



October 14, 2015

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
107 Wilcox Road
Stonington, CT 06378
N 41.34091
W -71.94017
T-Mobile Site #: CTNL071B _L700

Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 107 Wilcox Road, Stonington, CT.

The 107 Wilcox Road facility consists of a 100' Monopole Tower owned and operated by SBA Infrastructure, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located, First Selectman George Crouse, as well as the property owner, JBG Ventures LLC.

As part of T-Mobile's L700 project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of \$625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. The changes in radio frequency power density will not increase the calculated “worst case” power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,



Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com



T-Mobile

Equipment Modification

107 Wilcox Road, Stonington, CT
Site number CTNL071B _L700

Tower Owner: SBA Infrastructure, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (3) Ericsson Air21 B2A/B4P - Panel
- (3) Ericsson KRY 112 144/1 TMA
- (12) 1-1/4" Lines
- (1) 1-5/8" Fiber

Final Configuration:

- (3) Ericsson Air21 B2A/B4P - Panel
- (3) Ericsson Air21 B4A B12P - Panel
- (3) Ericsson KRY 112 144/1 TMA
- (3) Ericsson S11B12 RRU
- (12) 1-1/4" lines
- (1) 1-5/8" Fiber

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the T-Mobile facility are 4.80% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 5.43% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE%	
Carrier	MPE%
T-Mobile	4.80
MetroPCS	0.63 %
Site Total MPE %:	5.43 %

October 14, 2015

Mr. George Crouse
First Selectman
Town of Stonington
152 Elm Street
Stonington, CT 06378

RE: Telecommunications Facility @ 107 Wilcox Rd., Stonington, CT

Dear Mr. Crouse,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,



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October 14, 2015

JBG Ventures LLC
107 Wilcox Avenue
Stonington CT 06378

RE: Telecommunications Facility @ 107 Wilcox Rd., Stonington, CT

To Whom It May Concern:

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

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Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 100 ft SABRE Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT13074-A-01
Customer Site Name: Stonington
Carrier Name: T-Mobile
Carrier Site ID / Name: CTNL071B
Site Location: 107 Wilcox Road
Stonington, Connecticut
New London County
Latitude: 41.341111
Longitude: -71.940916

Analysis Result:

Max Structural Usage: 44.7% [Pass]

Max Foundation Usage: 48% [Pass]

Report Prepared By : Jie Chen



Introduction

The purpose of this report is to summarize the analysis results on the 100 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Sabre, Job # 07-07052, Dated 7/11/2006 FDH, Project # 1422XR1400, Dated 2/21/2014
Foundation Drawing	Sabre, Job # 07-07052, Dated 7/11/2006
Geotechnical Report	JGI Eastern, Inc., Project # 06437G, Dated 7/21/2006
Modification Drawings	N/A

Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Basic Wind Speed Used in the Analysis:	85.0 mph (fastest mile)
Basic Wind Speed with Ice:	74 mph (fastest mile) with 1/2" radial ice concurrent
Operational Wind Speed:	50 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
-	96.0	3	Ericsson Air21 B2A/B4P - Panel	(1) Collar Mount	(12) 1 1/4" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson KRY 112 144/1 TMA			
5	87.0	3	Kathrein 800 10504 - Panel	(1) Collar Mount	(6) 7/8" (1) 3/8"	Metro PCS

Proposed Carrier’s Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier’s final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	96.0	3	Ericsson Air21 B2A/B4P - Panel	New Mount (COMMSCOPE P/N MC- HPM1250-B)	(12) 1 1/4" (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson Air21 B4A B12P - Panel			
3		3	Ericsson KRY 112 144/1 TMA			
4		3	Ericsson S11B12 RRU			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	44.7%	39.8%	36.0%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	1150.0	13.4	22.4
Analysis Reactions	590.7	9.1	13.8
% of Design Reactions	51.4%	67.6%	61.7%

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-F for the installed antennas. Maximum twist/sway at the elevation of the proposed equipment is 0.5027 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Stress 44.7% at 0.0ft

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69

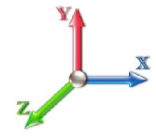
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Dead Load Factor: 1.00
Wind Load Factor: 1.00

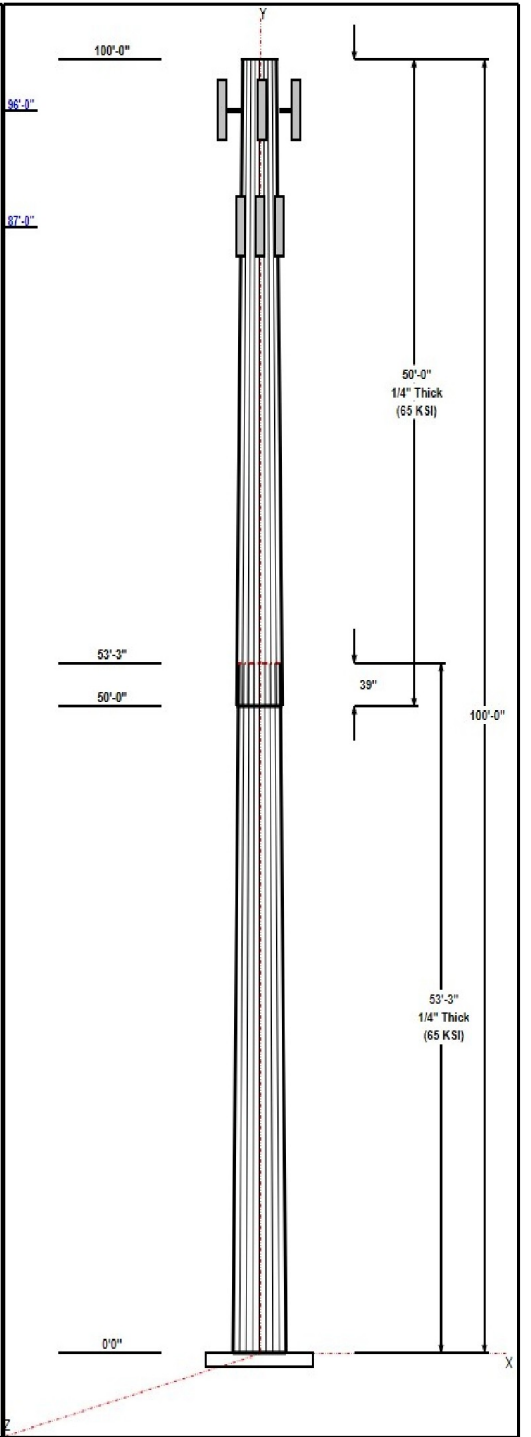
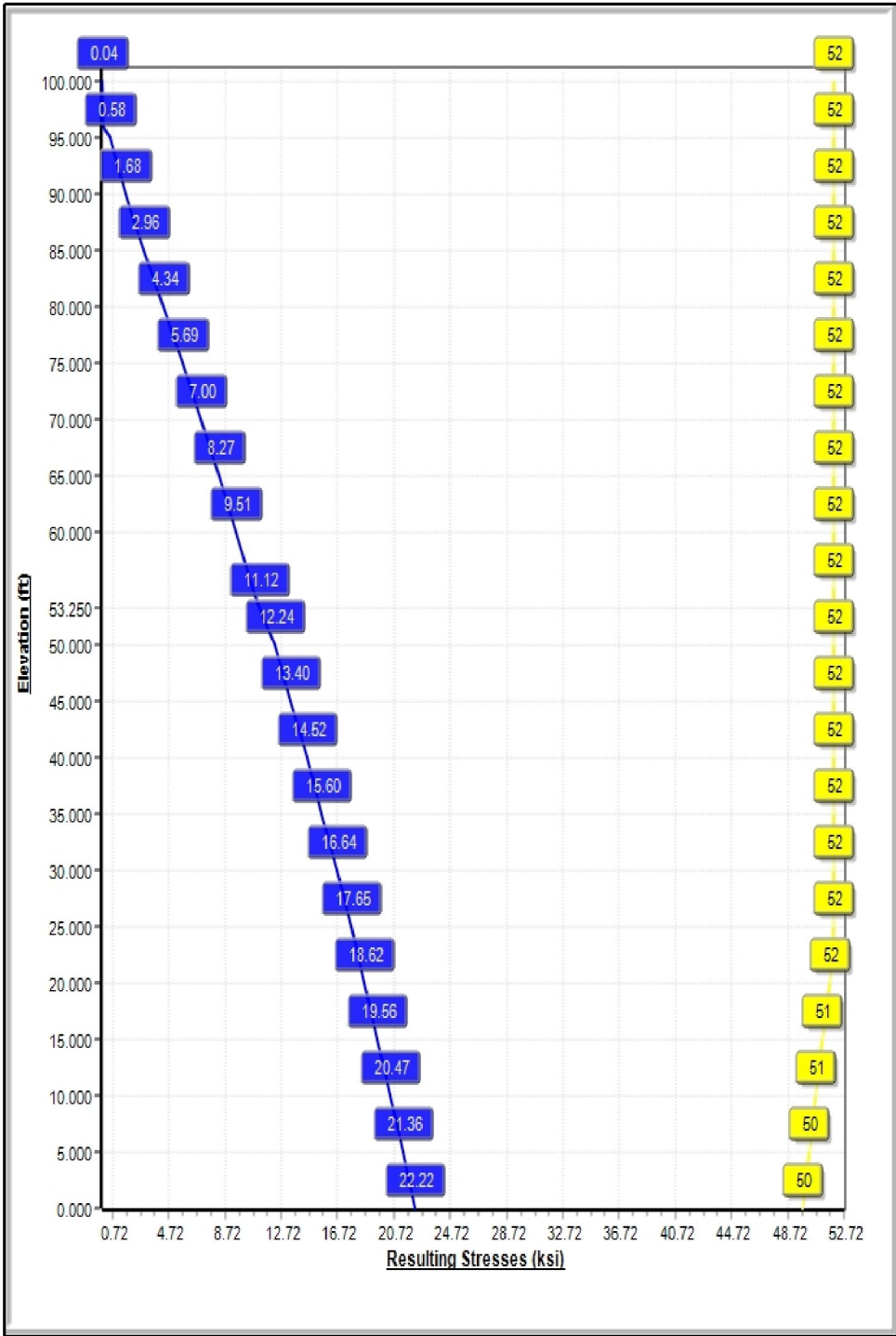
Load Case : 85 mph Wind with 0 in Ice



Iterations: 20

- 50 Allowable Stress
- 22 Resulting Stress

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Structure: CT13074-A-SBA

Type: Tapered
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.16140

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	32.32	40.91	0.250		0.16140	65
2	50.00	25.27	33.34	0.250	Slip	0.16140	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
96.00	96.00	3	AIR 21 B2A B4P	T-Mobile
96.00	96.00	3	AIR 21 B4A B2P	T-Mobile
96.00	96.00	3	KRY 112 144/1	T-Mobile
96.00	96.00	3	S11B12	T-Mobile
96.00	96.00	3	Side Arm	T-Mobile
87.00	87.00	3	800 10504	Metro PCS
87.00	87.00	1	Flush Mount	Metro PCS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	96.00	Inside	1 1/4" Coax	T-Mobile
0.00	96.00	Inside	1 5/8" Fiber	T-Mobile
0.00	87.00	Inside	3/8" Coax	Metro PCS
0.00	87.00	Inside	7/8" Coax	Metro PCS

