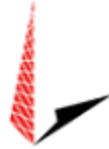




AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by



**TOWER
ENGINEERING
PROFESSIONALS**

Structural Analysis Report

Structure : 89 ft Monopole
ATC Site Name : Naugatuck (telephone Pole), CT
ATC Asset Number : 302526
Engineering Number : 13683578_C3_02
Proposed Carrier : VERIZON WIRELESS
Carrier Site Name : NAUGATUCK II
Carrier Site Number : 467142
Site Location : 585 South Main St. (soc. Club)
Naugatuck, CT 06770-4725
41.478400,-73.048500
County : New Haven
Date : June 16, 2021
Max Usage : 80%
Result : Pass

Prepared By:
Ayoub Sabor
TEP

Reviewed By:



COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 89 ft monopole to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower Drawings	EI Job #11696, dated January 22, 2001
Foundation Drawing	EI Job #11696, dated June 5, 2003
Geotechnical Report	CET Project #07729-76, dated March 28, 2003
Modifications	ATC Project #OAA698250_C6_03, dated June 8, 2017

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Spectral Response:	$S_s = 0.20, S_1 = 0.05$
Site Class:	D - Stiff Soil

Conclusion

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

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



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
90.0	4	Kaelus DBCT108F1V92-1	Modified Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (1) 0.51" (13mm) Hybrid (12) 0.78" (19.7mm) 8 AWG 6 (8) 1 5/8" Coax (2) 2" conduit (3) 3" conduit	AT&T MOBILITY
	4	CCI DTMABP7819VG12A			
	1	Raycap DC6-48-60-0-8F			
	2	Raycap DC6-48-60-18-8F ("Squid")			
	2	Ericsson RRUS 4426 B66			
	2	Ericsson 4478 Band 14 (15" Height)			
	2	Ericsson RRUS 4478 B5 (56.1 lbs)			
	2	Ericsson RRUS 11 (Band 12) (55 lb)			
	2	Ericsson RRUS 32 (50.8 lbs)			
	2	Ericsson RRUS 32 B2			
	2	Powerwave Allgon 7770.00			
	2	Quintel QS66512-2			
	2	CCI OPA-65R-LCUU-H6			
2	Kathrein Scala 80010965				
40.0	3	Commscope SBNHH-1D65B	Low Profile Platform	(10) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS

Equipment to be Removed

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
40.0	3	Alcatel-Lucent RRH2X60-1900	-	-	VERIZON WIRELESS
	3	Alcatel-Lucent RRH2x60 700			
	3	Commscope SBNHH-1D65B			
	6	Decibel DB844H80E-XY			
	2	RFS DB-T1-6Z-8AB-OZ			
	3	Alcatel-Lucent B66 RRH4x45			

Proposed Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
40.0	3	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	Low Profile Platform	-	VERIZON WIRELESS
	3	Samsung RT4401-48A			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			
	1	Raycap RCMD-6627-PF-48			
	3	Samsung MT6407-77A			
	6	JMA Wireless MX06FRO660-03			

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



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	22%	Pass
Shaft	73%	Pass
Base Plate	17%	Pass
Reinforcement	74%	Pass
Flange	34%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	509.6	80%
Axial (Kips)	22.7	20%
Shear (Kips)	8.1	25%

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) (°)
40.0	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	VERIZON WIRELESS	0.123	0.330
	Samsung RT4401-48A			
	Samsung B2/B66A RRH-BR049			
	Samsung B5/B13 RRH-BR04C			
	Raycap RCMDC-6627-PF-48			
	Samsung MT6407-77A			
JMA Wireless MX06FRO660-03				

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



Standard Conditions

All engineering services performed by 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:

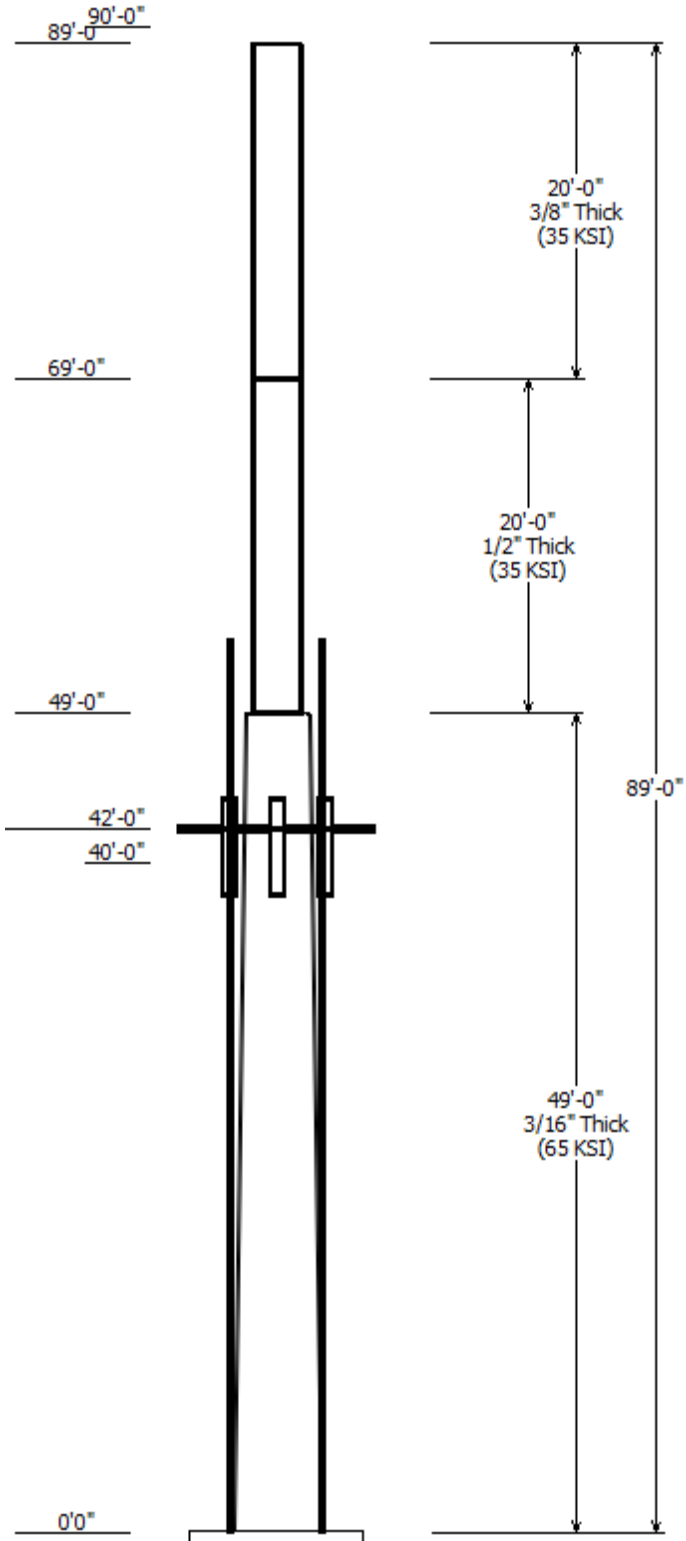
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.

