



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### VIA ELECTRONIC MAIL

March 11, 2020

Alex Murshteyn  
Real Estate Consultant – Site Acquisition  
Centerline Communications, LLC  
750 West Center Street, Floor 3/Suite 301  
West Bridgewater, MA 02379

RE: **TS-VER-131-191226** – Cellco Partnership d/b/a Verizon Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 80 Shuttle Meadow Road, Southington, Connecticut.

Dear Mr. Murshteyn:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 10, 2020 submitted in response to the Council's February 4, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/IN/emr



## **Robidoux, Evan**

---

**From:** Alex Murshteyn <amurshteyn@clinellc.com>  
**Sent:** Tuesday, March 10, 2020 4:46 PM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council; Peter Fales; Blake Paynter  
**Subject:** RE: Council Extension Letter for TS-VER-131-191226 (80 Shuttle Meadow Road, Southington) /// 302475 aka Southington 3 CT  
**Attachments:** Extension -- ts-ver-131-191226\_extltr-incomplete\_ShuttleMeadowRd.pdf; STAMPED PDF. VERIZON WIRELESS @ 302475 Sttn - Southington, CT (12978549\_C4\_09). Structural Analysis (100%).pdf

All,

We appreciate the extension provided in connection with the matter in subject and below; copy is attached. An updated Structural Analysis that was requested in order to complete the submission was revised to show the correct mount and is now internally approved. Copy for your approval was sent to the Siting Council earlier today and is attached here in PDF.

Thanks,

Alex Murshteyn  
508-821-0159

**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Wednesday, February 19, 2020 4:16 PM  
**To:** Alex Murshteyn <amurshteyn@clinellc.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** Council Extension Letter for TS-VER-131-191226 (80 Shuttle Meadow Road, Southington)

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



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February 19, 2020

Alex Murshteyn  
Real Estate Consultant – Site Acquisition  
Centerline Communications, LLC  
750 West Center Street, Floor 3/Suite 301  
West Bridgewater, MA 02379

RE: **TS-VER-131-191226** - Cellco Partnership d/b/a Verizon Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 80 Shuttle Meadow Road, Southington, Connecticut.

Dear Mr. Murshteyn:

The Connecticut Siting Council (Council) is in receipt of your email of February 18, 2020 requesting an extension of time to submit documentation required to make the above-referenced filing complete in response to the Council's incomplete notice dated February 4, 2020.

The Council hereby grants a one-month extension of time to submit the required documentation by March 20, 2020.

Thank you for your attention to this matter.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/FOC/emr

Enclosures: Email from Alex Murshteyn of February 18, 2020  
Incomplete filing letter dated February 4, 2020



## Robidoux, Evan

---

**From:** Alex Murshteyn <amurshteyn@clinellc.com>  
**Sent:** Tuesday, February 18, 2020 1:41 PM  
**To:** Robidoux, Evan; CSC-DL Siting Council  
**Cc:** Blake Paynter; Peter Fales  
**Subject:** RE: Council Incomplete Letter for TS-VER-131-191226 (80 Shuttle Meadow Road, Southington) /// 302475 aka Southington 3 CT  
**Attachments:** ts-ver-131-191226\_incompleteltr\_ShuttleMeadowRd (rev).pdf

All,  
Please be advised that we are in the process of producing an updated passing Structural Analysis, as per your recommendation provided below and within the attached. However, we do not expect that this SA will be ready by February 20<sup>th</sup> at this time and would therefore like to request an extension to complete the filing.

Thanks,

Alex Murshteyn  
508-821-0159

**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Wednesday, February 5, 2020 1:49 PM  
**To:** Alex Murshteyn <amurshteyn@clinellc.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** Council Incomplete Letter for TS-VER-131-191226 (80 Shuttle Meadow Road, Southington)

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



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February 4, 2020

Alex Murshteyn  
Real Estate Consultant – Site Acquisition  
Centerline Communications, LLC  
750 West Center Street, Floor 3/ Suite 301  
West Bridgewater, MA 02379

RE: **TS-VER-131-191226** – Celco Partnership d/b/a Verizon Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 80 Shuttle Meadow Road, Southington, Connecticut.

Dear Mr. Murshteyn:

The Connecticut Siting Council (Council) received the tower share request for the above-referenced facility on December 26, 2019. On January 3, 2020, the Council issued a letter (enclosed) stating that the tower share request was incomplete because there was no mount analysis (MA) provided with the request and the proposed RRUs referenced were inconsistent. The Council recommended that Centerline Communications provide a MA for the proposed equipment that is stamped and signed by a professional engineer duly licensed in the State of Connecticut and, if applicable, an updated Structural Analysis Report (SA) accounting for any required antenna mount modifications, and provide clarification on the model of RRUs proposed.

On February 3, 2020, the Council received an electronic mail with a revised construction drawing (CD) dated February 3, 2020 and a MA dated January 31, 2020. Council staff reviewed the response to the incomplete request and identified a deficiency. The MA and CD provided reference the use of a platform antenna mount (Site Pro 1 RMQP-496) with handrail kit. This is inconsistent with the SA dated December 9, 2019 and with a stress capacity of 100%, which proposes the use of a sector frame antenna mount.

Therefore, the tower share request remains incomplete at this time. The Council recommends that Centerline Communications provide an updated passing ( $\leq 100\%$ ) SA that is consistent with the MA and CD referenced above, on or before February 20, 2020. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to February 20, 2020. **Please provide an electronic version and one hard copy of the requested information for the incomplete exempt modification to be rendered complete and processed. Please include the Council's exempt modification identification number referenced above with the submittal**

This notice of incompleteness shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).





**AMERICAN TOWER®**  
CORPORATION

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## Post-Modification Structural Analysis Report

**Structure** : 150 ft Monopole  
**ATC Site Name** : Sttn - Southington, CT  
**ATC Asset Number** : 302475  
**Engineering Number** : 12978549\_C4\_09  
**Proposed Carrier** : VERIZON WIRELESS  
**Carrier Site Name** : Southington  
**Carrier Site Number** : 2548199  
**Site Location** : 80 Shuttle Meadow Road  
Southington, CT 06489-1313  
41.638600,-72.841100  
**County** : Hartford  
**Date** : February 18, 2020  
**Max Usage** : 100%  
**Result** : Pass

Prepared By:  
Matthew Reeves, CWI  
Structural Engineer III

Reviewed By:



**COA: PEC.0001553**





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**Introduction**

The purpose of this report is to summarize results of a post-modification structural analysis performed on the 150 ft monopole to reflect the change in loading by VERIZON WIRELESS.

**Supporting Documents**

<b>Tower Drawings</b>	SpectraSite Mapping Site #CT-0011, dated May 29, 2002 AT&T Technologies Project #AT-8935, dated April 13, 1984
<b>Foundation Drawing</b>	Girard & Co. Engineers Project #38922, dated May 18, 1983
<b>Geotechnical Report</b>	GeoTechnologies Project #1-02-0934-EA, dated July 12, 2002
<b>Modifications</b>	ATC Job #40480332, dated May 25, 2007 ATC Job #42608538, dated April 22, 2009 ATC Job #OAA740798_C6_05, dated January 22, 2019 ATC Job #12978549_C6_05, dated November 6, 2019 (Pending)

**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, $V_{asd}$ ) / 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 / 2015 IBC / 2018 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<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 the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and VERIZON WIRELESS should contact American Tower’s Site Manager for further direction on how to proceed.

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**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier	
154.0	1	Generic 10' Omni	Sabre 12" HD V-Boom Sector Frames	(3) 1 5/8" Coax	OTHER	
153.0	3	Ericsson RRUS-32 (77 lbs)		Sabre 12" HD V-Boom Sector Frames	(2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (1) 3" conduit (13) 7/8" Coax	AT&T MOBILITY
	3	Quintel QS66512-3 (112 lbs.)				
	1	Andrew SBNH-1D6565C (60.8 lbs)				
	2	Kathrein Scala 80010965				
	1	Kathrein Scala 80010966				
	3	Powerwave Allgon 7770.00				
	2	KMW AM-X-CD-16-65-00T-RET				
	3	Ericsson RRUS 32 B2				
	3	Ericsson RRUS-11 (50 lbs.)				
	3	Ericsson RRUS 4478 B5				
	3	Ericsson RRUS 4478 B14				
	3	Ericsson RRUS 4426 B66				
	1	Raycap DC6-48-60-18-8F ("Squid")				
	3	CCI DTMABP7819VG12A (w/ Bracket)				
	2	Raycap DC6-48-60-18-8F (23.5" Height)				
	6	Kaelus DBCT108F1V92-1				
	6	CCI TPX-070821				
130.0	3	RFS APXV18-206517S-C	Site-Pro UWS6-NP			
	3	Andrew LNX-6515DS-VTM				
	3	Kathrein Scala Smart Bias Tee				
123.0	1	Generic 12" x 12" Junction Box	Leg/Flush	(2) 2" Carflex Non-Metallic Conduit (4) 1 1/4" Hybriflex Cable (1) 1/2" Coax (2) 2" conduit	CLEARWIRE CORPORATION	
120.0	3	RFS APXVTM14-ALU-I20	Low Profile Platform			
	1	DragonWave A-ANT-11G-2.5-C				
	3	Commscope NNVV-65B-R4				
	3	Alcatel-Lucent 1900 MHz 4X45 RRH				
	1	DragonWave Horizon Compact				
	1	Generic 12" x 12" Junction Box				
	3	Nokia FZHN Flexi RRH 8TR 2600 9*20W				
	6	Alcatel-Lucent RRH2x50-08				
109.0	1	dB Systems 5100A	Stand-Off			(6) 7/8" Coax
	4	dB Systems 5100A-D				
104.0	1	VertexRSI 101V VPD	Stand-Off	-		

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					



**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
143.0	3	Samsung B2/B66A RRH-BR049	Site Pro 1 RMQP-496 with HRX-12	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	1	Raycap RVZDC-6627-PF-48			
	12	Commscope NNHH-65B-R4			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	80%	Pass
Shaft	100%	Pass
Base Plate	61%	Pass
Reinforcement	99%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,581.2	97%
Axial (Kips)	111.3	65%
Shear (Kips)	32.9	53%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
143.0	Samsung B2/B66A RRH-BR049	VERIZON WIRELESS	2.273	1.916
	Samsung B5/B13 RRH-BR04C			
	Raycap RVZDC-6627-PF-48			
	Commscope NNHH-65B-R4			
120.0	DragonWave A-ANT-11G-2.5-C	CLEARWIRE CORPORATION	1.602	1.450

\*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:

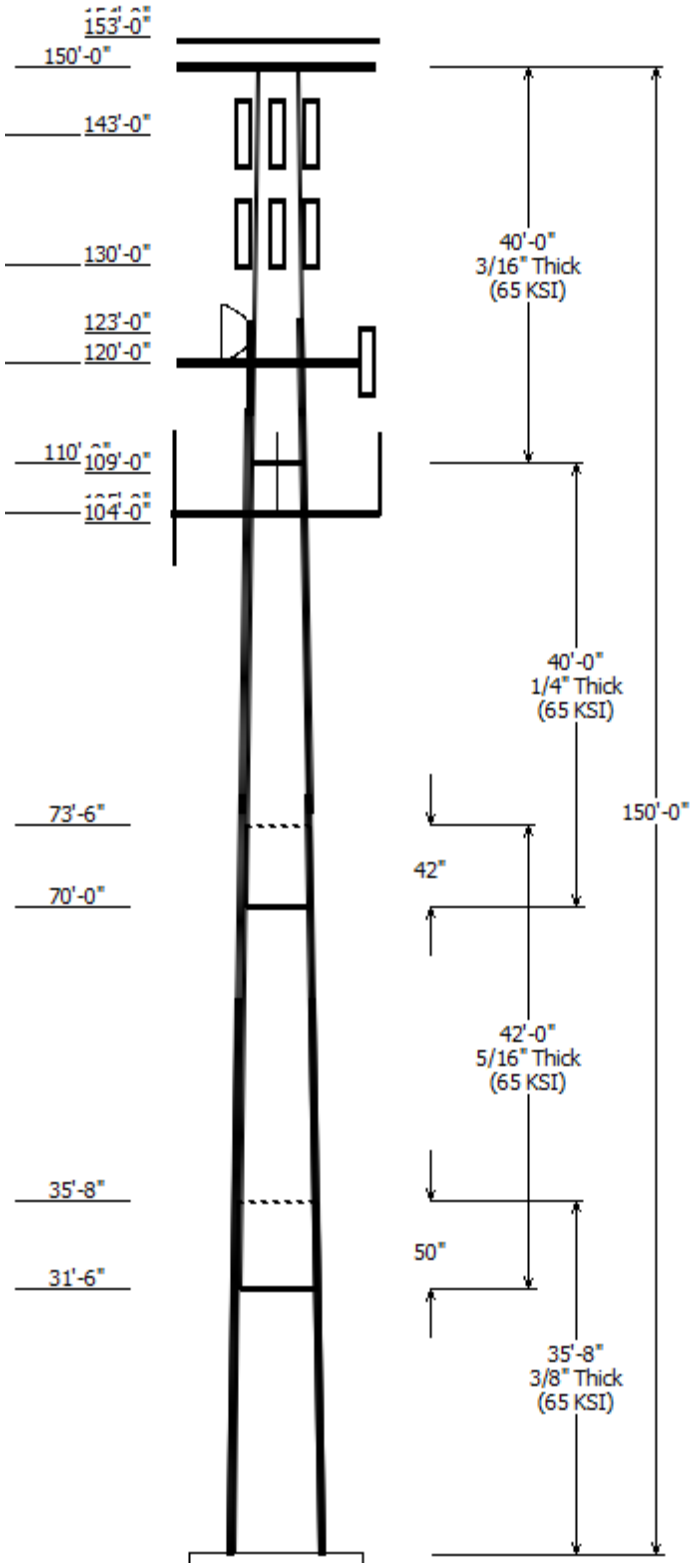
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.