Anchor Bolts

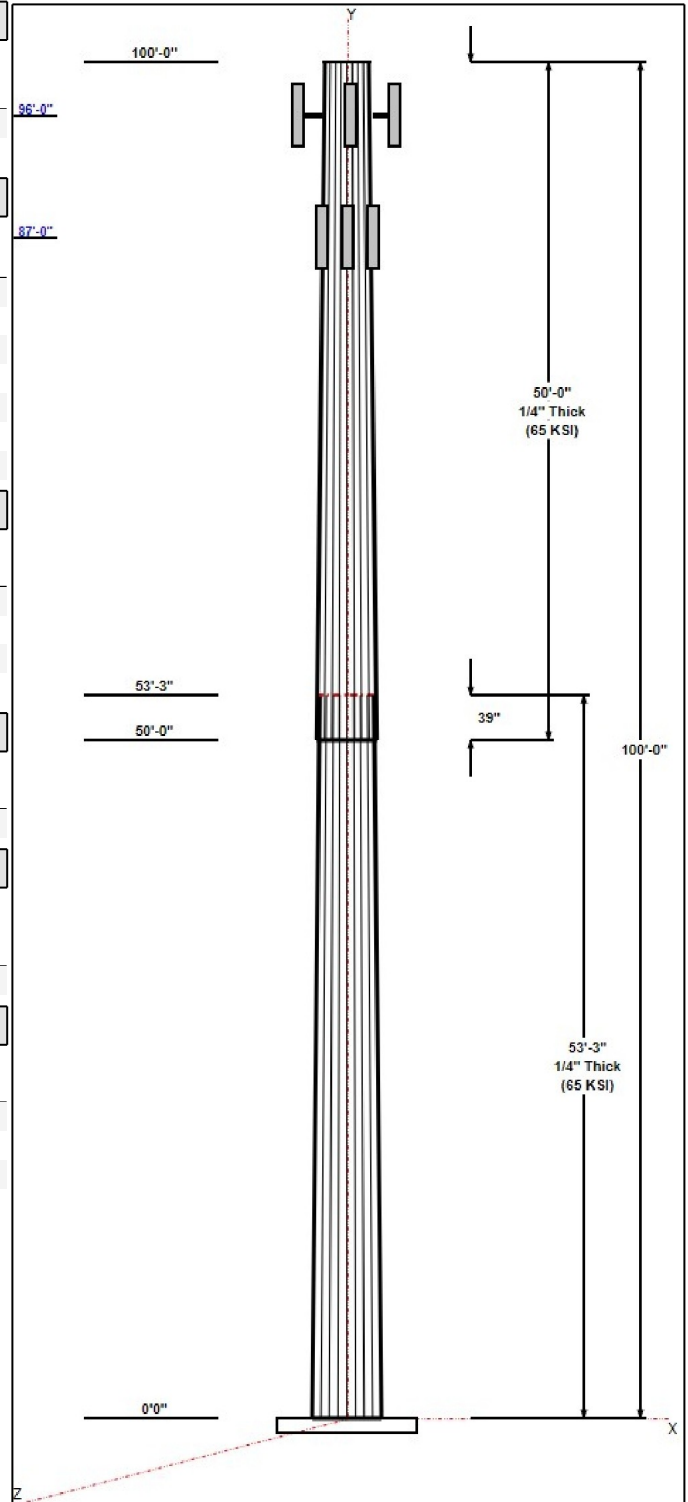
Qty	Specifications	Grade (ksi)	Arrangement
8	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.2500	44.8	60.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
85 mph Wind with 0" Ice	590.7	9.1	11.2
73.61 mph Wind with 0.5" Ice	477.6	7.2	13.8
50 mph Wind with 0" Ice	204.4	3.1	11.2



Structure: CT13074-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Stonington
Height: 100.00 (ft)

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Shaft Properties

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.2500	65		0.00	5,228
2	18	50.000	0.2500	65	Slip	39.00	3,922
Total Shaft Weight:							9,150

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper
1	40.91	0.00	32.26	6738.86	27.44	163.6	32.32	53.25	25.44	3305.19	21.38	129.2	0.161400
2	33.34	50.00	26.26	3632.24	22.10	133.3	25.27	100.0	19.85	1570.17	16.41	101.0	0.161400

Loading Summary

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	96.00	AIR 21 B2A B4P	3	91.50	6.58	0.86	129.20	6.970	0.86	0.00	0.00
2	96.00	AIR 21 B4A B2P	3	90.40	6.58	0.86	128.10	6.970	0.86	0.00	0.00
3	96.00	KRY 112 144/1	3	11.00	0.41	0.70	14.10	0.550	0.70	0.00	0.00
4	96.00	S11B12	3	51.00	3.31	0.70	67.10	3.520	0.70	0.00	0.00
5	96.00	Side Arm	3	120.00	4.50	0.75	150.00	6.000	0.75	0.00	0.00
6	87.00	800 10504	3	17.60	3.35	0.72	35.70	3.870	0.72	0.00	0.00
7	87.00	Flush Mount	1	350.00	5.00	1.00	450.00	6.000	1.00	0.00	0.00
Totals:			19	1,494.50			2,022.60				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	No Ice		Ice		Exposed
			Weight (lb/ft)	CaAa (sf/ft)	Weight (lb/ft)	CaAa (sf/ft)	
0.00	96.00	(12) 1 1/4" Coax	1.98	0.00	0.00	0.00	Inside
0.00	96.00	(1) 1 5/8" Fiber	3.30	0.00	0.00	0.00	Inside
0.00	87.00	(1) 3/8" Coax	0.48	0.00	0.00	0.00	Inside
0.00	87.00	(6) 7/8" Coax	0.52	0.00	0.00	0.00	Inside
Totals:			593.88		0.00		

Shaft Section Properties

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.2500	40.910	32.263	6738.9	27.44	163.64	65	50	0.0
5.00		0.2500	40.103	31.622	6345.5	26.87	160.41	65	50	543.5
10.00		0.2500	39.296	30.982	5967.8	26.31	157.18	65	51	532.6
15.00		0.2500	38.489	30.342	5605.4	25.74	153.96	65	51	521.7
20.00		0.2500	37.682	29.701	5257.9	25.17	150.73	65	52	510.8
25.00		0.2500	36.875	29.061	4925.1	24.60	147.50	65	52	499.9
30.00		0.2500	36.068	28.421	4606.7	24.03	144.27	65	52	489.0
35.00		0.2500	35.261	27.780	4302.3	23.46	141.04	65	52	478.1
40.00		0.2500	34.454	27.140	4011.6	22.89	137.82	65	52	467.2
45.00		0.2500	33.647	26.500	3734.3	22.32	134.59	65	52	456.3
50.00	Bot - Section 2	0.2500	32.840	25.859	3470.1	21.75	131.36	65	52	445.4
53.25	Top - Section 1	0.2500	32.815	25.840	3462.2	21.73	131.26	65	52	571.7
55.00		0.2500	32.533	25.616	3372.9	21.54	130.13	65	52	153.2
60.00		0.2500	31.726	24.975	3126.2	20.97	126.90	65	52	430.4
65.00		0.2500	30.919	24.335	2891.9	20.40	123.68	65	52	419.5
70.00		0.2500	30.112	23.695	2669.6	19.83	120.45	65	52	408.6
75.00		0.2500	29.305	23.054	2458.9	19.26	117.22	65	52	397.7
80.00		0.2500	28.498	22.414	2259.7	18.69	113.99	65	52	386.8
85.00		0.2500	27.691	21.774	2071.5	18.12	110.76	65	52	375.9
87.00		0.2500	27.368	21.518	1999.2	17.89	109.47	65	52	147.3
90.00		0.2500	26.884	21.133	1894.1	17.55	107.54	65	52	217.7
95.00		0.2500	26.077	20.493	1727.1	16.98	104.31	65	52	354.1
96.00		0.2500	25.916	20.365	1694.9	16.87	103.66	65	52	69.5
100.00		0.2500	25.270	19.853	1570.2	16.41	101.08	65	52	273.7
										9150.5

Wind Loading - Shaft

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
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Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	18.496	31.26	289.78	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	18.496	31.26	284.06	0.650	0.000	5.00	16.878	10.97	342.9	0.0	543.5
10.00		0.00	1.00	18.496	31.26	278.35	0.650	0.000	5.00	16.541	10.75	336.1	0.0	532.6
15.00		0.00	1.00	18.496	31.26	272.63	0.650	0.000	5.00	16.205	10.53	329.3	0.0	521.7
20.00		0.00	1.00	18.496	31.26	266.91	0.650	0.000	5.00	15.869	10.31	322.4	0.0	510.8
25.00		0.00	1.00	18.496	31.26	261.20	0.650	0.000	5.00	15.533	10.10	315.6	0.0	499.9
30.00		0.00	1.00	18.496	31.26	255.48	0.650	0.000	5.00	15.196	9.88	308.8	0.0	489.0
35.00		0.00	1.02	18.810	31.79	251.87	0.650	0.000	5.00	14.860	9.66	307.0	0.0	478.1
40.00		0.00	1.06	19.541	33.02	250.85	0.650	0.000	5.00	14.524	9.44	311.8	0.0	467.2
45.00		0.00	1.09	20.210	34.15	249.13	0.650	0.000	5.00	14.188	9.22	315.0	0.0	456.3
50.00	Bot - Section 2	0.00	1.13	20.827	35.20	246.84	0.650	0.000	5.00	13.851	9.00	316.9	0.0	445.4
53.25	Top - Section 1	0.00	1.15	21.206	35.84	245.09	0.650	0.000	3.25	8.959	5.82	208.7	0.0	571.7
55.00		0.00	1.16	21.402	36.17	247.89	0.650	0.000	1.75	4.765	3.10	112.0	0.0	153.2
60.00		0.00	1.19	21.941	37.08	244.76	0.650	0.000	5.00	13.387	8.70	322.7	0.0	430.4
65.00		0.00	1.21	22.449	37.94	241.28	0.650	0.000	5.00	13.051	8.48	321.8	0.0	419.5
70.00		0.00	1.24	22.929	38.75	237.48	0.650	0.000	5.00	12.715	8.26	320.3	0.0	408.6
75.00		0.00	1.26	23.386	39.52	233.41	0.650	0.000	5.00	12.379	8.05	318.0	0.0	397.7
80.00		0.00	1.29	23.821	40.26	229.08	0.650	0.000	5.00	12.042	7.83	315.1	0.0	386.8
85.00		0.00	1.31	24.237	40.96	224.53	0.650	0.000	5.00	11.706	7.61	311.7	0.0	375.9
87.00	Appurtenance(s)	0.00	1.32	24.399	41.23	222.65	0.650	0.000	2.00	4.588	2.98	123.0	0.0	147.3
90.00		0.00	1.33	24.636	41.63	219.78	0.650	0.000	3.00	6.782	4.41	183.5	0.0	217.7
95.00		0.00	1.35	25.020	42.28	214.83	0.650	0.000	5.00	11.034	7.17	303.2	0.0	354.1
96.00	Appurtenance(s)	0.00	1.36	25.095	42.41	213.82	0.650	0.000	1.00	2.166	1.41	59.7	0.0	69.5
100.00		0.00	1.37	25.389	42.91	209.71	0.650	0.000	4.00	8.531	5.55	237.9	0.0	273.7
Totals:									100.00			6,343.4		9,150.5

Discrete Appurtenance Forces

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

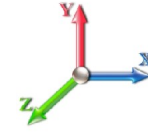
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 8



