



# 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

May 15, 2019

Arthur Perkowski  
Airosmith Development, Inc.  
32 Clinton Street  
Saratoga Springs, NY 12866

RE: **EM-SPRINT-131-190404** – Sprint Spectrum, LP notice of intent to modify an existing telecommunications facility located at 80 Shuttle Meadow Road, Southington, Connecticut.

Dear Mr. Perkowski:

The Connecticut Siting Council (Council) is in receipt of your correspondence of May 13, 2019 submitted in response to the Council's April 5, 2019 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

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**From:** Cunliffe, Fred  
**Sent:** Tuesday, May 14, 2019 9:21 AM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council  
**Subject:** FW: Siting Council Question - CT52XC108  
**Attachments:** CT52XC108\_DO MACRO Redesign\_ Final CDs\_05-13-19.pdf

Evan,  
Construction drawings submitted in response to incomplete letter for  
EM-SPRINT-131-190404-ShuttleMeadowRd-Southington.

Fred Cunliffe  
Siting Analyst Supervisor  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051  
website: [ct.gov/csc](http://ct.gov/csc)  
email: [fred.cunliffe@ct.gov](mailto:fred.cunliffe@ct.gov)  
desk-860.827.2939  
fax-860.827.2950

**From:** Art Perkowski [<mailto:aperkowski@airosmithdevelopment.com>]  
**Sent:** Monday, May 13, 2019 4:17 PM  
**To:** Cunliffe, Fred  
**Subject:** RE: Siting Council Question - CT52XC108

Fred,

Thank you again for reaching out to me, and allowing this application to still be valid. Attached are the revised CDs with the corrected Structural Date. The CDs and the Structural Analysis will be heading out to the CSC through the post today.

Thank you and have a great day Fred

**Art Perkowski**  
*Site Acquisition Specialist | Airosmith Development*  
32 Clinton Street | Saratoga Springs | New York | 12866  
518.350.4222 *desk/fax* | 518.871.3707 *cell*  
[aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)



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**From:** Cunliffe, Fred <Fred.Cunliffe@ct.gov>  
**Sent:** Monday, May 13, 2019 12:17 PM  
**To:** Art Perkowski <aperkowski@airosmithdevelopment.com>  
**Subject:** RE: Siting Council Question - CT52XC108

Hi Art,

Attached is the incomplete letter.

The structural analysis (SA) is acceptable. Also, the incomplete letter asked for an updated CD referencing the May 6, 2019 SA.

I have spoken with staff and for a complete record please submit one hard copy of the ATC Job #OAA740798\_C6\_05 dated Jan. 22, 2019.

I left a voice message too.

Council will continue processing if the soft copy of CD can be submitted today.

Thanks.

Fred Cunliffe  
Siting Analyst Supervisor  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051  
website:ct.gov/csc  
email:fred.cunliffe@ct.gov  
desk-860.827.2939  
fax-860.827.2950

**From:** Art Perkowski [<mailto:aperkowski@airosmithdevelopment.com>]  
**Sent:** Monday, May 13, 2019 10:18 AM  
**To:** Cunliffe, Fred  
**Subject:** Siting Council Question - CT52XC108

Hello Fred,

Hope all is well on your end. Reaching out as I have a question for you regarding an upcoming CSC application I intend on sending in soon. I received a passing structural with an asterisks by the percentage passing that states "the modifications by ATC job #OAA740798\_C6\_05 are scheduled to be installed by June 28, 2019." Would this structural be accepted by the CSC or would I need to get something in writing from ATC stating that the modifications were completed for to be able to get my CSC approval for this site?

Thank you as always Fred and lets hope this weather warms up for us in the near future.

**Art Perkowski**  
*Site Acquisition Specialist | Airosmith Development*  
32 Clinton Street | Saratoga Springs | New York | 12866  
518.350.4222 desk/fax | 518.871.3707 cell  
[aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)



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*2017, 2018 Albany Business Review Best Places to Work*

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**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 150 ft Monopole  
**ATC Site Name** : Sttn - Southington, CT  
**ATC Site Number** : 302475  
**Engineering Number** : OAA713367\_C3\_08  
**Proposed Carrier** : CLEARWIRE CORPORATION  
**Carrier Site Name** : Sttn - Southington  
**Carrier Site Number** : CT52XC108  
**Site Location** : 80 Shuttle Meadow Road  
Southington, CT 06489-1313  
41.638600,-72.841100  
**County** : Hartford  
**Date** : May 6, 2019  
**Max Usage** : 99%  
**Result** : Pass \*

Prepared By:  
Zackaryah Hughes  
Structural Engineer I

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 150 ft monopole to reflect the change in loading by CLEARWIRE CORPORATION.

**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*

\* The modifications by ATC Job #OAA740798\_C6\_05 are scheduled to be installed by June 28, 2019.

**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, Vasd) / 125 mph (3-Second Gust, Vult)
<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>	$S_s = 0.19, S_1 = 0.06$
<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 by the forecast date above, the results of this analysis are no longer valid, and CLEARWIRE CORPORATION 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	6	CCI TPX-070821		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
	1	Kathrein Scala 80010966				
	2	Kathrein Scala 80010965				
	1	Andrew SBNH-1D6565C (60.8 lbs)				
	3	Quintel QS66512-3 (112 lbs.)				
	2	KMW AM-X-CD-16-65-00T-RET				
	3	Powerwave Allgon 7770.00				
	3	Ericsson RRUS-32 (77 lbs)				
	6	Kaelus DBCT108F1V92-1				
	2	Raycap DC6-48-60-18-8F (23.5" Height)				
	3	CCI DTMAPB7819VG12A (w/ Bracket)				
	1	Raycap DC6-48-60-18-8F ("Squid")				
	3	Ericsson RRUS 4426 B66				
	3	Ericsson RRUS 4478 B14				
	3	Ericsson RRUS 4478 B5				
3	Ericsson RRUS-11 (50 lbs.)					
3	Ericsson RRUS 32 B2					
130.0	3	Andrew LNX-6515DS-VTM	Site-Pro 1 UWS6-NP Collar	(12) 1 5/8" Coax	METRO PCS INC	
	3	RFS APXV18-206517S-C				
	3	Kathrein Scala Smart Bias Tee				
120.0	1	DragonWave A-ANT-11G-2.5-C	-	(1) 1/2" Coax	CLEARWIRE CORPORATION	
	1	DragonWave Horizon Compact				
109.0	4	dB Systems 5100A-D	Side Arms	(6) 7/8" Coax	M/A COM PRIVATE RADIO SYSTEMS INC	
	1	dB Systems 5100A				
104.0	1	VertexRSI 101V VPD				

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
120.0	3	Argus LLPX310R	Collar	(6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	3	NextNet BTS-2500			

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
120.0	1	Generic 12" x 12" Junction Box	Low Profile Platform	(4) 1 1/4" Hybriflex Cable (2) 2" conduit	CLEARWIRE CORPORATION
	6	Alcatel-Lucent RRH2x50-08			
	3	Nokia FZHN Flexi RRH 8TR 2600 9*20W			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	RFS APXVTM14-ALU-I20			
	3	Commscope NNVV-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 outside the pole shaft. Stacking lines is not allowed.





**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	88%	Pass
Shaft	88%	Pass
Base Plate	63%	Pass
Flanges	99%	Pass
Reinforcement	88%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,735.4	98%
Axial (Kips)	40.1	62%
Shear (Kips)	26.8	40%

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) (°)
120.0	Generic 12" x 12" Junction Box	CLEARWIRE CORPORATION	1.741	1.457
	Alcatel-Lucent RRH2x50-08			
	Nokia FZHN Flexi RRH 8TR 2600 9*20W			
	Alcatel-Lucent 1900 MHz 4X45 RRH			
	RFS APXVTM14-ALU-I20			
	DragonWave A-ANT-11G-2.5-C			
Commscope NNVV-65B-R4				

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



## **Standard Conditions**

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

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

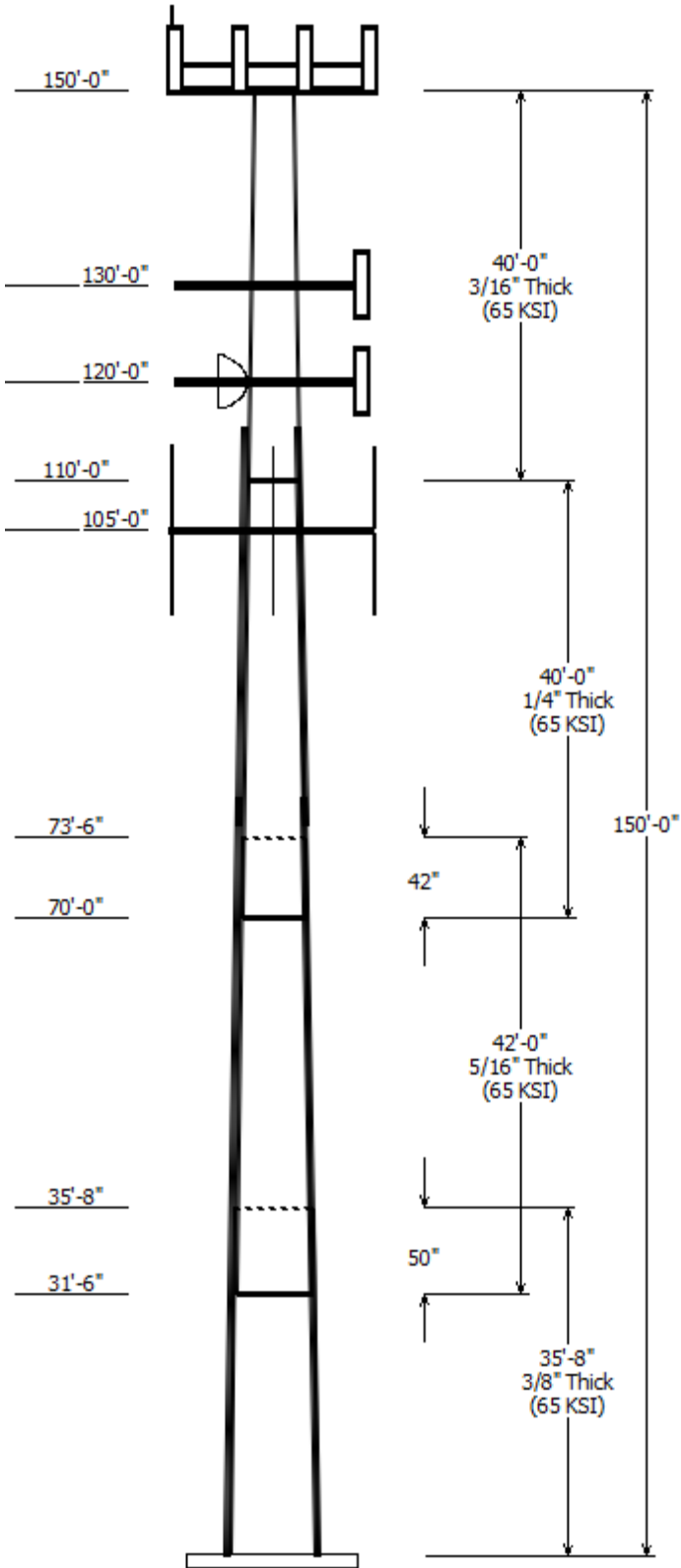
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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

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

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

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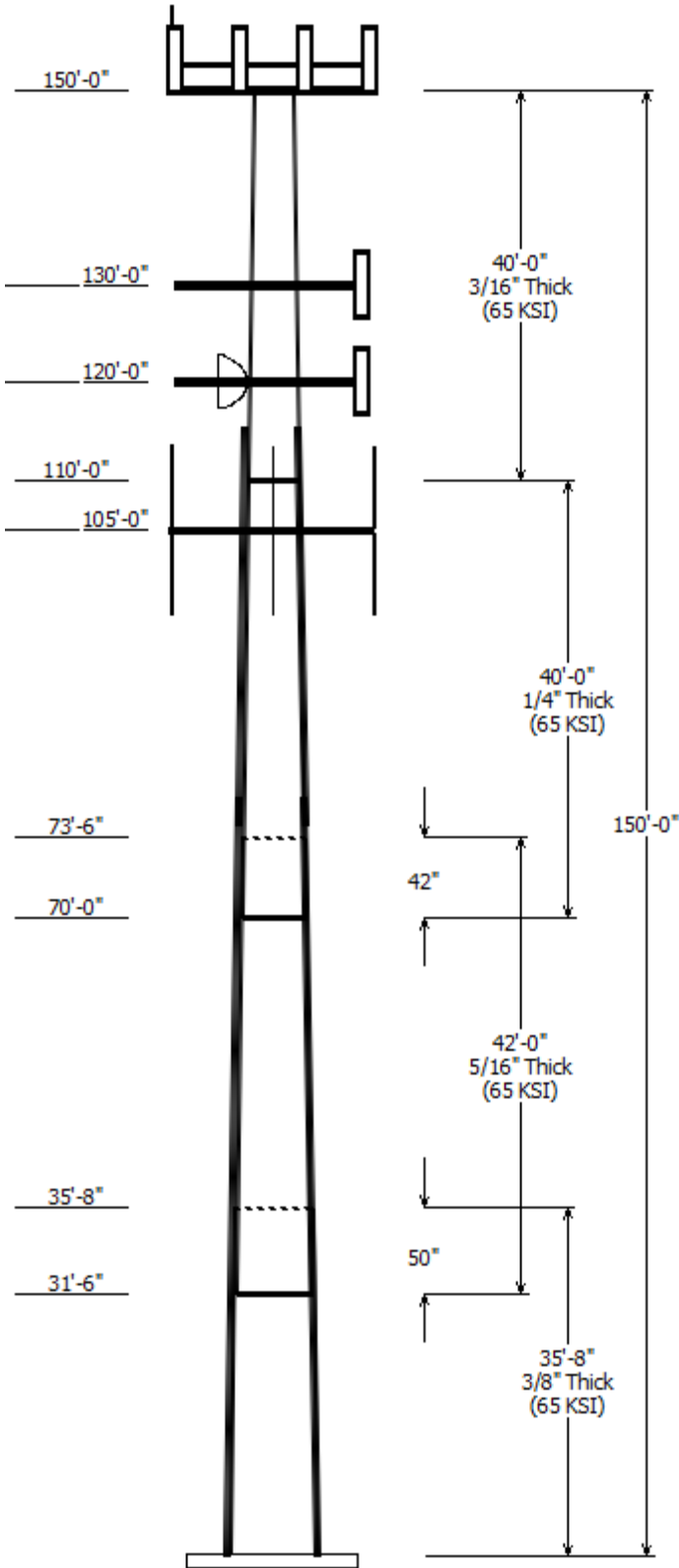


Job Information	
Pole : 302475	Code: ANSI/TIA-222-G
Location : Sctn - Southington, CT	
Description : 150' ITT Meyer Type "B" Monopole	
Client : CLEARWIRE CORPORATION	Structure Class : II
Shape : 12 Sides	Exposure : B
Height : 150.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.160834in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Across Flats Top	Across Flats 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
150.000	153.000	1	Kathrein Scala 80010966
150.000	153.000	2	Kathrein Scala 80010965
150.000	153.000	1	Andrew SBNH-1D6565C (60.8
150.000	153.000	3	Quintel QS66512-3 (112 lbs.)
150.000	153.000	2	KMW AM-X-CD-16-65-00T-RET
150.000	153.000	3	Powerwave Allgon 7770.00
150.000	153.000	3	Ericsson RRUS-32 (77 lbs)
150.000	153.000	3	Ericsson RRUS 32 B2
150.000	153.000	3	Ericsson RRUS-11 (50 lbs.)
150.000	153.000	3	Ericsson RRUS 4478 B5
150.000	153.000	3	Ericsson RRUS 4478 B14
150.000	153.000	3	Ericsson RRUS 4426 B66
150.000	153.000	1	Raycap DC6-48-60-18-8F
150.000	153.000	3	CCI DTMABP7819VG12A (w/
150.000	153.000	2	Raycap DC6-48-60-18-8F (23.5"
150.000	153.000	6	Kaelus DBCT108F1V92-1
150.000	153.000	6	CCI TPX-070821
150.000	154.000	1	Generic 10' Omni
150.000	150.000	3	Round Sector Frame
130.000	130.000	1	Site-Pro UWS6-NP Collar
130.000	130.000	3	Andrew LNX-6515DS-VTM
130.000	130.000	3	RFS APXV18-206517S-C
130.000	130.000	3	Kathrein Scala Smart Bias Tee
120.000	120.000	3	Commscope NNVV-65B-R4
120.000	120.000	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	120.000	1	DragonWave Horizon Compact
120.000	120.000	1	Generic Flat Low Profile Platf
105.000	104.000	1	VertexRSI 101V VPD
105.000	109.000	4	dB Systems 5100A-D
105.000	109.000	1	dB Systems 5100A
105.000	105.000	3	Round Side Arm