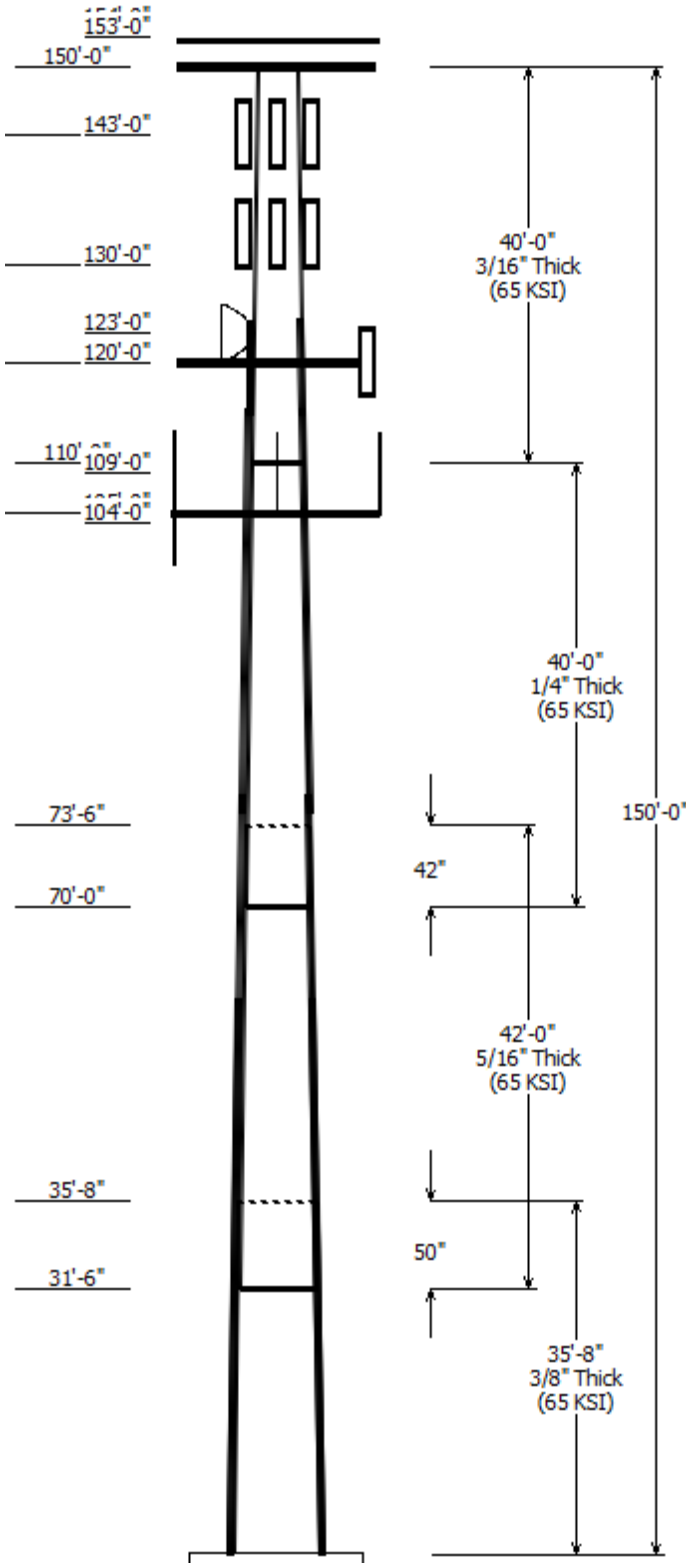
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Job Information	
Client : VERIZON WIRELESS	Code: ANSI/TIA-222-G
Pole : 302475	
Location : Sttn - Southington, CT	Structure Class : II
Description : 150' ITT Meyer Type "B" Monopole	Exposure : B
Shape : 12 Sides	Topo : 1
Height : 150.00 (ft)	
Base Elev (ft): 0.00	
Taper: 0.160834in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade (ksi)
		Across Top	Across Bottom				
1	35.667	31.26	37.00	0.375		0.000	12 Sides 65
2	42.000	25.80	32.55	0.313	Slip Joint	50.000	12 Sides 65
3	40.000	20.43	26.86	0.250	Slip Joint	42.000	12 Sides 65
4	40.000	14.00	20.43	0.188	Butt Joint	0.000	12 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
154.000	154.000	1	Generic 10' Omni
153.000	153.000	3	Ericsson RRUS-32 (77 lbs)
153.000	153.000	3	Ericsson RRUS 32 B2
153.000	153.000	3	Ericsson RRUS-11 (50 lbs.)
153.000	153.000	3	Ericsson RRUS 4478 B5
153.000	153.000	3	Ericsson RRUS 4478 B14
153.000	153.000	3	Ericsson RRUS 4426 B66
153.000	153.000	1	Raycap DC6-48-60-18-8F
153.000	153.000	3	CCI DTMABP7819VG12A (w/
153.000	153.000	2	Raycap DC6-48-60-18-8F (23.5"
153.000	153.000	6	Kaelus DBCT108F1V92-1
153.000	153.000	6	CCI TPX-070821
153.000	153.000	1	Kathrein Scala 80010966
153.000	153.000	2	Kathrein Scala 80010965
153.000	153.000	1	Andrew SBNH-1D6565C (60.8
153.000	153.000	3	Quintel QS66512-3 (112 lbs.)
153.000	153.000	2	KMW AM-X-CD-16-65-00T-RET
153.000	153.000	3	Powerwave Allgon 7770.00
150.000	150.000	3	Round Sector Frame
143.000	143.000	1	Site-Pro RMQP-496 w/ HRK-12
143.000	143.000	12	Commscope NNHH-65B-R4
143.000	143.000	1	Raycap RVZDC-6627-PF-48
143.000	143.000	3	Samsung B5/B13 RRH-BR04C
143.000	143.000	3	Samsung B2/B66A RRH-BR049
130.000	130.000	1	Site-Pro UWS6-NP Collar
130.000	134.000	3	Andrew LNX-6515DS-VTM
130.000	134.000	3	RFS APXV18-206517S-C
130.000	134.000	3	Kathrein Scala Smart Bias Tee
123.000	123.000	1	Generic 12" x 12" Junction Box
120.000	120.000	1	Generic Round Low Profile
120.000	120.000	3	Commscope NNVV-65B-R4
120.000	123.000	1	DragonWave A-ANT-11G-2.5-C
120.000	120.000	3	RFS APXVTM14-ALU-I20
120.000	120.000	3	Alcatel-Lucent 1900 MHz 4X45
120.000	120.000	3	Nokia FZHN Flexi RRH 8TR 2600
120.000	120.000	6	Alcatel-Lucent RRH2x50-08
120.000	120.000	1	Generic 12" x 12" Junction Box
120.000	123.000	1	DragonWave Horizon Compact
109.000	109.000	4	dB Systems 5100A-D
109.000	109.000	1	dB Systems 5100A
105.000	105.000	3	Round Side Arm
104.000	104.000	1	VertexRSI 101V VPD



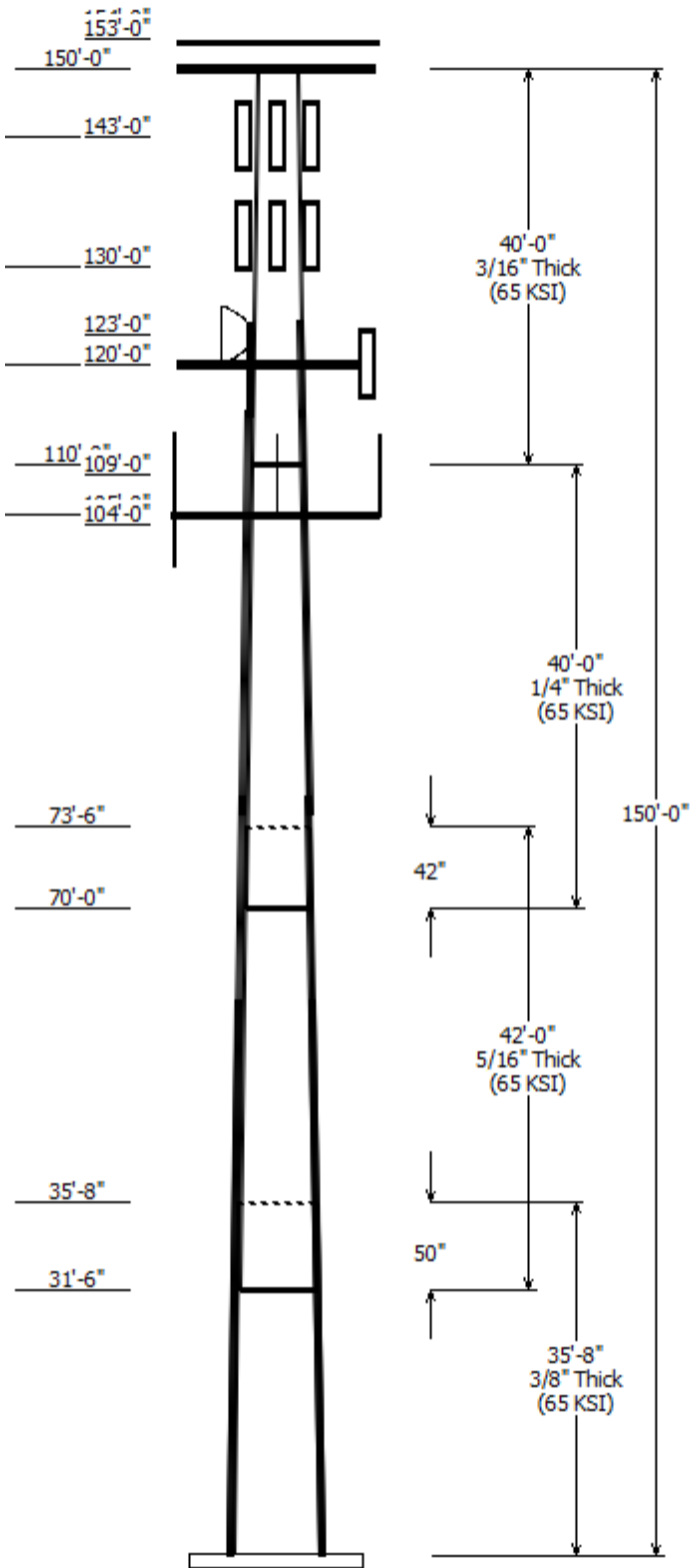
Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
110.0	129.0	#20 w/ W	Yes
110.0	129.0	#20 w/ W	Yes
110.0	129.0	#20 w/ W	Yes
110.0	129.0	#20 w/ W	Yes
110.0	129.0	W8 Brackets for	Yes
110.0	129.0	W8 Brackets for	Yes
110.0	129.0	W8 Brackets for	Yes
110.0	129.0	W8 Brackets for	Yes
69.000	119.0	#20 Dywidag Bars	Yes
69.000	119.0	#20 Dywidag Bars	Yes
69.000	119.0	#20 Dywidag Bars	Yes
69.000	119.0	#20 Dywidag Bars	Yes
69.000	119.0	W5 Brackets for	Yes
69.000	119.0	W5 Brackets for	Yes
69.000	119.0	W5 Brackets for	Yes
69.000	119.0	W5 Brackets for	Yes
0.000	120.0	1 1/4" Hybriflex	Yes
0.000	120.0	1/2" Coax	Yes
0.000	120.0	2" conduit	Yes
0.000	123.0	2" Carflex Non-	No
0.000	82.500	#20 Dywidag Bars	Yes
0.000	82.500	#20 Dywidag Bars	Yes
0.000	82.500	#20 Dywidag Bars	Yes
0.000	82.500	#20 Dywidag Bars	Yes
0.000	109.0	7/8" Coax	Yes
0.000	130.0	1 5/8" Coax	Yes
0.000	143.0	1 5/8" Hybriflex	No
0.000	153.0	0.39" (10mm)	No
0.000	153.0	0.78" (19.7mm) 8	No
0.000	153.0	3" conduit	No
0.000	153.0	7/8" Coax	No
0.000	153.0	7/8" Coax	No
0.000	154.0	1 5/8" 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	3581.21	32.91	53.18
0.9D + 1.6W	3517.74	32.87	39.87
1.2D + 1.0Di + 1.0Wi	1565.15	15.21	111.32
(1.2 + 0.2Sds) * DL + E ELFM	171.48	1.34	52.94
(1.2 + 0.2Sds) * DL + E EMAM	261.24	2.10	52.94
(0.9 - 0.2Sds) * DL + E ELFM	167.67	1.34	36.84
(0.9 - 0.2Sds) * DL + E EMAM	254.94	2.09	36.84
1.0D + 1.0W	759.22	7.04	44.39