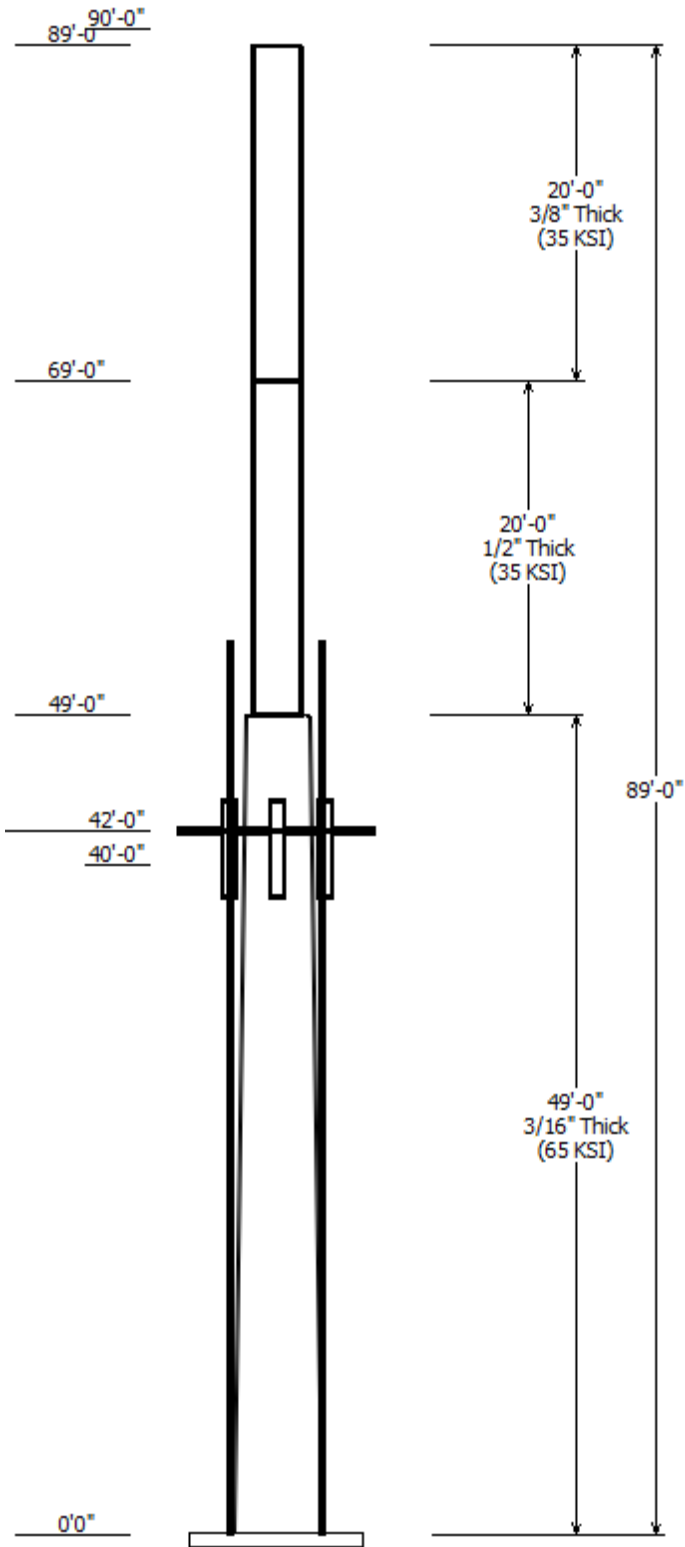


Job Information	
Client : VERIZON WIRELESS	Code: ANSI/TIA-222-H
Pole : 302526	
Location : Naugatuck (telephone Pole), CT	
Description : 49' EEI Monopole w/ Proposed 40' Extension	Risk Category : II
Shape : 18 Sides	Exposure : B
Height : 89.00 (ft)	Topo Method : Method 1
Base Elev (ft): 0.00	Topographic Category : 1
Taper: 0.183674in/ft)	

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade
		Top	Bottom			
1	49.000	14.00	23.00	0.188	0.000	18 Sides 65
2	20.000	12.75	12.75	0.500	0.000	Round 35
3	20.000	12.75	12.75	0.375	0.000	Round 35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
90.000	90.000	2	Kathrein Scala 80010965
90.000	90.000	2	CCI OPA-65R-LCUU-H6
90.000	90.000	2	Quintel QS66512-2
90.000	90.000	2	Powerwave Allgon 7770.00
90.000	90.000	2	Ericsson RRUS 32 B2
90.000	90.000	2	Ericsson RRUS 32 (50.8 lbs)
90.000	90.000	2	Ericsson RRUS 11 (Band 12) (55
90.000	90.000	2	Ericsson RRUS 4478 B5 (56.1 lb
90.000	90.000	2	Ericsson 4478 Band 14 (15" Hei
90.000	90.000	2	Ericsson RRUS 4426 B66
90.000	90.000	2	Raycap DC6-48-60-18-8F
90.000	90.000	1	Raycap DC6-48-60-0-8F
90.000	90.000	4	CCI DTMABP7819VG12A
90.000	90.000	4	Kaelus DBCT108F1V92-1
89.000	89.000	1	Modified Platform w/ Handrails
42.000	42.000	1	Flat Low Profile Platform
40.000	40.000	6	JMA Wireless MX06FRO660-03
40.000	42.000	3	Commscope SBNHH-1D65B
40.000	40.000	3	Samsung MT6407-77A
40.000	40.000	1	Raycap RCMD-6627-PF-48
40.000	40.000	3	Samsung B5/B13 RRH-BR04C
40.000	40.000	3	Samsung B2/B66A RRH-BR049
40.000	40.000	3	Samsung RT4401-48A
40.000	40.000	3	Samsung Outdoor CBRS 20W

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	40.000	1 5/8" Coax	No
0.000	40.000	1 5/8" Hybriflex	No
0.000	53.500	#20 Threaded Bar	Yes
0.000	53.500	#20 Threaded Bar	Yes
0.000	53.500	#20 Threaded Bar	Yes
0.000	90.000	0.39" (10mm)	No
0.000	90.000	0.51" (13mm)	No
0.000	90.000	0.78" (19.7mm) 8	No
0.000	90.000	0.78" (19.7mm) 8	No
0.000	90.000	1 5/8" Coax	No
0.000	90.000	2" conduit	No
0.000	90.000	3" conduit	No

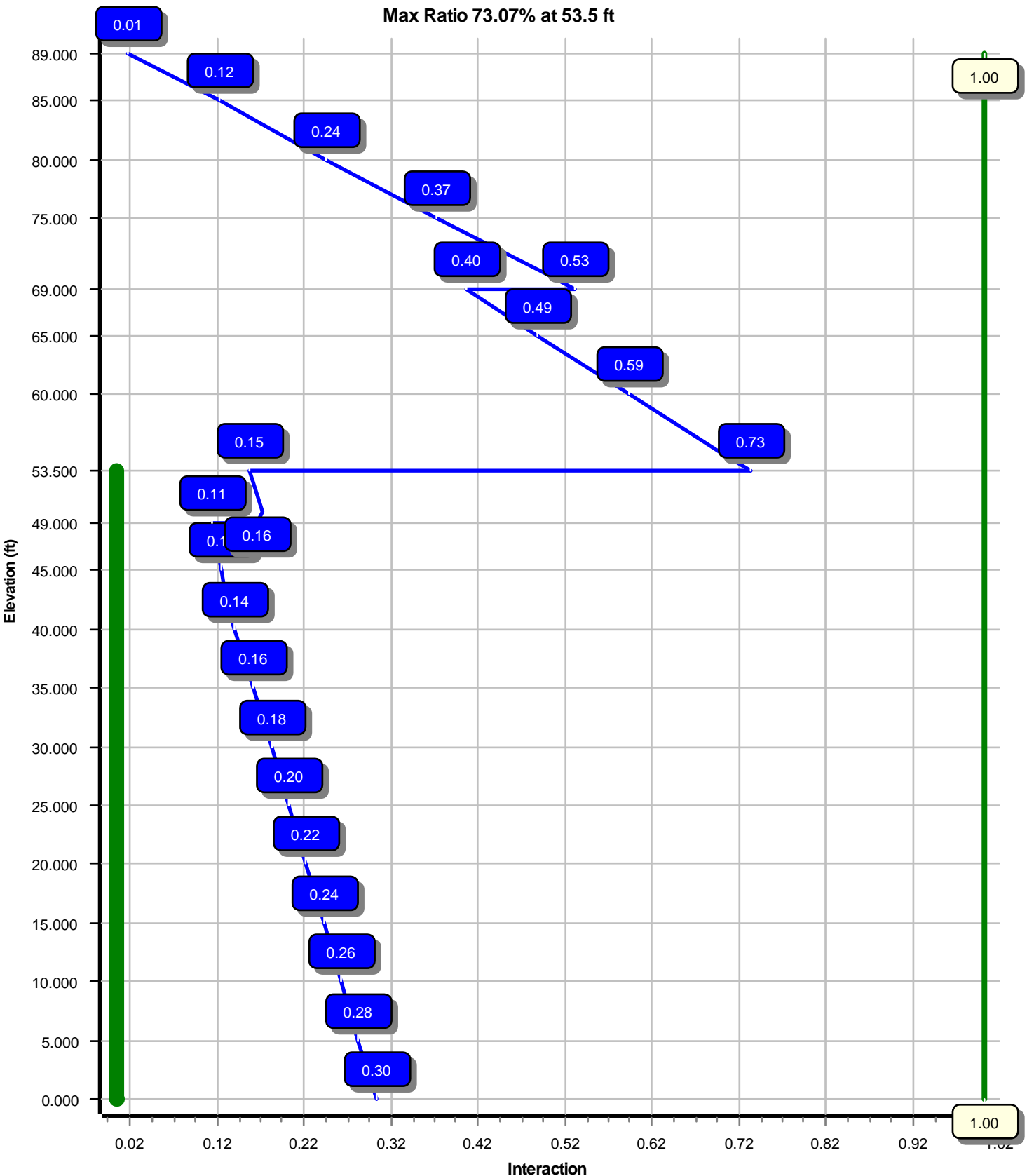


Load Cases	
1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	509.56	8.07	22.73
0.9D + 1.0W	502.71	8.06	17.04
1.2D + 1.0Di + 1.0Wi	143.72	2.42	28.97
1.2D + 1.0Ev + 1.0Eh	56.12	0.74	22.49
0.9D - 1.0Ev + 1.0Eh	55.17	0.74	15.53
1.0D + 1.0W	121.52	1.94	18.95

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000

Load Case : 1.2D + 1.0W
Max Ratio 73.07% at 53.5 ft



Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	89
Code :	ANSI/TIA-222-H	Base Diameter (in) :	23.00
Shape :	18 Sides. Sect 2: Round. Sect 3: Round	Top Diameter (in) :	12.75
Pole Type :	Custom	Taper (in/ft) :	0.184
Pole Manufacturer :	EEL	Rotation (deg) :	0.00
Kd (non-service) :	0.95	Ke :	0.99

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	118 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	262.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.04		
T _L (sec):	6	p:	1.3
S _s :	0.197	S ₁ :	0.054
F _a :	1.600	F _v :	2.400
S _{ds} :	0.210	S _{d1} :	0.086
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

