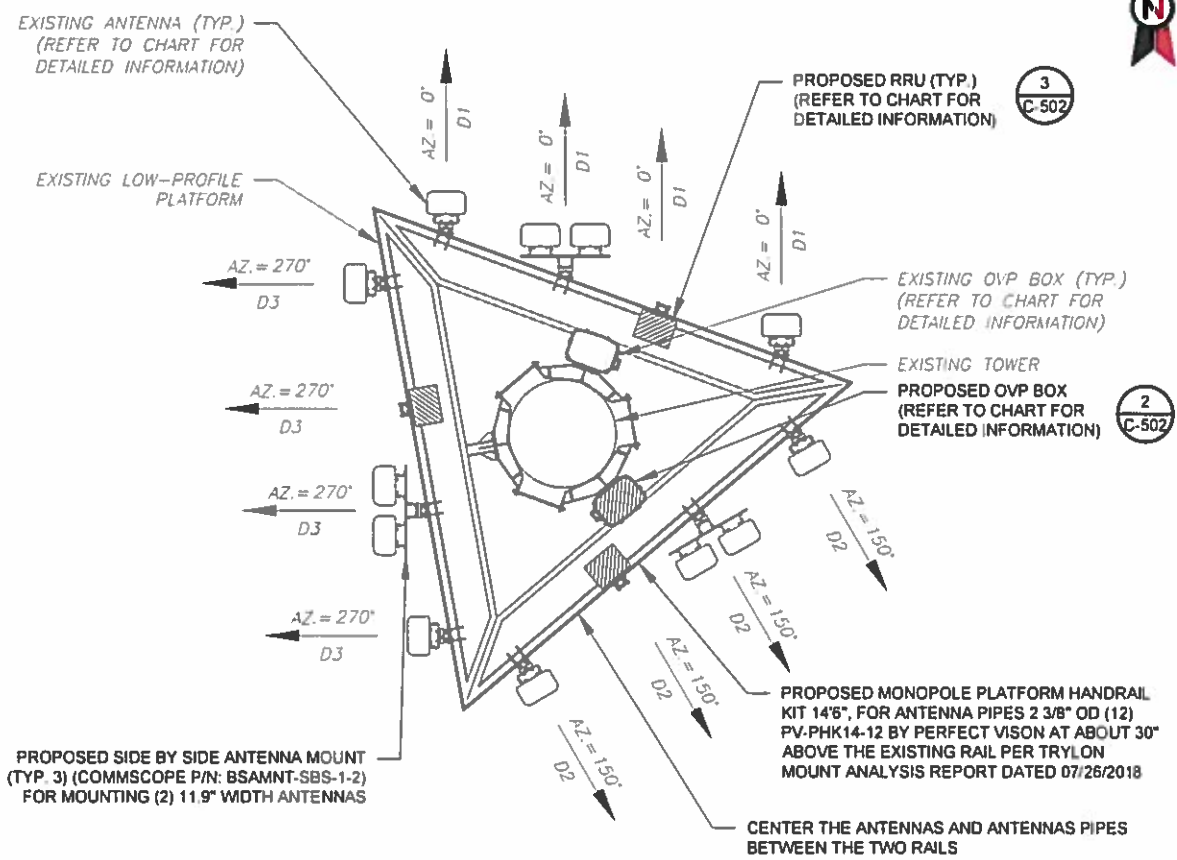
DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**DETAILED SITE PLAN AND TOWER ELEVATION**

