Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@clinellc.com

DATE June 18, 2019

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

RE: Notice of Exempt Modification // Site Number: CT5432
151 Berkshire Rd, Newton, CT 06482 (Site Name: Newton)
N 41.397375 // W -73.236069

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains six (6) antennas at the 118.5-foot level of the existing 148-foot Monopole tower at 151 Berkshire Rd., Newton, CT 06482. The tower is owned by Eversource. The property is owned by SBA Infrastructure, LLC. AT&T now intends to add three (3) antennas, replace three (3) Antennas, and replace six (6) RRUS for its LTE upgrade. This equipment would be installed at the 118.5-foot level of the tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Daniel C. Rosenthal, First Selectman, as well as the tower and ground owner, SBA Infrastructure, LLC.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated May 14, 2019 by Hudson Design Group, LLC, a structural analysis dated June 14, 2019 by Tower Engineering Solutions, a mount analysis dated April 22, 2018 by Hudson Design Group, LLC, a mount modification design dated May 14, 2019 by Hudson Design Group, LLC, and an Emissions Analysis Report dated June 28, 2019 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by Tower Engineering Solutions, dated June 14, 2019.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@centerlincommunications.com

Attachments

cc: Daniel C. Rosenthal, First Selectman - as elected official
SBA Infrastructure, LLC – as tower and property owner
John Poeltl – as Chief Building Official

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 148 ft Pennsummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13057-A

Customer Site Name: Newtown

Carrier Name: AT&T(App#: 116066, V#2)

Carrier Site ID / Name: CT5432 / Sandy Hook

Site Location: 151 Berkshire Road

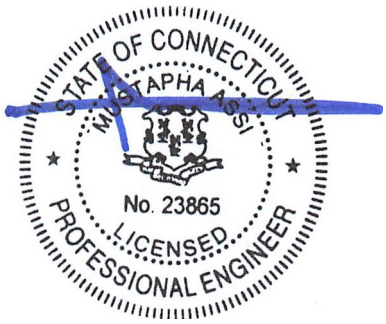
Newtown, Connecticut

Fairfield County

Latitude: 41.397375

Longitude: -73.236069

Exp.01/31/2020



06/14/2019

Analysis Result:

Max Structural Usage: 61.6% [Pass]

Max Foundation Usage: 43.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +1.6%

Report Prepared By : Uma S Atluri

Introduction

The purpose of this report is to summarize the analysis results on the 148 ft Pennsummit 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	PennSummit/PJF, Job # 29203-0081, dated 4/22/2003:
Foundation Drawing	PennSummit/PJF, Job # 29203-0081, dated 4/28/2003:
Geotechnical Report	N/A
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** 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.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 120.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.203, S_1 = 0.065

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

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
1	153.0	1	Decibel - DB-TDD6492A-A - Omni	(1) 2 ft. Standoff	(1) 7/8"	Town of Newtown
2	147.0	1	Trombone		(1) 7/8"	
3	137.5	3	Antel - BXA-171063-8BF - Panel	(1)Low Profile Platform	(12) 1 5/8"	Verizon
4		3	Swedcom - SLCP2x6014 - Panel			
5		6	Swedcom - SC-E 6014 Rev2W - Panel			
6		6	RFS - FD9R6004/2C-3L - Diplexer			
-	118.5	3	Allgon - 7770 - Panel	(1)Low Profile Platform + (1) RRH Collar Mount	(6) 1 5/8" (1) 3/8" (2) 5/8"	AT&T
-		3	Allgon - P65-16 - Panel			
-		6	Powerwave - LGP 21401 - TMA			
-		6	Ericsson - RRUS-11 - RRU			
-		1	Raycap - DC6-48-60-18-8F - SP			
13	109.0	3	RFS - APXVSPP18-C-A20 - Panel	(3) T-Arms w/ Working Platforms	(4) 1 1/4"	Sprint
14		3	RFS - APXVTM14-C-I20 - Panel			
15		3	ALU - 800 MHz RRH - RRU			
16		3	ALU - 1900MHz RRH - RRU			
17		3	ALU - TD-RRH8x20 - RRU			
18		3	ALU - 800MHz RRH Filter			
19		4	RFS - ACU-A20-N - RET			
20	99.5	6	Andrew - RR65-18-00DPL2 - Panel	Platform w/ Hand Rails (Commscope MT-195-12)	(12) 1 1/4"	T-Mobile
21		3	RFS - APXV18-206513-C-A20 - Panel			
22		3	Commscope - LNX-6515DS-A1M - Panel			
23		3	RFS - ATMAA1412D-1A2 - TMA			
24		3	Kathrein - 782 11054 - Bias Ts			
25	50.5	1	Decibel - 260B - GPS	(1) 3 ft. Standoff	(1) 1/2"	Sprint

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
7	118.5	3	Powerwave 7770 - Panel	Low Profile Platform + (1) RRH Collar Mount w/SitePro Sitepro 1 P/N HRK12-Handrail Kit/3 2-1/2" std. (2.88" O.D.)-Pipe Mast	(6) 1 5/8" (4) 3/4" DC Power (2) 1/2" Fiber	AT&T
8		6	Kathrein 800-10965 - Panel			
9		6	Powerwave LGP21401 TMA			
10		3	Ericsson 4449 B5/B12			
11		3	Ericsson RRUS 8843 B2 B66A			
12		2	Raycap DC6-48-60-18-8F (24x11" 32.8 lbs))			

See the attached coax layout for the line placement considered in the analysis.

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	Flange @120'
Max. Usage:	**60.3%**	**56.5%**	**61.6%**	**31.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	3750.0	35.0
Analysis Reactions	2872.8	29.3
Factored Reactions*	5062.5	47.3
% of Design Reactions	56.7%	61.9%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

The foundation has been analyzed using the supplied documents and was found adequate. Therefore, no modification to the foundation will be required. Geotechnical soil parameters were obtained from the original foundation calculations included with the referenced tower and foundation design drawings.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8894 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-G 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 structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. 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 and/or 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.

4. 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.

5. 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.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

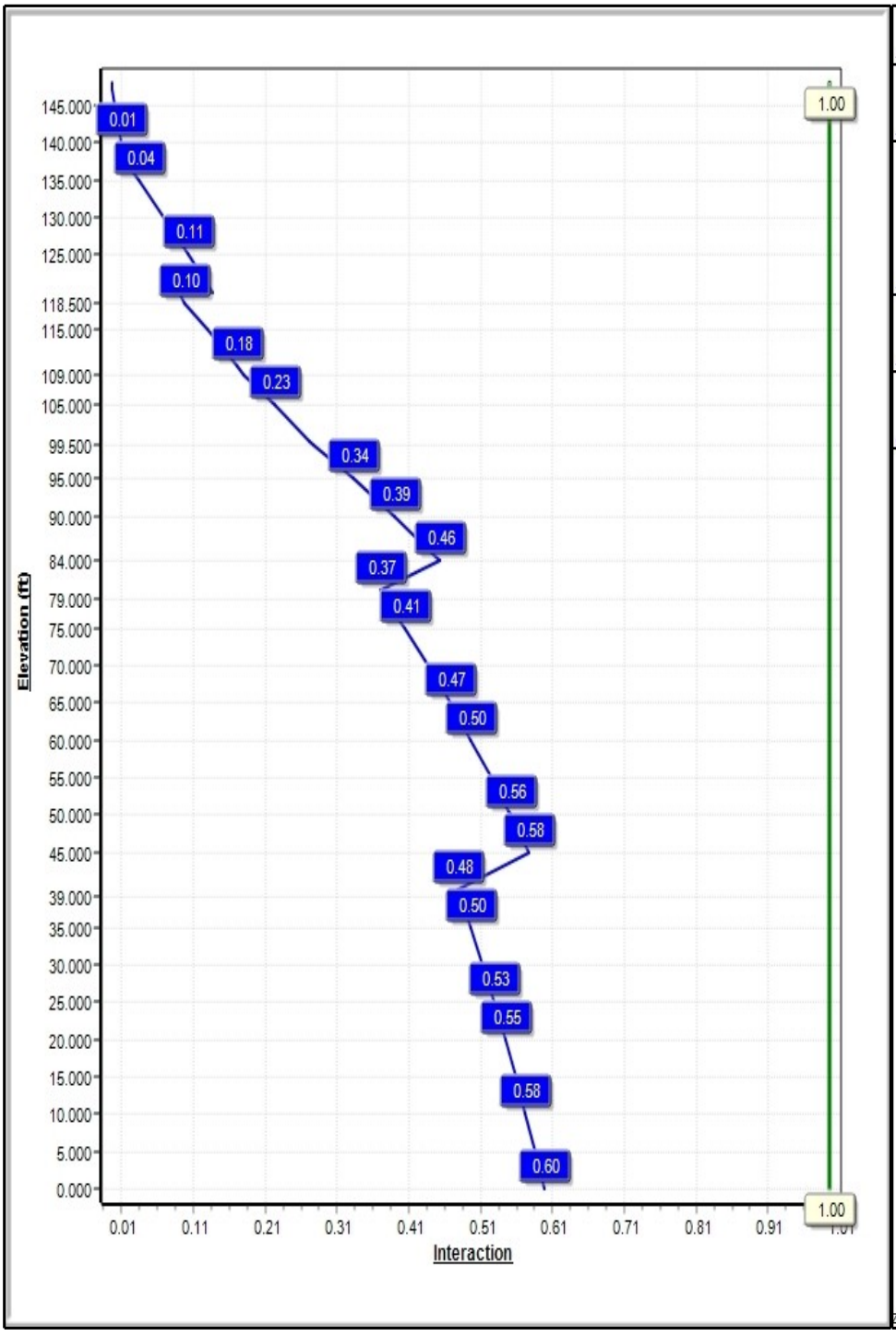
Usage Diagram - Max Ratio 60.32% at 0.0ft

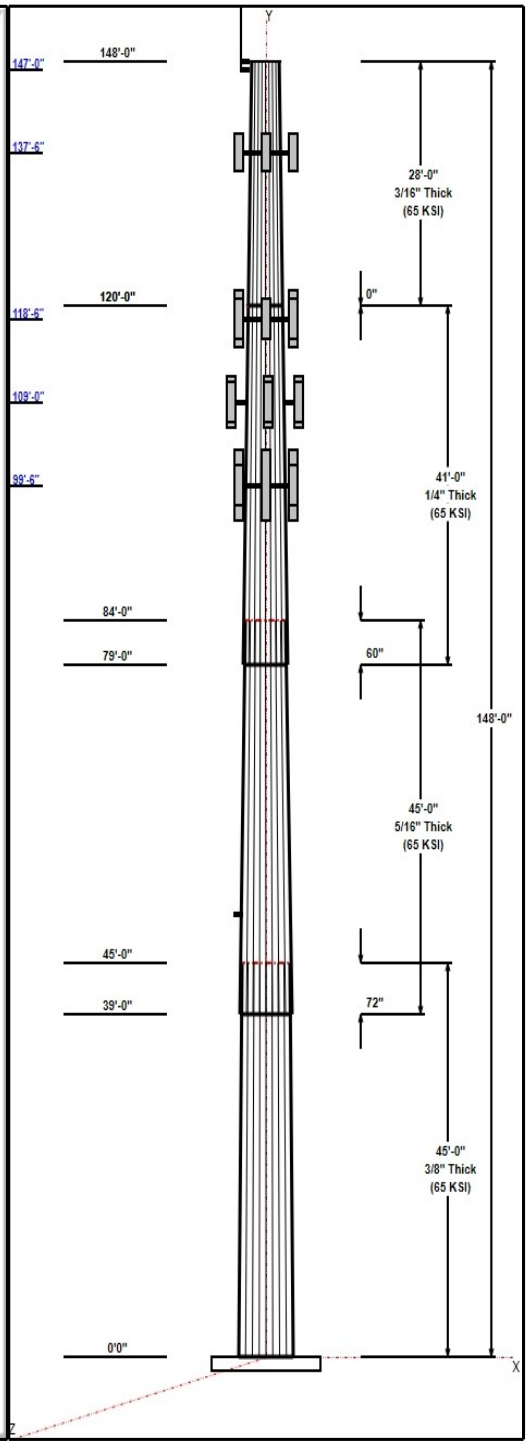
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	23
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT13057-A-SBA

Type: Tapered
Site Name: Newtown
Height: 148.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.20983

6/14/2019

Tower Engineering Solutions

Shaft Properties

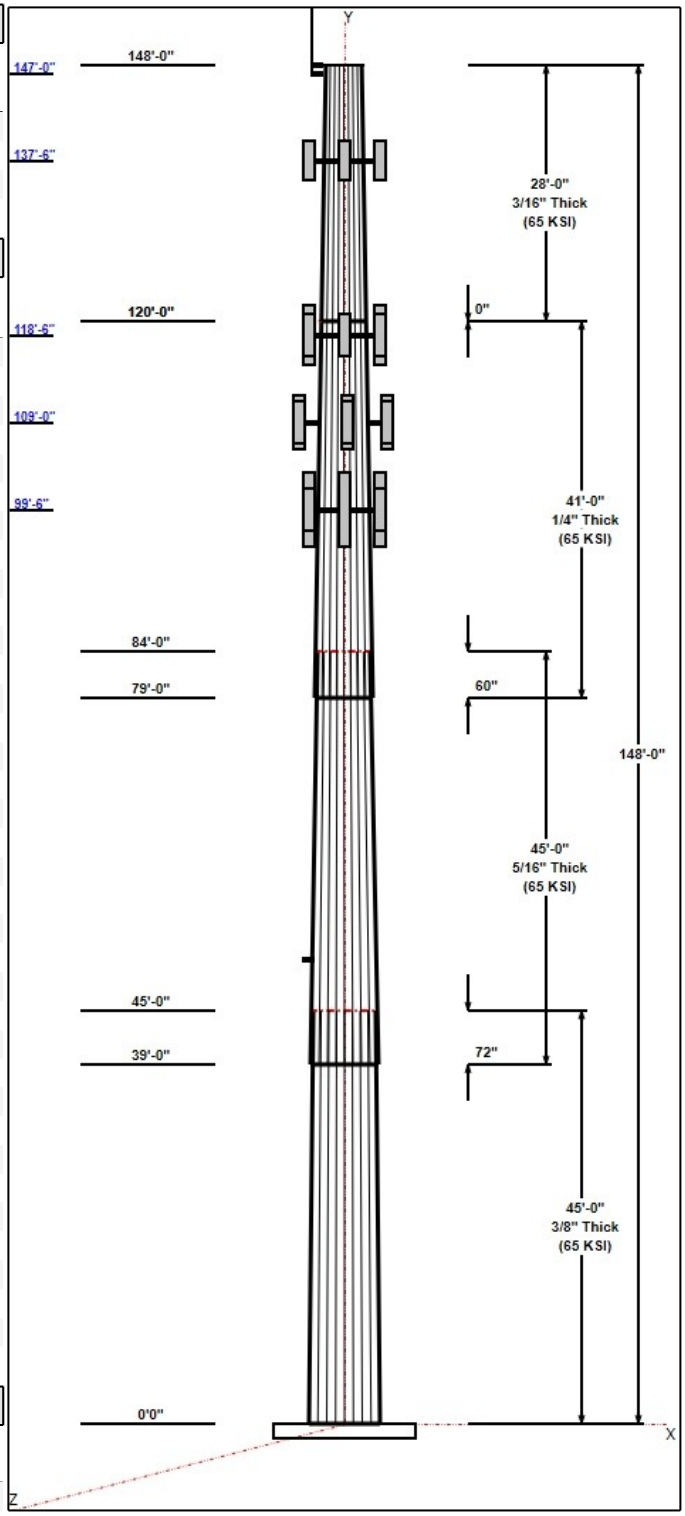
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	45.99	55.43	0.375		0.20983	65
2	45.00	38.43	47.87	0.313	Slip	0.20983	65
3	41.00	31.38	39.98	0.250	Slip	0.20983	65
4	28.00	25.50	31.38	0.188	Butt	0.20983	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
148.00	148.00	1	6' Lightning rod	T-Mobile
148.00	152.02	1	DB-TDD6492A-A	Town of Newtown
148.00	148.00	1	Pipe Mount	Town of Newtown
147.00	147.00	1	Standoff	Town of Newtown
147.00	148.46	1	Trombone	Town of Newtown
137.50	137.50	3	BXA-171063-8BF	Verizon
137.50	137.50	3	SLCP2x6014	Verizon
137.50	137.50	6	SC-E 6014 Rev2W	Verizon
137.50	137.50	6	FD9R6004/2C-3L -	Verizon
137.50	137.50	1	Low Profile Platform	Verizon
118.50	118.50	3	Powerwave 7770	AT&T
118.50	118.50	6	Powerwave LGP21401	AT&T
118.50	118.50	1	Low Profile Platform	AT&T
118.50	118.50	6	Kathrein 800-10965	AT&T
118.50	118.50	3	Ericsson 4449 B5/B12	AT&T
118.50	118.50	3	Ericsson RRUS 8843 B2	AT&T
118.50	118.50	1	SitePro Sitepro 1 P/N	AT&T
118.50	118.50	3	Pipe Mast	AT&T
118.50	118.50	2	Raycap DC6-48-60-18-8F	AT&T
118.50	118.50	1	RRH Collar Mount	AT&T
109.00	109.00	3	APXVSPP18-C-A20	Sprint
109.00	109.00	3	APXVTM14-C-I20	Sprint
109.00	109.00	3	1900MHz RRH - RRU	Sprint
109.00	109.00	3	800 MHz RRH - RRU	Sprint
109.00	109.00	3	800MHz RRH Filter	Sprint
109.00	109.00	3	TD-RRH8x20 - RRU	Sprint
109.00	109.00	4	ACU-A20-N - RET	Sprint
109.00	109.00	3	T-Arms w/ Working	Sprint
99.50	99.50	6	RR65-18-00DPL2	T-Mobile
99.50	99.50	3	APXV18-206513-C-A20	T-Mobile
99.50	99.50	3	LNX-6515DS-A1M	T-Mobile
99.50	99.50	3	ATMAA1412D-1A2 - TMA	T-Mobile
99.50	99.50	3	782 11054 - Bias Ts	T-Mobile
99.50	99.50	1	Platform w/ Hand Rail	T-Mobile
50.50	50.50	1	260B	Sprint
50.50	50.50	1	3 ft Standoff	Sprint

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	148.00	Inside	7/8" Coax	Town of Newtown
0.00	147.00	Inside	7/8" Coax	Town of Newtown
0.00	137.50	Inside	1 5/8" Coax	Verizon
0.00	118.50	Inside	1 5/8" Coax	AT&T
0.00	118.50	Inside	1/2" Fiber	AT&T
0.00	118.50	Inside	3/4" DC	AT&T



0.00	109.00	Inside	1 1/4"	Coax	Sprint
0.00	99.50	Inside	1 1/4"	Coax	T-Mobile
0.00	50.50	Outside	1/2"	Coax	Sprint

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	61.0	55.0	Clipped

Reactions

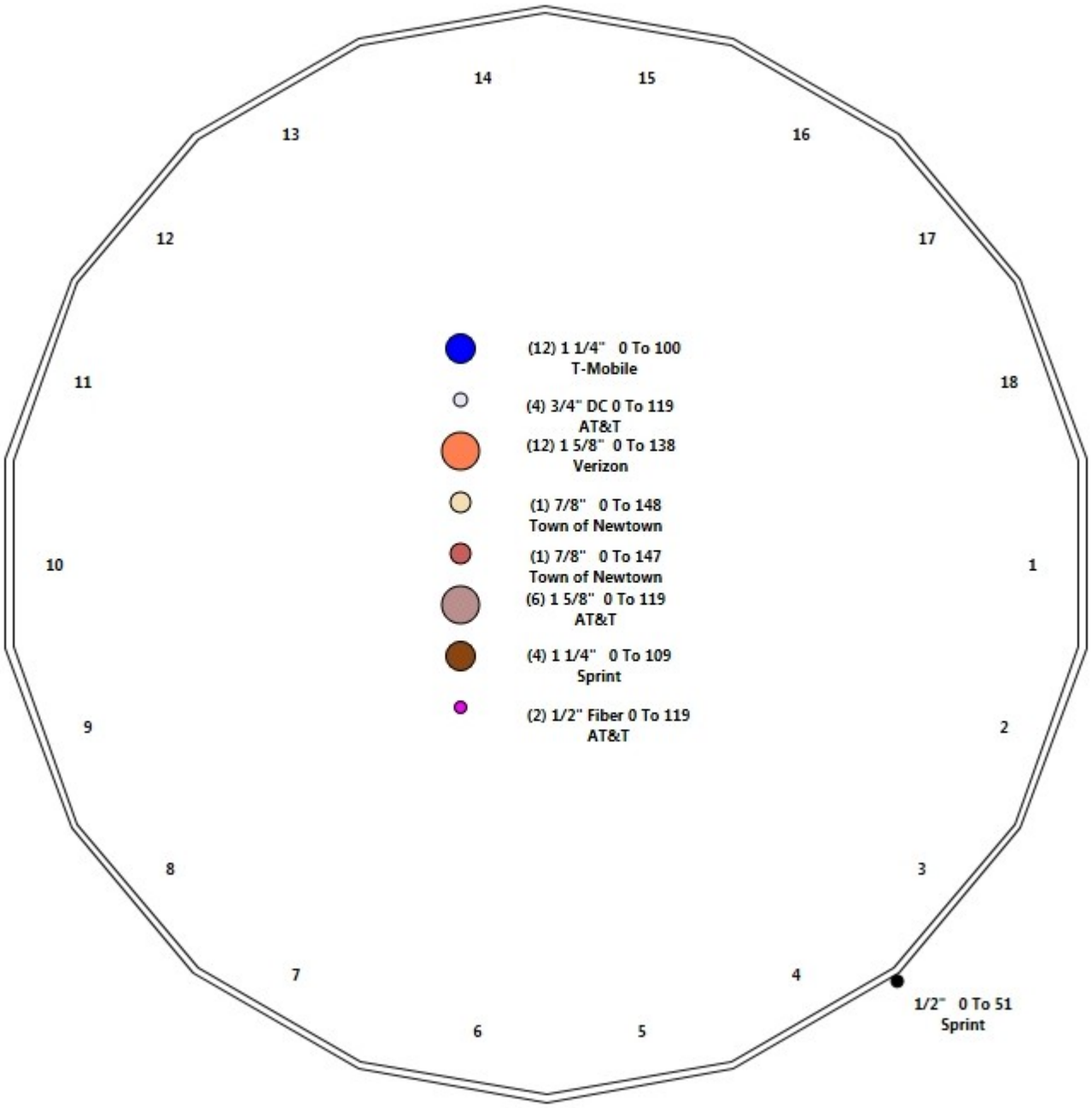
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	2872.8	29.3	41.4
0.9D + 1.6W 93 mph Wind	2851.4	29.2	31.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	949.4	9.6	65.7
1.2D + 1.0E	101.5	1.1	41.4
0.9D + 1.0E	100.7	1.1	31.1
1.0D + 1.0W 60 mph Wind	744.0	7.6	34.5

Structure: CT13057-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Newtown
Height: 148.00 (ft)

6/14/2019

TES Tower Engineering Solutions



Shaft Properties

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.3750	65		0.00	9,173
2	18	45.000	0.3125	65	Slip	72.00	6,506
3	18	41.000	0.2500	65	Slip	60.00	3,922
4	18	28.000	0.1875	65	Flange	0.00	1,602
					Total Shaft Weight:		**21,203**

	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	55.43	0.00	65.53	25093.77	24.65	147.81	45.99	45.00	54.29	14270.2	20.21	122.6	0.209831
2	47.87	39.00	47.17	13480.16	25.60	153.19	38.43	84.00	37.81	6939.69	20.27	122.9	0.209831
3	39.98	79.00	31.52	6286.17	26.79	159.91	31.38	120.00	24.70	3022.90	20.72	125.5	0.209831
4	31.38	120.0	18.56	2280.86	28.10	167.33	25.50	148.00	15.06	1219.41	22.57	136.0	0.209831

Load Summary

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	148.00	6' Lightning rod	1	6.50	0.38	1.00	42.75	1.466	1.00	0.00	0.00
2	148.00	DB-TDD6492A-A	1	21.00	2.41	1.00	82.34	5.194	1.00	0.00	4.02
3	148.00	Pipe Mount	1	40.00	2.63	1.00	120.17	8.591	1.00	0.00	0.00
4	147.00	Standoff	1	40.00	2.63	1.00	120.12	8.587	1.00	0.00	0.00
5	147.00	Trombone	1	6.00	1.00	1.00	14.68	2.712	1.00	0.00	1.46
6	137.50	BXA-171063-8BF	3	10.50	2.94	0.86	75.48	4.584	0.86	0.00	0.00
7	137.50	SLCP2x6014	3	20.00	6.49	0.82	194.71	8.547	0.82	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	15.00	3.33	0.85	108.97	4.985	0.85	0.00	0.00
9	137.50	FD9R6004/2C-3L - Diplexer	6	3.10	0.36	0.70	11.06	0.799	0.70	0.00	0.00
10	137.50	Low Profile Platform	1	1500.00	22.00	1.00	2797.57	39.509	1.00	0.00	0.00
11	118.50	Powerwave 7770	3	35.00	5.50	0.73	166.32	6.539	0.84	0.00	0.00
12	118.50	Powerwave LGP21401 TMA	6	14.10	1.29	0.70	38.52	2.106	0.70	0.00	0.00
13	118.50	Low Profile Platform	1	1500.00	22.00	1.00	2778.42	39.250	1.00	0.00	0.00
14	118.50	Kathrein 800-10965	6	108.60	13.81	0.71	398.79	15.352	1.00	0.00	0.00
15	118.50	Ericsson 4449 B5/B12	3	71.00	1.97	0.67	123.14	2.505	1.00	0.00	0.00
16	118.50	Ericsson RRUS 8843 B2 B66A	3	70.00	1.64	0.67	114.91	2.144	1.00	0.00	0.00
17	118.50	SitePro Sitepro 1 P/N HRK12	1	406.61	9.75	1.00	877.91	19.057	1.00	0.00	0.00
18	118.50	Pipe Mast	3	60.00	1.55	0.75	117.27	3.452	1.00	0.00	0.00
19	118.50	Raycap DC6-48-60-18-8F (24x11"	2	32.80	0.92	0.75	95.08	1.348	1.00	0.00	0.00
20	118.50	RRH Collar Mount	1	250.00	5.00	0.75	846.60	13.523	0.75	0.00	0.00
21	109.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	224.42	10.726	0.83	0.00	0.00
22	109.00	APXVTM14-C-I20	3	56.00	6.34	0.85	210.38	7.416	0.85	0.00	0.00
23	109.00	1900MHz RRH - RRU	3	44.00	3.80	0.67	149.73	5.146	0.67	0.00	0.00
24	109.00	800 MHz RRH - RRU	3	53.00	2.49	0.67	124.64	3.598	0.67	0.00	0.00
25	109.00	800MHz RRH Filter	3	8.80	0.78	0.67	25.89	1.407	0.67	0.00	0.00
26	109.00	TD-RRH8x20 - RRU	3	70.00	4.05	0.67	176.29	4.836	0.67	0.00	0.00
27	109.00	ACU-A20-N - RET	4	1.00	0.14	0.50	5.16	0.427	0.50	0.00	0.00
28	109.00	T-Arms w/ Working Platforms	3	350.00	12.00	0.75	586.65	22.142	0.75	0.00	0.00
29	99.50	RR65-18-00DPL2	6	13.50	4.36	0.85	107.11	5.303	0.85	0.00	0.00
30	99.50	APXV18-206513-C-A20	3	26.40	5.17	0.84	115.94	7.449	0.84	0.00	0.00
31	99.50	LNX-6515DS-A1M	3	49.80	11.47	0.80	270.12	14.605	0.80	0.00	0.00
32	99.50	ATMAA1412D-1A2 - TMA	3	13.00	1.17	0.70	38.51	1.921	0.74	0.00	0.00
33	99.50	782 11054 - Bias Ts	3	2.60	0.28	0.70	8.87	0.665	0.71	0.00	0.00
34	99.50	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3615.39	58.800	1.00	0.00	0.00
35	50.50	260B	1	1.00	0.09	1.00	5.86	0.248	1.00	0.00	0.00
36	50.50	3 ft Standoff	1	40.00	2.63	1.00	112.00	7.983	1.00	0.00	0.00
		Totals:	**99**	**9,397.81**			**23,781.11**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	148.00	(1) 7/8" Coax	0.00	Inside
0.00	147.00	(1) 7/8" Coax	0.00	Inside
0.00	137.50	(12) 1 5/8" Coax	0.00	Inside
0.00	118.50	(6) 1 5/8" Coax	0.00	Inside
0.00	118.50	(2) 1/2" Fiber	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	118.50	(4) 3/4" DC			0.00	Inside					
0.00	109.00	(4) 1 1/4" Coax			0.00	Inside					
0.00	99.50	(12) 1 1/4" Coax			0.00	Inside					
0.00	50.50	(1) 1/2" Coax			0.65	Outside					

Shaft Section Properties

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	55.430	65.527	25093.8	24.65	147.81	72.4	891.7	0.0
5.00		0.3750	54.381	64.278	23686.3	24.16	145.02	73.0	857.9	1104.2
10.00		0.3750	53.332	63.029	22332.5	23.67	142.22	73.6	824.8	1083.0
15.00		0.3750	52.283	61.781	21031.3	23.17	139.42	74.1	792.3	1061.8
20.00		0.3750	51.233	60.532	19781.7	22.68	136.62	74.7	760.5	1040.5
25.00		0.3750	50.184	59.283	18582.5	22.19	133.82	75.3	729.3	1019.3
30.00		0.3750	49.135	58.035	17432.9	21.69	131.03	75.9	698.8	998.0
35.00		0.3750	48.086	56.786	16331.6	21.20	128.23	76.5	668.9	976.8
39.00	Bot - Section 2	0.3750	47.247	55.787	15484.8	20.80	125.99	76.9	645.5	766.1
40.00		0.3750	47.037	55.537	15277.7	20.71	125.43	77.0	639.7	349.6
45.00	Top - Section 1	0.3125	46.613	45.922	12437.7	24.89	149.16	0.0	0.0	1724.4
50.00		0.3125	45.563	44.882	11611.2	24.30	145.80	72.8	501.9	772.5
50.50		0.3125	45.459	44.778	11530.6	24.24	145.47	72.9	499.6	76.3
55.00		0.3125	44.514	43.841	10822.2	23.71	142.45	73.5	478.8	678.5
60.00		0.3125	43.465	42.800	10069.7	23.11	139.09	74.2	456.3	737.1
65.00		0.3125	42.416	41.760	9352.9	22.52	135.73	74.9	434.3	719.4
70.00		0.3125	41.367	40.719	8671.0	21.93	132.37	75.6	412.9	701.6
75.00		0.3125	40.318	39.679	8023.1	21.34	129.02	76.3	391.9	683.9
79.00	Bot - Section 3	0.3125	39.478	38.846	7528.6	20.86	126.33	76.9	375.6	534.4
80.00		0.3125	39.269	38.638	7408.3	20.75	125.66	77.0	371.6	238.8
84.00	Top - Section 2	0.2500	38.929	30.691	5801.2	26.05	155.72	0.0	0.0	942.5
85.00		0.2500	38.719	30.524	5707.3	25.90	154.88	70.9	290.3	104.2
90.00		0.2500	37.670	29.692	5252.9	25.16	150.68	71.8	274.7	512.3
95.00		0.2500	36.621	28.859	4823.4	24.42	146.48	72.7	259.4	498.1
99.50		0.2500	35.677	28.110	4457.4	23.75	142.71	73.5	246.1	436.2
100.00		0.2500	35.572	28.027	4417.9	23.68	142.29	73.6	244.6	47.8
105.00		0.2500	34.523	27.194	4035.8	22.94	138.09	74.4	230.3	469.8
109.00		0.2500	33.683	26.528	3746.5	22.35	134.73	75.1	219.1	365.6
110.00		0.2500	33.474	26.362	3676.4	22.20	133.89	75.3	216.3	90.0
115.00		0.2500	32.424	25.529	3339.0	21.46	129.70	76.2	202.8	441.4
118.50		0.2500	31.690	24.947	3115.5	20.94	126.76	76.8	193.6	300.6
120.00	Top - Section 3	0.2500	31.375	24.697	3022.9	20.72	125.50	77.0	189.8	126.7
120.00	Bot - Section 4	0.1875	31.375	18.560	2280.9	27.62	167.33	68.4	143.2	
125.00		0.1875	30.326	17.936	2058.3	27.11	161.74	69.5	133.7	310.5
130.00		0.1875	29.277	17.311	1850.8	26.12	156.14	70.7	124.5	299.8
135.00		0.1875	28.228	16.687	1657.7	25.14	150.55	71.8	115.7	289.2
137.50		0.1875	27.703	16.375	1566.3	24.64	147.75	72.4	111.4	140.6
140.00		0.1875	27.179	16.063	1478.5	24.15	144.95	73.0	107.1	138.0
145.00		0.1875	26.129	15.438	1312.7	23.16	139.36	74.2	98.9	268.0
147.00		0.1875	25.710	15.188	1250.0	22.77	137.12	74.6	95.8	104.2
148.00		0.1875	25.500	15.064	1219.4	22.57	136.00	74.9	94.2	51.5
										21202.9

Wind Loading - Shaft

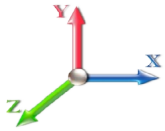
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