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
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
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	130.0	1 5/8" Coax	Yes
0.000	130.0	1 5/8" Coax	No
0.000	150.0	0.39" (10mm)	No
0.000	150.0	0.78" (19.7mm) 8	No
0.000	150.0	0.78" (19.7mm) 8	No
0.000	150.0	1 5/8" Coax	No
0.000	150.0	3" conduit	No
0.000	150.0	7/8" Coax	No
0.000	150.0	7/8" Coax	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	105.0	7/8" Coax	Yes

### 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

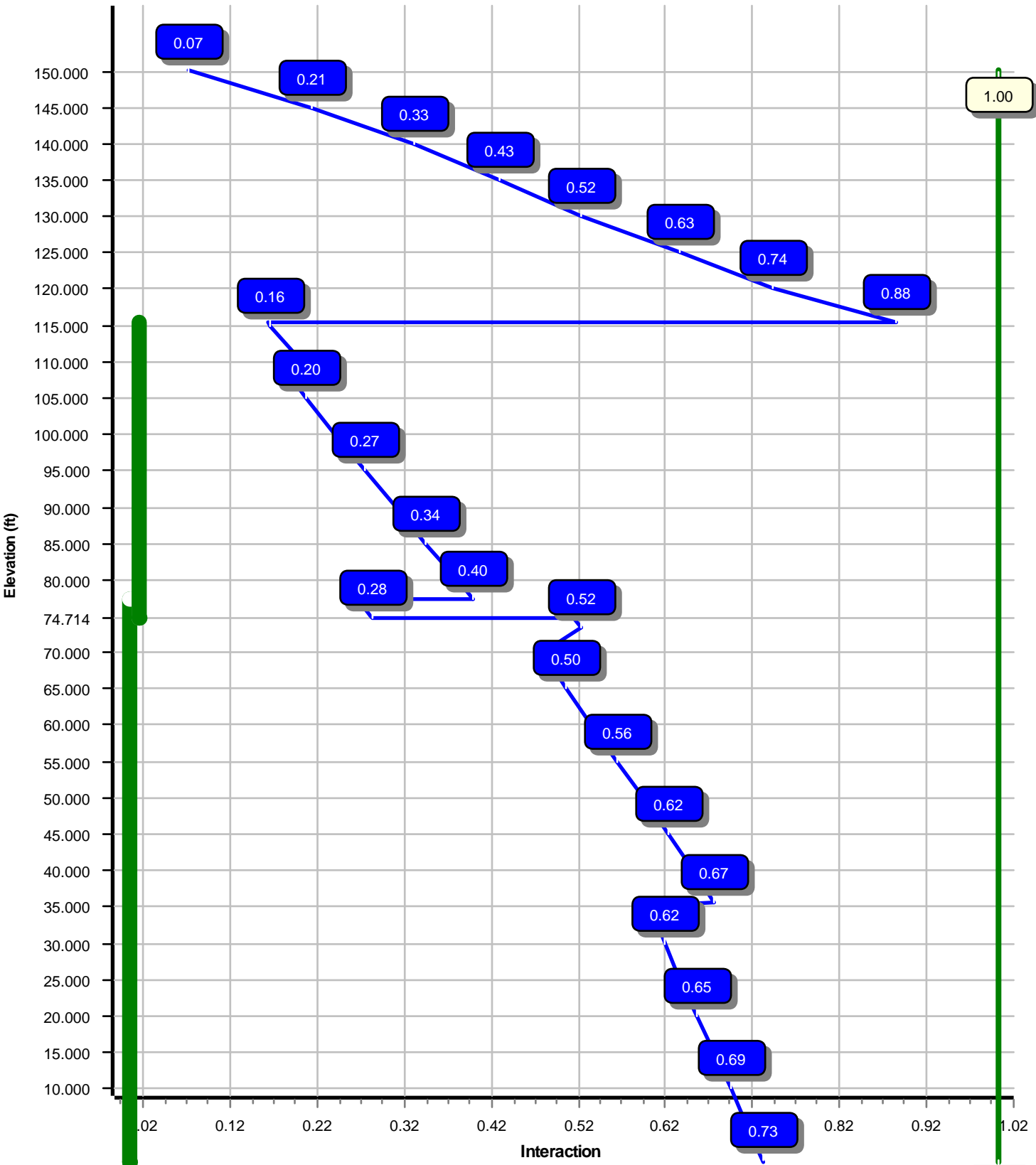
### Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2735.35	26.82	40.07
0.9D + 1.6W	2690.27	26.50	30.04
1.2D + 1.0Di + 1.0Wi	1197.35	13.02	72.21
(1.2 + 0.2Sds) * DL + E ELFM	123.11	1.01	39.87
(1.2 + 0.2Sds) * DL + E EMAM	161.62	1.37	39.87
(0.9 - 0.2Sds) * DL + E ELFM	120.73	1.01	27.68
(0.9 - 0.2Sds) * DL + E EMAM	158.23	1.37	27.68
1.0D + 1.0W	648.18	6.34	33.45

### Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	20.890	1.457

Load Case : 1.2D + 1.6W  
Max Ratio 88.25% at 115.5 ft



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:15 PM

Customer: CLEARWIRE

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):	2.67		
T <sub>L</sub> (sec):	6	p:	1
S <sub>s</sub> :	0.185	S <sub>1</sub> :	0.064
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.197	S <sub>d1</sub> :	0.102
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S <sub>ds</sub> ) * 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: OAA713367\_C3\_08

5/6/2019 9:02:15 PM

Customer: CLEARWIRE

**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													

**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
150.00	CCI TPX-070821	6	0.80	3.000	7.50	0.470	0.50	23.68	1.110	0.50
150.00	Kaelus DBCT108F1V92-1	6	0.80	3.000	13.90	0.630	0.50	47.47	1.354	0.50
150.00	Raycap DC6-48-60-18-8F (23.5"	2	0.80	3.000	20.00	1.260	0.67	90.23	2.138	0.67
150.00	CCI DTMABP7819VG12A (w/	3	0.80	3.000	19.20	1.370	0.50	64.62	2.411	0.50
150.00	Raycap DC6-48-60-18-8F	1	0.80	3.000	31.80	1.470	0.67	114.09	2.402	0.67
150.00	Ericsson RRUS 4426 B66	3	0.80	3.000	48.40	1.650	0.50	107.95	2.783	0.50
150.00	Ericsson RRUS 4478 B14	3	0.80	3.000	59.90	1.840	0.50	133.65	3.035	0.50
150.00	Ericsson RRUS 4478 B5	3	0.80	3.000	59.90	1.840	0.50	133.65	3.035	0.50
150.00	Ericsson RRUS-11 (50 lbs.)	3	0.80	3.000	50.00	2.570	0.50	140.92	3.969	0.50
150.00	Ericsson RRUS 32 B2	3	0.80	3.000	53.00	2.740	0.50	151.10	4.298	0.50
150.00	Generic 10' Omni	1	1.00	4.000	25.00	3.000	1.00	126.24	7.800	1.00
150.00	Ericsson RRUS-32 (77 lbs)	3	1.00	3.000	77.00	3.310	0.50	206.72	5.020	0.50
150.00	Powerwave Allgon 7770.00	3	0.80	3.000	35.00	5.510	0.65	228.70	6.949	0.65
150.00	KMW AM-X-CD-16-65-00T-RET	2	0.80	3.000	48.50	8.020	0.67	264.51	11.739	0.67
150.00	Quintel QS66512-3 (112 lbs.)	3	0.80	3.000	112.00	8.130	0.74	377.80	11.847	0.74
150.00	Andrew SBNH-1D6565C (60.8 lbs)	1	0.80	3.000	60.80	11.440	0.70	366.84	15.756	0.70
150.00	Kathrein Scala 80010965	2	0.80	3.000	97.60	13.810	0.62	453.20	17.878	0.62
150.00	Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	790.63	36.478	0.67
150.00	Kathrein Scala 80010966	1	0.80	3.000	114.60	17.360	0.63	542.90	22.280	0.63
130.00	Kathrein Scala Smart Bias Tee	3	1.00	0.000	3.30	0.080	0.50	7.62	0.353	0.50
130.00	Site-Pro UWS6-NP Collar	1	0.75	0.000	96.00	1.500	0.50	201.50	3.176	0.50
130.00	RFS APXV18-206517S-C	3	1.00	0.000	26.40	5.160	0.68	148.20	8.269	0.68
130.00	Andrew LNX-6515DS-VTM	3	1.00	0.000	51.30	11.430	0.70	352.63	15.690	0.70
120.00	DragonWave Horizon Compact	1	0.80	0.000	10.60	0.720	0.50	39.92	1.461	0.50
120.00	Generic 12" x 12" Junction Box	1	0.80	0.000	10.00	1.200	0.50	64.32	2.146	0.50
120.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.700	0.50	130.18	2.824	0.50
120.00	Nokia FZHN Flexi RRH 8TR 2600	3	0.80	0.000	44.10	2.020	0.50	107.93	3.239	0.50
120.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.320	0.50	165.10	3.728	0.50
120.00	RFS APXVTM14-ALU-I20	3	0.80	0.000	56.20	6.340	0.50	235.78	9.180	0.50
120.00	DragonWave A-ANT-11G-2.5-C	1	1.00	0.000	47.60	8.670	1.00	278.66	10.923	1.00
120.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.270	0.64	405.09	15.926	0.64
120.00	Generic Flat Low Profile Platform	1	1.00	0.000	1,875.00	26.100	1.00	2,931.16	50.998	1.00
105.00	dB Systems 5100A	1	1.00	4.000	21.00	2.050	1.00	89.60	3.789	1.00
105.00	VertexRSI 101V VPD	1	1.00	-1.000	4.00	2.410	1.00	103.61	10.803	1.00
105.00	dB Systems 5100A-D	4	1.00	4.000	38.00	3.090	1.00	163.77	4.892	1.00
105.00	Round Side Arm	3	1.00	0.000	150.00	5.200	0.67	244.08	8.694	0.67
Totals	Num Loadings:36	93			7,075.70			20,344.29		

**Linear Appurtenance Properties** Load Case Azimuth (deg) : 120

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 Exposed From Face (in)	Dist Exposed To Wind Carrier
0.00	150.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N AT&T MOBILITY

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:15 PM

Customer: CLEARWIRE

0.00	150.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	150.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	150.00	3	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	OTHER
0.00	150.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	150.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	150.00	12	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	130.00	6	1 5/8" Coax	1.98	0.82	N	4	0.00	0.50	150	0.50	Y	METRO PCS INC
0.00	130.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	METRO PCS INC
0.00	120.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	4	0.00	0.00	320	0.50	Y	CLEARWIRE
0.00	120.00	1	1/2" Coax	0.63	0.15	N	1	0.00	0.00	315	0.25	Y	CLEARWIRE
0.00	120.00	2	2" conduit	2.38	3.65	N	2	0.00	0.25	342	0.50	Y	CLEARWIRE
69.00	119.00	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	30	0.00	Y	-
69.00	119.00	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	120	0.00	Y	-
69.00	119.00	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	210	0.00	Y	-
69.00	119.00	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	300	0.00	Y	-
0.00	105.00	6	7/8" Coax	1.09	0.33	N	6	0.00	0.50	60	0.50	Y	M/A COM PRIVATE
0.00	82.50	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	0	0.00	Y	-
0.00	82.50	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	90	0.00	Y	-
0.00	82.50	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	180	0.00	Y	-
0.00	82.50	1	#20 Dywidag Bars	4.00	0.00	N	1	0.00	0.00	270	0.00	Y	-

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	77.44	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	30.0	3.31	5/8" A36 U-Bolt	No



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

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.3750	37.000	44.225	7,571.9	23.76	98.67	78.8	395.3	0.0	0.0	19.64	4,734	0.0
5.00		0.3750	36.196	43.254	7,084.0	23.18	96.52	79.4	378.1	0.0	744.2	19.64	4,563	334.0
10.00		0.3750	35.392	42.283	6,617.6	22.61	94.38	80.1	361.2	0.0	727.7	19.64	4,394	334.0
15.00		0.3750	34.588	41.312	6,172.0	22.03	92.23	80.7	344.7	0.0	711.1	19.64	4,229	334.0
20.00		0.3750	33.783	40.341	5,747.0	21.46	90.09	81.3	328.6	0.0	694.6	19.64	4,067	334.0
25.00		0.3750	32.979	39.370	5,341.9	20.89	87.94	81.9	312.9	0.0	678.1	19.64	3,908	334.0
30.00		0.3750	32.175	38.398	4,956.3	20.31	85.80	81.9	297.6	0.0	661.6	19.64	3,752	334.0
31.50	Bot - Section 2	0.3750	31.934	38.107	4,844.3	20.14	85.16	81.9	293.1	0.0	195.2	19.64	3,706	100.2
35.00		0.3750	31.371	37.427	4,589.7	19.74	83.66	81.9	282.6	0.0	832.9	19.64	3,718	233.8
35.67	Top - Section 1	0.3125	31.889	31.773	4,043.6	24.66	102.04	77.8	245.0	0.0	157.0	19.64	3,697	44.5
40.00		0.3125	31.192	31.072	3,781.7	24.07	99.81	78.5	234.2	0.0	463.3	19.64	3,566	289.5
45.00		0.3125	30.388	30.263	3,493.9	23.38	97.24	79.2	222.1	0.0	521.8	19.64	3,417	334.0
50.00		0.3125	29.583	29.454	3,221.0	22.69	94.67	80.0	210.3	0.0	508.0	19.64	3,271	334.0
55.00		0.3125	28.779	28.645	2,962.8	22.00	92.09	80.7	198.9	0.0	494.2	19.64	3,129	334.0
60.00		0.3125	27.975	27.835	2,718.7	21.31	89.52	81.5	187.7	0.0	480.5	19.64	2,990	334.0
65.00		0.3125	27.171	27.026	2,488.5	20.62	86.95	81.9	176.9	0.0	466.7	19.64	2,854	334.0
70.00	Bot - Section 3	0.3125	26.367	26.217	2,271.6	19.93	84.37	81.9	166.4	0.0	452.9	19.64	2,721	334.0
73.50	Top - Section 2	0.2500	26.304	20.973	1,817.2	25.51	105.22	76.9	133.5	0.0	561.3	19.64	2,711	233.8
74.71	Reinf Bottom	0.2500	26.109	20.816	1,776.6	25.30	104.43	77.1	131.5	0.0	86.3	19.64	2,679	81.1
75.00		0.2500	26.063	20.779	1,767.1	25.25	104.25	77.2	131.0	0.0	20.3	39.28	6,387	38.3
77.44	Reinf. Top	0.2500	25.670	20.463	1,687.8	24.83	102.68	77.6	127.0	0.0	171.0	39.28	6,312	182.0
80.00		0.2500	25.258	20.132	1,607.1	24.39	101.03	78.1	122.9	0.0	177.0	19.64	3,563	171.2
85.00		0.2500	24.454	19.484	1,457.0	23.53	97.82	79.1	115.1	0.0	337.0	19.64	3,414	334.0
90.00		0.2500	23.650	18.837	1,316.5	22.67	94.60	80.0	107.5	0.0	326.0	19.64	3,269	334.0
95.00		0.2500	22.846	18.190	1,185.4	21.81	91.38	80.9	100.2	0.0	315.0	19.64	3,127	334.0
100.0		0.2500	22.042	17.542	1,063.3	20.94	88.17	81.9	93.2	0.0	304.0	19.64	2,987	334.0
105.0		0.2500	21.238	16.895	949.9	20.08	84.95	81.9	86.4	0.0	293.0	19.64	2,851	334.0
110.0	Top - Section 3	0.2500	20.433	16.248	844.8	19.22	81.73	81.9	79.9	0.0	281.9	19.64	2,719	334.0
110.0	Bot - Section 4	0.1875	20.433	12.223	639.5	26.52	108.98	75.8	60.5	0.0		19.64	2,719	
115.0		0.1875	19.629	11.738	566.3	25.37	104.69	77.0	55.7	0.0	203.8	19.64	2,589	334.0
115.5	Reinf. Top	0.1875	19.545	11.687	559.0	25.25	104.24	77.2	55.3	0.0	20.8	19.64	2,576	34.8
120.0		0.1875	18.825	11.252	498.9	24.22	100.40	78.3	51.2	0.0	174.8			
125.0		0.1875	18.021	10.767	437.1	23.07	96.11	79.5	46.9	0.0	187.3			
130.0		0.1875	17.217	10.281	380.6	21.92	91.82	80.8	42.7	0.0	179.1			
135.0		0.1875	16.413	9.796	329.2	20.77	87.53	81.9	38.7	0.0	170.8			
140.0		0.1875	15.608	9.310	282.6	19.63	83.24	81.9	35.0	0.0	162.5			
145.0		0.1875	14.804	8.825	240.7	18.48	78.96	81.9	31.4	0.0	154.3			
150.0		0.1875	14.000	8.339	203.1	17.33	74.67	81.9	28.0	0.0	146.0			
											13,062.0			7,755.0