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	96.00	AIR 21 B2A B4P	3	25.095	42.410	0.86	16.98	274.50	0.000	0.000	719.97	0.00	0.00
2	96.00	AIR 21 B4A B2P	3	25.095	42.410	0.86	16.98	271.20	0.000	0.000	719.97	0.00	0.00
3	96.00	KRY 112 144/1	3	25.095	42.410	0.70	0.86	33.00	0.000	0.000	36.51	0.00	0.00
4	96.00	S11B12	3	25.095	42.410	0.70	6.95	153.00	0.000	0.000	294.79	0.00	0.00
5	96.00	Side Arm	3	25.095	42.410	0.75	10.13	360.00	0.000	0.000	429.40	0.00	0.00
6	87.00	800 10504	3	24.399	41.234	0.72	7.24	52.80	0.000	0.000	298.37	0.00	0.00
7	87.00	Flush Mount	1	24.399	41.234	1.00	5.00	350.00	0.000	0.000	206.17	0.00	0.00
Totals:								1,494.50			2,705.17		

Total Applied Force Summary

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

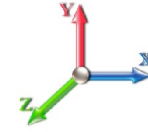
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 9



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		342.92	574.86	0.00	0.00
10.00		336.09	563.97	0.00	0.00
15.00		329.26	553.08	0.00	0.00
20.00		322.42	542.18	0.00	0.00
25.00		315.59	531.29	0.00	0.00
30.00		308.76	520.39	0.00	0.00
35.00		307.05	509.50	0.00	0.00
40.00		311.77	498.60	0.00	0.00
45.00		314.97	487.71	0.00	0.00
50.00		316.91	476.81	0.00	0.00
53.25		208.68	592.15	0.00	0.00
55.00		112.03	164.19	0.00	0.00
60.00		322.67	461.77	0.00	0.00
65.00		321.84	450.88	0.00	0.00
70.00		320.26	439.99	0.00	0.00
75.00		317.99	429.09	0.00	0.00
80.00		315.11	418.20	0.00	0.00
85.00		311.67	407.30	0.00	0.00
87.00	(4) appurtenances	627.51	562.67	0.00	0.00
90.00		183.53	233.54	0.00	0.00
95.00		303.25	380.51	0.00	0.00
96.00	(15) appurtenances	2260.36	1166.50	0.00	0.00
100.00		237.93	273.70	0.00	0.00
	Totals:	9,048.54	11,238.88	0.00	0.00

Resulting Forces and Deflections

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

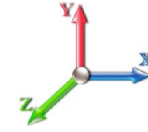
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 10



Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-9.060	-11.229	0.000	0.000	0.000	-590.72	0.000	0.000	0.000	0.000	0.000
5.00	-8.739	-10.637	0.000	0.000	0.000	-545.42	-0.065	0.000	0.065	-0.120	0.000
10.00	-8.421	-10.057	0.000	0.000	0.000	-501.72	-0.254	0.000	0.254	-0.237	0.000
15.00	-8.108	-9.489	0.000	0.000	0.000	-459.62	-0.564	0.000	0.564	-0.352	0.000
20.00	-7.799	-8.934	0.000	0.000	0.000	-419.08	-0.993	0.000	0.993	-0.463	0.000
25.00	-7.494	-8.392	0.000	0.000	0.000	-380.09	-1.537	0.000	1.537	-0.571	0.000
30.00	-7.193	-7.862	0.000	0.000	0.000	-342.62	-2.192	0.000	2.192	-0.676	0.000
35.00	-6.893	-7.345	0.000	0.000	0.000	-306.65	-2.954	0.000	2.954	-0.776	0.000
40.00	-6.585	-6.840	0.000	0.000	0.000	-272.19	-3.819	0.000	3.819	-0.872	0.000
45.00	-6.272	-6.348	0.000	0.000	0.000	-239.27	-4.781	0.000	4.781	-0.962	0.000
50.00	-5.954	-5.870	0.000	0.000	0.000	-207.91	-5.836	0.000	5.836	-1.048	0.000
53.25	-5.737	-5.278	0.000	0.000	0.000	-188.56	-6.568	0.000	6.568	-1.100	0.000
55.00	-5.627	-5.111	0.000	0.000	0.000	-178.52	-6.977	0.000	6.977	-1.128	0.000
60.00	-5.300	-4.650	0.000	0.000	0.000	-150.39	-8.196	0.000	8.196	-1.197	0.000
65.00	-4.973	-4.201	0.000	0.000	0.000	-123.89	-9.485	0.000	9.485	-1.260	0.000
70.00	-4.646	-3.764	0.000	0.000	0.000	-99.027	-10.834	0.000	10.834	-1.315	0.000
75.00	-4.321	-3.339	0.000	0.000	0.000	-75.796	-12.237	0.000	12.237	-1.361	0.000
80.00	-3.997	-2.926	0.000	0.000	0.000	-54.192	-13.684	0.000	13.684	-1.399	0.000
85.00	-3.677	-2.526	0.000	0.000	0.000	-34.205	-15.165	0.000	15.165	-1.427	0.000
87.00	-3.036	-1.979	0.000	0.000	0.000	-26.852	-15.765	0.000	15.765	-1.435	0.000
90.00	-2.847	-1.749	0.000	0.000	0.000	-17.745	-16.670	0.000	16.670	-1.445	0.000
95.00	-2.534	-1.376	0.000	0.000	0.000	-3.513	-18.189	0.000	18.189	-1.453	0.000
96.00	-0.245	-0.268	0.000	0.000	0.000	-0.979	-18.493	0.000	18.493	-1.453	0.000
100.00	-0.238	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.710	-1.453	0.000

Resulting Stresses

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

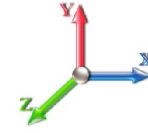
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
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Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	f Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.35	0.57	0.00	0.00	0.00	21.85	22.22	49.7	0.447
5.00	0.34	0.56	0.00	0.00	0.00	21.00	21.36	50.2	0.425
10.00	0.32	0.55	0.00	0.00	0.00	20.13	20.47	50.7	0.404
15.00	0.31	0.54	0.00	0.00	0.00	19.23	19.56	51.2	0.382
20.00	0.30	0.53	0.00	0.00	0.00	18.30	18.62	51.7	0.360
25.00	0.29	0.52	0.00	0.00	0.00	17.34	17.65	52.0	0.340
30.00	0.28	0.51	0.00	0.00	0.00	16.34	16.64	52.0	0.320
35.00	0.26	0.50	0.00	0.00	0.00	15.31	15.60	52.0	0.300
40.00	0.25	0.49	0.00	0.00	0.00	14.24	14.52	52.0	0.279
45.00	0.24	0.48	0.00	0.00	0.00	13.14	13.40	52.0	0.258
50.00	0.23	0.46	0.00	0.00	0.00	11.99	12.24	52.0	0.236
53.25	0.20	0.45	0.00	0.00	0.00	10.89	11.12	52.0	0.214
55.00	0.20	0.44	0.00	0.00	0.00	10.49	10.72	52.0	0.206
60.00	0.19	0.43	0.00	0.00	0.00	9.30	9.51	52.0	0.183
65.00	0.17	0.41	0.00	0.00	0.00	8.07	8.27	52.0	0.159
70.00	0.16	0.40	0.00	0.00	0.00	6.81	7.00	52.0	0.135
75.00	0.14	0.38	0.00	0.00	0.00	5.50	5.69	52.0	0.109
80.00	0.13	0.36	0.00	0.00	0.00	4.16	4.34	52.0	0.083
85.00	0.12	0.34	0.00	0.00	0.00	2.79	2.96	52.0	0.057
87.00	0.09	0.28	0.00	0.00	0.00	2.24	2.38	52.0	0.046
90.00	0.08	0.27	0.00	0.00	0.00	1.53	1.68	52.0	0.032
95.00	0.07	0.25	0.00	0.00	0.00	0.32	0.58	52.0	0.011
96.00	0.01	0.02	0.00	0.00	0.00	0.09	0.11	52.0	0.002
100.00	0.00	0.02	0.00	0.00	0.00	0.00	0.04	52.0	0.001

Wind Loading - Shaft

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 12



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	13.871	23.44	250.95	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	13.871	23.44	246.00	0.650	0.500	5.00	17.294	11.24	263.5	125.3	668.8
10.00		0.00	1.00	13.871	23.44	241.05	0.650	0.500	5.00	16.958	11.02	258.4	122.8	655.4
15.00		0.00	1.00	13.871	23.44	236.10	0.650	0.500	5.00	16.622	10.80	253.3	120.3	642.0
20.00		0.00	1.00	13.871	23.44	231.15	0.650	0.500	5.00	16.286	10.59	248.2	117.8	628.6
25.00		0.00	1.00	13.871	23.44	226.20	0.650	0.500	5.00	15.949	10.37	243.0	115.3	615.2
30.00		0.00	1.00	13.871	23.44	221.25	0.650	0.500	5.00	15.613	10.15	237.9	112.8	601.8
35.00		0.00	1.02	14.106	23.84	218.12	0.650	0.500	5.00	15.277	9.93	236.7	110.3	588.4
40.00		0.00	1.06	14.655	24.77	217.24	0.650	0.500	5.00	14.941	9.71	240.5	107.9	575.1
45.00		0.00	1.09	15.156	25.61	215.75	0.650	0.500	5.00	14.604	9.49	243.2	105.4	561.7
50.00	Bot - Section 2	0.00	1.13	15.620	26.40	213.77	0.650	0.500	5.00	14.268	9.27	244.8	102.9	548.3
53.25	Top - Section 1	0.00	1.15	15.903	26.88	212.25	0.650	0.500	3.25	9.229	6.00	161.2	66.8	638.6
55.00		0.00	1.16	16.051	27.13	214.67	0.650	0.500	1.75	4.911	3.19	86.6	35.7	188.9
60.00		0.00	1.19	16.455	27.81	211.96	0.650	0.500	5.00	13.804	8.97	249.5	99.4	529.8
65.00		0.00	1.21	16.836	28.45	208.95	0.650	0.500	5.00	13.468	8.75	249.1	97.0	516.4
70.00		0.00	1.24	17.196	29.06	205.66	0.650	0.500	5.00	13.131	8.54	248.0	94.5	503.0
75.00		0.00	1.26	17.538	29.64	202.13	0.650	0.500	5.00	12.795	8.32	246.5	92.0	489.7
80.00		0.00	1.29	17.865	30.19	198.39	0.650	0.500	5.00	12.459	8.10	244.5	89.5	476.3
85.00		0.00	1.31	18.177	30.72	194.44	0.650	0.500	5.00	12.123	7.88	242.1	87.0	462.9
87.00	Appurtenance(s)	0.00	1.32	18.298	30.92	192.82	0.650	0.500	2.00	4.755	3.09	95.6	34.4	181.7
90.00		0.00	1.33	18.476	31.22	190.33	0.650	0.500	3.00	7.032	4.57	142.7	50.7	268.4
95.00		0.00	1.35	18.764	31.71	186.04	0.650	0.500	5.00	11.450	7.44	236.0	82.0	436.1
96.00	Appurtenance(s)	0.00	1.36	18.820	31.81	185.17	0.650	0.500	1.00	2.250	1.46	46.5	16.3	85.8
100.00		0.00	1.37	19.041	32.18	181.61	0.650	0.500	4.00	8.864	5.76	185.4	63.6	337.3
Totals:									100.00			4,903.2		11,200.1

Discrete Appurtenance Forces

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

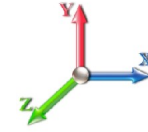
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 13



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	96.00	AIR 21 B2A B4P	3	18.820	31.806	0.86	17.98	387.60	0.000	0.000	571.95	0.00	0.00
2	96.00	AIR 21 B4A B2P	3	18.820	31.806	0.86	17.98	384.30	0.000	0.000	571.95	0.00	0.00
3	96.00	KRY 112 144/1	3	18.820	31.806	0.70	1.16	42.30	0.000	0.000	36.74	0.00	0.00
4	96.00	S11B12	3	18.820	31.806	0.70	7.39	201.30	0.000	0.000	235.11	0.00	0.00
5	96.00	Side Arm	3	18.820	31.806	0.75	13.50	450.00	0.000	0.000	429.37	0.00	0.00
6	87.00	800 10504	3	18.298	30.923	0.72	8.36	107.10	0.000	0.000	258.50	0.00	0.00
7	87.00	Flush Mount	1	18.298	30.923	1.00	6.00	450.00	0.000	0.000	185.54	0.00	0.00
Totals:								2,022.60			2,289.14		