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		1.00	0.85	17.879	19.67	402.17	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	394.55	0.650	0.000	5.00	23.230	15.10	475.1	0.0	1325.1
10.00		1.00	0.85	17.879	19.67	386.94	0.650	0.000	5.00	22.786	14.81	466.1	0.0	1299.6
15.00		1.00	0.85	17.879	19.67	379.33	0.650	0.000	5.00	22.342	14.52	457.0	0.0	1274.1
20.00		1.00	0.90	18.971	20.87	382.89	0.650	0.000	5.00	21.899	14.23	475.2	0.0	1248.6
25.00		1.00	0.95	19.883	21.87	383.97	0.650	0.000	5.00	21.455	13.95	488.0	0.0	1223.1
30.00		1.00	0.98	20.661	22.73	383.22	0.650	0.000	5.00	21.011	13.66	496.6	0.0	1197.6
35.00		1.00	1.01	21.343	23.48	381.18	0.650	0.000	5.00	20.567	13.37	502.2	0.0	1172.1
39.00	Bot - Section 2	1.00	1.04	21.834	24.02	378.81	0.650	0.000	4.00	16.134	10.49	403.0	0.0	919.3
40.00		1.00	1.04	21.951	24.15	378.14	0.650	0.000	1.00	4.042	2.63	101.5	0.0	419.5
45.00	Top - Section 1	1.00	1.07	22.502	24.75	374.32	0.650	0.000	5.00	19.943	12.96	513.4	0.0	2069.3
50.00		1.00	1.09	23.007	25.31	375.00	0.650	0.000	5.00	19.500	12.67	513.2	0.0	927.0
50.50	Appurtenance(s)	1.00	1.10	23.055	25.36	374.53	0.650	0.000	0.50	1.926	1.25	50.8	0.0	91.5
55.00		1.00	1.12	23.473	25.82	370.06	0.650	0.000	4.50	17.130	11.13	460.0	0.0	814.2
60.00		1.00	1.14	23.907	26.30	364.66	0.650	0.000	5.00	18.612	12.10	509.0	0.0	884.5
65.00		1.00	1.16	24.313	26.74	358.87	0.650	0.000	5.00	18.168	11.81	505.3	0.0	863.2
70.00		1.00	1.17	24.696	27.17	352.73	0.650	0.000	5.00	17.724	11.52	500.7	0.0	842.0
75.00		1.00	1.19	25.057	27.56	346.29	0.650	0.000	5.00	17.280	11.23	495.3	0.0	820.7
79.00	Bot - Section 3	1.00	1.20	25.333	27.87	340.95	0.650	0.000	4.00	13.504	8.78	391.4	0.0	641.3
80.00		1.00	1.21	25.400	27.94	339.58	0.650	0.000	1.00	3.374	2.19	98.0	0.0	286.6
84.00	Top - Section 2	1.00	1.22	25.662	28.23	334.04	0.650	0.000	4.00	13.319	8.66	391.0	0.0	1131.0
85.00		1.00	1.22	25.726	28.30	336.98	0.650	0.000	1.00	3.285	2.14	96.7	0.0	125.0
90.00		1.00	1.24	26.037	28.64	329.82	0.650	0.000	5.00	16.160	10.50	481.4	0.0	614.7
95.00		1.00	1.25	26.336	28.97	322.47	0.650	0.000	5.00	15.716	10.22	473.5	0.0	597.7
99.50	Appurtenance(s)	1.00	1.26	26.593	29.25	315.69	0.650	0.000	4.50	13.765	8.95	418.8	0.0	523.4
100.00		1.00	1.27	26.621	29.28	314.93	0.650	0.000	0.50	1.507	0.98	45.9	0.0	57.3
105.00		1.00	1.28	26.896	29.59	307.21	0.650	0.000	5.00	14.828	9.64	456.3	0.0	563.7
109.00	Appurtenance(s)	1.00	1.29	27.109	29.82	300.92	0.650	0.000	4.00	11.543	7.50	358.0	0.0	438.7
110.00		1.00	1.29	27.161	29.88	299.34	0.650	0.000	1.00	2.841	1.85	88.3	0.0	108.0
115.00		1.00	1.30	27.416	30.16	291.32	0.650	0.000	5.00	13.941	9.06	437.2	0.0	529.7
118.50	Appurtenance(s)	1.00	1.31	27.590	30.35	285.62	0.650	0.000	3.50	9.494	6.17	299.7	0.0	360.7
120.00	Top - Section 3	1.00	1.32	27.663	30.43	283.15	0.650	0.000	1.50	4.002	2.60	126.7	0.0	152.0
125.00		1.00	1.33	27.902	30.69	274.87	0.650	0.000	5.00	13.053	8.48	416.6	0.0	372.6
130.00		1.00	1.34	28.133	30.95	266.45	0.650	0.000	5.00	12.609	8.20	405.8	0.0	359.8
135.00		1.00	1.35	28.358	31.19	257.93	0.650	0.000	5.00	12.165	7.91	394.6	0.0	347.1
137.50	Appurtenance(s)	1.00	1.35	28.467	31.31	253.62	0.650	0.000	2.50	5.916	3.85	192.7	0.0	168.8
140.00		1.00	1.36	28.576	31.43	249.29	0.650	0.000	2.50	5.805	3.77	189.8	0.0	165.6
145.00		1.00	1.37	28.788	31.67	240.56	0.650	0.000	5.00	11.277	7.33	371.4	0.0	321.6
147.00	Appurtenance(s)	1.00	1.37	28.871	31.76	237.04	0.650	0.000	2.00	4.387	2.85	144.9	0.0	125.1
148.00	Appurtenance(s)	1.00	1.37	28.912	31.80	235.27	0.650	0.000	1.00	2.167	1.41	71.7	0.0	61.8
								Totals:	**148.00**			**13,762.8**		**25,443.5**

Discrete Appurtenance Forces

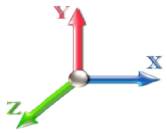
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	148.00	DB-TDD6492A-A	1	29.076	31.983	1.00	1.00	2.41	25.20	0.000	4.021	123.33	0.00	495.88
2	148.00	6' Lightning rod	1	28.912	31.803	1.00	1.00	0.38	7.80	0.000	0.000	19.34	0.00	0.00
3	148.00	Pipe Mount	1	28.912	31.803	1.00	1.00	2.63	48.00	0.000	0.000	133.83	0.00	0.00
4	147.00	Trombone	1	28.931	31.824	1.00	1.00	1.00	7.20	0.000	1.458	50.92	0.00	74.26
5	147.00	Standoff	1	28.871	31.758	1.00	1.00	2.63	48.00	0.000	0.000	133.64	0.00	0.00
6	137.50	SC-E 6014 Rev2W	6	28.467	31.314	0.68	0.80	13.59	108.00	0.000	0.000	680.72	0.00	0.00
7	137.50	BXA-171063-8BF	3	28.467	31.314	0.69	0.80	6.07	37.80	0.000	0.000	304.03	0.00	0.00
8	137.50	SLCP2x6014	3	28.467	31.314	0.66	0.80	12.77	72.00	0.000	0.000	639.93	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	28.467	31.314	0.56	0.80	1.21	22.32	0.000	0.000	60.60	0.00	0.00
10	137.50	Low Profile Platform	1	28.467	31.314	1.00	1.00	22.00	1800.00	0.000	0.000	1102.26	0.00	0.00
11	118.50	RRH Collar Mount	1	27.590	30.349	0.56	0.75	2.81	300.00	0.000	0.000	136.57	0.00	0.00
12	118.50	Raycap DC6-48-60-18-8F	2	27.590	30.349	0.56	0.75	1.04	78.72	0.000	0.000	50.26	0.00	0.00
13	118.50	Pipe Mast	3	27.590	30.349	0.56	0.75	2.62	216.00	0.000	0.000	127.01	0.00	0.00
14	118.50	SitePro Sitepro 1 P/N	1	27.590	30.349	1.00	1.00	9.75	487.93	0.000	0.000	473.44	0.00	0.00
15	118.50	Ericsson RRUS 8843 B2	3	27.590	30.349	0.50	0.75	2.47	252.00	0.000	0.000	120.05	0.00	0.00
16	118.50	Ericsson 4449 B5/B12	3	27.590	30.349	0.50	0.75	2.97	255.60	0.000	0.000	144.21	0.00	0.00
17	118.50	Kathrein 800-10965	6	27.590	30.349	0.53	0.75	44.12	781.92	0.000	0.000	2142.54	0.00	0.00
18	118.50	Low Profile Platform	1	27.590	30.349	1.00	1.00	22.00	1800.00	0.000	0.000	1068.29	0.00	0.00
19	118.50	Powerwave LGP21401	6	27.590	30.349	0.52	0.75	4.06	101.52	0.000	0.000	197.32	0.00	0.00
20	118.50	Powerwave 7770	3	27.590	30.349	0.55	0.75	9.03	126.00	0.000	0.000	438.66	0.00	0.00
21	109.00	800 MHz RRH - RRU	3	27.109	29.820	0.54	0.80	4.00	190.80	0.000	0.000	191.03	0.00	0.00
22	109.00	APXVTM14-C-I20	3	27.109	29.820	0.68	0.80	12.93	201.60	0.000	0.000	617.08	0.00	0.00
23	109.00	1900MHz RRH - RRU	3	27.109	29.820	0.54	0.80	6.11	158.40	0.000	0.000	291.54	0.00	0.00
24	109.00	APXVSPP18-C-A20	3	27.109	29.820	0.66	0.80	15.98	205.20	0.000	0.000	762.23	0.00	0.00
25	109.00	TD-RRH8x20 - RRU	3	27.109	29.820	0.54	0.80	6.51	252.00	0.000	0.000	310.72	0.00	0.00
26	109.00	ACU-A20-N - RET	4	27.109	29.820	0.40	0.80	0.22	4.80	0.000	0.000	10.69	0.00	0.00
27	109.00	T-Arms w/ Working	3	27.109	29.820	0.56	0.75	20.25	1260.00	0.000	0.000	966.16	0.00	0.00
28	109.00	800MHz RRH Filter	3	27.109	29.820	0.54	0.80	1.25	31.68	0.000	0.000	59.84	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	26.593	29.253	0.64	0.80	22.02	179.28	0.000	0.000	1030.75	0.00	0.00
30	99.50	RR65-18-00DPL2	6	26.593	29.253	0.68	0.80	17.79	97.20	0.000	0.000	832.59	0.00	0.00
31	99.50	APXV18-206513-C-A20	3	26.593	29.253	0.67	0.80	10.42	95.04	0.000	0.000	487.83	0.00	0.00
32	99.50	782 11054 - Bias Ts	3	26.593	29.253	0.56	0.80	0.47	9.36	0.000	0.000	22.02	0.00	0.00
33	99.50	ATMAA1412D-1A2 - TMA	3	26.593	29.253	0.56	0.80	1.97	46.80	0.000	0.000	92.00	0.00	0.00
34	99.50	Platform w/ Hand Rail	1	26.593	29.253	1.00	1.00	32.00	1920.00	0.000	0.000	1497.74	0.00	0.00
35	50.50	3 ft Standoff	1	23.055	25.361	1.00	1.00	2.63	48.00	0.000	0.000	106.72	0.00	0.00
36	50.50	260B	1	23.055	25.361	1.00	1.00	0.09	1.20	0.000	0.000	3.65	0.00	0.00
							Totals:		**11,277.37**			**15,429.53**		

Total Applied Force Summary

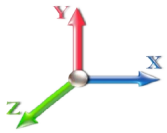
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

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		475.15	1519.49	0.00	0.00
10.00		466.07	1494.00	0.00	0.00
15.00		456.99	1468.50	0.00	0.00
20.00		475.25	1443.01	0.00	0.00
25.00		488.01	1417.51	0.00	0.00
30.00		496.61	1392.02	0.00	0.00
35.00		502.16	1366.53	0.00	0.00
39.00		403.00	1074.86	0.00	0.00
40.00		101.50	458.36	0.00	0.00
45.00		513.39	2263.74	0.00	0.00
50.00		513.23	1121.36	0.00	0.00
50.50	(2) attachments	161.16	160.17	0.00	0.00
55.00		460.00	988.28	0.00	0.00
60.00		509.03	1077.91	0.00	0.00
65.00		505.33	1056.66	0.00	0.00
70.00		500.74	1035.41	0.00	0.00
75.00		495.34	1014.17	0.00	0.00
79.00		391.37	796.04	0.00	0.00
80.00		98.04	325.27	0.00	0.00
84.00		391.00	1285.76	0.00	0.00
85.00		96.69	163.67	0.00	0.00
90.00		481.36	808.15	0.00	0.00
95.00		473.49	791.15	0.00	0.00
99.50	(19) attachments	4381.70	3045.18	0.00	0.00
100.00		45.90	71.90	0.00	0.00
105.00		456.26	709.64	0.00	0.00
109.00	(25) attachments	3567.27	2859.95	0.00	0.00
110.00		88.29	134.00	0.00	0.00
115.00		437.24	659.81	0.00	0.00
118.50	(29) attachments	5198.02	4851.44	0.00	0.00
120.00		126.66	176.37	0.00	0.00
125.00		416.64	453.68	0.00	0.00
130.00		405.81	440.93	0.00	0.00
135.00		394.65	428.18	0.00	0.00
137.50	(19) attachments	2980.21	2249.43	0.00	0.00
140.00		189.77	168.69	0.00	0.00
145.00		371.39	327.81	0.00	0.00
147.00	(2) attachments	329.44	182.75	0.00	74.26
148.00	(3) attachments	348.15	143.39	0.00	495.88
	Totals:	**29,192.28**	**41,425.17**	**0.00**	**570.13**

Linear Appurtenance Segment Forces (Factored)

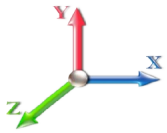
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.96
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.96
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.96
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	18.971	0.00	0.96
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	19.883	0.00	0.96
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	20.661	0.00	0.96
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	21.343	0.00	0.96
39.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.013	0.000	21.834	0.00	0.77
40.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	21.951	0.00	0.19
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	22.502	0.00	0.96
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	23.007	0.00	0.96
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.014	0.000	23.055	0.00	0.10
										Totals:	**0.0**	**9.7**

Calculated Forces

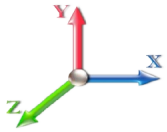
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

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 Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.38	-29.25	0.00	-2872.8	0.00	2872.84	4270.00	2135.00	9669.74	4842.06	0.00	0.000	0.000	0.603
5.00	-39.78	-28.88	0.00	-2726.5	0.00	2726.59	4222.20	2111.10	9378.04	4695.99	0.09	-0.159	0.000	0.590
10.00	-38.21	-28.52	0.00	-2582.1	0.00	2582.17	4173.09	2086.54	9087.66	4550.58	0.34	-0.318	0.000	0.577
15.00	-36.67	-28.15	0.00	-2439.5	0.00	2439.59	4122.67	2061.34	8798.75	4405.92	0.76	-0.478	0.000	0.563
20.00	-35.15	-27.76	0.00	-2298.8	0.00	2298.83	4070.95	2035.48	8511.51	4262.08	1.34	-0.638	0.000	0.548
25.00	-33.67	-27.35	0.00	-2160.0	0.00	2160.02	4017.93	2008.97	8226.08	4119.16	2.10	-0.799	0.000	0.533
30.00	-32.21	-26.92	0.00	-2023.2	0.00	2023.27	3963.61	1981.80	7942.65	3977.23	3.02	-0.959	0.000	0.517
35.00	-30.78	-26.47	0.00	-1888.6	0.00	1888.66	3907.97	1953.99	7661.39	3836.39	4.11	-1.118	0.000	0.500
39.00	-29.68	-26.09	0.00	-1782.7	0.00	1782.77	3862.53	1931.27	7438.05	3724.55	5.11	-1.246	0.000	0.487
40.00	-29.18	-26.03	0.00	-1756.6	0.00	1756.68	3851.04	1925.52	7382.46	3696.72	5.37	-1.279	0.000	0.483
45.00	-26.86	-25.53	0.00	-1626.5	0.00	1626.55	2980.94	1490.47	5677.43	2842.94	6.79	-1.436	0.000	0.581
50.00	-25.72	-25.03	0.00	-1498.8	0.00	1498.89	2941.52	1470.76	5474.55	2741.34	8.38	-1.592	0.000	0.556
50.50	-25.52	-24.90	0.00	-1486.3	0.00	1486.37	2937.50	1468.75	5454.31	2731.21	8.55	-1.610	0.000	0.553
55.00	-24.48	-24.49	0.00	-1374.3	0.00	1374.31	2900.79	1450.39	5272.72	2640.28	10.15	-1.769	0.000	0.529
60.00	-23.34	-24.01	0.00	-1251.8	0.00	1251.88	2858.76	1429.38	5072.11	2539.83	12.09	-1.942	0.000	0.501
65.00	-22.24	-23.53	0.00	-1131.8	0.00	1131.83	2815.42	1407.71	4872.91	2440.07	14.22	-2.110	0.000	0.472
70.00	-21.16	-23.05	0.00	-1014.1	0.00	1014.17	2770.78	1385.39	4675.26	2341.11	16.52	-2.273	0.000	0.441
75.00	-20.11	-22.56	0.00	-898.90	0.00	898.90	2724.84	1362.42	4479.35	2243.01	18.98	-2.430	0.000	0.408
79.00	-19.30	-22.16	0.00	-808.65	0.00	808.65	2687.14	1343.57	4323.99	2165.21	21.07	-2.551	0.000	0.381
80.00	-18.95	-22.08	0.00	-786.48	0.00	786.48	2677.59	1338.79	4285.35	2145.86	21.61	-2.581	0.000	0.374
84.00	-17.66	-21.65	0.00	-698.18	0.00	698.18	1954.67	977.33	3110.93	1557.78	23.82	-2.696	0.000	0.458
85.00	-17.47	-21.57	0.00	-676.53	0.00	676.53	1948.85	974.42	3084.73	1544.66	24.39	-2.724	0.000	0.447
90.00	-16.63	-21.09	0.00	-568.67	0.00	568.67	1918.95	959.48	2954.04	1479.22	27.33	-2.879	0.000	0.394
95.00	-15.82	-20.62	0.00	-463.20	0.00	463.20	1887.76	943.88	2824.00	1414.10	30.42	-3.019	0.000	0.336
99.50	-13.00	-16.09	0.00	-370.43	0.00	370.43	1858.56	929.28	2707.66	1355.84	33.32	-3.129	0.000	0.281
100.00	-12.91	-16.05	0.00	-362.39	0.00	362.39	1855.26	927.63	2694.78	1349.39	33.65	-3.141	0.000	0.276
105.00	-12.20	-15.58	0.00	-282.12	0.00	282.12	1821.45	910.73	2566.54	1285.18	36.99	-3.245	0.000	0.227
109.00	-9.54	-11.86	0.00	-219.81	0.00	219.81	1793.47	896.73	2464.77	1234.22	39.74	-3.315	0.000	0.184
110.00	-9.41	-11.77	0.00	-207.95	0.00	207.95	1786.34	893.17	2439.46	1221.54	40.44	-3.332	0.000	0.176
115.00	-8.76	-11.30	0.00	-149.10	0.00	149.10	1749.93	874.96	2313.70	1158.57	43.97	-3.401	0.000	0.134
118.50	-4.23	-5.83	0.00	-109.54	0.00	109.54	1723.66	861.83	2226.56	1114.93	46.47	-3.439	0.000	0.101
120.00	-4.06	-5.69	0.00	-100.80	0.00	100.80	1712.21	856.11	2189.45	1096.35	47.56	-3.454	0.000	0.094
120.00	-4.06	-5.69	0.00	-100.80	0.00	100.80	1141.82	570.91	1465.94	734.06	47.56	-3.454	0.000	0.141
125.00	-3.63	-5.25	0.00	-72.34	0.00	72.34	1122.14	561.07	1391.92	696.99	51.19	-3.494	0.000	0.107
130.00	-3.21	-4.82	0.00	-46.08	0.00	46.08	1101.16	550.58	1318.05	660.01	54.88	-3.535	0.000	0.073
135.00	-2.80	-4.40	0.00	-21.98	0.00	21.98	1078.87	539.43	1244.50	623.18	58.59	-3.562	0.000	0.038
137.50	-0.74	-1.29	0.00	-10.97	0.00	10.97	1067.24	533.62	1207.90	604.85	60.46	-3.569	0.000	0.019
140.00	-0.59	-1.09	0.00	-7.76	0.00	7.76	1055.28	527.64	1171.44	586.59	62.33	-3.573	0.000	0.014
145.00	-0.28	-0.70	0.00	-2.32	0.00	2.32	1030.38	515.19	1099.04	550.33	66.07	-3.578	0.000	0.004
147.00	-0.12	-0.36	0.00	-0.85	0.00	0.85	1020.06	510.03	1070.30	535.94	67.57	-3.578	0.000	0.002
148.00	0.00	-0.35	0.00	-0.50	0.00	0.50	1014.82	507.41	1055.98	528.78	68.32	-3.579	0.000	0.001

Wind Loading - Shaft

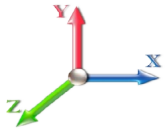
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

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		1.00	0.85	17.879	19.67	402.17	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	394.55	0.650	0.000	5.00	23.230	15.10	475.1	0.0	993.8
10.00		1.00	0.85	17.879	19.67	386.94	0.650	0.000	5.00	22.786	14.81	466.1	0.0	974.7
15.00		1.00	0.85	17.879	19.67	379.33	0.650	0.000	5.00	22.342	14.52	457.0	0.0	955.6
20.00		1.00	0.90	18.971	20.87	382.89	0.650	0.000	5.00	21.899	14.23	475.2	0.0	936.5
25.00		1.00	0.95	19.883	21.87	383.97	0.650	0.000	5.00	21.455	13.95	488.0	0.0	917.3
30.00		1.00	0.98	20.661	22.73	383.22	0.650	0.000	5.00	21.011	13.66	496.6	0.0	898.2
35.00		1.00	1.01	21.343	23.48	381.18	0.650	0.000	5.00	20.567	13.37	502.2	0.0	879.1
39.00	Bot - Section 2	1.00	1.04	21.834	24.02	378.81	0.650	0.000	4.00	16.134	10.49	403.0	0.0	689.5
40.00		1.00	1.04	21.951	24.15	378.14	0.650	0.000	1.00	4.042	2.63	101.5	0.0	314.6
45.00	Top - Section 1	1.00	1.07	22.502	24.75	374.32	0.650	0.000	5.00	19.943	12.96	513.4	0.0	1552.0
50.00		1.00	1.09	23.007	25.31	375.00	0.650	0.000	5.00	19.500	12.67	513.2	0.0	695.2
50.50	Appurtenance(s)	1.00	1.10	23.055	25.36	374.53	0.650	0.000	0.50	1.926	1.25	50.8	0.0	68.6
55.00		1.00	1.12	23.473	25.82	370.06	0.650	0.000	4.50	17.130	11.13	460.0	0.0	610.6
60.00		1.00	1.14	23.907	26.30	364.66	0.650	0.000	5.00	18.612	12.10	509.0	0.0	663.3
65.00		1.00	1.16	24.313	26.74	358.87	0.650	0.000	5.00	18.168	11.81	505.3	0.0	647.4
70.00		1.00	1.17	24.696	27.17	352.73	0.650	0.000	5.00	17.724	11.52	500.7	0.0	631.5
75.00		1.00	1.19	25.057	27.56	346.29	0.650	0.000	5.00	17.280	11.23	495.3	0.0	615.5
79.00	Bot - Section 3	1.00	1.20	25.333	27.87	340.95	0.650	0.000	4.00	13.504	8.78	391.4	0.0	481.0
80.00		1.00	1.21	25.400	27.94	339.58	0.650	0.000	1.00	3.374	2.19	98.0	0.0	214.9
84.00	Top - Section 2	1.00	1.22	25.662	28.23	334.04	0.650	0.000	4.00	13.319	8.66	391.0	0.0	848.3
85.00		1.00	1.22	25.726	28.30	336.98	0.650	0.000	1.00	3.285	2.14	96.7	0.0	93.7
90.00		1.00	1.24	26.037	28.64	329.82	0.650	0.000	5.00	16.160	10.50	481.4	0.0	461.0
95.00		1.00	1.25	26.336	28.97	322.47	0.650	0.000	5.00	15.716	10.22	473.5	0.0	448.3
99.50	Appurtenance(s)	1.00	1.26	26.593	29.25	315.69	0.650	0.000	4.50	13.765	8.95	418.8	0.0	392.6
100.00		1.00	1.27	26.621	29.28	314.93	0.650	0.000	0.50	1.507	0.98	45.9	0.0	43.0
105.00		1.00	1.28	26.896	29.59	307.21	0.650	0.000	5.00	14.828	9.64	456.3	0.0	422.8
109.00	Appurtenance(s)	1.00	1.29	27.109	29.82	300.92	0.650	0.000	4.00	11.543	7.50	358.0	0.0	329.1
110.00		1.00	1.29	27.161	29.88	299.34	0.650	0.000	1.00	2.841	1.85	88.3	0.0	81.0
115.00		1.00	1.30	27.416	30.16	291.32	0.650	0.000	5.00	13.941	9.06	437.2	0.0	397.3
118.50	Appurtenance(s)	1.00	1.31	27.590	30.35	285.62	0.650	0.000	3.50	9.494	6.17	299.7	0.0	270.5
120.00	Top - Section 3	1.00	1.32	27.663	30.43	283.15	0.650	0.000	1.50	4.002	2.60	126.7	0.0	114.0
125.00		1.00	1.33	27.902	30.69	274.87	0.650	0.000	5.00	13.053	8.48	416.6	0.0	279.4
130.00		1.00	1.34	28.133	30.95	266.45	0.650	0.000	5.00	12.609	8.20	405.8	0.0	269.9
135.00		1.00	1.35	28.358	31.19	257.93	0.650	0.000	5.00	12.165	7.91	394.6	0.0	260.3
137.50	Appurtenance(s)	1.00	1.35	28.467	31.31	253.62	0.650	0.000	2.50	5.916	3.85	192.7	0.0	126.6
140.00		1.00	1.36	28.576	31.43	249.29	0.650	0.000	2.50	5.805	3.77	189.8	0.0	124.2
145.00		1.00	1.37	28.788	31.67	240.56	0.650	0.000	5.00	11.277	7.33	371.4	0.0	241.2
147.00	Appurtenance(s)	1.00	1.37	28.871	31.76	237.04	0.650	0.000	2.00	4.387	2.85	144.9	0.0	93.8
148.00	Appurtenance(s)	1.00	1.37	28.912	31.80	235.27	0.650	0.000	1.00	2.167	1.41	71.7	0.0	46.3
								Totals:	**148.00**			**13,762.8**		**19,082.6**

Discrete Appurtenance Forces

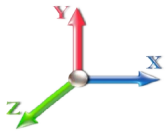
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	148.00	DB-TDD6492A-A	1	29.076	31.983	1.00	1.00	2.41	18.90	0.000	4.021	123.33	0.00	495.88
2	148.00	6' Lightning rod	1	28.912	31.803	1.00	1.00	0.38	5.85	0.000	0.000	19.34	0.00	0.00
3	148.00	Pipe Mount	1	28.912	31.803	1.00	1.00	2.63	36.00	0.000	0.000	133.83	0.00	0.00
4	147.00	Trombone	1	28.931	31.824	1.00	1.00	1.00	5.40	0.000	1.458	50.92	0.00	74.26
5	147.00	Standoff	1	28.871	31.758	1.00	1.00	2.63	36.00	0.000	0.000	133.64	0.00	0.00
6	137.50	SC-E 6014 Rev2W	6	28.467	31.314	0.68	0.80	13.59	81.00	0.000	0.000	680.72	0.00	0.00
7	137.50	BXA-171063-8BF	3	28.467	31.314	0.69	0.80	6.07	28.35	0.000	0.000	304.03	0.00	0.00
8	137.50	SLCP2x6014	3	28.467	31.314	0.66	0.80	12.77	54.00	0.000	0.000	639.93	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	28.467	31.314	0.56	0.80	1.21	16.74	0.000	0.000	60.60	0.00	0.00
10	137.50	Low Profile Platform	1	28.467	31.314	1.00	1.00	22.00	1350.00	0.000	0.000	1102.26	0.00	0.00
11	118.50	RRH Collar Mount	1	27.590	30.349	0.56	0.75	2.81	225.00	0.000	0.000	136.57	0.00	0.00
12	118.50	Raycap DC6-48-60-18-8F	2	27.590	30.349	0.56	0.75	1.04	59.04	0.000	0.000	50.26	0.00	0.00
13	118.50	Pipe Mast	3	27.590	30.349	0.56	0.75	2.62	162.00	0.000	0.000	127.01	0.00	0.00
14	118.50	SitePro Sitepro 1 P/N	1	27.590	30.349	1.00	1.00	9.75	365.95	0.000	0.000	473.44	0.00	0.00
15	118.50	Ericsson RRUS 8843 B2	3	27.590	30.349	0.50	0.75	2.47	189.00	0.000	0.000	120.05	0.00	0.00
16	118.50	Ericsson 4449 B5/B12	3	27.590	30.349	0.50	0.75	2.97	191.70	0.000	0.000	144.21	0.00	0.00
17	118.50	Kathrein 800-10965	6	27.590	30.349	0.53	0.75	44.12	586.44	0.000	0.000	2142.54	0.00	0.00
18	118.50	Low Profile Platform	1	27.590	30.349	1.00	1.00	22.00	1350.00	0.000	0.000	1068.29	0.00	0.00
19	118.50	Powerwave LGP21401	6	27.590	30.349	0.52	0.75	4.06	76.14	0.000	0.000	197.32	0.00	0.00
20	118.50	Powerwave 7770	3	27.590	30.349	0.55	0.75	9.03	94.50	0.000	0.000	438.66	0.00	0.00
21	109.00	800 MHz RRH - RRU	3	27.109	29.820	0.54	0.80	4.00	143.10	0.000	0.000	191.03	0.00	0.00
22	109.00	APXVTM14-C-I20	3	27.109	29.820	0.68	0.80	12.93	151.20	0.000	0.000	617.08	0.00	0.00
23	109.00	1900MHz RRH - RRU	3	27.109	29.820	0.54	0.80	6.11	118.80	0.000	0.000	291.54	0.00	0.00
24	109.00	APXVSPP18-C-A20	3	27.109	29.820	0.66	0.80	15.98	153.90	0.000	0.000	762.23	0.00	0.00
25	109.00	TD-RRH8x20 - RRU	3	27.109	29.820	0.54	0.80	6.51	189.00	0.000	0.000	310.72	0.00	0.00
26	109.00	ACU-A20-N - RET	4	27.109	29.820	0.40	0.80	0.22	3.60	0.000	0.000	10.69	0.00	0.00
27	109.00	T-Arms w/ Working	3	27.109	29.820	0.56	0.75	20.25	945.00	0.000	0.000	966.16	0.00	0.00
28	109.00	800MHz RRH Filter	3	27.109	29.820	0.54	0.80	1.25	23.76	0.000	0.000	59.84	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	26.593	29.253	0.64	0.80	22.02	134.46	0.000	0.000	1030.75	0.00	0.00
30	99.50	RR65-18-00DPL2	6	26.593	29.253	0.68	0.80	17.79	72.90	0.000	0.000	832.59	0.00	0.00
31	99.50	APXV18-206513-C-A20	3	26.593	29.253	0.67	0.80	10.42	71.28	0.000	0.000	487.83	0.00	0.00
32	99.50	782 11054 - Bias Ts	3	26.593	29.253	0.56	0.80	0.47	7.02	0.000	0.000	22.02	0.00	0.00
33	99.50	ATMAA1412D-1A2 - TMA	3	26.593	29.253	0.56	0.80	1.97	35.10	0.000	0.000	92.00	0.00	0.00
34	99.50	Platform w/ Hand Rail	1	26.593	29.253	1.00	1.00	32.00	1440.00	0.000	0.000	1497.74	0.00	0.00
35	50.50	3 ft Standoff	1	23.055	25.361	1.00	1.00	2.63	36.00	0.000	0.000	106.72	0.00	0.00
36	50.50	260B	1	23.055	25.361	1.00	1.00	0.09	0.90	0.000	0.000	3.65	0.00	0.00
							Totals:		**8,458.03**			**15,429.53**		

Total Applied Force Summary

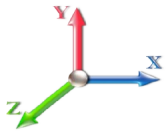
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

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		475.15	1139.62	0.00	0.00
10.00		466.07	1120.50	0.00	0.00
15.00		456.99	1101.38	0.00	0.00
20.00		475.25	1082.26	0.00	0.00
25.00		488.01	1063.14	0.00	0.00
30.00		496.61	1044.01	0.00	0.00
35.00		502.16	1024.89	0.00	0.00
39.00		403.00	806.15	0.00	0.00
40.00		101.50	343.77	0.00	0.00
45.00		513.39	1697.80	0.00	0.00
50.00		513.23	841.02	0.00	0.00
50.50	(2) attachments	161.16	120.13	0.00	0.00
55.00		460.00	741.21	0.00	0.00
60.00		509.03	808.43	0.00	0.00
65.00		505.33	792.50	0.00	0.00
70.00		500.74	776.56	0.00	0.00
75.00		495.34	760.63	0.00	0.00
79.00		391.37	597.03	0.00	0.00
80.00		98.04	243.95	0.00	0.00
84.00		391.00	964.32	0.00	0.00
85.00		96.69	122.75	0.00	0.00
90.00		481.36	606.11	0.00	0.00
95.00		473.49	593.36	0.00	0.00
99.50	(19) attachments	4381.70	2283.89	0.00	0.00
100.00		45.90	53.92	0.00	0.00
105.00		456.26	532.23	0.00	0.00
109.00	(25) attachments	3567.27	2144.96	0.00	0.00
110.00		88.29	100.50	0.00	0.00
115.00		437.24	494.85	0.00	0.00
118.50	(29) attachments	5198.02	3638.58	0.00	0.00
120.00		126.66	132.28	0.00	0.00
125.00		416.64	340.26	0.00	0.00
130.00		405.81	330.70	0.00	0.00
135.00		394.65	321.14	0.00	0.00
137.50	(19) attachments	2980.21	1687.07	0.00	0.00
140.00		189.77	126.51	0.00	0.00
145.00		371.39	245.86	0.00	0.00
147.00	(2) attachments	329.44	137.07	0.00	74.26
148.00	(3) attachments	348.15	107.54	0.00	495.88
	Totals:	**29,192.28**	**31,068.88**	**0.00**	**570.13**