Load Cases

1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom					Top							
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	49.000	0.1875	65		0.00	1,817	23.00	0.00	13.58	892.6	20.22	122.67	14.00	49.00	8.22	198.1	11.76	74.67	0.183673
2-R	20.000	0.5000	35	Butt	0.00	1,310	12.75	49.00	19.24	361.2	0.00	25.50	12.75	69.00	19.24	361.2	0.00	25.50	0.000000
3-R	20.000	0.3750	35	Butt	0.00	992	12.75	69.00	14.58	279.3	0.00	34.00	12.75	89.00	14.58	279.3	0.00	34.00	0.000000
Shaft Weight						4,119													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
90.00	Kaelus DBCT108F1V92-1	4	0.75	0.000	13.90	0.633	0.50	29.82	0.978	0.50
90.00	CCI DTMABP7819VG12A	4	0.75	0.000	19.20	0.972	0.50	35.31	1.386	0.50
90.00	Raycap DC6-48-60-0-8F	1	0.75	0.000	32.80	1.360	1.00	69.57	1.780	1.00
90.00	Raycap DC6-48-60-18-8F	2	0.75	0.000	31.80	1.470	1.00	70.83	1.912	1.00
90.00	Ericsson RRUS 4426 B66	2	0.75	0.000	48.40	1.650	0.50	76.64	2.187	0.50
90.00	Ericsson 4478 Band 14 (15")	2	0.75	0.000	59.90	1.842	0.50	94.88	2.409	0.50
90.00	Ericsson RRUS 4478 B5 (56.1 lbs)	2	0.75	0.000	56.10	2.036	0.67	94.03	2.635	0.67
90.00	Ericsson RRUS 11 (Band 12) (55	2	0.75	0.000	55.00	2.522	0.67	97.56	3.180	0.67
90.00	Ericsson RRUS 32 (50.8 lbs)	2	0.75	0.000	50.80	2.692	0.67	96.05	3.423	0.67
90.00	Ericsson RRUS 32 B2	2	0.75	0.000	53.00	2.743	0.67	99.53	3.483	0.67
90.00	Powerwave Allgon 7770.00	2	0.75	0.000	35.00	5.508	0.74	113.29	6.157	0.74
90.00	Quintel QS66512-2	2	0.75	0.000	111.00	8.133	0.80	237.07	9.897	0.80
90.00	CCI OPA-65R-LCUU-H6	2	0.75	0.000	73.00	9.658	0.75	201.75	11.412	0.75
90.00	Kathrein Scala 80010965	2	0.75	0.000	97.60	13.814	0.72	266.26	15.744	0.72
89.00	Modified Platform w/ Handrails	1	1.00	0.000	2,466.20	30.000	1.00	3,553.10	43.222	1.00
42.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	1,880.16	37.303	1.00
40.00	Samsung Outdoor CBRS 20W	3	0.80	0.000	4.40	0.892	0.50	14.87	1.264	0.50
40.00	Samsung RT4401-48A	3	0.80	0.000	18.60	0.996	0.50	34.30	1.394	0.50
40.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	121.50	2.400	0.50
40.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	103.57	2.400	0.50
40.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	105.91	4.850	1.00
40.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	140.88	5.592	0.61
40.00	Commscope SBNHH-1D65B	3	0.80	2.000	50.70	8.173	0.69	152.77	9.819	0.69
40.00	JMA Wireless MX06FRO660-03	6	0.80	0.000	60.00	9.872	0.71	199.44	11.468	0.71
Totals	Num Loadings:24	58			6,796.60			11,665.32		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 30

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Dist Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	90.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	1	0.51" (13mm) Hybrid	0.51	0.14	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	8	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	2	2" conduit	2.38	3.65	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	90.00	3	3" conduit	3.50	7.58	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	53.50	1	#20 Threaded Bar	2.49	6.30	N	1	0.00	0.00	0	Y	
0.00	53.50	1	#20 Threaded Bar	2.49	6.30	N	1	0.00	0.00	120	Y	
0.00	53.50	1	#20 Threaded Bar	2.49	6.30	N	1	0.00	0.00	240	Y	
0.00	40.00	10	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	VERIZON WIRELESS

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

0.00 40.00 2 1 5/8" Hybriflex 1.98 1.30 N 0 0.00 0.00 0 0.00 N VERIZON WIRELESS

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	53.50	3	SOL #20 All Thread	80	6.25	6" Angle Bracket	48.0	3.31	5/8" A36 U-Bolt	No

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.1875	23.000	13.576	892.6	20.22	122.67	77.6	76.4	0.0	0.0	14.73	2,664	0.0
5.00		0.1875	22.082	13.029	789.1	19.36	117.77	78.6	70.4	0.0	226.3	14.73	2,537	250.5
10.00		0.1875	21.163	12.483	693.9	18.49	112.87	79.7	64.6	0.0	217.0	14.73	2,413	250.5
15.00		0.1875	20.245	11.936	606.7	17.63	107.97	80.7	59.0	0.0	207.7	14.73	2,293	250.5
20.00		0.1875	19.327	11.390	527.1	16.76	103.07	81.7	53.7	0.0	198.4	14.73	2,175	250.5
25.00		0.1875	18.408	10.843	454.8	15.90	98.18	82.6	48.7	0.0	189.1	14.73	2,060	250.5
30.00		0.1875	17.490	10.297	389.5	15.04	93.28	82.6	43.9	0.0	179.8	14.73	1,949	250.5
35.00		0.1875	16.571	9.750	330.7	14.17	88.38	82.6	39.3	0.0	170.5	14.73	1,841	250.5
40.00		0.1875	15.653	9.204	278.1	13.31	83.48	82.6	35.0	0.0	161.2	14.73	1,735	250.5
42.00		0.1875	15.286	8.985	258.8	12.96	81.52	82.6	33.3	0.0	61.9	14.73	1,694	100.2
45.00		0.1875	14.735	8.657	231.5	12.45	78.59	82.6	30.9	0.0	90.0	14.73	1,633	150.3
49.00	Top - Section 1	0.1875	14.000	8.220	198.1	11.76	74.67	82.6	27.9	0.0	114.9	14.73	1,554	200.4
49.00	Bot - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1		14.73	1,554	
50.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	65.5	14.73	1,423	50.1
53.50	Reinf. Top	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	229.2	14.73	1,423	175.3
55.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	98.2			
60.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
65.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
69.00	Top - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	261.9			
69.00	Bot - Section 3	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
70.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	49.6			
75.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
80.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
85.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
89.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	198.4			
											4,118.8			2,680.3

Load Case: 1.2D + 1.0W	118 mph with No Ice	21 Iterations
Gust Response Factor :1.10		
Dead Load Factor :1.20		
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		89.9	0.0					0.0	0.0	89.9	0.0	0.0	0.0
5.00		176.2	271.6					5.3	742.4	181.5	1,014.0	0.0	0.0
10.00		168.8	260.4					5.7	742.4	174.5	1,002.9	0.0	0.0
15.00		161.5	249.3					6.0	742.4	167.5	991.7	0.0	0.0
20.00		154.2	238.1					6.9	742.4	161.1	980.6	0.0	0.0
25.00		146.8	227.0					7.1	742.4	153.9	969.4	0.0	0.0
30.00		141.2	215.8					7.3	742.4	148.4	958.2	0.0	0.0
35.00		138.1	204.6					7.7	742.4	145.8	947.1	0.0	0.0
40.00	Appurtenance(s)	95.6	193.5	1,803.8	0.0	770.4	1,586.4	8.2	742.4	1,907.5	2,522.3	0.0	0.0
42.00	Appurtenance(s)	67.0	74.3	742.8	0.0	0.0	1,800.0	3.4	271.1	813.2	2,145.3	0.0	0.0
45.00		92.1	108.1					5.3	406.6	97.4	514.6	0.0	0.0
49.00	Top - Section 1	61.7	137.8					7.3	542.1	69.0	679.9	0.0	0.0
50.00		43.2	78.6					1.9	135.5	45.1	214.1	0.0	0.0
53.50	Reinf. Top	48.3	275.0					6.6	474.3	54.9	749.4	0.0	0.0
55.00		64.3	117.9					0.0	79.1	64.3	197.0	0.0	0.0
60.00		100.4	392.9					0.0	263.6	100.4	656.5	0.0	0.0
65.00		92.3	392.9					0.0	263.6	92.3	656.5	0.0	0.0
69.00	Top - Section 2	51.9	314.3					0.0	210.9	51.9	525.2	0.0	0.0
70.00		63.5	59.5					0.0	52.7	63.5	112.3	0.0	0.0
75.00		107.0	297.7					0.0	263.6	107.0	561.3	0.0	0.0
80.00		109.0	297.7					0.0	263.6	109.0	561.3	0.0	0.0
85.00		99.7	297.7					0.0	263.6	99.7	561.3	0.0	0.0
89.00	Appurtenance(s)	44.7	238.1	1,058.1	0.0	0.0	2,959.4	0.0	210.9	1,102.8	3,408.5	0.0	0.0
Totals:										6,000.65	20,929.3	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