SHEET NUMBER:	REVISION:
<b>C-101</b>	<b>0</b>



1 CURRENT ANTENNA PLAN



2 PROPOSED ANTENNA PLAN

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/28/18

ATC SITE NUMBER:  
**302466**

ATC SITE NAME:  
**WEST SERVICE ROAD**

SITE ADDRESS:  
305 W. SERVICE RD.  
HARTFORD, CT 06120

CURRENT ANTENNA AND RF EQUIPMENT SCHEDULE									
LOCATION			ANTENNA SUMMARY			NON ANTENNA SUMMARY			
SECTOR	RAD	AZ	POS	BAND	MODEL NUMBER	STATUS	POS	MODEL NUMBER	STATUS
D1	115°	0°	1	2100LTE	SBNHH-1D65B	RMN	1	RRH2X60 700	RMV
			2	850CDMA	BXA-70063-6CF-EDIN-X	RMN	2	B66A RRH 4X45	RMV
			3	700/850/1900LTE	SBNHH-1D65B	RMN	3	-	-
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
D2	115°	150°	1	2100LTE	SBNHH-1D65B	RMN	1	RRH2X60 700	RMV
			2	850CDMA	BXA-70063-6CF-EDIN-X	RMN	2	B66A RRH 4X45	RMV
			3	700/850/1900LTE	SBNHH-1D65B	RMN	3	-	-
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
D3	115°	270°	1	2100LTE	SBNHH-1D65B	RMN	1	RRH2X60 700	RMV
			2	850CDMA	BXA-70063-6CF-EDIN-X	RMN	2	B66A RRH 4X45	RMV
			3	700/850/1900LTE	SBNHH-1D65B	RMN	3	-	-
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
CURRENT FIBER DISTRIBUTION / OVP BOX					CURRENT CABLING SUMMARY				
LOCATION	POS	BAND	MODEL NUMBER	STATUS	COAX	HYBRID	STATUS		
TOWER	-	-	DB-T1-6Z-BAB-OZ	RMN	(12) 1-5/8"	-	RMV		
TOWER	-	-	DB-T1-6Z-BAB-OZ	RMV	(6) 1-5/8"	(2) 1-5/8"	RMN		

- NOTES**
- BASED ON APPROVED ATC APPLICATION OAA735527 DATED 06/19/18 CONFIRM WITH VERIZON WIRELESS REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS. 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.
  - ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH THE ATC CM.
  - CONFIRM SPACING OF PROPOSED EQUIPMENT DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
  - POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).
  - CABLE LENGTHS SHOWN ESTIMATE MAXIMUM TYPICAL RUN AND INCORPORATE A 15% SAFETY FACTOR.

PROPOSED ANTENNA AND RF EQUIPMENT SCHEDULE									
LOCATION			ANTENNA SUMMARY			NON ANTENNA SUMMARY			
SECTOR	RAD	AZ	POS	BAND	MODEL NUMBER	STATUS	POS	MODEL NUMBER	STATUS
D1	115°	0°	1	850CDMA	BXA-70063-6CF-EDIN-X	RMN	1	-	-
			2	2100LTE	SBNHH-1D65B	RMN	3	700/850MHz DUAL BAND RRH	ADD
			3	700/850/1900LTE	SBNHH-1D65B	RMN	4	PCS/AWS DUAL BAND RRH	ADD
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
D2	115°	150°	1	2100LTE	SBNHH-1D65B	RMN	1	-	-
			2	850CDMA	BXA-70063-6CF-EDIN-X	RMN	2	700/850MHz DUAL BAND RRH	ADD
			3	700/850/1900LTE	SBNHH-1D65B	RMN	3	PCS/AWS DUAL BAND RRH	ADD
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
D3	115°	270°	1	2100LTE	SBNHH-1D65B	RMN	1	-	-
			2	850CDMA	BXA-70063-6CF-EDIN-X	RMN	2	700/850MHz DUAL BAND RRH	ADD
			3	700/850/1900LTE	SBNHH-1D65B	RMN	3	PCS/AWS DUAL BAND RRH	ADD
			4	-	BXA-70063-6CF-EDIN-X	RMN	4	-	-
PROPOSED FIBER DISTRIBUTION / OVP BOX					PROPOSED CABLING SUMMARY				
LOCATION	POS	BAND	MODEL NUMBER	STATUS	COAX	HYBRID	STATUS		
TOWER	-	-	DB-T1-6Z-BAB-OZ	RMN	(6) 1-5/8"	(2) 1-5/8"	RMN		
TOWER	-	-	RVZDC-6627-PF-48	ADD	-	-	-		

**STATUS ABBREVIATIONS**  
 RMV: TO BE REMOVED    DSC: TO BE DISCONNECTED  
 RMN: TO REMAIN        AND TO REMAIN  
 REL: TO BE RELOCATED

3 ANTENNA AND RF EQUIPMENT SCHEDULES

CABLE LENGTHS FOR FIBER AND DC JUMPERS  
 FROM FIBER DISTRIBUTION / OVP BOX TO RRU: 15' JUMPERS  
 FROM RRU TO ANTENNA: 10' JUMPERS

SEAL:

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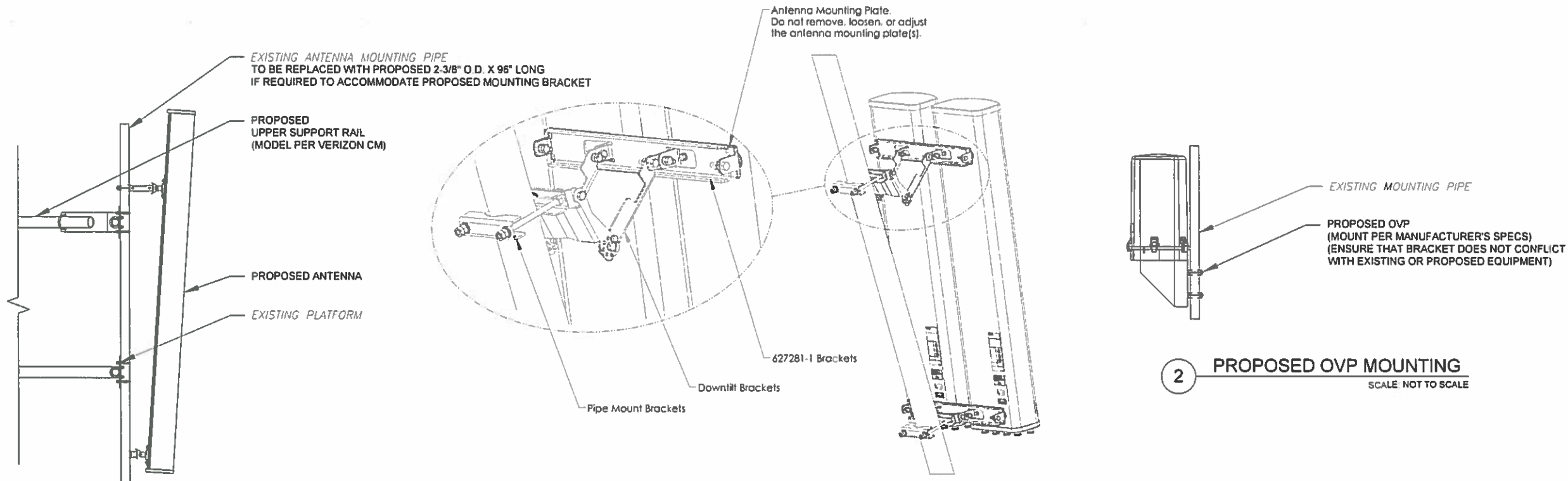
**verizon**

DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**RF SCHEDULE AND ANTENNA INSTALLATION**

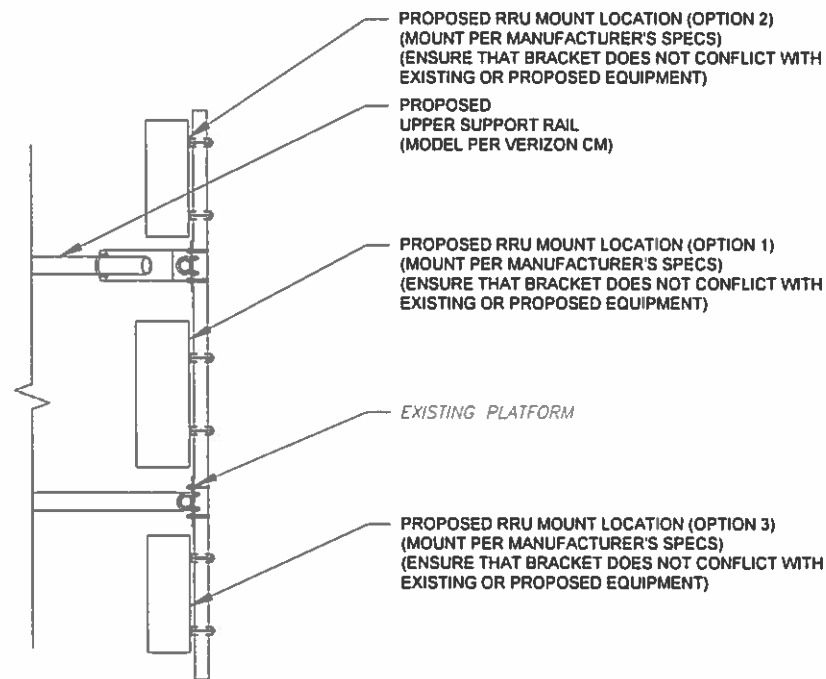
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**C-501**