Linear Appurtenance Segment Forces (Factored)

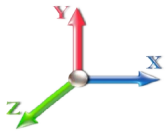
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.72
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.72
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	17.879	0.00	0.72
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	18.971	0.00	0.72
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	19.883	0.00	0.72
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	20.661	0.00	0.72
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	21.343	0.00	0.72
39.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.013	0.000	21.834	0.00	0.58
40.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	21.951	0.00	0.14
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	22.502	0.00	0.72
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	23.007	0.00	0.72
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.014	0.000	23.055	0.00	0.07
										Totals:	**0.0**	**7.3**

Calculated Forces

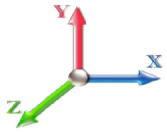
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

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 Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-31.03	-29.24	0.00	-2851.3	0.00	2851.37	4270.00	2135.00	9669.74	4842.06	0.00	0.000	0.000	0.596
5.00	-29.81	-28.84	0.00	-2705.2	0.00	2705.20	4222.20	2111.10	9378.04	4695.99	0.09	-0.157	0.000	0.583
10.00	-28.61	-28.45	0.00	-2560.9	0.00	2560.99	4173.09	2086.54	9087.66	4550.58	0.34	-0.316	0.000	0.570
15.00	-27.44	-28.06	0.00	-2418.7	0.00	2418.75	4122.67	2061.34	8798.75	4405.92	0.75	-0.474	0.000	0.556
20.00	-26.28	-27.65	0.00	-2278.4	0.00	2278.45	4070.95	2035.48	8511.51	4262.08	1.33	-0.633	0.000	0.541
25.00	-25.15	-27.22	0.00	-2140.2	0.00	2140.21	4017.93	2008.97	8226.08	4119.16	2.08	-0.792	0.000	0.526
30.00	-24.04	-26.77	0.00	-2004.1	0.00	2004.13	3963.61	1981.80	7942.65	3977.23	3.00	-0.951	0.000	0.510
35.00	-22.96	-26.31	0.00	-1870.2	0.00	1870.28	3907.97	1953.99	7661.39	3836.39	4.08	-1.109	0.000	0.494
39.00	-22.13	-25.92	0.00	-1765.0	0.00	1765.06	3862.53	1931.27	7438.05	3724.55	5.06	-1.235	0.000	0.480
40.00	-21.74	-25.85	0.00	-1739.1	0.00	1739.14	3851.04	1925.52	7382.46	3696.72	5.33	-1.268	0.000	0.476
45.00	-19.99	-25.35	0.00	-1609.9	0.00	1609.92	2980.94	1490.47	5677.43	2842.94	6.74	-1.423	0.000	0.573
50.00	-19.12	-24.84	0.00	-1483.1	0.00	1483.19	2941.52	1470.76	5474.55	2741.34	8.31	-1.578	0.000	0.548
50.50	-18.97	-24.70	0.00	-1470.7	0.00	1470.77	2937.50	1468.75	5454.31	2731.21	8.48	-1.596	0.000	0.545
55.00	-18.17	-24.28	0.00	-1359.6	0.00	1359.60	2900.79	1450.39	5272.72	2640.28	10.06	-1.753	0.000	0.521
60.00	-17.31	-23.79	0.00	-1238.2	0.00	1238.22	2858.76	1429.38	5072.11	2539.83	11.99	-1.924	0.000	0.494
65.00	-16.47	-23.31	0.00	-1119.2	0.00	1119.27	2815.42	1407.71	4872.91	2440.07	14.09	-2.090	0.000	0.465
70.00	-15.65	-22.82	0.00	-1002.7	0.00	1002.74	2770.78	1385.39	4675.26	2341.11	16.37	-2.251	0.000	0.434
75.00	-14.86	-22.33	0.00	-888.64	0.00	888.64	2724.84	1362.42	4479.35	2243.01	18.81	-2.407	0.000	0.402
79.00	-14.25	-21.93	0.00	-799.33	0.00	799.33	2687.14	1343.57	4323.99	2165.21	20.88	-2.526	0.000	0.375
80.00	-13.98	-21.84	0.00	-777.40	0.00	777.40	2677.59	1338.79	4285.35	2145.86	21.41	-2.556	0.000	0.368
84.00	-13.01	-21.42	0.00	-690.04	0.00	690.04	1954.67	977.33	3110.93	1557.78	23.60	-2.669	0.000	0.450
85.00	-12.86	-21.34	0.00	-668.62	0.00	668.62	1948.85	974.42	3084.73	1544.66	24.16	-2.697	0.000	0.440
90.00	-12.22	-20.86	0.00	-561.92	0.00	561.92	1918.95	959.48	2954.04	1479.22	27.07	-2.850	0.000	0.387
95.00	-11.61	-20.38	0.00	-457.62	0.00	457.62	1887.76	943.88	2824.00	1414.10	30.13	-2.988	0.000	0.330
99.50	-9.55	-15.90	0.00	-365.90	0.00	365.90	1858.56	929.28	2707.66	1355.84	33.00	-3.097	0.000	0.275
100.00	-9.48	-15.86	0.00	-357.95	0.00	357.95	1855.26	927.63	2694.78	1349.39	33.33	-3.109	0.000	0.271
105.00	-8.95	-15.38	0.00	-278.67	0.00	278.67	1821.45	910.73	2566.54	1285.18	36.64	-3.211	0.000	0.222
109.00	-7.00	-11.71	0.00	-217.13	0.00	217.13	1793.47	896.73	2464.77	1234.22	39.36	-3.281	0.000	0.180
110.00	-6.90	-11.62	0.00	-205.43	0.00	205.43	1786.34	893.17	2439.46	1221.54	40.05	-3.297	0.000	0.172
115.00	-6.42	-11.16	0.00	-147.34	0.00	147.34	1749.93	874.96	2313.70	1158.57	43.54	-3.366	0.000	0.131
118.50	-3.09	-5.76	0.00	-108.28	0.00	108.28	1723.66	861.83	2226.56	1114.93	46.02	-3.404	0.000	0.099
120.00	-2.96	-5.62	0.00	-99.65	0.00	99.65	1712.21	856.11	2189.45	1096.35	47.09	-3.418	0.000	0.093
120.00	-2.96	-5.62	0.00	-99.65	0.00	99.65	1141.82	570.91	1465.94	734.06	47.09	-3.418	0.000	0.138
125.00	-2.65	-5.19	0.00	-71.53	0.00	71.53	1122.14	561.07	1391.92	696.99	50.69	-3.458	0.000	0.105
130.00	-2.34	-4.77	0.00	-45.58	0.00	45.58	1101.16	550.58	1318.05	660.01	54.34	-3.499	0.000	0.071
135.00	-2.04	-4.35	0.00	-21.76	0.00	21.76	1078.87	539.43	1244.50	623.18	58.02	-3.525	0.000	0.037
137.50	-0.54	-1.27	0.00	-10.88	0.00	10.88	1067.24	533.62	1207.90	604.85	59.86	-3.532	0.000	0.018
140.00	-0.42	-1.08	0.00	-7.69	0.00	7.69	1055.28	527.64	1171.44	586.59	61.71	-3.536	0.000	0.014
145.00	-0.20	-0.69	0.00	-2.31	0.00	2.31	1030.38	515.19	1099.04	550.33	65.42	-3.541	0.000	0.004
147.00	-0.09	-0.35	0.00	-0.85	0.00	0.85	1020.06	510.03	1070.30	535.94	66.90	-3.541	0.000	0.002
148.00	0.00	-0.35	0.00	-0.50	0.00	0.50	1014.82	507.41	1055.98	528.78	67.64	-3.541	0.000	0.001

Wind Loading - Shaft

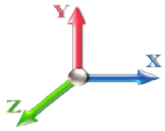
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	24.265	29.12	165.5	432.8	1757.9
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	23.896	28.67	163.0	455.8	1755.4
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	23.498	28.20	160.3	466.1	1740.2
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	23.087	27.70	167.1	470.6	1719.2
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	22.670	27.20	172.0	471.9	1695.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	22.249	26.70	175.4	471.1	1668.7
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	21.824	26.19	177.7	468.7	1640.8
39.00	Bot - Section 2	1.00	1.04	6.311	6.94	0.00	1.200	1.525	4.00	17.151	20.58	142.9	372.8	1292.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	1.00	4.297	5.16	36.0	94.2	513.7
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.233	25.48	182.3	466.7	2536.1
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	20.803	24.96	182.6	461.6	1388.5
50.50	Appurtenance(s)	1.00	1.10	6.664	7.33	0.00	1.200	1.565	0.50	2.056	2.47	18.1	46.1	137.6
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	4.50	18.314	21.98	164.0	410.2	1224.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	19.939	23.93	181.9	449.4	1333.9
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	19.506	23.41	180.9	442.6	1305.8
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.072	22.89	179.7	435.4	1277.3
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	18.637	22.36	178.2	427.8	1248.5
79.00	Bot - Section 3	1.00	1.20	7.322	8.05	0.00	1.200	1.637	4.00	14.596	17.51	141.1	337.2	978.5
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	1.00	3.647	4.38	35.3	85.0	371.6
84.00	Top - Section 2	1.00	1.22	7.418	8.16	0.00	1.200	1.647	4.00	14.417	17.30	141.2	334.8	1465.8
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	1.00	3.560	4.27	34.9	83.4	208.4
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	17.542	21.05	174.3	408.4	1023.1
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.106	20.53	171.9	399.8	997.5
99.50	Appurtenance(s)	1.00	1.26	7.687	8.46	0.00	1.200	1.675	4.50	15.021	18.03	152.4	352.6	876.0
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	0.50	1.647	1.98	16.7	39.1	96.4
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.232	19.48	166.6	381.8	945.6
109.00	Appurtenance(s)	1.00	1.29	7.836	8.62	0.00	1.200	1.690	4.00	12.670	15.20	131.0	299.6	738.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	1.00	3.123	3.75	32.4	74.5	182.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	15.357	18.43	160.6	363.1	892.9
118.50	Appurtenance(s)	1.00	1.31	7.975	8.77	0.00	1.200	1.705	3.50	10.489	12.59	110.4	249.5	610.2
120.00	Top - Section 3	1.00	1.32	7.996	8.80	0.00	1.200	1.707	1.50	4.429	5.31	46.7	106.1	258.1
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	14.481	17.38	154.2	343.8	716.4
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	14.043	16.85	150.7	333.9	693.7
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	13.604	16.32	147.2	323.9	671.0
137.50	Appurtenance(s)	1.00	1.35	8.229	9.05	0.00	1.200	1.730	2.50	6.637	7.96	72.1	159.4	328.2
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	2.50	6.527	7.83	71.2	156.9	322.4
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	12.727	15.27	139.8	303.5	625.0
147.00	Appurtenance(s)	1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	4.967	5.96	54.7	119.7	244.8
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	1.743	1.00	2.457	2.95	27.1	59.5	121.2
								Totals:	**148.00**			**4,960.2**		**37,602.7**

Discrete Appurtenance Forces

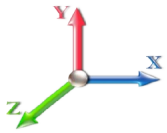
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	148.00	DB-TDD6492A-A	1	8.404	9.245	1.00	1.00	5.19	68.94	0.000	4.021	48.02	0.00	193.07
2	148.00	6' Lightning rod	1	8.357	9.193	1.00	1.00	1.47	38.75	0.000	0.000	13.48	0.00	0.00
3	148.00	Pipe Mount	1	8.357	9.193	1.00	1.00	8.59	105.17	0.000	0.000	78.97	0.00	0.00
4	147.00	Trombone	1	8.362	9.199	1.00	1.00	2.71	-5.02	0.000	1.458	24.95	0.00	36.39
5	147.00	Standoff	1	8.345	9.180	1.00	1.00	8.59	105.12	0.000	0.000	78.82	0.00	0.00
6	137.50	SC-E 6014 Rev2W	6	8.229	9.051	0.68	0.80	20.34	509.19	0.000	0.000	184.08	0.00	0.00
7	137.50	BXA-171063-8BF	3	8.229	9.051	0.69	0.80	9.46	176.33	0.000	0.000	85.64	0.00	0.00
8	137.50	SLCP2x6014	3	8.229	9.051	0.66	0.80	16.82	444.94	0.000	0.000	152.25	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	8.229	9.051	0.56	0.80	2.69	56.26	0.000	0.000	24.31	0.00	0.00
10	137.50	Low Profile Platform	1	8.229	9.051	1.00	1.00	39.51	2797.57	0.000	0.000	357.61	0.00	0.00
11	118.50	RRH Collar Mount	1	7.975	8.772	0.56	0.75	7.61	721.60	0.000	0.000	66.73	0.00	0.00
12	118.50	Raycap DC6-48-60-18-8F	2	7.975	8.772	0.75	0.75	2.02	169.89	0.000	0.000	17.74	0.00	0.00
13	118.50	Pipe Mast	3	7.975	8.772	0.75	0.75	7.77	402.82	0.000	0.000	68.14	0.00	0.00
14	118.50	SitePro Sitepro 1 P/N	1	7.975	8.772	1.00	1.00	19.06	1365.84	0.000	0.000	167.17	0.00	0.00
15	118.50	Ericsson RRUS 8843 B2	3	7.975	8.772	0.75	0.75	4.82	352.84	0.000	0.000	42.32	0.00	0.00
16	118.50	Ericsson 4449 B5/B12	3	7.975	8.772	0.75	0.75	5.64	371.21	0.000	0.000	49.44	0.00	0.00
17	118.50	Kathrein 800-10965	6	7.975	8.772	0.75	0.75	69.09	2523.09	0.000	0.000	606.05	0.00	0.00
18	118.50	Low Profile Platform	1	7.975	8.772	1.00	1.00	39.25	2778.42	0.000	0.000	344.32	0.00	0.00
19	118.50	Powerwave LGP21401	6	7.975	8.772	0.52	0.75	6.63	205.43	0.000	0.000	58.20	0.00	0.00
20	118.50	Powerwave 7770	3	7.975	8.772	0.63	0.75	12.36	519.97	0.000	0.000	108.41	0.00	0.00
21	109.00	800 MHz RRH - RRU	3	7.836	8.619	0.54	0.80	5.79	342.41	0.000	0.000	49.87	0.00	0.00
22	109.00	APXVTM14-C-I20	3	7.836	8.619	0.68	0.80	15.13	664.75	0.000	0.000	130.40	0.00	0.00
23	109.00	1900MHz RRH - RRU	3	7.836	8.619	0.54	0.80	8.28	382.00	0.000	0.000	71.33	0.00	0.00
24	109.00	APXVSPP18-C-A20	3	7.836	8.619	0.66	0.80	21.37	558.96	0.000	0.000	184.16	0.00	0.00
25	109.00	TD-RRH8x20 - RRU	3	7.836	8.619	0.54	0.80	7.78	570.87	0.000	0.000	67.02	0.00	0.00
26	109.00	ACU-A20-N - RET	4	7.836	8.619	0.40	0.80	0.68	16.24	0.000	0.000	5.89	0.00	0.00
27	109.00	T-Arms w/ Working	3	7.836	8.619	0.56	0.75	37.37	1759.96	0.000	0.000	322.07	0.00	0.00
28	109.00	800MHz RRH Filter	3	7.836	8.619	0.54	0.80	2.26	67.95	0.000	0.000	19.49	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	7.687	8.456	0.64	0.80	28.04	642.84	0.000	0.000	237.11	0.00	0.00
30	99.50	RR65-18-00DPL2	6	7.687	8.456	0.68	0.80	21.63	658.84	0.000	0.000	182.93	0.00	0.00
31	99.50	APXV18-206513-C-A20	3	7.687	8.456	0.67	0.80	15.02	283.55	0.000	0.000	126.98	0.00	0.00
32	99.50	782 11054 - Bias Ts	3	7.687	8.456	0.57	0.80	1.13	22.47	0.000	0.000	9.58	0.00	0.00
33	99.50	ATMAA1412D-1A2 - TMA	3	7.687	8.456	0.59	0.80	3.41	100.54	0.000	0.000	28.85	0.00	0.00
34	99.50	Platform w/ Hand Rail	1	7.687	8.456	1.00	1.00	58.80	3335.39	0.000	0.000	497.19	0.00	0.00
35	50.50	3 ft Standoff	1	6.664	7.331	1.00	1.00	7.98	97.00	0.000	0.000	58.52	0.00	0.00
36	50.50	260B	1	6.664	7.331	1.00	1.00	0.25	4.56	0.000	0.000	1.82	0.00	0.00
							Totals:		**23,216.68**			**4,569.87**		

Total Applied Force Summary

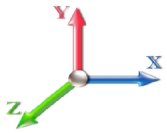
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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		165.53	1965.02	0.00	0.00
10.00		163.01	1964.20	0.00	0.00
15.00		160.30	1949.98	0.00	0.00
20.00		167.11	1929.86	0.00	0.00
25.00		171.98	1906.33	0.00	0.00
30.00		175.39	1880.55	0.00	0.00
35.00		177.72	1853.15	0.00	0.00
39.00		142.88	1462.22	0.00	0.00
40.00		35.99	556.25	0.00	0.00
45.00		182.30	2749.18	0.00	0.00
50.00		182.61	1601.98	0.00	0.00
50.50	(2) attachments	78.43	260.54	0.00	0.00
55.00		164.02	1398.45	0.00	0.00
60.00		181.88	1527.30	0.00	0.00
65.00		180.95	1499.24	0.00	0.00
70.00		179.70	1470.77	0.00	0.00
75.00		178.18	1441.94	0.00	0.00
79.00		141.08	1133.22	0.00	0.00
80.00		35.35	410.27	0.00	0.00
84.00		141.16	1620.57	0.00	0.00
85.00		34.94	247.04	0.00	0.00
90.00		174.27	1216.59	0.00	0.00
95.00		171.88	1190.94	0.00	0.00
99.50	(19) attachments	1235.06	6093.76	0.00	0.00
100.00		16.73	110.99	0.00	0.00
105.00		166.57	1091.47	0.00	0.00
109.00	(25) attachments	981.29	5218.17	0.00	0.00
110.00		32.37	208.52	0.00	0.00
115.00		160.64	1022.95	0.00	0.00
118.50	(29) attachments	1638.93	10112.36	0.00	0.00
120.00		46.75	282.43	0.00	0.00
125.00		154.16	797.48	0.00	0.00
130.00		150.74	774.84	0.00	0.00
135.00		147.19	752.07	0.00	0.00
137.50	(19) attachments	875.98	4353.01	0.00	0.00
140.00		71.17	325.55	0.00	0.00
145.00		139.79	631.28	0.00	0.00
147.00	(2) attachments	158.49	347.38	0.00	36.39
148.00	(3) attachments	167.57	334.71	0.00	193.07
	Totals:	**9,530.07**	**65,692.55**	**0.00**	**229.45**

Linear Appurtenance Segment Forces (Factored)

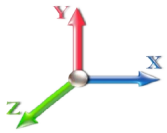
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.31	0.00	0.012	0.000	5.168	0.00	13.70
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.38	0.00	0.012	0.000	5.168	0.00	15.33
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.43	0.00	0.012	0.000	5.168	0.00	16.38
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.46	0.00	0.012	0.000	5.483	0.00	17.18
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.49	0.00	0.013	0.000	5.747	0.00	17.83
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.51	0.00	0.013	0.000	5.972	0.00	18.38
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.53	0.00	0.013	0.000	6.169	0.00	18.86
39.00	1/2" Coax	Yes	4.00	0.000	0.65	1.23	0.00	0.013	0.000	6.311	0.00	15.36
40.00	1/2" Coax	Yes	1.00	0.000	0.65	0.31	0.00	0.014	0.000	6.345	0.00	3.86
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.56	0.00	0.014	0.000	6.504	0.00	19.67
50.00	1/2" Coax	Yes	5.00	0.000	0.65	1.57	0.00	0.014	0.000	6.650	0.00	20.02
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.16	0.00	0.014	0.000	6.664	0.00	2.01
										Totals:	**0.0**	**178.6**

Calculated Forces

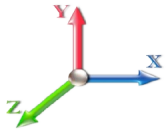
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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 Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-65.69	-9.56	0.00	-949.40	0.00	949.40	4270.00	2135.00	9669.74	4842.06	0.00	0.000	0.000	0.211
5.00	-63.71	-9.45	0.00	-901.60	0.00	901.60	4222.20	2111.10	9378.04	4695.99	0.03	-0.052	0.000	0.207
10.00	-61.74	-9.34	0.00	-854.34	0.00	854.34	4173.09	2086.54	9087.66	4550.58	0.11	-0.105	0.000	0.203
15.00	-59.78	-9.23	0.00	-807.62	0.00	807.62	4122.67	2061.34	8798.75	4405.92	0.25	-0.158	0.000	0.198
20.00	-57.85	-9.11	0.00	-761.45	0.00	761.45	4070.95	2035.48	8511.51	4262.08	0.44	-0.211	0.000	0.193
25.00	-55.93	-8.99	0.00	-715.88	0.00	715.88	4017.93	2008.97	8226.08	4119.16	0.69	-0.264	0.000	0.188
30.00	-54.04	-8.85	0.00	-670.94	0.00	670.94	3963.61	1981.80	7942.65	3977.23	1.00	-0.317	0.000	0.182
35.00	-52.19	-8.71	0.00	-626.69	0.00	626.69	3907.97	1953.99	7661.39	3836.39	1.36	-0.370	0.000	0.177
39.00	-50.72	-8.58	0.00	-591.86	0.00	591.86	3862.53	1931.27	7438.05	3724.55	1.69	-0.413	0.000	0.172
40.00	-50.16	-8.56	0.00	-583.29	0.00	583.29	3851.04	1925.52	7382.46	3696.72	1.78	-0.424	0.000	0.171
45.00	-47.40	-8.40	0.00	-540.47	0.00	540.47	2980.94	1490.47	5677.43	2842.94	2.25	-0.476	0.000	0.206
50.00	-45.80	-8.23	0.00	-498.45	0.00	498.45	2941.52	1470.76	5474.55	2741.34	2.78	-0.528	0.000	0.197
50.50	-45.54	-8.17	0.00	-494.34	0.00	494.34	2937.50	1468.75	5454.31	2731.21	2.83	-0.534	0.000	0.197
55.00	-44.13	-8.04	0.00	-457.56	0.00	457.56	2900.79	1450.39	5272.72	2640.28	3.36	-0.587	0.000	0.189
60.00	-42.60	-7.88	0.00	-417.37	0.00	417.37	2858.76	1429.38	5072.11	2539.83	4.01	-0.644	0.000	0.179
65.00	-41.09	-7.72	0.00	-377.97	0.00	377.97	2815.42	1407.71	4872.91	2440.07	4.71	-0.700	0.000	0.170
70.00	-39.62	-7.56	0.00	-339.35	0.00	339.35	2770.78	1385.39	4675.26	2341.11	5.47	-0.755	0.000	0.159
75.00	-38.17	-7.39	0.00	-301.55	0.00	301.55	2724.84	1362.42	4479.35	2243.01	6.29	-0.807	0.000	0.148
79.00	-37.04	-7.25	0.00	-271.97	0.00	271.97	2687.14	1343.57	4323.99	2165.21	6.99	-0.848	0.000	0.139
80.00	-36.63	-7.23	0.00	-264.72	0.00	264.72	2677.59	1338.79	4285.35	2145.86	7.17	-0.858	0.000	0.137
84.00	-35.00	-7.08	0.00	-235.81	0.00	235.81	1954.67	977.33	3110.93	1557.78	7.90	-0.897	0.000	0.169
85.00	-34.75	-7.06	0.00	-228.73	0.00	228.73	1948.85	974.42	3084.73	1544.66	8.09	-0.906	0.000	0.166
90.00	-33.53	-6.89	0.00	-193.45	0.00	193.45	1918.95	959.48	2954.04	1479.22	9.07	-0.959	0.000	0.148
95.00	-32.34	-6.72	0.00	-158.99	0.00	158.99	1887.76	943.88	2824.00	1414.10	10.10	-1.007	0.000	0.130
99.50	-26.27	-5.39	0.00	-128.73	0.00	128.73	1858.56	929.28	2707.66	1355.84	11.07	-1.045	0.000	0.109
100.00	-26.16	-5.38	0.00	-126.04	0.00	126.04	1855.26	927.63	2694.78	1349.39	11.18	-1.049	0.000	0.108
105.00	-25.07	-5.21	0.00	-99.14	0.00	99.14	1821.45	910.73	2566.54	1285.18	12.30	-1.085	0.000	0.091
109.00	-19.87	-4.13	0.00	-78.31	0.00	78.31	1793.47	896.73	2464.77	1234.22	13.22	-1.110	0.000	0.075
110.00	-19.66	-4.10	0.00	-74.18	0.00	74.18	1786.34	893.17	2439.46	1221.54	13.45	-1.116	0.000	0.072
115.00	-18.64	-3.92	0.00	-53.69	0.00	53.69	1749.93	874.96	2313.70	1158.57	14.63	-1.141	0.000	0.057
118.50	-8.56	-2.08	0.00	-39.95	0.00	39.95	1723.66	861.83	2226.56	1114.93	15.47	-1.155	0.000	0.041
120.00	-8.28	-2.03	0.00	-36.82	0.00	36.82	1712.21	856.11	2189.45	1096.35	15.84	-1.160	0.000	0.038
120.00	-8.28	-2.03	0.00	-36.82	0.00	36.82	1141.82	570.91	1465.94	734.06	15.84	-1.160	0.000	0.057
125.00	-7.48	-1.87	0.00	-26.65	0.00	26.65	1122.14	561.07	1391.92	696.99	17.06	-1.175	0.000	0.045
130.00	-6.71	-1.70	0.00	-17.33	0.00	17.33	1101.16	550.58	1318.05	660.01	18.30	-1.190	0.000	0.032
135.00	-5.96	-1.54	0.00	-8.82	0.00	8.82	1078.87	539.43	1244.50	623.18	19.55	-1.200	0.000	0.020
137.50	-1.63	-0.57	0.00	-4.98	0.00	4.98	1067.24	533.62	1207.90	604.85	20.18	-1.203	0.000	0.010
140.00	-1.30	-0.49	0.00	-3.55	0.00	3.55	1055.28	527.64	1171.44	586.59	20.81	-1.205	0.000	0.007
145.00	-0.68	-0.34	0.00	-1.08	0.00	1.08	1030.38	515.19	1099.04	550.33	22.08	-1.207	0.000	0.003
147.00	-0.33	-0.17	0.00	-0.37	0.00	0.37	1020.06	510.03	1070.30	535.94	22.58	-1.207	0.000	0.001
148.00	0.00	-0.17	0.00	-0.19	0.00	0.19	1014.82	507.41	1055.98	528.78	22.83	-1.207	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 24

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	21
Gust Response Factor	1.10				**Sds**	0.22		**Ss**	0.20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.37		**SA**	0.04	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1104.2	0.00	0.03	0.02	23.49	
10.00		1083.0	0.01	0.05	0.03	33.20	
15.00		1061.7	0.02	0.06	0.04	37.40	
20.00		1040.5	0.03	0.07	0.04	39.07	
25.00		1019.2	0.05	0.07	0.04	39.65	
30.00		998.02	0.08	0.07	0.04	39.85	
35.00		976.77	0.11	0.07	0.04	39.97	
39.00	Bot - Section 2	766.12	0.13	0.07	0.03	31.93	
40.00		349.56	0.14	0.07	0.03	14.63	
45.00	Top - Section 1	1724.4	0.17	0.07	0.03	73.28	
50.00		772.46	0.22	0.06	0.02	32.71	
50.50	Appurtenance(s)	117.27	0.22	0.06	0.02	4.96	
55.00		678.49	0.26	0.05	0.02	27.60	
60.00		737.05	0.31	0.04	0.01	26.98	
65.00		719.35	0.36	0.03	0.01	21.01	
70.00		701.65	0.42	0.01	0.01	12.61	
75.00		683.94	0.49	-0.01	0.01	2.34	
79.00	Bot - Section 3	534.41	0.54	-0.03	0.01	-5.00	
80.00		238.81	0.55	-0.04	0.01	-2.99	
84.00	Top - Section 2	942.51	0.61	-0.06	0.02	-22.93	
85.00		104.15	0.62	-0.06	0.02	-2.81	
90.00		512.26	0.70	-0.09	0.03	-19.15	
95.00		498.09	0.78	-0.11	0.05	-21.07	
99.50	Appurtenance(s)	2392.5	0.85	-0.12	0.07	-99.48	
100.00		47.76	0.86	-0.12	0.07	-1.97	
105.00		469.76	0.95	-0.12	0.11	-16.00	
109.00	Appurtenance(s)	2286.0	1.03	-0.10	0.14	-55.08	
110.00		89.99	1.04	-0.10	0.15	-1.89	
115.00		441.44	1.14	-0.04	0.21	-0.95	
118.50	Appurtenance(s)	3966.9	1.21	0.02	0.26	57.55	
120.00	Top - Section 3	126.70	1.24	0.05	0.29	2.85	
125.00		310.47	1.35	0.19	0.38	16.47	
130.00		299.84	1.46	0.40	0.49	26.84	
135.00		289.22	1.57	0.70	0.63	38.19	
137.50	Appurtenance(s)	1840.7	1.63	0.88	0.71	286.50	
140.00		137.97	1.69	1.09	0.80	24.95	
145.00		267.97	1.81	1.60	1.00	63.21	
147.00	Appurtenance(s)	150.22	1.86	1.85	1.09	39.02	
148.00	Appurtenance(s)	118.97	1.89	1.98	1.14	32.37	
	Totals:	**30,600.7**				**839.3**	**Total Wind:** **29,192.3**

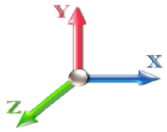
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22			**Ss**	0.20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.37	**SA**	0.04	**Seismic Importance Factor**	1.00		

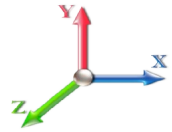
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.43	-1.09	0.00	-101.45	0.00	101.45	4270.00	2135.00	9669.74	4842.06		0.00	0.00	0.031
5.00	-39.91	-1.07	0.00	-96.00	0.00	96.00	4222.20	2111.10	9378.04	4695.99		0.00	-0.01	0.030
10.00	-38.41	-1.04	0.00	-90.65	0.00	90.65	4173.09	2086.54	9087.66	4550.58		0.01	-0.01	0.029
15.00	-36.94	-1.01	0.00	-85.45	0.00	85.45	4122.67	2061.34	8798.75	4405.92		0.03	-0.02	0.028
20.00	-35.50	-0.97	0.00	-80.41	0.00	80.41	4070.95	2035.48	8511.51	4262.08		0.05	-0.02	0.028
25.00	-34.08	-0.93	0.00	-75.56	0.00	75.56	4017.93	2008.97	8226.08	4119.16		0.07	-0.03	0.027
30.00	-32.69	-0.90	0.00	-70.89	0.00	70.89	3963.61	1981.80	7942.65	3977.23		0.11	-0.03	0.026
35.00	-31.32	-0.86	0.00	-66.41	0.00	66.41	3907.97	1953.99	7661.39	3836.39		0.14	-0.04	0.025
39.00	-30.25	-0.83	0.00	-62.98	0.00	62.98	3862.53	1931.27	7438.05	3724.55		0.18	-0.04	0.025
40.00	-29.79	-0.81	0.00	-62.15	0.00	62.15	3851.04	1925.52	7382.46	3696.72		0.19	-0.04	0.025
45.00	-27.53	-0.74	0.00	-58.08	0.00	58.08	2980.94	1490.47	5677.43	2842.94		0.24	-0.05	0.030
50.00	-26.41	-0.71	0.00	-54.38	0.00	54.38	2941.52	1470.76	5474.55	2741.34		0.29	-0.06	0.029
50.50	-26.24	-0.71	0.00	-54.02	0.00	54.02	2937.50	1468.75	5454.31	2731.21		0.30	-0.06	0.029
55.00	-25.26	-0.68	0.00	-50.85	0.00	50.85	2900.79	1450.39	5272.72	2640.28		0.36	-0.06	0.028
60.00	-24.18	-0.65	0.00	-47.45	0.00	47.45	2858.76	1429.38	5072.11	2539.83		0.43	-0.07	0.027
65.00	-23.12	-0.63	0.00	-44.18	0.00	44.18	2815.42	1407.71	4872.91	2440.07		0.50	-0.08	0.026
70.00	-22.09	-0.62	0.00	-41.01	0.00	41.01	2770.78	1385.39	4675.26	2341.11		0.58	-0.08	0.025
75.00	-21.07	-0.62	0.00	-37.90	0.00	37.90	2724.84	1362.42	4479.35	2243.01		0.67	-0.09	0.025
79.00	-20.28	-0.62	0.00	-35.41	0.00	35.41	2687.14	1343.57	4323.99	2165.21		0.75	-0.09	0.024
80.00	-19.95	-0.62	0.00	-34.79	0.00	34.79	2677.59	1338.79	4285.35	2145.86		0.77	-0.09	0.024
84.00	-18.67	-0.62	0.00	-32.31	0.00	32.31	1954.67	977.33	3110.93	1557.78		0.85	-0.10	0.030
85.00	-18.50	-0.62	0.00	-31.69	0.00	31.69	1948.85	974.42	3084.73	1544.66		0.87	-0.10	0.030
90.00	-17.69	-0.62	0.00	-28.58	0.00	28.58	1918.95	959.48	2954.04	1479.22		0.98	-0.11	0.029
95.00	-16.90	-0.62	0.00	-25.47	0.00	25.47	1887.76	943.88	2824.00	1414.10		1.10	-0.12	0.027
99.50	-13.86	-0.62	0.00	-22.66	0.00	22.66	1858.56	929.28	2707.66	1355.84		1.21	-0.12	0.024
100.00	-13.78	-0.62	0.00	-22.35	0.00	22.35	1855.26	927.63	2694.78	1349.39		1.23	-0.12	0.024
105.00	-13.08	-0.62	0.00	-19.26	0.00	19.26	1821.45	910.73	2566.54	1285.18		1.36	-0.13	0.022
109.00	-10.22	-0.61	0.00	-16.79	0.00	16.79	1793.47	896.73	2464.77	1234.22		1.47	-0.14	0.019
110.00	-10.08	-0.61	0.00	-16.18	0.00	16.18	1786.34	893.17	2439.46	1221.54		1.50	-0.14	0.019
115.00	-9.42	-0.61	0.00	-13.12	0.00	13.12	1749.93	874.96	2313.70	1158.57		1.65	-0.14	0.017
118.50	-4.57	-0.54	0.00	-10.98	0.00	10.98	1723.66	861.83	2226.56	1114.93		1.75	-0.15	0.013
120.00	-4.39	-0.54	0.00	-10.17	0.00	10.17	1712.21	856.11	2189.45	1096.35		1.80	-0.15	0.012
120.00	-4.39	-0.54	0.00	-10.17	0.00	10.17	1141.82	570.91	1465.94	734.06		1.80	-0.15	0.018
125.00	-3.94	-0.52	0.00	-7.47	0.00	7.47	1122.14	561.07	1391.92	696.99		1.95	-0.15	0.014
130.00	-3.50	-0.49	0.00	-4.87	0.00	4.87	1101.16	550.58	1318.05	660.01		2.11	-0.16	0.011
135.00	-3.07	-0.45	0.00	-2.40	0.00	2.40	1078.87	539.43	1244.50	623.18		2.28	-0.16	0.007
137.50	-0.82	-0.16	0.00	-1.26	0.00	1.26	1067.24	533.62	1207.90	604.85		2.36	-0.16	0.003
140.00	-0.65	-0.14	0.00	-0.86	0.00	0.86	1055.28	527.64	1171.44	586.59		2.45	-0.16	0.002
145.00	-0.33	-0.07	0.00	-0.18	0.00	0.18	1030.38	515.19	1099.04	550.33		2.61	-0.16	0.001
147.00	-0.14	-0.03	0.00	-0.03	0.00	0.03	1020.06	510.03	1070.30	535.94		2.68	-0.16	0.000
148.00	0.00	-0.03	0.00	0.00	0.00	0.00	1014.82	507.41	1055.98	528.78		2.71	-0.16	0.000