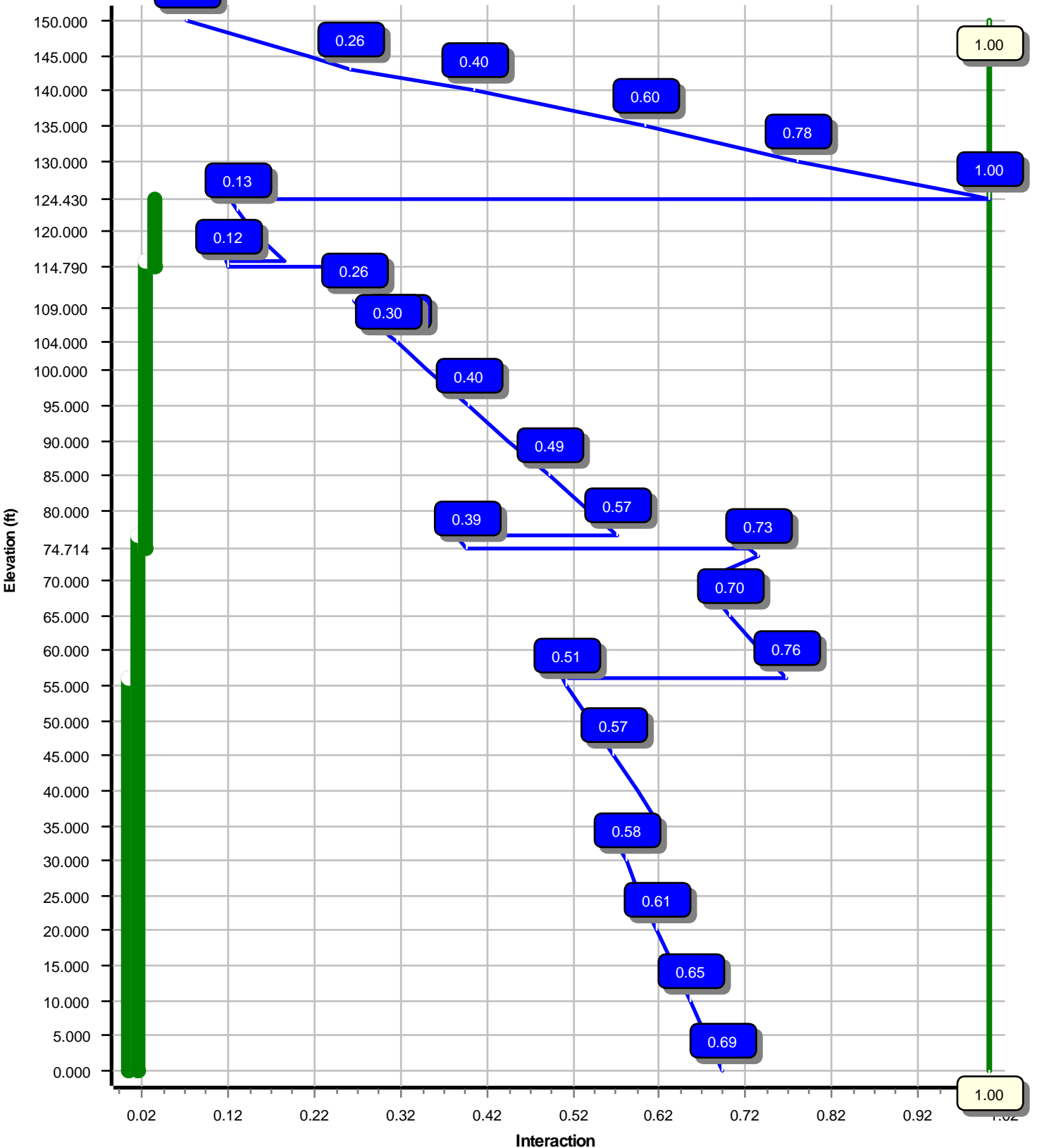
### Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	19.220	1.450





Load Case : 1.2D + 1.6W  
Max Ratio 99.93% at 124.4 ft



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	150
Code :	ANSI/TIA-222-G	Base Diameter (in) :	37.00
Shape :	12 Sides	Top Diameter (in) :	14.00
Pole Type :	Taper	Taper (in/ft) :	0.161
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	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): 2.89

$T_L$ (sec):	6	$p$ :	1	$C_s$ :	0.030
$S_s$ :	0.180	$S_1$ :	0.060	$C_s$ Max:	0.030
$F_a$ :	1.600	$F_v$ :	2.400	$C_s$ Min:	0.030
$S_{ds}$ :	0.192	$S_{d1}$ :	0.096		

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: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <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)
1-12	35.667	0.3750	65		0.00	4,947	37.00	0.00	44.22	7571.9	23.76	98.67	31.26	35.67	37.30	4542.2	19.66	83.37	0.160833
2-12	42.000	0.3125	65	Slip	50.00	4,152	32.55	31.50	32.45	4306.6	25.24	104.19	25.80	73.50	25.65	2127.5	19.45	82.57	0.160833
3-12	40.000	0.2500	65	Slip	42.00	2,564	26.86	70.00	21.43	1937.5	26.12	107.47	20.43	110.00	16.25	844.8	19.22	81.73	0.160833
4-12	40.000	0.1875	65	Butt	0.00	1,399	20.43	110.00	12.22	639.5	26.52	108.98	14.00	150.00	8.34	203.1	17.33	74.67	0.160833
Shaft Weight						13,062													

**Additional Steel**

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections			Connectors	Continuation?
						Description	Spacing (in)	Len (in)		
0.00	56.02	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No
0.00	76.50	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No
74.71	115.5	4	SOL #20 All Thread	80	5.15	6" T Bracket	32.0	3.31	5/8" A36 U-Bolt	No
114.7	124.4	4	SOL #20 All Thread	80	8.28	6" T Bracket	32.0	3.31	5/8" A36 U-Bolt	No

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

97 mph with No Ice

26 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	-53.18	-32.91	0.00	-3,581.21	0.00	3,581.21	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.690
5.00	-51.05	-32.52	0.00	-3,416.68	0.00	3,416.68	3,092.06	1,546.03	4,560.72	2,252.37	0.16	-0.29	0.672
10.00	-48.95	-32.13	0.00	-3,254.07	0.00	3,254.07	3,046.49	1,523.25	4,391.58	2,168.84	0.62	-0.58	0.653
15.00	-46.87	-31.73	0.00	-3,093.44	0.00	3,093.44	2,999.83	1,499.91	4,223.96	2,086.05	1.39	-0.88	0.634
20.00	-44.81	-31.32	0.00	-2,934.81	0.00	2,934.81	2,952.07	1,476.04	4,057.95	2,004.07	2.47	-1.17	0.614
25.00	-42.78	-30.90	0.00	-2,778.23	0.00	2,778.23	2,901.93	1,450.96	3,891.94	1,922.08	3.85	-1.46	0.595
30.00	-40.83	-30.56	0.00	-2,623.75	0.00	2,623.75	2,830.35	1,415.18	3,701.25	1,827.91	5.54	-1.76	0.579
31.50	-40.20	-30.37	0.00	-2,577.91	0.00	2,577.91	2,808.88	1,404.44	3,644.98	1,800.12	6.11	-1.84	0.574
35.00	-38.40	-30.11	0.00	-2,471.61	0.00	2,471.61	2,758.78	1,379.39	3,515.36	1,736.10	7.54	-2.05	0.551
35.67	-38.00	-29.93	0.00	-2,451.54	0.00	2,451.54	2,225.24	1,112.62	2,894.88	1,429.67	7.83	-2.09	0.615
40.00	-36.40	-29.48	0.00	-2,321.84	0.00	2,321.84	2,194.35	1,097.17	2,791.07	1,378.40	9.84	-2.34	0.592
45.00	-34.58	-28.96	0.00	-2,174.45	0.00	2,174.45	2,157.69	1,078.84	2,672.25	1,319.72	12.44	-2.63	0.565
50.00	-32.79	-28.42	0.00	-2,029.65	0.00	2,029.65	2,119.93	1,059.96	2,554.56	1,261.60	15.35	-2.92	0.538
55.00	-31.07	-27.99	0.00	-1,887.57	0.00	1,887.57	2,081.07	1,040.54	2,438.12	1,204.10	18.56	-3.20	0.511
56.02	-30.68	-27.77	0.00	-1,859.03	0.00	1,859.03	2,073.01	1,036.51	2,414.53	1,192.44	19.25	-3.26	0.505
56.02	-30.68	-27.77	0.00	-1,859.03	0.00	1,859.03	2,073.01	1,036.51	2,414.53	1,192.44	19.25	-3.26	0.764
60.00	-29.57	-27.32	0.00	-1,748.52	0.00	1,748.52	2,041.12	1,020.56	2,323.03	1,147.26	22.07	-3.49	0.735
65.00	-28.18	-26.81	0.00	-1,611.91	0.00	1,611.91	1,992.10	996.05	2,200.59	1,086.79	25.94	-3.90	0.700
70.00	-26.83	-26.28	0.00	-1,477.84	0.00	1,477.84	1,932.46	966.23	2,070.05	1,022.32	30.25	-4.32	0.666
73.50	-25.54	-25.90	0.00	-1,385.86	0.00	1,385.86	1,451.36	725.68	1,558.37	769.62	33.52	-4.60	0.733
74.71	-25.22	-25.78	0.00	-1,354.44	0.00	1,354.44	1,444.76	722.38	1,539.55	760.33	34.70	-4.70	0.721
75.00	-25.11	-25.69	0.00	-1,347.05	0.00	1,347.05	1,443.19	721.60	1,535.11	758.14	34.98	-4.72	0.392
76.50	-24.70	-25.41	0.00	-1,308.51	0.00	1,308.51	1,434.93	717.46	1,511.92	746.68	36.48	-4.79	0.381
76.50	-24.70	-25.41	0.00	-1,308.51	0.00	1,308.51	1,434.93	717.46	1,511.92	746.68	36.48	-4.79	0.569
80.00	-23.79	-24.88	0.00	-1,219.59	0.00	1,219.59	1,415.26	707.63	1,458.06	720.08	40.05	-4.95	0.536
85.00	-22.51	-24.21	0.00	-1,095.20	0.00	1,095.20	1,386.24	693.12	1,381.78	682.41	45.40	-5.27	0.489
90.00	-21.25	-23.57	0.00	-974.16	0.00	974.16	1,356.12	678.06	1,306.38	645.17	51.07	-5.57	0.442
95.00	-20.03	-22.91	0.00	-856.32	0.00	856.32	1,324.90	662.45	1,231.99	608.43	57.05	-5.85	0.395
100.00	-18.83	-22.28	0.00	-741.74	0.00	741.74	1,293.04	646.52	1,159.10	572.44	63.32	-6.12	0.348
104.00	-17.91	-21.76	0.00	-652.61	0.00	652.61	1,254.87	627.43	1,091.30	538.95	68.52	-6.31	0.313
105.00	-16.69	-20.55	0.00	-630.85	0.00	630.85	1,245.33	622.66	1,074.67	530.74	69.85	-6.36	0.304
109.00	-15.64	-19.50	0.00	-548.65	0.00	548.65	1,207.15	603.58	1,009.42	498.51	75.24	-6.54	0.271
110.00	-15.41	-19.22	0.00	-529.15	0.00	529.15	1,197.61	598.80	993.42	490.61	76.61	-6.58	0.263
110.00	-15.41	-19.22	0.00	-529.15	0.00	529.15	833.77	416.88	695.90	343.68	76.61	-6.58	0.302
114.79	-14.31	-18.55	0.00	-437.08	0.00	437.08	814.75	407.37	653.92	322.94	83.30	-6.76	0.252
115.00	-14.24	-18.49	0.00	-433.19	0.00	433.19	813.89	406.95	652.08	322.04	83.60	-6.77	0.117
115.52	-14.12	-18.24	0.00	-423.56	0.00	423.56	811.76	405.88	647.55	319.80	84.34	-6.78	0.115
115.52	-14.12	-18.24	0.00	-423.56	0.00	423.56	811.76	405.88	647.55	319.80	84.34	-6.78	0.184
120.00	-9.94	-14.35	0.00	-340.93	0.00	340.93	792.92	396.46	608.75	300.64	90.72	-6.85	0.146
123.00	-9.39	-13.87	0.00	-297.87	0.00	297.87	779.81	389.91	583.04	287.94	95.05	-6.92	0.128
124.43	-9.13	-13.67	0.00	-278.04	0.00	278.04	773.42	386.71	570.86	281.93	97.12	-6.95	0.119
124.43	-9.13	-13.67	0.00	-278.04	0.00	278.04	773.42	386.71	570.86	281.93	97.12	-6.95	0.999

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

97 mph with No Ice

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

125.00	-9.00	-13.47	0.00	-270.25	0.00	270.25	770.85	385.43	566.02	279.54	97.95	-6.96	0.980
130.00	-8.20	-11.52	0.00	-198.10	0.00	198.10	747.69	373.84	524.00	258.78	105.65	-7.73	0.777
135.00	-7.80	-11.25	0.00	-140.48	0.00	140.48	722.05	361.03	481.88	237.98	114.07	-8.37	0.602
140.00	-7.46	-11.01	0.00	-84.23	0.00	84.23	686.26	343.13	435.03	214.85	123.08	-8.85	0.404
143.00	-3.29	-5.78	0.00	-51.20	0.00	51.20	664.79	332.40	408.08	201.53	128.69	-9.06	0.259
145.00	-3.19	-5.57	0.00	-39.64	0.00	39.64	650.48	325.24	390.59	192.90	132.49	-9.16	0.211
150.00	0.00	-4.99	0.00	-11.78	0.00	11.78	614.69	307.34	348.53	172.13	142.13	-9.31	0.069