Total Applied Force Summary

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

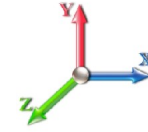
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 14



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		263.52	700.15	0.00	0.00
10.00		258.40	686.77	0.00	0.00
15.00		253.28	673.38	0.00	0.00
20.00		248.15	660.00	0.00	0.00
25.00		243.03	646.61	0.00	0.00
30.00		237.90	633.23	0.00	0.00
35.00		236.73	619.85	0.00	0.00
40.00		240.52	606.46	0.00	0.00
45.00		243.15	593.08	0.00	0.00
50.00		244.82	579.69	0.00	0.00
53.25		161.24	658.97	0.00	0.00
55.00		86.59	199.87	0.00	0.00
60.00		249.52	561.21	0.00	0.00
65.00		249.07	547.83	0.00	0.00
70.00		248.05	534.45	0.00	0.00
75.00		246.51	521.06	0.00	0.00
80.00		244.50	507.68	0.00	0.00
85.00		242.06	494.29	0.00	0.00
87.00	(4) appurtenances	539.61	751.37	0.00	0.00
90.00		142.71	284.24	0.00	0.00
95.00		236.01	462.52	0.00	0.00
96.00	(15) appurtenances	1891.62	1556.60	0.00	0.00
100.00		185.41	337.32	0.00	0.00
	Totals:	7,192.38	13,816.63	0.00	0.00

Resulting Forces and Deflections

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

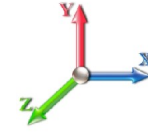
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 15



Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-7.204	-13.810	0.000	0.000	0.000	-477.63	0.000	0.000	0.000	0.000	0.000
5.00	-6.962	-13.099	0.000	0.000	0.000	-441.61	-0.052	0.000	0.052	-0.097	0.000
10.00	-6.722	-12.402	0.000	0.000	0.000	-406.80	-0.205	0.000	0.205	-0.192	0.000
15.00	-6.485	-11.719	0.000	0.000	0.000	-373.19	-0.457	0.000	0.457	-0.285	0.000
20.00	-6.250	-11.051	0.000	0.000	0.000	-340.77	-0.804	0.000	0.804	-0.376	0.000
25.00	-6.018	-10.397	0.000	0.000	0.000	-309.52	-1.245	0.000	1.245	-0.464	0.000
30.00	-5.789	-9.757	0.000	0.000	0.000	-279.43	-1.777	0.000	1.777	-0.549	0.000
35.00	-5.558	-9.132	0.000	0.000	0.000	-250.49	-2.396	0.000	2.396	-0.631	0.000
40.00	-5.322	-8.521	0.000	0.000	0.000	-222.70	-3.099	0.000	3.099	-0.709	0.000
45.00	-5.081	-7.925	0.000	0.000	0.000	-196.09	-3.882	0.000	3.882	-0.783	0.000
50.00	-4.835	-7.344	0.000	0.000	0.000	-170.68	-4.740	0.000	4.740	-0.853	0.000
53.25	-4.668	-6.685	0.000	0.000	0.000	-154.97	-5.336	0.000	5.336	-0.896	0.000
55.00	-4.583	-6.484	0.000	0.000	0.000	-146.80	-5.669	0.000	5.669	-0.919	0.000
60.00	-4.330	-5.922	0.000	0.000	0.000	-123.88	-6.663	0.000	6.663	-0.976	0.000
65.00	-4.075	-5.376	0.000	0.000	0.000	-102.24	-7.713	0.000	7.713	-1.027	0.000
70.00	-3.821	-4.843	0.000	0.000	0.000	-81.863	-8.814	0.000	8.814	-1.073	0.000
75.00	-3.567	-4.325	0.000	0.000	0.000	-62.757	-9.959	0.000	9.959	-1.111	0.000
80.00	-3.315	-3.820	0.000	0.000	0.000	-44.920	-11.141	0.000	11.141	-1.142	0.000
85.00	-3.064	-3.330	0.000	0.000	0.000	-28.346	-12.351	0.000	12.351	-1.166	0.000
87.00	-2.509	-2.590	0.000	0.000	0.000	-22.218	-12.841	0.000	12.841	-1.172	0.000
90.00	-2.361	-2.308	0.000	0.000	0.000	-14.691	-13.580	0.000	13.580	-1.180	0.000
95.00	-2.116	-1.850	0.000	0.000	0.000	-2.885	-14.821	0.000	14.821	-1.187	0.000
96.00	-0.192	-0.333	0.000	0.000	0.000	-0.769	-15.070	0.000	15.070	-1.187	0.000
100.00	-0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.064	-1.188	0.000

Resulting Stresses

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

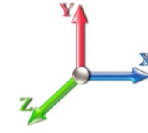
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 20

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fv _t Torsion (ksi)	fb _x Bending (X) (ksi)	fb _z Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.43	0.45	0.00	0.00	0.00	17.67	18.11	49.7	0.364
5.00	0.41	0.44	0.00	0.00	0.00	17.00	17.44	50.2	0.347
10.00	0.40	0.44	0.00	0.00	0.00	16.32	16.74	50.7	0.330
15.00	0.39	0.43	0.00	0.00	0.00	15.61	16.02	51.2	0.313
20.00	0.37	0.42	0.00	0.00	0.00	14.88	15.27	51.7	0.295
25.00	0.36	0.42	0.00	0.00	0.00	14.12	14.49	52.0	0.279
30.00	0.34	0.41	0.00	0.00	0.00	13.33	13.69	52.0	0.263
35.00	0.33	0.40	0.00	0.00	0.00	12.51	12.86	52.0	0.247
40.00	0.31	0.40	0.00	0.00	0.00	11.65	11.99	52.0	0.231
45.00	0.30	0.39	0.00	0.00	0.00	10.76	11.08	52.0	0.213
50.00	0.28	0.38	0.00	0.00	0.00	9.84	10.15	52.0	0.195
53.25	0.26	0.36	0.00	0.00	0.00	8.95	9.23	52.0	0.178
55.00	0.25	0.36	0.00	0.00	0.00	8.63	8.90	52.0	0.171
60.00	0.24	0.35	0.00	0.00	0.00	7.66	7.92	52.0	0.152
65.00	0.22	0.34	0.00	0.00	0.00	6.66	6.91	52.0	0.133
70.00	0.20	0.33	0.00	0.00	0.00	5.63	5.86	52.0	0.113
75.00	0.19	0.31	0.00	0.00	0.00	4.56	4.78	52.0	0.092
80.00	0.17	0.30	0.00	0.00	0.00	3.45	3.66	52.0	0.070
85.00	0.15	0.28	0.00	0.00	0.00	2.31	2.51	52.0	0.048
87.00	0.12	0.24	0.00	0.00	0.00	1.85	2.01	52.0	0.039
90.00	0.11	0.23	0.00	0.00	0.00	1.27	1.43	52.0	0.028
95.00	0.09	0.21	0.00	0.00	0.00	0.27	0.51	52.0	0.010
96.00	0.02	0.02	0.00	0.00	0.00	0.07	0.09	52.0	0.002
100.00	0.00	0.02	0.00	0.00	0.00	0.00	0.03	52.0	0.001

Wind Loading - Shaft

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

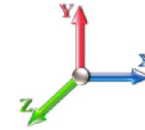
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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 Page: 17



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.82	170.46	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.82	167.10	0.650	0.000	5.00	16.878	10.97	118.7	0.0	543.5
10.00		0.00	1.00	6.400	10.82	163.73	0.650	0.000	5.00	16.541	10.75	116.3	0.0	532.6
15.00		0.00	1.00	6.400	10.82	160.37	0.650	0.000	5.00	16.205	10.53	113.9	0.0	521.7
20.00		0.00	1.00	6.400	10.82	157.01	0.650	0.000	5.00	15.869	10.31	111.6	0.0	510.8
25.00		0.00	1.00	6.400	10.82	153.65	0.650	0.000	5.00	15.533	10.10	109.2	0.0	499.9
30.00		0.00	1.00	6.400	10.82	150.28	0.650	0.000	5.00	15.196	9.88	106.8	0.0	489.0
35.00		0.00	1.02	6.509	11.00	148.16	0.650	0.000	5.00	14.860	9.66	106.2	0.0	478.1
40.00		0.00	1.06	6.762	11.43	147.56	0.650	0.000	5.00	14.524	9.44	107.9	0.0	467.2
45.00		0.00	1.09	6.993	11.82	146.55	0.650	0.000	5.00	14.188	9.22	109.0	0.0	456.3
50.00	Bot - Section 2	0.00	1.13	7.207	12.18	145.20	0.650	0.000	5.00	13.851	9.00	109.7	0.0	445.4
53.25	Top - Section 1	0.00	1.15	7.338	12.40	144.17	0.650	0.000	3.25	8.959	5.82	72.2	0.0	571.7
55.00		0.00	1.16	7.406	12.52	145.82	0.650	0.000	1.75	4.765	3.10	38.8	0.0	153.2
60.00		0.00	1.19	7.592	12.83	143.98	0.650	0.000	5.00	13.387	8.70	111.6	0.0	430.4
65.00		0.00	1.21	7.768	13.13	141.93	0.650	0.000	5.00	13.051	8.48	111.4	0.0	419.5
70.00		0.00	1.24	7.934	13.41	139.70	0.650	0.000	5.00	12.715	8.26	110.8	0.0	408.6
75.00		0.00	1.26	8.092	13.68	137.30	0.650	0.000	5.00	12.379	8.05	110.0	0.0	397.7
80.00		0.00	1.29	8.242	13.93	134.75	0.650	0.000	5.00	12.042	7.83	109.0	0.0	386.8
85.00		0.00	1.31	8.387	14.17	132.08	0.650	0.000	5.00	11.706	7.61	107.8	0.0	375.9
87.00	Appurtenance(s)	0.00	1.32	8.442	14.27	130.97	0.650	0.000	2.00	4.588	2.98	42.6	0.0	147.3
90.00		0.00	1.33	8.525	14.41	129.28	0.650	0.000	3.00	6.782	4.41	63.5	0.0	217.7
95.00		0.00	1.35	8.657	14.63	126.37	0.650	0.000	5.00	11.034	7.17	104.9	0.0	354.1
96.00	Appurtenance(s)	0.00	1.36	8.683	14.67	125.78	0.650	0.000	1.00	2.166	1.41	20.7	0.0	69.5
100.00		0.00	1.37	8.785	14.85	123.36	0.650	0.000	4.00	8.531	5.55	82.3	0.0	273.7
Totals:									100.00			2,194.9		9,150.5

Discrete Appurtenance Forces

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

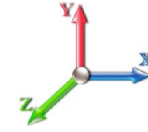
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	96.00	AIR 21 B2A B4P	3	8.683	14.675	0.86	16.98	274.50	0.000	0.000	249.12	0.00	0.00
2	96.00	AIR 21 B4A B2P	3	8.683	14.675	0.86	16.98	271.20	0.000	0.000	249.12	0.00	0.00
3	96.00	KRY 112 144/1	3	8.683	14.675	0.70	0.86	33.00	0.000	0.000	12.63	0.00	0.00
4	96.00	S11B12	3	8.683	14.675	0.70	6.95	153.00	0.000	0.000	102.00	0.00	0.00
5	96.00	Side Arm	3	8.683	14.675	0.75	10.13	360.00	0.000	0.000	148.58	0.00	0.00
6	87.00	800 10504	3	8.442	14.268	0.72	7.24	52.80	0.000	0.000	103.24	0.00	0.00
7	87.00	Flush Mount	1	8.442	14.268	1.00	5.00	350.00	0.000	0.000	71.34	0.00	0.00
Totals:								1,494.50			936.05		