Seismic Segment Forces (Factored)

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

IES Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.37	**SA**	0.04	**S1**	0.07
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1104.2	0.00	0.03	0.02	23.49	
10.00		1083.0	0.01	0.05	0.03	33.20	
15.00		1061.7	0.02	0.06	0.04	37.40	
20.00		1040.5	0.03	0.07	0.04	39.07	
25.00		1019.2	0.05	0.07	0.04	39.65	
30.00		998.02	0.08	0.07	0.04	39.85	
35.00		976.77	0.11	0.07	0.04	39.97	
39.00	Bot - Section 2	766.12	0.13	0.07	0.03	31.93	
40.00		349.56	0.14	0.07	0.03	14.63	
45.00	Top - Section 1	1724.4	0.17	0.07	0.03	73.28	
50.00		772.46	0.22	0.06	0.02	32.71	
50.50	Appurtenance(s)	117.27	0.22	0.06	0.02	4.96	
55.00		678.49	0.26	0.05	0.02	27.60	
60.00		737.05	0.31	0.04	0.01	26.98	
65.00		719.35	0.36	0.03	0.01	21.01	
70.00		701.65	0.42	0.01	0.01	12.61	
75.00		683.94	0.49	-0.01	0.01	2.34	
79.00	Bot - Section 3	534.41	0.54	-0.03	0.01	-5.00	
80.00		238.81	0.55	-0.04	0.01	-2.99	
84.00	Top - Section 2	942.51	0.61	-0.06	0.02	-22.93	
85.00		104.15	0.62	-0.06	0.02	-2.81	
90.00		512.26	0.70	-0.09	0.03	-19.15	
95.00		498.09	0.78	-0.11	0.05	-21.07	
99.50	Appurtenance(s)	2392.5	0.85	-0.12	0.07	-99.48	
100.00		47.76	0.86	-0.12	0.07	-1.97	
105.00		469.76	0.95	-0.12	0.11	-16.00	
109.00	Appurtenance(s)	2286.0	1.03	-0.10	0.14	-55.08	
110.00		89.99	1.04	-0.10	0.15	-1.89	
115.00		441.44	1.14	-0.04	0.21	-0.95	
118.50	Appurtenance(s)	3966.9	1.21	0.02	0.26	57.55	
120.00	Top - Section 3	126.70	1.24	0.05	0.29	2.85	
125.00		310.47	1.35	0.19	0.38	16.47	
130.00		299.84	1.46	0.40	0.49	26.84	
135.00		289.22	1.57	0.70	0.63	38.19	
137.50	Appurtenance(s)	1840.7	1.63	0.88	0.71	286.50	
140.00		137.97	1.69	1.09	0.80	24.95	
145.00		267.97	1.81	1.60	1.00	63.21	
147.00	Appurtenance(s)	150.22	1.86	1.85	1.09	39.02	
148.00	Appurtenance(s)	118.97	1.89	1.98	1.14	32.37	
	Totals:	**30,600.7**				**839.3**	**Total Wind:** **29,192.3**

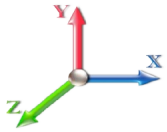
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	21		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20		
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.37	**SA**	0.04	**S1**	0.07		
						Seismic Importance Factor	1.00		

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 Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-31.07	-1.09	0.00	-100.65	0.00	100.65	4270.00	2135.00	9669.74	4842.06		0.00	0.00	0.028
5.00	-29.93	-1.07	0.00	-95.20	0.00	95.20	4222.20	2111.10	9378.04	4695.99		0.00	-0.01	0.027
10.00	-28.81	-1.04	0.00	-89.86	0.00	89.86	4173.09	2086.54	9087.66	4550.58		0.01	-0.01	0.027
15.00	-27.71	-1.00	0.00	-84.67	0.00	84.67	4122.67	2061.34	8798.75	4405.92		0.03	-0.02	0.026
20.00	-26.62	-0.97	0.00	-79.65	0.00	79.65	4070.95	2035.48	8511.51	4262.08		0.05	-0.02	0.025
25.00	-25.56	-0.93	0.00	-74.82	0.00	74.82	4017.93	2008.97	8226.08	4119.16		0.07	-0.03	0.025
30.00	-24.52	-0.89	0.00	-70.17	0.00	70.17	3963.61	1981.80	7942.65	3977.23		0.11	-0.03	0.024
35.00	-23.49	-0.85	0.00	-65.72	0.00	65.72	3907.97	1953.99	7661.39	3836.39		0.14	-0.04	0.023
39.00	-22.69	-0.82	0.00	-62.31	0.00	62.31	3862.53	1931.27	7438.05	3724.55		0.18	-0.04	0.023
40.00	-22.34	-0.81	0.00	-61.49	0.00	61.49	3851.04	1925.52	7382.46	3696.72		0.19	-0.04	0.022
45.00	-20.64	-0.73	0.00	-57.45	0.00	57.45	2980.94	1490.47	5677.43	2842.94		0.24	-0.05	0.027
50.00	-19.80	-0.70	0.00	-53.78	0.00	53.78	2941.52	1470.76	5474.55	2741.34		0.29	-0.06	0.026
50.50	-19.68	-0.70	0.00	-53.43	0.00	53.43	2937.50	1468.75	5454.31	2731.21		0.30	-0.06	0.026
55.00	-18.94	-0.67	0.00	-50.28	0.00	50.28	2900.79	1450.39	5272.72	2640.28		0.35	-0.06	0.026
60.00	-18.13	-0.65	0.00	-46.92	0.00	46.92	2858.76	1429.38	5072.11	2539.83		0.42	-0.07	0.025
65.00	-17.34	-0.63	0.00	-43.69	0.00	43.69	2815.42	1407.71	4872.91	2440.07		0.50	-0.07	0.024
70.00	-16.56	-0.61	0.00	-40.56	0.00	40.56	2770.78	1385.39	4675.26	2341.11		0.58	-0.08	0.023
75.00	-15.80	-0.61	0.00	-37.49	0.00	37.49	2724.84	1362.42	4479.35	2243.01		0.67	-0.09	0.023
79.00	-15.21	-0.61	0.00	-35.04	0.00	35.04	2687.14	1343.57	4323.99	2165.21		0.74	-0.09	0.022
80.00	-14.96	-0.61	0.00	-34.43	0.00	34.43	2677.59	1338.79	4285.35	2145.86		0.76	-0.09	0.022
84.00	-14.00	-0.61	0.00	-31.98	0.00	31.98	1954.67	977.33	3110.93	1557.78		0.84	-0.10	0.028
85.00	-13.88	-0.61	0.00	-31.37	0.00	31.37	1948.85	974.42	3084.73	1544.66		0.86	-0.10	0.027
90.00	-13.27	-0.61	0.00	-28.30	0.00	28.30	1918.95	959.48	2954.04	1479.22		0.97	-0.11	0.026
95.00	-12.68	-0.61	0.00	-25.24	0.00	25.24	1887.76	943.88	2824.00	1414.10		1.09	-0.12	0.025
99.50	-10.39	-0.61	0.00	-22.48	0.00	22.48	1858.56	929.28	2707.66	1355.84		1.20	-0.12	0.022
100.00	-10.34	-0.61	0.00	-22.17	0.00	22.17	1855.26	927.63	2694.78	1349.39		1.21	-0.12	0.022
105.00	-9.81	-0.61	0.00	-19.12	0.00	19.12	1821.45	910.73	2566.54	1285.18		1.35	-0.13	0.020
109.00	-7.66	-0.61	0.00	-16.68	0.00	16.68	1793.47	896.73	2464.77	1234.22		1.46	-0.13	0.018
110.00	-7.56	-0.61	0.00	-16.07	0.00	16.07	1786.34	893.17	2439.46	1221.54		1.48	-0.14	0.017
115.00	-7.07	-0.61	0.00	-13.04	0.00	13.04	1749.93	874.96	2313.70	1158.57		1.63	-0.14	0.015
118.50	-3.43	-0.54	0.00	-10.93	0.00	10.93	1723.66	861.83	2226.56	1114.93		1.73	-0.14	0.012
120.00	-3.29	-0.54	0.00	-10.12	0.00	10.12	1712.21	856.11	2189.45	1096.35		1.78	-0.15	0.011
120.00	-3.29	-0.54	0.00	-10.12	0.00	10.12	1141.82	570.91	1465.94	734.06		1.78	-0.15	0.017
125.00	-2.95	-0.52	0.00	-7.44	0.00	7.44	1122.14	561.07	1391.92	696.99		1.93	-0.15	0.013
130.00	-2.62	-0.49	0.00	-4.85	0.00	4.85	1101.16	550.58	1318.05	660.01		2.09	-0.15	0.010
135.00	-2.30	-0.45	0.00	-2.39	0.00	2.39	1078.87	539.43	1244.50	623.18		2.26	-0.16	0.006
137.50	-0.62	-0.16	0.00	-1.26	0.00	1.26	1067.24	533.62	1207.90	604.85		2.34	-0.16	0.003
140.00	-0.49	-0.14	0.00	-0.86	0.00	0.86	1055.28	527.64	1171.44	586.59		2.42	-0.16	0.002
145.00	-0.24	-0.07	0.00	-0.18	0.00	0.18	1030.38	515.19	1099.04	550.33		2.59	-0.16	0.001
147.00	-0.11	-0.03	0.00	-0.03	0.00	0.03	1020.06	510.03	1070.30	535.94		2.65	-0.16	0.000
148.00	0.00	-0.03	0.00	0.00	0.00	0.00	1014.82	507.41	1055.98	528.78		2.69	-0.16	0.000

Wind Loading - Shaft

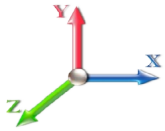
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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		1.00	0.85	7.442	8.19	259.46	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	254.55	0.650	0.000	5.00	23.230	15.10	123.6	0.0	1104.2
10.00		1.00	0.85	7.442	8.19	249.64	0.650	0.000	5.00	22.786	14.81	121.2	0.0	1083.0
15.00		1.00	0.85	7.442	8.19	244.73	0.650	0.000	5.00	22.342	14.52	118.9	0.0	1061.8
20.00		1.00	0.90	7.896	8.69	247.03	0.650	0.000	5.00	21.899	14.23	123.6	0.0	1040.5
25.00		1.00	0.95	8.276	9.10	247.72	0.650	0.000	5.00	21.455	13.95	127.0	0.0	1019.3
30.00		1.00	0.98	8.600	9.46	247.24	0.650	0.000	5.00	21.011	13.66	129.2	0.0	998.0
35.00		1.00	1.01	8.883	9.77	245.92	0.650	0.000	5.00	20.567	13.37	130.6	0.0	976.8
39.00	Bot - Section 2	1.00	1.04	9.088	10.00	244.40	0.650	0.000	4.00	16.134	10.49	104.8	0.0	766.1
40.00		1.00	1.04	9.137	10.05	243.96	0.650	0.000	1.00	4.042	2.63	26.4	0.0	349.6
45.00	Top - Section 1	1.00	1.07	9.366	10.30	241.49	0.650	0.000	5.00	19.943	12.96	133.6	0.0	1724.4
50.00		1.00	1.09	9.576	10.53	241.94	0.650	0.000	5.00	19.500	12.67	133.5	0.0	772.5
50.50	Appurtenance(s)	1.00	1.10	9.596	10.56	241.63	0.650	0.000	0.50	1.926	1.25	13.2	0.0	76.3
55.00		1.00	1.12	9.770	10.75	238.75	0.650	0.000	4.50	17.130	11.13	119.7	0.0	678.5
60.00		1.00	1.14	9.951	10.95	235.27	0.650	0.000	5.00	18.612	12.10	132.4	0.0	737.1
65.00		1.00	1.16	10.120	11.13	231.53	0.650	0.000	5.00	18.168	11.81	131.5	0.0	719.4
70.00		1.00	1.17	10.279	11.31	227.57	0.650	0.000	5.00	17.724	11.52	130.3	0.0	701.6
75.00		1.00	1.19	10.430	11.47	223.42	0.650	0.000	5.00	17.280	11.23	128.9	0.0	683.9
79.00	Bot - Section 3	1.00	1.20	10.544	11.60	219.96	0.650	0.000	4.00	13.504	8.78	101.8	0.0	534.4
80.00		1.00	1.21	10.572	11.63	219.09	0.650	0.000	1.00	3.374	2.19	25.5	0.0	238.8
84.00	Top - Section 2	1.00	1.22	10.681	11.75	215.51	0.650	0.000	4.00	13.319	8.66	101.7	0.0	942.5
85.00		1.00	1.22	10.708	11.78	217.40	0.650	0.000	1.00	3.285	2.14	25.2	0.0	104.2
90.00		1.00	1.24	10.838	11.92	212.79	0.650	0.000	5.00	16.160	10.50	125.2	0.0	512.3
95.00		1.00	1.25	10.962	12.06	208.04	0.650	0.000	5.00	15.716	10.22	123.2	0.0	498.1
99.50	Appurtenance(s)	1.00	1.26	11.069	12.18	203.67	0.650	0.000	4.50	13.765	8.95	108.9	0.0	436.2
100.00		1.00	1.27	11.081	12.19	203.18	0.650	0.000	0.50	1.507	0.98	11.9	0.0	47.8
105.00		1.00	1.28	11.195	12.31	198.20	0.650	0.000	5.00	14.828	9.64	118.7	0.0	469.8
109.00	Appurtenance(s)	1.00	1.29	11.284	12.41	194.14	0.650	0.000	4.00	11.543	7.50	93.1	0.0	365.6
110.00		1.00	1.29	11.305	12.44	193.12	0.650	0.000	1.00	2.841	1.85	23.0	0.0	90.0
115.00		1.00	1.30	11.412	12.55	187.95	0.650	0.000	5.00	13.941	9.06	113.7	0.0	441.4
118.50	Appurtenance(s)	1.00	1.31	11.484	12.63	184.27	0.650	0.000	3.50	9.494	6.17	78.0	0.0	300.6
120.00	Top - Section 3	1.00	1.32	11.514	12.67	182.68	0.650	0.000	1.50	4.002	2.60	33.0	0.0	126.7
125.00		1.00	1.33	11.614	12.78	177.33	0.650	0.000	5.00	13.053	8.48	108.4	0.0	310.5
130.00		1.00	1.34	11.710	12.88	171.91	0.650	0.000	5.00	12.609	8.20	105.6	0.0	299.8
135.00		1.00	1.35	11.803	12.98	166.41	0.650	0.000	5.00	12.165	7.91	102.7	0.0	289.2
137.50	Appurtenance(s)	1.00	1.35	11.849	13.03	163.63	0.650	0.000	2.50	5.916	3.85	50.1	0.0	140.6
140.00		1.00	1.36	11.894	13.08	160.83	0.650	0.000	2.50	5.805	3.77	49.4	0.0	138.0
145.00		1.00	1.37	11.982	13.18	155.20	0.650	0.000	5.00	11.277	7.33	96.6	0.0	268.0
147.00	Appurtenance(s)	1.00	1.37	12.017	13.22	152.93	0.650	0.000	2.00	4.387	2.85	37.7	0.0	104.2
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	151.79	0.650	0.000	1.00	2.167	1.41	18.6	0.0	51.5
								Totals:	**148.00**			**3,580.3**		**21,202.9**

Discrete Appurtenance Forces

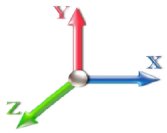
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	148.00	DB-TDD6492A-A	1	12.102	13.312	1.00	1.00	2.41	21.00	0.000	4.021	32.08	0.00	129.00
2	148.00	6' Lightning rod	1	12.034	13.238	1.00	1.00	0.38	6.50	0.000	0.000	5.03	0.00	0.00
3	148.00	Pipe Mount	1	12.034	13.238	1.00	1.00	2.63	40.00	0.000	0.000	34.81	0.00	0.00
4	147.00	Trombone	1	12.042	13.246	1.00	1.00	1.00	6.00	0.000	1.458	13.25	0.00	19.32
5	147.00	Standoff	1	12.017	13.219	1.00	1.00	2.63	40.00	0.000	0.000	34.76	0.00	0.00
6	137.50	SC-E 6014 Rev2W	6	11.849	13.034	0.68	0.80	13.59	90.00	0.000	0.000	177.09	0.00	0.00
7	137.50	BXA-171063-8BF	3	11.849	13.034	0.69	0.80	6.07	31.50	0.000	0.000	79.09	0.00	0.00
8	137.50	SLCP2x6014	3	11.849	13.034	0.66	0.80	12.77	60.00	0.000	0.000	166.47	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	11.849	13.034	0.56	0.80	1.21	18.60	0.000	0.000	15.77	0.00	0.00
10	137.50	Low Profile Platform	1	11.849	13.034	1.00	1.00	22.00	1500.00	0.000	0.000	286.75	0.00	0.00
11	118.50	RRH Collar Mount	1	11.484	12.632	0.56	0.75	2.81	250.00	0.000	0.000	35.53	0.00	0.00
12	118.50	Raycap DC6-48-60-18-8F	2	11.484	12.632	0.56	0.75	1.04	65.60	0.000	0.000	13.07	0.00	0.00
13	118.50	Pipe Mast	3	11.484	12.632	0.56	0.75	2.62	180.00	0.000	0.000	33.04	0.00	0.00
14	118.50	SitePro Sitepro 1 P/N	1	11.484	12.632	1.00	1.00	9.75	406.61	0.000	0.000	123.16	0.00	0.00
15	118.50	Ericsson RRUS 8843 B2	3	11.484	12.632	0.50	0.75	2.47	210.00	0.000	0.000	31.23	0.00	0.00
16	118.50	Ericsson 4449 B5/B12	3	11.484	12.632	0.50	0.75	2.97	213.00	0.000	0.000	37.51	0.00	0.00
17	118.50	Kathrein 800-10965	6	11.484	12.632	0.53	0.75	44.12	651.60	0.000	0.000	557.37	0.00	0.00
18	118.50	Low Profile Platform	1	11.484	12.632	1.00	1.00	22.00	1500.00	0.000	0.000	277.91	0.00	0.00
19	118.50	Powerwave LGP21401	6	11.484	12.632	0.52	0.75	4.06	84.60	0.000	0.000	51.33	0.00	0.00
20	118.50	Powerwave 7770	3	11.484	12.632	0.55	0.75	9.03	105.00	0.000	0.000	114.12	0.00	0.00
21	109.00	800 MHz RRH - RRU	3	11.284	12.412	0.54	0.80	4.00	159.00	0.000	0.000	49.70	0.00	0.00
22	109.00	APXVTM14-C-I20	3	11.284	12.412	0.68	0.80	12.93	168.00	0.000	0.000	160.53	0.00	0.00
23	109.00	1900MHz RRH - RRU	3	11.284	12.412	0.54	0.80	6.11	132.00	0.000	0.000	75.84	0.00	0.00
24	109.00	APXVSPP18-C-A20	3	11.284	12.412	0.66	0.80	15.98	171.00	0.000	0.000	198.29	0.00	0.00
25	109.00	TD-RRH8x20 - RRU	3	11.284	12.412	0.54	0.80	6.51	210.00	0.000	0.000	80.83	0.00	0.00
26	109.00	ACU-A20-N - RET	4	11.284	12.412	0.40	0.80	0.22	4.00	0.000	0.000	2.78	0.00	0.00
27	109.00	T-Arms w/ Working	3	11.284	12.412	0.56	0.75	20.25	1050.00	0.000	0.000	251.34	0.00	0.00
28	109.00	800MHz RRH Filter	3	11.284	12.412	0.54	0.80	1.25	26.40	0.000	0.000	15.57	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	11.069	12.176	0.64	0.80	22.02	149.40	0.000	0.000	268.14	0.00	0.00
30	99.50	RR65-18-00DPL2	6	11.069	12.176	0.68	0.80	17.79	81.00	0.000	0.000	216.60	0.00	0.00
31	99.50	APXV18-206513-C-A20	3	11.069	12.176	0.67	0.80	10.42	79.20	0.000	0.000	126.91	0.00	0.00
32	99.50	782 11054 - Bias Ts	3	11.069	12.176	0.56	0.80	0.47	7.80	0.000	0.000	5.73	0.00	0.00
33	99.50	ATMAA1412D-1A2 - TMA	3	11.069	12.176	0.56	0.80	1.97	39.00	0.000	0.000	23.93	0.00	0.00
34	99.50	Platform w/ Hand Rail	1	11.069	12.176	1.00	1.00	32.00	1600.00	0.000	0.000	389.63	0.00	0.00
35	50.50	3 ft Standoff	1	9.596	10.556	1.00	1.00	2.63	40.00	0.000	0.000	27.76	0.00	0.00
36	50.50	260B	1	9.596	10.556	1.00	1.00	0.09	1.00	0.000	0.000	0.95	0.00	0.00
							Totals:		**9,397.81**			**4,013.92**		

Total Applied Force Summary

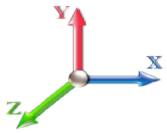
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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		123.61	1266.24	0.00	0.00
10.00		121.25	1245.00	0.00	0.00
15.00		118.88	1223.75	0.00	0.00
20.00		123.63	1202.51	0.00	0.00
25.00		126.95	1181.26	0.00	0.00
30.00		129.19	1160.02	0.00	0.00
35.00		130.63	1138.77	0.00	0.00
39.00		104.84	895.72	0.00	0.00
40.00		26.41	381.96	0.00	0.00
45.00		133.56	1886.45	0.00	0.00
50.00		133.51	934.46	0.00	0.00
50.50	(2) attachments	41.92	133.47	0.00	0.00
55.00		119.67	823.57	0.00	0.00
60.00		132.42	898.25	0.00	0.00
65.00		131.46	880.55	0.00	0.00
70.00		130.26	862.85	0.00	0.00
75.00		128.86	845.14	0.00	0.00
79.00		101.81	663.37	0.00	0.00
80.00		25.50	271.05	0.00	0.00
84.00		101.72	1071.47	0.00	0.00
85.00		25.15	136.39	0.00	0.00
90.00		125.22	673.46	0.00	0.00
95.00		123.18	659.29	0.00	0.00
99.50	(19) attachments	1139.88	2537.65	0.00	0.00
100.00		11.94	59.92	0.00	0.00
105.00		118.69	591.36	0.00	0.00
109.00	(25) attachments	928.01	2383.29	0.00	0.00
110.00		22.97	111.67	0.00	0.00
115.00		113.75	549.84	0.00	0.00
118.50	(29) attachments	1352.24	4042.87	0.00	0.00
120.00		32.95	146.98	0.00	0.00
125.00		108.39	378.07	0.00	0.00
130.00		105.57	367.44	0.00	0.00
135.00		102.67	356.82	0.00	0.00
137.50	(19) attachments	775.29	1874.53	0.00	0.00
140.00		49.37	140.57	0.00	0.00
145.00		96.62	273.17	0.00	0.00
147.00	(2) attachments	85.70	152.30	0.00	19.32
148.00	(3) attachments	90.57	119.49	0.00	129.00
	Totals:	**7,594.25**	**34,520.97**	**0.00**	**148.32**

Linear Appurtenance Segment Forces (Factored)

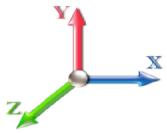
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	7.442	0.00	0.80
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	7.442	0.00	0.80
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	7.442	0.00	0.80
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	7.896	0.00	0.80
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	8.276	0.00	0.80
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	8.600	0.00	0.80
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	8.883	0.00	0.80
39.00	1/2" Coax	Yes	4.00	0.000	0.65	0.22	0.00	0.013	0.000	9.088	0.00	0.64
40.00	1/2" Coax	Yes	1.00	0.000	0.65	0.05	0.00	0.014	0.000	9.137	0.00	0.16
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	9.366	0.00	0.80
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	9.576	0.00	0.80
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.014	0.000	9.596	0.00	0.08
									Totals:		**0.0**	**8.1**

Calculated Forces

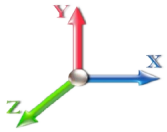
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

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 Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.52	-7.61	0.00	-743.96	0.00	743.96	4270.00	2135.00	9669.74	4842.06	0.00	0.000	0.000	0.162
5.00	-33.25	-7.51	0.00	-705.94	0.00	705.94	4222.20	2111.10	9378.04	4695.99	0.02	-0.041	0.000	0.158
10.00	-32.00	-7.41	0.00	-668.41	0.00	668.41	4173.09	2086.54	9087.66	4550.58	0.09	-0.082	0.000	0.155
15.00	-30.77	-7.31	0.00	-631.38	0.00	631.38	4122.67	2061.34	8798.75	4405.92	0.20	-0.124	0.000	0.151
20.00	-29.56	-7.20	0.00	-594.84	0.00	594.84	4070.95	2035.48	8511.51	4262.08	0.35	-0.165	0.000	0.147
25.00	-28.37	-7.09	0.00	-558.83	0.00	558.83	4017.93	2008.97	8226.08	4119.16	0.54	-0.207	0.000	0.143
30.00	-27.21	-6.98	0.00	-523.37	0.00	523.37	3963.61	1981.80	7942.65	3977.23	0.78	-0.248	0.000	0.138
35.00	-26.07	-6.86	0.00	-488.48	0.00	488.48	3907.97	1953.99	7661.39	3836.39	1.06	-0.289	0.000	0.134
39.00	-25.17	-6.76	0.00	-461.05	0.00	461.05	3862.53	1931.27	7438.05	3724.55	1.32	-0.322	0.000	0.130
40.00	-24.78	-6.74	0.00	-454.29	0.00	454.29	3851.04	1925.52	7382.46	3696.72	1.39	-0.331	0.000	0.129
45.00	-22.89	-6.61	0.00	-420.59	0.00	420.59	2980.94	1490.47	5677.43	2842.94	1.76	-0.372	0.000	0.156
50.00	-21.96	-6.48	0.00	-387.54	0.00	387.54	2941.52	1470.76	5474.55	2741.34	2.17	-0.412	0.000	0.149
50.50	-21.82	-6.45	0.00	-384.30	0.00	384.30	2937.50	1468.75	5454.31	2731.21	2.21	-0.417	0.000	0.148
55.00	-21.00	-6.34	0.00	-355.29	0.00	355.29	2900.79	1450.39	5272.72	2640.28	2.63	-0.458	0.000	0.142
60.00	-20.09	-6.21	0.00	-323.61	0.00	323.61	2858.76	1429.38	5072.11	2539.83	3.13	-0.502	0.000	0.134
65.00	-19.21	-6.09	0.00	-292.56	0.00	292.56	2815.42	1407.71	4872.91	2440.07	3.68	-0.546	0.000	0.127
70.00	-18.34	-5.96	0.00	-262.13	0.00	262.13	2770.78	1385.39	4675.26	2341.11	4.27	-0.588	0.000	0.119
75.00	-17.50	-5.83	0.00	-232.33	0.00	232.33	2724.84	1362.42	4479.35	2243.01	4.91	-0.629	0.000	0.110
79.00	-16.83	-5.73	0.00	-208.99	0.00	208.99	2687.14	1343.57	4323.99	2165.21	5.45	-0.660	0.000	0.103
80.00	-16.56	-5.71	0.00	-203.26	0.00	203.26	2677.59	1338.79	4285.35	2145.86	5.59	-0.668	0.000	0.101
84.00	-15.49	-5.60	0.00	-180.44	0.00	180.44	1954.67	977.33	3110.93	1557.78	6.16	-0.697	0.000	0.124
85.00	-15.35	-5.58	0.00	-174.84	0.00	174.84	1948.85	974.42	3084.73	1544.66	6.31	-0.704	0.000	0.121
90.00	-14.67	-5.45	0.00	-146.96	0.00	146.96	1918.95	959.48	2954.04	1479.22	7.07	-0.745	0.000	0.107
95.00	-14.01	-5.33	0.00	-119.69	0.00	119.69	1887.76	943.88	2824.00	1414.10	7.87	-0.781	0.000	0.092
99.50	-11.49	-4.16	0.00	-95.71	0.00	95.71	1858.56	929.28	2707.66	1355.84	8.62	-0.809	0.000	0.077
100.00	-11.43	-4.15	0.00	-93.63	0.00	93.63	1855.26	927.63	2694.78	1349.39	8.71	-0.812	0.000	0.076
105.00	-10.84	-4.02	0.00	-72.90	0.00	72.90	1821.45	910.73	2566.54	1285.18	9.57	-0.839	0.000	0.063
109.00	-8.47	-3.06	0.00	-56.80	0.00	56.80	1793.47	896.73	2464.77	1234.22	10.28	-0.857	0.000	0.051
110.00	-8.36	-3.04	0.00	-53.74	0.00	53.74	1786.34	893.17	2439.46	1221.54	10.46	-0.862	0.000	0.049
115.00	-7.81	-2.92	0.00	-38.54	0.00	38.54	1749.93	874.96	2313.70	1158.57	11.38	-0.879	0.000	0.038
118.50	-3.79	-1.51	0.00	-28.32	0.00	28.32	1723.66	861.83	2226.56	1114.93	12.02	-0.889	0.000	0.028
120.00	-3.64	-1.47	0.00	-26.06	0.00	26.06	1712.21	856.11	2189.45	1096.35	12.30	-0.893	0.000	0.026
120.00	-3.64	-1.47	0.00	-26.06	0.00	26.06	1141.82	570.91	1465.94	734.06	12.30	-0.893	0.000	0.039
125.00	-3.26	-1.36	0.00	-18.71	0.00	18.71	1122.14	561.07	1391.92	696.99	13.25	-0.904	0.000	0.030
130.00	-2.90	-1.25	0.00	-11.92	0.00	11.92	1101.16	550.58	1318.05	660.01	14.20	-0.914	0.000	0.021
135.00	-2.54	-1.14	0.00	-5.69	0.00	5.69	1078.87	539.43	1244.50	623.18	15.16	-0.921	0.000	0.011
137.50	-0.68	-0.33	0.00	-2.84	0.00	2.84	1067.24	533.62	1207.90	604.85	15.64	-0.923	0.000	0.005
140.00	-0.54	-0.28	0.00	-2.01	0.00	2.01	1055.28	527.64	1171.44	586.59	16.13	-0.924	0.000	0.004
145.00	-0.27	-0.18	0.00	-0.60	0.00	0.60	1030.38	515.19	1099.04	550.33	17.09	-0.925	0.000	0.001
147.00	-0.12	-0.09	0.00	-0.22	0.00	0.22	1020.06	510.03	1070.30	535.94	17.48	-0.925	0.000	0.001
148.00	0.00	-0.09	0.00	-0.13	0.00	0.13	1014.82	507.41	1055.98	528.78	17.68	-0.925	0.000	0.000