<b>Load Case:</b> 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		

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		280.6	0.0					0.0	0.0	280.6	0.0	0.0	0.0
5.00		557.9	893.0					0.0	648.4	557.9	1,541.4	0.0	0.0
10.00		551.3	873.2					0.0	648.4	551.3	1,521.5	0.0	0.0
15.00		523.4	853.4					0.0	648.4	523.4	1,501.7	0.0	0.0
20.00		493.0	833.5					100.2	648.4	593.2	1,481.9	0.0	0.0
25.00		481.3	813.7					100.3	648.4	581.5	1,462.1	0.0	0.0
30.00		308.4	793.9					100.4	648.4	408.8	1,442.2	0.0	0.0
31.50	Bot - Section 2	240.6	234.3					30.4	194.5	271.0	428.8	0.0	0.0
35.00		202.5	999.4					72.5	453.8	275.0	1,453.3	0.0	0.0
35.67	Top - Section 1	245.9	188.4					14.1	86.4	259.9	274.8	0.0	0.0
40.00		461.7	556.0					93.1	561.9	554.8	1,117.9	0.0	0.0
45.00		498.1	626.1					111.2	648.4	609.3	1,274.5	0.0	0.0
50.00		499.7	609.6					114.9	648.4	614.6	1,258.0	0.0	0.0
55.00		499.6	593.1					118.3	648.4	618.0	1,241.4	0.0	0.0
60.00		497.9	576.6					121.6	648.4	619.5	1,224.9	0.0	0.0
65.00		494.8	560.0					124.6	648.4	619.4	1,208.4	0.0	0.0
70.00	Bot - Section 3	420.8	543.5					127.5	648.4	548.3	1,191.9	0.0	0.0
73.50	Top - Section 2	234.5	673.6					90.9	453.9	325.4	1,127.5	0.0	0.0
74.71	Reinf Bottom	74.3	103.5					31.8	157.4	106.1	260.9	0.0	0.0
75.00		134.4	24.3					7.5	60.1	141.9	84.4	0.0	0.0
77.44	Reinf. Top	245.7	205.2					64.4	339.0	310.2	544.3	0.0	0.0
80.00		367.9	212.4					68.4	332.3	436.3	544.7	0.0	0.0
85.00		480.8	404.4					135.3	648.4	616.1	1,052.8	0.0	0.0
90.00		472.7	391.2					137.7	648.4	610.4	1,039.6	0.0	0.0
95.00		463.7	378.0					140.0	648.4	603.7	1,026.3	0.0	0.0
100.00		454.0	364.8					142.2	648.4	596.2	1,013.1	0.0	0.0
105.00	Appurtenance(s)	443.6	351.5	1,106.6	0.0	2,254.2	752.4	144.0	648.4	1,694.3	1,752.3	0.0	0.0
110.00	Top - Section 3	432.5	338.3					145.8	636.5	578.3	974.8	0.0	0.0
115.00		235.3	244.6					147.5	636.5	382.8	881.1	0.0	0.0
115.52	Reinf. Top	207.4	24.9					15.5	66.3	222.8	91.2	0.0	0.0
120.00	Appurtenance(s)	386.6	209.8	2,988.6	0.0	0.0	3,568.4	133.6	211.1	3,508.9	3,989.4	0.0	0.0
125.00		395.6	224.8					92.6	167.0	488.2	391.8	0.0	0.0
130.00	Appurtenance(s)	351.0	214.9	1,510.5	0.0	0.0	406.8	93.6	167.0	1,955.1	788.6	0.0	0.0
135.00		306.9	205.0					0.0	107.9	306.9	312.9	0.0	0.0
140.00		295.0	195.0					0.0	107.9	295.0	303.0	0.0	0.0
145.00		282.6	185.1					0.0	107.9	282.6	293.1	0.0	0.0
150.00	Appurtenance(s)	138.1	175.2	4,909.1	0.0	11,952.2	3,763.2	0.0	107.9	5,047.3	4,046.4	0.0	0.0
Totals:										26,994.8	40,142.7	0.00	0.00

**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	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-40.07	-26.82	0.00	-2,735.35	0.00	2,735.35	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.729
5.00	-38.39	-26.47	0.00	-2,601.23	0.00	2,601.23	3,092.06	1,546.03	4,560.72	2,252.37	0.17	-0.31	0.711
10.00	-36.73	-26.11	0.00	-2,468.89	0.00	2,468.89	3,046.49	1,523.25	4,391.58	2,168.84	0.65	-0.62	0.693
15.00	-35.10	-25.75	0.00	-2,338.37	0.00	2,338.37	2,999.83	1,499.91	4,223.96	2,086.05	1.47	-0.93	0.673
20.00	-33.49	-25.31	0.00	-2,209.61	0.00	2,209.61	2,952.07	1,476.04	4,057.95	2,004.07	2.61	-1.24	0.654
25.00	-31.91	-24.87	0.00	-2,083.04	0.00	2,083.04	2,901.93	1,450.96	3,891.94	1,922.08	4.07	-1.55	0.633
30.00	-30.39	-24.53	0.00	-1,958.70	0.00	1,958.70	2,830.35	1,415.18	3,701.25	1,827.91	5.86	-1.86	0.617
31.50	-29.90	-24.32	0.00	-1,921.91	0.00	1,921.91	2,808.88	1,404.44	3,644.98	1,800.12	6.46	-1.96	0.612
35.00	-28.41	-24.06	0.00	-1,836.78	0.00	1,836.78	2,758.78	1,379.39	3,515.36	1,736.10	7.98	-2.18	0.592
35.67	-28.08	-23.86	0.00	-1,820.75	0.00	1,820.75	2,225.24	1,112.62	2,894.88	1,429.67	8.29	-2.22	0.673
40.00	-26.86	-23.40	0.00	-1,717.33	0.00	1,717.33	2,194.35	1,097.17	2,791.07	1,378.40	10.42	-2.48	0.649
45.00	-25.49	-22.88	0.00	-1,600.32	0.00	1,600.32	2,157.69	1,078.84	2,672.25	1,319.72	13.19	-2.80	0.621
50.00	-24.15	-22.33	0.00	-1,485.93	0.00	1,485.93	2,119.93	1,059.96	2,554.56	1,261.60	16.30	-3.12	0.592
55.00	-22.82	-21.77	0.00	-1,374.28	0.00	1,374.28	2,081.07	1,040.54	2,438.12	1,204.10	19.73	-3.43	0.562
60.00	-21.53	-21.19	0.00	-1,265.44	0.00	1,265.44	2,041.12	1,020.56	2,323.03	1,147.26	23.49	-3.74	0.532
65.00	-20.26	-20.59	0.00	-1,159.50	0.00	1,159.50	1,992.10	996.05	2,200.59	1,086.79	27.57	-4.04	0.503
70.00	-19.02	-20.04	0.00	-1,056.53	0.00	1,056.53	1,932.46	966.23	2,070.05	1,022.32	31.96	-4.34	0.476
73.50	-17.88	-19.67	0.00	-986.38	0.00	986.38	1,451.36	725.68	1,558.37	769.62	35.22	-4.54	0.521
74.71	-17.61	-19.56	0.00	-962.51	0.00	962.51	1,444.76	722.38	1,539.55	760.33	36.38	-4.61	0.512
75.00	-17.52	-19.43	0.00	-956.90	0.00	956.90	1,443.19	721.60	1,535.11	758.14	36.66	-4.63	0.278
77.44	-16.98	-19.10	0.00	-909.55	0.00	909.55	1,429.71	714.86	1,497.46	739.54	39.04	-4.71	0.264
77.44	-16.98	-19.10	0.00	-909.55	0.00	909.55	1,429.71	714.86	1,497.46	739.54	39.04	-4.71	0.396
80.00	-16.42	-18.66	0.00	-860.62	0.00	860.62	1,415.26	707.63	1,458.06	720.08	41.59	-4.79	0.378
85.00	-15.36	-18.02	0.00	-767.31	0.00	767.31	1,386.24	693.12	1,381.78	682.41	46.72	-5.01	0.342
90.00	-14.31	-17.37	0.00	-677.23	0.00	677.23	1,356.12	678.06	1,306.38	645.17	52.08	-5.22	0.307
95.00	-13.29	-16.71	0.00	-590.41	0.00	590.41	1,324.90	662.45	1,231.99	608.43	57.66	-5.42	0.272
100.00	-12.29	-16.06	0.00	-506.84	0.00	506.84	1,293.04	646.52	1,159.10	572.44	63.43	-5.60	0.237
105.00	-10.68	-14.23	0.00	-424.29	0.00	424.29	1,245.33	622.66	1,074.67	530.74	69.38	-5.77	0.204
110.00	-9.74	-13.58	0.00	-353.14	0.00	353.14	1,197.61	598.80	993.42	490.61	75.48	-5.91	0.175
110.00	-9.74	-13.58	0.00	-353.14	0.00	353.14	833.77	416.88	695.90	343.68	75.48	-5.91	0.201
115.00	-8.88	-13.12	0.00	-285.26	0.00	285.26	813.89	406.95	652.08	322.04	81.74	-6.04	0.164
115.52	-8.80	-12.89	0.00	-278.43	0.00	278.43	811.76	405.88	647.55	319.80	82.40	-6.05	0.160
115.52	-8.80	-12.89	0.00	-278.43	0.00	278.43	811.76	405.88	647.55	319.80	82.40	-6.05	0.882
120.00	-5.16	-9.01	0.00	-220.67	0.00	220.67	792.92	396.46	608.75	300.64	88.12	-6.15	0.741
125.00	-4.74	-8.53	0.00	-175.62	0.00	175.62	770.85	385.43	566.02	279.54	94.86	-6.72	0.635
130.00	-4.14	-6.52	0.00	-132.99	0.00	132.99	747.69	373.84	524.00	258.78	102.15	-7.22	0.520
135.00	-3.83	-6.21	0.00	-100.37	0.00	100.37	722.05	361.03	481.88	237.98	109.93	-7.66	0.427
140.00	-3.54	-5.89	0.00	-69.33	0.00	69.33	686.26	343.13	435.03	214.85	118.13	-8.02	0.328
145.00	-3.27	-5.58	0.00	-39.87	0.00	39.87	650.48	325.24	390.59	192.90	126.67	-8.30	0.212
150.00	0.00	-5.05	0.00	-11.95	0.00	11.95	614.69	307.34	348.53	172.13	135.42	-8.45	0.070

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:21 PM

Customer: CLEARWIRE

**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

### 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		222.5	0.0					0.0	0.0	222.5	0.0	0.0	0.0
5.00		440.2	669.8					0.0	486.3	440.2	1,156.0	0.0	0.0
10.00		430.4	654.9					0.0	486.3	430.4	1,141.2	0.0	0.0
15.00		462.2	640.0					0.0	486.3	462.2	1,126.3	0.0	0.0
20.00		493.0	625.1					100.2	486.3	593.2	1,111.4	0.0	0.0
25.00		481.3	610.3					100.3	486.3	581.5	1,096.5	0.0	0.0
30.00		308.4	595.4					100.4	486.3	408.8	1,081.7	0.0	0.0
31.50	Bot - Section 2	240.6	175.7					30.4	145.9	271.0	321.6	0.0	0.0
35.00		202.5	749.6					72.5	340.4	275.0	1,090.0	0.0	0.0
35.67	Top - Section 1	245.9	141.3					14.1	64.8	259.9	206.1	0.0	0.0
40.00		461.7	417.0					93.1	421.4	554.8	838.4	0.0	0.0
45.00		498.1	469.6					111.2	486.3	609.3	955.9	0.0	0.0
50.00		499.7	457.2					114.9	486.3	614.6	943.5	0.0	0.0
55.00		499.6	444.8					118.3	486.3	618.0	931.1	0.0	0.0
60.00		497.9	432.4					121.6	486.3	619.5	918.7	0.0	0.0
65.00		494.8	420.0					124.6	486.3	619.4	906.3	0.0	0.0
70.00	Bot - Section 3	420.8	407.6					127.5	486.3	548.3	893.9	0.0	0.0
73.50	Top - Section 2	234.5	505.2					90.9	340.4	325.4	845.6	0.0	0.0
74.71	Reinf Bottom	74.3	77.7					31.8	118.0	106.1	195.7	0.0	0.0
75.00		134.4	18.2					7.5	45.1	141.9	63.3	0.0	0.0
77.44	Reinf. Top	245.7	153.9					64.4	254.3	310.2	408.2	0.0	0.0
80.00		367.9	159.3					68.4	249.2	436.3	408.5	0.0	0.0
85.00		480.8	303.3					135.3	486.3	616.1	789.6	0.0	0.0
90.00		472.7	293.4					137.7	486.3	610.4	779.7	0.0	0.0
95.00		463.7	283.5					140.0	486.3	603.7	769.8	0.0	0.0
100.00		454.0	273.6					142.2	486.3	596.2	759.8	0.0	0.0
105.00	Appurtenance(s)	443.6	263.7	1,106.6	0.0	2,254.2	564.3	144.0	486.3	1,694.3	1,314.2	0.0	0.0
110.00	Top - Section 3	432.5	253.7					145.8	477.4	578.3	731.1	0.0	0.0
115.00		235.3	183.5					147.5	477.4	382.8	660.8	0.0	0.0
115.52	Reinf. Top	207.4	18.7					15.5	49.7	222.8	68.4	0.0	0.0
120.00	Appurtenance(s)	386.6	157.3	2,988.6	0.0	0.0	2,676.3	133.6	158.3	3,508.9	2,992.0	0.0	0.0
125.00		395.6	168.6					92.6	125.2	488.2	293.8	0.0	0.0
130.00	Appurtenance(s)	351.0	161.2	1,510.5	0.0	0.0	305.1	93.6	125.2	1,955.1	591.5	0.0	0.0
135.00		306.9	153.7					0.0	81.0	306.9	234.7	0.0	0.0
140.00		295.0	146.3					0.0	81.0	295.0	227.2	0.0	0.0
145.00		282.6	138.8					0.0	81.0	282.6	219.8	0.0	0.0
150.00	Appurtenance(s)	138.1	131.4	4,909.1	0.0	11,952.2	2,822.4	0.0	81.0	5,047.3	3,034.8	0.0	0.0
Totals:										26,636.9	30,107.0	0.00	0.00

