STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

February 28, 2019

Julia Coughlin
Site Acquisition Specialist
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

RE: **EM-CING-088-190129** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 585 South Main Street, Naugatuck, Connecticut.

Dear Ms. Coughlin:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 25, 2019 submitted in response to the Council's January 30, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Julia Coughlin <jcoughlin@empiretelecomm.com>
Sent: Monday, February 25, 2019 2:59 PM
To: CSC-DL Siting Council
Cc: Lauren Groppi; Kristen White; David Cooper
Subject: RE: 585 S Main Street ; Naugatuck, CT - AT&T Application for Exempt Modification (AT&T Site CT2166) EM-CING-088-190129
Attachments: Notice of Exempt Modification Additional Documents - AT&T @ 585 South Main Street, Naugatuck, CT.pdf

Good afternoon,

Please disregard the last attachment. Attached here please find additional documents for the application previously submitted for exempt modification for AT&T at the above-referenced site (EM-CING-088-190129). This letter and requested additional documents were dispatched to you by UPS today and should reach you by close of business Tuesday.

Please do not hesitate to contact me with any questions or concerns. Thank you for your attention to this matter.

Julia Coughlin
Site Acquisition Specialist

EMPIRE
telecom
16 Esquire Road | Billerica, MA 01862
Mobile: 978-284-3376
Email: jcoughlin@empiretelecomm.com
Website: www.EmpireTelecomm.com

From: Julia Coughlin
Sent: Monday, February 25, 2019 2:02 PM
To: 'Siting.Council@ct.gov'
Cc: Lauren Groppi ; Kristen White ; David Cooper
Subject: RE: 585 S Main Street ; Naugatuck, CT - AT&T Application for Exempt Modification (AT&T Site CT2166)

Good day,

Attached please find additional documents for the application previously submitted for exempt modification for AT&T at the above-referenced site. This letter and requested additional documents were dispatched to you by UPS today and should reach you by close of business Tuesday.

Please do not hesitate to contact me with any questions or concerns. Thank you for your attention to this matter.

expressly stated in this email, nothing in this message or any attachment should be construed as a digital or electronic signature.

February 25, 2019

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

Regarding:	Revision to Notice of Exempt Modification dated January 29, 2019 **EM-CING-088-190129** "Revision to Notice")
Property Address:	585 South Main Street, Naugatuck, CT 06770 (the "Property")
Applicant:	New Cingular Wireless PCS, LLC (AT&T, Site # CT2166)

Dear Ms. Bachman:

I am in receipt of the Council's letter in response to the January 29, 2019 Notice of Exempt Modification for the above-referenced property (EM-CING-088-190129). Attached is AT&T's Mount Analysis dated October 17, 2018, by Maser Consulting Connecticut which is referenced in the Construction Drawings. In addition, the revised Structural Analysis Report dated February 15, 2019, by American Tower Corporation attached herein also considers the Mount Modifications as noted on Page 7 in the Discreet Appurtenance table.

Please accept this Revision to Notice with the requested Mount Analysis and Structural Analysis referencing same as requested. The Property Card, Map, Construction Drawings and RF Emissions Analysis Report Evaluations remain unchanged. Please accept this revised letter, dated February 25, 2019, as a supplement to AT&T's Notice of Exempt Modification for the Property.

For the foregoing reasons, AT&T respectfully requests that the proposed antenna and remote-radio head installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Please do not hesitate to contact me with any further questions or concerns you may have.

Sincerely,

Julia Coughlin

Julia Coughlin
Site Acquisition Specialist

Enclosures: EM-CING-088-190129 Notice of Incompletion
Structural Analysis Report dated February 15, 2019, by American Tower Corporation
Mount Analysis dated October 17, 2018, by Maser Consulting Connecticut

Julia Coughlin • Empire Telecom USA, LLC • 16 Esquire Road, Billerica, MA 01862 • 978-284-3376 • jcoughlin@empiretelecomm.com

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

January 30, 2019

Julia Coughlin
Site Acquisition Specialist
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

RE: **EM-CING-088-190129 –** New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 585 South Main Street, Naugatuck, Connecticut.

Dear Ms. Coughlin:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on January 29, 2019.

According to Section 16-50j-71 of the Regulations of Connecticut State Agencies, "…any modification, as defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, to an existing tower site, except as specified in Sections 16-50j-72 and 16-50j-88 of the Regulations of Connecticut State Agencies, may have a substantial adverse environmental effect."