Final Analysis Summary

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	6/14/2019	
Site Name:	Newtown	**Exposure:**	C		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	29.3	0.00	41.38	0.00	0.00	2872.84
0.9D + 1.6W 93 mph Wind	29.2	0.00	31.03	0.00	0.00	2851.37
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.6	0.00	65.69	0.00	0.00	949.40
1.2D + 1.0E	1.1	0.00	41.43	0.00	0.00	101.45
0.9D + 1.0E	1.1	0.00	31.07	0.00	0.00	100.65
1.0D + 1.0W 60 mph Wind	7.6	0.00	34.52	0.00	0.00	743.96

Max Stresses

Load Case	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)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-41.38	-29.25	0.00	-2872.8	0.00	-2872.8	4270.00	2135.0	9669.74	4842.06	0.00	0.603
0.9D + 1.6W 93 mph Wind	-31.03	-29.24	0.00	-2851.3	0.00	-2851.3	4270.00	2135.0	9669.74	4842.06	0.00	0.596
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-65.69	-9.56	0.00	-949.40	0.00	-949.40	4270.00	2135.0	9669.74	4842.06	0.00	0.211
1.2D + 1.0E	-41.43	-1.09	0.00	-101.45	0.00	-101.45	4270.00	2135.0	9669.74	4842.06	0.00	0.031
0.9D + 1.0E	-31.07	-1.09	0.00	-100.65	0.00	-100.65	4270.00	2135.0	9669.74	4842.06	0.00	0.028
1.0D + 1.0W 60 mph Wind	-34.52	-7.61	0.00	-743.96	0.00	-743.96	4270.00	2135.0	9669.74	4842.06	0.00	0.162

Base Plate Summary

Structure:	CT13057-A-SB		**Code:**	EIA/TIA-222-G	6/14/2019
Site Name:	Newtown		**Exposure:**	C	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 34

Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	55.00	**Bolt Circle:**	62.00
Moment (kip-ft):	3750.00	**Width (in):**	61.00	**Number Bolts:**	16.00
Axial (kip):	38.00	**Style:**	Clipped	**Bolt Type:**	2.25" 18J
Shear (kip):	35.00	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.25
Analysis		**Clip Length (in):**	10.00	**Yield (ksi):**	75.00
Moment (kip-ft):	2872.84	**Effective Len (in):**	8.16	**Ultimate (ksi):**	100.00
Axial (kip):	65.69	**Moment (kip-in):**	470.13	**Arrangement:**	Clustered
Shear (kip):	29.25	**Allow Stress (ksi):**	74.25	**Cluster Dist (in):**	6.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	45.00
Moment Design %:	76.61	**Stress Ratio:**	0.62	Compression	
				Force (kip):	143.11
				Allowable (kip):	260.00
				Ratio:	0.56
				Tension	
				Force (kip):	134.90
				Allowable (kip):	260.00
				Ratio:	0.53

Monopole Mat Foundation Design

			Date: 6/14/2019
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	148
Site Number:	CT13057-A-SBA	**Engineer Name:**	U. Atluri
Engr. Number:	77764	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

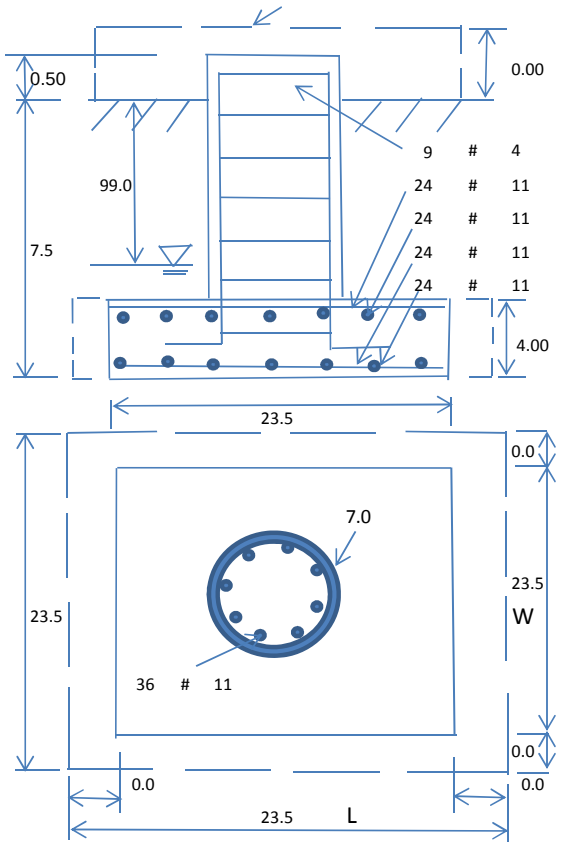
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	65.6	Shear Force (Kips):	29.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2869.6
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	7.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	23.5	Width of Pad (ft.):	23.5
Final Length of pad (ft)	23.5	Final width of pad (ft):	23.5



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	11	
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):	24	Qty. of Rebar in Pad (W):	24

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	24	Qty. of Rebar in Pad (W):	24
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	425	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	1798.18	Total Dry Soil Weight (Kips):	197.80
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	197.80	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2362.94	Total Dry Concrete Weight (Kips):	354.44
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	354.44	Total Vertical Load on Base (Kips):	617.84

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2045	<	Allowable Factored Soil Bearing (psf): 6000	0.34	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6610.7	>	Design Factored Momont (kips-ft): 2835	0.43	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.33	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	8832.5	>	Design Factored Moment (Mu, Kips-F	2986.4	0.34	OK!
Calculated Shear Capacity (Kips):	589.7	>	Design Factored Shear (Kips):	29.2	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	3032.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7273.9	>	Design Factored Axial Load (Pu Kips):	65.6	0.01	OK!
Moment & Axial Strength Combination:	0.34	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.010		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1026.7	>	One-Way Factored Shear (L-D. Kips):	173.4	0.17	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1026.7	>	One-Way Factored Shear (W-D., Kips)	173.4	0.17	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	823.5	>	One-Way Factored Shear (C-C, Kips):	161.9	0.20	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0030	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0030		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7202.6	>	Moment at Bottom (L-Dir. K-Ft):	1078.2	0.15	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7202.6	>	Moment at Bottom (W-Dir. K-Ft):	1078.2	0.15	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10086.7	>	Moment at Bottom (C-C Dir. K-Ft):	1524.8	0.15	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0030	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0030		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	7202.6	>	Moment at the top (L-Dir K-Ft):	405.3	0.06	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	7202.6	>	Moment at the top (W-Dir K-Ft):	405.3	0.06	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10086.7	>	Moment at the top (C-C Dir. K-Ft):	381.3	0.04	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1147.8	k-ft.	Max. factored shear stress v_{u_CD}:		1.4	Psi
Max. factored shear stress v_{u_AB}:	6.8	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	6.8	Psi	Check Usage of Punching Shear Capacity:		0.04	OK!

April 22, 2019

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT5432 (LTE 2C/3C/4C)
	FA Number:	10071168
	PACE Number:	MRCTB037970
	PT Number:	-
	Site Name:	NEWTOWN EAST CENTRAL
	Site Address:	151 Berkshire Road Sandy Hook, CT 06482

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing AT&T antenna/RRH mount to determine their capability of supporting the following additional loading:

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(6) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)**
- **(3) B5/B12 4449 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mount. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mount on April 16, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R12.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.13 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK12 (or approved equal).**
- **Remove existing pipe mast and install new 2-1/2" std. (2.88" O.D.) pipe mast behind new 800-10965 antennas secured to existing mount (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/3C/4C) Mount Rating	29	LC1	103%	**FAIL**
Modified (LTE 2C/3C/4C) Mount Rating	1	LC16	97%	**PASS**

Reference Documents:

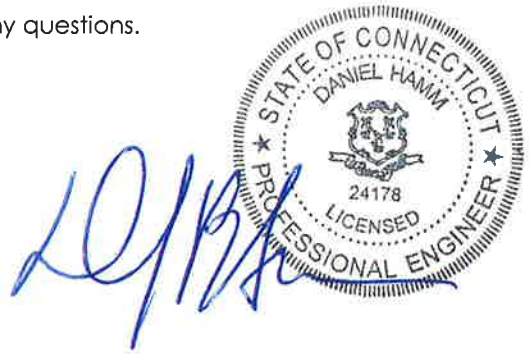
- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

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HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

		z=	120 (ft)
		z_g=	1200 (ft)
K_z=	**1.041**	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}=	**#DIV/0!**	K_h=	#DIV/0!
		K_c=	0.9 (from Table 2-4)
(If Category 1 then K_{zt}=1.0)		K_t=	0 (from Table 2-5)
		f=	0 (from Table 2-5)
Category=	1	z=	120
		z_s=	1500 (Mean elevation of base of structure above se
		H=	0 (Ht. of the crest above surrounding terrain)
		K_{zt}=	1.00 (from 2.6.6.2.1)
		K_e=	0.95 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =		t_i =	1.00 in
Importance Factor =		I=	1.0 (from Table 2-3)
		K_{iz} =	1.14 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.14 in

Date: 4/22/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	149	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

q_z=	**34.20**	K_z=	1.031	(from 2.6.5.2)
$q_{z\,(ice)}$=	**5.94**	K_{zt}=	1.0	(from 2.6.6.2.1)
$q_{z\,(30)}$=	**2.14**	K_s=	1.0	(from 2.6.7)
		K_e=	0.95	(from 2.6.8)
		K_d=	0.95	(from Table 2-2)
		V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.14 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	190	42	12
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	477	95	30
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.43	1.20	45	11	3
B5/B12 4449 RRH (Shielded)	14.9	6.6	13.2	0.68	2.26	1.20	28	8	2
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.20	47	11	3
B2/B66A 8843 RRH (Shielded)	14.9	6.6	13.2	0.68	2.26	1.20	28	8	2
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	39	9	2
2" Pipe	2.4	12.0		0.20	0.20	1.20	8	3	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	12	4	1
2x2 Angle	2.0	12.0		0.17	0.17	2.00	12	5	1
3-1/2x3 Channel	3.5	12.0		0.29	0.29	2.00	20	7	1
6x3/8 Plate	6.0	12.0		0.50	0.50	2.00	35	10	2

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	190	101	168
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	477	201	408
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	45	57	48
B5/B12 4449 RRH (Shielc	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	23	57	31
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	49
B2/B66A 8843 RRH (Shie	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	32

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	41	25	37
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.83	1.25	1.46	94	45	82
B5/B12 4449 RRH	17.2	12.7	15.5	1.51	1.85	1.36	1.11	1.20	1.20	11	13	11
B5/B12 4449 RRH (Shielc	17.2	6.3	15.5	0.76	1.85	2.71	1.11	1.21	1.20	5	13	7
B2/B66A 8843 RRH	17.2	13.2	15.5	1.57	1.85	1.30	1.11	1.20	1.20	11	13	12
B2/B66A 8843 RRH (Shie	17.2	6.6	15.5	0.79	1.85	2.61	1.11	1.20	1.20	6	13	8

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	10
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	30	13	26
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH (Shielc	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	1	4	2
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B2/B66A 8843 RRH (Shie	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	2

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	190	101	123
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	477	201	270
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	45	57	54
B5/B12 4449 RRH (Shielc	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	33	57	51
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	54
B2/B66A 8843 RRH (Shie	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	35	57	51

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	41	25	29
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.83	1.25	1.46	94	45	57
B5/B12 4449 RRH	17.2	12.7	15.5	1.51	1.85	1.36	1.11	1.20	1.20	11	13	13
B5/B12 4449 RRH (Shielc	17.2	9.5	15.5	1.13	1.85	1.81	1.11	1.20	1.20	8	13	12
B2/B66A 8843 RRH	17.2	13.2	15.5	1.57	1.85	1.30	1.11	1.20	1.20	11	13	13
B2/B66A 8843 RRH (Shie	17.2	9.9	15.5	1.18	1.85	1.74	1.11	1.20	1.20	8	13	12

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	8
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	30	13	17
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH (Shielc	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	2	4	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B2/B66A 8843 RRH (Shie	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	2	4	3

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	190	101	101
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	477	201	201
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	45	57	57
B5/B12 4449 RRH (Shielc	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	28	57	57
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	57
B2/B66A 8843 RRH (Shie	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	28	57	57

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	41	25	25
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.83	1.25	1.46	94	45	45
B5/B12 4449 RRH	17.2	12.7	15.5	1.51	1.85	1.36	1.11	1.20	1.20	11	13	13
B5/B12 4449 RRH (Shielc	17.2	8.9	15.5	1.06	1.85	1.94	1.11	1.20	1.20	8	13	13
B2/B66A 8843 RRH	17.2	13.2	15.5	1.57	1.85	1.30	1.11	1.20	1.20	11	13	13
B2/B66A 8843 RRH (Shie	17.2	8.9	15.5	1.06	1.85	1.94	1.11	1.20	1.20	8	13	13

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	6
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	30	13	13
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	4
B5/B12 4449 RRH (Shielc	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	4	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
B2/B66A 8843 RRH (Shie	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	4	4

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	190	101	123
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	477	201	270
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	45	57	54
B5/B12 4449 RRH (Shield	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	33	57	51
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	54
B2/B66A 8843 RRH (Shie	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	35	57	51

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	41	25	29
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.83	1.25	1.46	94	45	57
B5/B12 4449 RRH	17.2	12.7	15.5	1.51	1.85	1.36	1.11	1.20	1.20	11	13	13
B5/B12 4449 RRH (Shield	17.2	9.5	15.5	1.13	1.85	1.81	1.11	1.20	1.20	8	13	12
B2/B66A 8843 RRH	17.2	13.2	15.5	1.57	1.85	1.30	1.11	1.20	1.20	11	13	13
B2/B66A 8843 RRH (Shie	17.2	9.9	15.5	1.18	1.85	1.74	1.11	1.20	1.20	8	13	12

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	8
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	30	13	17
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH (Shield	14.9	7.8	13.2	0.81	1.37	1.91	1.13	1.20	1.20	2	4	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B2/B66A 8843 RRH (Shie	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	2	4	3

Date: 4/23/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	190	101	168
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	477	201	408
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	45	57	48
B5/B12 4449 RRH (Shield	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	23	57	31
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	49
B2/B66A 8843 RRH (Shiel	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	32

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	41	25	37
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.83	1.25	1.46	94	45	82
B5/B12 4449 RRH	17.2	12.7	15.5	1.51	1.85	1.36	1.11	1.20	1.20	11	13	11
B5/B12 4449 RRH (Shield	17.2	6.3	15.5	0.76	1.85	2.71	1.11	1.21	1.20	5	13	7
B2/B66A 8843 RRH	17.2	13.2	15.5	1.57	1.85	1.30	1.11	1.20	1.20	11	13	12
B2/B66A 8843 RRH (Shiel	17.2	6.6	15.5	0.79	1.85	2.61	1.11	1.20	1.20	6	13	8

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	10
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	30	13	26
B5/B12 4449 RRH	14.9	10.4	13.2	1.08	1.37	1.43	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH (Shield	14.9	5.2	13.2	0.54	1.37	2.87	1.13	1.22	1.20	1	4	2
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B2/B66A 8843 RRH (Shiel	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	2

Date: 4/22/2019
Project Name: NEWTOWN EAST CENTRAL
Project No.: CT5432
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.14 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		84 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		119 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		204 lbs
Weight of object:	109.0 lbs	
Combined weight of ice and object:		313 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		31 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		104 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		32 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		104 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		30 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		63 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		6 plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		6 plf

C 3-1/2x2

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	2	
Per foot weight of ice on object:		7 plf

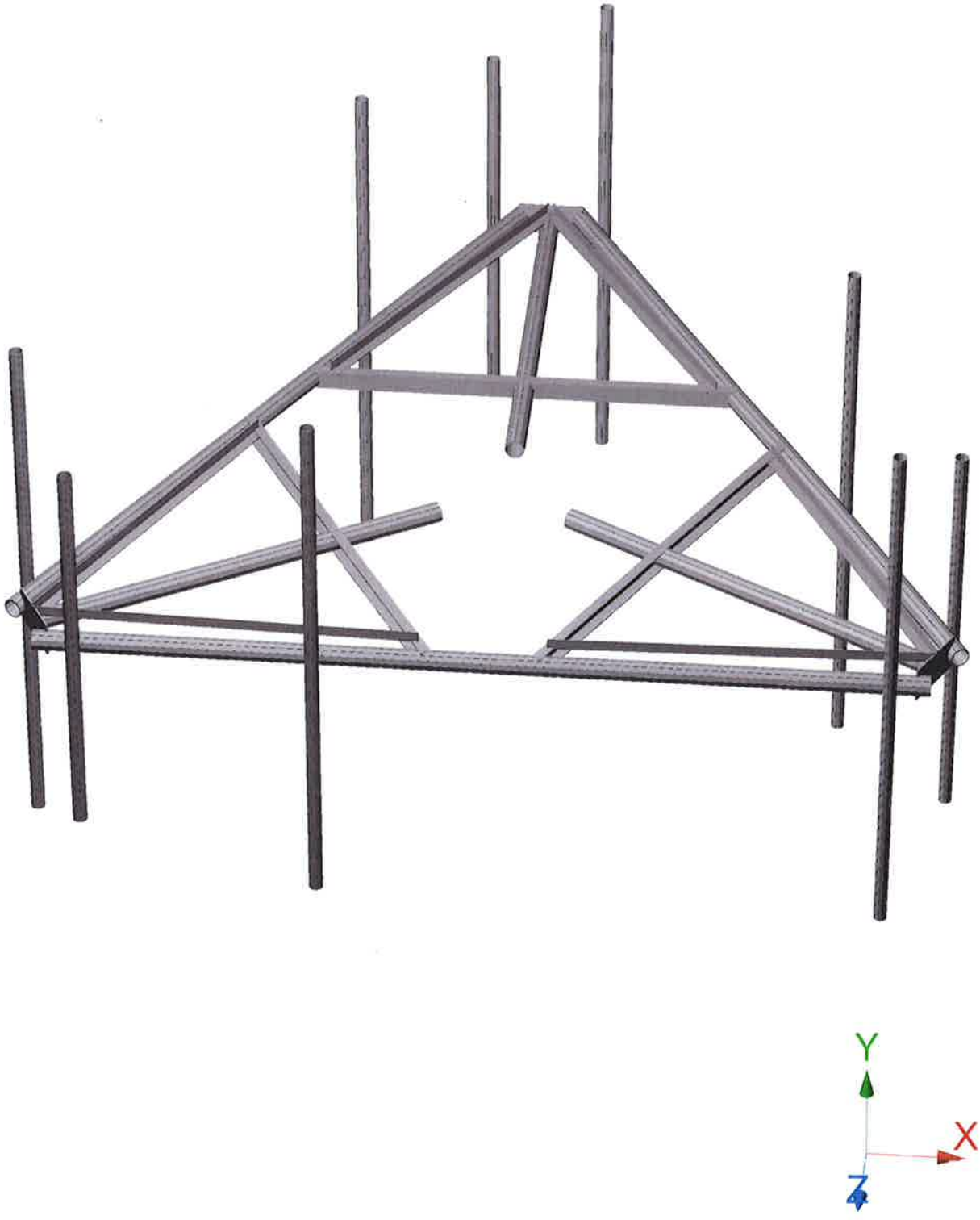
PL 6x3/8

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:		10 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)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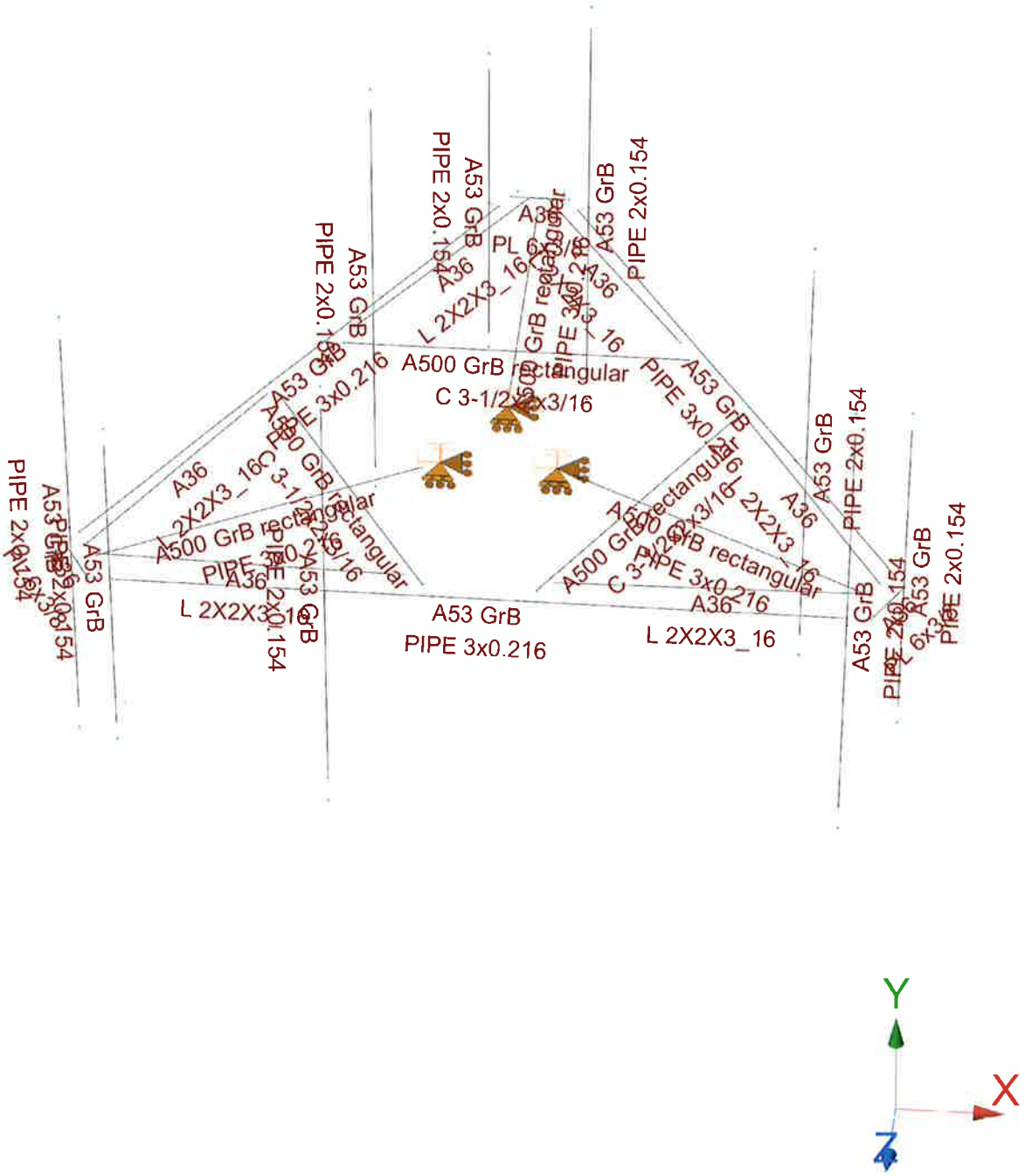
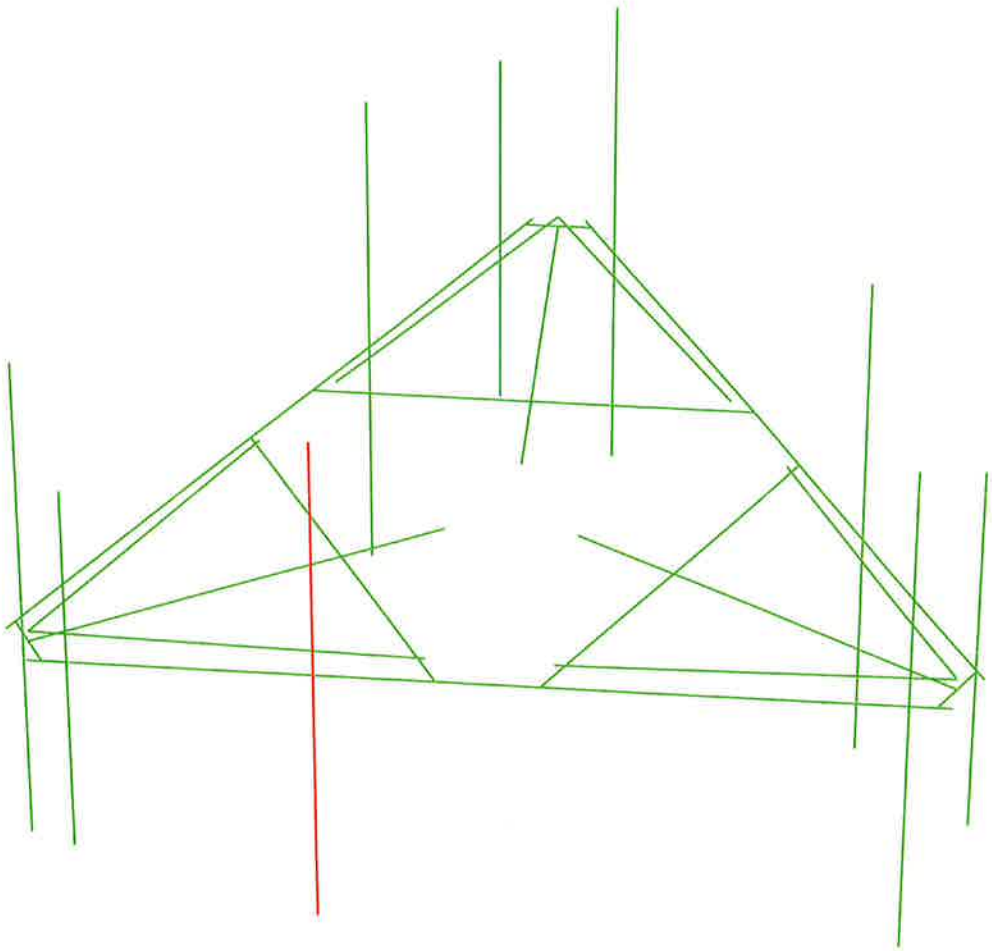
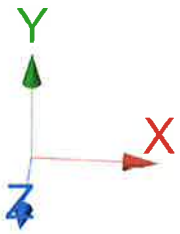
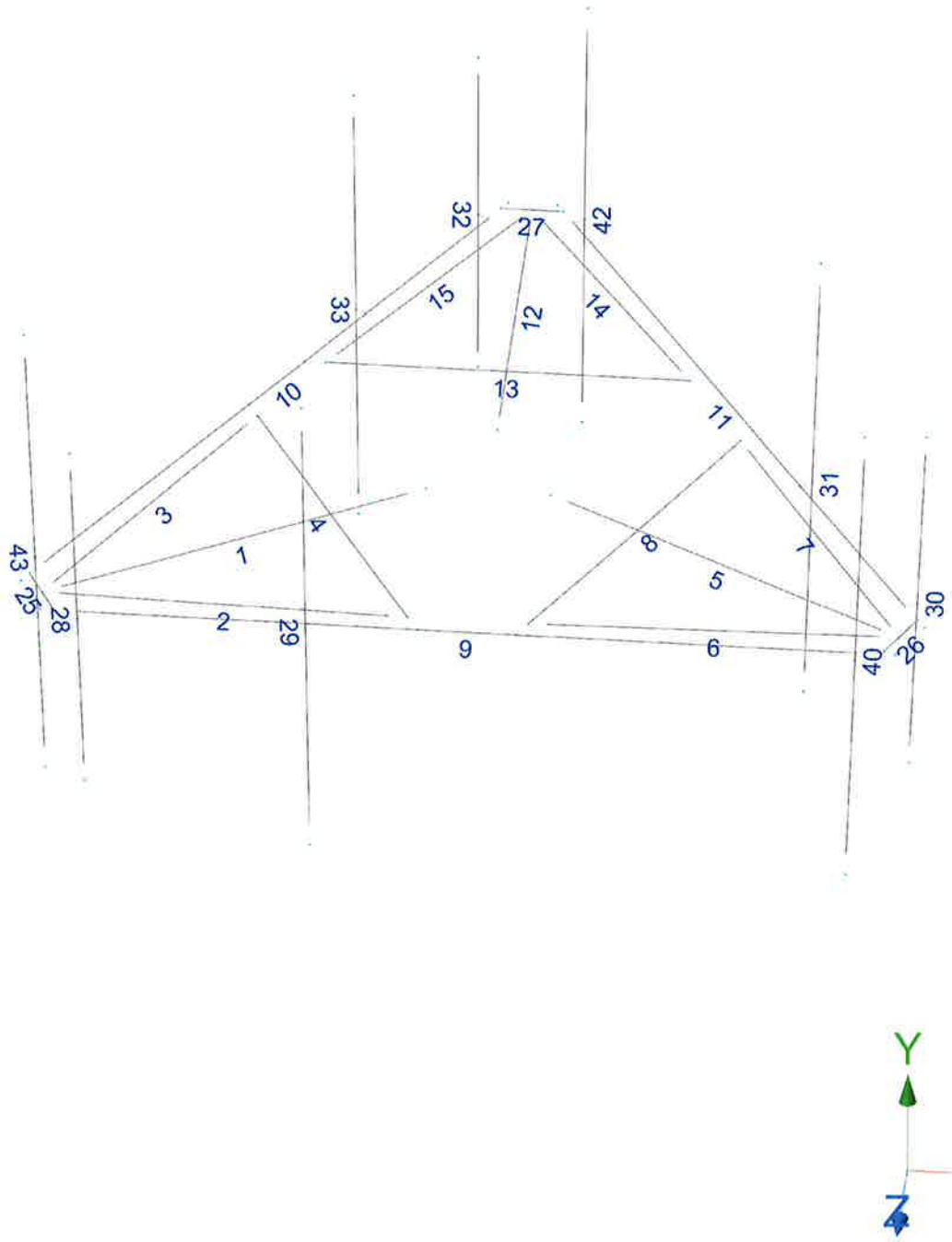


Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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Bentley

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Load data

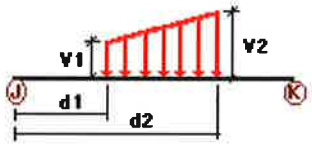
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

Distributed force on members

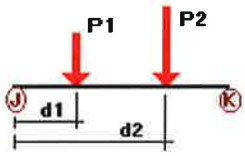


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	2	y	-0.01	0.00	0.00	No	0.00	No
	3	y	-0.01	0.00	0.00	No	0.00	No
	4	y	-0.01	0.00	0.00	No	0.00	No
	6	y	-0.01	0.00	0.00	No	0.00	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
W0	1	z	-0.012	0.00	0.00	No	0.00	No
	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.011	0.00	0.00	No	0.00	No
	4	z	-0.02	0.00	0.00	No	0.00	No
	5	z	-0.012	0.00	0.00	No	0.00	No
	6	z	-0.011	0.00	0.00	No	0.00	No

	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.02	0.00	0.00	No	0.00	No
	9	z	-0.012	0.00	0.00	No	0.00	No
	10	z	-0.012	0.00	0.00	No	0.00	No
	11	z	-0.012	0.00	0.00	No	0.00	No
	12	z	-0.012	0.00	0.00	No	0.00	No
	13	z	-0.02	0.00	0.00	No	0.00	No
	14	z	-0.011	0.00	0.00	No	0.00	No
	15	z	-0.011	0.00	0.00	No	0.00	No
	25	z	-0.034	0.00	0.00	No	0.00	No
	26	z	-0.034	0.00	0.00	No	0.00	No
	27	z	-0.034	0.00	0.00	No	0.00	No
W30	1	x	-0.012	0.00	0.00	No	0.00	No
	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.011	0.00	0.00	No	0.00	No
	4	x	-0.02	0.00	0.00	No	0.00	No
	5	x	-0.012	0.00	0.00	No	0.00	No
	6	x	-0.011	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.02	0.00	0.00	No	0.00	No
	9	x	-0.012	0.00	0.00	No	0.00	No
	10	x	-0.012	0.00	0.00	No	0.00	No
	11	x	-0.012	0.00	0.00	No	0.00	No
	12	x	-0.012	0.00	0.00	No	0.00	No
	13	x	-0.02	0.00	0.00	No	0.00	No
	14	x	-0.011	0.00	0.00	No	0.00	No
	15	x	-0.011	0.00	0.00	No	0.00	No
	25	x	-0.034	0.00	0.00	No	0.00	No
	26	x	-0.034	0.00	0.00	No	0.00	No
	27	x	-0.034	0.00	0.00	No	0.00	No
	28	x	-0.008	0.00	0.00	No	0.00	No
	29	x	-0.008	0.00	0.00	No	0.00	No
	30	x	-0.008	0.00	0.00	No	0.00	No
	31	x	-0.008	0.00	0.00	No	0.00	No
	32	x	-0.008	0.00	0.00	No	0.00	No
	33	x	-0.008	0.00	0.00	No	0.00	No
	40	x	-0.008	0.00	0.00	No	0.00	No
	42	x	-0.008	0.00	0.00	No	0.00	No
	43	x	-0.008	0.00	0.00	No	0.00	No
Di	1	y	-0.006	0.00	0.00	No	0.00	No
	2	y	-0.005	0.00	0.00	No	0.00	No
	3	y	-0.005	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.006	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.007	0.00	0.00	No	0.00	No
	9	y	-0.006	0.00	0.00	No	0.00	No
	10	y	-0.006	0.00	0.00	No	0.00	No
	11	y	-0.006	0.00	0.00	No	0.00	No
	12	y	-0.006	0.00	0.00	No	0.00	No
	13	y	-0.007	0.00	0.00	No	0.00	No
	14	y	-0.005	0.00	0.00	No	0.00	No
	15	y	-0.005	0.00	0.00	No	0.00	No
	25	y	-0.01	0.00	0.00	No	0.00	No
	26	y	-0.01	0.00	0.00	No	0.00	No
	27	y	-0.01	0.00	0.00	No	0.00	No
	28	y	-0.005	0.00	0.00	No	0.00	No
	29	y	-0.005	0.00	0.00	No	0.00	No
	30	y	-0.005	0.00	0.00	No	0.00	No