**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	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-30.04	-26.50	0.00	-2,690.27	0.00	2,690.27	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.715
5.00	-28.74	-26.21	0.00	-2,557.79	0.00	2,557.79	3,092.06	1,546.03	4,560.72	2,252.37	0.16	-0.30	0.697
10.00	-27.47	-25.91	0.00	-2,426.77	0.00	2,426.77	3,046.49	1,523.25	4,391.58	2,168.84	0.64	-0.61	0.679
15.00	-26.21	-25.57	0.00	-2,297.21	0.00	2,297.21	2,999.83	1,499.91	4,223.96	2,086.05	1.44	-0.91	0.660
20.00	-24.98	-25.09	0.00	-2,169.34	0.00	2,169.34	2,952.07	1,476.04	4,057.95	2,004.07	2.56	-1.22	0.640
25.00	-23.76	-24.61	0.00	-2,043.87	0.00	2,043.87	2,901.93	1,450.96	3,891.94	1,922.08	4.00	-1.52	0.620
30.00	-22.61	-24.25	0.00	-1,920.80	0.00	1,920.80	2,830.35	1,415.18	3,701.25	1,827.91	5.76	-1.83	0.604
31.50	-22.23	-24.03	0.00	-1,884.42	0.00	1,884.42	2,808.88	1,404.44	3,644.98	1,800.12	6.35	-1.92	0.599
35.00	-21.10	-23.76	0.00	-1,800.32	0.00	1,800.32	2,758.78	1,379.39	3,515.36	1,736.10	7.84	-2.14	0.578
35.67	-20.84	-23.55	0.00	-1,784.48	0.00	1,784.48	2,225.24	1,112.62	2,894.88	1,429.67	8.14	-2.18	0.658
40.00	-19.91	-23.06	0.00	-1,682.42	0.00	1,682.42	2,194.35	1,097.17	2,791.07	1,378.40	10.24	-2.44	0.634
45.00	-18.86	-22.51	0.00	-1,567.11	0.00	1,567.11	2,157.69	1,078.84	2,672.25	1,319.72	12.96	-2.75	0.606
50.00	-17.83	-21.95	0.00	-1,454.53	0.00	1,454.53	2,119.93	1,059.96	2,554.56	1,261.60	16.01	-3.06	0.577
55.00	-16.83	-21.37	0.00	-1,344.79	0.00	1,344.79	2,081.07	1,040.54	2,438.12	1,204.10	19.38	-3.37	0.548
60.00	-15.84	-20.78	0.00	-1,237.94	0.00	1,237.94	2,041.12	1,020.56	2,323.03	1,147.26	23.07	-3.67	0.519
65.00	-14.87	-20.18	0.00	-1,134.05	0.00	1,134.05	1,992.10	996.05	2,200.59	1,086.79	27.07	-3.97	0.491
70.00	-13.94	-19.62	0.00	-1,033.17	0.00	1,033.17	1,932.46	966.23	2,070.05	1,022.32	31.37	-4.25	0.464
73.50	-13.07	-19.27	0.00	-964.49	0.00	964.49	1,451.36	725.68	1,558.37	769.62	34.56	-4.45	0.508
74.71	-12.87	-19.15	0.00	-941.11	0.00	941.11	1,444.76	722.38	1,539.55	760.33	35.70	-4.52	0.499
75.00	-12.81	-19.02	0.00	-935.63	0.00	935.63	1,443.19	721.60	1,535.11	758.14	35.98	-4.54	0.271
77.44	-12.40	-18.69	0.00	-889.27	0.00	889.27	1,429.71	714.86	1,497.46	739.54	38.31	-4.62	0.257
77.44	-12.40	-18.69	0.00	-889.27	0.00	889.27	1,429.71	714.86	1,497.46	739.54	38.31	-4.62	0.386
80.00	-11.98	-18.26	0.00	-841.37	0.00	841.37	1,415.26	707.63	1,458.06	720.08	40.81	-4.70	0.368
85.00	-11.18	-17.62	0.00	-750.08	0.00	750.08	1,386.24	693.12	1,381.78	682.41	45.84	-4.91	0.333
90.00	-10.40	-16.98	0.00	-661.99	0.00	661.99	1,356.12	678.06	1,306.38	645.17	51.09	-5.12	0.299
95.00	-9.63	-16.34	0.00	-577.10	0.00	577.10	1,324.90	662.45	1,231.99	608.43	56.56	-5.31	0.265
100.00	-8.89	-15.70	0.00	-495.41	0.00	495.41	1,293.04	646.52	1,159.10	572.44	62.21	-5.49	0.231
105.00	-7.71	-13.91	0.00	-414.66	0.00	414.66	1,245.33	622.66	1,074.67	530.74	68.04	-5.65	0.199
110.00	-7.00	-13.27	0.00	-345.13	0.00	345.13	1,197.61	598.80	993.42	490.61	74.02	-5.79	0.170
110.00	-7.00	-13.27	0.00	-345.13	0.00	345.13	833.77	416.88	695.90	343.68	74.02	-5.79	0.195
115.00	-6.37	-12.83	0.00	-278.77	0.00	278.77	813.89	406.95	652.08	322.04	80.15	-5.92	0.159
115.52	-6.31	-12.61	0.00	-272.08	0.00	272.08	811.76	405.88	647.55	319.80	80.79	-5.93	0.156
115.52	-6.31	-12.61	0.00	-272.08	0.00	272.08	811.76	405.88	647.55	319.80	80.79	-5.93	0.860
120.00	-3.65	-8.83	0.00	-215.60	0.00	215.60	792.92	396.46	608.75	300.64	86.40	-6.03	0.722
125.00	-3.34	-8.34	0.00	-171.45	0.00	171.45	770.85	385.43	566.02	279.54	93.00	-6.58	0.618
130.00	-2.93	-6.36	0.00	-129.73	0.00	129.73	747.69	373.84	524.00	258.78	100.15	-7.07	0.506
135.00	-2.70	-6.04	0.00	-97.95	0.00	97.95	722.05	361.03	481.88	237.98	107.76	-7.50	0.416
140.00	-2.48	-5.73	0.00	-67.75	0.00	67.75	686.26	343.13	435.03	214.85	115.79	-7.85	0.319
145.00	-2.28	-5.43	0.00	-39.10	0.00	39.10	650.48	325.24	390.59	192.90	124.14	-8.12	0.206
150.00	0.00	-5.05	0.00	-11.95	0.00	11.95	614.69	307.34	348.53	172.13	132.72	-8.27	0.070

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	25 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		48.0	0.0					0.0	0.0	48.0	0.0	0.0	0.0
5.00		95.4	1,270.5					283.1	960.8	378.5	2,231.2	0.0	0.0
10.00		94.1	1,287.4					284.7	1,000.1	378.7	2,287.5	0.0	0.0
15.00		92.5	1,280.9					283.6	1,020.5	376.0	2,301.3	0.0	0.0
20.00		90.8	1,266.6					281.7	1,034.7	372.4	2,301.3	0.0	0.0
25.00		89.0	1,248.4					279.3	1,045.7	368.3	2,294.1	0.0	0.0
30.00		57.2	1,227.6					276.7	1,054.8	333.9	2,282.4	0.0	0.0
31.50	Bot - Section 2	44.7	365.0					83.1	318.0	127.9	683.0	0.0	0.0
35.00		37.7	1,307.6					197.3	744.6	235.0	2,052.2	0.0	0.0
35.67	Top - Section 1	45.9	247.2					38.1	142.2	84.0	389.4	0.0	0.0
40.00		86.4	933.6					253.7	927.2	340.1	1,860.8	0.0	0.0
45.00		93.6	1,056.5					299.6	1,075.5	393.1	2,132.0	0.0	0.0
50.00		94.3	1,034.3					305.8	1,081.0	400.0	2,115.3	0.0	0.0
55.00		94.7	1,011.4					310.9	1,086.0	405.6	2,097.4	0.0	0.0
60.00		94.8	987.9					315.3	1,090.6	410.1	2,078.5	0.0	0.0
65.00		94.7	964.0					319.0	1,094.9	413.6	2,058.8	0.0	0.0
70.00	Bot - Section 3	80.8	939.6					326.7	1,125.5	407.5	2,065.1	0.0	0.0
73.50	Top - Section 2	45.1	952.1					244.0	865.4	289.1	1,817.4	0.0	0.0
74.71	Reinf Bottom	14.3	199.7					85.6	300.6	99.9	500.3	0.0	0.0
75.00		25.9	47.0					20.2	94.0	46.2	141.0	0.0	0.0
77.44	Reinf. Top	47.5	396.1					172.6	627.7	220.1	1,023.8	0.0	0.0
80.00		71.4	410.7					182.1	636.9	253.5	1,047.6	0.0	0.0
85.00		93.7	781.9					344.0	1,177.7	437.7	1,959.7	0.0	0.0
90.00		92.7	759.6					331.9	1,112.7	424.6	1,872.3	0.0	0.0
95.00		91.5	737.1					332.6	1,115.7	424.1	1,852.8	0.0	0.0
100.00		90.2	714.3					332.9	1,118.6	423.1	1,832.9	0.0	0.0
105.00	Appurtenance(s)	88.7	691.3	347.6	0.0	560.7	1,477.5	332.9	1,121.3	769.2	3,290.2	0.0	0.0
110.00	Top - Section 3	87.1	668.2					220.4	1,035.0	307.5	1,703.2	0.0	0.0
115.00		47.6	564.3					221.1	1,037.2	268.7	1,601.4	0.0	0.0
115.52	Reinf. Top	42.3	58.2					23.1	108.1	65.4	166.3	0.0	0.0
120.00	Appurtenance(s)	79.2	487.0	793.6	0.0	0.0	6,438.8	192.6	543.5	1,065.4	7,469.4	0.0	0.0
125.00		81.8	523.7					120.8	281.6	202.6	805.3	0.0	0.0
130.00	Appurtenance(s)	79.8	503.2	367.2	0.0	0.0	1,499.8	118.6	282.1	565.5	2,285.1	0.0	0.0
135.00		77.7	482.5					0.0	107.9	77.7	590.5	0.0	0.0
140.00		75.6	461.7					0.0	107.9	75.6	569.7	0.0	0.0
145.00		73.4	440.8					0.0	107.9	73.4	548.8	0.0	0.0
150.00	Appurtenance(s)	36.1	419.8	1,382.3	0.0	2,980.8	9,390.6	0.0	107.9	1,418.4	9,918.3	0.0	0.0
<b>Totals:</b>										12,980.5	72,226.3	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:34 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

25 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	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-72.21	-13.02	0.00	-1,197.35	0.00	1,197.35	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.331
5.00	-69.95	-12.80	0.00	-1,132.26	0.00	1,132.26	3,092.06	1,546.03	4,560.72	2,252.37	0.07	-0.13	0.321
10.00	-67.63	-12.57	0.00	-1,068.26	0.00	1,068.26	3,046.49	1,523.25	4,391.58	2,168.84	0.29	-0.27	0.311
15.00	-65.31	-12.34	0.00	-1,005.39	0.00	1,005.39	2,999.83	1,499.91	4,223.96	2,086.05	0.64	-0.40	0.301
20.00	-62.98	-12.09	0.00	-943.72	0.00	943.72	2,952.07	1,476.04	4,057.95	2,004.07	1.13	-0.54	0.290
25.00	-60.66	-11.84	0.00	-883.26	0.00	883.26	2,901.93	1,450.96	3,891.94	1,922.08	1.77	-0.67	0.279
30.00	-58.37	-11.56	0.00	-824.08	0.00	824.08	2,830.35	1,415.18	3,701.25	1,827.91	2.54	-0.80	0.270
31.50	-57.67	-11.49	0.00	-806.73	0.00	806.73	2,808.88	1,404.44	3,644.98	1,800.12	2.79	-0.84	0.268
35.00	-55.62	-11.28	0.00	-766.52	0.00	766.52	2,758.78	1,379.39	3,515.36	1,736.10	3.45	-0.93	0.257
35.67	-55.21	-11.25	0.00	-759.00	0.00	759.00	2,225.24	1,112.62	2,894.88	1,429.67	3.58	-0.95	0.293
40.00	-53.34	-10.99	0.00	-710.27	0.00	710.27	2,194.35	1,097.17	2,791.07	1,378.40	4.49	-1.06	0.280
45.00	-51.19	-10.67	0.00	-655.33	0.00	655.33	2,157.69	1,078.84	2,672.25	1,319.72	5.67	-1.19	0.266
50.00	-49.06	-10.33	0.00	-601.98	0.00	601.98	2,119.93	1,059.96	2,554.56	1,261.60	6.99	-1.32	0.251
55.00	-46.95	-9.98	0.00	-550.32	0.00	550.32	2,081.07	1,040.54	2,438.12	1,204.10	8.44	-1.45	0.236
60.00	-44.86	-9.61	0.00	-500.43	0.00	500.43	2,041.12	1,020.56	2,323.03	1,147.26	10.02	-1.57	0.221
65.00	-42.80	-9.22	0.00	-452.38	0.00	452.38	1,992.10	996.05	2,200.59	1,086.79	11.73	-1.69	0.206
70.00	-40.73	-8.82	0.00	-406.27	0.00	406.27	1,932.46	966.23	2,070.05	1,022.32	13.56	-1.80	0.193
73.50	-38.92	-8.51	0.00	-375.39	0.00	375.39	1,451.36	725.68	1,558.37	769.62	14.91	-1.88	0.210
74.71	-38.42	-8.40	0.00	-365.07	0.00	365.07	1,444.76	722.38	1,539.55	760.33	15.39	-1.91	0.205
75.00	-38.28	-8.37	0.00	-362.66	0.00	362.66	1,443.19	721.60	1,535.11	758.14	15.50	-1.91	0.113
77.44	-37.26	-8.13	0.00	-342.27	0.00	342.27	1,429.71	714.86	1,497.46	739.54	16.49	-1.94	0.107
77.44	-37.26	-8.13	0.00	-342.27	0.00	342.27	1,429.71	714.86	1,497.46	739.54	16.49	-1.94	0.160
80.00	-36.21	-7.88	0.00	-321.44	0.00	321.44	1,415.26	707.63	1,458.06	720.08	17.54	-1.97	0.152
85.00	-34.26	-7.42	0.00	-282.05	0.00	282.05	1,386.24	693.12	1,381.78	682.41	19.65	-2.06	0.136
90.00	-32.39	-6.97	0.00	-244.95	0.00	244.95	1,356.12	678.06	1,306.38	645.17	21.85	-2.13	0.121
95.00	-30.55	-6.51	0.00	-210.12	0.00	210.12	1,324.90	662.45	1,231.99	608.43	24.12	-2.20	0.106
100.00	-28.73	-6.05	0.00	-177.57	0.00	177.57	1,293.04	646.52	1,159.10	572.44	26.47	-2.27	0.092
105.00	-25.47	-5.17	0.00	-146.78	0.00	146.78	1,245.33	622.66	1,074.67	530.74	28.87	-2.33	0.079
110.00	-23.77	-4.81	0.00	-120.93	0.00	120.93	1,197.61	598.80	993.42	490.61	31.33	-2.38	0.067
110.00	-23.77	-4.81	0.00	-120.93	0.00	120.93	833.77	416.88	695.90	343.68	31.33	-2.38	0.078
115.00	-22.18	-4.49	0.00	-96.88	0.00	96.88	813.89	406.95	652.08	322.04	33.85	-2.42	0.064
115.52	-22.02	-4.42	0.00	-94.54	0.00	94.54	811.76	405.88	647.55	319.80	34.11	-2.42	0.063
115.52	-22.02	-4.42	0.00	-94.54	0.00	94.54	811.76	405.88	647.55	319.80	34.11	-2.42	0.323
120.00	-14.60	-3.07	0.00	-74.74	0.00	74.74	792.92	396.46	608.75	300.64	36.40	-2.46	0.267
125.00	-13.79	-2.87	0.00	-59.41	0.00	59.41	770.85	385.43	566.02	279.54	39.08	-2.65	0.230
130.00	-11.53	-2.23	0.00	-45.04	0.00	45.04	747.69	373.84	524.00	258.78	41.94	-2.82	0.190
135.00	-10.94	-2.15	0.00	-33.89	0.00	33.89	722.05	361.03	481.88	237.98	44.98	-2.97	0.158
140.00	-10.37	-2.06	0.00	-23.15	0.00	23.15	686.26	343.13	435.03	214.85	48.15	-3.09	0.123
145.00	-9.82	-1.97	0.00	-12.84	0.00	12.84	650.48	325.24	390.59	192.90	51.44	-3.18	0.082
150.00	0.00	-1.42	0.00	-2.98	0.00	2.98	614.69	307.34	348.53	172.13	54.80	-3.23	0.017