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

26 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	-39.87	-32.87	0.00	-3,517.74	0.00	3,517.74	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.676
5.00	-38.23	-32.42	0.00	-3,353.39	0.00	3,353.39	3,092.06	1,546.03	4,560.72	2,252.37	0.15	-0.29	0.658
10.00	-36.62	-31.96	0.00	-3,191.31	0.00	3,191.31	3,046.49	1,523.25	4,391.58	2,168.84	0.61	-0.57	0.639
15.00	-35.02	-31.50	0.00	-3,031.50	0.00	3,031.50	2,999.83	1,499.91	4,223.96	2,086.05	1.37	-0.86	0.619
20.00	-33.45	-31.04	0.00	-2,874.00	0.00	2,874.00	2,952.07	1,476.04	4,057.95	2,004.07	2.42	-1.15	0.600
25.00	-31.90	-30.57	0.00	-2,718.80	0.00	2,718.80	2,901.93	1,450.96	3,891.94	1,922.08	3.78	-1.43	0.580
30.00	-30.41	-30.21	0.00	-2,565.94	0.00	2,565.94	2,830.35	1,415.18	3,701.25	1,827.91	5.44	-1.72	0.564
31.50	-29.93	-30.00	0.00	-2,520.63	0.00	2,520.63	2,808.88	1,404.44	3,644.98	1,800.12	5.99	-1.81	0.559
35.00	-28.56	-29.73	0.00	-2,415.63	0.00	2,415.63	2,758.78	1,379.39	3,515.36	1,736.10	7.39	-2.01	0.537
35.67	-28.25	-29.53	0.00	-2,395.81	0.00	2,395.81	2,225.24	1,112.62	2,894.88	1,429.67	7.68	-2.05	0.599
40.00	-27.03	-29.05	0.00	-2,267.85	0.00	2,267.85	2,194.35	1,097.17	2,791.07	1,378.40	9.64	-2.29	0.576
45.00	-25.64	-28.50	0.00	-2,122.61	0.00	2,122.61	2,157.69	1,078.84	2,672.25	1,319.72	12.19	-2.57	0.550
50.00	-24.27	-27.93	0.00	-1,980.12	0.00	1,980.12	2,119.93	1,059.96	2,554.56	1,261.60	15.04	-2.86	0.523
55.00	-22.97	-27.50	0.00	-1,840.48	0.00	1,840.48	2,081.07	1,040.54	2,438.12	1,204.10	18.18	-3.13	0.496
56.02	-22.66	-27.26	0.00	-1,812.43	0.00	1,812.43	2,073.01	1,036.51	2,414.53	1,192.44	18.86	-3.19	0.491
56.02	-22.66	-27.26	0.00	-1,812.43	0.00	1,812.43	2,073.01	1,036.51	2,414.53	1,192.44	18.86	-3.19	0.743
60.00	-21.80	-26.79	0.00	-1,703.92	0.00	1,703.92	2,041.12	1,020.56	2,323.03	1,147.26	21.61	-3.41	0.714
65.00	-20.74	-26.24	0.00	-1,569.99	0.00	1,569.99	1,992.10	996.05	2,200.59	1,086.79	25.40	-3.82	0.680
70.00	-19.70	-25.68	0.00	-1,438.79	0.00	1,438.79	1,932.46	966.23	2,070.05	1,022.32	29.61	-4.22	0.647
73.50	-18.72	-25.30	0.00	-1,348.89	0.00	1,348.89	1,451.36	725.68	1,558.37	769.62	32.81	-4.50	0.711
74.71	-18.48	-25.18	0.00	-1,318.19	0.00	1,318.19	1,444.76	722.38	1,539.55	760.33	33.96	-4.59	0.699
75.00	-18.39	-25.09	0.00	-1,310.97	0.00	1,310.97	1,443.19	721.60	1,535.11	758.14	34.24	-4.62	0.380
76.50	-18.08	-24.80	0.00	-1,273.33	0.00	1,273.33	1,434.93	717.46	1,511.92	746.68	35.70	-4.68	0.369
76.50	-18.08	-24.80	0.00	-1,273.33	0.00	1,273.33	1,434.93	717.46	1,511.92	746.68	35.70	-4.68	0.551
80.00	-17.39	-24.27	0.00	-1,186.52	0.00	1,186.52	1,415.26	707.63	1,458.06	720.08	39.19	-4.84	0.520
85.00	-16.41	-23.59	0.00	-1,065.20	0.00	1,065.20	1,386.24	693.12	1,381.78	682.41	44.41	-5.14	0.474
90.00	-15.46	-22.95	0.00	-947.26	0.00	947.26	1,356.12	678.06	1,306.38	645.17	49.95	-5.44	0.428
95.00	-14.54	-22.30	0.00	-832.53	0.00	832.53	1,324.90	662.45	1,231.99	608.43	55.79	-5.71	0.383
100.00	-13.64	-21.68	0.00	-721.05	0.00	721.05	1,293.04	646.52	1,159.10	572.44	61.91	-5.97	0.337
104.00	-12.95	-21.16	0.00	-634.34	0.00	634.34	1,254.87	627.43	1,091.30	538.95	66.99	-6.16	0.303
105.00	-12.05	-19.99	0.00	-613.18	0.00	613.18	1,245.33	622.66	1,074.67	530.74	68.28	-6.21	0.294
109.00	-11.28	-18.96	0.00	-533.23	0.00	533.23	1,207.15	603.58	1,009.42	498.51	73.55	-6.38	0.262
110.00	-11.11	-18.68	0.00	-514.27	0.00	514.27	1,197.61	598.80	993.42	490.61	74.89	-6.42	0.254
110.00	-11.11	-18.68	0.00	-514.27	0.00	514.27	833.77	416.88	695.90	343.68	74.89	-6.42	0.292
114.79	-10.29	-18.03	0.00	-424.80	0.00	424.80	814.75	407.37	653.92	322.94	81.41	-6.60	0.243
115.00	-10.24	-17.98	0.00	-421.01	0.00	421.01	813.89	406.95	652.08	322.04	81.70	-6.61	0.113
115.52	-10.15	-17.73	0.00	-411.65	0.00	411.65	811.76	405.88	647.55	319.80	82.42	-6.62	0.110
115.52	-10.15	-17.73	0.00	-411.65	0.00	411.65	811.76	405.88	647.55	319.80	82.42	-6.62	0.177
120.00	-7.10	-13.98	0.00	-331.30	0.00	331.30	792.92	396.46	608.75	300.64	88.65	-6.69	0.141
123.00	-6.70	-13.52	0.00	-289.35	0.00	289.35	779.81	389.91	583.04	287.94	92.87	-6.75	0.123
124.43	-6.51	-13.32	0.00	-270.02	0.00	270.02	773.42	386.71	570.86	281.93	94.89	-6.78	0.115
124.43	-6.51	-13.32	0.00	-270.02	0.00	270.02	773.42	386.71	570.86	281.93	94.89	-6.78	0.967

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:05 PM

Customer: VERIZON WIRELESS

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

97 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

125.00	-6.40	-13.11	0.00	-262.43	0.00	262.43	770.85	385.43	566.02	279.54	95.70	-6.79	0.948
130.00	-5.83	-11.16	0.00	-192.09	0.00	192.09	747.69	373.84	524.00	258.78	103.21	-7.54	0.751
135.00	-5.52	-10.88	0.00	-136.28	0.00	136.28	722.05	361.03	481.88	237.98	111.42	-8.15	0.581
140.00	-5.26	-10.64	0.00	-81.90	0.00	81.90	686.26	343.13	435.03	214.85	120.20	-8.63	0.390
143.00	-2.28	-5.60	0.00	-49.99	0.00	49.99	664.79	332.40	408.08	201.53	125.67	-8.82	0.252
145.00	-2.22	-5.40	0.00	-38.79	0.00	38.79	650.48	325.24	390.59	192.90	129.37	-8.92	0.205
150.00	0.00	-4.99	0.00	-11.78	0.00	11.78	614.69	307.34	348.53	172.13	138.77	-9.07	0.069

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:05 PM

Customer: VERIZON WIRELESS

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

50 mph with 1.00 in Radial Ice

27 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	-111.32	-15.21	0.00	-1,565.15	0.00	1,565.15	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.317
5.00	-108.59	-15.00	0.00	-1,489.11	0.00	1,489.11	3,092.06	1,546.03	4,560.72	2,252.37	0.07	-0.13	0.307
10.00	-105.81	-14.78	0.00	-1,414.11	0.00	1,414.11	3,046.49	1,523.25	4,391.58	2,168.84	0.27	-0.25	0.298
15.00	-103.02	-14.56	0.00	-1,340.19	0.00	1,340.19	2,999.83	1,499.91	4,223.96	2,086.05	0.61	-0.38	0.289
20.00	-100.22	-14.32	0.00	-1,267.42	0.00	1,267.42	2,952.07	1,476.04	4,057.95	2,004.07	1.07	-0.51	0.279
25.00	-97.44	-14.08	0.00	-1,195.82	0.00	1,195.82	2,901.93	1,450.96	3,891.94	1,922.08	1.68	-0.64	0.269
30.00	-94.68	-13.78	0.00	-1,125.44	0.00	1,125.44	2,830.35	1,415.18	3,701.25	1,827.91	2.41	-0.76	0.262
31.50	-93.84	-13.73	0.00	-1,104.76	0.00	1,104.76	2,808.88	1,404.44	3,644.98	1,800.12	2.65	-0.80	0.259
35.00	-91.45	-13.50	0.00	-1,056.70	0.00	1,056.70	2,758.78	1,379.39	3,515.36	1,736.10	3.27	-0.89	0.249
35.67	-90.99	-13.50	0.00	-1,047.70	0.00	1,047.70	2,225.24	1,112.62	2,894.88	1,429.67	3.40	-0.90	0.277
40.00	-88.71	-13.25	0.00	-989.20	0.00	989.20	2,194.35	1,097.17	2,791.07	1,378.40	4.27	-1.01	0.267
45.00	-86.09	-12.93	0.00	-922.96	0.00	922.96	2,157.69	1,078.84	2,672.25	1,319.72	5.39	-1.13	0.254
50.00	-83.49	-12.68	0.00	-858.32	0.00	858.32	2,119.93	1,059.96	2,554.56	1,261.60	6.64	-1.26	0.241
55.00	-80.92	-12.38	0.00	-794.92	0.00	794.92	2,081.07	1,040.54	2,438.12	1,204.10	8.02	-1.38	0.229
56.02	-80.39	-12.35	0.00	-782.30	0.00	782.30	2,073.01	1,036.51	2,414.53	1,192.44	8.32	-1.40	0.226
56.02	-80.39	-12.35	0.00	-782.30	0.00	782.30	2,073.01	1,036.51	2,414.53	1,192.44	8.32	-1.40	0.341
60.00	-78.66	-12.17	0.00	-733.16	0.00	733.16	2,041.12	1,020.56	2,323.03	1,147.26	9.53	-1.49	0.327
65.00	-76.51	-11.96	0.00	-672.30	0.00	672.30	1,992.10	996.05	2,200.59	1,086.79	11.19	-1.67	0.311
70.00	-74.30	-11.69	0.00	-612.52	0.00	612.52	1,932.46	966.23	2,070.05	1,022.32	13.03	-1.84	0.295
73.50	-72.21	-11.42	0.00	-571.62	0.00	571.62	1,451.36	725.68	1,558.37	769.62	14.42	-1.96	0.324
74.71	-71.62	-11.33	0.00	-557.77	0.00	557.77	1,444.76	722.38	1,539.55	760.33	14.93	-2.00	0.318
75.00	-71.45	-11.31	0.00	-554.52	0.00	554.52	1,443.19	721.60	1,535.11	758.14	15.05	-2.01	0.176
76.50	-70.69	-11.18	0.00	-537.56	0.00	537.56	1,434.93	717.46	1,511.92	746.68	15.68	-2.04	0.171
76.50	-70.69	-11.18	0.00	-537.56	0.00	537.56	1,434.93	717.46	1,511.92	746.68	15.68	-2.04	0.255
80.00	-68.99	-10.90	0.00	-498.43	0.00	498.43	1,415.26	707.63	1,458.06	720.08	17.20	-2.10	0.240
85.00	-66.63	-10.51	0.00	-443.95	0.00	443.95	1,386.24	693.12	1,381.78	682.41	19.48	-2.23	0.219
90.00	-64.37	-10.12	0.00	-391.41	0.00	391.41	1,356.12	678.06	1,306.38	645.17	21.88	-2.35	0.198
95.00	-62.12	-9.71	0.00	-340.83	0.00	340.83	1,324.90	662.45	1,231.99	608.43	24.41	-2.47	0.177
100.00	-59.90	-9.27	0.00	-292.31	0.00	292.31	1,293.04	646.52	1,159.10	572.44	27.05	-2.57	0.156
104.00	-58.04	-8.84	0.00	-255.22	0.00	255.22	1,254.87	627.43	1,091.30	538.95	29.24	-2.65	0.141
105.00	-55.07	-8.39	0.00	-246.38	0.00	246.38	1,245.33	622.66	1,074.67	530.74	29.79	-2.67	0.137
109.00	-52.38	-7.82	0.00	-212.81	0.00	212.81	1,207.15	603.58	1,009.42	498.51	32.06	-2.74	0.122
110.00	-51.96	-7.72	0.00	-204.99	0.00	204.99	1,197.61	598.80	993.42	490.61	32.63	-2.75	0.119
110.00	-51.96	-7.72	0.00	-204.99	0.00	204.99	833.77	416.88	695.90	343.68	32.63	-2.75	0.138
114.79	-49.57	-7.19	0.00	-167.99	0.00	167.99	814.75	407.37	653.92	322.94	35.43	-2.82	0.117
115.00	-49.45	-7.16	0.00	-166.49	0.00	166.49	813.89	406.95	652.08	322.04	35.56	-2.83	0.057
115.52	-49.17	-7.07	0.00	-162.76	0.00	162.76	811.76	405.88	647.55	319.80	35.86	-2.83	0.056
115.52	-49.17	-7.07	0.00	-162.76	0.00	162.76	811.76	405.88	647.55	319.80	35.86	-2.83	0.090
120.00	-36.69	-5.28	0.00	-130.89	0.00	130.89	792.92	396.46	608.75	300.64	38.53	-2.86	0.071
123.00	-35.54	-5.11	0.00	-115.04	0.00	115.04	779.81	389.91	583.04	287.94	40.34	-2.88	0.064
124.43	-35.04	-5.04	0.00	-107.73	0.00	107.73	773.42	386.71	570.86	281.93	41.20	-2.90	0.060
124.43	-35.04	-5.04	0.00	-107.73	0.00	107.73	773.42	386.71	570.86	281.93	41.20	-2.90	0.428



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:13 PM

Customer: VERIZON WIRELESS

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

50 mph with 1.00 in Radial Ice

27 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

125.00	-34.87	-5.06	0.00	-104.86	0.00	104.86	770.85	385.43	566.02	279.54	41.55	-2.90	0.421
130.00	-31.51	-4.53	0.00	-78.39	0.00	78.39	747.69	373.84	524.00	258.78	44.75	-3.20	0.345
135.00	-30.89	-4.54	0.00	-55.73	0.00	55.73	722.05	361.03	481.88	237.98	48.24	-3.45	0.277
140.00	-30.30	-4.51	0.00	-33.03	0.00	33.03	686.26	343.13	435.03	214.85	51.96	-3.64	0.198
143.00	-14.48	-2.40	0.00	-19.50	0.00	19.50	664.79	332.40	408.08	201.53	54.28	-3.72	0.119
145.00	-14.26	-2.35	0.00	-14.69	0.00	14.69	650.48	325.24	390.59	192.90	55.84	-3.76	0.098
150.00	0.00	-1.40	0.00	-2.94	0.00	2.94	614.69	307.34	348.53	172.13	59.81	-3.81	0.017