6/16/2021 3:42:10 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0W

118 mph with No Ice

21 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

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	-22.73	-8.07	0.00	-509.56	0.00	509.56	948.37	238.26	490.93	444.99	0.00	0.00	0.300
5.00	-21.68	-7.96	0.00	-469.20	0.00	469.20	922.11	228.66	452.20	415.11	0.11	-0.20	0.280
10.00	-20.66	-7.85	0.00	-429.39	0.00	429.39	894.84	219.07	415.06	385.79	0.42	-0.39	0.260
15.00	-19.64	-7.74	0.00	-390.14	0.00	390.14	866.57	209.48	379.52	357.10	0.92	-0.58	0.240
20.00	-18.64	-7.62	0.00	-351.45	0.00	351.45	837.31	199.89	345.57	329.10	1.63	-0.76	0.219
25.00	-17.65	-7.51	0.00	-313.33	0.00	313.33	805.59	190.30	313.20	301.29	2.52	-0.93	0.199
30.00	-16.67	-7.39	0.00	-275.79	0.00	275.79	764.99	180.71	282.43	271.54	3.58	-1.10	0.180
35.00	-15.71	-7.27	0.00	-238.85	0.00	238.85	724.39	171.11	253.25	243.33	4.82	-1.26	0.160
40.00	-13.22	-5.32	0.00	-201.75	0.00	201.75	683.78	161.52	225.66	216.67	6.22	-1.40	0.137
42.00	-11.09	-4.47	0.00	-191.10	0.00	191.10	667.54	157.69	215.07	206.44	6.82	-1.46	0.130
45.00	-10.58	-4.38	0.00	-177.69	0.00	177.69	643.18	151.93	199.66	191.56	7.76	-1.54	0.122
49.00	-9.89	-4.30	0.00	-160.19	0.00	160.19	610.70	144.26	180.01	172.58	9.09	-1.64	0.112
49.00	-9.89	-4.30	0.00	-160.19	0.00	160.19	606.13	181.84	195.84	197.07	9.09	-1.64	0.163
50.00	-9.68	-4.26	0.00	-155.89	0.00	155.89	606.13	181.84	195.84	197.07	9.44	-1.66	0.170
53.50	-8.93	-4.19	0.00	-140.99	0.00	140.99	606.13	181.84	195.84	197.07	10.69	-1.75	0.154
53.50	-8.93	-4.19	0.00	-140.99	0.00	140.99	606.13	181.84	195.84	197.07	10.69	-1.75	0.731
55.00	-8.71	-4.16	0.00	-134.71	0.00	134.71	606.13	181.84	195.84	197.07	11.24	-1.78	0.698
60.00	-8.03	-4.10	0.00	-113.92	0.00	113.92	606.13	181.84	195.84	197.07	13.37	-2.27	0.592
65.00	-7.35	-4.02	0.00	-93.42	0.00	93.42	606.13	181.84	195.84	197.07	15.97	-2.68	0.487
69.00	-6.82	-3.96	0.00	-77.34	0.00	77.34	606.13	181.84	195.84	197.07	18.33	-2.95	0.404
69.00	-6.82	-3.96	0.00	-77.34	0.00	77.34	459.24	137.77	149.89	150.79	18.33	-2.95	0.529
70.00	-6.70	-3.92	0.00	-73.38	0.00	73.38	459.24	137.77	149.89	150.79	18.95	-3.01	0.502
75.00	-6.12	-3.81	0.00	-53.79	0.00	53.79	459.24	137.77	149.89	150.79	22.28	-3.33	0.371
80.00	-5.56	-3.68	0.00	-34.75	0.00	34.75	459.24	137.77	149.89	150.79	25.89	-3.56	0.243
85.00	-5.00	-3.55	0.00	-16.34	0.00	16.34	459.24	137.77	149.89	150.79	29.69	-3.69	0.120
89.00	0.00	-3.22	0.00	-2.12	0.00	2.12	459.24	137.77	149.89	150.79	32.80	-3.72	0.015

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

6/16/2021 3:42:10 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.0W **118 mph with No Ice (Reduced DL)** **21 Iterations**

Gust Response Factor :1.10
 Dead Load Factor :0.90
 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		89.9	0.0					0.0	0.0	89.9	0.0	0.0	0.0
5.00		176.2	203.7					5.3	556.8	181.5	760.5	0.0	0.0
10.00		168.8	195.3					5.7	556.8	174.5	752.2	0.0	0.0
15.00		161.5	187.0					6.0	556.8	167.5	743.8	0.0	0.0
20.00		154.2	178.6					6.9	556.8	161.1	735.4	0.0	0.0
25.00		146.8	170.2					7.1	556.8	153.9	727.0	0.0	0.0
30.00		141.2	161.9					7.3	556.8	148.4	718.7	0.0	0.0
35.00		138.1	153.5					7.7	556.8	145.8	710.3	0.0	0.0
40.00	Appurtenance(s)	95.6	145.1	1,803.8	0.0	770.4	1,189.8	8.2	556.8	1,907.5	1,891.7	0.0	0.0
42.00	Appurtenance(s)	67.0	55.7	742.8	0.0	0.0	1,350.0	3.4	203.3	813.2	1,609.0	0.0	0.0
45.00		92.1	81.0					5.3	304.9	97.4	386.0	0.0	0.0
49.00	Top - Section 1	61.7	103.4					7.3	406.6	69.0	510.0	0.0	0.0
50.00		43.2	58.9					1.9	101.6	45.1	160.6	0.0	0.0
53.50	Reinf. Top	48.3	206.3					6.6	355.8	54.9	562.0	0.0	0.0
55.00		64.3	88.4					0.0	59.3	64.3	147.7	0.0	0.0
60.00		100.4	294.6					0.0	197.7	100.4	492.4	0.0	0.0
65.00		92.3	294.6					0.0	197.7	92.3	492.4	0.0	0.0
69.00	Top - Section 2	51.9	235.7					0.0	158.2	51.9	393.9	0.0	0.0
70.00		63.5	44.6					0.0	39.5	63.5	84.2	0.0	0.0
75.00		107.0	223.2					0.0	197.7	107.0	421.0	0.0	0.0
80.00		109.0	223.2					0.0	197.7	109.0	421.0	0.0	0.0
85.00		99.7	223.2					0.0	197.7	99.7	421.0	0.0	0.0
89.00	Appurtenance(s)	44.7	178.6	1,058.1	0.0	0.0	2,219.6	0.0	158.2	1,102.8	2,556.4	0.0	0.0
								Totals:		6,000.65	15,697.0	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.0W	118 mph with No Ice (Reduced DL)	21 Iterations
Gust Response Factor :1.10		
Dead Load Factor :0.90		
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	-17.04	-8.06	0.00	-502.71	0.00	502.71	948.37	238.26	490.93	444.99	0.00	0.00	0.293
5.00	-16.25	-7.93	0.00	-462.41	0.00	462.41	922.11	228.66	452.20	415.11	0.10	-0.19	0.274
10.00	-15.48	-7.80	0.00	-422.74	0.00	422.74	894.84	219.07	415.06	385.79	0.41	-0.38	0.254
15.00	-14.71	-7.68	0.00	-383.72	0.00	383.72	866.57	209.48	379.52	357.10	0.91	-0.57	0.234
20.00	-13.95	-7.55	0.00	-345.33	0.00	345.33	837.31	199.89	345.57	329.10	1.60	-0.75	0.213
25.00	-13.21	-7.43	0.00	-307.58	0.00	307.58	805.59	190.30	313.20	301.29	2.48	-0.92	0.193
30.00	-12.47	-7.30	0.00	-270.45	0.00	270.45	764.99	180.71	282.43	271.54	3.53	-1.08	0.174
35.00	-11.75	-7.17	0.00	-233.96	0.00	233.96	724.39	171.11	253.25	243.33	4.75	-1.23	0.155
40.00	-9.89	-5.24	0.00	-197.34	0.00	197.34	683.78	161.52	225.66	216.67	6.12	-1.38	0.132
42.00	-8.30	-4.39	0.00	-186.87	0.00	186.87	667.54	157.69	215.07	206.44	6.71	-1.43	0.125
45.00	-7.91	-4.30	0.00	-173.70	0.00	173.70	643.18	151.93	199.66	191.56	7.63	-1.51	0.118
49.00	-7.39	-4.22	0.00	-156.50	0.00	156.50	610.70	144.26	180.01	172.58	8.94	-1.61	0.108
49.00	-7.39	-4.22	0.00	-156.50	0.00	156.50	606.13	181.84	195.84	197.07	8.94	-1.61	0.157
50.00	-7.23	-4.18	0.00	-152.28	0.00	152.28	606.13	181.84	195.84	197.07	9.28	-1.63	0.164
53.50	-6.67	-4.12	0.00	-137.65	0.00	137.65	606.13	181.84	195.84	197.07	10.51	-1.72	0.148
53.50	-6.67	-4.12	0.00	-137.65	0.00	137.65	606.13	181.84	195.84	197.07	10.51	-1.72	0.710
55.00	-6.50	-4.08	0.00	-131.48	0.00	131.48	606.13	181.84	195.84	197.07	11.05	-1.75	0.678
60.00	-5.98	-4.00	0.00	-111.10	0.00	111.10	606.13	181.84	195.84	197.07	13.14	-2.23	0.574
65.00	-5.47	-3.92	0.00	-91.08	0.00	91.08	606.13	181.84	195.84	197.07	15.69	-2.62	0.472
69.00	-5.07	-3.87	0.00	-75.39	0.00	75.39	606.13	181.84	195.84	197.07	18.00	-2.89	0.391
69.00	-5.07	-3.87	0.00	-75.39	0.00	75.39	459.24	137.77	149.89	150.79	18.00	-2.89	0.512
70.00	-4.98	-3.82	0.00	-71.52	0.00	71.52	459.24	137.77	149.89	150.79	18.61	-2.94	0.486
75.00	-4.55	-3.71	0.00	-52.44	0.00	52.44	459.24	137.77	149.89	150.79	21.86	-3.26	0.358
80.00	-4.12	-3.59	0.00	-33.91	0.00	33.91	459.24	137.77	149.89	150.79	25.40	-3.48	0.235
85.00	-3.70	-3.47	0.00	-15.98	0.00	15.98	459.24	137.77	149.89	150.79	29.11	-3.61	0.115
89.00	0.00	-3.22	0.00	-2.12	0.00	2.12	459.24	137.77	149.89	150.79	32.15	-3.64	0.015