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:34 PM

Customer: CLEARWIRE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

### Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		53.2	0.0					0.0	0.0	53.2	0.0	0.0	0.0
5.00		105.3	744.2					0.0	540.3	105.3	1,284.5	0.0	0.0
10.00		102.9	727.7					0.0	540.3	102.9	1,268.0	0.0	0.0
15.00		110.5	711.1					0.0	540.3	110.5	1,251.4	0.0	0.0
20.00		117.9	694.6					24.0	540.3	141.8	1,234.9	0.0	0.0
25.00		115.1	678.1					24.0	540.3	139.1	1,218.4	0.0	0.0
30.00		73.8	661.6					24.0	540.3	97.8	1,201.9	0.0	0.0
31.50	Bot - Section 2	57.5	195.2					7.3	162.1	64.8	357.3	0.0	0.0
35.00		48.4	832.9					17.3	378.2	65.8	1,211.1	0.0	0.0
35.67	Top - Section 1	58.8	157.0					3.4	72.0	62.2	229.0	0.0	0.0
40.00		110.4	463.3					22.3	468.3	132.7	931.6	0.0	0.0
45.00		119.1	521.8					26.6	540.3	145.7	1,062.1	0.0	0.0
50.00		119.5	508.0					27.5	540.3	147.0	1,048.3	0.0	0.0
55.00		119.5	494.2					28.3	540.3	147.8	1,034.5	0.0	0.0
60.00		119.1	480.5					29.1	540.3	148.1	1,020.8	0.0	0.0
65.00		118.3	466.7					29.8	540.3	148.1	1,007.0	0.0	0.0
70.00	Bot - Section 3	100.6	452.9					30.5	540.3	131.1	993.2	0.0	0.0
73.50	Top - Section 2	56.1	561.3					21.7	378.2	77.8	939.6	0.0	0.0
74.71	Reinf Bottom	17.8	86.3					7.6	131.1	25.4	217.4	0.0	0.0
75.00		32.1	20.3					1.8	50.1	33.9	70.4	0.0	0.0
77.44	Reinf. Top	58.8	171.0					15.4	282.5	74.2	453.6	0.0	0.0
80.00		88.0	177.0					16.4	276.9	104.3	453.9	0.0	0.0
85.00		115.0	337.0					32.4	540.3	147.3	877.3	0.0	0.0
90.00		113.0	326.0					32.9	540.3	146.0	866.3	0.0	0.0
95.00		110.9	315.0					33.5	540.3	144.4	855.3	0.0	0.0
100.00		108.6	304.0					34.0	540.3	142.6	844.3	0.0	0.0
105.00	Appurtenance(s)	106.1	293.0	264.6	0.0	539.1	627.0	34.5	540.3	405.2	1,460.3	0.0	0.0
110.00	Top - Section 3	103.4	281.9					35.0	530.4	138.5	812.3	0.0	0.0
115.00		56.3	203.8					35.5	530.4	91.8	734.2	0.0	0.0
115.52	Reinf. Top	49.6	20.8					3.7	55.2	53.3	76.0	0.0	0.0
120.00	Appurtenance(s)	92.5	174.8	714.7	0.0	0.0	2,973.7	32.2	175.9	839.4	3,324.5	0.0	0.0
125.00		94.6	187.3					22.1	139.2	116.7	326.5	0.0	0.0
130.00	Appurtenance(s)	83.9	179.1	361.2	0.0	0.0	339.0	22.4	139.2	467.5	657.2	0.0	0.0
135.00		73.4	170.8					0.0	90.0	73.4	260.7	0.0	0.0
140.00		70.5	162.5					0.0	90.0	70.5	252.5	0.0	0.0
145.00		67.6	154.3					0.0	90.0	67.6	244.2	0.0	0.0
150.00	Appurtenance(s)	33.0	146.0	1,173.9	0.0	2,858.2	3,136.0	0.0	90.0	1,207.0	3,372.0	0.0	0.0
Totals:										6,370.59	33,452.2	0.00	0.00



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

5/6/2019 9:02:41 PM

Customer: CLEARWIRE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-33.45	-6.34	0.00	-648.18	0.00	648.18	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.178
5.00	-32.16	-6.27	0.00	-616.49	0.00	616.49	3,092.06	1,546.03	4,560.72	2,252.37	0.04	-0.07	0.174
10.00	-30.88	-6.21	0.00	-585.12	0.00	585.12	3,046.49	1,523.25	4,391.58	2,168.84	0.16	-0.15	0.169
15.00	-29.62	-6.13	0.00	-554.09	0.00	554.09	2,999.83	1,499.91	4,223.96	2,086.05	0.35	-0.22	0.164
20.00	-28.38	-6.02	0.00	-523.43	0.00	523.43	2,952.07	1,476.04	4,057.95	2,004.07	0.62	-0.29	0.159
25.00	-27.15	-5.91	0.00	-493.33	0.00	493.33	2,901.93	1,450.96	3,891.94	1,922.08	0.97	-0.37	0.154
30.00	-25.95	-5.82	0.00	-463.79	0.00	463.79	2,830.35	1,415.18	3,701.25	1,827.91	1.39	-0.44	0.150
31.50	-25.59	-5.77	0.00	-455.05	0.00	455.05	2,808.88	1,404.44	3,644.98	1,800.12	1.53	-0.46	0.149
35.00	-24.37	-5.71	0.00	-434.85	0.00	434.85	2,758.78	1,379.39	3,515.36	1,736.10	1.89	-0.52	0.144
35.67	-24.14	-5.66	0.00	-431.04	0.00	431.04	2,225.24	1,112.62	2,894.88	1,429.67	1.96	-0.53	0.164
40.00	-23.20	-5.55	0.00	-406.51	0.00	406.51	2,194.35	1,097.17	2,791.07	1,378.40	2.47	-0.59	0.158
45.00	-22.14	-5.42	0.00	-378.77	0.00	378.77	2,157.69	1,078.84	2,672.25	1,319.72	3.13	-0.66	0.151
50.00	-21.08	-5.29	0.00	-351.67	0.00	351.67	2,119.93	1,059.96	2,554.56	1,261.60	3.86	-0.74	0.144
55.00	-20.05	-5.15	0.00	-325.24	0.00	325.24	2,081.07	1,040.54	2,438.12	1,204.10	4.68	-0.81	0.137
60.00	-19.02	-5.01	0.00	-299.48	0.00	299.48	2,041.12	1,020.56	2,323.03	1,147.26	5.57	-0.89	0.130
65.00	-18.01	-4.87	0.00	-274.42	0.00	274.42	1,992.10	996.05	2,200.59	1,086.79	6.53	-0.96	0.123
70.00	-17.01	-4.74	0.00	-250.07	0.00	250.07	1,932.46	966.23	2,070.05	1,022.32	7.57	-1.03	0.116
73.50	-16.07	-4.65	0.00	-233.48	0.00	233.48	1,451.36	725.68	1,558.37	769.62	8.35	-1.08	0.128
74.71	-15.86	-4.63	0.00	-227.84	0.00	227.84	1,444.76	722.38	1,539.55	760.33	8.62	-1.09	0.125
75.00	-15.79	-4.59	0.00	-226.51	0.00	226.51	1,443.19	721.60	1,535.11	758.14	8.69	-1.10	0.069
77.44	-15.33	-4.52	0.00	-215.31	0.00	215.31	1,429.71	714.86	1,497.46	739.54	9.25	-1.12	0.065
77.44	-15.33	-4.52	0.00	-215.31	0.00	215.31	1,429.71	714.86	1,497.46	739.54	9.25	-1.12	0.098
80.00	-14.88	-4.41	0.00	-203.74	0.00	203.74	1,415.26	707.63	1,458.06	720.08	9.86	-1.13	0.093
85.00	-14.00	-4.26	0.00	-181.68	0.00	181.68	1,386.24	693.12	1,381.78	682.41	11.07	-1.19	0.085
90.00	-13.13	-4.11	0.00	-160.37	0.00	160.37	1,356.12	678.06	1,306.38	645.17	12.34	-1.24	0.076
95.00	-12.28	-3.95	0.00	-139.84	0.00	139.84	1,324.90	662.45	1,231.99	608.43	13.67	-1.28	0.068
100.00	-11.43	-3.80	0.00	-120.07	0.00	120.07	1,293.04	646.52	1,159.10	572.44	15.03	-1.33	0.059
105.00	-9.98	-3.37	0.00	-100.53	0.00	100.53	1,245.33	622.66	1,074.67	530.74	16.44	-1.37	0.051
110.00	-9.17	-3.21	0.00	-83.70	0.00	83.70	1,197.61	598.80	993.42	490.61	17.89	-1.40	0.044
110.00	-9.17	-3.21	0.00	-83.70	0.00	83.70	833.77	416.88	695.90	343.68	17.89	-1.40	0.051
115.00	-8.44	-3.11	0.00	-67.62	0.00	67.62	813.89	406.95	652.08	322.04	19.38	-1.43	0.042
115.52	-8.36	-3.05	0.00	-66.01	0.00	66.01	811.76	405.88	647.55	319.80	19.53	-1.43	0.041
115.52	-8.36	-3.05	0.00	-66.01	0.00	66.01	811.76	405.88	647.55	319.80	19.53	-1.43	0.217
120.00	-5.06	-2.14	0.00	-52.33	0.00	52.33	792.92	396.46	608.75	300.64	20.89	-1.46	0.180
125.00	-4.73	-2.02	0.00	-41.64	0.00	41.64	770.85	385.43	566.02	279.54	22.49	-1.59	0.155
130.00	-4.08	-1.54	0.00	-31.52	0.00	31.52	747.69	373.84	524.00	258.78	24.22	-1.71	0.127
135.00	-3.82	-1.47	0.00	-23.80	0.00	23.80	722.05	361.03	481.88	237.98	26.07	-1.81	0.105
140.00	-3.57	-1.40	0.00	-16.45	0.00	16.45	686.26	343.13	435.03	214.85	28.02	-1.90	0.082
145.00	-3.33	-1.32	0.00	-9.47	0.00	9.47	650.48	325.24	390.59	192.90	30.04	-1.97	0.054
150.00	0.00	-1.21	0.00	-2.86	0.00	2.86	614.69	307.34	348.53	172.13	32.13	-2.00	0.017

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.67
Redundancy Factor ( $\rho$ ):	1.00
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	33.45 k
Seismic Base Shear (E):	1.00 k

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

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
36	147.50	236	5,134	0.020	20	292
35	142.50	244	4,959	0.020	20	303
34	137.50	252	4,774	0.019	19	313
33	132.50	261	4,578	0.018	18	323
32	127.50	318	5,173	0.020	21	394
31	122.50	326	4,899	0.019	19	405
30	117.76	351	4,864	0.019	19	435
29	115.26	76	1,010	0.004	4	94
28	112.50	734	9,293	0.037	37	910
27	107.50	812	9,388	0.037	37	1,007
26	102.50	833	8,754	0.035	35	1,033
25	97.50	844	8,026	0.032	32	1,046
24	92.50	855	7,318	0.029	29	1,060
23	87.50	866	6,633	0.026	26	1,074
22	82.50	877	5,971	0.024	24	1,087
21	78.72	454	2,813	0.011	11	563
20	76.22	454	2,635	0.010	10	562
19	74.86	70	394	0.002	2	87
18	74.11	217	1,194	0.005	5	269
17	71.75	940	4,837	0.019	19	1,165
16	67.50	993	4,525	0.018	18	1,231
15	62.50	1,007	3,934	0.016	16	1,248
14	57.50	1,021	3,375	0.013	13	1,265

Site Number: 302475

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

13	52.50	1,035	2,851	0.011	11	1,282
12	47.50	1,048	2,365	0.009	9	1,299
11	42.50	1,062	1,918	0.008	8	1,316
10	37.83	932	1,333	0.005	5	1,155
9	35.33	229	286	0.001	1	284
8	33.25	1,211	1,339	0.005	5	1,501
7	30.75	357	338	0.001	1	443
6	27.50	1,202	909	0.004	4	1,490
5	22.50	1,218	617	0.002	2	1,510
4	17.50	1,235	378	0.001	1	1,531
3	12.50	1,251	196	0.001	1	1,551
2	7.50	1,268	71	0.000	0	1,572
1	2.50	1,284	8	0.000	0	1,592
CCI TPX-070821	150.00	45	1,013	0.004	4	56
Kaelus DBCT108F1V92-	150.00	83	1,876	0.007	7	103
Raycap DC6-48-60-18-	150.00	40	900	0.004	4	50
CCI DTMAPB7819VG12A	150.00	58	1,296	0.005	5	71
Raycap DC6-48-60-18-	150.00	32	715	0.003	3	39
Ericsson RRUS 4426 B	150.00	145	3,267	0.013	13	180
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	223
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	223
Ericsson RRUS-11 (50	150.00	150	3,375	0.013	13	186
Ericsson RRUS 32 B2	150.00	159	3,577	0.014	14	197
Generic 10' Omni	150.00	25	563	0.002	2	31
Ericsson RRUS-32 (77	150.00	231	5,198	0.021	21	286
Powerwave Allgon 777	150.00	105	2,363	0.009	9	130
KMW AM-X-CD-16-65-00	150.00	97	2,183	0.009	9	120
Quintel QS66512-3 (1	150.00	336	7,560	0.030	30	416
Andrew SBNH-1D6565C	150.00	61	1,368	0.005	5	75
Kathrein Scala 80010	150.00	195	4,392	0.017	17	242
Round Sector Frame	150.00	900	20,250	0.080	80	1,116
Kathrein Scala 80010	150.00	115	2,579	0.010	10	142
Kathrein Scala Smart	130.00	10	167	0.001	1	12
Site-Pro UWS6-NP Col	130.00	96	1,622	0.006	6	119
RFS APXV18-206517S-C	130.00	79	1,338	0.005	5	98
Andrew LNX-6515DS-VT	130.00	154	2,601	0.010	10	191
DragonWave Horizon C	120.00	11	153	0.001	1	13
Generic 12" x 12" Ju	120.00	10	144	0.001	1	12
Alcatel-Lucent RRH2x	120.00	317	4,571	0.018	18	393
Nokia FZHN Flexi RRH	120.00	132	1,905	0.008	8	164
Alcatel-Lucent 1900	120.00	180	2,592	0.010	10	223
RFS APXVTM14-ALU-I20	120.00	169	2,428	0.010	10	209
DragonWave A-ANT-11G	120.00	48	685	0.003	3	59
Commscope NNVV-65B-R	120.00	232	3,344	0.013	13	288
Generic Flat Low Pro	120.00	1,875	27,000	0.107	107	2,324
dB Systems 5100A	105.00	21	232	0.001	1	26
VertexRSI 101V VPD	105.00	4	44	0.000	0	5
dB Systems 5100A-D	105.00	152	1,676	0.007	7	188
Round Side Arm	105.00	450	4,961	0.020	20	558
		33,452	253,112	1.000	1,004	41,463

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
36	147.50	236	5,134	0.020	20	203
35	142.50	244	4,959	0.020	20	210
34	137.50	252	4,774	0.019	19	217
33	132.50	261	4,578	0.018	18	224
32	127.50	318	5,173	0.020	21	274

Site Number: 302475

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

31	122.50	326	4,899	0.019	19	281
30	117.76	351	4,864	0.019	19	302
29	115.26	76	1,010	0.004	4	65
28	112.50	734	9,293	0.037	37	632
27	107.50	812	9,388	0.037	37	699
26	102.50	833	8,754	0.035	35	717
25	97.50	844	8,026	0.032	32	727
24	92.50	855	7,318	0.029	29	736
23	87.50	866	6,633	0.026	26	745
22	82.50	877	5,971	0.024	24	755
21	78.72	454	2,813	0.011	11	391
20	76.22	454	2,635	0.010	10	390
19	74.86	70	394	0.002	2	61
18	74.11	217	1,194	0.005	5	187
17	71.75	940	4,837	0.019	19	809
16	67.50	993	4,525	0.018	18	855
15	62.50	1,007	3,934	0.016	16	867
14	57.50	1,021	3,375	0.013	13	878
13	52.50	1,035	2,851	0.011	11	890
12	47.50	1,048	2,365	0.009	9	902
11	42.50	1,062	1,918	0.008	8	914
10	37.83	932	1,333	0.005	5	802
9	35.33	229	286	0.001	1	197
8	33.25	1,211	1,339	0.005	5	1,042
7	30.75	357	338	0.001	1	308
6	27.50	1,202	909	0.004	4	1,034
5	22.50	1,218	617	0.002	2	1,048
4	17.50	1,235	378	0.001	1	1,063
3	12.50	1,251	196	0.001	1	1,077
2	7.50	1,268	71	0.000	0	1,091
1	2.50	1,284	8	0.000	0	1,105
CCI TPX-070821	150.00	45	1,013	0.004	4	39
Kaelus DBCT108F1V92-	150.00	83	1,876	0.007	7	72
Raycap DC6-48-60-18-	150.00	40	900	0.004	4	34
CCI DTMAPB7819VG12A	150.00	58	1,296	0.005	5	50
Raycap DC6-48-60-18-	150.00	32	715	0.003	3	27
Ericsson RRUS 4426 B	150.00	145	3,267	0.013	13	125
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	155
Ericsson RRUS 4478 B	150.00	180	4,043	0.016	16	155
Ericsson RRUS-11 (50	150.00	150	3,375	0.013	13	129
Ericsson RRUS 32 B2	150.00	159	3,577	0.014	14	137
Generic 10' Omni	150.00	25	563	0.002	2	22
Ericsson RRUS-32 (77	150.00	231	5,198	0.021	21	199
Powerwave Allgon 777	150.00	105	2,363	0.009	9	90
KMW AM-X-CD-16-65-00	150.00	97	2,183	0.009	9	83
Quintel QS66512-3 (1	150.00	336	7,560	0.030	30	289
Andrew SBNH-1D6565C	150.00	61	1,368	0.005	5	52
Kathrein Scala 80010	150.00	195	4,392	0.017	17	168
Round Sector Frame	150.00	900	20,250	0.080	80	774
Kathrein Scala 80010	150.00	115	2,579	0.010	10	99
Kathrein Scala Smart	130.00	10	167	0.001	1	9
Site-Pro UWS6-NP Col	130.00	96	1,622	0.006	6	83
RFS APXV18-206517S-C	130.00	79	1,338	0.005	5	68
Andrew LNX-6515DS-VT	130.00	154	2,601	0.010	10	132
DragonWave Horizon C	120.00	11	153	0.001	1	9
Generic 12" x 12" Ju	120.00	10	144	0.001	1	9
Alcatel-Lucent RRH2x	120.00	317	4,571	0.018	18	273
Nokia FZHN Flexi RRH	120.00	132	1,905	0.008	8	114
Alcatel-Lucent 1900	120.00	180	2,592	0.010	10	155
RFS APXVTM14-ALU-I20	120.00	169	2,428	0.010	10	145
DragonWave A-ANT-11G	120.00	48	685	0.003	3	41
Commscope NNVV-65B-R	120.00	232	3,344	0.013	13	200
Generic Flat Low Pro	120.00	1,875	27,000	0.107	107	1,613
dB Systems 5100A	105.00	21	232	0.001	1	18