31	y	-0.005	0.00	0.00	No	0.00	No
32	y	-0.005	0.00	0.00	No	0.00	No
33	y	-0.005	0.00	0.00	No	0.00	No
40	y	-0.005	0.00	0.00	No	0.00	No
42	y	-0.005	0.00	0.00	No	0.00	No
43	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	28	y	-0.018	0.50	No
		y	-0.018	4.50	No
	29	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	30	y	-0.018	0.50	No
		y	-0.018	4.50	No
	31	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	32	y	-0.018	0.50	No
		y	-0.018	4.50	No
	33	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	40	y	-0.055	0.50	No
		y	-0.055	7.50	No
	42	y	-0.055	0.50	No
		y	-0.055	7.50	No
	43	y	-0.055	0.50	No
		y	-0.055	7.50	No
W0	28	z	-0.095	0.50	No
		z	-0.095	4.50	No
	29	z	-0.237	0.50	No
		z	-0.237	7.50	No
		z	-0.056	1.50	No
	30	z	-0.062	0.50	No
		z	-0.062	4.50	No
	31	z	-0.134	0.50	No
		z	-0.134	7.50	No
		z	-0.051	1.50	No
	32	z	-0.062	0.50	No
		z	-0.062	4.50	No
	33	z	-0.134	0.50	No
		z	-0.134	7.50	No
		z	-0.051	1.50	No
	40	z	-0.237	0.50	No
		z	-0.237	7.50	No
	42	z	-0.134	0.50	No

		z	-0.134	7.50	No
	43	z	-0.134	0.50	No
		z	-0.134	7.50	No
W30	28	x	-0.051	0.50	No
		x	-0.051	4.50	No
	29	x	-0.10	0.50	No
		x	-0.10	7.50	No
		x	-0.056	1.50	No
	30	x	-0.084	0.50	No
		x	-0.084	4.50	No
	31	x	-0.203	0.50	No
		x	-0.203	7.50	No
		x	-0.032	1.50	No
	32	x	-0.084	0.50	No
		x	-0.084	4.50	No
	33	x	-0.203	0.50	No
		x	-0.203	7.50	No
		x	-0.032	1.50	No
	40	x	-0.10	0.50	No
		x	-0.10	7.50	No
	42	x	-0.203	0.50	No
		x	-0.203	7.50	No
	43	x	-0.203	0.50	No
		x	-0.203	7.50	No
Di	28	y	-0.042	0.50	No
		y	-0.042	4.50	No
	29	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	30	y	-0.042	0.50	No
		y	-0.042	4.50	No
	31	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	32	y	-0.042	0.50	No
		y	-0.042	4.50	No
	33	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	40	y	-0.101	0.50	No
		y	-0.101	7.50	No
	42	y	-0.101	0.50	No
		y	-0.101	7.50	No
	43	y	-0.101	0.50	No
		y	-0.101	7.50	No
Wi0	28	z	-0.021	0.50	No
		z	-0.021	4.50	No
	29	z	-0.047	0.50	No
		z	-0.047	7.50	No
		z	-0.016	1.50	No
	30	z	-0.015	0.50	No
		z	-0.015	4.50	No
	31	z	-0.029	0.50	No
		z	-0.029	7.50	No
		z	-0.012	1.50	No
	32	z	-0.015	0.50	No
		z	-0.015	4.50	No
	33	z	-0.029	0.50	No
		z	-0.029	7.50	No
		z	-0.012	1.50	No

	40	z	-0.047	0.50	No
		z	-0.047	7.50	No
	42	z	-0.029	0.50	No
		z	-0.029	7.50	No
	43	z	-0.029	0.50	No
		z	-0.029	7.50	No
Wi30	28	x	-0.013	0.50	No
		x	-0.013	4.50	No
	29	x	-0.023	0.50	No
		x	-0.023	7.50	No
		x	-0.013	1.50	No
	30	x	-0.019	0.50	No
		x	-0.019	4.50	No
	31	x	-0.041	0.50	No
		x	-0.041	7.50	No
		x	-0.007	1.50	No
	32	x	-0.019	0.50	No
		x	-0.019	4.50	No
	33	x	-0.041	0.50	No
		x	-0.041	7.50	No
		x	-0.007	1.50	No
	40	x	-0.023	0.50	No
		x	-0.023	7.50	No
	42	x	-0.041	0.50	No
		x	-0.041	7.50	No
	43	x	-0.041	0.50	No
		x	-0.041	7.50	No
WL0	28	z	-0.006	0.50	No
		z	-0.006	4.50	No
	29	z	-0.015	0.50	No
		z	-0.015	7.50	No
		z	-0.004	1.50	No
	30	z	-0.004	0.50	No
		z	-0.004	4.50	No
	31	z	-0.009	0.50	No
		z	-0.009	7.50	No
		z	-0.003	1.50	No
	32	z	-0.004	0.50	No
		z	-0.004	4.50	No
	33	z	-0.009	0.50	No
		z	-0.009	7.50	No
		z	-0.003	1.50	No
	40	z	-0.015	0.50	No
		z	-0.015	7.50	No
	42	z	-0.009	0.50	No
		z	-0.009	7.50	No
	43	z	-0.009	0.50	No
		z	-0.009	7.50	No
WL30	28	x	-0.004	0.50	No
		x	-0.004	4.50	No
	29	x	-0.007	0.50	No
		x	-0.007	7.50	No
		x	-0.004	1.50	No
	30	x	-0.006	0.50	No
		x	-0.006	4.50	No
	31	x	-0.013	0.50	No
		x	-0.013	7.50	No
		x	-0.002	1.50	No
	32	x	-0.006	0.50	No
		x	-0.006	4.50	No

	33	x	-0.013	0.50	No
		x	-0.013	7.50	No
		x	-0.002	1.50	No
	40	x	-0.007	0.50	No
		x	-0.007	7.50	No
	42	x	-0.013	0.50	No
		x	-0.013	7.50	No
	43	x	-0.013	0.50	No
		x	-0.013	7.50	No
LL1	9	y	-0.25	6.29	No
LL2	9	y	-0.25	0.00	No
LLa1	40	y	-0.25	4.00	No
LLa2	29	y	-0.25	3.00	No
LLa3	28	y	-0.25	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 3-1/2x2x3/16	**4**	LC11 at 50.00%	**0.53**	**OK**	Eq. H1-1b
		8	LC11 at 50.00%	0.51	OK	Eq. H1-1b
		13	LC9 at 50.00%	0.51	OK	Eq. H1-1b
	L 2X2X3_16	**2**	LC9 at 0.00%	0.43	OK	Eq. H2-1
		3	LC12 at 0.00%	0.43	OK	Eq. H2-1
		6	LC9 at 0.00%	0.43	OK	Eq. H2-1
		7	LC8 at 100.00%	**0.45**	**OK**	Eq. H2-1
		14	LC10 at 100.00%	0.43	OK	Eq. H2-1
		15	LC12 at 100.00%	0.42	OK	Eq. H2-1
	PIPE 2x0.154	**28**	LC3 at 46.88%	0.25	OK	Eq. H1-1b
		29	LC1 at 46.88%	1.03	**N.G.**	Eq. H1-1b
		30	LC4 at 46.88%	0.26	OK	Eq. H1-1b
		31	LC4 at 46.88%	0.91	OK	Eq. H1-1b
		32	LC2 at 46.88%	0.26	OK	Eq. H1-1b
		33	LC2 at 46.88%	0.91	OK	Eq. H1-1b
		40	LC1 at 50.00%	0.94	OK	Eq. H1-1b
		42	LC2 at 50.00%	0.62	OK	Eq. H1-1b
		43	LC4 at 50.00%	0.62	OK	Eq. H1-1b

PIPE 3x0.216	**1**	LC11 at 100.00%	0.85	OK	Eq. H1-1b
	5	LC11 at 100.00%	0.85	OK	Eq. H1-1b
	9	LC11 at 55.47%	0.51	OK	Eq. H1-1b
	10	LC12 at 44.53%	0.50	OK	Eq. H1-1b
	11	LC12 at 44.53%	0.51	OK	Eq. H1-1b
	12	LC12 at 0.00%	**0.86**	**OK**	Eq. H1-1b
PL 6x3/8	**25**	LC2 at 0.00%	**0.32**	**OK**	Eq. H1-1b
	26	LC4 at 50.00%	0.31	OK	Eq. H1-1b
	27	LC1 at 0.00%	0.28	OK	Eq. H1-1b

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	-0.7253	0.00	4.0896	0
3	-6.0833	0.00	4.0896	0
4	-6.292	0.00	4.0896	0
5	-6.3333	0.00	3.6566	0
6	-6.5833	0.00	3.2236	0
7	-3.7376	0.00	-1.128	0
8	-3.9043	0.00	-1.4166	0
9	-0.892	0.00	3.8009	0
10	-6.6877	0.00	3.4042	0
11	-3.179	0.00	-2.6729	0
12	-2.8457	0.00	-2.6729	0
13	-0.50	0.00	-7.3131	0
14	-0.3957	0.00	-7.4938	0
17	0.7253	0.00	4.0896	0
18	6.0833	0.00	4.0896	0
19	6.292	0.00	4.0896	0
20	6.3333	0.00	3.6566	0
21	6.5833	0.00	3.2236	0
22	3.7376	0.00	-1.128	0
23	3.9043	0.00	-1.4166	0
24	0.892	0.00	3.8009	0

25	6.6877	0.00	3.4042	0
26	3.179	0.00	-2.6729	0
27	2.8457	0.00	-2.6729	0
28	0.50	0.00	-7.3131	0
29	0.3957	0.00	-7.4938	0
32	0.00	0.00	-7.3131	0
69	0.9427	0.00	0.5443	0
70	0.00	0.00	-1.0885	0
71	-0.9427	0.00	0.5443	0
76	-5.709	-3.00	4.2896	0
77	-2.355	-4.00	4.2896	0
78	-5.709	3.00	4.2896	0
79	-2.355	4.00	4.2896	0
84	-0.8604	-3.00	-7.0889	0
85	-2.5374	-4.00	-4.1843	0
86	-0.8604	3.00	-7.0889	0
87	-2.5374	4.00	-4.1843	0
92	6.5694	-3.00	2.7994	0
93	4.8924	-4.00	-0.1053	0
94	6.5694	3.00	2.7994	0
95	4.8924	4.00	-0.1053	0
98	5.712	-4.00	4.2896	0
99	5.712	4.00	4.2896	0
102	-6.5709	-4.00	2.802	0
103	-6.5709	4.00	2.802	0
106	0.8589	-4.00	-7.0915	0
107	0.8589	4.00	-7.0915	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
69	1	1	1	1	1	1
70	1	1	1	1	1	1
71	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	5	71		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00
2	5	9		L 2X2X3_16	A36	0.00	0.00	0.00
3	5	7		L 2X2X3_16	A36	0.00	0.00	0.00
4	8	2		C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
5	20	69		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00
6	20	24		L 2X2X3_16	A36	0.00	0.00	0.00
7	20	22		L 2X2X3_16	A36	0.00	0.00	0.00
8	23	17		C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	70	32		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00

13	11	26	C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
14	27	32	L 2X2X3_16	A36	0.00	0.00	0.00
15	12	32	L 2X2X3_16	A36	0.00	0.00	0.00
25	6	3	PL 6x3/8	A36	0.00	0.00	0.00
26	18	21	PL 6x3/8	A36	0.00	0.00	0.00
27	28	13	PL 6x3/8	A36	0.00	0.00	0.00
28	78	76	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	79	77	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
30	94	92	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	95	93	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	86	84	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	87	85	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
40	99	98	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	107	106	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	103	102	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	180.00	0	0.00	0.00	0.00
13	180.00	0	0.00	0.00	0.00
14	270.00	0	0.00	0.00	0.00
28	0.00	2	0.7071	0.00	-0.7071
29	0.00	2	0.7071	0.00	-0.7071
30	0.00	2	0.7071	0.00	-0.7071
31	0.00	2	0.7071	0.00	-0.7071
32	0.00	2	0.7071	0.00	-0.7071
33	0.00	2	0.7071	0.00	-0.7071
40	0.00	2	0.7071	0.00	-0.7071

Rigid end offsets

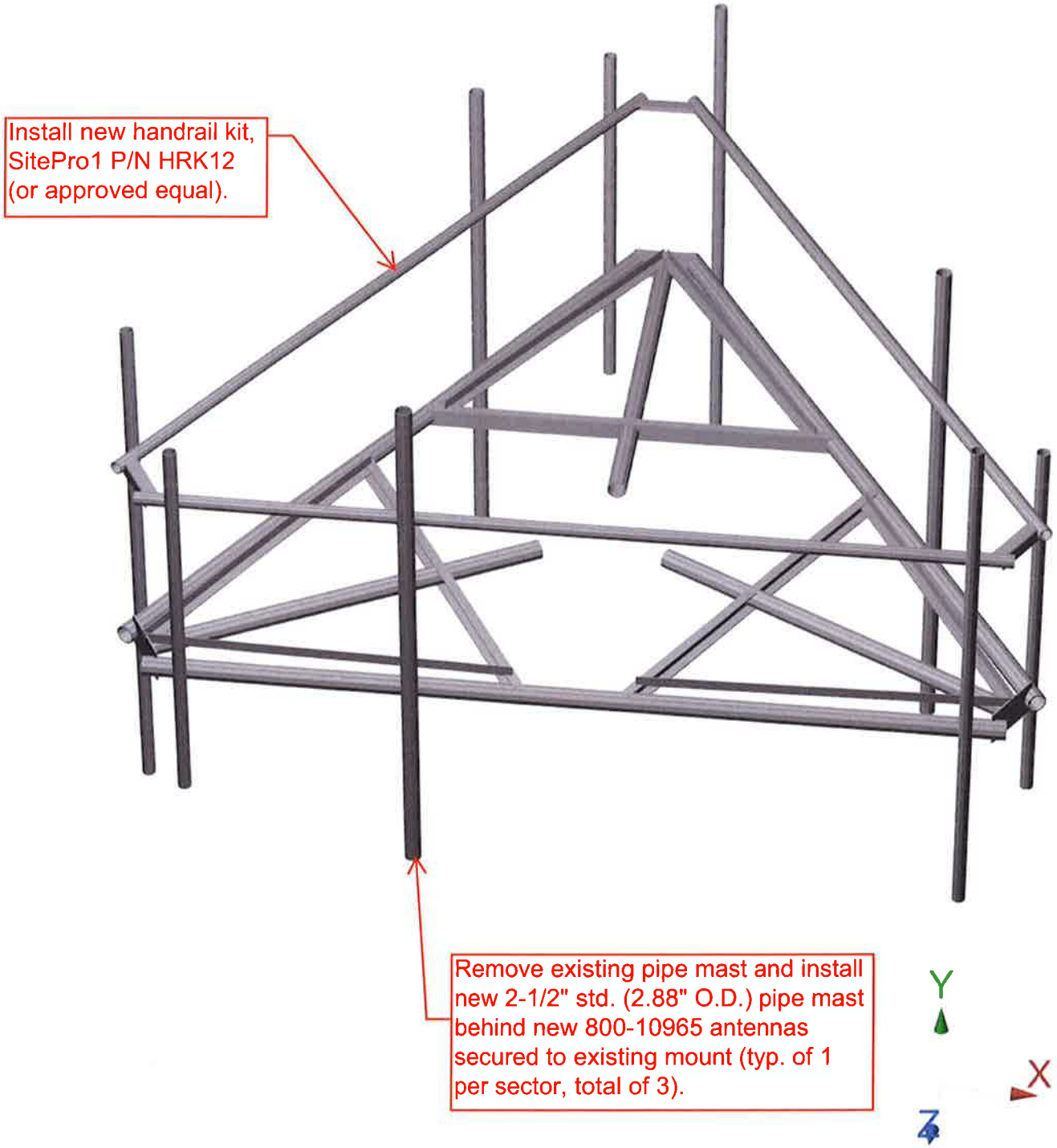
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
2	0.00	2.00	0.00	0.00	2.00	0.00
3	0.00	2.00	0.00	0.00	2.00	0.00
6	0.00	2.00	0.00	0.00	2.00	0.00
7	0.00	2.00	0.00	0.00	2.00	0.00
14	0.00	2.00	0.00	0.00	2.00	0.00
15	0.00	2.00	0.00	0.00	2.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

Current Date: 4/22/2019 2:32 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT5432\LTE 2C-3C-4C\CT5432 (LTE 2C-3C-4C)(MODS).e



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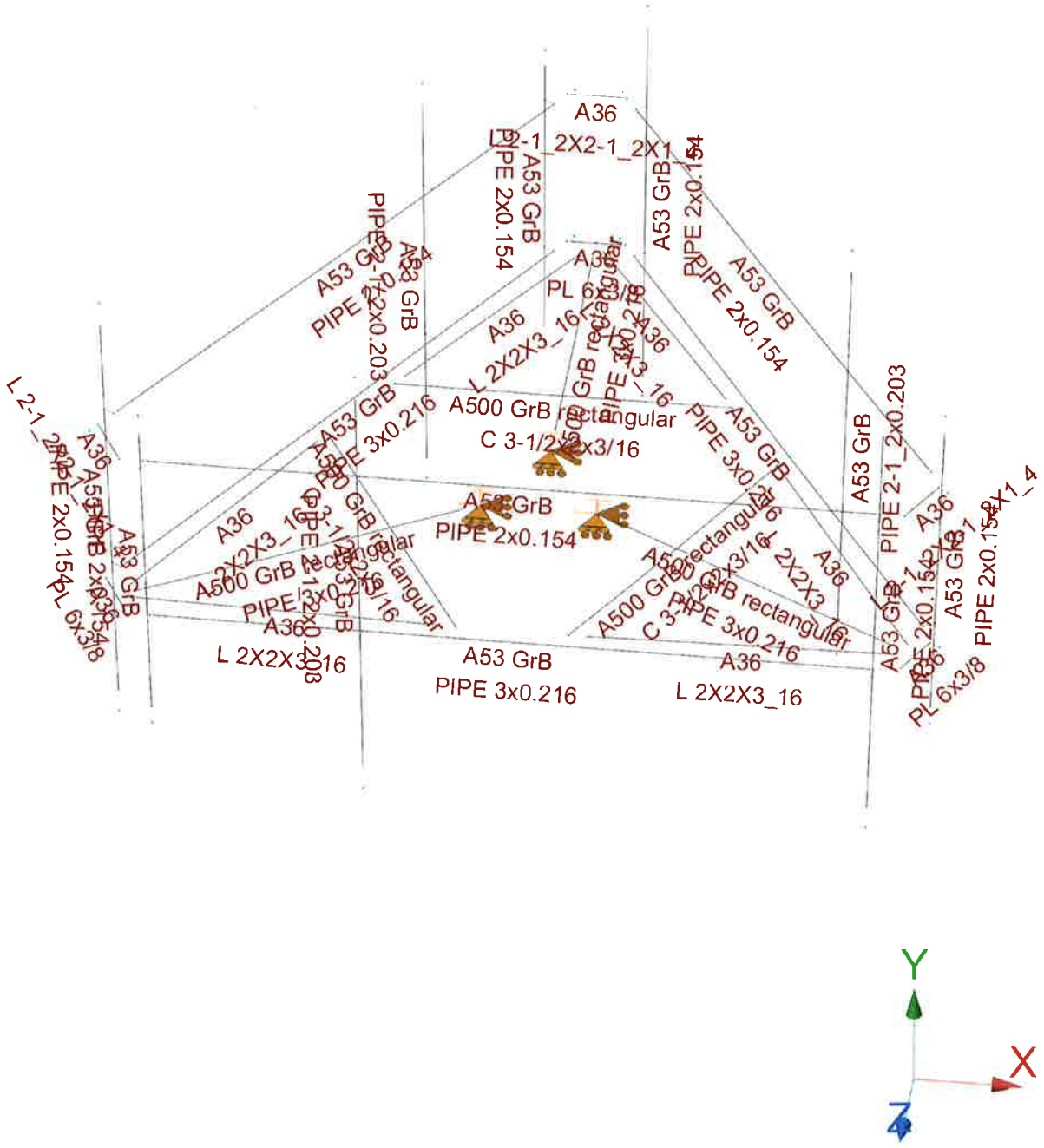

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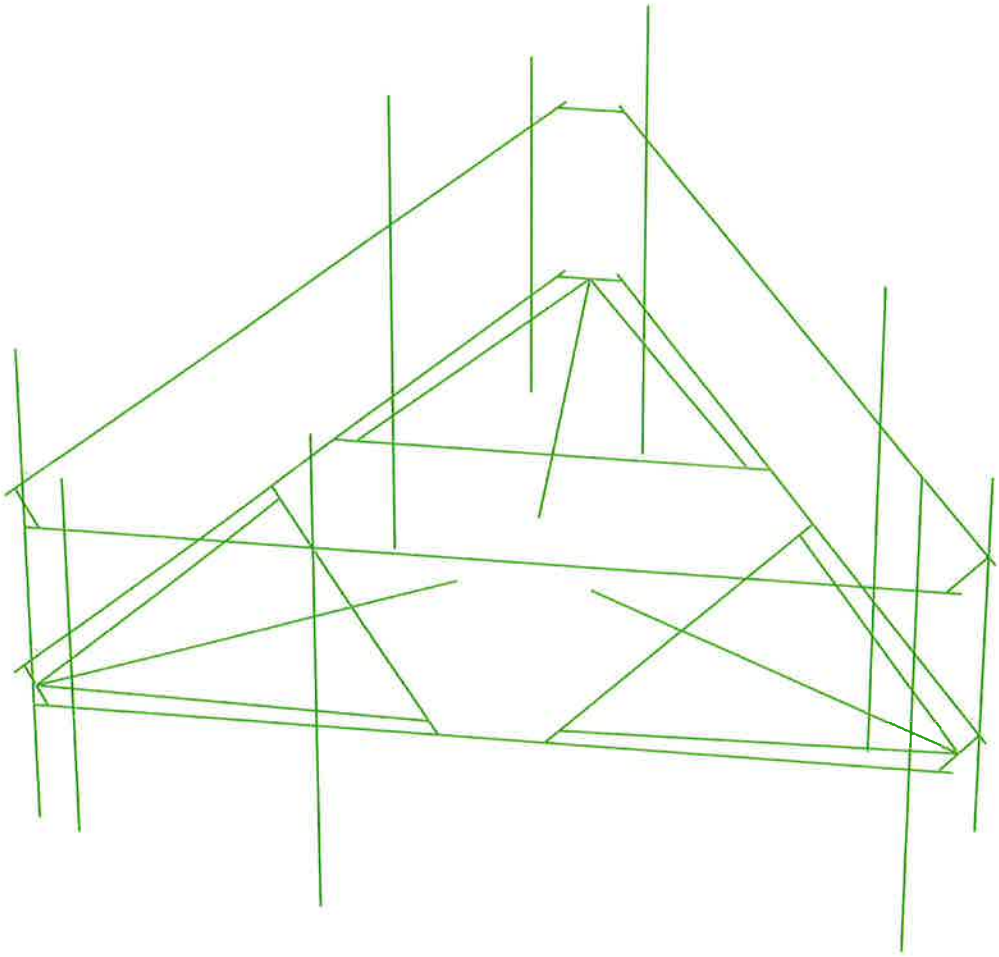
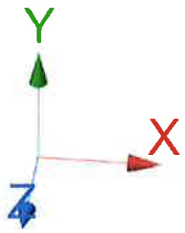
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





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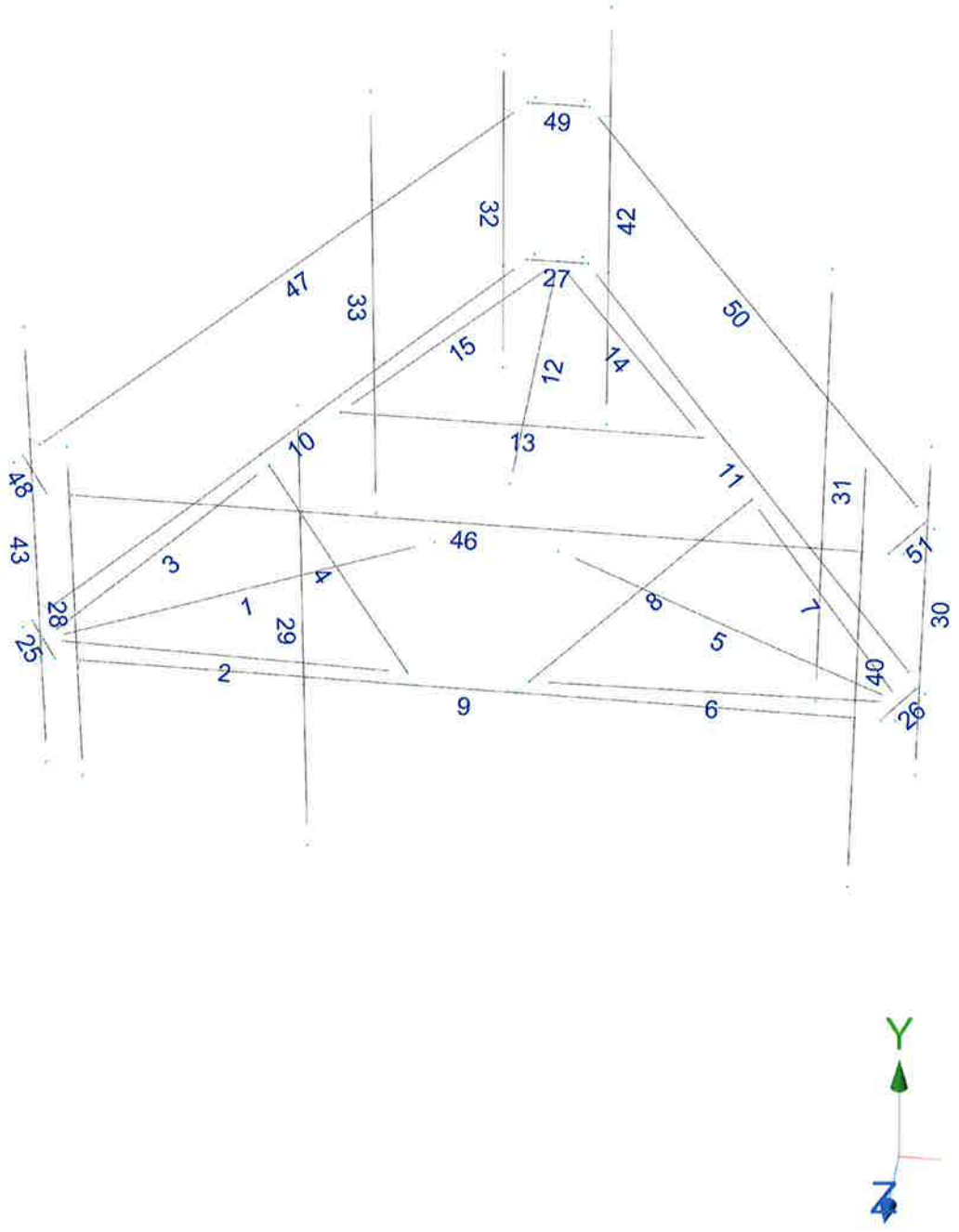

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Load data

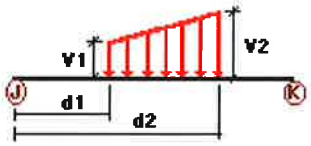
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

Distributed force on members

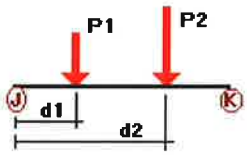


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	2	y	-0.01	0.00	0.00	No	0.00	No
	3	y	-0.01	0.00	0.00	No	0.00	No
	4	y	-0.01	0.00	0.00	No	0.00	No
	6	y	-0.01	0.00	0.00	No	0.00	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
W0	1	z	-0.012	0.00	0.00	No	0.00	No
	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.011	0.00	0.00	No	0.00	No
	4	z	-0.02	0.00	0.00	No	0.00	No
	5	z	-0.012	0.00	0.00	No	0.00	No
	6	z	-0.011	0.00	0.00	No	0.00	No

	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.02	0.00	0.00	No	0.00	No
	9	z	-0.012	0.00	0.00	No	0.00	No
	10	z	-0.012	0.00	0.00	No	0.00	No
	11	z	-0.012	0.00	0.00	No	0.00	No
	12	z	-0.012	0.00	0.00	No	0.00	No
	13	z	-0.02	0.00	0.00	No	0.00	No
	14	z	-0.011	0.00	0.00	No	0.00	No
	15	z	-0.011	0.00	0.00	No	0.00	No
	25	z	-0.034	0.00	0.00	No	0.00	No
	26	z	-0.034	0.00	0.00	No	0.00	No
	27	z	-0.034	0.00	0.00	No	0.00	No
	46	z	-0.012	0.00	0.00	No	0.00	No
	47	z	-0.012	0.00	0.00	No	0.00	No
	48	z	-0.034	0.00	0.00	No	0.00	No
	49	z	-0.034	0.00	0.00	No	0.00	No
	50	z	-0.012	0.00	0.00	No	0.00	No
	51	z	-0.034	0.00	0.00	No	0.00	No
W30	1	x	-0.012	0.00	0.00	No	0.00	No
	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.011	0.00	0.00	No	0.00	No
	4	x	-0.02	0.00	0.00	No	0.00	No
	5	x	-0.012	0.00	0.00	No	0.00	No
	6	x	-0.011	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.02	0.00	0.00	No	0.00	No
	9	x	-0.012	0.00	0.00	No	0.00	No
	10	x	-0.012	0.00	0.00	No	0.00	No
	11	x	-0.012	0.00	0.00	No	0.00	No
	12	x	-0.012	0.00	0.00	No	0.00	No
	13	x	-0.02	0.00	0.00	No	0.00	No
	14	x	-0.011	0.00	0.00	No	0.00	No
	15	x	-0.011	0.00	0.00	No	0.00	No
	25	x	-0.034	0.00	0.00	No	0.00	No
	26	x	-0.034	0.00	0.00	No	0.00	No
	27	x	-0.034	0.00	0.00	No	0.00	No
	28	x	-0.008	0.00	0.00	No	0.00	No
	29	x	-0.008	0.00	0.00	No	0.00	No
	30	x	-0.008	0.00	0.00	No	0.00	No
	31	x	-0.008	0.00	0.00	No	0.00	No
	32	x	-0.008	0.00	0.00	No	0.00	No
	33	x	-0.008	0.00	0.00	No	0.00	No
	40	x	-0.008	0.00	0.00	No	0.00	No
	42	x	-0.008	0.00	0.00	No	0.00	No
	43	x	-0.008	0.00	0.00	No	0.00	No
	46	x	-0.012	0.00	0.00	No	0.00	No
	47	x	-0.012	0.00	0.00	No	0.00	No
	48	x	-0.034	0.00	0.00	No	0.00	No
	49	x	-0.034	0.00	0.00	No	0.00	No
	50	x	-0.012	0.00	0.00	No	0.00	No
	51	x	-0.034	0.00	0.00	No	0.00	No
Di	1	y	-0.006	0.00	0.00	No	0.00	No
	2	y	-0.005	0.00	0.00	No	0.00	No
	3	y	-0.005	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.006	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.007	0.00	0.00	No	0.00	No
	9	y	-0.006	0.00	0.00	No	0.00	No

10	y	-0.006	0.00	0.00	No	0.00	No
11	y	-0.006	0.00	0.00	No	0.00	No
12	y	-0.006	0.00	0.00	No	0.00	No
13	y	-0.007	0.00	0.00	No	0.00	No
14	y	-0.005	0.00	0.00	No	0.00	No
15	y	-0.005	0.00	0.00	No	0.00	No
25	y	-0.01	0.00	0.00	No	0.00	No
26	y	-0.01	0.00	0.00	No	0.00	No
27	y	-0.01	0.00	0.00	No	0.00	No
28	y	-0.005	0.00	0.00	No	0.00	No
29	y	-0.005	0.00	0.00	No	0.00	No
30	y	-0.005	0.00	0.00	No	0.00	No
31	y	-0.005	0.00	0.00	No	0.00	No
32	y	-0.005	0.00	0.00	No	0.00	No
33	y	-0.005	0.00	0.00	No	0.00	No
40	y	-0.005	0.00	0.00	No	0.00	No
42	y	-0.005	0.00	0.00	No	0.00	No
43	y	-0.005	0.00	0.00	No	0.00	No
46	y	-0.006	0.00	0.00	No	0.00	No
47	y	-0.006	0.00	0.00	No	0.00	No
48	y	-0.01	0.00	0.00	No	0.00	No
49	y	-0.01	0.00	0.00	No	0.00	No
50	y	-0.006	0.00	0.00	No	0.00	No
51	y	-0.01	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	28	y	-0.018	0.50	No
		y	-0.018	4.50	No
	29	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	30	y	-0.018	0.50	No
		y	-0.018	4.50	No
	31	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	32	y	-0.018	0.50	No
		y	-0.018	4.50	No
	33	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.145	1.50	No
	40	y	-0.055	0.50	No
		y	-0.055	7.50	No
	42	y	-0.055	0.50	No
		y	-0.055	7.50	No
	43	y	-0.055	0.50	No
		y	-0.055	7.50	No