REVISION:  
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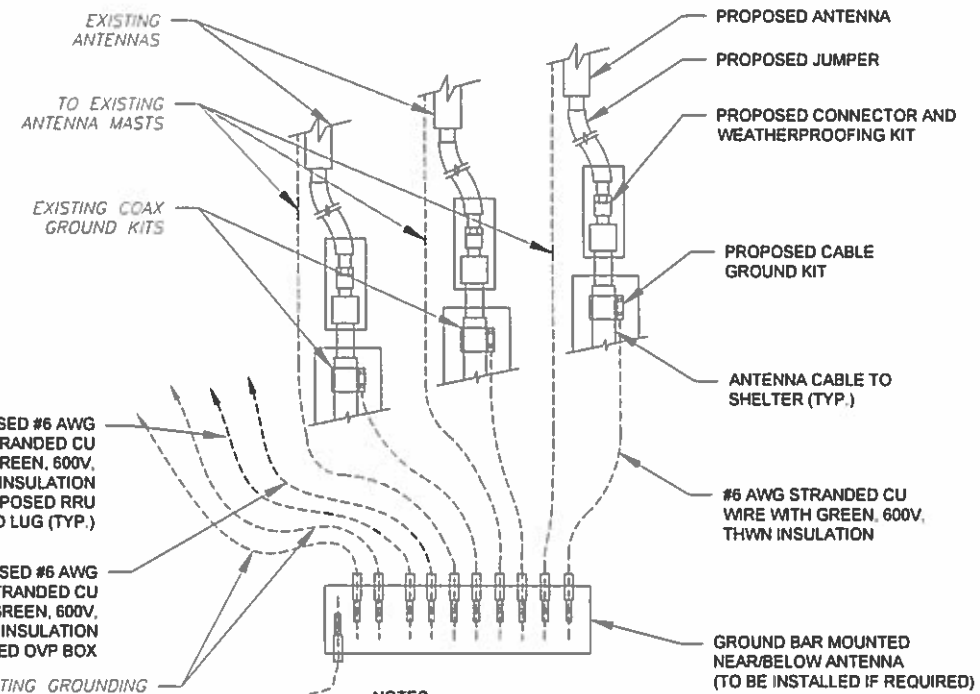


ISOMETRIC VIEW (BY MANUFACTURER)

**1 PROPOSED SIDE-BY-SIDE MOUNT**  
SCALE: NOT TO SCALE



**3 PROPOSED RRU MOUNTING DETAIL - TYPICAL**  
SCALE: NOT TO SCALE



**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 VERIZON WIRELESS GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH VERIZON WIRELESS GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

**4 TYPICAL ANTENNA GROUNDING DIAGRAM**  
SCALE: NOT TO SCALE



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REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/28/18

ATC SITE NUMBER:

302466

ATC SITE NAME:

WEST SERVICE ROAD

SITE ADDRESS:

305 W. SERVICE RD  
HARTFORD, CT 06120

SEAL:



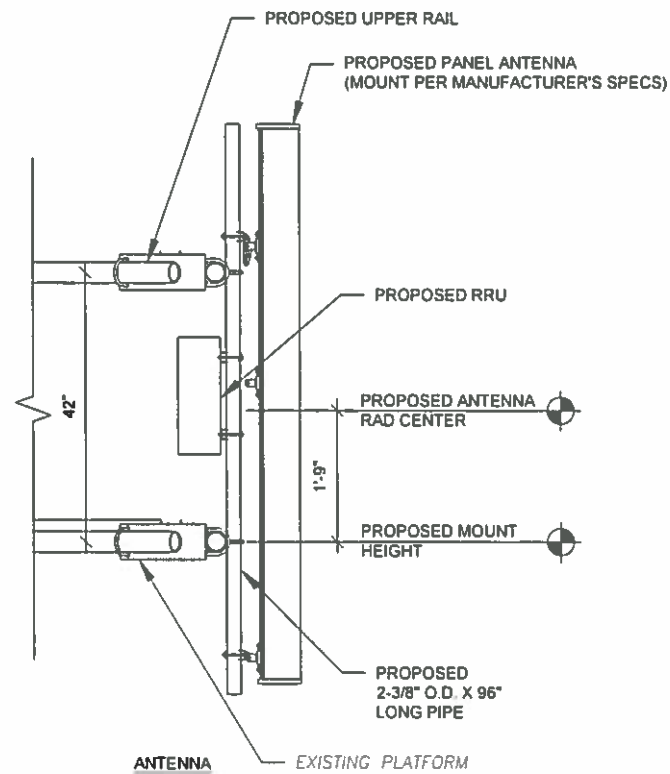
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DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**CONSTRUCTION DETAILS**