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Site Number: 302475

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

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VertexRSI 101V VPD	105.00	4	44	0.000	0	3
dB Systems 5100A-D	105.00	152	1,676	0.007	7	131
Round Side Arm	105.00	450	4,961	0.020	20	387
		33,452	253,112	1.000	1,004	28,787

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	-39.87	-1.01	0.00	-123.11	0.00	123.11	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.041
5.00	-38.30	-1.02	0.00	-118.07	0.00	118.07	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.040
10.00	-36.75	-1.02	0.00	-112.99	0.00	112.99	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.040
15.00	-35.22	-1.03	0.00	-107.87	0.00	107.87	2,999.83	1,499.91	4,223.96	2,086.05	0.07	-0.04	0.039
20.00	-33.71	-1.04	0.00	-102.71	0.00	102.71	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.038
25.00	-32.22	-1.04	0.00	-97.54	0.00	97.54	2,901.93	1,450.96	3,891.94	1,922.08	0.19	-0.07	0.037
30.00	-31.77	-1.04	0.00	-92.34	0.00	92.34	2,830.35	1,415.18	3,701.25	1,827.91	0.27	-0.09	0.036
31.50	-30.27	-1.04	0.00	-90.78	0.00	90.78	2,808.88	1,404.44	3,644.98	1,800.12	0.30	-0.09	0.036
35.00	-29.99	-1.04	0.00	-87.15	0.00	87.15	2,758.78	1,379.39	3,515.36	1,736.10	0.37	-0.10	0.035
35.67	-28.83	-1.04	0.00	-86.46	0.00	86.46	2,225.24	1,112.62	2,894.88	1,429.67	0.38	-0.10	0.040
40.00	-27.52	-1.03	0.00	-81.97	0.00	81.97	2,194.35	1,097.17	2,791.07	1,378.40	0.48	-0.12	0.038
45.00	-26.22	-1.03	0.00	-76.80	0.00	76.80	2,157.69	1,078.84	2,672.25	1,319.72	0.61	-0.13	0.037
50.00	-24.93	-1.02	0.00	-71.66	0.00	71.66	2,119.93	1,059.96	2,554.56	1,261.60	0.75	-0.15	0.035
55.00	-23.67	-1.01	0.00	-66.57	0.00	66.57	2,081.07	1,040.54	2,438.12	1,204.10	0.91	-0.16	0.034
60.00	-22.42	-1.00	0.00	-61.52	0.00	61.52	2,041.12	1,020.56	2,323.03	1,147.26	1.09	-0.18	0.032
65.00	-21.19	-0.98	0.00	-56.54	0.00	56.54	1,992.10	996.05	2,200.59	1,086.79	1.28	-0.19	0.030
70.00	-20.02	-0.96	0.00	-51.64	0.00	51.64	1,932.46	966.23	2,070.05	1,022.32	1.49	-0.21	0.029
73.50	-19.76	-0.96	0.00	-48.28	0.00	48.28	1,451.36	725.68	1,558.37	769.62	1.64	-0.22	0.032
74.71	-19.67	-0.96	0.00	-47.12	0.00	47.12	1,444.76	722.38	1,539.55	760.33	1.70	-0.22	0.032
75.00	-19.11	-0.94	0.00	-46.85	0.00	46.85	1,443.19	721.60	1,535.11	758.14	1.71	-0.22	0.018
77.44	-18.54	-0.93	0.00	-44.55	0.00	44.55	1,429.71	714.86	1,497.46	739.54	1.83	-0.22	0.017
77.44	-18.54	-0.93	0.00	-44.55	0.00	44.55	1,429.71	714.86	1,497.46	739.54	1.83	-0.22	0.026
80.00	-17.46	-0.91	0.00	-42.16	0.00	42.16	1,415.26	707.63	1,458.06	720.08	1.95	-0.23	0.024
85.00	-16.38	-0.88	0.00	-37.63	0.00	37.63	1,386.24	693.12	1,381.78	682.41	2.19	-0.24	0.022
90.00	-15.32	-0.85	0.00	-33.23	0.00	33.23	1,356.12	678.06	1,306.38	645.17	2.45	-0.25	0.020
95.00	-14.28	-0.81	0.00	-29.00	0.00	29.00	1,324.90	662.45	1,231.99	608.43	2.71	-0.26	0.018
100.00	-13.24	-0.78	0.00	-24.93	0.00	24.93	1,293.04	646.52	1,159.10	572.44	2.99	-0.27	0.016
105.00	-11.46	-0.70	0.00	-21.04	0.00	21.04	1,245.33	622.66	1,074.67	530.74	3.27	-0.28	0.014
110.00	-10.55	-0.66	0.00	-17.52	0.00	17.52	1,197.61	598.80	993.42	490.61	3.56	-0.28	0.012
110.00	-10.55	-0.66	0.00	-17.52	0.00	17.52	833.77	416.88	695.90	343.68	3.56	-0.28	0.015
115.00	-10.45	-0.66	0.00	-14.20	0.00	14.20	813.89	406.95	652.08	322.04	3.86	-0.29	0.013
115.52	-10.02	-0.64	0.00	-13.85	0.00	13.85	811.76	405.88	647.55	319.80	3.89	-0.29	0.012
115.52	-10.02	-0.64	0.00	-13.85	0.00	13.85	811.76	405.88	647.55	319.80	3.89	-0.29	0.056
120.00	-5.93	-0.43	0.00	-10.99	0.00	10.99	792.92	396.46	608.75	300.64	4.17	-0.29	0.044
125.00	-5.54	-0.41	0.00	-8.83	0.00	8.83	770.85	385.43	566.02	279.54	4.49	-0.32	0.039
130.00	-4.79	-0.37	0.00	-6.77	0.00	6.77	747.69	373.84	524.00	258.78	4.84	-0.35	0.033
135.00	-4.48	-0.35	0.00	-4.92	0.00	4.92	722.05	361.03	481.88	237.98	5.22	-0.37	0.027
140.00	-4.18	-0.33	0.00	-3.18	0.00	3.18	686.26	343.13	435.03	214.85	5.62	-0.39	0.021
145.00	-3.88	-0.31	0.00	-1.53	0.00	1.53	650.48	325.24	390.59	192.90	6.03	-0.40	0.014
150.00	0.00	-0.28	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	6.45	-0.40	0.000

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	-27.68	-1.01	0.00	-120.73	0.00	120.73	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.038
5.00	-26.59	-1.01	0.00	-115.70	0.00	115.70	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.01	0.037
10.00	-25.51	-1.02	0.00	-110.64	0.00	110.64	3,046.49	1,523.25	4,391.58	2,168.84	0.03	-0.03	0.036
15.00	-24.45	-1.02	0.00	-105.55	0.00	105.55	2,999.83	1,499.91	4,223.96	2,086.05	0.07	-0.04	0.036
20.00	-23.40	-1.02	0.00	-100.45	0.00	100.45	2,952.07	1,476.04	4,057.95	2,004.07	0.12	-0.06	0.035
25.00	-22.37	-1.02	0.00	-95.33	0.00	95.33	2,901.93	1,450.96	3,891.94	1,922.08	0.18	-0.07	0.034
30.00	-22.06	-1.03	0.00	-90.21	0.00	90.21	2,830.35	1,415.18	3,701.25	1,827.91	0.26	-0.08	0.033
31.50	-21.02	-1.02	0.00	-88.67	0.00	88.67	2,808.88	1,404.44	3,644.98	1,800.12	0.29	-0.09	0.033
35.00	-20.82	-1.02	0.00	-85.09	0.00	85.09	2,758.78	1,379.39	3,515.36	1,736.10	0.36	-0.10	0.032
35.67	-20.02	-1.02	0.00	-84.41	0.00	84.41	2,225.24	1,112.62	2,894.88	1,429.67	0.37	-0.10	0.036
40.00	-19.10	-1.01	0.00	-79.99	0.00	79.99	2,194.35	1,097.17	2,791.07	1,378.40	0.47	-0.11	0.035
45.00	-18.20	-1.01	0.00	-74.93	0.00	74.93	2,157.69	1,078.84	2,672.25	1,319.72	0.60	-0.13	0.034
50.00	-17.31	-1.00	0.00	-69.89	0.00	69.89	2,119.93	1,059.96	2,554.56	1,261.60	0.74	-0.14	0.032
55.00	-16.43	-0.99	0.00	-64.90	0.00	64.90	2,081.07	1,040.54	2,438.12	1,204.10	0.89	-0.16	0.031
60.00	-15.57	-0.97	0.00	-59.96	0.00	59.96	2,041.12	1,020.56	2,323.03	1,147.26	1.07	-0.17	0.029
65.00	-14.71	-0.96	0.00	-55.10	0.00	55.10	1,992.10	996.05	2,200.59	1,086.79	1.25	-0.19	0.028
70.00	-13.90	-0.94	0.00	-50.32	0.00	50.32	1,932.46	966.23	2,070.05	1,022.32	1.46	-0.20	0.027
73.50	-13.71	-0.93	0.00	-47.04	0.00	47.04	1,451.36	725.68	1,558.37	769.62	1.61	-0.21	0.029
74.71	-13.65	-0.93	0.00	-45.91	0.00	45.91	1,444.76	722.38	1,539.55	760.33	1.66	-0.21	0.029
75.00	-13.26	-0.92	0.00	-45.64	0.00	45.64	1,443.19	721.60	1,535.11	758.14	1.67	-0.21	0.016
77.44	-12.87	-0.91	0.00	-43.40	0.00	43.40	1,429.71	714.86	1,497.46	739.54	1.79	-0.22	0.015
77.44	-12.87	-0.91	0.00	-43.40	0.00	43.40	1,429.71	714.86	1,497.46	739.54	1.79	-0.22	0.023
80.00	-12.12	-0.88	0.00	-41.07	0.00	41.07	1,415.26	707.63	1,458.06	720.08	1.90	-0.22	0.022
85.00	-11.37	-0.86	0.00	-36.65	0.00	36.65	1,386.24	693.12	1,381.78	682.41	2.14	-0.23	0.020
90.00	-10.64	-0.83	0.00	-32.37	0.00	32.37	1,356.12	678.06	1,306.38	645.17	2.39	-0.24	0.018
95.00	-9.91	-0.79	0.00	-28.24	0.00	28.24	1,324.90	662.45	1,231.99	608.43	2.65	-0.25	0.016
100.00	-9.19	-0.76	0.00	-24.28	0.00	24.28	1,293.04	646.52	1,159.10	572.44	2.92	-0.26	0.014
105.00	-7.95	-0.69	0.00	-20.50	0.00	20.50	1,245.33	622.66	1,074.67	530.74	3.20	-0.27	0.013
110.00	-7.32	-0.65	0.00	-17.06	0.00	17.06	1,197.61	598.80	993.42	490.61	3.48	-0.28	0.011
110.00	-7.32	-0.65	0.00	-17.06	0.00	17.06	833.77	416.88	695.90	343.68	3.48	-0.28	0.013
115.00	-7.26	-0.64	0.00	-13.82	0.00	13.82	813.89	406.95	652.08	322.04	3.77	-0.28	0.011
115.52	-6.96	-0.62	0.00	-13.49	0.00	13.49	811.76	405.88	647.55	319.80	3.80	-0.28	0.011
115.52	-6.96	-0.62	0.00	-13.49	0.00	13.49	811.76	405.88	647.55	319.80	3.80	-0.28	0.051
120.00	-4.12	-0.42	0.00	-10.70	0.00	10.70	792.92	396.46	608.75	300.64	4.07	-0.29	0.041
125.00	-3.84	-0.40	0.00	-8.59	0.00	8.59	770.85	385.43	566.02	279.54	4.39	-0.31	0.036
130.00	-3.33	-0.36	0.00	-6.58	0.00	6.58	747.69	373.84	524.00	258.78	4.73	-0.34	0.030
135.00	-3.11	-0.34	0.00	-4.79	0.00	4.79	722.05	361.03	481.88	237.98	5.10	-0.36	0.024
140.00	-2.90	-0.32	0.00	-3.09	0.00	3.09	686.26	343.13	435.03	214.85	5.49	-0.38	0.019
145.00	-2.70	-0.30	0.00	-1.49	0.00	1.49	650.48	325.24	390.59	192.90	5.89	-0.39	0.012
150.00	0.00	-0.28	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	6.30	-0.39	0.000

### Equivalent Modal Analysis Method

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.67
Redundancy Factor ( $p$ ):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	147.50	236	1.828	1.667	1.025	0.332	52	292
35	142.50	244	1.706	1.144	0.823	0.257	42	303
34	137.50	252	1.588	0.742	0.654	0.190	32	313
33	132.50	261	1.475	0.441	0.513	0.132	23	323
32	127.50	318	1.366	0.222	0.397	0.082	17	394
31	122.50	326	1.261	0.069	0.302	0.040	9	405
30	117.76	351	1.165	-0.026	0.229	0.007	2	435
29	115.26	76	1.116	-0.061	0.197	-0.007	0	94
28	112.50	734	1.063	-0.088	0.165	-0.021	-10	910
27	107.50	812	0.971	-0.116	0.117	-0.040	-21	1,007
26	102.50	833	0.883	-0.121	0.081	-0.050	-28	1,033
25	97.50	844	0.799	-0.112	0.053	-0.053	-30	1,046
24	92.50	855	0.719	-0.092	0.034	-0.048	-27	1,060
23	87.50	866	0.643	-0.068	0.020	-0.036	-21	1,074
22	82.50	877	0.572	-0.043	0.012	-0.019	-11	1,087
21	78.72	454	0.521	-0.024	0.008	-0.004	-1	563
20	76.22	454	0.488	-0.012	0.007	0.006	2	562
19	74.86	70	0.471	-0.006	0.006	0.011	1	87
18	74.11	217	0.461	-0.002	0.006	0.014	2	269
17	71.75	940	0.432	0.008	0.006	0.023	14	1,165
16	67.50	993	0.383	0.023	0.007	0.035	23	1,231
15	62.50	1,007	0.328	0.039	0.010	0.046	31	1,248
14	57.50	1,021	0.278	0.050	0.014	0.052	36	1,265
13	52.50	1,035	0.232	0.058	0.019	0.055	38	1,282
12	47.50	1,048	0.190	0.064	0.025	0.056	39	1,299
11	42.50	1,062	0.152	0.068	0.030	0.056	39	1,316
10	37.83	932	0.120	0.070	0.034	0.055	34	1,155
9	35.33	229	0.105	0.071	0.037	0.054	8	284
8	33.25	1,211	0.093	0.071	0.038	0.054	43	1,501
7	30.75	357	0.079	0.072	0.040	0.053	13	443
6	27.50	1,202	0.064	0.072	0.041	0.052	42	1,490
5	22.50	1,218	0.043	0.070	0.042	0.050	41	1,510
4	17.50	1,235	0.026	0.067	0.040	0.048	40	1,531
3	12.50	1,251	0.013	0.059	0.034	0.044	36	1,551