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:14 PM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 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	-44.39	-7.04	0.00	-759.22	0.00	759.22	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.152
5.00	-42.74	-6.94	0.00	-724.04	0.00	724.04	3,092.06	1,546.03	4,560.72	2,252.37	0.03	-0.06	0.148
10.00	-41.11	-6.85	0.00	-689.33	0.00	689.33	3,046.49	1,523.25	4,391.58	2,168.84	0.13	-0.12	0.144
15.00	-39.50	-6.76	0.00	-655.08	0.00	655.08	2,999.83	1,499.91	4,223.96	2,086.05	0.29	-0.19	0.139
20.00	-37.90	-6.66	0.00	-621.29	0.00	621.29	2,952.07	1,476.04	4,057.95	2,004.07	0.52	-0.25	0.135
25.00	-36.33	-6.57	0.00	-587.98	0.00	587.98	2,901.93	1,450.96	3,891.94	1,922.08	0.82	-0.31	0.130
30.00	-34.77	-6.49	0.00	-555.15	0.00	555.15	2,830.35	1,415.18	3,701.25	1,827.91	1.17	-0.37	0.127
31.50	-34.30	-6.45	0.00	-545.41	0.00	545.41	2,808.88	1,404.44	3,644.98	1,800.12	1.29	-0.39	0.126
35.00	-32.84	-6.39	0.00	-522.84	0.00	522.84	2,758.78	1,379.39	3,515.36	1,736.10	1.60	-0.43	0.121
35.67	-32.56	-6.35	0.00	-518.58	0.00	518.58	2,225.24	1,112.62	2,894.88	1,429.67	1.66	-0.44	0.135
40.00	-31.32	-6.25	0.00	-491.05	0.00	491.05	2,194.35	1,097.17	2,791.07	1,378.40	2.08	-0.49	0.130
45.00	-29.90	-6.14	0.00	-459.80	0.00	459.80	2,157.69	1,078.84	2,672.25	1,319.72	2.64	-0.56	0.124
50.00	-28.49	-6.02	0.00	-429.11	0.00	429.11	2,119.93	1,059.96	2,554.56	1,261.60	3.25	-0.62	0.118
55.00	-27.10	-5.93	0.00	-399.02	0.00	399.02	2,081.07	1,040.54	2,438.12	1,204.10	3.93	-0.68	0.112
56.02	-26.81	-5.88	0.00	-392.97	0.00	392.97	2,073.01	1,036.51	2,414.53	1,192.44	4.08	-0.69	0.111
56.02	-26.81	-5.88	0.00	-392.97	0.00	392.97	2,073.01	1,036.51	2,414.53	1,192.44	4.08	-0.69	0.167
60.00	-25.98	-5.78	0.00	-369.58	0.00	369.58	2,041.12	1,020.56	2,323.03	1,147.26	4.67	-0.74	0.161
65.00	-24.95	-5.67	0.00	-340.68	0.00	340.68	1,992.10	996.05	2,200.59	1,086.79	5.49	-0.83	0.153
70.00	-23.91	-5.55	0.00	-312.33	0.00	312.33	1,932.46	966.23	2,070.05	1,022.32	6.41	-0.91	0.146
73.50	-22.87	-5.47	0.00	-292.89	0.00	292.89	1,451.36	725.68	1,558.37	769.62	7.10	-0.97	0.161
74.71	-22.62	-5.45	0.00	-286.25	0.00	286.25	1,444.76	722.38	1,539.55	760.33	7.35	-0.99	0.158
75.00	-22.54	-5.43	0.00	-284.69	0.00	284.69	1,443.19	721.60	1,535.11	758.14	7.41	-1.00	0.087
76.50	-22.21	-5.37	0.00	-276.55	0.00	276.55	1,434.93	717.46	1,511.92	746.68	7.72	-1.01	0.084
76.50	-22.21	-5.37	0.00	-276.55	0.00	276.55	1,434.93	717.46	1,511.92	746.68	7.72	-1.01	0.126
80.00	-21.50	-5.25	0.00	-257.76	0.00	257.76	1,415.26	707.63	1,458.06	720.08	8.48	-1.05	0.119
85.00	-20.48	-5.11	0.00	-231.49	0.00	231.49	1,386.24	693.12	1,381.78	682.41	9.61	-1.11	0.109
90.00	-19.48	-4.98	0.00	-205.93	0.00	205.93	1,356.12	678.06	1,306.38	645.17	10.82	-1.18	0.099
95.00	-18.49	-4.84	0.00	-181.05	0.00	181.05	1,324.90	662.45	1,231.99	608.43	12.08	-1.24	0.089
100.00	-17.51	-4.71	0.00	-156.85	0.00	156.85	1,293.04	646.52	1,159.10	572.44	13.41	-1.29	0.078
104.00	-16.73	-4.60	0.00	-138.03	0.00	138.03	1,254.87	627.43	1,091.30	538.95	14.51	-1.34	0.071
105.00	-15.64	-4.34	0.00	-133.43	0.00	133.43	1,245.33	622.66	1,074.67	530.74	14.79	-1.35	0.069
109.00	-14.71	-4.12	0.00	-116.07	0.00	116.07	1,207.15	603.58	1,009.42	498.51	15.94	-1.38	0.061
110.00	-14.52	-4.06	0.00	-111.95	0.00	111.95	1,197.61	598.80	993.42	490.61	16.23	-1.39	0.060
110.00	-14.52	-4.06	0.00	-111.95	0.00	111.95	833.77	416.88	695.90	343.68	16.23	-1.39	0.069
114.79	-13.57	-3.92	0.00	-92.50	0.00	92.50	814.75	407.37	653.92	322.94	17.65	-1.43	0.058
115.00	-13.51	-3.91	0.00	-91.68	0.00	91.68	813.89	406.95	652.08	322.04	17.71	-1.43	0.027
115.52	-13.40	-3.86	0.00	-89.64	0.00	89.64	811.76	405.88	647.55	319.80	17.87	-1.43	0.027
115.52	-13.40	-3.86	0.00	-89.64	0.00	89.64	811.76	405.88	647.55	319.80	17.87	-1.43	0.043
120.00	-9.58	-3.04	0.00	-72.18	0.00	72.18	792.92	396.46	608.75	300.64	19.22	-1.45	0.034
123.00	-9.09	-2.94	0.00	-63.06	0.00	63.06	779.81	389.91	583.04	287.94	20.14	-1.46	0.030
124.43	-8.86	-2.89	0.00	-58.86	0.00	58.86	773.42	386.71	570.86	281.93	20.58	-1.47	0.028
124.43	-8.86	-2.89	0.00	-58.86	0.00	58.86	773.42	386.71	570.86	281.93	20.58	-1.47	0.220

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:22 PM

Customer: VERIZON WIRELESS

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

Serviceability 60 mph

25 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

125.00	-8.81	-2.85	0.00	-57.21	0.00	57.21	770.85	385.43	566.02	279.54	20.75	-1.47	0.216
130.00	-8.04	-2.44	0.00	-41.93	0.00	41.93	747.69	373.84	524.00	258.78	22.38	-1.64	0.173
135.00	-7.77	-2.38	0.00	-29.75	0.00	29.75	722.05	361.03	481.88	237.98	24.17	-1.77	0.136
140.00	-7.50	-2.33	0.00	-17.86	0.00	17.86	686.26	343.13	435.03	214.85	26.08	-1.87	0.094
143.00	-3.43	-1.23	0.00	-10.88	0.00	10.88	664.79	332.40	408.08	201.53	27.28	-1.92	0.059
145.00	-3.33	-1.18	0.00	-8.43	0.00	8.43	650.48	325.24	390.59	192.90	28.08	-1.94	0.049
150.00	0.00	-1.07	0.00	-2.52	0.00	2.52	614.69	307.34	348.53	172.13	30.13	-1.97	0.015

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

<b>Load Case:</b> (1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method	23 Iterations
Gust Response Factor : 1.10	Sds : 0.00	Ss : 0.00
Dead Load Factor : 1.20	Seismic Load Factor : 1.00	Sd1 : 0.00
Wind Load Factor : 0.00	Structure Frequency : 0.0000	SA : 0.00
		Seismic Importance Factor : 1.00

Load Case (1.2 + 0.2Sds) \* DL + E ELFM 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	-52.94	-1.34	0.00	-171.48	0.00	171.48	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.042
5.00	-50.94	-1.35	0.00	-164.80	0.00	164.80	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.041
10.00	-48.95	-1.36	0.00	-158.05	0.00	158.05	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.040
15.00	-46.98	-1.37	0.00	-151.26	0.00	151.26	2,999.83	1,499.91	4,223.96	2,086.05	0.07	-0.04	0.039
20.00	-45.03	-1.38	0.00	-144.41	0.00	144.41	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.038
25.00	-43.11	-1.38	0.00	-137.54	0.00	137.54	2,901.93	1,450.96	3,891.94	1,922.08	0.19	-0.07	0.036
30.00	-42.53	-1.38	0.00	-130.64	0.00	130.64	2,830.35	1,415.18	3,701.25	1,827.91	0.27	-0.09	0.036
31.50	-40.72	-1.38	0.00	-128.56	0.00	128.56	2,808.88	1,404.44	3,644.98	1,800.12	0.30	-0.09	0.035
35.00	-40.38	-1.38	0.00	-123.73	0.00	123.73	2,758.78	1,379.39	3,515.36	1,736.10	0.37	-0.10	0.034
35.67	-38.85	-1.38	0.00	-122.81	0.00	122.81	2,225.24	1,112.62	2,894.88	1,429.67	0.38	-0.10	0.038
40.00	-37.10	-1.38	0.00	-116.83	0.00	116.83	2,194.35	1,097.17	2,791.07	1,378.40	0.48	-0.11	0.037
45.00	-35.36	-1.37	0.00	-109.95	0.00	109.95	2,157.69	1,078.84	2,672.25	1,319.72	0.61	-0.13	0.035
50.00	-33.64	-1.36	0.00	-103.10	0.00	103.10	2,119.93	1,059.96	2,554.56	1,261.60	0.75	-0.14	0.034
55.00	-33.29	-1.36	0.00	-96.30	0.00	96.30	2,081.07	1,040.54	2,438.12	1,204.10	0.91	-0.16	0.032
56.02	-32.27	-1.35	0.00	-94.91	0.00	94.91	2,073.01	1,036.51	2,414.53	1,192.44	0.94	-0.16	0.032
56.02	-32.27	-1.35	0.00	-94.91	0.00	94.91	2,073.01	1,036.51	2,414.53	1,192.44	0.94	-0.16	0.048
60.00	-30.99	-1.34	0.00	-89.53	0.00	89.53	2,041.12	1,020.56	2,323.03	1,147.26	1.08	-0.17	0.046
65.00	-29.71	-1.33	0.00	-82.81	0.00	82.81	1,992.10	996.05	2,200.59	1,086.79	1.28	-0.19	0.044
70.00	-28.43	-1.32	0.00	-76.14	0.00	76.14	1,932.46	966.23	2,070.05	1,022.32	1.49	-0.22	0.042
73.50	-28.12	-1.32	0.00	-71.52	0.00	71.52	1,451.36	725.68	1,558.37	769.62	1.66	-0.23	0.047
74.71	-28.02	-1.32	0.00	-69.92	0.00	69.92	1,444.76	722.38	1,539.55	760.33	1.72	-0.24	0.047
75.00	-27.62	-1.31	0.00	-69.55	0.00	69.55	1,443.19	721.60	1,535.11	758.14	1.73	-0.24	0.027
76.50	-26.73	-1.29	0.00	-67.58	0.00	67.58	1,434.93	717.46	1,511.92	746.68	1.81	-0.24	0.026
76.50	-26.73	-1.29	0.00	-67.58	0.00	67.58	1,434.93	717.46	1,511.92	746.68	1.81	-0.24	0.038
80.00	-25.48	-1.27	0.00	-63.05	0.00	63.05	1,415.26	707.63	1,458.06	720.08	1.98	-0.25	0.036
85.00	-24.24	-1.24	0.00	-56.71	0.00	56.71	1,386.24	693.12	1,381.78	682.41	2.25	-0.27	0.034
90.00	-23.02	-1.21	0.00	-50.49	0.00	50.49	1,356.12	678.06	1,306.38	645.17	2.54	-0.28	0.031
95.00	-21.81	-1.18	0.00	-44.42	0.00	44.42	1,324.90	662.45	1,231.99	608.43	2.84	-0.30	0.028
100.00	-20.85	-1.15	0.00	-38.53	0.00	38.53	1,293.04	646.52	1,159.10	572.44	3.16	-0.31	0.025
104.00	-20.60	-1.14	0.00	-33.93	0.00	33.93	1,254.87	627.43	1,091.30	538.95	3.42	-0.32	0.024
105.00	-18.54	-1.07	0.00	-32.78	0.00	32.78	1,245.33	622.66	1,074.67	530.74	3.49	-0.32	0.022
109.00	-18.09	-1.05	0.00	-28.52	0.00	28.52	1,207.15	603.58	1,009.42	498.51	3.76	-0.33	0.021
110.00	-16.92	-1.00	0.00	-27.47	0.00	27.47	1,197.61	598.80	993.42	490.61	3.83	-0.33	0.020
110.00	-16.92	-1.00	0.00	-27.47	0.00	27.47	833.77	416.88	695.90	343.68	3.83	-0.33	0.023
114.79	-16.85	-1.00	0.00	-22.67	0.00	22.67	814.75	407.37	653.92	322.94	4.17	-0.34	0.020
115.00	-16.70	-0.99	0.00	-22.45	0.00	22.45	813.89	406.95	652.08	322.04	4.19	-0.34	0.011
115.52	-15.64	-0.95	0.00	-21.94	0.00	21.94	811.76	405.88	647.55	319.80	4.23	-0.34	0.010
115.52	-15.64	-0.95	0.00	-21.94	0.00	21.94	811.76	405.88	647.55	319.80	4.23	-0.34	0.016
120.00	-11.35	-0.74	0.00	-17.70	0.00	17.70	792.92	396.46	608.75	300.64	4.55	-0.35	0.013
123.00	-11.06	-0.73	0.00	-15.47	0.00	15.47	779.81	389.91	583.04	287.94	4.77	-0.35	0.011
124.43	-10.99	-0.73	0.00	-14.43	0.00	14.43	773.42	386.71	570.86	281.93	4.87	-0.35	0.011