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	20 Iterations
Gust Response Factor :1.10	Ice Dead Load 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		28.3	0.0					0.0	0.0	28.3	0.0	0.0	0.0
5.00		55.8	382.2					20.0	788.6	75.8	1,170.8	0.0	0.0
10.00		53.9	379.4					21.6	795.4	75.5	1,174.8	0.0	0.0
15.00		51.9	369.5					22.5	798.9	74.4	1,168.4	0.0	0.0
20.00		49.9	357.2					26.0	801.4	75.9	1,158.6	0.0	0.0
25.00		47.8	343.7					26.7	803.3	74.6	1,147.0	0.0	0.0
30.00		46.3	329.4					27.4	804.9	73.7	1,134.3	0.0	0.0
35.00		45.6	314.5					28.7	806.3	74.3	1,120.8	0.0	0.0
40.00	Appurtenance(s)	31.7	299.2	385.9	0.0	166.2	2,854.9	30.5	807.5	448.2	3,961.5	0.0	0.0
42.00	Appurtenance(s)	22.4	116.0	190.6	0.0	0.0	2,087.2	12.7	297.4	225.7	2,500.5	0.0	0.0
45.00		31.0	168.9					19.6	446.3	50.5	615.3	0.0	0.0
49.00	Top - Section 1	21.6	215.8					27.0	595.7	48.6	811.5	0.0	0.0
50.00		18.1	96.1					7.0	149.0	25.1	245.1	0.0	0.0
53.50	Reinf. Top	20.2	336.7					25.0	521.8	45.2	858.5	0.0	0.0
55.00		26.9	144.4					0.0	79.1	26.9	223.5	0.0	0.0
60.00		42.1	482.0					0.0	263.6	42.1	745.6	0.0	0.0
65.00		38.7	482.8					0.0	263.6	38.7	746.4	0.0	0.0
69.00	Top - Section 2	21.8	386.8					0.0	210.9	21.8	597.7	0.0	0.0
70.00		26.7	77.7					0.0	52.7	26.7	130.4	0.0	0.0
75.00		45.0	389.0					0.0	263.6	45.0	652.7	0.0	0.0
80.00		45.9	389.7					0.0	263.6	45.9	653.3	0.0	0.0
85.00		42.0	390.3					0.0	263.6	42.0	653.9	0.0	0.0
89.00	Appurtenance(s)	18.8	312.7	273.7	0.0	0.0	3,799.7	0.0	210.9	292.5	4,323.3	0.0	0.0
Totals:										1,977.26	25,794.0	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	20 Iterations
Gust Response Factor :1.10	Ice Dead Load 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	-28.97	-2.42	0.00	-143.72	0.00	143.72	948.37	238.26	490.93	444.99	0.00	0.00	0.096
5.00	-27.79	-2.37	0.00	-131.60	0.00	131.60	922.11	228.66	452.20	415.11	0.03	-0.06	0.089
10.00	-26.62	-2.32	0.00	-119.74	0.00	119.74	894.84	219.07	415.06	385.79	0.12	-0.11	0.083
15.00	-25.45	-2.27	0.00	-108.13	0.00	108.13	866.57	209.48	379.52	357.10	0.26	-0.16	0.077
20.00	-24.29	-2.21	0.00	-96.80	0.00	96.80	837.31	199.89	345.57	329.10	0.46	-0.21	0.070
25.00	-23.14	-2.15	0.00	-85.76	0.00	85.76	805.59	190.30	313.20	301.29	0.70	-0.26	0.064
30.00	-22.00	-2.08	0.00	-75.03	0.00	75.03	764.99	180.71	282.43	271.54	1.00	-0.30	0.058
35.00	-20.88	-2.02	0.00	-64.60	0.00	64.60	724.39	171.11	253.25	243.33	1.34	-0.35	0.052
40.00	-16.92	-1.55	0.00	-54.34	0.00	54.34	683.78	161.52	225.66	216.67	1.73	-0.39	0.044
42.00	-14.42	-1.31	0.00	-51.24	0.00	51.24	667.54	157.69	215.07	206.44	1.89	-0.40	0.041
45.00	-13.81	-1.27	0.00	-47.29	0.00	47.29	643.18	151.93	199.66	191.56	2.15	-0.42	0.039
49.00	-12.99	-1.21	0.00	-42.23	0.00	42.23	610.70	144.26	180.01	172.58	2.52	-0.45	0.035
49.00	-12.99	-1.21	0.00	-42.23	0.00	42.23	606.13	181.84	195.84	197.07	2.52	-0.45	0.053
50.00	-12.75	-1.19	0.00	-41.02	0.00	41.02	606.13	181.84	195.84	197.07	2.61	-0.46	0.054
53.50	-11.89	-1.14	0.00	-36.85	0.00	36.85	606.13	181.84	195.84	197.07	2.96	-0.48	0.049
53.50	-11.89	-1.14	0.00	-36.85	0.00	36.85	606.13	181.84	195.84	197.07	2.96	-0.48	0.207
55.00	-11.67	-1.13	0.00	-35.14	0.00	35.14	606.13	181.84	195.84	197.07	3.11	-0.49	0.198
60.00	-10.92	-1.10	0.00	-29.50	0.00	29.50	606.13	181.84	195.84	197.07	3.69	-0.61	0.168
65.00	-10.17	-1.07	0.00	-24.00	0.00	24.00	606.13	181.84	195.84	197.07	4.39	-0.72	0.139
69.00	-9.57	-1.05	0.00	-19.72	0.00	19.72	606.13	181.84	195.84	197.07	5.02	-0.79	0.116
69.00	-9.57	-1.05	0.00	-19.72	0.00	19.72	459.24	137.77	149.89	150.79	5.02	-0.79	0.152
70.00	-9.44	-1.03	0.00	-18.68	0.00	18.68	459.24	137.77	149.89	150.79	5.19	-0.80	0.144
75.00	-8.79	-0.98	0.00	-13.55	0.00	13.55	459.24	137.77	149.89	150.79	6.07	-0.89	0.109
80.00	-8.14	-0.93	0.00	-8.64	0.00	8.64	459.24	137.77	149.89	150.79	7.03	-0.94	0.075
85.00	-7.48	-0.88	0.00	-3.99	0.00	3.99	459.24	137.77	149.89	150.79	8.04	-0.97	0.043
89.00	0.00	-0.75	0.00	-0.46	0.00	0.46	459.24	137.77	149.89	150.79	8.86	-0.98	0.003

Load Case: 1.0D + 1.0W	Serviceability 60 mph	20 Iterations
Gust Response Factor :1.10		
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		20.8	0.0					0.0	0.0	20.8	0.0	0.0	0.0
5.00		40.7	226.3					1.2	618.7	42.0	845.0	0.0	0.0
10.00		39.1	217.0					1.3	618.7	40.4	835.7	0.0	0.0
15.00		37.4	207.7					1.4	618.7	38.7	826.4	0.0	0.0
20.00		35.7	198.4					1.6	618.7	37.3	817.1	0.0	0.0
25.00		34.3	189.1					1.6	618.7	35.9	807.8	0.0	0.0
30.00		33.8	179.8					1.7	618.7	35.5	798.5	0.0	0.0
35.00		34.0	170.5					1.8	618.7	35.8	789.2	0.0	0.0
40.00	Appurtenance(s)	23.9	161.2	417.3	0.0	178.2	1,322.0	1.9	618.7	443.1	2,101.9	0.0	0.0
42.00	Appurtenance(s)	17.2	61.9	171.8	0.0	0.0	1,500.0	0.8	225.9	189.8	1,787.8	0.0	0.0
45.00		24.1	90.0					1.2	338.8	25.3	428.9	0.0	0.0
49.00	Top - Section 1	16.8	114.9					1.7	451.8	18.5	566.6	0.0	0.0
50.00		13.6	65.5					0.4	112.9	14.0	178.4	0.0	0.0
53.50	Reinf. Top	15.2	229.2					1.5	395.3	16.7	624.5	0.0	0.0
55.00		19.9	98.2					0.0	65.9	19.9	164.1	0.0	0.0
60.00		30.9	327.4					0.0	219.7	30.9	547.1	0.0	0.0
65.00		28.1	327.4					0.0	219.7	28.1	547.1	0.0	0.0
69.00	Top - Section 2	15.7	261.9					0.0	175.8	15.7	437.7	0.0	0.0
70.00		19.0	49.6					0.0	43.9	19.0	93.5	0.0	0.0
75.00		31.9	248.0					0.0	219.7	31.9	467.7	0.0	0.0
80.00		32.2	248.0					0.0	219.7	32.2	467.7	0.0	0.0
85.00		29.2	248.0					0.0	219.7	29.2	467.7	0.0	0.0
89.00	Appurtenance(s)	13.0	198.4	244.8	0.0	0.0	2,466.2	0.0	175.8	257.8	2,840.4	0.0	0.0
Totals:										1,458.63	17,441.1	0.00	0.00