W0	28	z	-0.095	0.50	No
		z	-0.095	4.50	No
	29	z	-0.237	0.50	No
		z	-0.237	7.50	No
		z	-0.056	1.50	No
	30	z	-0.062	0.50	No
		z	-0.062	4.50	No
	31	z	-0.134	0.50	No
		z	-0.134	7.50	No
		z	-0.051	1.50	No
	32	z	-0.062	0.50	No
		z	-0.062	4.50	No
	33	z	-0.134	0.50	No
		z	-0.134	7.50	No
		z	-0.051	1.50	No
	40	z	-0.237	0.50	No
		z	-0.237	7.50	No
	42	z	-0.134	0.50	No
		z	-0.134	7.50	No
	43	z	-0.134	0.50	No
		z	-0.134	7.50	No
W30	28	x	-0.051	0.50	No
		x	-0.051	4.50	No
	29	x	-0.10	0.50	No
		x	-0.10	7.50	No
		x	-0.056	1.50	No
	30	x	-0.084	0.50	No
		x	-0.084	4.50	No
	31	x	-0.203	0.50	No
		x	-0.203	7.50	No
		x	-0.032	1.50	No
	32	x	-0.084	0.50	No
		x	-0.084	4.50	No
	33	x	-0.203	0.50	No
		x	-0.203	7.50	No
		x	-0.032	1.50	No
	40	x	-0.10	0.50	No
		x	-0.10	7.50	No
	42	x	-0.203	0.50	No
		x	-0.203	7.50	No
	43	x	-0.203	0.50	No
		x	-0.203	7.50	No
Di	28	y	-0.042	0.50	No
		y	-0.042	4.50	No
	29	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	30	y	-0.042	0.50	No
		y	-0.042	4.50	No
	31	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	32	y	-0.042	0.50	No
		y	-0.042	4.50	No
	33	y	-0.101	0.50	No
		y	-0.101	7.50	No
		y	-0.062	1.50	No
	40	y	-0.101	0.50	No
		y	-0.101	7.50	No
	42	y	-0.101	0.50	No

		y	-0.101	7.50	No
	43	y	-0.101	0.50	No
		y	-0.101	7.50	No
Wi0	28	z	-0.021	0.50	No
		z	-0.021	4.50	No
	29	z	-0.047	0.50	No
		z	-0.047	7.50	No
		z	-0.016	1.50	No
	30	z	-0.015	0.50	No
		z	-0.015	4.50	No
	31	z	-0.029	0.50	No
		z	-0.029	7.50	No
		z	-0.012	1.50	No
	32	z	-0.015	0.50	No
		z	-0.015	4.50	No
	33	z	-0.029	0.50	No
		z	-0.029	7.50	No
		z	-0.012	1.50	No
	40	z	-0.047	0.50	No
		z	-0.047	7.50	No
	42	z	-0.029	0.50	No
		z	-0.029	7.50	No
	43	z	-0.029	0.50	No
		z	-0.029	7.50	No
Wi30	28	x	-0.013	0.50	No
		x	-0.013	4.50	No
	29	x	-0.023	0.50	No
		x	-0.023	7.50	No
		x	-0.013	1.50	No
	30	x	-0.019	0.50	No
		x	-0.019	4.50	No
	31	x	-0.041	0.50	No
		x	-0.041	7.50	No
		x	-0.007	1.50	No
	32	x	-0.019	0.50	No
		x	-0.019	4.50	No
	33	x	-0.041	0.50	No
		x	-0.041	7.50	No
		x	-0.007	1.50	No
	40	x	-0.023	0.50	No
		x	-0.023	7.50	No
	42	x	-0.041	0.50	No
		x	-0.041	7.50	No
	43	x	-0.041	0.50	No
		x	-0.041	7.50	No
WL0	28	z	-0.006	0.50	No
		z	-0.006	4.50	No
	29	z	-0.015	0.50	No
		z	-0.015	7.50	No
		z	-0.004	1.50	No
	30	z	-0.004	0.50	No
		z	-0.004	4.50	No
	31	z	-0.009	0.50	No
		z	-0.009	7.50	No
		z	-0.003	1.50	No
	32	z	-0.004	0.50	No
		z	-0.004	4.50	No
	33	z	-0.009	0.50	No
		z	-0.009	7.50	No
		z	-0.003	1.50	No

	40	z	-0.015	0.50	No
		z	-0.015	7.50	No
	42	z	-0.009	0.50	No
		z	-0.009	7.50	No
	43	z	-0.009	0.50	No
		z	-0.009	7.50	No
WL30	28	x	-0.004	0.50	No
		x	-0.004	4.50	No
	29	x	-0.007	0.50	No
		x	-0.007	7.50	No
		x	-0.004	1.50	No
	30	x	-0.006	0.50	No
		x	-0.006	4.50	No
	31	x	-0.013	0.50	No
		x	-0.013	7.50	No
		x	-0.002	1.50	No
	32	x	-0.006	0.50	No
		x	-0.006	4.50	No
	33	x	-0.013	0.50	No
		x	-0.013	7.50	No
		x	-0.002	1.50	No
	40	x	-0.007	0.50	No
		x	-0.007	7.50	No
	42	x	-0.013	0.50	No
		x	-0.013	7.50	No
	43	x	-0.013	0.50	No
		x	-0.013	7.50	No
LL1	9	y	-0.25	6.29	No
	46	y	-0.25	6.29	No
LL2	9	y	-0.25	0.00	No
	46	y	-0.25	0.00	No
LLa1	40	y	-0.25	4.00	No
LLa2	29	y	-0.25	4.00	No
LLa3	28	y	-0.25	3.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

Bentley

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 3-1/2x2x3/16	**4**	LC11 at 50.00%	**0.60**	**OK**	Eq. H1-1b
		8	LC12 at 48.44%	0.58	OK	Eq. H1-1b
		13	LC9 at 48.44%	0.57	OK	Eq. H1-1b
	L 2-1_2X2-1_2X1_4	**48**	LC3 at 0.00%	0.36	OK	Eq. H2-1
		49	LC2 at 0.00%	**0.46**	**OK**	Eq. H2-1
		51	LC1 at 0.00%	0.41	OK	Eq. H2-1
	L 2X2X3_16	**2**	LC7 at 100.00%	0.47	OK	Eq. H2-1
		3	LC2 at 100.00%	0.43	OK	Eq. H2-1
		6	LC3 at 100.00%	0.41	OK	Eq. H2-1
		7	LC8 at 100.00%	0.48	OK	Eq. H2-1
		14	LC2 at 100.00%	0.40	OK	Eq. H2-1
		15	LC4 at 100.00%	**0.48**	**OK**	Eq. H2-1
	PIPE 2-1_2x0.203	**29**	LC1 at 60.42%	**0.69**	**OK**	Eq. H1-1b
		31	LC2 at 60.42%	0.67	OK	Eq. H1-1b
		33	LC4 at 60.42%	0.60	OK	Eq. H1-1b
	PIPE 2x0.154	**28**	LC4 at 64.58%	0.45	OK	Eq. H1-1b
		30	LC2 at 64.58%	0.41	OK	Eq. H1-1b

	32	LC3 at 64.58%	0.42	OK	Eq. H1-1b
	40	LC2 at 60.42%	0.68	OK	Eq. H1-1b
	42	LC4 at 60.42%	**0.69**	**OK**	Eq. H1-1b
	43	LC1 at 60.42%	0.65	OK	Eq. H1-1b
	46	LC11 at 31.25%	0.50	OK	Eq. H1-1b
	47	LC10 at 68.75%	0.50	OK	Eq. H1-1b
	50	LC9 at 68.75%	0.51	OK	Eq. H1-1b
PIPE 3x0.216	**1**	LC16 at 100.00%	**0.97**	**OK**	Eq. H1-1b
	5	LC11 at 100.00%	0.78	OK	Eq. H1-1b
	9	LC16 at 43.75%	0.42	OK	Eq. H1-1b
	10	LC16 at 43.75%	0.43	OK	Eq. H1-1b
	11	LC11 at 56.25%	0.38	OK	Eq. H1-1b
	12	LC9 at 0.00%	0.80	OK	Eq. H1-1b
PL 6x3/8	**25**	LC2 at 46.88%	0.32	OK	Eq. H1-1b
	26	LC4 at 50.00%	**0.35**	**OK**	Eq. H1-1b
	27	LC1 at 0.00%	0.34	OK	Eq. H1-1b

Bentley

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	-0.7253	0.00	4.0896	0
3	-6.0833	0.00	4.0896	0
4	-6.292	0.00	4.0896	0
5	-6.3333	0.00	3.6566	0
6	-6.5833	0.00	3.2236	0
7	-3.7376	0.00	-1.128	0
8	-3.9043	0.00	-1.4166	0
9	-0.892	0.00	3.8009	0
10	-6.6877	0.00	3.4042	0
11	-3.179	0.00	-2.6729	0
12	-2.8457	0.00	-2.6729	0
13	-0.50	0.00	-7.3131	0
14	-0.3957	0.00	-7.4938	0
17	0.7253	0.00	4.0896	0
18	6.0833	0.00	4.0896	0
19	6.292	0.00	4.0896	0
20	6.3333	0.00	3.6566	0
21	6.5833	0.00	3.2236	0
22	3.7376	0.00	-1.128	0
23	3.9043	0.00	-1.4166	0
24	0.892	0.00	3.8009	0

25	6.6877	0.00	3.4042	0
26	3.179	0.00	-2.6729	0
27	2.8457	0.00	-2.6729	0
28	0.50	0.00	-7.3131	0
29	0.3957	0.00	-7.4938	0
32	0.00	0.00	-7.3131	0
69	0.9427	0.00	0.5443	0
70	0.00	0.00	-1.0885	0
71	-0.9427	0.00	0.5443	0
76	-5.709	-2.00	4.2896	0
77	-2.355	-3.00	4.2896	0
78	-5.709	4.00	4.2896	0
79	-2.355	5.00	4.2896	0
84	-0.8604	-2.00	-7.0889	0
85	-2.5374	-3.00	-4.1843	0
86	-0.8604	4.00	-7.0889	0
87	-2.5374	5.00	-4.1843	0
92	6.5694	-2.00	2.7994	0
93	4.8924	-3.00	-0.1053	0
94	6.5694	4.00	2.7994	0
95	4.8924	5.00	-0.1053	0
98	5.712	-3.00	4.2896	0
99	5.712	5.00	4.2896	0
102	-6.5709	-3.00	2.802	0
103	-6.5709	5.00	2.802	0
106	0.8589	-3.00	-7.0915	0
107	0.8589	5.00	-7.0915	0
108	-6.292	3.00	4.0896	0
109	6.292	3.00	4.0896	0
110	-6.6877	3.00	3.4042	0
111	-0.3957	3.00	-7.4938	0
112	-6.5833	3.00	3.2236	0
113	-6.0833	3.00	4.0896	0
114	0.50	3.00	-7.3131	0
115	-0.50	3.00	-7.3131	0
116	0.3957	3.00	-7.4938	0
117	6.6877	3.00	3.4042	0
118	6.0833	3.00	4.0896	0
119	6.5833	3.00	3.2236	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
69	1	1	1	1	1	1
70	1	1	1	1	1	1
71	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	5	71		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00
2	5	9		L 2X2X3_16	A36	0.00	0.00	0.00
3	5	7		L 2X2X3_16	A36	0.00	0.00	0.00
4	8	2		C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
5	20	69		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00
6	20	24		L 2X2X3_16	A36	0.00	0.00	0.00
7	20	22		L 2X2X3_16	A36	0.00	0.00	0.00
8	23	17		C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	70	32		PIPE 3x0.216	A500 GrB rectangular	0.00	0.00	0.00
13	11	26		C 3-1/2x2x3/16	A500 GrB rectangular	0.00	0.00	0.00
14	27	32		L 2X2X3_16	A36	0.00	0.00	0.00
15	12	32		L 2X2X3_16	A36	0.00	0.00	0.00
25	6	3		PL 6x3/8	A36	0.00	0.00	0.00
26	18	21		PL 6x3/8	A36	0.00	0.00	0.00
27	28	13		PL 6x3/8	A36	0.00	0.00	0.00
28	78	76		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	79	77		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
30	94	92		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	95	93		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
32	86	84		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	87	85		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
40	99	98		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	107	106		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	103	102		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
46	108	109		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	110	111		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	112	113		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00
49	114	115		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00
50	116	117		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	118	119		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	180.00	0	0.00	0.00	0.00
13	180.00	0	0.00	0.00	0.00
14	270.00	0	0.00	0.00	0.00
28	0.00	2	0.7071	0.00	-0.7071
29	0.00	2	0.7071	0.00	-0.7071
30	0.00	2	0.7071	0.00	-0.7071
31	0.00	2	0.7071	0.00	-0.7071
32	0.00	2	0.7071	0.00	-0.7071
33	0.00	2	0.7071	0.00	-0.7071
40	0.00	2	0.7071	0.00	-0.7071
48	180.00	0	0.00	0.00	0.00
49	180.00	0	0.00	0.00	0.00
51	180.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
2	0.00	2.00	0.00	0.00	2.00	0.00
3	0.00	2.00	0.00	0.00	2.00	0.00
6	0.00	2.00	0.00	0.00	2.00	0.00
7	0.00	2.00	0.00	0.00	2.00	0.00
14	0.00	2.00	0.00	0.00	2.00	0.00
15	0.00	2.00	0.00	0.00	2.00	0.00

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5432
SITE NAME: NEWTOWN EAST CENTRAL
SBA SITE ID: CT13057

151 BERKSHIRE ROAD
SANDY HOOK, CT 06482
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	05/14/19	ISSUED FOR CONSTRUCTION	HC	AT	DJC
1	04/24/19	ISSUED FOR REVIEW	RP	AT	DJC
A	04/12/19	ISSUED FOR REVIEW	JM	AT	DJC

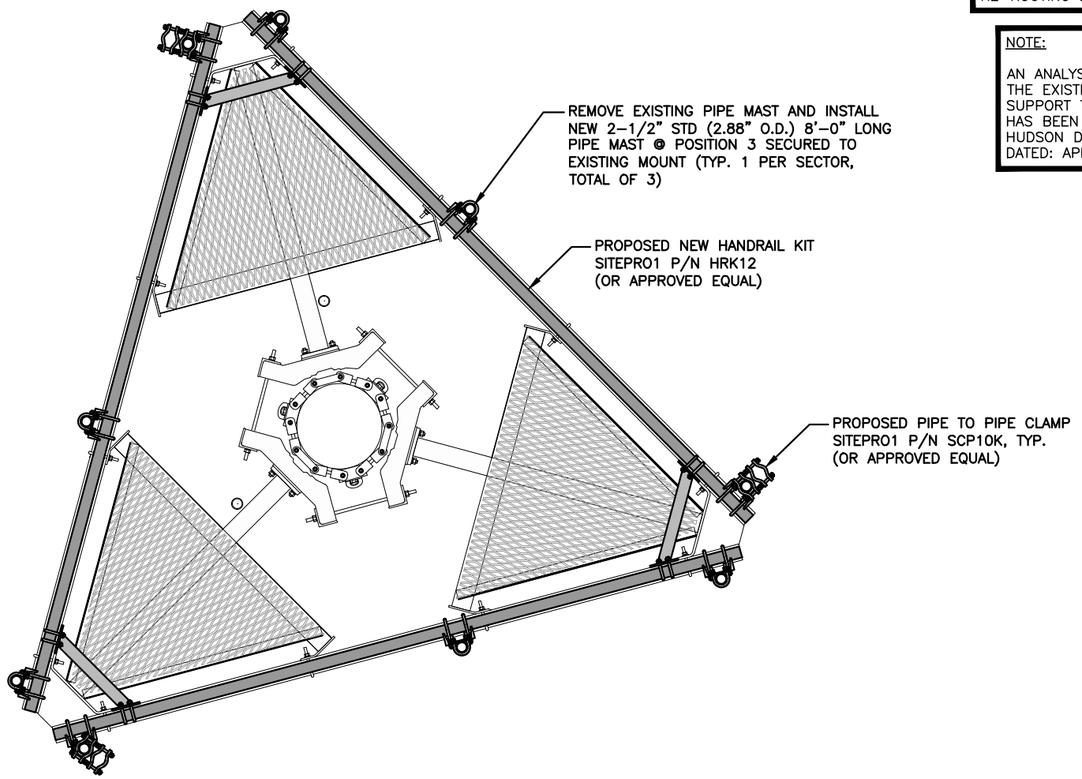
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29351
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	SN-1	2



NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION

NOTE:

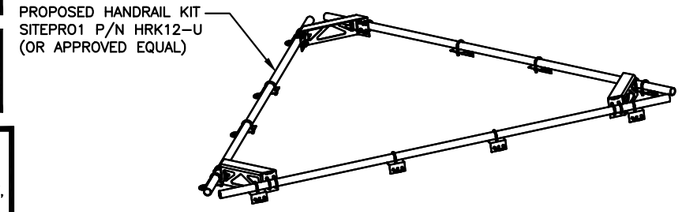
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

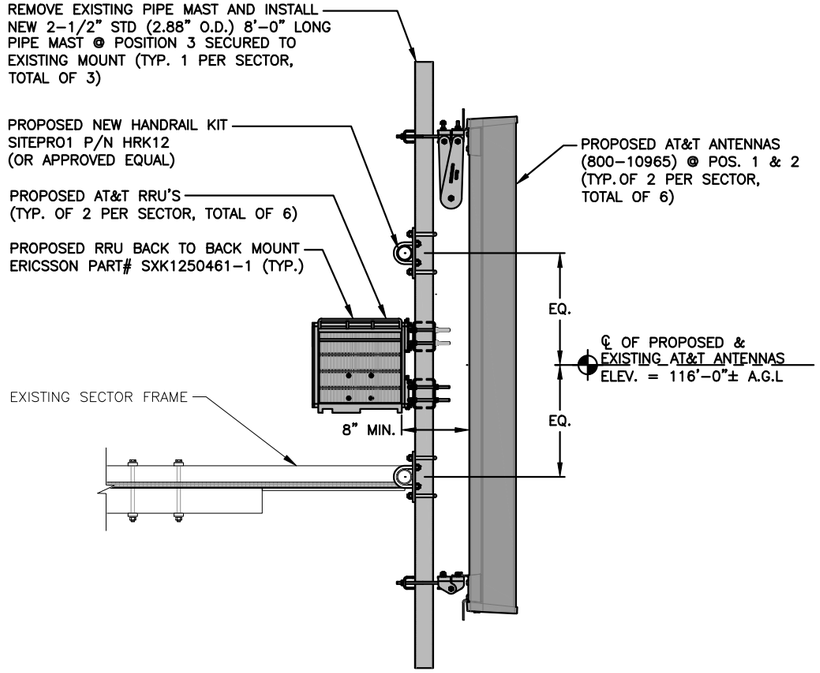
ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE–ROUTING BRACKETS AS REQUIRED.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 22, 2019



PROPOSED HANDRAIL KIT (3 / S–1)
SCALE: N.T.S



PROPOSED MOUNT MODIFICATIONS PLAN (1 / S–1)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 8" 1'–4" 2'–8" 4'–0"

PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (2 / S–1)
22x34 SCALE: 1"=1'–0"
11x17 SCALE: 1/2"=1'–0"

0 0'–6" 1'–0" 2'–0" 3'–0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23551 · LICENSED PROFESSIONAL ENGINEER

AT&T
MOUNT MODIFICATIOIN DESIGN
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	S–1	2

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE: • NEW AT&T ANTENNAS (800-10965) @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS (800-10965) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T AT&T RRUS B2/B66A 8843 (AWS/PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SURGE ARRESTOR DC6-48-60-18-8C (TOTAL OF 1) WITH (2) DC POWER, (1) FIBER RUN WITHIN (P) 3"ø FLEX CONDUIT. • INSTALL (1) HANDRAIL KIT. ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • SWAP BBU FOR 6630. • ADD 2ND 6630 FOR 5G. ITEMS TO REMAIN: • (3) ANTENNAS, (6) TWIN TMA'S, (1) SURGE ARRESTOR, (6) COAX CABLES, (2) DC POWER & (1) FIBER.
SITE ADDRESS:	151 BERKSHIRE ROAD SANDY HOOK, CT 06482
LATITUDE:	41.397491° N 41° 23' 50.97" N
LONGITUDE:	73.235798° W 73° 14' 8.88" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
TOWER HEIGHT:	149'-0"±
RAD CENTER:	116'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLANS	2
A-2	ANTENNA LAYOUTS & ELEVATION	2
A-3	DETAILS	2
SN-1	STRUCTURAL NOTES	2
S-1	MOUNT MODIFICATION DESIGN	2
RF-1	RF PLUMBING DIAGRAM	2
G-1	GROUNDING DETAILS	2

SITE NUMBER: CT5432

SITE NAME: NEWTOWN EAST CENTRAL

FA CODE: 10071168

PACE ID: MRCTB037970, MRCTB037935, MRCTB038091, MRCTB038093,

PROJECT: LTE 2C/3C/4C/4TX4RX 2019 LTE NEXT CARRIER

VICINITY MAP

DIRECTIONS TO SITE:

DEPART W CENTER ST. HEAD EAST ON MA-106 E. TURN RIGHT ONTO MA-106 E. USE RIGHT LANE TO MERGE ONTO MA-24 S VIA THE RAMP TO FALL RIVER. MERGE ONTO MA-24 S. TAKE EXIT 14B TO MERGE ONTO I-495 N TOWARD WORCESTER. TAKE EXIT 22 FOR I-90 TOWARDMASSPIKE/ BOSTON/ALBANY NY. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-90 W/SPRINGFIELD/ALBANY AND MERGE ONTO I-90 W. USE THE RIGHT TWO LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. CONTINUE STRAIGHT TO STAY ON I-84 (SIGNS FOR I-91 N/HARTFORD). TAKE EXIT 11 TOWARD CT-34/DERBY/NEW HAVEN. DRIVE TO CT-34 E. TURN RIGHT ONTO WASSERMAN WAY. TURN RIGHT ONTO CT-34 E. ADDRESS WILL BE ON THE LEFT.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

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UNDERGROUND SERVICE ALERT

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEPARTMENT OF CONSUMER PROTECTION · No. 28355 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	T-1	2

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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SITE NUMBER: CT5432
SITE NAME: NEWTOWN EAST CENTRAL
SBA SITE ID: CT13057

151 BERKSHIRE ROAD
SANDY HOOK, CT 06482
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	05/14/19	ISSUED FOR CONSTRUCTION	HC	AT	DJC
1	04/24/19	ISSUED FOR REVIEW	RP	AT	DJC
A	04/12/19	ISSUED FOR REVIEW	JM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 29551
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	GN-1	2

NOTE:

ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

NOTE:

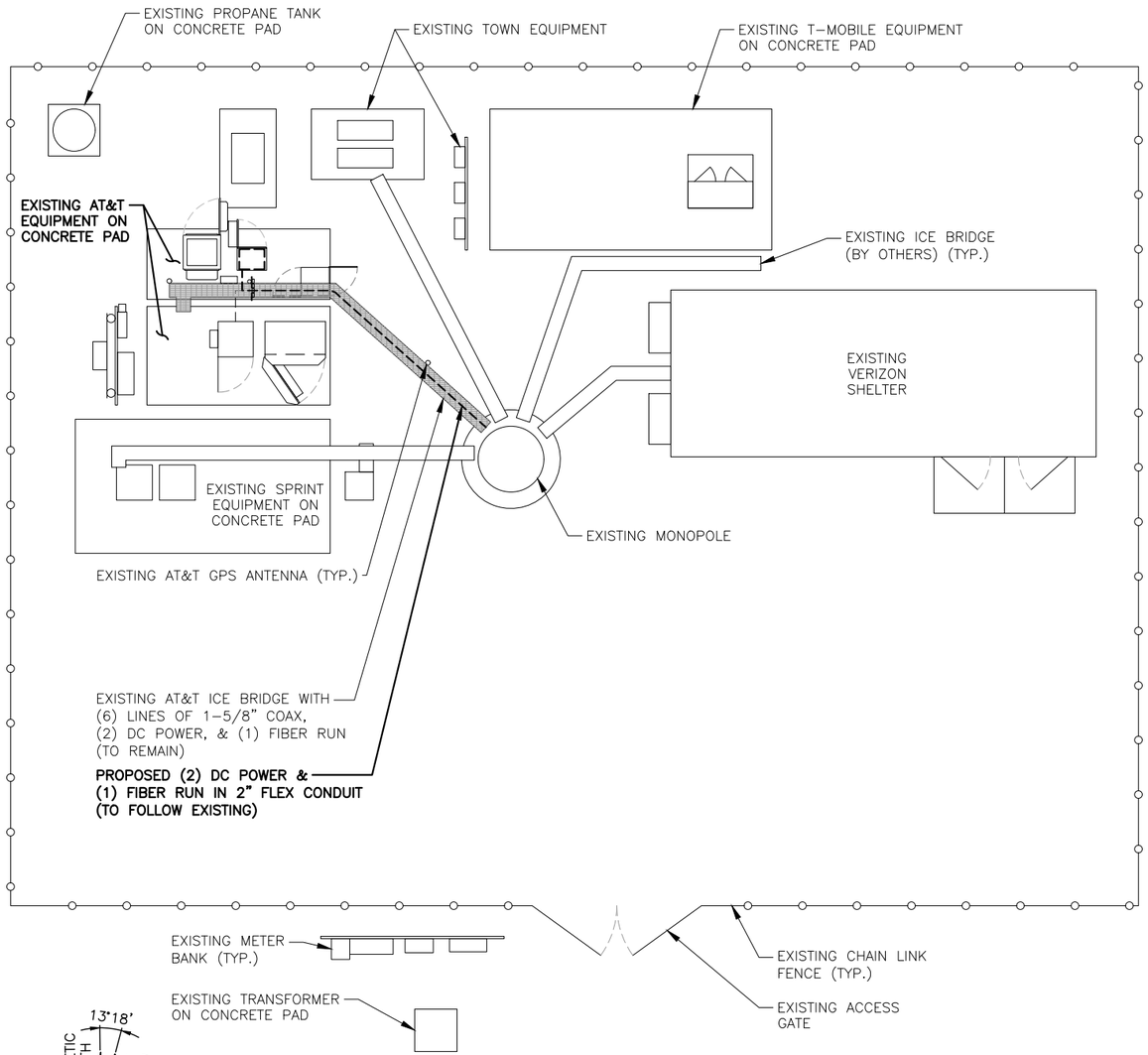
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION

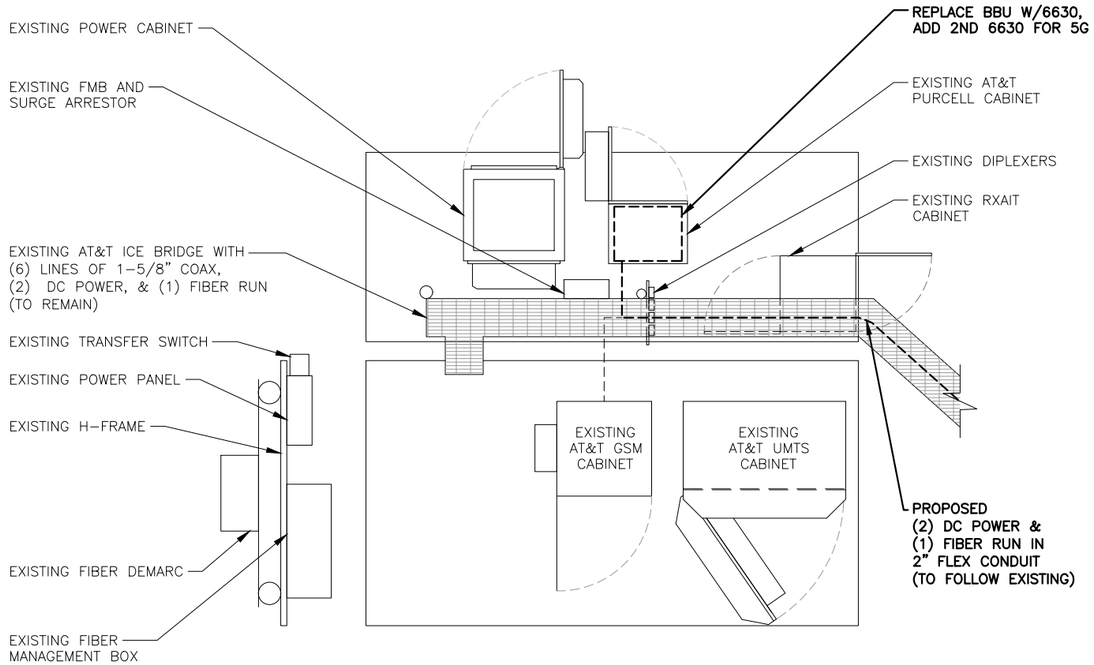
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 22, 2019



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

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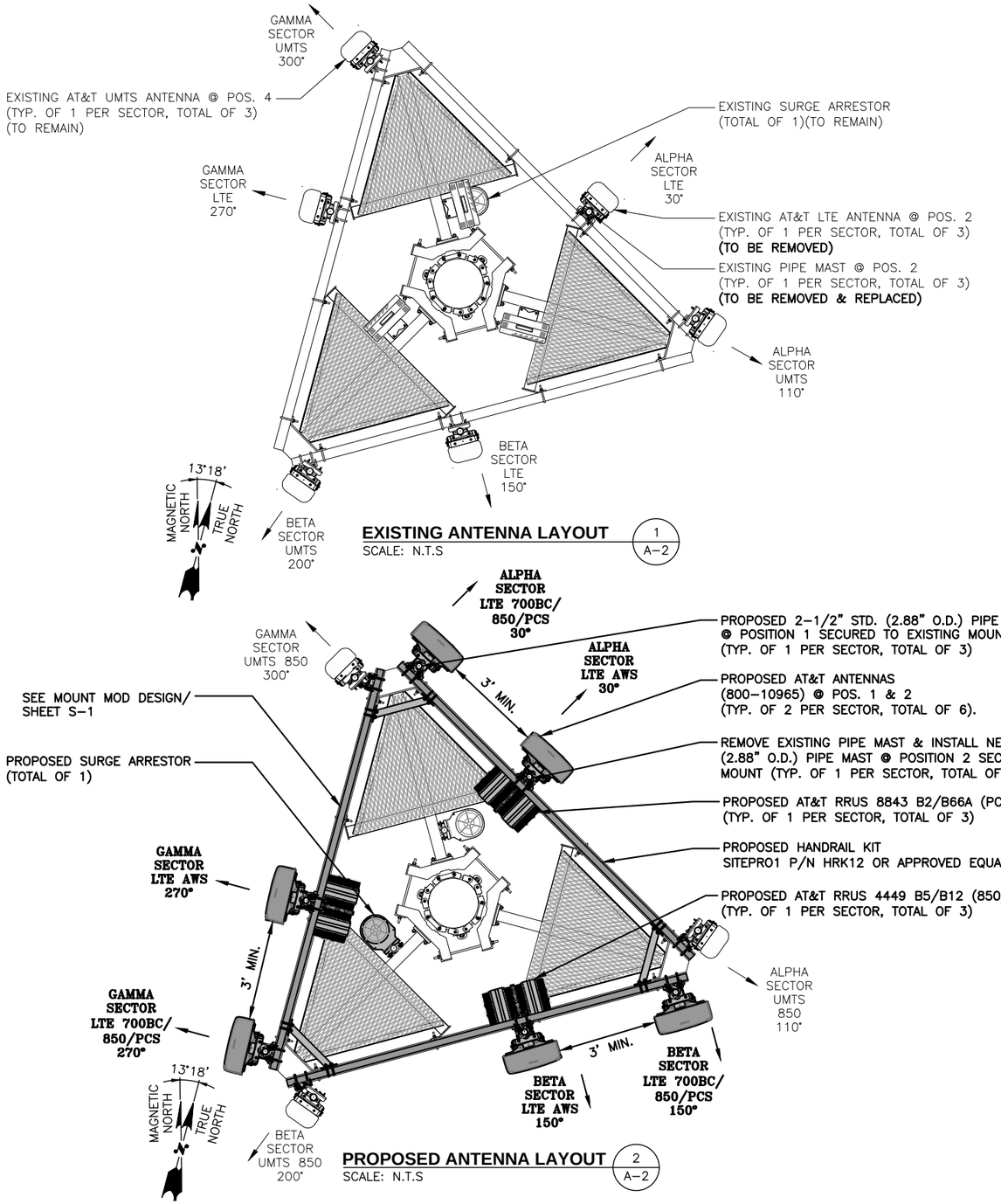
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25... · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	A-1	2



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION

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

NOTE:
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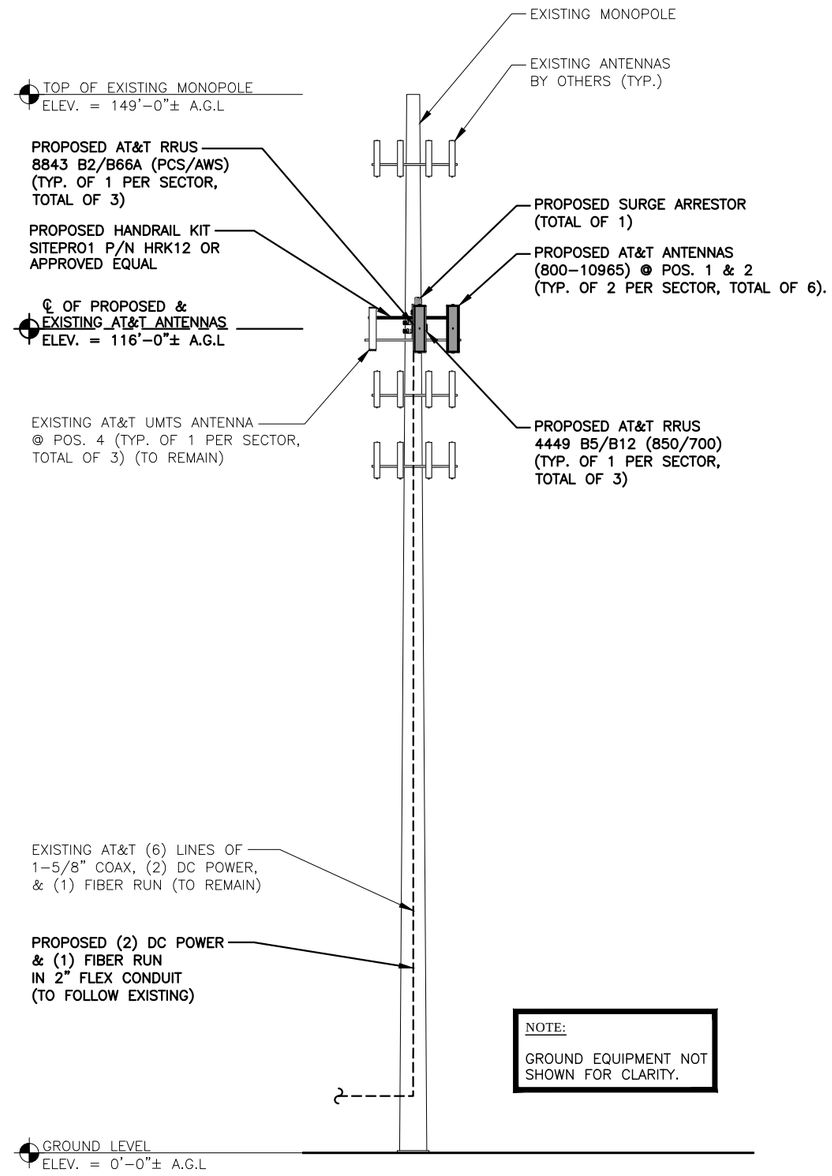