SHEET NUMBER:	REVISION:
C-502	0



1 PROPOSED ANTENNA MOUNTING DETAIL (ELEVATION)  
SCALE: NOT TO SCALE



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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/28/18

ATC SITE NUMBER:  
**302466**

ATC SITE NAME:  
**WEST SERVICE ROAD**

SITE ADDRESS:  
 305 W. SERVICE RD.  
 HARTFORD, CT 06120

SEAL:



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DRAWN BY:	TC
APPROVED BY:	PBB
DATE DRAWN:	08/28/18
ATC JOB NO:	12593284
CUSTOMER ID:	HARTFORD N CT
CUSTOMER #:	467518

**MOUNTING DETAIL**

SHEET NUMBER:	REVISION:
<b>C-503</b>	<b>0</b>



## MOUNT ANALYSIS REPORT

American Tower Corporation  
10 Presidential Way  
Woburn, MA 01801

Attention: Mr. Blake Paynter

Reference: Analysis of the existing Platform installed at 115-ft elevation.

ATC Site Name: West Service Road  
ATC Asset Number: 302466  
Verizon Site Name: HARTFORD N CT  
Verizon Site Number: PSLC# 467518 / PROJ# 15207931  
Site Address: 305 West Service Rd, Hartford, CT 06120  
Tower Profile: Monopole

Dear Sir:

We have been provided with RF information, photos and sketches of the structure for above-referenced site. Verizon is proposing to change the equipment configuration on the existing mounting hardware.

A revised antenna, coax and miscellaneous equipment schematic have been provided to us. We have been asked to evaluate this information to determine whether or not the existing mounting apparatus are adequate to safely support the proposed loading change. The structural evaluation refers to the existing Platform installed at 115-ft elevation on the Monopole located at 305 West Service Rd, Hartford, CT 06120.

The proposed changes were provided to us in a RFDS package dated 06/12/2018. The antennas are located at 115-ft elevation on all sectors.

According to the RFDS document, the final configuration consists of:

- (1) SBNHH-1D65B antenna (72.7" x 11.9" x 7.1" – 50.7 lbs.) on each sector in position #1;
- (1) BXA-70063-6CFEDIN-X antennas (71" x 11.2" x 5.2" – 17lbs.) on each sector in position #2;
- (1) SBNHH-1D65B antenna (72.7" x 11.9" x 7.1" – 50.7 lbs.) on each sector in position #3;
- (1) BXA-70063-6CFEDIN-X antennas (71" x 11.2" x 5.2" – 17lbs.) on each sector in position #4;

Additional equipment: (1) 700/850MHz Dual Band RRH Samsung and (1) PCS/AWS Dual Band RRH Samsung on each sector.

Additional equipment: (1) RVZDC-6627-PF-48 Raycap and (1) DB-T1-6Z-8AB-0Z RFS on the site.

The member's dimensions that we considered in our evaluation are as per sketches and pictures. The structural members that we considered in our analysis are presented in the attached model sketches.



Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

### CONCLUSIONS AND RECOMMENDATIONS

Based on information provided, our calculations conclude that the Verizon existing Platform located at 115-ft elevation on the existing Monopole at the specified address IS NOT ADEQUATE to safely support the proposed equipment, subject to the attached Standard Conditions on page 3.

We recommend reinforcing the existing platform as follows:

- Install a Monopole Platform Handrail Kit 14' 6", for Antenna Pipes 2 3/8" OD (12) (PV-PHK14-12 by Perfect Vison at about 30" above the existing rail;
- Install a L3x3x0.25 vertical angle to connect the middle of the existing rail and the middle of the new handrail for each side of the platform; The new angle will be bolted to the existing rail and fixed with a bracket to the new handrail; See below sketch
- Also center the antennas and the antennas pipes between the two rails.



Should you have any questions, comments or require additional information, please do not hesitate to call.

Sincerely,

Analysis performed by:

Laurentiu Banu  
Trylon Engineer

Reviewed by:

Michael Plahovinsak, P.E.

CUSTOMER #: 467518

SUPPLEMENTAL

SHEET NUMBER:

R-601

REVISION:

0

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