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W	Serviceability 60 mph	20 Iterations
Gust Response Factor :1.10		
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	-18.95	-1.94	0.00	-121.52	0.00	121.52	948.37	238.26	490.93	444.99	0.00	0.00	0.078
5.00	-18.10	-1.91	0.00	-111.84	0.00	111.84	922.11	228.66	452.20	415.11	0.03	-0.05	0.073
10.00	-17.27	-1.88	0.00	-102.30	0.00	102.30	894.84	219.07	415.06	385.79	0.10	-0.09	0.068
15.00	-16.44	-1.85	0.00	-92.89	0.00	92.89	866.57	209.48	379.52	357.10	0.22	-0.14	0.063
20.00	-15.62	-1.82	0.00	-83.63	0.00	83.63	837.31	199.89	345.57	329.10	0.39	-0.18	0.058
25.00	-14.81	-1.80	0.00	-74.51	0.00	74.51	805.59	190.30	313.20	301.29	0.60	-0.22	0.053
30.00	-14.01	-1.77	0.00	-65.52	0.00	65.52	764.99	180.71	282.43	271.54	0.85	-0.26	0.048
35.00	-13.22	-1.74	0.00	-56.69	0.00	56.69	724.39	171.11	253.25	243.33	1.15	-0.30	0.043
40.00	-11.12	-1.29	0.00	-47.83	0.00	47.83	683.78	161.52	225.66	216.67	1.48	-0.33	0.037
42.00	-9.33	-1.09	0.00	-45.26	0.00	45.26	667.54	157.69	215.07	206.44	1.62	-0.35	0.034
45.00	-8.90	-1.06	0.00	-42.00	0.00	42.00	643.18	151.93	199.66	191.56	1.85	-0.37	0.032
49.00	-8.34	-1.04	0.00	-37.75	0.00	37.75	610.70	144.26	180.01	172.58	2.16	-0.39	0.030
49.00	-8.34	-1.04	0.00	-37.75	0.00	37.75	606.13	181.84	195.84	197.07	2.16	-0.39	0.044
50.00	-8.16	-1.03	0.00	-36.70	0.00	36.70	606.13	181.84	195.84	197.07	2.25	-0.40	0.045
53.50	-7.53	-1.01	0.00	-33.10	0.00	33.10	606.13	181.84	195.84	197.07	2.54	-0.42	0.041
53.50	-7.53	-1.01	0.00	-33.10	0.00	33.10	606.13	181.84	195.84	197.07	2.54	-0.42	0.180
55.00	-7.37	-1.00	0.00	-31.59	0.00	31.59	606.13	181.84	195.84	197.07	2.68	-0.42	0.172
60.00	-6.82	-0.97	0.00	-26.60	0.00	26.60	606.13	181.84	195.84	197.07	3.18	-0.54	0.146
65.00	-6.27	-0.95	0.00	-21.73	0.00	21.73	606.13	181.84	195.84	197.07	3.79	-0.63	0.121
69.00	-5.83	-0.93	0.00	-17.93	0.00	17.93	606.13	181.84	195.84	197.07	4.35	-0.70	0.101
69.00	-5.83	-0.93	0.00	-17.93	0.00	17.93	459.24	137.77	149.89	150.79	4.35	-0.70	0.132
70.00	-5.74	-0.92	0.00	-17.00	0.00	17.00	459.24	137.77	149.89	150.79	4.50	-0.71	0.125
75.00	-5.27	-0.88	0.00	-12.42	0.00	12.42	459.24	137.77	149.89	150.79	5.28	-0.78	0.094
80.00	-4.80	-0.85	0.00	-7.99	0.00	7.99	459.24	137.77	149.89	150.79	6.13	-0.84	0.064
85.00	-4.34	-0.81	0.00	-3.75	0.00	3.75	459.24	137.77	149.89	150.79	7.03	-0.87	0.034
89.00	0.00	-0.75	0.00	-0.49	0.00	0.49	459.24	137.77	149.89	150.79	7.76	-0.87	0.003

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period (S_s):	0.20
Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.05
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}):	0.21
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.04
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.77
Total Unfactored Dead Load:	18.95 k
Seismic Base Shear (E):	0.74 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
22	87.00	374	1,010	0.043	32	465
21	82.50	468	1,149	0.049	36	581
20	77.50	468	1,029	0.044	32	581
19	72.50	468	914	0.039	29	581
18	69.50	94	170	0.007	5	116
17	67.00	438	744	0.032	24	544
16	62.50	547	822	0.035	26	679
15	57.50	547	710	0.030	22	679
14	54.25	164	192	0.008	6	204
13	51.75	624	672	0.029	21	776
12	49.50	178	178	0.008	6	222
11	47.00	567	514	0.022	16	704
10	43.50	429	340	0.015	11	533
9	41.00	288	205	0.009	6	357
8	37.50	780	475	0.020	15	969
7	32.50	789	373	0.016	12	980
6	27.50	799	281	0.012	9	992
5	22.50	808	199	0.009	6	1,003
4	17.50	817	129	0.006	4	1,015
3	12.50	826	72	0.003	2	1,026
2	7.50	836	30	0.001	1	1,038
1	2.50	845	4	0.000	0	1,050
Kaelus DBCT108F1V92-	89.00	56	156	0.007	5	69
CCI DTMAP7819VG12A	89.00	77	216	0.009	7	95
Raycap DC6-48-60-0-8	89.00	33	92	0.004	3	41

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

Raycap DC6-48-60-18-	89.00	64	179	0.008	6	79
Ericsson RRUS 4426 B	89.00	97	272	0.012	9	120
Ericsson 4478 Band 1	89.00	120	337	0.014	11	149
Ericsson RRUS 4478 B	89.00	112	315	0.013	10	139
Ericsson RRUS 11 (Ba	89.00	110	309	0.013	10	137
Ericsson RRUS 32 (50	89.00	102	285	0.012	9	126
Ericsson RRUS 32 B2	89.00	106	298	0.013	9	132
Powerwave Allgon 777	89.00	70	197	0.008	6	87
Quintel QS66512-2	89.00	222	624	0.027	20	276
CCI OPA-65R-LCUU-H6	89.00	146	410	0.018	13	181
Kathrein Scala 80010	89.00	195	548	0.023	17	242
Modified Platform w/	89.00	2,466	6,929	0.296	219	3,063
Flat Low Profile Pla	42.00	1,500	1,116	0.048	35	1,863
Samsung Outdoor CBRS	40.00	13	9	0.000	0	16
Samsung RT4401-48A	40.00	56	38	0.002	1	69
Samsung B2/B66A RRH-	40.00	253	173	0.007	5	314
Samsung B5/B13 RRH-B	40.00	211	144	0.006	5	262
Raycap RCMD-6627-PF	40.00	32	22	0.001	1	40
Samsung MT6407-77A	40.00	245	167	0.007	5	304
Commscope SBNHH-1D65	40.00	152	104	0.004	3	189
JMA Wireless MX06FRO	40.00	360	246	0.011	8	447
		18,950	23,398	1.000	739	23,536

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
22	87.00	374	1,010	0.043	32	321
21	82.50	468	1,149	0.049	36	401
20	77.50	468	1,029	0.044	32	401
19	72.50	468	914	0.039	29	401
18	69.50	94	170	0.007	5	80
17	67.00	438	744	0.032	24	376
16	62.50	547	822	0.035	26	469
15	57.50	547	710	0.030	22	469
14	54.25	164	192	0.008	6	141
13	51.75	624	672	0.029	21	536
12	49.50	178	178	0.008	6	153
11	47.00	567	514	0.022	16	486
10	43.50	429	340	0.015	11	368
9	41.00	288	205	0.009	6	247
8	37.50	780	475	0.020	15	669
7	32.50	789	373	0.016	12	677
6	27.50	799	281	0.012	9	685
5	22.50	808	199	0.009	6	693
4	17.50	817	129	0.006	4	701
3	12.50	826	72	0.003	2	709
2	7.50	836	30	0.001	1	717
1	2.50	845	4	0.000	0	725
Kaelus DBCT108F1V92-	89.00	56	156	0.007	5	48
CCI DTMAP7819VG12A	89.00	77	216	0.009	7	66
Raycap DC6-48-60-0-8	89.00	33	92	0.004	3	28
Raycap DC6-48-60-18-	89.00	64	179	0.008	6	55
Ericsson RRUS 4426 B	89.00	97	272	0.012	9	83
Ericsson 4478 Band 1	89.00	120	337	0.014	11	103
Ericsson RRUS 4478 B	89.00	112	315	0.013	10	96
Ericsson RRUS 11 (Ba	89.00	110	309	0.013	10	94
Ericsson RRUS 32 (50	89.00	102	285	0.012	9	87
Ericsson RRUS 32 B2	89.00	106	298	0.013	9	91
Powerwave Allgon 777	89.00	70	197	0.008	6	60
Quintel QS66512-2	89.00	222	624	0.027	20	190

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

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Customer: VERIZON WIRELESS

CCI OPA-65R-LCUU-H6	89.00	146	410	0.018	13	125
Kathrein Scala 80010	89.00	195	548	0.023	17	167
Modified Platform w/ Flat Low Profile Pla	89.00	2,466	6,929	0.296	219	2,116
	42.00	1,500	1,116	0.048	35	1,287
Samsung Outdoor CBRS	40.00	13	9	0.000	0	11
Samsung RT4401-48A	40.00	56	38	0.002	1	48
Samsung B2/B66A RRH-	40.00	253	173	0.007	5	217
Samsung B5/B13 RRH-B	40.00	211	144	0.006	5	181
Raycap RCMDC-6627-PF	40.00	32	22	0.001	1	27
Samsung MT6407-77A	40.00	245	167	0.007	5	210
Commscope SBNHH-1D65	40.00	152	104	0.004	3	130
JMA Wireless MX06FRO	40.00	360	246	0.011	8	309
		18,950	23,398	1.000	739	16,258