Staff has reviewed this exempt modification request for completeness and has identified a deficiency in the request. The construction drawing Sheets C-2, C-3 and S-1 prepared by Maser Consulting, last revised on January 21, 2019, recommends the installation of a platform reinforcement kit (Site Pro I P/N PRK 1245L) as part of the proposed modifications. However, this proposed mount modification is not referenced in the Structural Analysis Report provided with the request and no Mount Analysis was submitted as part of this exempt modification request.

Therefore, the exempt modification request is incomplete at this time. The Council recommends that Empire Telecom provide a Mount Analysis and an updated Structural Analysis Report that accounts for the proposed mount modification referenced above on or before March 4, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to March 4, 2019.

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

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/FOC/in

c: The Honorable N. Warren Hess III, Mayor, Borough of Naugatuck
Lori Rotella, Town Planner, Borough of Naugatuck

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**89 ft Monopole**
ATC Site Name	:	**Naugatuck (telephone Pole), CT**
ATC Site Number	:	**302526**
Engineering Number	:	**OAA742050_C3_02**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Naugatuck South Main**
Carrier Site Number	:	**CT2166**
Site Location	:	**585 South Main St. (soc. Club)** **Naugatuck, CT 06770-4725** **41.478400,-73.048500**
County	:	**New Haven**
Date	:	**February 15, 2019**
Max Usage	:	**97%**
Result	:	**Pass**

Prepared By:
Travis J. Gatling
Structural Engineer I

Travis J. Gatling

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Feb 15 2019 4:46 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

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

Supporting Documents

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

Analysis

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

Basic Wind Speed:	97 mph (3-Second Gust V_{ASD}) / 125 mph (3-Second Gust V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
90.0	4	CCI DTMABP7819VG12A	Modified Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (1) 0.51" (13mm) Hybrid (4) 0.78" (19.7mm) 8 AWG 6 (8) 1 5/8" Coax (2) 2" conduit	AT&T MOBILITY
	2	Raycap DC6-48-60-18-8F ("Squid")			
	2	Ericsson RRUS 11 (Band 12) (55 lb)			
	2	Ericsson RRUS 32 (50.8 lbs)			
	2	Ericsson RRUS 32 B2			
	2	Powerwave Allgon 7770.00			
	2	Quintel QS66512-2			
	2	CCI OPA-65R-LCUU-H6			
42.0	3	RFS FD9R6004/1C-3L	Low Profile Platform	(22) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
40.0	3	Alcatel-Lucent RRH2X60-1900			
	3	Alcatel-Lucent RRH2x60 700			
	3	Alcatel-Lucent B66 RRH4x45			
	2	RFS DB-T1-6Z-8AB-0Z			
	6	Commscope SBNHH-1D65B			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
90.0	4	Powerwave Allgon CM1007-DBPXBC-003	-	-	AT&T MOBILITY

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
90.0	4	Kaelus DBCT108F1V92-1	Modified Platform with Handrails	(2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8F			
	2	Ericsson RRUS 4426 B66			
	2	Ericsson 4478 Band 14 (15" Height)			
	2	Ericsson RRUS 4478 B5 (56.1 lbs)			
	2	Kathrein Scala 80010965			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	20%	Pass
Shaft	87%	Pass
Base Plate	24%	Pass
Flanges	37%	Pass
Reinforcement	81%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	577.4	92%
Axial (Kips)	34.3	97%
Shear (Kips)	9.9	32%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
89.0	Kaelus DBCT108F1V92-1	AT&T MOBILITY	0.721	0.971
	Raycap DC6-48-60-0-8F			
	Ericsson RRUS 4426 B66			
	Ericsson 4478 Band 14 (15" Height)			
	Ericsson RRUS 4478 B5 (56.1 lbs)			
	Kathrein Scala 80010965			