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

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DEREK J. CREASER No. 25... LICENSED PROFESSIONAL ENGINEER STATE OF CONNECTICUT

AT&T

ANTENNA LAYOUTS & ELEVATION
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	A-2	2

NOTE:
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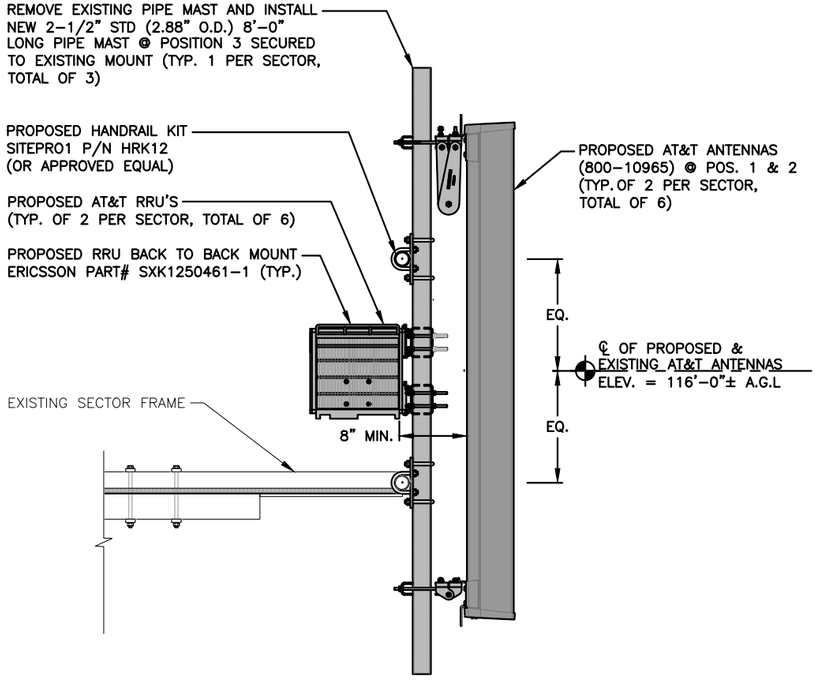
DATED: APRIL 22, 2019

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE 850/ /700 BC/PCS	800-10965	78.7X20X6.9	±116'-0"	30°	–	(P)(1) 8843 B2/B66A (AWS/PCS)	14.9X13.2X10.9	(2) 1-5/8 COAX (LENGTH 160' ±)	(E) (1) RAYCAP DC6-48-60-18-8C
A2	PROPOSED	LTE AWS	800-10965	78.7X20X6.9	±116'-0"	30°	–	(P)(1) 4449 B5/B12 (850/700BC)	14.9X13.2X10.4	(2) DC POWER, 1 FIBER	
A3	–	–	–	–	–	–	–	–	–	–	
A4	EXISTING	UMTS 850	7770	72X12X6	±116'-0"	110°	E)(G)(2) POWERWAVE LGP21901 (E)(2) POWERWAVE LGP21401	–	–	–	
B1	PROPOSED	LTE 850/ /700 BC/PCS	800-10965	78.7X20X6.9	±116'-0"	150°	–	(P)(1) 8843 B2/B66A (AWS/PCS)	14.9X13.2X10.9	(2) 1-5/8 COAX (LENGTH 160' ±)	(P)(1) RAYCAP DC6-48-60-18-8C
B2	PROPOSED	LTE AWS	800-10965	78.7X20X6.9	±116'-0"	150°	–	(P)(1) 4449 B5/B12 (850/700BC)	14.9X13.2X10.4	(2) DC POWER, 1 FIBER	
B3	–	–	–	–	–	–	–	–	–	–	
B4	EXISTING	UMTS 850	7770	72X12X6	±116'-0"	200°	E)(G)(2) POWERWAVE LGP21901 (E)(2) POWERWAVE LGP21401	–	–	–	
C1	PROPOSED	LTE 850/ /700 BC/PCS	800-10965	78.7X20X6.9	±116'-0"	270°	–	(P)(1) 8843 B2/B66A (AWS/PCS)	14.9X13.2X10.9	(2) 1-5/8 COAX (LENGTH 160' ±)	SHARED
C2	PROPOSED	LTE AWS	800-10965	78.7X20X6.9	±116'-0"	270°	–	(P)(1) 4449 B5/B12 (850/700BC)	14.9X13.2X10.4	(2) DC POWER, 1 FIBER	
C3	–	–	–	–	–	–	–	–	–	–	
C4	EXISTING	UMTS 850	7770	72X12X6	±116'-0"	300°	E)(G)(2) POWERWAVE LGP21901 (E)(2) POWERWAVE LGP21401	–	–	–	

FINAL ANTENNA SCHEDULE 1 A-3
SCALE: N.T.S



PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL 2 A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

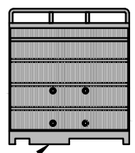
RRU CHART

QUANTITY	MODEL	L	W	D
3(P)	4449	14.9"	13.2"	10.4"
3(P)	8843	14.9"	13.2"	10.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

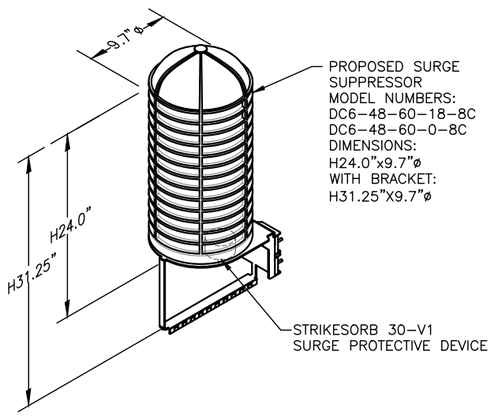
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

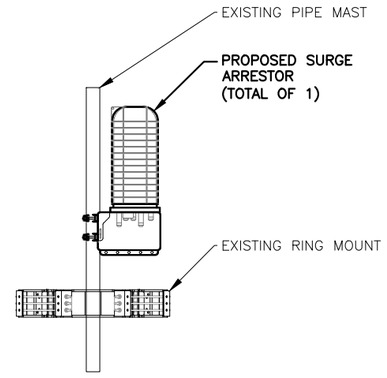
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL 3 A-3
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL 4 A-3
SCALE: N.T.S



PROPOSED SURGE ARRESTOR MOUNTING DETAIL 5 A-3
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23551
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	A-3	2

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	05/14/19	ISSUED FOR CONSTRUCTION	HC	AT	DJC
1	04/24/19	ISSUED FOR REVIEW	RP	AT	DJC
A	04/12/19	ISSUED FOR REVIEW	JM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29351
LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	SN-1	2

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION

NOTE:

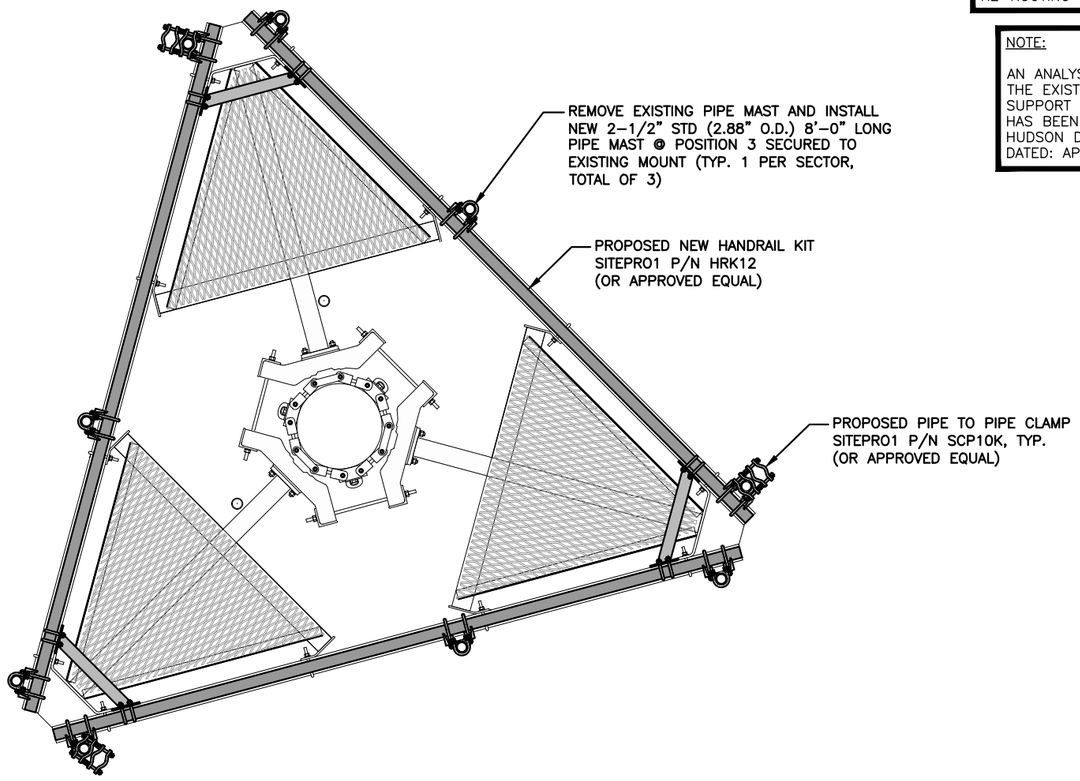
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

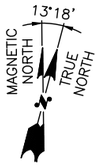
NOTE:

ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

NOTE:

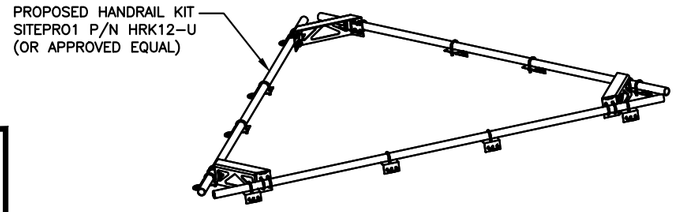
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 22, 2019



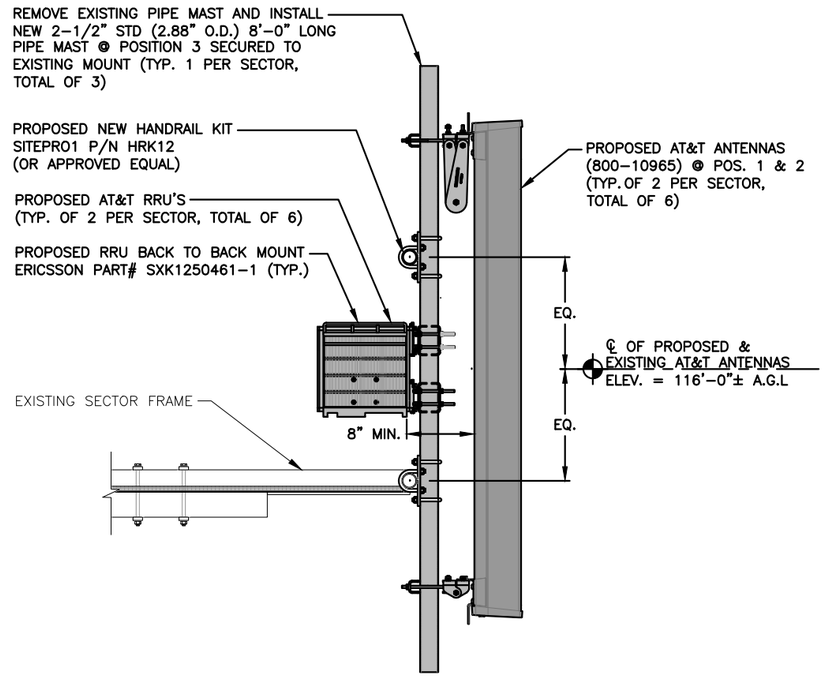


PROPOSED MOUNT MODIFICATIONS PLAN (1 / S-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED HANDRAIL KIT (3 / S-1)
SCALE: N.T.S



PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5432
SITE NAME: NEWTOWN EAST CENTRAL
SBA SITE ID: CT13057

151 BERKSHIRE ROAD
SANDY HOOK, CT 06482
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

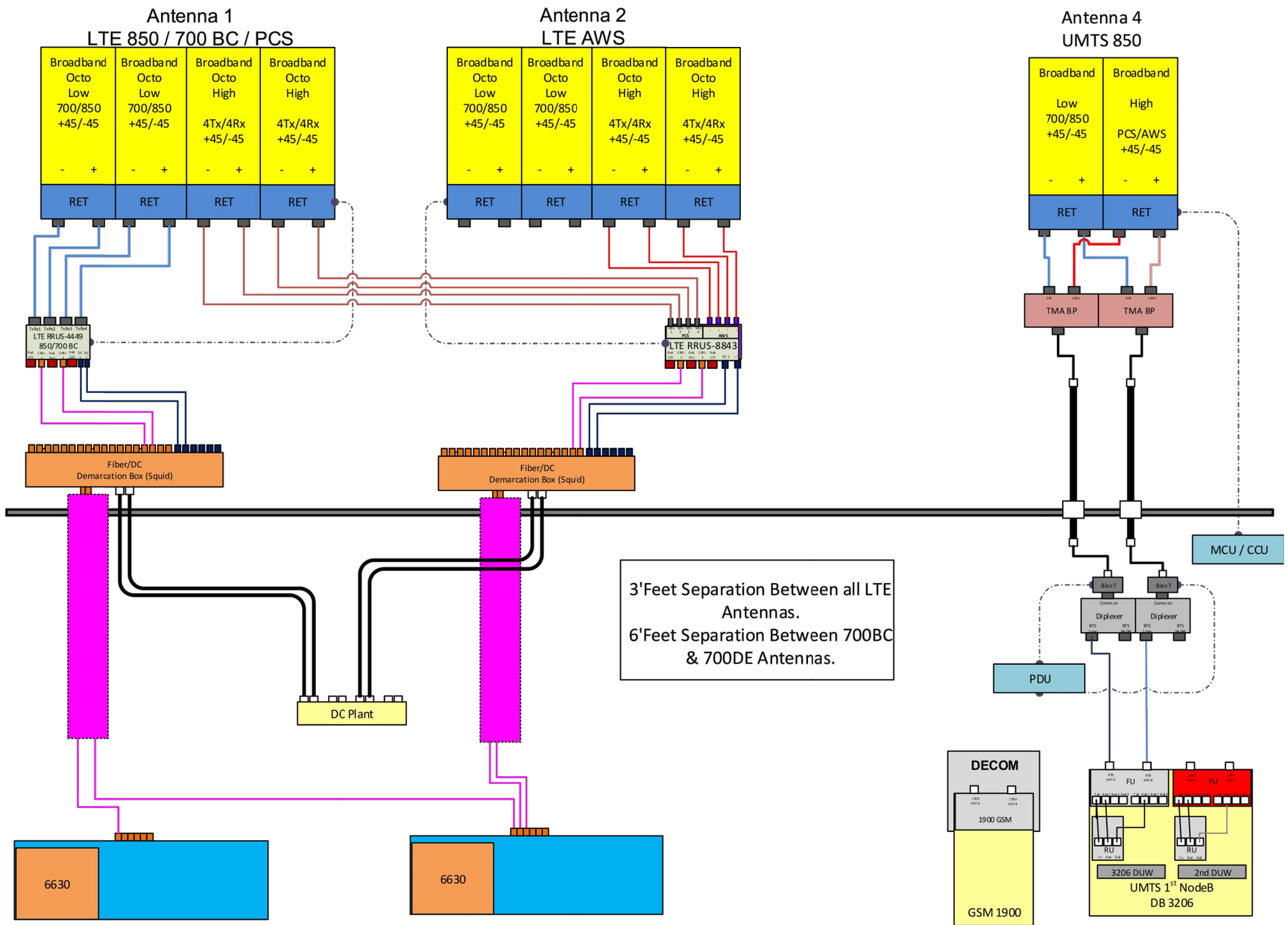
NO.	DATE	REVISIONS	BY	CHK	APP'D
2	05/14/19	ISSUED FOR CONSTRUCTION	HC	DJC	
1	04/24/19	ISSUED FOR REVIEW	RP	AT	DJC
A	04/12/19	ISSUED FOR REVIEW	JM	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23551 · LICENSED PROFESSIONAL ENGINEER

AT&T
MOUNT MODIFICATIOIN DESIGN
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	S-1	2



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

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

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5432
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151 BERKSHIRE ROAD
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at&t
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A	04/12/19	ISSUED FOR REVIEW	JM	AT	DJC

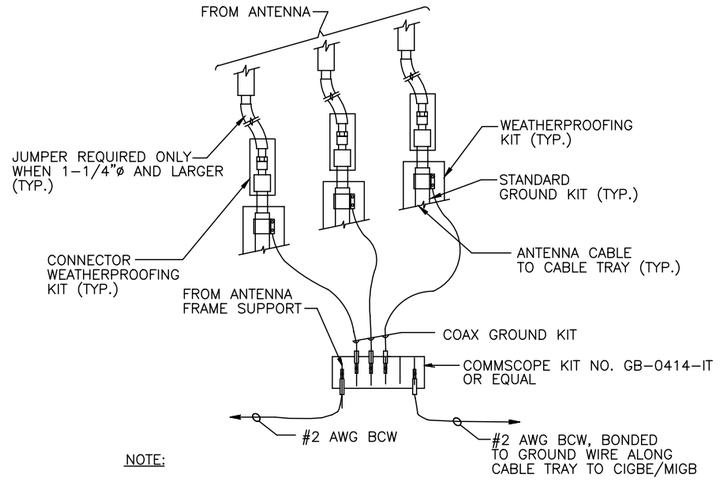
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25955 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	RF–1	2



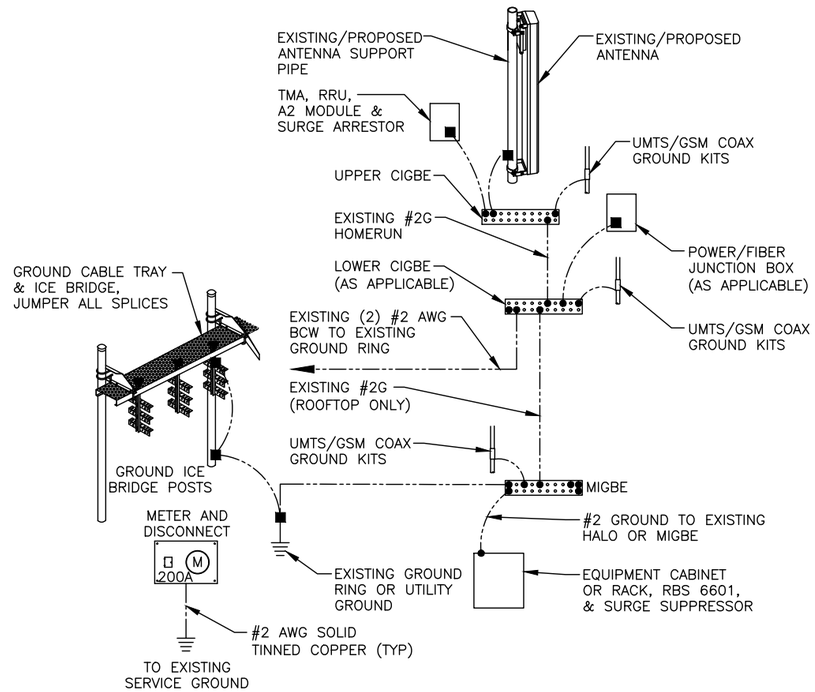
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

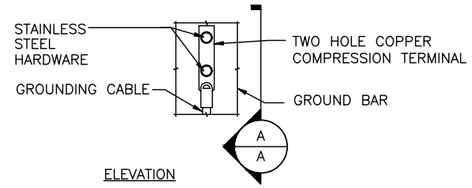
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

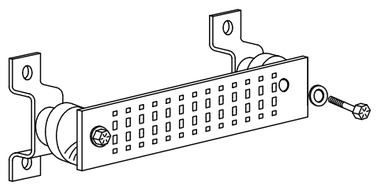
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23955 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT5432	G-1	2

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5432

Newtown East Central
151 Berkshire Road

Sandy Hook, CT 06482

June 28, 2019

Centerline Communications Project Number: 950012-229

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.56 %**

June 28, 2019

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5432 – Newtown East Central**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **151 Berkshire Road** in **Sandy Hook, Connecticut** for the purpose of determining whether the emissions from the Proposed AT&T 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ 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 population 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 population 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 performed for the proposed AT&T Wireless antenna facility located at **151 Berkshire Road in Sandy Hook, Connecticut**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
5G	850 MHz	2	25
LTE	850 MHz	2	40
LTE	700 MHz	2	40
LTE	2100 MHz (AWS)	4	30
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10965	116
A	2	Kathrein 800-10965	116
A	3	Powerwave 7770	116
B	1	Kathrein 800-10965	116
B	2	Kathrein 800-10965	116
B	3	Powerwave 7770	116
C	1	Kathrein 800-10965	116
C	2	Kathrein 800-10965	116
C	3	Powerwave 7770	116

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power	ERP (W)	MPE %
Antenna A1	Kathrein 800-10965	700 MHz / 850 MHz / 1900 MHz / 1900 MHz / 850 MHz	12.65 dBd / 13.45 dBd / 15.65 dBd / 15.65 dBd / 13.45 dBd	14	530	16,102.67	5.34
Antenna A2	Kathrein 800-10965	2100 MHz	15.95 dBd	4	120	4,722.60	1.26
Antenna A3	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.40
						Sector A Composite MPE%	**7.00**
Antenna B1	Kathrein 800-10965	700 MHz / 850 MHz / 1900 MHz / 1900 MHz / 850 MHz	12.65 dBd / 13.45 dBd / 15.65 dBd / 15.65 dBd / 13.45 dBd	14	530	16,102.67	5.34
Antenna B2	Kathrein 800-10965	2100 MHz	15.95 dBd	4	120	4,722.60	1.26
Antenna B3	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.40
						Sector B Composite MPE%	**7.00**
Antenna C1	Kathrein 800-10965	700 MHz / 850 MHz / 1900 MHz / 1900 MHz / 850 MHz	12.65 dBd / 13.45 dBd / 15.65 dBd / 15.65 dBd / 13.45 dBd	14	530	16,102.67	5.34
Antenna C2	Kathrein 800-10965	2100 MHz	15.95 dBd	4	120	4,722.60	1.26
Antenna C3	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.40
						Sector C Composite MPE%	**7.00**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Per Sector Value	7.00%
Sprint	0.02%
T-Mobile	1.18%
Town	0.17%
Verizon	1.19%
Site Total MPE %:	**9.56 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	7.00 %
AT&T Sector B Total:	7.00 %
AT&T Sector C Total:	7.00 %
Site Total:	9.56 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($i.tW/cm^2$)	Frequency (MHz)	Allowable MPE ($i.tW/cm^2$)	Calculated % MPE
AT&T 700 MHz LTE	2	736.31	116.0	3.93	700 MHz LTE	467	0.84%
AT&T 850 MHz LTE	2	885.24	116.0	4.73	850 MHz LTE	567	0.83%
AT&T 1900 MHz LTE	4	1469.13	116.0	15.70	1900 MHz LTE	1000	1.57%
AT&T 1900 MHz LTE	4	1469.13	116.0	15.70	1900 MHz LTE	1000	1.57%
AT&T 850 MHz 5G	2	553.27	116.0	2.96	850 MHz 5G	567	0.52%
AT&T 2100 MHz LTE AWS	4	1180.65	116.0	12.62	2100 MHz LTE AWS	1000	1.26%
AT&T 850 MHz UMTS	2	423.76	116.0	2.26	850 MHz UMTS	567	0.40%
						Total:	**7.00%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	7.00 %
Sector B:	7.00 %
Sector C:	7.00 %
AT&T Maximum Total (per sector):	7.00 %
Site Total:	9.56 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.56 %** of the allowable FCC established general population 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.

Ryan McManus
Senior RF EME Compliance Manager
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

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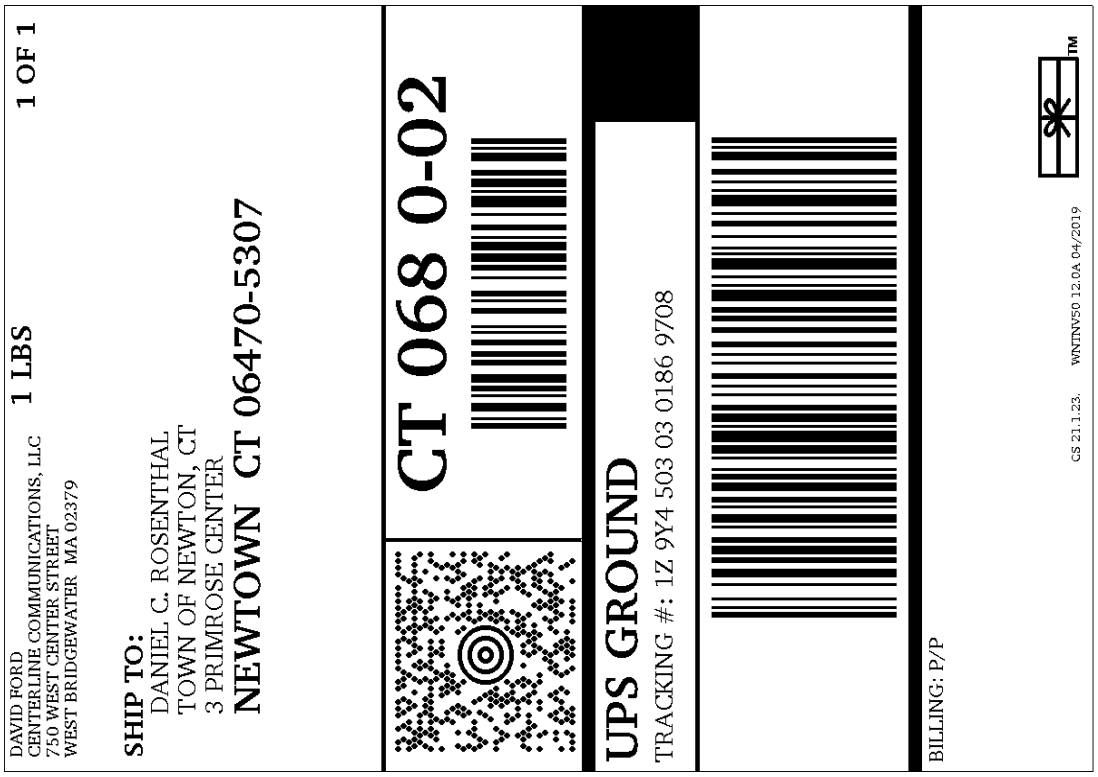

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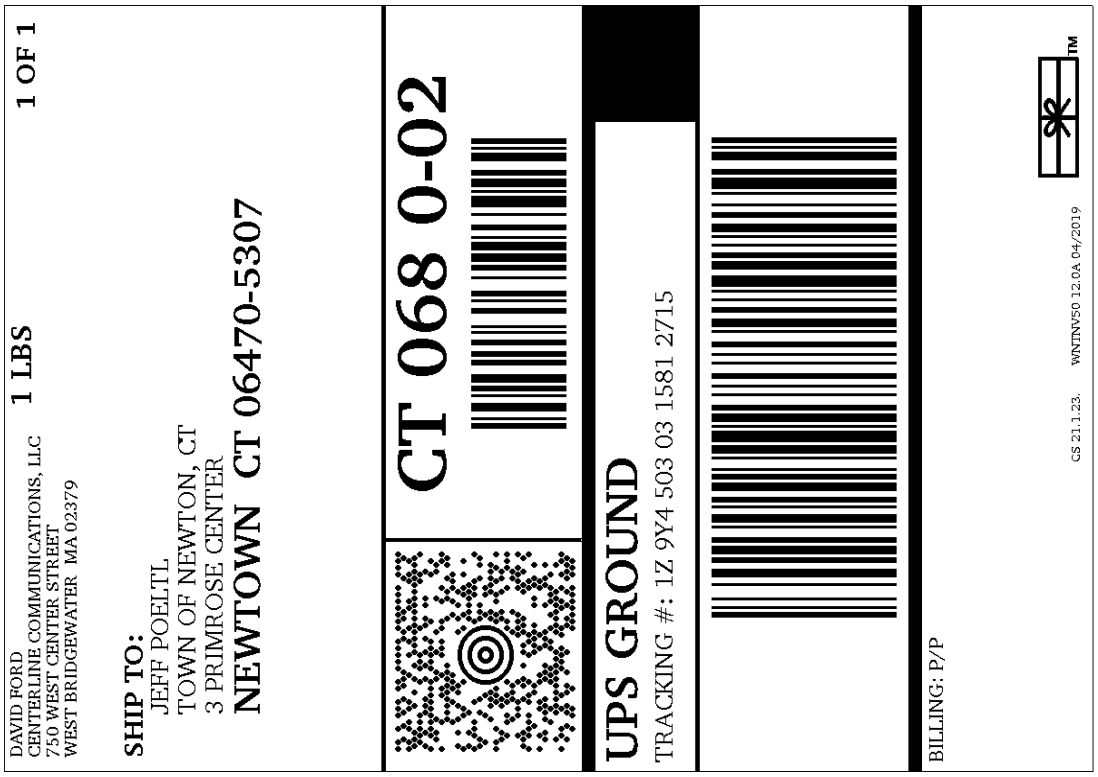

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BROCKTON ,MA 02301

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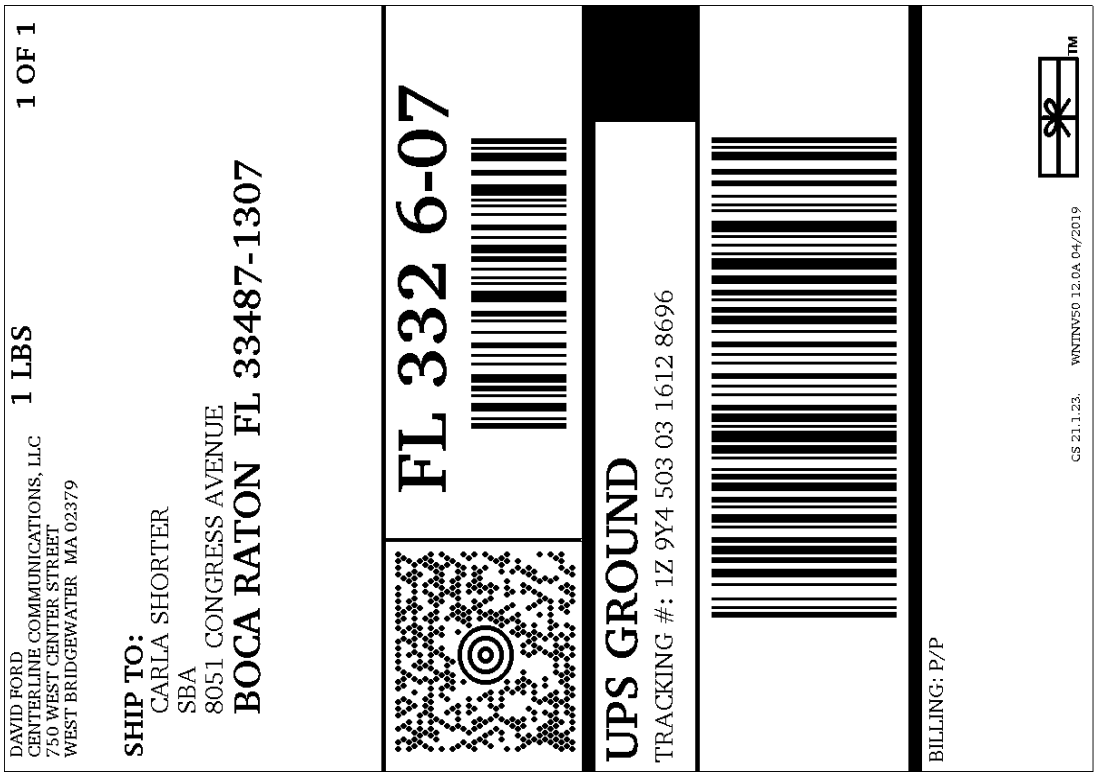

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
TOWN LINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

UPS Access Point™
M&M SEAFOOD
1124 MAIN ST
BROCKTON ,MA 02301

UPS Access Point™
BOOST MOBILE 649
649 WARREN AVE
BROCKTON ,MA 02301

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