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

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	-22.49	-0.74	0.00	-56.12	0.00	56.12	948.37	238.26	490.93	444.99	0.00	0.00	0.043
5.00	-21.45	-0.75	0.00	-52.41	0.00	52.41	922.11	228.66	452.20	415.11	0.01	-0.02	0.041
10.00	-20.42	-0.75	0.00	-48.66	0.00	48.66	894.84	219.07	415.06	385.79	0.05	-0.04	0.039
15.00	-19.41	-0.76	0.00	-44.89	0.00	44.89	866.57	209.48	379.52	357.10	0.10	-0.06	0.036
20.00	-18.40	-0.76	0.00	-41.10	0.00	41.10	837.31	199.89	345.57	329.10	0.18	-0.09	0.034
25.00	-17.41	-0.75	0.00	-37.32	0.00	37.32	805.59	190.30	313.20	301.29	0.28	-0.11	0.032
30.00	-16.43	-0.74	0.00	-33.56	0.00	33.56	764.99	180.71	282.43	271.54	0.41	-0.13	0.029
35.00	-15.46	-0.73	0.00	-29.84	0.00	29.84	724.39	171.11	253.25	243.33	0.55	-0.15	0.027
40.00	-13.46	-0.69	0.00	-26.19	0.00	26.19	683.78	161.52	225.66	216.67	0.71	-0.16	0.024
42.00	-11.07	-0.64	0.00	-24.80	0.00	24.80	667.54	157.69	215.07	206.44	0.78	-0.17	0.022
45.00	-10.36	-0.63	0.00	-22.87	0.00	22.87	643.18	151.93	199.66	191.56	0.89	-0.18	0.021
49.00	-10.14	-0.62	0.00	-20.37	0.00	20.37	610.70	144.26	180.01	172.58	1.05	-0.19	0.019
49.00	-10.14	-0.62	0.00	-20.37	0.00	20.37	606.13	181.84	195.84	197.07	1.05	-0.19	0.029
50.00	-9.36	-0.60	0.00	-19.75	0.00	19.75	606.13	181.84	195.84	197.07	1.09	-0.20	0.029
53.50	-9.16	-0.59	0.00	-17.65	0.00	17.65	606.13	181.84	195.84	197.07	1.24	-0.21	0.027
53.50	-9.16	-0.59	0.00	-17.65	0.00	17.65	606.13	181.84	195.84	197.07	1.24	-0.21	0.105
55.00	-8.48	-0.57	0.00	-16.76	0.00	16.76	606.13	181.84	195.84	197.07	1.31	-0.21	0.099
60.00	-7.80	-0.55	0.00	-13.90	0.00	13.90	606.13	181.84	195.84	197.07	1.56	-0.27	0.083
65.00	-7.26	-0.53	0.00	-11.14	0.00	11.14	606.13	181.84	195.84	197.07	1.88	-0.32	0.069
69.00	-7.14	-0.53	0.00	-9.02	0.00	9.02	606.13	181.84	195.84	197.07	2.16	-0.35	0.058
69.00	-7.14	-0.53	0.00	-9.02	0.00	9.02	459.24	137.77	149.89	150.79	2.16	-0.35	0.075
70.00	-6.56	-0.50	0.00	-8.49	0.00	8.49	459.24	137.77	149.89	150.79	2.24	-0.36	0.071
75.00	-5.98	-0.46	0.00	-6.01	0.00	6.01	459.24	137.77	149.89	150.79	2.63	-0.40	0.053
80.00	-5.40	-0.43	0.00	-3.69	0.00	3.69	459.24	137.77	149.89	150.79	3.06	-0.42	0.036
85.00	-4.93	-0.39	0.00	-1.56	0.00	1.56	459.24	137.77	149.89	150.79	3.52	-0.44	0.021
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.88	-0.44	0.000

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

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	-15.53	-0.74	0.00	-55.17	0.00	55.17	948.37	238.26	490.93	444.99	0.00	0.00	0.039
5.00	-14.82	-0.75	0.00	-51.46	0.00	51.46	922.11	228.66	452.20	415.11	0.01	-0.02	0.037
10.00	-14.11	-0.75	0.00	-47.73	0.00	47.73	894.84	219.07	415.06	385.79	0.05	-0.04	0.035
15.00	-13.41	-0.75	0.00	-43.99	0.00	43.99	866.57	209.48	379.52	357.10	0.10	-0.06	0.033
20.00	-12.71	-0.75	0.00	-40.24	0.00	40.24	837.31	199.89	345.57	329.10	0.18	-0.08	0.030
25.00	-12.03	-0.74	0.00	-36.51	0.00	36.51	805.59	190.30	313.20	301.29	0.28	-0.10	0.028
30.00	-11.35	-0.73	0.00	-32.81	0.00	32.81	764.99	180.71	282.43	271.54	0.40	-0.12	0.026
35.00	-10.68	-0.72	0.00	-29.16	0.00	29.16	724.39	171.11	253.25	243.33	0.54	-0.14	0.024
40.00	-9.30	-0.68	0.00	-25.57	0.00	25.57	683.78	161.52	225.66	216.67	0.70	-0.16	0.022
42.00	-7.64	-0.63	0.00	-24.21	0.00	24.21	667.54	157.69	215.07	206.44	0.77	-0.17	0.020
45.00	-7.16	-0.62	0.00	-22.31	0.00	22.31	643.18	151.93	199.66	191.56	0.88	-0.18	0.019
49.00	-7.00	-0.61	0.00	-19.85	0.00	19.85	610.70	144.26	180.01	172.58	1.03	-0.19	0.017
49.00	-7.00	-0.61	0.00	-19.85	0.00	19.85	606.13	181.84	195.84	197.07	1.03	-0.19	0.026
50.00	-6.47	-0.59	0.00	-19.24	0.00	19.24	606.13	181.84	195.84	197.07	1.07	-0.19	0.026
53.50	-6.33	-0.58	0.00	-17.18	0.00	17.18	606.13	181.84	195.84	197.07	1.22	-0.20	0.024
53.50	-6.33	-0.58	0.00	-17.18	0.00	17.18	606.13	181.84	195.84	197.07	1.22	-0.20	0.098
55.00	-5.86	-0.56	0.00	-16.31	0.00	16.31	606.13	181.84	195.84	197.07	1.28	-0.21	0.092
60.00	-5.39	-0.54	0.00	-13.50	0.00	13.50	606.13	181.84	195.84	197.07	1.53	-0.27	0.077
65.00	-5.01	-0.52	0.00	-10.81	0.00	10.81	606.13	181.84	195.84	197.07	1.84	-0.31	0.063
69.00	-4.93	-0.51	0.00	-8.75	0.00	8.75	606.13	181.84	195.84	197.07	2.11	-0.35	0.053
69.00	-4.93	-0.51	0.00	-8.75	0.00	8.75	459.24	137.77	149.89	150.79	2.11	-0.35	0.069
70.00	-4.53	-0.48	0.00	-8.23	0.00	8.23	459.24	137.77	149.89	150.79	2.19	-0.35	0.064
75.00	-4.13	-0.45	0.00	-5.82	0.00	5.82	459.24	137.77	149.89	150.79	2.58	-0.39	0.048
80.00	-3.73	-0.41	0.00	-3.57	0.00	3.57	459.24	137.77	149.89	150.79	3.00	-0.41	0.032
85.00	-3.41	-0.38	0.00	-1.51	0.00	1.51	459.24	137.77	149.89	150.79	3.44	-0.42	0.017
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.79	-0.43	0.000

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

6/16/2021 3:42:15 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 + 1.0W	8.07	0.00	22.73	0.00	0.00	509.56	53.50	0.73
0.9D + 1.0W	8.06	0.00	17.04	0.00	0.00	502.71	53.50	0.71
1.2D + 1.0Di + 1.0Wi	2.42	0.00	28.97	0.00	0.00	143.72	53.50	0.21
1.2D + 1.0Ev + 1.0Eh	0.74	0.00	22.49	0.00	0.00	56.12	53.50	0.10
0.9D - 1.0Ev + 1.0Eh	0.74	0.00	15.53	0.00	0.00	55.17	53.50	0.10
1.0D + 1.0W	1.94	0.00	18.95	0.00	0.00	121.52	53.50	0.18

Site Number: 302526

Code: ANSI/TIA-222-H

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Site Name: Naugatuck (telephone Pole), CT Engineering Number:13683578_C3_02

6/16/2021 3:42:15 PM

Customer: VERIZON WIRELESS

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	53.50	(3) SOL-#20 All Thread Bar	259.3	12.4	16.8	0.740	164.3	297.5	0.552

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors					Lower Termination Connectors				
			MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	53.50	(3) SOL-#20 All Thread Bar	64.6	12.0	6	8	0.673	0.0	12.0	0	0	0.000

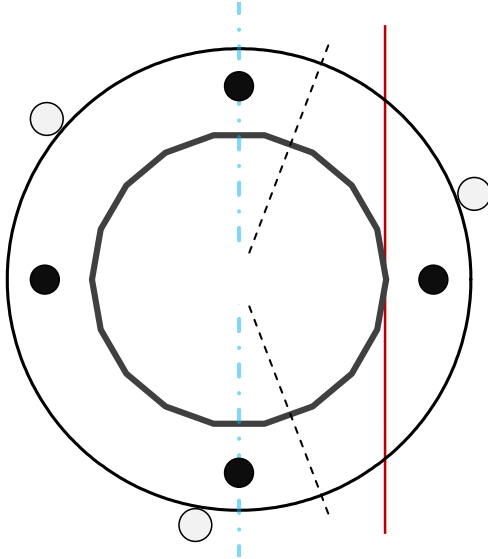
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	23	in
Thickness	3/16	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	509.6	k-ft
Axial, Pu	22.7	k
Shear, Vu	8.1	k
Neutral Axis	270	°