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

Standard Conditions

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

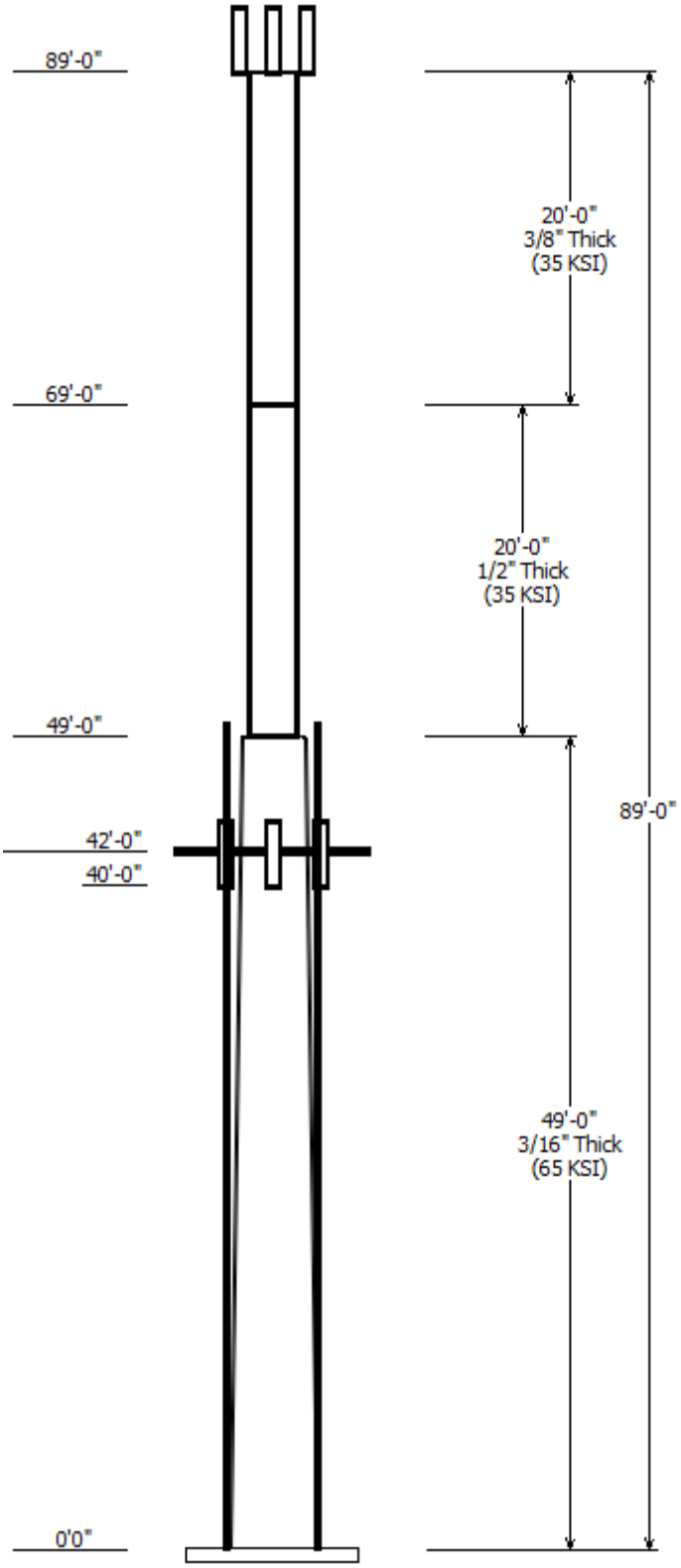
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Pole :	302526	Code:	ANSI/TIA-222-G
Location :	Naugatuck (telephone Pole), CT		
Description :	49' EEI Monopole w/ Proposed 40 ft extension		
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	89.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.183673 (in/ft)		