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

Load Case: (1.2 + 0.2Sds) * DL + E ELM				Seismic Equivalent Lateral Forces Method								23 Iterations	
Gust Response Factor : 1.10				Sds : 0.00				Ss : 0.00					
Dead Load Factor : 1.20				Seismic Load Factor : 1.00				Sd1 : 0.00				S1 : 0.00	
Wind Load Factor : 0.00				Structure Frequency : 0.0000				SA : 0.00				Seismic Importance Factor : 1.00	
124.43	-10.99	-0.73	0.00	-14.43	0.00	14.43	773.42	386.71	570.86	281.93	4.87	-0.35	0.065
125.00	-10.46	-0.70	0.00	-14.01	0.00	14.01	770.85	385.43	566.02	279.54	4.92	-0.35	0.064
130.00	-9.70	-0.66	0.00	-10.51	0.00	10.51	747.69	373.84	524.00	258.78	5.31	-0.39	0.054
135.00	-9.37	-0.65	0.00	-7.19	0.00	7.19	722.05	361.03	481.88	237.98	5.74	-0.43	0.043
140.00	-9.18	-0.64	0.00	-3.94	0.00	3.94	686.26	343.13	435.03	214.85	6.20	-0.45	0.032
143.00	-4.17	-0.30	0.00	-2.03	0.00	2.03	664.79	332.40	408.08	201.53	6.49	-0.46	0.016
145.00	-3.88	-0.28	0.00	-1.42	0.00	1.42	650.48	325.24	390.59	192.90	6.68	-0.46	0.013
150.00	0.00	-0.25	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	7.17	-0.47	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sstn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

<b>Load Case:</b> (0.9 - 0.2Sds) * DL + E ELMF	Seismic (Reduced DL) Equivalent Lateral Forces Method	23 Iterations
Gust Response Factor : 1.10	Sds : 0.00	Ss : 0.00
Dead Load Factor : 0.90	Seismic Load Factor : 1.00	Sd1 : 0.00
Wind Load Factor : 0.00	Structure Frequency : 0.0000	SA : 0.00
		Seismic Importance Factor : 1.00

Load Case (0.9 - 0.2Sds) \* DL + E ELMF 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	-36.84	-1.34	0.00	-167.67	0.00	167.67	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.038
5.00	-35.44	-1.34	0.00	-160.99	0.00	160.99	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.037
10.00	-34.05	-1.35	0.00	-154.28	0.00	154.28	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.036
15.00	-32.69	-1.36	0.00	-147.53	0.00	147.53	2,999.83	1,499.91	4,223.96	2,086.05	0.07	-0.04	0.035
20.00	-31.33	-1.36	0.00	-140.75	0.00	140.75	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.034
25.00	-29.99	-1.36	0.00	-133.96	0.00	133.96	2,901.93	1,450.96	3,891.94	1,922.08	0.18	-0.07	0.033
30.00	-29.59	-1.36	0.00	-127.15	0.00	127.15	2,830.35	1,415.18	3,701.25	1,827.91	0.26	-0.08	0.033
31.50	-28.33	-1.36	0.00	-125.11	0.00	125.11	2,808.88	1,404.44	3,644.98	1,800.12	0.29	-0.09	0.032
35.00	-28.10	-1.36	0.00	-120.35	0.00	120.35	2,758.78	1,379.39	3,515.36	1,736.10	0.36	-0.10	0.031
35.67	-27.03	-1.36	0.00	-119.44	0.00	119.44	2,225.24	1,112.62	2,894.88	1,429.67	0.37	-0.10	0.035
40.00	-25.81	-1.35	0.00	-113.57	0.00	113.57	2,194.35	1,097.17	2,791.07	1,378.40	0.47	-0.11	0.034
45.00	-24.60	-1.34	0.00	-106.82	0.00	106.82	2,157.69	1,078.84	2,672.25	1,319.72	0.59	-0.13	0.032
50.00	-23.40	-1.33	0.00	-100.10	0.00	100.10	2,119.93	1,059.96	2,554.56	1,261.60	0.73	-0.14	0.031
55.00	-23.16	-1.33	0.00	-93.44	0.00	93.44	2,081.07	1,040.54	2,438.12	1,204.10	0.89	-0.15	0.030
56.02	-22.45	-1.32	0.00	-92.08	0.00	92.08	2,073.01	1,036.51	2,414.53	1,192.44	0.92	-0.16	0.029
56.02	-22.45	-1.32	0.00	-92.08	0.00	92.08	2,073.01	1,036.51	2,414.53	1,192.44	0.92	-0.16	0.044
60.00	-21.56	-1.31	0.00	-86.82	0.00	86.82	2,041.12	1,020.56	2,323.03	1,147.26	1.06	-0.17	0.042
65.00	-20.67	-1.30	0.00	-80.26	0.00	80.26	1,992.10	996.05	2,200.59	1,086.79	1.25	-0.19	0.040
70.00	-19.78	-1.28	0.00	-73.76	0.00	73.76	1,932.46	966.23	2,070.05	1,022.32	1.45	-0.21	0.039
73.50	-19.56	-1.28	0.00	-69.27	0.00	69.27	1,451.36	725.68	1,558.37	769.62	1.61	-0.22	0.043
74.71	-19.50	-1.28	0.00	-67.72	0.00	67.72	1,444.76	722.38	1,539.55	760.33	1.67	-0.23	0.042
75.00	-19.21	-1.27	0.00	-67.35	0.00	67.35	1,443.19	721.60	1,535.11	758.14	1.69	-0.23	0.024
76.50	-18.60	-1.26	0.00	-65.44	0.00	65.44	1,434.93	717.46	1,511.92	746.68	1.76	-0.23	0.023
76.50	-18.60	-1.26	0.00	-65.44	0.00	65.44	1,434.93	717.46	1,511.92	746.68	1.76	-0.23	0.035
80.00	-17.73	-1.23	0.00	-61.04	0.00	61.04	1,415.26	707.63	1,458.06	720.08	1.93	-0.24	0.033
85.00	-16.87	-1.21	0.00	-54.88	0.00	54.88	1,386.24	693.12	1,381.78	682.41	2.19	-0.26	0.030
90.00	-16.01	-1.18	0.00	-48.85	0.00	48.85	1,356.12	678.06	1,306.38	645.17	2.47	-0.27	0.028
95.00	-15.17	-1.14	0.00	-42.97	0.00	42.97	1,324.90	662.45	1,231.99	608.43	2.77	-0.29	0.025
100.00	-14.50	-1.11	0.00	-37.26	0.00	37.26	1,293.04	646.52	1,159.10	572.44	3.07	-0.30	0.022
104.00	-14.33	-1.11	0.00	-32.81	0.00	32.81	1,254.87	627.43	1,091.30	538.95	3.33	-0.31	0.021
105.00	-12.90	-1.03	0.00	-31.70	0.00	31.70	1,245.33	622.66	1,074.67	530.74	3.40	-0.31	0.020
109.00	-12.59	-1.02	0.00	-27.57	0.00	27.57	1,207.15	603.58	1,009.42	498.51	3.66	-0.32	0.018
110.00	-11.77	-0.97	0.00	-26.56	0.00	26.56	1,197.61	598.80	993.42	490.61	3.73	-0.32	0.017
110.00	-11.77	-0.97	0.00	-26.56	0.00	26.56	833.77	416.88	695.90	343.68	3.73	-0.32	0.020
114.79	-11.72	-0.97	0.00	-21.91	0.00	21.91	814.75	407.37	653.92	322.94	4.06	-0.33	0.018
115.00	-11.62	-0.96	0.00	-21.71	0.00	21.71	813.89	406.95	652.08	322.04	4.07	-0.33	0.009
115.52	-10.88	-0.92	0.00	-21.20	0.00	21.20	811.76	405.88	647.55	319.80	4.11	-0.33	0.009
115.52	-10.88	-0.92	0.00	-21.20	0.00	21.20	811.76	405.88	647.55	319.80	4.11	-0.33	0.014
120.00	-7.90	-0.72	0.00	-17.10	0.00	17.10	792.92	396.46	608.75	300.64	4.42	-0.34	0.011
123.00	-7.69	-0.71	0.00	-14.94	0.00	14.94	779.81	389.91	583.04	287.94	4.64	-0.34	0.010
124.43	-7.65	-0.70	0.00	-13.93	0.00	13.93	773.42	386.71	570.86	281.93	4.74	-0.34	0.009

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

**Load Case:** (0.9 - 0.2Sds) \* DL + E ELFM      Seismic (Reduced DL) Equivalent Lateral Forces Method      23 Iterations

Gust Response Factor : 1.10

Sds : 0.00

Ss : 0.00

Dead Load Factor : 0.90

Seismic Load Factor : 1.00

Sd1 : 0.00

S1 : 0.00

Wind Load Factor : 0.00

Structure Frequency : 0.0000

SA : 0.00

Seismic Importance Factor : 1.00

124.43	-7.65	-0.70	0.00	-13.93	0.00	13.93	773.42	386.71	570.86	281.93	4.74	-0.34	0.059
125.00	-7.28	-0.68	0.00	-13.53	0.00	13.53	770.85	385.43	566.02	279.54	4.78	-0.34	0.058
130.00	-6.75	-0.64	0.00	-10.14	0.00	10.14	747.69	373.84	524.00	258.78	5.16	-0.38	0.048
135.00	-6.52	-0.63	0.00	-6.93	0.00	6.93	722.05	361.03	481.88	237.98	5.58	-0.41	0.038
140.00	-6.39	-0.62	0.00	-3.80	0.00	3.80	686.26	343.13	435.03	214.85	6.02	-0.44	0.027
143.00	-2.90	-0.29	0.00	-1.95	0.00	1.95	664.79	332.40	408.08	201.53	6.30	-0.44	0.014
145.00	-2.70	-0.27	0.00	-1.37	0.00	1.37	650.48	325.24	390.59	192.90	6.49	-0.45	0.011
150.00	0.00	-0.25	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	6.96	-0.45	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

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

Seismic Equivalent Modal Analysis Method

24 Iterations

Gust Response Factor : 1.10

Sds : 0.00

Ss : 0.00

Dead Load Factor : 1.20

Seismic Load Factor : 1.00

Sd1 : 0.00

S1 : 0.00

Wind Load Factor : 0.00

Structure Frequency : 0.0000

SA : 0.00

Seismic Importance Factor : 1.00

**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	-52.94	-2.10	0.00	-261.24	0.00	261.24	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.059
5.00	-50.94	-2.08	0.00	-250.76	0.00	250.76	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.057
10.00	-48.95	-2.04	0.00	-240.38	0.00	240.38	3,046.49	1,523.25	4,391.58	2,168.84	0.05	-0.04	0.056
15.00	-46.98	-2.01	0.00	-230.16	0.00	230.16	2,999.83	1,499.91	4,223.96	2,086.05	0.10	-0.06	0.055
20.00	-45.03	-1.97	0.00	-220.11	0.00	220.11	2,952.07	1,476.04	4,057.95	2,004.07	0.18	-0.09	0.053
25.00	-43.10	-1.93	0.00	-210.27	0.00	210.27	2,901.93	1,450.96	3,891.94	1,922.08	0.28	-0.11	0.052
30.00	-42.53	-1.92	0.00	-200.63	0.00	200.63	2,830.35	1,415.18	3,701.25	1,827.91	0.41	-0.13	0.051
31.50	-40.72	-1.87	0.00	-197.74	0.00	197.74	2,808.88	1,404.44	3,644.98	1,800.12	0.45	-0.14	0.051
35.00	-40.38	-1.87	0.00	-191.19	0.00	191.19	2,758.78	1,379.39	3,515.36	1,736.10	0.56	-0.15	0.049
35.67	-38.85	-1.82	0.00	-189.95	0.00	189.95	2,225.24	1,112.62	2,894.88	1,429.67	0.58	-0.16	0.055
40.00	-37.09	-1.78	0.00	-182.04	0.00	182.04	2,194.35	1,097.17	2,791.07	1,378.40	0.73	-0.18	0.053
45.00	-35.36	-1.73	0.00	-173.15	0.00	173.15	2,157.69	1,078.84	2,672.25	1,319.72	0.93	-0.20	0.052
50.00	-33.64	-1.69	0.00	-164.47	0.00	164.47	2,119.93	1,059.96	2,554.56	1,261.60	1.15	-0.22	0.050
55.00	-33.29	-1.69	0.00	-156.02	0.00	156.02	2,081.07	1,040.54	2,438.12	1,204.10	1.39	-0.25	0.048
56.02	-32.26	-1.66	0.00	-154.30	0.00	154.30	2,073.01	1,036.51	2,414.53	1,192.44	1.45	-0.25	0.048
56.02	-32.26	-1.66	0.00	-154.30	0.00	154.30	2,073.01	1,036.51	2,414.53	1,192.44	1.45	-0.25	0.072
60.00	-30.99	-1.64	0.00	-147.70	0.00	147.70	2,041.12	1,020.56	2,323.03	1,147.26	1.66	-0.27	0.070
65.00	-29.71	-1.62	0.00	-139.52	0.00	139.52	1,992.10	996.05	2,200.59	1,086.79	1.96	-0.30	0.068
70.00	-28.43	-1.62	0.00	-131.40	0.00	131.40	1,932.46	966.23	2,070.05	1,022.32	2.30	-0.34	0.067
73.50	-28.12	-1.62	0.00	-125.73	0.00	125.73	1,451.36	725.68	1,558.37	769.62	2.56	-0.37	0.076
74.71	-28.02	-1.62	0.00	-123.76	0.00	123.76	1,444.76	722.38	1,539.55	760.33	2.66	-0.38	0.075
75.00	-27.61	-1.62	0.00	-123.30	0.00	123.30	1,443.19	721.60	1,535.11	758.14	2.68	-0.38	0.042
76.50	-26.73	-1.62	0.00	-120.86	0.00	120.86	1,434.93	717.46	1,511.92	746.68	2.80	-0.38	0.041
76.50	-26.73	-1.62	0.00	-120.86	0.00	120.86	1,434.93	717.46	1,511.92	746.68	2.80	-0.38	0.061
80.00	-25.48	-1.64	0.00	-115.17	0.00	115.17	1,415.26	707.63	1,458.06	720.08	3.09	-0.40	0.059
85.00	-24.24	-1.67	0.00	-106.96	0.00	106.96	1,386.24	693.12	1,381.78	682.41	3.52	-0.43	0.056
90.00	-23.01	-1.71	0.00	-98.59	0.00	98.59	1,356.12	678.06	1,306.38	645.17	3.99	-0.46	0.052
95.00	-21.80	-1.75	0.00	-90.02	0.00	90.02	1,324.90	662.45	1,231.99	608.43	4.48	-0.49	0.049
100.00	-20.84	-1.78	0.00	-81.26	0.00	81.26	1,293.04	646.52	1,159.10	572.44	5.01	-0.52	0.045
104.00	-20.59	-1.79	0.00	-74.14	0.00	74.14	1,254.87	627.43	1,091.30	538.95	5.45	-0.54	0.042
105.00	-18.53	-1.83	0.00	-72.35	0.00	72.35	1,245.33	622.66	1,074.67	530.74	5.56	-0.54	0.041
109.00	-18.08	-1.84	0.00	-65.03	0.00	65.03	1,207.15	603.58	1,009.42	498.51	6.03	-0.56	0.038
110.00	-16.90	-1.85	0.00	-63.20	0.00	63.20	1,197.61	598.80	993.42	490.61	6.15	-0.57	0.037
110.00	-16.90	-1.85	0.00	-63.20	0.00	63.20	833.77	416.88	695.90	343.68	6.15	-0.57	0.043
114.79	-16.83	-1.85	0.00	-54.36	0.00	54.36	814.75	407.37	653.92	322.94	6.73	-0.59	0.038
115.00	-16.69	-1.85	0.00	-53.97	0.00	53.97	813.89	406.95	652.08	322.04	6.76	-0.59	0.019
115.52	-15.62	-1.84	0.00	-53.01	0.00	53.01	811.76	405.88	647.55	319.80	6.82	-0.59	0.018
115.52	-15.62	-1.84	0.00	-53.01	0.00	53.01	811.76	405.88	647.55	319.80	6.82	-0.59	0.029
120.00	-11.34	-1.75	0.00	-44.78	0.00	44.78	792.92	396.46	608.75	300.64	7.39	-0.60	0.024
123.00	-11.05	-1.74	0.00	-39.53	0.00	39.53	779.81	389.91	583.04	287.94	7.77	-0.61	0.021
124.43	-10.98	-1.74	0.00	-37.04	0.00	37.04	773.42	386.71	570.86	281.93	7.95	-0.62	0.020