Total Applied Force Summary

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

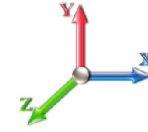
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 19



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		118.66	574.86	0.00	0.00
10.00		116.29	563.97	0.00	0.00
15.00		113.93	553.08	0.00	0.00
20.00		111.57	542.18	0.00	0.00
25.00		109.20	531.29	0.00	0.00
30.00		106.84	520.39	0.00	0.00
35.00		106.24	509.50	0.00	0.00
40.00		107.88	498.60	0.00	0.00
45.00		108.99	487.71	0.00	0.00
50.00		109.66	476.81	0.00	0.00
53.25		72.21	592.15	0.00	0.00
55.00		38.76	164.19	0.00	0.00
60.00		111.65	461.77	0.00	0.00
65.00		111.36	450.88	0.00	0.00
70.00		110.82	439.99	0.00	0.00
75.00		110.03	429.09	0.00	0.00
80.00		109.04	418.20	0.00	0.00
85.00		107.84	407.30	0.00	0.00
87.00	(4) appurtenances	217.13	562.67	0.00	0.00
90.00		63.50	233.54	0.00	0.00
95.00		104.93	380.51	0.00	0.00
96.00	(15) appurtenances	782.13	1166.50	0.00	0.00
100.00		82.33	273.70	0.00	0.00
	Totals:	3,130.98	11,238.88	0.00	0.00

Resulting Forces and Deflections

Structure: CT13074-A-SB
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

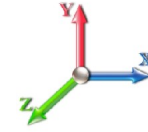
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

9/29/2015
 Page: 20



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 19

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-3.134	-11.238	0.000	0.000	0.000	-204.37	0.000	0.000	0.000	0.000	0.000
5.00	-3.023	-10.661	0.000	0.000	0.000	-188.70	-0.022	0.000	0.022	-0.041	0.000
10.00	-2.913	-10.095	0.000	0.000	0.000	-173.58	-0.088	0.000	0.088	-0.082	0.000
15.00	-2.805	-9.540	0.000	0.000	0.000	-159.02	-0.195	0.000	0.195	-0.122	0.000
20.00	-2.698	-8.996	0.000	0.000	0.000	-144.99	-0.344	0.000	0.344	-0.160	0.000
25.00	-2.593	-8.464	0.000	0.000	0.000	-131.50	-0.532	0.000	0.532	-0.198	0.000
30.00	-2.489	-7.942	0.000	0.000	0.000	-118.54	-0.758	0.000	0.758	-0.234	0.000
35.00	-2.385	-7.432	0.000	0.000	0.000	-106.10	-1.022	0.000	1.022	-0.269	0.000
40.00	-2.278	-6.932	0.000	0.000	0.000	-94.180	-1.321	0.000	1.321	-0.302	0.000
45.00	-2.170	-6.444	0.000	0.000	0.000	-82.790	-1.654	0.000	1.654	-0.333	0.000
50.00	-2.060	-5.967	0.000	0.000	0.000	-71.940	-2.019	0.000	2.019	-0.362	0.000
53.25	-1.985	-5.375	0.000	0.000	0.000	-65.246	-2.272	0.000	2.272	-0.381	0.000
55.00	-1.947	-5.211	0.000	0.000	0.000	-61.772	-2.414	0.000	2.414	-0.390	0.000
60.00	-1.834	-4.749	0.000	0.000	0.000	-52.038	-2.836	0.000	2.836	-0.414	0.000
65.00	-1.721	-4.298	0.000	0.000	0.000	-42.869	-3.282	0.000	3.282	-0.436	0.000
70.00	-1.608	-3.859	0.000	0.000	0.000	-34.266	-3.749	0.000	3.749	-0.455	0.000
75.00	-1.495	-3.430	0.000	0.000	0.000	-26.228	-4.234	0.000	4.234	-0.471	0.000
80.00	-1.383	-3.013	0.000	0.000	0.000	-18.752	-4.735	0.000	4.735	-0.484	0.000
85.00	-1.272	-2.606	0.000	0.000	0.000	-11.836	-5.247	0.000	5.247	-0.494	0.000
87.00	-1.050	-2.045	0.000	0.000	0.000	-9.292	-5.455	0.000	5.455	-0.497	0.000
90.00	-0.985	-1.812	0.000	0.000	0.000	-6.141	-5.768	0.000	5.768	-0.500	0.000
95.00	-0.877	-1.433	0.000	0.000	0.000	-1.215	-6.294	0.000	6.294	-0.503	0.000
96.00	-0.085	-0.273	0.000	0.000	0.000	-0.339	-6.399	0.000	6.399	-0.503	0.000
100.00	-0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.820	-0.503	0.000

Resulting Stresses

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

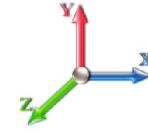
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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 Page: 21



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 19

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	f Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.35	0.20	0.00	0.00	0.00	7.56	7.91	49.7	0.159
5.00	0.34	0.19	0.00	0.00	0.00	7.27	7.61	50.2	0.152
10.00	0.33	0.19	0.00	0.00	0.00	6.96	7.30	50.7	0.144
15.00	0.31	0.19	0.00	0.00	0.00	6.65	6.97	51.2	0.136
20.00	0.30	0.18	0.00	0.00	0.00	6.33	6.64	51.7	0.129
25.00	0.29	0.18	0.00	0.00	0.00	6.00	6.30	52.0	0.121
30.00	0.28	0.18	0.00	0.00	0.00	5.65	5.94	52.0	0.114
35.00	0.27	0.17	0.00	0.00	0.00	5.30	5.57	52.0	0.107
40.00	0.26	0.17	0.00	0.00	0.00	4.93	5.19	52.0	0.100
45.00	0.24	0.17	0.00	0.00	0.00	4.54	4.80	52.0	0.092
50.00	0.23	0.16	0.00	0.00	0.00	4.15	4.39	52.0	0.084
53.25	0.21	0.15	0.00	0.00	0.00	3.77	3.98	52.0	0.077
55.00	0.20	0.15	0.00	0.00	0.00	3.63	3.84	52.0	0.074
60.00	0.19	0.15	0.00	0.00	0.00	3.22	3.42	52.0	0.066
65.00	0.18	0.14	0.00	0.00	0.00	2.79	2.98	52.0	0.057
70.00	0.16	0.14	0.00	0.00	0.00	2.35	2.53	52.0	0.049
75.00	0.15	0.13	0.00	0.00	0.00	1.90	2.07	52.0	0.040
80.00	0.13	0.12	0.00	0.00	0.00	1.44	1.59	52.0	0.031
85.00	0.12	0.12	0.00	0.00	0.00	0.96	1.10	52.0	0.021
87.00	0.10	0.10	0.00	0.00	0.00	0.77	0.89	52.0	0.017
90.00	0.09	0.09	0.00	0.00	0.00	0.53	0.64	52.0	0.012
95.00	0.07	0.09	0.00	0.00	0.00	0.11	0.24	52.0	0.005
96.00	0.01	0.01	0.00	0.00	0.00	0.03	0.05	52.0	0.001
100.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Final Analysis Summary

Structure: CT13074-A-SBA
Site Name: Stonington
Height: 100.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	t MZ (ft-kips)
85 mph Wind with 0" Ice	9.1	0.00	11.23	0.00	0.00	590.72
73.61 mph Wind with 0.5" Ice	7.2	0.00	13.81	0.00	0.00	477.63
50 mph Wind with 0" Ice	3.1	0.00	11.24	0.00	0.00	204.38

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
85 mph Wind with 0" Ice	0.35	0.57	0.00	0.00	0.00	21.85	22.22	49.7	0.00	0.447
73.61 mph Wind with 0.5" Ice	0.43	0.45	0.00	0.00	0.00	17.67	18.11	49.7	0.00	0.364
50 mph Wind with 0" Ice	0.35	0.20	0.00	0.00	0.00	7.56	7.91	49.7	0.00	0.159



Monopole Mat Foundation Design

Date
9/29/2015

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-F
Site Name:		Structure Height (Ft.):	100
Site Number:	CT13074-A-SBA	Engineer Name:	J. Chen
Engr. Number:	17800	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

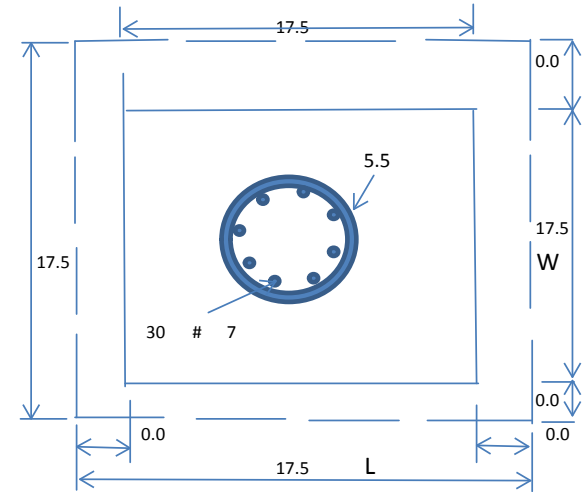
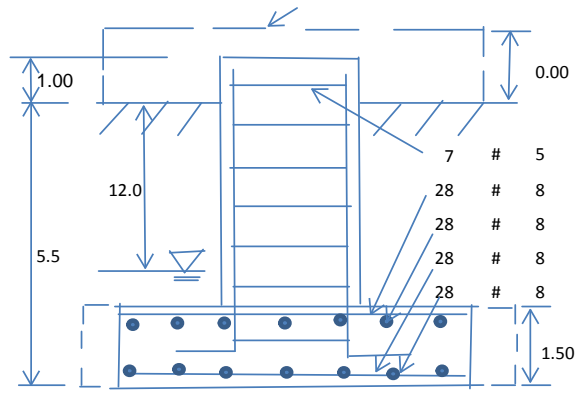
Base Reactions (Unfactored)

Axial Load (Kips):	13.8	Shear Force (Kips):	9.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	590.7

Allowable overstress %: 5.0%

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	5.5	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	1.50
Length of Pad (ft.):	17.5	Width of Pad (ft.):	17.5
Final Length of pad (ft)	17.5	Final width of pad (ft):	17.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	7	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	30	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28	

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Soil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	12.0	Unit Weight of Water:	62.4	pcf
Allowable Net Soil Bearing (psf):	3000	Allowable Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hori. force for O.T.M.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	

Foundation Analysis and Design:

Total Dry Soil Volume (cu. Ft.):	1129.97	Total Dry Soil Weight (Kips):	129.95
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	129.95	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	578.17	Total Dry Concrete Weight (Kips):	86.72
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	86.72	Total Vertical Load on Base (Kips):	230.47

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	1128	<	Allowable Soil Bearing (psf):	3000	0.38	OK!
Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.):	1344.4	>	Applied Momnt (kips-ft):	650	0.48	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	3.10					OK!