Sections Properties

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

Discrete Appurtenance

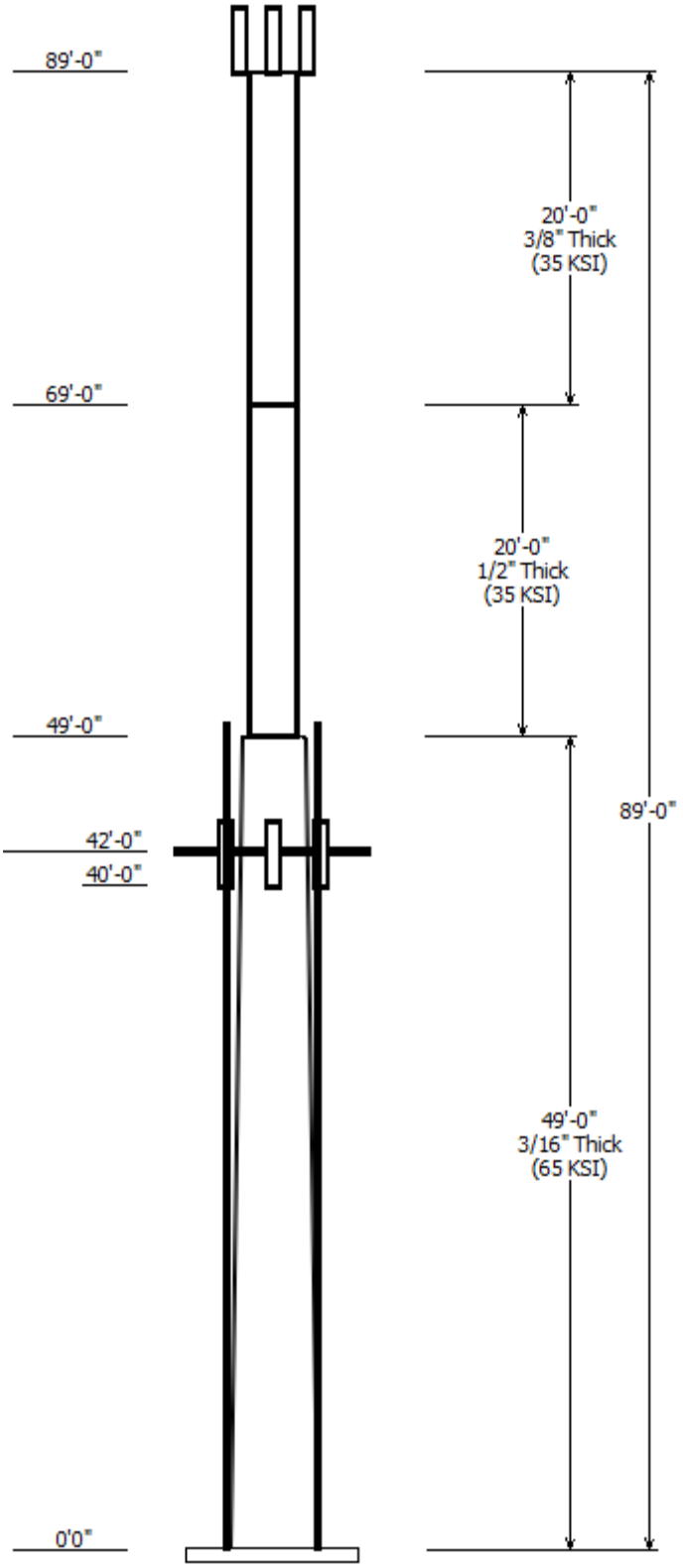
Attach Elev (ft)	Force Elev (ft)	Qty	Description
89.000	90.000	2	Kathrein Scala 80010965
89.000	90.000	2	CCI OPA-65R-LCUU-H6
89.000	90.000	2	Quintel QS66512-2
89.000	90.000	2	Powerwave Allgon 7770.00
89.000	90.000	2	Ericsson RRUS 32 B2
89.000	90.000	2	Ericsson RRUS 32 (50.8 lbs)
89.000	90.000	2	Ericsson RRUS 11 (Band 12) (55
89.000	90.000	2	Ericsson RRUS 4478 B5 (56.1 lb
89.000	90.000	2	Ericsson 4478 Band 14 (15" Hei
89.000	90.000	2	Ericsson RRUS 4426 B66
89.000	90.000	2	Raycap DC6-48-60-18-8F
89.000	90.000	1	Raycap DC6-48-60-0-8F
89.000	90.000	4	CCI DTMABP7819VG12A
89.000	90.000	4	Kaelus DBCT108F1V92-1
89.000	89.000	1	Modified Platform w/ Handrails
42.000	42.000	1	Flat Low Profile Platform
42.000	42.000	3	RFS FD9R6004/1C-3L
40.000	42.000	6	Commscope SBNHH-1D65B
40.000	42.000	2	RFS DB-T1-6Z-8AB-0Z
40.000	40.000	3	Alcatel-Lucent B66 RRH4x45
40.000	40.000	3	Alcatel-Lucent RRH2x60 700
40.000	40.000	3	Alcatel-Lucent RRH2X60-1900