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

2	7.50	1,268	0.005	0.044	0.025	0.035	29	1,572
1	2.50	1,284	0.001	0.018	0.010	0.016	14	1,592
CCI TPX-070821	150.00	45	1.890	1.980	1.140	0.373	11	56
Kaelus DBCT108F1V92-	150.00	83	1.890	1.980	1.140	0.373	21	103
Raycap DC6-48-60-18-	150.00	40	1.890	1.980	1.140	0.373	10	50
CCI DTMAPB7819VG12A	150.00	58	1.890	1.980	1.140	0.373	14	71
Raycap DC6-48-60-18-	150.00	32	1.890	1.980	1.140	0.373	8	39
Ericsson RRUS 4426 B	150.00	145	1.890	1.980	1.140	0.373	36	180
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.373	45	223
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.373	45	223
Ericsson RRUS-11 (50	150.00	150	1.890	1.980	1.140	0.373	37	186
Ericsson RRUS 32 B2	150.00	159	1.890	1.980	1.140	0.373	40	197
Generic 10' Omni	150.00	25	1.890	1.980	1.140	0.373	6	31
Ericsson RRUS-32 (77	150.00	231	1.890	1.980	1.140	0.373	57	286
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.373	26	130
KMW AM-X-CD-16-65-00	150.00	97	1.890	1.980	1.140	0.373	24	120
Quintel QS66512-3 (1	150.00	336	1.890	1.980	1.140	0.373	84	416
Andrew SBNH-1D6565C	150.00	61	1.890	1.980	1.140	0.373	15	75
Kathrein Scala 80010	150.00	195	1.890	1.980	1.140	0.373	49	242
Round Sector Frame	150.00	900	1.890	1.980	1.140	0.373	224	1,116
Kathrein Scala 80010	150.00	115	1.890	1.980	1.140	0.373	28	142
Kathrein Scala Smart	130.00	10	1.420	0.322	0.452	0.106	1	12
Site-Pro UWS6-NP Col	130.00	96	1.420	0.322	0.452	0.106	7	119
RFS APXV18-206517S-C	130.00	79	1.420	0.322	0.452	0.106	6	98
Andrew LNX-6515DS-VT	130.00	154	1.420	0.322	0.452	0.106	11	191
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.022	0	13
Generic 12" x 12" Ju	120.00	10	1.210	0.014	0.262	0.022	0	12
Alcatel-Lucent RRH2x	120.00	317	1.210	0.014	0.262	0.022	5	393
Nokia FZHN Flexi RRH	120.00	132	1.210	0.014	0.262	0.022	2	164
Alcatel-Lucent 1900	120.00	180	1.210	0.014	0.262	0.022	3	223
RFS APXVTM14-ALU-I20	120.00	169	1.210	0.014	0.262	0.022	2	209
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.022	1	59
Commscope NNVV-	120.00	232	1.210	0.014	0.262	0.022	3	288
Generic Flat Low Pro	120.00	1,875	1.210	0.014	0.262	0.022	27	2,324
dB Systems 5100A	105.00	21	0.926	-0.121	0.098	-0.046	-1	26
VertexRSI 101V VPD	105.00	4	0.926	-0.121	0.098	-0.046	0	5
dB Systems 5100A-D	105.00	152	0.926	-0.121	0.098	-0.046	-5	188
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.046	-14	558
		33,452	77.812	42.987	31.320	9.098	1,379	41,463

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	147.50	236	1.828	1.667	1.025	0.332	52	203
35	142.50	244	1.706	1.144	0.823	0.257	42	210
34	137.50	252	1.588	0.742	0.654	0.190	32	217
33	132.50	261	1.475	0.441	0.513	0.132	23	224
32	127.50	318	1.366	0.222	0.397	0.082	17	274
31	122.50	326	1.261	0.069	0.302	0.040	9	281
30	117.76	351	1.165	-0.026	0.229	0.007	2	302
29	115.26	76	1.116	-0.061	0.197	-0.007	0	65
28	112.50	734	1.063	-0.088	0.165	-0.021	-10	632
27	107.50	812	0.971	-0.116	0.117	-0.040	-21	699
26	102.50	833	0.883	-0.121	0.081	-0.050	-28	717
25	97.50	844	0.799	-0.112	0.053	-0.053	-30	727
24	92.50	855	0.719	-0.092	0.034	-0.048	-27	736
23	87.50	866	0.643	-0.068	0.020	-0.036	-21	745
22	82.50	877	0.572	-0.043	0.012	-0.019	-11	755

21	78.72	454	0.521	-0.024	0.008	-0.004	-1	391
20	76.22	454	0.488	-0.012	0.007	0.006	2	390
19	74.86	70	0.471	-0.006	0.006	0.011	1	61
18	74.11	217	0.461	-0.002	0.006	0.014	2	187
17	71.75	940	0.432	0.008	0.006	0.023	14	809
16	67.50	993	0.383	0.023	0.007	0.035	23	855
15	62.50	1,007	0.328	0.039	0.010	0.046	31	867
14	57.50	1,021	0.278	0.050	0.014	0.052	36	878
13	52.50	1,035	0.232	0.058	0.019	0.055	38	890
12	47.50	1,048	0.190	0.064	0.025	0.056	39	902
11	42.50	1,062	0.152	0.068	0.030	0.056	39	914
10	37.83	932	0.120	0.070	0.034	0.055	34	802
9	35.33	229	0.105	0.071	0.037	0.054	8	197
8	33.25	1,211	0.093	0.071	0.038	0.054	43	1,042
7	30.75	357	0.079	0.072	0.040	0.053	13	308
6	27.50	1,202	0.064	0.072	0.041	0.052	42	1,034
5	22.50	1,218	0.043	0.070	0.042	0.050	41	1,048
4	17.50	1,235	0.026	0.067	0.040	0.048	40	1,063
3	12.50	1,251	0.013	0.059	0.034	0.044	36	1,077
2	7.50	1,268	0.005	0.044	0.025	0.035	29	1,091
1	2.50	1,284	0.001	0.018	0.010	0.016	14	1,105
CCI TPX-070821	150.00	45	1.890	1.980	1.140	0.373	11	39
Kaelus DBCT108F1V92-	150.00	83	1.890	1.980	1.140	0.373	21	72
Raycap DC6-48-60-18-	150.00	40	1.890	1.980	1.140	0.373	10	34
CCI DTMAPB7819VG12A	150.00	58	1.890	1.980	1.140	0.373	14	50
Raycap DC6-48-60-18-	150.00	32	1.890	1.980	1.140	0.373	8	27
Ericsson RRUS 4426 B	150.00	145	1.890	1.980	1.140	0.373	36	125
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.373	45	155
Ericsson RRUS 4478 B	150.00	180	1.890	1.980	1.140	0.373	45	155
Ericsson RRUS-11 (50	150.00	150	1.890	1.980	1.140	0.373	37	129
Ericsson RRUS 32 B2	150.00	159	1.890	1.980	1.140	0.373	40	137
Generic 10' Omni	150.00	25	1.890	1.980	1.140	0.373	6	22
Ericsson RRUS-32 (77	150.00	231	1.890	1.980	1.140	0.373	57	199
Powerwave Allgon 777	150.00	105	1.890	1.980	1.140	0.373	26	90
KMW AM-X-CD-16-65-00	150.00	97	1.890	1.980	1.140	0.373	24	83
Quintel QS66512-3 (1	150.00	336	1.890	1.980	1.140	0.373	84	289
Andrew SBNH-1D6565C	150.00	61	1.890	1.980	1.140	0.373	15	52
Kathrein Scala 80010	150.00	195	1.890	1.980	1.140	0.373	49	168
Round Sector Frame	150.00	900	1.890	1.980	1.140	0.373	224	774
Kathrein Scala 80010	150.00	115	1.890	1.980	1.140	0.373	28	99
Kathrein Scala Smart	130.00	10	1.420	0.322	0.452	0.106	1	9
Site-Pro UWS6-NP Col	130.00	96	1.420	0.322	0.452	0.106	7	83
RFS APXV18-206517S-C	130.00	79	1.420	0.322	0.452	0.106	6	68
Andrew LNX-6515DS-VT	130.00	154	1.420	0.322	0.452	0.106	11	132
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.022	0	9
Generic 12" x 12" Ju	120.00	10	1.210	0.014	0.262	0.022	0	9
Alcatel-Lucent RRH2x	120.00	317	1.210	0.014	0.262	0.022	5	273
Nokia FZHN Flexi RRH	120.00	132	1.210	0.014	0.262	0.022	2	114
Alcatel-Lucent 1900	120.00	180	1.210	0.014	0.262	0.022	3	155
RFS APXVTM14-ALU-I20	120.00	169	1.210	0.014	0.262	0.022	2	145
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.022	1	41
Commscope NNVV-	120.00	232	1.210	0.014	0.262	0.022	3	200
Generic Flat Low Pro	120.00	1,875	1.210	0.014	0.262	0.022	27	1,613
dB Systems 5100A	105.00	21	0.926	-0.121	0.098	-0.046	-1	18
VertexRSI 101V VPD	105.00	4	0.926	-0.121	0.098	-0.046	0	3
dB Systems 5100A-D	105.00	152	0.926	-0.121	0.098	-0.046	-5	131
Round Side Arm	105.00	450	0.926	-0.121	0.098	-0.046	-14	387
		33,452	77.812	42.987	31.320	9.098	1,379	28,787

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	-39.87	-1.37	0.00	-161.62	0.00	161.62	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.051
5.00	-38.30	-1.35	0.00	-154.77	0.00	154.77	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.050
10.00	-36.75	-1.33	0.00	-148.00	0.00	148.00	3,046.49	1,523.25	4,391.58	2,168.84	0.04	-0.04	0.049
15.00	-35.22	-1.30	0.00	-141.36	0.00	141.36	2,999.83	1,499.91	4,223.96	2,086.05	0.09	-0.06	0.048
20.00	-33.71	-1.27	0.00	-134.87	0.00	134.87	2,952.07	1,476.04	4,057.95	2,004.07	0.16	-0.07	0.047
25.00	-32.22	-1.23	0.00	-128.53	0.00	128.53	2,901.93	1,450.96	3,891.94	1,922.08	0.24	-0.09	0.046
30.00	-31.77	-1.23	0.00	-122.36	0.00	122.36	2,830.35	1,415.18	3,701.25	1,827.91	0.35	-0.11	0.046
31.50	-30.27	-1.19	0.00	-120.52	0.00	120.52	2,808.88	1,404.44	3,644.98	1,800.12	0.39	-0.12	0.045
35.00	-29.99	-1.18	0.00	-116.37	0.00	116.37	2,758.78	1,379.39	3,515.36	1,736.10	0.48	-0.13	0.044
35.67	-28.83	-1.15	0.00	-115.58	0.00	115.58	2,225.24	1,112.62	2,894.88	1,429.67	0.50	-0.14	0.050
40.00	-27.52	-1.12	0.00	-110.59	0.00	110.59	2,194.35	1,097.17	2,791.07	1,378.40	0.63	-0.15	0.049
45.00	-26.22	-1.08	0.00	-105.01	0.00	105.01	2,157.69	1,078.84	2,672.25	1,319.72	0.80	-0.17	0.048
50.00	-24.93	-1.05	0.00	-99.59	0.00	99.59	2,119.93	1,059.96	2,554.56	1,261.60	0.99	-0.19	0.046
55.00	-23.67	-1.02	0.00	-94.34	0.00	94.34	2,081.07	1,040.54	2,438.12	1,204.10	1.21	-0.22	0.045
60.00	-22.42	-0.99	0.00	-89.25	0.00	89.25	2,041.12	1,020.56	2,323.03	1,147.26	1.44	-0.24	0.043
65.00	-21.19	-0.97	0.00	-84.29	0.00	84.29	1,992.10	996.05	2,200.59	1,086.79	1.70	-0.26	0.042
70.00	-20.02	-0.96	0.00	-79.43	0.00	79.43	1,932.46	966.23	2,070.05	1,022.32	1.99	-0.28	0.041
73.50	-19.75	-0.96	0.00	-76.08	0.00	76.08	1,451.36	725.68	1,558.37	769.62	2.20	-0.30	0.047
74.71	-19.67	-0.96	0.00	-74.92	0.00	74.92	1,444.76	722.38	1,539.55	760.33	2.27	-0.30	0.046
75.00	-19.10	-0.95	0.00	-74.64	0.00	74.64	1,443.19	721.60	1,535.11	758.14	2.29	-0.30	0.026
77.44	-18.54	-0.95	0.00	-72.32	0.00	72.32	1,429.71	714.86	1,497.46	739.54	2.45	-0.31	0.025
77.44	-18.54	-0.95	0.00	-72.32	0.00	72.32	1,429.71	714.86	1,497.46	739.54	2.45	-0.31	0.038
80.00	-17.45	-0.96	0.00	-69.87	0.00	69.87	1,415.26	707.63	1,458.06	720.08	2.61	-0.32	0.036
85.00	-16.38	-0.98	0.00	-65.05	0.00	65.05	1,386.24	693.12	1,381.78	682.41	2.95	-0.33	0.034
90.00	-15.32	-1.01	0.00	-60.13	0.00	60.13	1,356.12	678.06	1,306.38	645.17	3.31	-0.35	0.032
95.00	-14.27	-1.04	0.00	-55.08	0.00	55.08	1,324.90	662.45	1,231.99	608.43	3.69	-0.37	0.030
100.00	-13.24	-1.06	0.00	-49.90	0.00	49.90	1,293.04	646.52	1,159.10	572.44	4.09	-0.39	0.028
105.00	-11.45	-1.09	0.00	-44.58	0.00	44.58	1,245.33	622.66	1,074.67	530.74	4.50	-0.40	0.025
110.00	-10.54	-1.10	0.00	-39.11	0.00	39.11	1,197.61	598.80	993.42	490.61	4.93	-0.42	0.023
110.00	-10.54	-1.10	0.00	-39.11	0.00	39.11	833.77	416.88	695.90	343.68	4.93	-0.42	0.027
115.00	-10.45	-1.10	0.00	-33.61	0.00	33.61	813.89	406.95	652.08	322.04	5.38	-0.43	0.024
115.52	-10.02	-1.10	0.00	-33.04	0.00	33.04	811.76	405.88	647.55	319.80	5.43	-0.44	0.023
115.52	-10.02	-1.10	0.00	-33.04	0.00	33.04	811.76	405.88	647.55	319.80	5.43	-0.44	0.116
120.00	-5.92	-1.02	0.00	-28.12	0.00	28.12	792.92	396.46	608.75	300.64	5.84	-0.45	0.101
125.00	-5.53	-1.01	0.00	-23.01	0.00	23.01	770.85	385.43	566.02	279.54	6.35	-0.52	0.090
130.00	-4.79	-0.96	0.00	-17.98	0.00	17.98	747.69	373.84	524.00	258.78	6.93	-0.59	0.076
135.00	-4.47	-0.93	0.00	-13.20	0.00	13.20	722.05	361.03	481.88	237.98	7.58	-0.65	0.062
140.00	-4.17	-0.88	0.00	-8.57	0.00	8.57	686.26	343.13	435.03	214.85	8.28	-0.69	0.046
145.00	-3.88	-0.83	0.00	-4.15	0.00	4.15	650.48	325.24	390.59	192.90	9.03	-0.72	0.027
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	9.80	-0.74	0.000