Report Capacities		
Component	Capacity	Result
Base Plate	17%	Pass
Anchor Rods	22%	Pass
Dwyidag	42%	Pass

Base Plate		
Shape	Round	-
Diameter, ϕ	37	in
Thickness	1 1/2	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	137.0	k
Bending Stress, ϕMn	827.4	k



Dwyidag Reinforcement		
Quantity	3	-
Bar Size	#20	in
Diameter, ϕ	2.5	in
Bracket Type	Angle	-
Circle	40.00	in
Orientation Offset	20	°
Applied Force, Pu	153.5	k
Dwyidag Bar, ϕPn	368.2	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	4	-
Diameter, ϕ	2 1/4	in
Bolt Circle	31	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	24.3	in
Orientation Offset	0	°
Applied Force, Pu	49.8	k
Anchor Rods, ϕPn	243.6	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	8.1	116.0	0.23
Anchor Rod Forces	8.1	116.0	0.23
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	393.6	0.77
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	13.3696	0.7428	0.0087		869.86
Bolt	3.9761	3.2477	0.8393	4.5	1333.92
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		2951.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	37	in
Thickness, t	1.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	28.983	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	4	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	31	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	49.8	k
Applied Shear, Vu	2.3	k
Compressive Capacity, φPn	243.6	k
Tensile Capacity, φRnt	0.204	OK
Interaction Capacity	0.223	OK

External Base Plate		
Chord Length AA	24.238	in
Additional AA	3.000	in
Section Modulus, Z	15.321	in ³
Applied Moment, Mu	137.0	k-ft
Bending Capacity, φMn	827.4	k-ft
Capacity, Mu/φMn	0.166	OK
Chord Length AB	23.893	in
Additional AB	3.000	in
Section Modulus, Z	15.127	in ³
Applied Moment, Mu	128.1	k-ft
Bending Capacity, φMn	816.9	k-ft
Capacity, Mu/φMn	0.157	OK
Bend Line Length	33.885	in
Additional Bend Line	0.000	in
Section Modulus, Z	19.060	in ³
Applied Moment, Mu	137.0	k-ft
Bending Capacity, φMn	1029.3	k-ft
Capacity, Mu/φMn	0.133	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
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	3	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	40	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	153.5	k
Compressive Capacity, φPn	368.2	k
Capacity, Pu/φPn	0.417	OK

Flange Plate Analysis

Flange Plate	Plate Type	Flange	@ 49 ft
	Pole Diameter	12.75	in
	Pole Thickness	0.5	in
	Plate Diameter	28.5	in
	Plate Thickness	2	in
	Plate Fy	50	ksi
	Weld Length	5/16	in
	f _s Resistance	100.14	k-in
	Applied	10.60	k-in

Code Rev. **H**

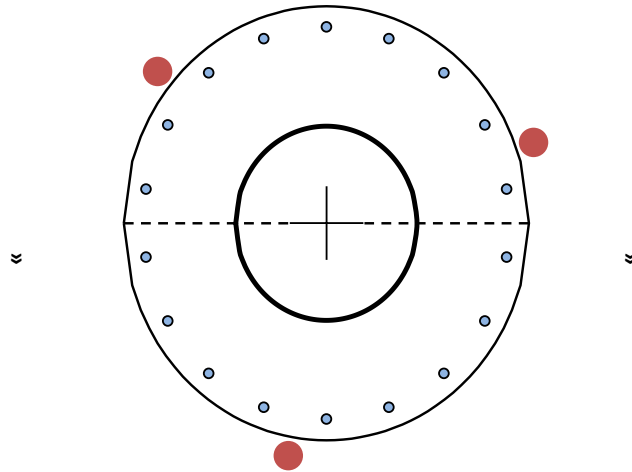
Date	6/16/2021
Engineer	AS
Site #	302526
Carrier	VERIZON WIRELESS

Moment **160.2 k-ft**
Axial **9.9 k**

Required Flange Thickness:
0.65 in OK

Stiffeners	#	
------------	---	--

Bolts	#	18	
	Bolt Circle (R)adial / (S)quare	25.75 R	in
	Diameter	1	in
	Hole Diameter	1 1/8	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	f _s Resistance	54.52	k
Applied	1.88	k	



Reinforcement	#	3	
	DYW. Circle	31	in
	Offset Angle	20	°
	Type	#20	
	Diameter	2.72	in
	Fu	100	ksi
	f _s Resistance	464.86	k
Applied	69.21	k	

Plate Stress Ratio:
11% Pass

Bolt Stress Ratio:
3% Pass

Extra Bolts O	#	
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Reinforcement Stress Ratio:
15% Pass

Flange Plate Analysis

Flange Plate	Plate Type	Flange	@ 69 ft
	Pole Diameter	12.75	in
	Pole Thickness	0.375	in
	Plate Diameter	20	in
	Plate Thickness	1 1/2	in
	Plate Fy	50	ksi
	Weld Length	5/16	in
	f _s Resistance	84.49	k-in
	Applied	14.05	k-in

Code Rev. **H**

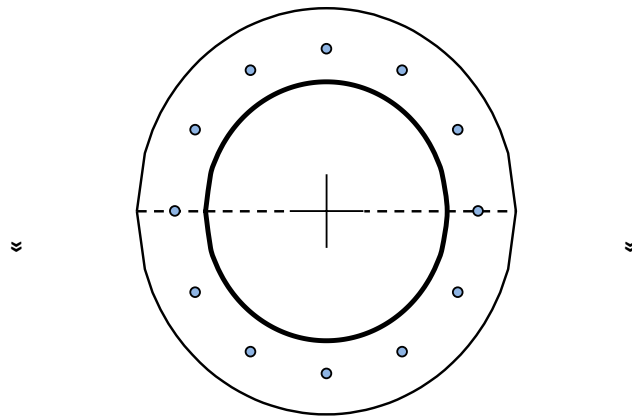
Date	6/16/2021
Engineer	AS
Site #	302526
Carrier	VERIZON WIRELESS

Moment **77.3 k-ft**
Axial **6.8 k**

Required Flange Thickness:
0.61 in OK

Stiffeners	#	
------------	---	--

Bolts	#	12	
	Bolt Circle	16	in
	(R)adial / (S)quare	R	
	Diameter	1	in
	Hole Diameter	1 1/8	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	f _s Resistance	54.52	k
Applied	18.74	k	



Reinforcement	#	0
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Plate Stress Ratio:
17% Pass

Bolt Stress Ratio:
34% Pass

Extra Bolts	#	
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Site Name: Naugatuck, CT
Site Number: 302526
Tower Type: MP
Design Loads (Factored) - Analysis per TIA-222-H Standards

Monolithic Mat & Pier Foundation Analysis

Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	22.7	k
Uplift/Leg:	0.0	k
Total Shear:	8.1	k
Moment:	509.6	k-ft
Tower + Appurtenance Weight:	22.7	k
Depth to Base of Foundation (l + t - h):	5.25	ft
Diameter of Pier (d):	4.5	ft
Length of Pier (l):	3.25	ft
Height of Pier above Ground (h):	1	ft
Width of Pad (W):	12	ft
Length of Pad (L):	12	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:	25	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	110	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	47.6	pcf
Friction Angle of Uplift:	30	°
Coefficient of Shear Friction:	0.35	-
Ultimate Compressive Bearing Pressure:	6,000	psf
Ultimate Passive Pressure on Pad Face:	0	psf
$f_{\text{Soil and Concrete Weight}}$:	0.9	-
f_{Soil} :	0.75	-

Foundation Steel Parameters		
Shear/Leg (Compression):	8.1	k
Shear/Leg (Uplift):	8.1	k
Concrete Strength (f'_c):	4,000	psi
Pad Tension Steel Depth:	32.63	in
Dead Load Factor:	0.9	-
f_{Shear} :	0.75	-
$f_{\text{Flexure / Tension}}$:	0.9	-
$f_{\text{Compression}}$:	0.65	-
b:	0.85	-
Bottom Pad Rebar Size #:	6	-
# of Bottom Pad Rebar:	20	-
Pad Bottom Steel Area:	8.80	in ²
Pad Steel F_y :	60,000	psi
Top Pad Rebar Size #:	6	-
# of Top Pad Rebar:	20	-
Pad Top Steel Area:	8.80	in ²
Pier Rebar Size #:	6	-
Pier Steel Area (Single Bar):	0.44	in ²
# of Pier Rebar:	24	-
Pier Steel F_y :	60,000	psi
Pier Cage Diameter:	46.3	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	4	-
Tie Steel Area (Single Bar):	0.20	in ²
Tie Spacing:	6.5	in
Tie Steel F_y :	60,000	psi
Clear Cover:	3	in

Overturning Moment Usage		
Design OTM:	560.0	k-ft
OTM Resistance:	700.6	k-ft
Design OTM / OTM Resistance:	80%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	880	psf
Factored Nominal Bearing Pressure:	4500	psf
Factored Nominal (Net) Bearing Pressure:	20%	Pass
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge	

Sliding Factor of Safety		
Ultimate Friction Resistance:	43.1	k
Ultimate Passive Pressure Resistance:	0.0	k
Total Factored Sliding Resistance:	32.3	k
Sliding Design / Sliding Resistance:	25%	Pass