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.30

Load/
Capacity
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	0.60	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	2410.8	>	Design Factored Moment (Mu, Kips-Ft)	636.2	0.26 OK!
Calculated Shear Capacity (Kips):	488.2	>	Design Factored Shear (Kips):	11.8	0.02 OK!
Calculated Tension Capacity (Tn, Kips):	972.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	6016.8	>	Design Factored Axial Load (Pu Kips):	17.9	0.00 OK!
Moment & Axial Strength Combination:	0.26	OK!	Check Tie Spacing (Design/Required):	1	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	288.9	>	One-Way Factored Shear (L-D. Kips):	69.8	0.24 OK!
One-Way Design Shear Capacity (W-Direction, Kips):	288.9	>	One-Way Factored Shear (W-D., Kips)	69.8	0.24 OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	317.7	>	One-Way Factored Shear (C-C, Kips):	91.4	0.29 OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0073	OK!	Lower Steel Pad Reinf. Ratio (W-Direct	0.0073	
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1350.8	>	Moment at Bottom (L-Direct. K-Ft):	128.7	0.10 OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1350.8	>	Moment at Bottom (W-Direct. K-Ft):	128.7	0.10 OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	1873.0	>	Moment at Bottom (C-C Dir. K-Ft):	182.0	0.10 OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0073	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0073	
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	1350.8	>	Moment at the top (L-Dir Kips-Ft):	105.5	0.08 OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	1350.8	>	Moment at the top (W-Dir Kips-Ft):	105.5	0.08 OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	1873.0	>	Moment at the top (C-C Direc. K-Ft):	127.9	0.07 OK!

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

T-Mobile Existing Facility

Site ID: CTNL071B

**NL071/OptasiteWilcoxFT
107 Wilcox Rd
Stonington, CT 06378**

October 9, 2015

EBI Project Number: 6215005056

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	5.43 %

October 9, 2015

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

Emissions Analysis for Site: **CTNL071B – NL071/OptasiteWilcoxFT**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **107 Wilcox Rd, Stonington, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **107 Wilcox Rd, Stonington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 2 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Ericsson AIR21 B4A/B12P** for 2100 MHz (AWS) and 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe. The **Ericsson AIR21 B4A/B12P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz and has a maximum gain of **13.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerline of the proposed antennas is **96 feet** above ground level (AGL).
- 9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	96	Height (AGL):	96	Height (AGL):	96
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	# PCS Channels:	4
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	2.07	Antenna B1 MPE%	2.07	Antenna C1 MPE%	2.07
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P
Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd
Height (AGL):	96	Height (AGL):	96	Height (AGL):	96
Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power:	150	Total TX Power:	150	Total TX Power:	150
ERP (W):	5,355.80	ERP (W):	5,355.80	ERP (W):	5,355.80
Antenna A2 MPE%	2.73	Antenna B2 MPE%	2.73	Antenna C2 MPE%	2.73

Site Composite MPE%	
Carrier	MPE%
T-Mobile	4.80
MetroPCS	0.63 %
Site Total MPE %:	5.43 %

T-Mobile Sector 1 Total:	4.80 %
T-Mobile Sector 2 Total:	4.80 %
T-Mobile Sector 3 Total:	4.80 %
Site Total:	5.43 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	96	20.72	2100	1000	2.07 %
T-Mobile 700 MHz LTE	1	687.26	96	3.05	700	467	0.65 %
T-Mobile 1900 MHz (PCS) UMTS	2	1167.14	96	10.36	1900	1000	1.04 %
T-Mobile 2100 MHz (AWS) UMTS	2	1167.14	96	10.36	2100	1000	1.04 %
						Total:	4.80%

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	4.80 %
Sector 2:	4.80 %
Sector 3 :	4.80 %
T-Mobile Total:	4.80 %
Site Total:	5.43 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **5.43%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

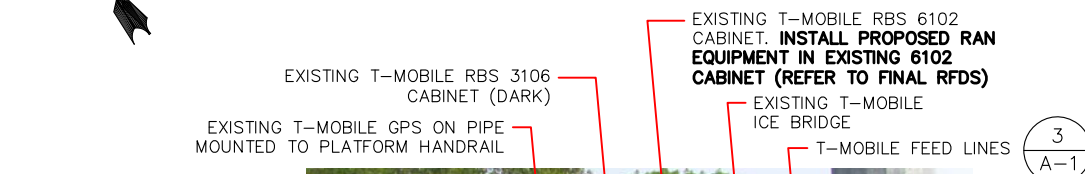
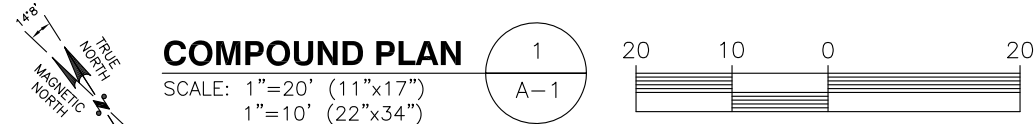
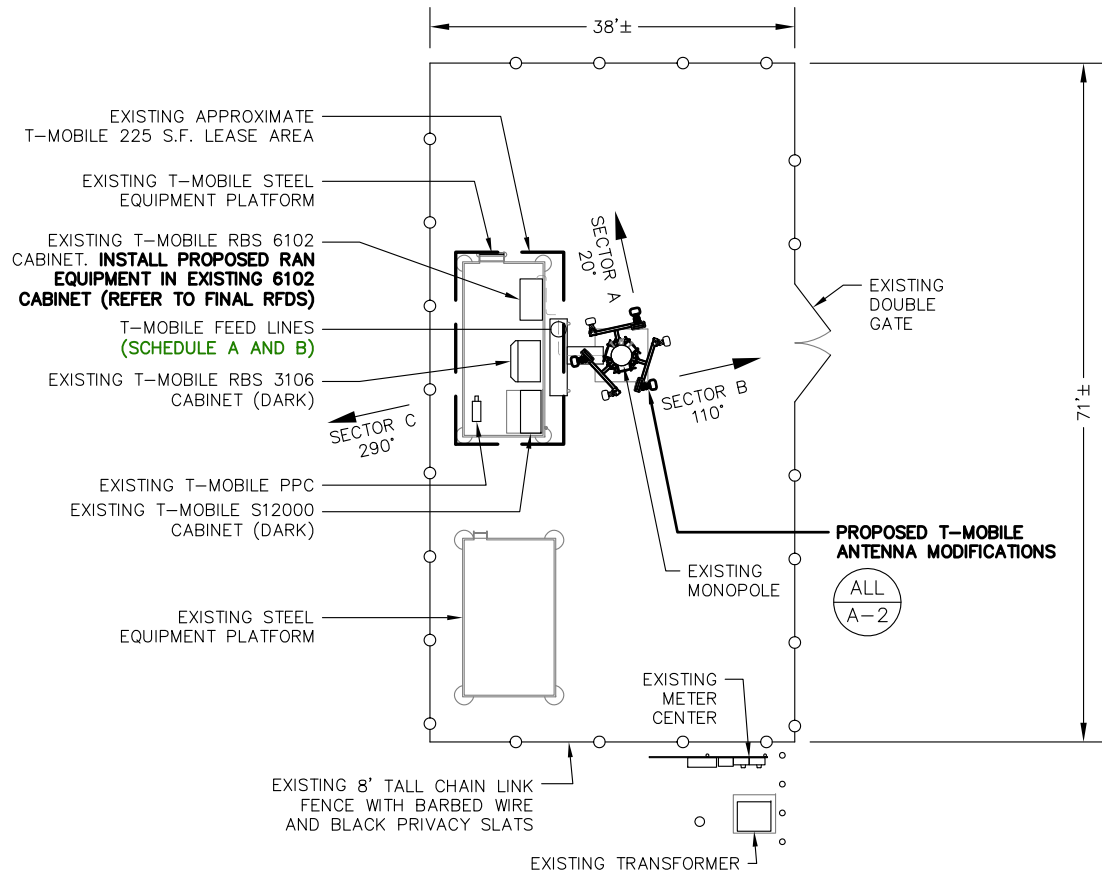
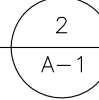


IMAGE SOURCE: PROTERRA 09/02/15

EQUIPMENT PHOTO DETAIL

SCALE: N.T.S.



ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:

ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

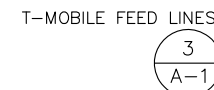
STRUCTURAL NOTES:

PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY SBA TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS

CL OF PROPOSED T-MOBILE ANTENNAS
ELEV.= 96' ± AGL (SBA DATABASE)



EXISTING 100'± MONOPOLE



FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING: TO REMAIN (12) 1-1/4" COAX AND (1) FIBER TO 96' RAD	UP INSIDE MONOPOLE
B	PROPOSED: USE EXISTING	UP INSIDE MONOPOLE

NOTE: EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER

EXISTING (12) 1-1/4" COAX AND (1) FIBER ACROSS EXISTING ICE BRIDGE & UP INSIDE MONOPOLE,

ALL TO REMAIN (REFER TO SBA-PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL FEEDLINE INSTALLATION REQUIREMENTS, STACKING, BUNDLING, SHIELDING, MOUNTING AND RELOCATION OF EXISTING OR PROPOSED FEEDLINES)



IMAGE SOURCE: PROTERRA 09/02/15

FEEDLINE PHOTO DETAIL AT TOWER BASE

SCALE: N.T.S.



IMAGE SOURCE: PROTERRA 09/02/15

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.



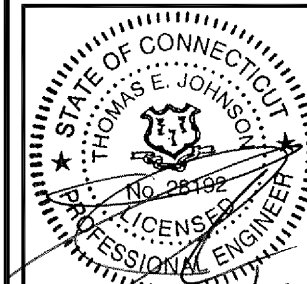
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116



SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752 TEL: (508) 251-0720

ProTerra
DESIGN GROUP, LLC

4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph: (413) 320-4918



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	09/25/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CTNL071B
SITE NAME:
NL071 / OPTASITE WILCOX FT
SITE ADDRESS:
107 WILCOX ROAD
STONINGTON, CT 06378
NEW LONDON COUNTY

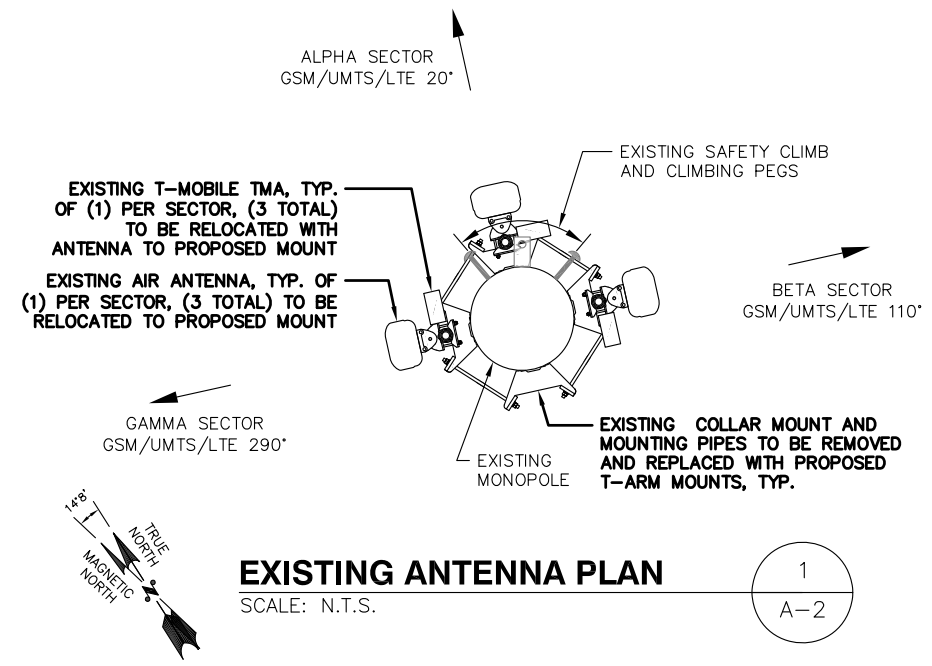
SHEET TITLE
COMPOUND & ELEVATION PLAN

SHEET NUMBER
A-1

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
 ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