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:22 PM

Customer: VERIZON WIRELESS

**Load Case:** (1.2 + 0.2Sds) \* DL + E EMAM      Seismic Equivalent Modal Analysis Method      24 Iterations

Gust Response Factor : 1.10		Sds : 0.00	Ss : 0.00
Dead Load Factor : 1.20	Seismic Load Factor : 1.00	Sd1 : 0.00	S1 : 0.00
Wind Load Factor : 0.00	Structure Frequency : 0.0000	SA : 0.00	Seismic Importance Factor : 1.00

124.43	-10.98	-1.74	0.00	-37.04	0.00	37.04	773.42	386.71	570.86	281.93	7.95	-0.62	0.146
125.00	-10.44	-1.72	0.00	-36.05	0.00	36.05	770.85	385.43	566.02	279.54	8.03	-0.62	0.143
130.00	-9.68	-1.68	0.00	-27.44	0.00	27.44	747.69	373.84	524.00	258.78	8.73	-0.72	0.119
135.00	-9.35	-1.66	0.00	-19.03	0.00	19.03	722.05	361.03	481.88	237.98	9.53	-0.81	0.093
140.00	-9.16	-1.64	0.00	-10.75	0.00	10.75	686.26	343.13	435.03	214.85	10.42	-0.87	0.063
143.00	-4.16	-0.87	0.00	-5.83	0.00	5.83	664.79	332.40	408.08	201.53	10.97	-0.90	0.035
145.00	-3.87	-0.82	0.00	-4.09	0.00	4.09	650.48	325.24	390.59	192.90	11.35	-0.91	0.027
150.00	0.00	-0.76	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	12.31	-0.92	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:22 PM

Customer: VERIZON WIRELESS

<b>Load Case:</b> (0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method	24 Iterations
Gust Response Factor : 1.10	Sds : 0.00	Ss : 0.00
Dead Load Factor : 0.90	Seismic Load Factor : 1.00	Sd1 : 0.00
Wind Load Factor : 0.00	Structure Frequency : 0.0000	SA : 0.00
		Seismic Importance Factor : 1.00

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	-36.84	-2.09	0.00	-254.94	0.00	254.94	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.055
5.00	-35.44	-2.07	0.00	-244.47	0.00	244.47	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.053
10.00	-34.05	-2.03	0.00	-234.14	0.00	234.14	3,046.49	1,523.25	4,391.58	2,168.84	0.04	-0.04	0.052
15.00	-32.68	-1.99	0.00	-223.99	0.00	223.99	2,999.83	1,499.91	4,223.96	2,086.05	0.10	-0.06	0.051
20.00	-31.33	-1.94	0.00	-214.05	0.00	214.05	2,952.07	1,476.04	4,057.95	2,004.07	0.18	-0.08	0.050
25.00	-29.99	-1.90	0.00	-204.33	0.00	204.33	2,901.93	1,450.96	3,891.94	1,922.08	0.28	-0.11	0.048
30.00	-29.59	-1.89	0.00	-194.83	0.00	194.83	2,830.35	1,415.18	3,701.25	1,827.91	0.40	-0.13	0.048
31.50	-28.33	-1.84	0.00	-192.00	0.00	192.00	2,808.88	1,404.44	3,644.98	1,800.12	0.44	-0.13	0.047
35.00	-28.09	-1.83	0.00	-185.56	0.00	185.56	2,758.78	1,379.39	3,515.36	1,736.10	0.54	-0.15	0.046
35.67	-27.03	-1.79	0.00	-184.34	0.00	184.34	2,225.24	1,112.62	2,894.88	1,429.67	0.57	-0.15	0.051
40.00	-25.81	-1.74	0.00	-176.59	0.00	176.59	2,194.35	1,097.17	2,791.07	1,378.40	0.71	-0.17	0.050
45.00	-24.60	-1.69	0.00	-167.89	0.00	167.89	2,157.69	1,078.84	2,672.25	1,319.72	0.90	-0.19	0.048
50.00	-23.40	-1.65	0.00	-159.43	0.00	159.43	2,119.93	1,059.96	2,554.56	1,261.60	1.12	-0.22	0.046
55.00	-23.16	-1.64	0.00	-151.20	0.00	151.20	2,081.07	1,040.54	2,438.12	1,204.10	1.36	-0.24	0.045
56.02	-22.44	-1.61	0.00	-149.53	0.00	149.53	2,073.01	1,036.51	2,414.53	1,192.44	1.41	-0.24	0.045
56.02	-22.44	-1.61	0.00	-149.53	0.00	149.53	2,073.01	1,036.51	2,414.53	1,192.44	1.41	-0.24	0.067
60.00	-21.56	-1.59	0.00	-143.11	0.00	143.11	2,041.12	1,020.56	2,323.03	1,147.26	1.62	-0.26	0.066
65.00	-20.67	-1.57	0.00	-135.18	0.00	135.18	1,992.10	996.05	2,200.59	1,086.79	1.91	-0.30	0.064
70.00	-19.77	-1.56	0.00	-127.33	0.00	127.33	1,932.46	966.23	2,070.05	1,022.32	2.24	-0.33	0.063
73.50	-19.56	-1.56	0.00	-121.87	0.00	121.87	1,451.36	725.68	1,558.37	769.62	2.49	-0.36	0.071
74.71	-19.49	-1.56	0.00	-119.97	0.00	119.97	1,444.76	722.38	1,539.55	760.33	2.58	-0.36	0.070
75.00	-19.21	-1.56	0.00	-119.52	0.00	119.52	1,443.19	721.60	1,535.11	758.14	2.60	-0.37	0.039
76.50	-18.59	-1.57	0.00	-117.18	0.00	117.18	1,434.93	717.46	1,511.92	746.68	2.72	-0.37	0.038
76.50	-18.59	-1.57	0.00	-117.18	0.00	117.18	1,434.93	717.46	1,511.92	746.68	2.72	-0.37	0.057
80.00	-17.72	-1.58	0.00	-111.70	0.00	111.70	1,415.26	707.63	1,458.06	720.08	3.00	-0.39	0.055
85.00	-16.86	-1.61	0.00	-103.78	0.00	103.78	1,386.24	693.12	1,381.78	682.41	3.42	-0.42	0.052
90.00	-16.01	-1.65	0.00	-95.71	0.00	95.71	1,356.12	678.06	1,306.38	645.17	3.87	-0.45	0.048
95.00	-15.16	-1.69	0.00	-87.46	0.00	87.46	1,324.90	662.45	1,231.99	608.43	4.35	-0.47	0.045
100.00	-14.49	-1.72	0.00	-79.01	0.00	79.01	1,293.04	646.52	1,159.10	572.44	4.87	-0.50	0.042
104.00	-14.32	-1.73	0.00	-72.13	0.00	72.13	1,254.87	627.43	1,091.30	538.95	5.30	-0.52	0.039
105.00	-12.89	-1.77	0.00	-70.41	0.00	70.41	1,245.33	622.66	1,074.67	530.74	5.41	-0.53	0.038
109.00	-12.58	-1.78	0.00	-63.32	0.00	63.32	1,207.15	603.58	1,009.42	498.51	5.86	-0.55	0.035
110.00	-11.76	-1.79	0.00	-61.55	0.00	61.55	1,197.61	598.80	993.42	490.61	5.97	-0.55	0.034
110.00	-11.76	-1.79	0.00	-61.55	0.00	61.55	833.77	416.88	695.90	343.68	5.97	-0.55	0.040
114.79	-11.71	-1.79	0.00	-52.97	0.00	52.97	814.75	407.37	653.92	322.94	6.54	-0.57	0.035
115.00	-11.61	-1.79	0.00	-52.59	0.00	52.59	813.89	406.95	652.08	322.04	6.56	-0.58	0.017
115.52	-10.87	-1.78	0.00	-51.66	0.00	51.66	811.76	405.88	647.55	319.80	6.63	-0.58	0.016
115.52	-10.87	-1.78	0.00	-51.66	0.00	51.66	811.76	405.88	647.55	319.80	6.63	-0.58	0.026
120.00	-7.89	-1.71	0.00	-43.67	0.00	43.67	792.92	396.46	608.75	300.64	7.17	-0.59	0.022
123.00	-7.68	-1.70	0.00	-38.54	0.00	38.54	779.81	389.91	583.04	287.94	7.54	-0.59	0.019
124.43	-7.64	-1.70	0.00	-36.10	0.00	36.10	773.42	386.71	570.86	281.93	7.72	-0.60	0.018

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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Customer: VERIZON WIRELESS

**Load Case:** (0.9 - 0.2Sds) \* DL + E EMAM      Seismic (Reduced DL) Equivalent Modal Analysis Method      24 Iterations

Gust Response Factor : 1.10		Sds : 0.00	Ss : 0.00
Dead Load Factor : 0.90	Seismic Load Factor : 1.00	Sd1 : 0.00	S1 : 0.00
Wind Load Factor : 0.00	Structure Frequency : 0.0000	SA : 0.00	Seismic Importance Factor : 1.00

124.43	-7.64	-1.70	0.00	-36.10	0.00	36.10	773.42	386.71	570.86	281.93	7.72	-0.60	0.138
125.00	-7.26	-1.68	0.00	-35.13	0.00	35.13	770.85	385.43	566.02	279.54	7.80	-0.60	0.135
130.00	-6.73	-1.64	0.00	-26.73	0.00	26.73	747.69	373.84	524.00	258.78	8.48	-0.70	0.112
135.00	-6.50	-1.61	0.00	-18.53	0.00	18.53	722.05	361.03	481.88	237.98	9.26	-0.79	0.087
140.00	-6.37	-1.59	0.00	-10.46	0.00	10.46	686.26	343.13	435.03	214.85	10.12	-0.85	0.058
143.00	-2.89	-0.85	0.00	-5.69	0.00	5.69	664.79	332.40	408.08	201.53	10.66	-0.87	0.033
145.00	-2.69	-0.80	0.00	-3.99	0.00	3.99	650.48	325.24	390.59	192.90	11.03	-0.88	0.025
150.00	0.00	-0.76	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	11.96	-0.89	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

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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	32.91	0.00	53.18	0.00	0.00	3581.21	124.43	1.00
0.9D + 1.6W	32.87	0.00	39.87	0.00	0.00	3517.74	124.43	0.97
1.2D + 1.0Di + 1.0Wi	15.21	0.00	111.32	0.00	0.00	1565.15	124.43	0.43
(1.2 + 0.2Sds) * DL + E ELFM	1.34	0.00	52.94	0.00	0.00	171.48	124.43	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.10	0.00	52.94	0.00	0.00	261.24	124.43	0.15
(0.9 - 0.2Sds) * DL + E ELFM	1.34	0.00	36.84	0.00	0.00	167.67	124.43	0.06
(0.9 - 0.2Sds) * DL + E EMAM	2.09	0.00	36.84	0.00	0.00	254.94	124.43	0.14
1.0D + 1.0W	7.04	0.00	44.39	0.00	0.00	759.22	124.43	0.22