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	-27.68	-1.37	0.00	-158.23	0.00	158.23	3,136.53	1,568.27	4,731.25	2,336.59	0.00	0.00	0.048
5.00	-26.59	-1.35	0.00	-151.39	0.00	151.39	3,092.06	1,546.03	4,560.72	2,252.37	0.01	-0.02	0.047
10.00	-25.51	-1.32	0.00	-144.65	0.00	144.65	3,046.49	1,523.25	4,391.58	2,168.84	0.04	-0.04	0.046
15.00	-24.45	-1.29	0.00	-138.06	0.00	138.06	2,999.83	1,499.91	4,223.96	2,086.05	0.09	-0.05	0.045
20.00	-23.40	-1.25	0.00	-131.63	0.00	131.63	2,952.07	1,476.04	4,057.95	2,004.07	0.15	-0.07	0.044
25.00	-22.37	-1.22	0.00	-125.37	0.00	125.37	2,901.93	1,450.96	3,891.94	1,922.08	0.24	-0.09	0.043
30.00	-22.06	-1.21	0.00	-119.29	0.00	119.29	2,830.35	1,415.18	3,701.25	1,827.91	0.34	-0.11	0.042
31.50	-21.02	-1.17	0.00	-117.48	0.00	117.48	2,808.88	1,404.44	3,644.98	1,800.12	0.38	-0.12	0.042
35.00	-20.82	-1.16	0.00	-113.40	0.00	113.40	2,758.78	1,379.39	3,515.36	1,736.10	0.47	-0.13	0.041
35.67	-20.02	-1.13	0.00	-112.63	0.00	112.63	2,225.24	1,112.62	2,894.88	1,429.67	0.49	-0.13	0.047
40.00	-19.10	-1.09	0.00	-107.75	0.00	107.75	2,194.35	1,097.17	2,791.07	1,378.40	0.62	-0.15	0.046
45.00	-18.20	-1.06	0.00	-102.29	0.00	102.29	2,157.69	1,078.84	2,672.25	1,319.72	0.78	-0.17	0.044
50.00	-17.31	-1.02	0.00	-97.01	0.00	97.01	2,119.93	1,059.96	2,554.56	1,261.60	0.97	-0.19	0.043
55.00	-16.43	-0.99	0.00	-91.90	0.00	91.90	2,081.07	1,040.54	2,438.12	1,204.10	1.18	-0.21	0.042
60.00	-15.56	-0.96	0.00	-86.95	0.00	86.95	2,041.12	1,020.56	2,323.03	1,147.26	1.41	-0.23	0.041
65.00	-14.71	-0.94	0.00	-82.15	0.00	82.15	1,992.10	996.05	2,200.59	1,086.79	1.66	-0.25	0.039
70.00	-13.90	-0.93	0.00	-77.46	0.00	77.46	1,932.46	966.23	2,070.05	1,022.32	1.94	-0.27	0.039
73.50	-13.71	-0.92	0.00	-74.22	0.00	74.22	1,451.36	725.68	1,558.37	769.62	2.14	-0.29	0.044
74.71	-13.65	-0.92	0.00	-73.09	0.00	73.09	1,444.76	722.38	1,539.55	760.33	2.22	-0.29	0.043
75.00	-13.26	-0.92	0.00	-72.83	0.00	72.83	1,443.19	721.60	1,535.11	758.14	2.24	-0.29	0.024
77.44	-12.87	-0.92	0.00	-70.58	0.00	70.58	1,429.71	714.86	1,497.46	739.54	2.39	-0.30	0.023
77.44	-12.87	-0.92	0.00	-70.58	0.00	70.58	1,429.71	714.86	1,497.46	739.54	2.39	-0.30	0.035
80.00	-12.12	-0.93	0.00	-68.22	0.00	68.22	1,415.26	707.63	1,458.06	720.08	2.55	-0.31	0.034
85.00	-11.37	-0.95	0.00	-63.56	0.00	63.56	1,386.24	693.12	1,381.78	682.41	2.88	-0.33	0.032
90.00	-10.63	-0.98	0.00	-58.80	0.00	58.80	1,356.12	678.06	1,306.38	645.17	3.23	-0.34	0.030
95.00	-9.91	-1.01	0.00	-53.91	0.00	53.91	1,324.90	662.45	1,231.99	608.43	3.60	-0.36	0.028
100.00	-9.19	-1.03	0.00	-48.87	0.00	48.87	1,293.04	646.52	1,159.10	572.44	3.99	-0.38	0.026
105.00	-7.95	-1.07	0.00	-43.70	0.00	43.70	1,245.33	622.66	1,074.67	530.74	4.39	-0.39	0.024
110.00	-7.32	-1.08	0.00	-38.37	0.00	38.37	1,197.61	598.80	993.42	490.61	4.81	-0.41	0.021
110.00	-7.32	-1.08	0.00	-38.37	0.00	38.37	833.77	416.88	695.90	343.68	4.81	-0.41	0.025
115.00	-7.25	-1.08	0.00	-32.99	0.00	32.99	813.89	406.95	652.08	322.04	5.25	-0.42	0.022
115.52	-6.95	-1.07	0.00	-32.43	0.00	32.43	811.76	405.88	647.55	319.80	5.30	-0.43	0.021
115.52	-6.95	-1.07	0.00	-32.43	0.00	32.43	811.76	405.88	647.55	319.80	5.30	-0.43	0.110
120.00	-4.11	-1.00	0.00	-27.62	0.00	27.62	792.92	396.46	608.75	300.64	5.70	-0.44	0.097
125.00	-3.84	-0.99	0.00	-22.60	0.00	22.60	770.85	385.43	566.02	279.54	6.20	-0.51	0.086
130.00	-3.32	-0.94	0.00	-17.65	0.00	17.65	747.69	373.84	524.00	258.78	6.77	-0.57	0.073
135.00	-3.10	-0.91	0.00	-12.95	0.00	12.95	722.05	361.03	481.88	237.98	7.40	-0.63	0.059
140.00	-2.89	-0.87	0.00	-8.40	0.00	8.40	686.26	343.13	435.03	214.85	8.09	-0.68	0.043
145.00	-2.69	-0.81	0.00	-4.07	0.00	4.07	650.48	325.24	390.59	192.90	8.82	-0.71	0.025
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	614.69	307.34	348.53	172.13	9.57	-0.72	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

## 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	26.82	0.00	40.07	0.00	0.00	2735.35	115.52	0.88
0.9D + 1.6W	26.50	0.00	30.04	0.00	0.00	2690.27	115.52	0.86
1.2D + 1.0Di + 1.0Wi	13.02	0.00	72.21	0.00	0.00	1197.35	0.00	0.33
(1.2 + 0.2Sds) * DL + E ELFM	1.01	0.00	39.87	0.00	0.00	123.11	115.52	0.06
(1.2 + 0.2Sds) * DL + E EMAM	1.37	0.00	39.87	0.00	0.00	161.62	115.52	0.12
(0.9 - 0.2Sds) * DL + E ELFM	1.01	0.00	27.68	0.00	0.00	120.73	115.52	0.05
(0.9 - 0.2Sds) * DL + E EMAM	1.37	0.00	27.68	0.00	0.00	158.23	115.52	0.11
1.0D + 1.0W	6.34	0.00	33.45	0.00	0.00	648.18	115.52	0.22

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA713367\_C3\_08

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Customer: CLEARWIRE

Additional Steel Summary

			Intermediate Connectors				Max Member		
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	77.44	(4) SOL-#20 All Thread Bar	355.5	10.7	16.8	0.634	290.4	330.5	0.879
74.71	115.52	(4) SOL-#20 All Thread Bar	339.2	10.2	16.8	0.605	195.5	330.5	0.592

			Upper Termination Connectors				Lower Termination Connectors					
Elev From (ft)	Elev To (ft)	Member	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	77.44	(4) SOL-#20 All Thread Bar	110.3	12.0	10	12	0.766	0.0	12.0	0	0	0.000
74.71	115.52	(4) SOL-#20 All Thread Bar	84.6	12.0	8	8	0.882	134.9	12.0	12	16	0.702

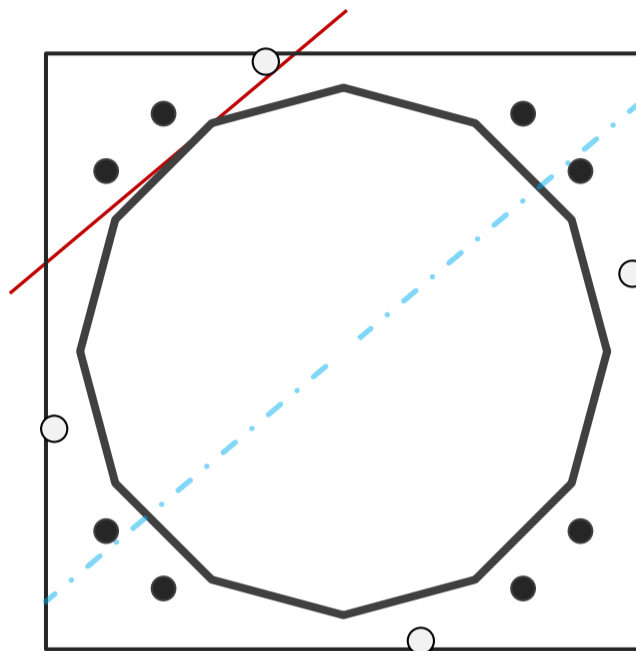
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	37.38	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2735.4	k-ft
Axial, Pu	40.1	k
Shear, Vu	26.8	k
Neutral Axis	40	°

Report Capacities		
Component	Capacity	Result
Base Plate	63%	Pass
Anchor Rods	88%	Pass
Dwyidag	69%	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	0	in
Orientation Offset	0	°
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	1309.7	k
Bending Stress, $\phi Mn$	2075.7	k



Dwyidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, $\phi$	2.5	in
Bracket Type	Angle	-
Circle	44.26	in
Orientation Offset	15	°
Applied Force, Pu	269.0	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	0	°
Applied Force, Pu	228.2	k
Anchor Rods, $\phi Pn$	259.8	k

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	26.8	1655.1	0.61
Anchor Rod Forces	26.8	1655.1	0.61
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1080.3	0.39
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	43.0934	3.5911	0.1692		7376.38
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
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		4814.56
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	23.219	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	228.2	k
Applied Shear, Vu	0.3	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.878	OK
Interaction Capacity	0.880	OK

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

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

External Base Plate		
Chord Length AA	24.600	in
Additional AA	0.000	in
Section Modulus, Z	38.438	in <sup>3</sup>
Applied Moment, Mu	1309.7	k-ft
Bending Capacity, φMn	2075.7	k-ft
Capacity, Mu/φMn	0.631	OK

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

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

Chord Length AB	23.273	in
Additional AB	0.000	in
Section Modulus, Z	36.364	in <sup>3</sup>
Applied Moment, Mu	1010.3	k-ft
Bending Capacity, φMn	1963.7	k-ft
Capacity, Mu/φMn	0.515	OK

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

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

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		

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	44.255	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	269.0	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.685	OK

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



<b>Base/Flange Plate</b>	Plate Type	<b>Flange @ 110.0 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
	$\phi_s$ Resistance	347.07 k-in
	Applied	106.54 k-in
<b>Stiffeners</b>	#	<b>12 Show</b>
	Thickness	0.75 in
	Length	3 in
	Height	6 in
	Chamfer	0.75 in
	Offset Angle	0°
	Fy	50 ksi

Code Rev. **G**

Date **5/6/2019**  
 Engineer **Zackaryah.Hughes**  
 Site # **302475**  
 Carrier **CLEARWIRE CORPORATION**

Moment **353.1 k-ft**  
 Axial **9.8 k**

<b>Bolts</b>	#	<b>12</b>
	Bolt Circle (R)adial / (S)quare	25.75 in R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	$\phi_s$ Resistance	54.52 k
	Applied	54.01 k
	<b>Reinforcement</b>	#
<b>Extra Bolts</b>	#	<b>0</b>

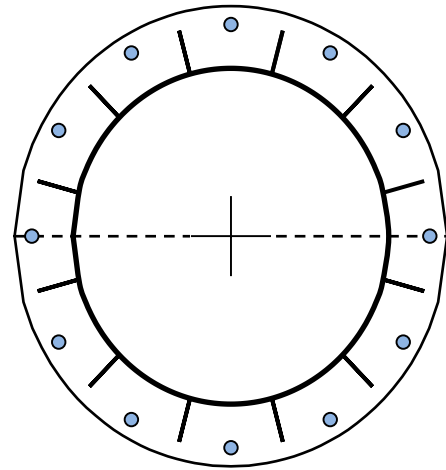
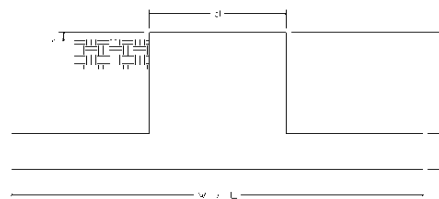


Plate Stress Ratio:  
**0.31** (Pass)

Bolt Stress Ratio:  
**0.99** (Pass)

Site Name: Sttn- Southington, CT  
 Site Number: 302475  
 Engineering Number: OAA713367  
 Engineer: Zackaryah.Hughes  
 Date: 05/06/19  
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:	Analysis		
Compression/Leg:	40.1 k	Concrete Strength ( $f'_c$ ):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	32.00 in
Total Shear:	26.8 k	$\phi_{\text{Shear}}$ :	0.75
Moment:	2735.4 k-ft	$\phi_{\text{Flexure / Tension}}$ :	0.90
Tower + Appurtenance Weight:	33.4 k	$\phi_{\text{Compression}}$ :	0.65
Depth to Base of Foundation (l + t - h):	8.00 ft	$\beta$ :	0.85
Diameter of Pier (d):	4.89 ft	Bottom Pad Rebar Size #:	10
Height of Pier above Ground (h):	0.50	# of Bottom Pad Rebar:	35
Width of Pad (W):	18.00 ft	Pad Bottom Steel Area:	44.45 in <sup>2</sup>
Length of Pad (L):	18.00 ft	Pad Steel $F_y$ :	60000 psi
Thickness of Pad (t):	3.00 ft	Top Pad Rebar Size #:	5
Tower Leg Center to Center:	0.00 ft	# of Top Pad Rebar:	35
Number of Tower Legs:	1.0 (1 if MP or GT)	Pad Top Steel Area:	10.85 in <sup>2</sup>
Tower Center from Mat Center:	0.00 ft	Pier Rebar Size #:	11
Depth Below Ground Surface to Water Table:	9.00 ft	Pier Steel Area (Single Bar):	1.56 in <sup>2</sup>
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	52
Unit Weight of Soil Above Water Table:	121.0 pcf	Pier Steel $F_y$ :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	50.6 in
Unit Weight of Soil Below Water Table:	53.0 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	0.0 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.40	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	12000.0 psf	Tie Steel Area (Single Bar):	0.20 in <sup>2</sup>
Ultimate Passive Pressure on Pad Face:	0.0 psf	Tie Spacing:	12 in
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9	Tie Steel $F_y$ :	60000 psi
$\phi_{\text{Soil}}$ :	0.75		

**Overturning Moment Usage**

Design OTM:	2963.2 k-ft
Weight of Soil and Concrete OTM Resistance:	345.9 k
OTM Resistance from Soil and Concrete:	3113.5 k-ft
OTM Resistance from Tower:	250.7 k-ft
OTM Resistance from Soil Faature:	0.0 k-ft
OTM Resistance from Passive Pressure on Pad Face:	0.0 k-ft
OTM Resistance:	3027.7 k-ft
Design OTM / OTM Resistance:	0.98 Result: OK

**Soil Bearing Pressure Usage**

Maximum Bearing Pressure:	4442 psf
Net Bearing Pressure:	5558 psf
Factored Nominal Bearing Pressure:	9000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.62 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

**Sliding Factor of Safety**

Ultimate Friction Resistance:	149.5 k
Ultimate Passive Pressure Resistance:	0.0 k
Total Factored Sliding Resistance:	112.1 k
Sliding Design / Sliding Resistance:	0.24 Result: OK

## One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear ( $V_u$ ):	191.5 k
One Way Shear Capacity ( $\phi V_c$ ):	480.7 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.40 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	1136.0 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	5989.2 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.19 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	652.8 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	1537.9 k-ft
$M_u / \phi M_n$ :	0.42 Result: OK
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
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 ( $\phi_c V_n$ ):	1496.9 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	2882.8 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	9035.1 k-ft
$M_u / \phi M_n$ :	0.32 Result: OK
Factored Shear in Pier ( $V_u$ ):	26.8 k
Pier Shear Capacity ( $\phi V_n$ ):	223.4 k
$V_u / \phi V_c$ :	0.12 Result: OK
Pier Shear Reinforcement Ratio:	0.0007 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	4380.5 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	40.1 k
Pier Compression Capacity ( $\phi P_n$ ):	3471.1 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.01 Result: OK
Pier Compression Reinforcement Ratio:	0.030 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.32 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads