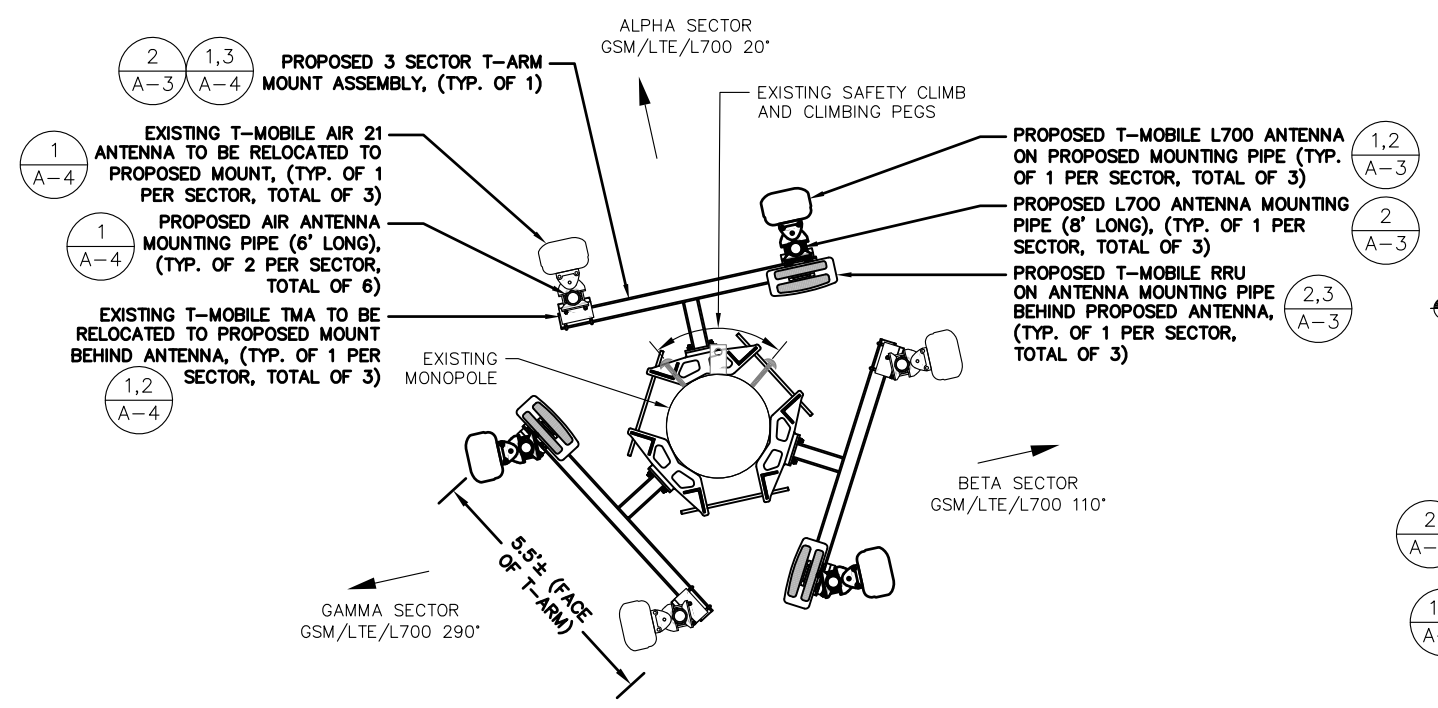
STRUCTURAL NOTES:
 PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY SBA TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS

NOTE:
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

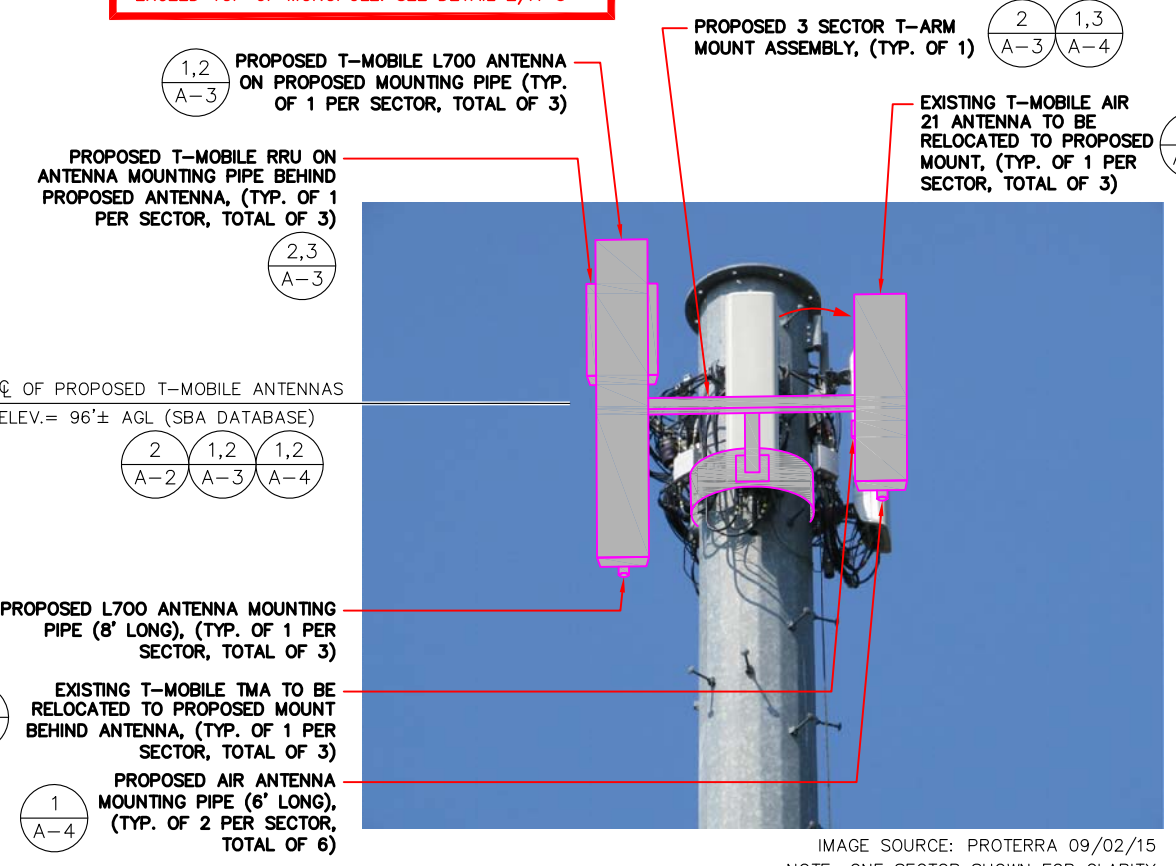


1
A-2

SPECIAL WORK NOTE:
 VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE PROPOSED MOUNTING RAIL. ANTENNA TIP HEIGHT SHALL NOT EXCEED TOP OF MONOPOLE. SEE DETAIL 2/A-3



2
A-2

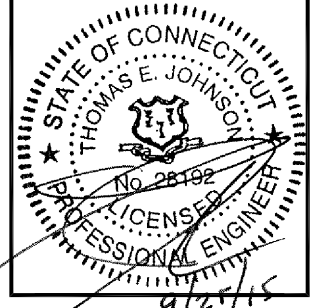


3
A-2

T-Mobile
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 OFFICE: (860) 648-1116

SBA
 SBA COMMUNICATIONS CORP.
 33 BOSTON POST ROAD WEST, SUITE 320
 MARLBOROUGH, MA 01752 TEL: (508) 251-0720

ProTerra
 DESIGN GROUP, LLC
 4 Bay Road, Building A
 Suite 200
 Hadley, MA 01035 Ph: (413) 320-4918



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

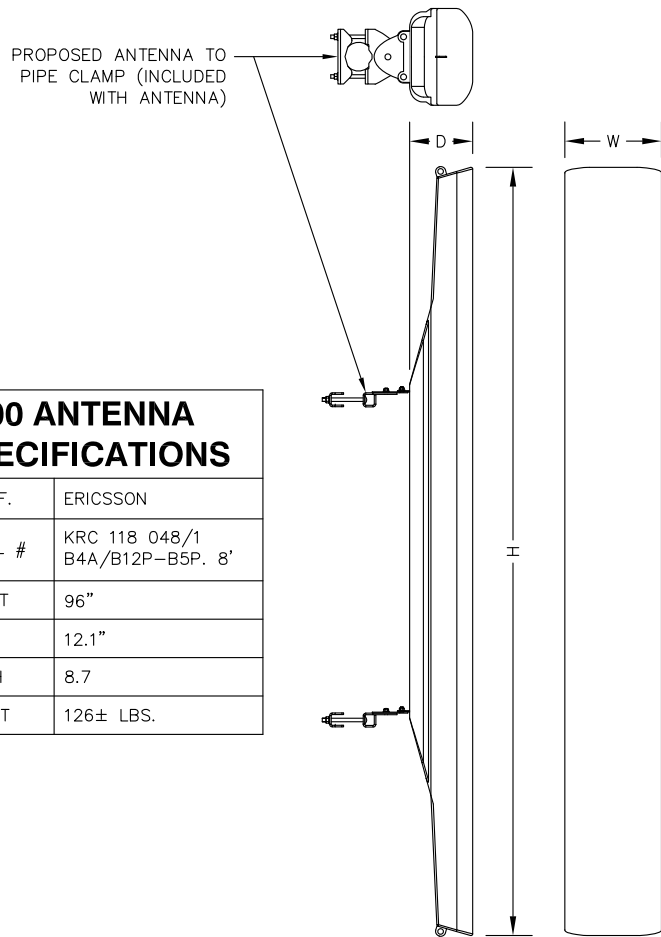
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	09/25/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CTNL071B
 SITE NAME:
NL071 / OPTASITE WILCOX FT
 SITE ADDRESS:
 107 WILCOX ROAD
 STONINGTON, CT 06378
 NEW LONDON COUNTY

SHEET TITLE
EXISTING & PROPOSED ANTENNA PLAN

SHEET NUMBER
A-2

IMAGE SOURCE: PROTERRA 09/02/15
 NOTE: ONE SECTOR SHOWN FOR CLARITY

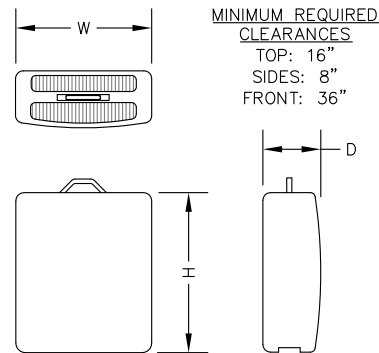


L700 ANTENNA SPECIFICATIONS

MANUF.	ERICSSON
MODEL #	KRC 118 048/1 B4A/B12P-B5P. 8'
HEIGHT	96"
WIDTH	12.1"
DEPTH	8.7
WEIGHT	126± LBS.

L700 ANTENNA DETAIL

SCALE: N.T.S.



RRU SPECIFICATIONS

MANUF.	ERICSSON
MODEL #	RRUS11 B12
HEIGHT	20"
WIDTH	17"
DEPTH	7"
WEIGHT	50.7 LBS.

REMOTE RADIO UNIT (RRU)

SCALE: N.T.S.

1
A-3

3
A-3

NOTE:
ALL PIPE TO BE SCH40 GALVANIZED ASTM A53 GRADE B (35 KSI)

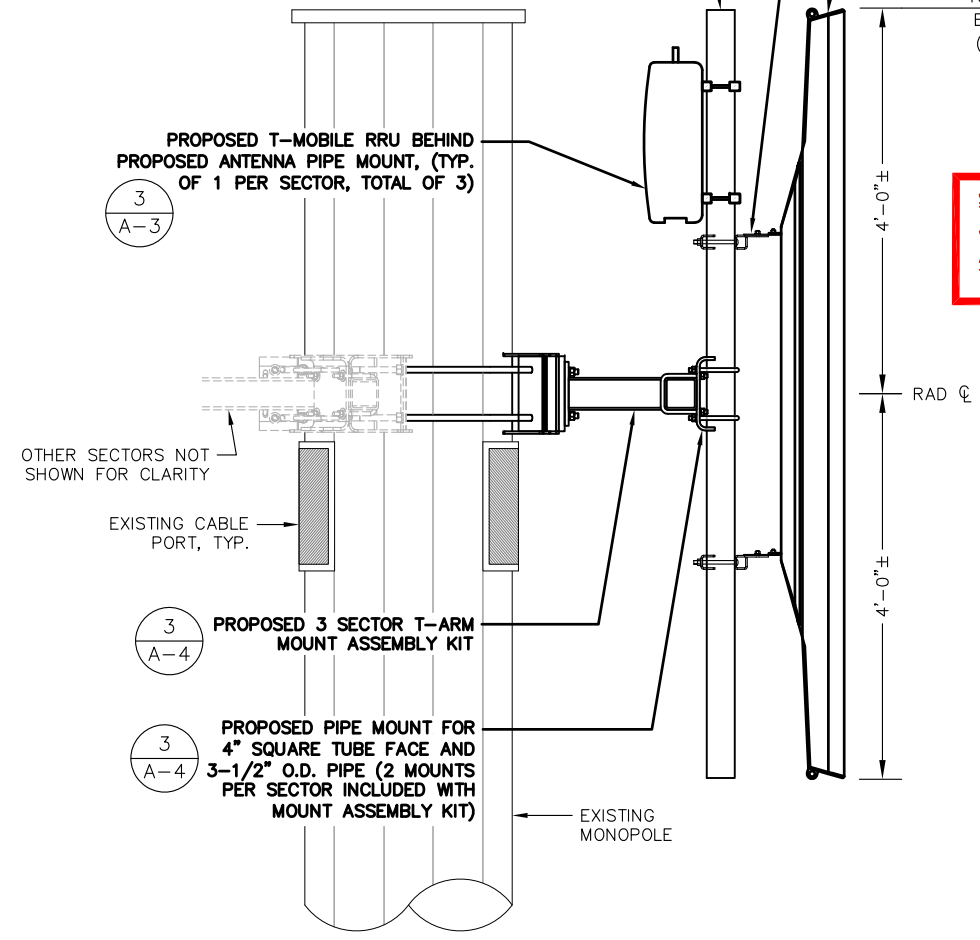
PROPOSED 3" SCH40 NOMINAL (3-1/2" O.D. X 0.216" WALL) MOUNTING PIPE (8'-0" LONG), (TYP. OF 1 PIPE PER SECTOR, TOTAL OF 3), (CROSSOVER CLAMPS INCLUDED WITH FRAME ASSEMBLY KIT)

PROPOSED ANTENNA TO PIPE CLAMP (INCLUDED WITH ANTENNA)

PROPOSED T-MOBILE ANTENNA ON PROPOSED MOUNTING PIPE, (TYP. OF 1 PER SECTOR, TOTAL OF 3)

ANTENNA TIP HEIGHTS SHALL NOT EXCEED TOP OF MONOPOLE
ELEV.=100'± AGL (SBA DATABASE)

SPECIAL WORK NOTE:
VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE PROPOSED MOUNTING RAIL



PROPOSED ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

2
A-3

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
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T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
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MARLBOROUGH, MA 01752 TEL: (508) 251-0720

ProTerra
DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph: (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

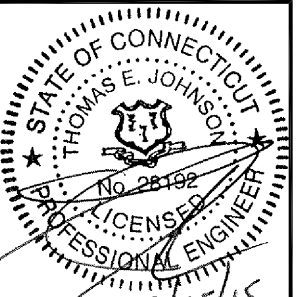
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	09/25/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CTNL071B
SITE NAME:
NL071 / OPTASITE WILCOX FT
SITE ADDRESS:
107 WILCOX ROAD
STONINGTON, CT 06378
NEW LONDON COUNTY

SHEET TITLE
DETAILS

SHEET NUMBER
A-3



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
0	09/25/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CTNL071B
 SITE NAME:
NL071 / OPTASITE WILCOX FT
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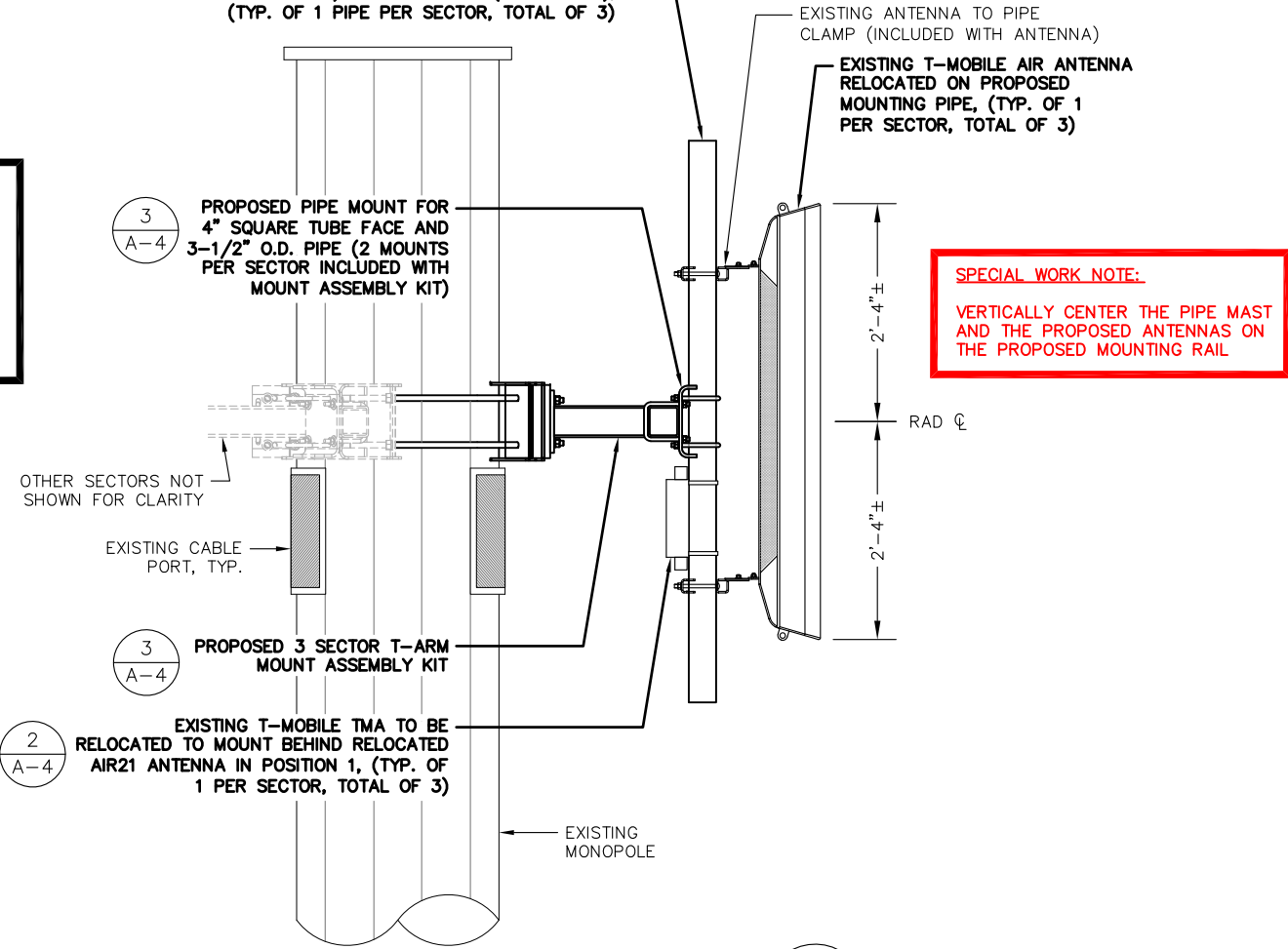
SHEET TITLE
DETAILS

SHEET NUMBER
A-4

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
 ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

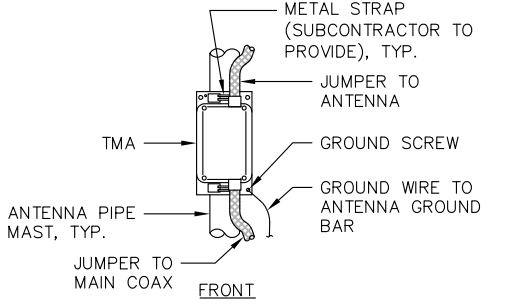
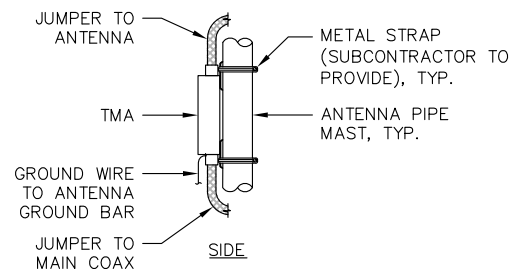
NOTE:
 ALL PIPE TO BE SCH40 GALVANIZED ASTM A53 GRADE B (35 KSI)

PROPOSED 3" SCH40 NOMINAL (3-1/2" O.D. X 0.216" WALL) MOUNTING PIPE (6'-0" LONG), (TYP. OF 1 PIPE PER SECTOR, TOTAL OF 3)



SPECIAL WORK NOTE:
 VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE PROPOSED MOUNTING RAIL

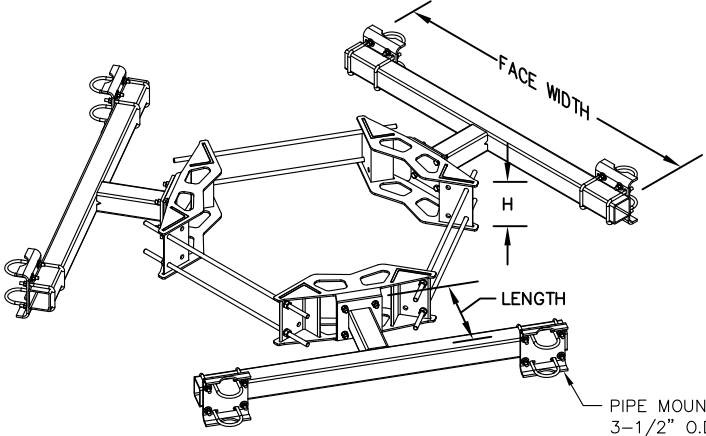
AIR21 ANTENNA MOUNTING DETAIL 1
 SCALE: N.T.S. A-4



TMA MOUNTING DETAIL 2
 SCALE: N.T.S. A-4

3 SECTOR T-FRAME SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	MC-HPM1250-B
HEIGHT	10.0"
FACE WIDTH	66"
LENGTH	14.0"
WEIGHT	534.2± LBS.



3 SECTOR T-FRAME MOUNT KIT 3
 SCALE: N.T.S. A-4

PIPE MOUNT FOR 4" SQUARE TUBE FACE AND 3-1/2" O.D. PIPE (2 MOUNTS PER SECTOR INCLUDED WITH MOUNT ASSEMBLY KIT)