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 12978549\_C4\_09

2/18/2020 1:39:22 PM

Customer: VERIZON WIRELESS

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors				Max Member		
			VQ/l (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	56.02	(4) SOL-#20 All Thread Bar	265.7	8.0	16.8	0.474	274.8	330.5	0.831
0.00	76.50	(4) SOL-#20 All Thread Bar	468.6	14.1	16.8	0.836	326.4	330.5	0.988
74.71	115.52	(4) SOL-#20 All Thread Bar	474.4	15.2	16.8	0.903	279.4	327.4	0.853
114.79	124.43	(4) SOL-#20 All Thread Bar	409.2	13.1	16.8	0.779	116.2	327.4	0.355

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors					Lower Termination Connectors				
			MQ/l (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/l (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	56.02	(4) SOL-#20 All Thread Bar	213.3	12.0	18	20	0.889	0.0	12.0	0	0	0.000
0.00	76.50	(4) SOL-#20 All Thread Bar	157.6	12.0	14	14	0.938	0.0	12.0	0	0	0.000
74.71	115.52	(4) SOL-#20 All Thread Bar	59.4	12.0	5	8	0.619	189.8	12.0	16	16	0.988
114.79	124.43	(4) SOL-#20 All Thread Bar	79.2	12.0	7	12	0.550	72.8	12.0	7	12	0.505

# Flange Plate Analysis

Flange Plate	Plate Type	<b>Flange</b>	<b>@ 110 ft</b>
	Pole Diameter	20.43	in
	Pole Thickness	0.1875	in
	Plate Diameter	28	in
	Plate Thickness	1	in
	Plate Fy	36	ksi
	Weld Length	0.125	in
	f <sub>s</sub> Resistance	347.07	k-in
	Applied	27.69	k-in

Code Rev.	<b>G</b>
Moment	529.2 k-ft
Axial	15.4 k

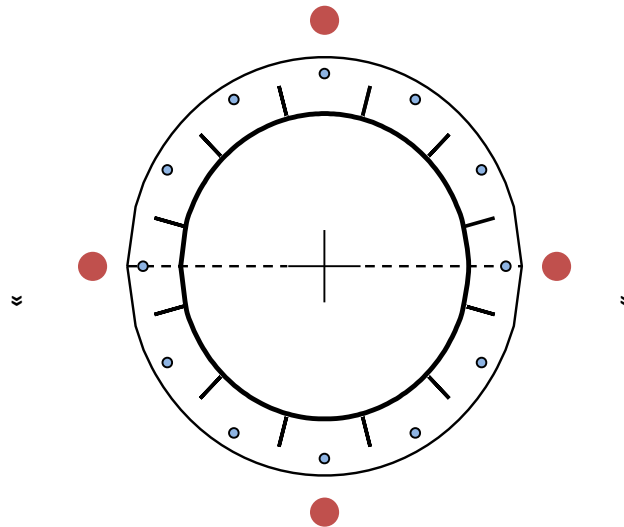
Date	2/18/2020
Engineer	MER
Site #	302475
Carrier	Verizon

Stiffeners	#	<b>12</b>	<b>Show</b>
	Thickness	0.75	in
	Length	3	in
	Height	6	in
	Chamfer	0.75	in
	Offset Angle	0	°
	Fy	50	ksi

Bolts	#	<b>12</b>	
	Bolt Circle (R)adial / (S)quare	25.75	in
		R	
	Bolt Gap	6	in
	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	f <sub>s</sub> Resistance	54.52	k
Applied	14.04	k	

Reinforcement	#	<b>4</b>	
	DYW. Circle	32.9	in
	Offset Angle	0	°
	Type	#20	
	Diameter	2.5	in
	Fu	100	ksi
	f <sub>s</sub> Resistance	392.70	k
Applied	156.56	k	

Extra Bolts	#		
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**Plate Stress Ratio:**

8% Pass

**Bolt Stress Ratio:**

26% Pass

**Reinforcement Stress Ratio:**

40% Pass



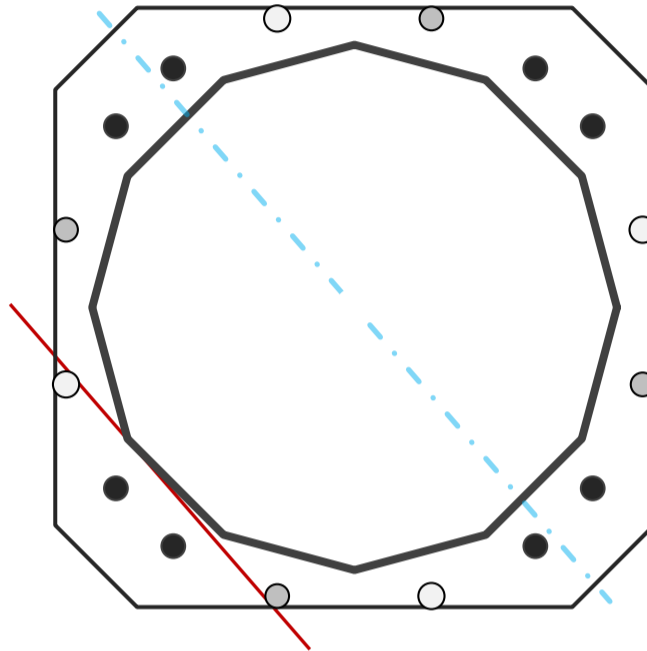
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	37	in
Thickness	0.375	in
Orientation Offset		°

Base Reactions		
Moment, Mu	3581.2	k-ft
Axial, Pu	53.2	k
Shear, Vu	32.9	k
Neutral Axis	131	°

Report Capacities		
Component	Capacity	Result
Base Plate	61%	Pass
Anchor Rods	80%	Pass
Dwyidag	90%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2 1/2	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	6	in
Orientation Offset		°
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	1276.7	k
Bending Stress, $\phi Mn$	2107.3	k



Dwyidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, $\phi$	2.5	in
Bracket Type	Angle	-
Circle	43.88	in
Orientation Offset	15	°
Applied Force, Pu	355.2	k
Dwyidag Bar, $\phi Pn$	392.7	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset		°
Applied Force, Pu	206.6	k
Anchor Rods, $\phi Pn$	259.8	k

Additional Anchor Rods		
Quantity	4	-
Diameter, $\phi$	2.25	in
Bolt Circle	43.88	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Bypass Base?	Yes	
Orientation Offset	-15	°
Applied Force, Pu	151.0	k
Additional Rod, $\phi Pn$	259.8	k

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	32.9	1499.3	0.42
Anchor Rod Forces	32.9	1499.3	0.42
Additional Bolt (Grp1) Forces	0.0	655.9	0.18
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1425.9	0.40
Stiffener Forces	0.0	0.0	0.00

## 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	42.6566	3.5547	0.1675		7154.41
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1	3.9761	3.2477	0.8393	4.5	3130.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		4733.45
Stiffener	0.0000	0.0000	0.0000		0.00

### Base Plate

Shape	Square	-
Width, W	44	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	23.812	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

### Anchor Rods

Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	206.6	k
Applied Shear, Vu	0.5	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.795	OK
Interaction Capacity	0.798	OK

### External Base Plate

Chord Length AA	24.975	in
Additional AA	0.000	in
Section Modulus, Z	39.024	in <sup>3</sup>
Applied Moment, Mu	1276.7	k-ft
Bending Capacity, φMn	2107.3	k-ft
Capacity, Mu/φMn	0.606	OK
Chord Length AB	23.661	in
Additional AB	0.000	in
Section Modulus, Z	36.971	in <sup>3</sup>
Applied Moment, Mu	1007.9	k-ft
Bending Capacity, φMn	1996.4	k-ft
Capacity, Mu/φMn	0.505	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

### Additional Bolt Group 1

Bolt Quantity, N	4	-
Bolt Diameter, d	2.25	in
Bolt Circle, BC	43.88	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	151.0	k
Applied Shear, Vu	3.1	k
Compressive Capacity, φPn	259.8	k
Compressive Capacity, φPn	0.581	OK
Interaction Capacity	0.620	OK

### 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	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	43.88	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	355.2	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.905	OK



**Site Name:** Sttn- Southington, CT  
**Site Number:** 302475  
**Tower Type:** MP  
**Design Loads (Factored) - Analysis per TIA-222-G Standards**

## Monolithic Mat & Pier Foundation Analysis

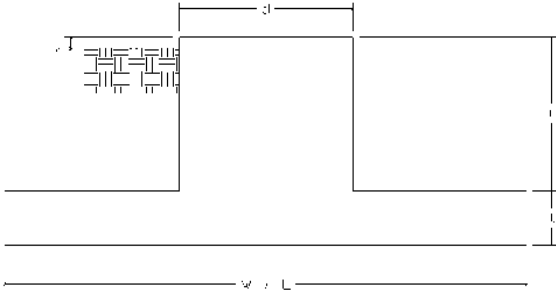
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	53.2	k
Uplift/Leg:	0.0	k
Total Shear:	32.9	k
Moment:	3,581.2	k-ft
Tower + Appurtenance Weight:	53.2	k
Depth to Base of Foundation (l + t - h):	8	ft
Diameter of Pier (d):	4.9	ft
Length of Pier (l):	5.5	ft
Height of Pier above Ground (h):	0.5	ft
Width of Pad (W):	18	ft
Length of Pad (L):	18	ft
Thickness of Pad (t):	3	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	9	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	136	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	73.6	pcf
Friction Angle of Uplift:	20	°
Coefficient of Shear Friction:	0.40	-
Ultimate Compressive Bearing Pressure:	12,000	psf
Ultimate Passive Pressure on Pad Face:	4,200	psf
$f_{\text{Soil and Concrete Weight}}$ :	0.9	-
$f_{\text{Soil}}$ :	0.75	-

Foundation Steel Parameters		
Concrete Strength ( $f_c$ ):	3,000	psi
Pad Tension Steel Depth:	32.0	in
Dead Load Factor:	0.9	-
$f_{\text{Shear}}$ :	0.75	-
$f_{\text{Flexure / Tension}}$ :	0.9	-
$f_{\text{Compression}}$ :	0.65	-
b:	0.85	-
Bottom Pad Rebar Size #:	10	-
# of Bottom Pad Rebar:	35	-
Pad Bottom Steel Area:	44.45	in <sup>2</sup>
Pad Steel $F_y$ :	60,000	psi
Top Pad Rebar Size #:	5	-
# of Top Pad Rebar:	35	-
Pad Top Steel Area:	10.85	in <sup>2</sup>
Pier Rebar Size #:	11	-
Pier Steel Area (Single Bar):	1.56	in <sup>2</sup>
# of Pier Rebar:	52	-
Pier Steel $F_y$ :	60,000	psi
Pier Cage Diameter:	50.8	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	4	-
Tie Steel Area (Single Bar):	0.20	in <sup>2</sup>
Tie Spacing:	12	in
Tie Steel $F_y$ :	60,000	psi

Overturning Moment Usage		
Design OTM:	3860.9	k-ft
OTM Resistance:	3975.8	k-ft
Design OTM / OTM Resistance:	97%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	5837	psf
Factored Nominal Bearing Pressure:	9000	psf
Factored Nominal (Net) Bearing Pressure:	65%	Pass
Load Direction Controlling Design Bearing Pressure:	<i>Diagonal to Pad Edge</i>	

Sliding Factor of Safety		
Ultimate Friction Resistance:	165.3	k
Ultimate Passive Pressure Resistance:	204.1	k
Total Factored Sliding Resistance:	277.0	k
Sliding Design / Sliding Resistance:	12%	Pass



Pad Strength Capacity			
Factored One Way Shear ( $V_u$ ):	301.9	k	
One Way Shear Capacity ( $fV_c$ ):	567.9	k	ACI11.3.1.1
$V_u / fV_c$ :	53%	Pass	
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge		
Lower Steel Pad Factored Moment ( $M_u$ ):	1594.7	k-ft	
Lower Steel Pad Moment Capacity ( $fM_n$ ):	5989.2	k-ft	ACI10.3
$M_u / fM_n$ :	27%	Pass	
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge		
Upper Steel Pad Factored Moment ( $M_u$ ):	698.1	k-ft	
Upper Steel Pad Moment Capacity ( $fM_n$ ):	1537.9	k-ft	
$M_u / fM_n$ :	45%	Pass	
Lower Pad Flexural Reinforcement Ratio:	0.0064		OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016		OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Pad Shrinkage Reinforcement Ratio:	0.0080		OK - Shrinkage Reinforcement Ratio Met - ACI7.12.2.1
Lower Pad Reinforcement Spacing:	6	in	Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6	in	Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	0.0	k	
Nominal Punching Shear Capacity ( $f_cV_n$ ):	1499.9	k	ACI11.12.2.1
$V_u / fV_c$ :	0%	Pass	

Pier Strength Capacity			
Factored Moment in Pier ( $M_u$ ):	3762.2	k-ft	
Pier Moment Capacity ( $fM_n$ ):	9067.2	k-ft	
$M_u / fM_n$ :	41%	Pass	
Factored Shear in Pier ( $V_u$ ):	32.9	k	
Pier Shear Capacity ( $fV_n$ ):	295.8	k	
$V_u / fV_c$ :	11%	Pass	
Pier Shear Reinforcement Ratio:	0.0007		OK - No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0	k	
Pier Tension Capacity ( $fT_n$ ):	4380.5	k	
$T_u / fT_n$ :	0%	Pass	
Factored Compression in Pier ( $P_u$ ):	53.2	k	
Pier Compression Capacity ( $fP_n$ ):	3493.1	k	ACI10.3.6.2
$P_u / fP_n$ :	2%	Pass	
Pier Compression Reinforcement Ratio:	0.030		OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
Minimum Depth to Develop Vertical Rebar:	31	in	ACI12.2.3
Minimum Hook Development Length:	22	in	ACI12.5
Minimum Mat Thickness / Edge Distance from Pier:	25.0	in	
Minimum Foundation Depth:	4.93	ft	
$M_u/f_B M_n + T_u/f_T T_n$ :	41%	Pass	