Linear Appurtenance

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

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice



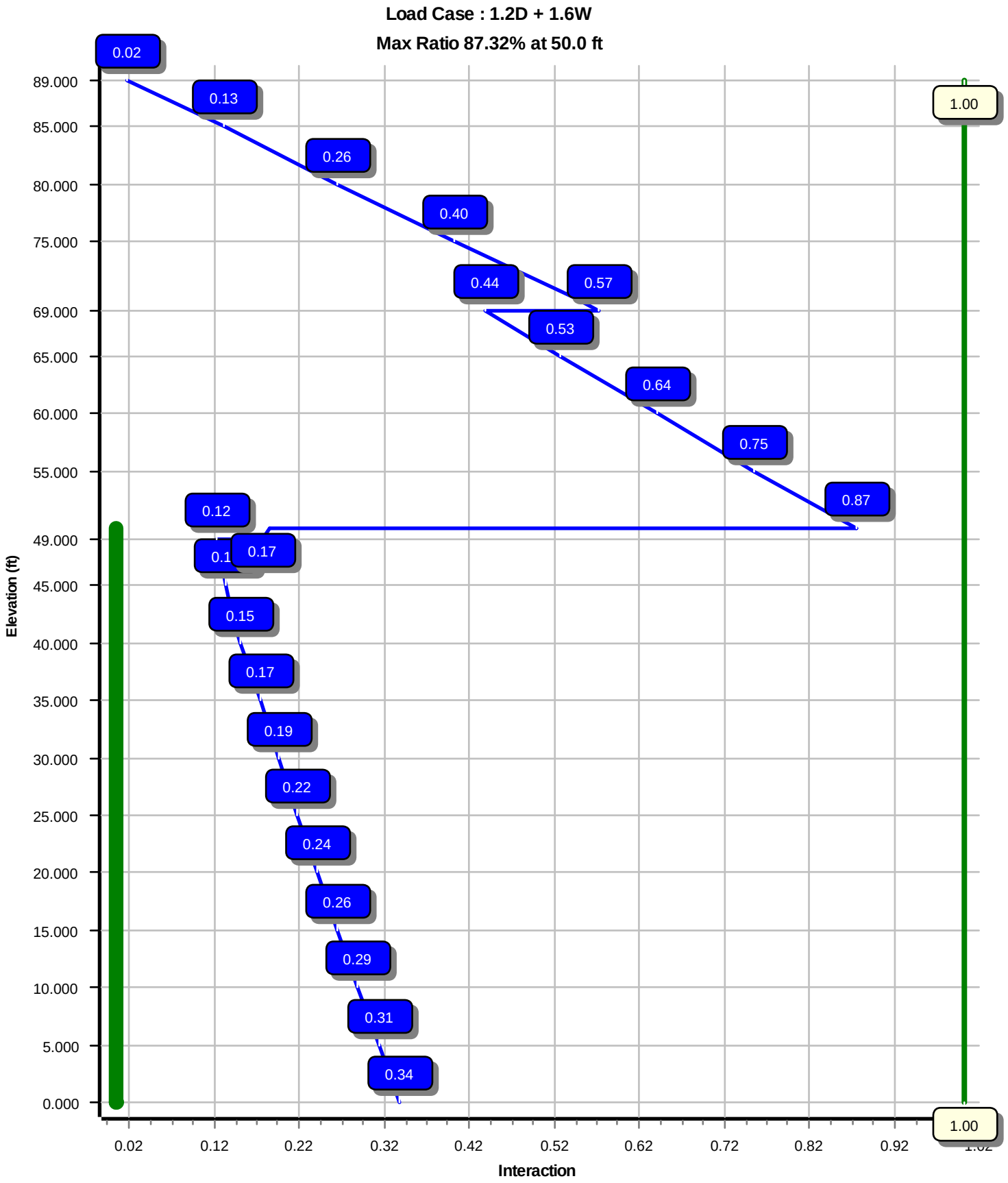
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	577.45	9.91	17.98
0.9D + 1.6W	570.92	9.90	13.48
1.2D + 1.0Di + 1.0Wi	156.10	2.45	34.31
(1.2 + 0.2Sds) * DL + E ELFM	49.69	0.64	17.84
(1.2 + 0.2Sds) * DL + E EMAM	145.83	1.74	17.84
(0.9 - 0.2Sds) * DL + E ELFM	48.94	0.64	12.36
(0.9 - 0.2Sds) * DL + E EMAM	143.46	1.74	12.36
1.0D + 1.0W	139.52	2.43	15.00

Dish Deflections

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


Load Case : 1.2D + 1.6W
Max Ratio 87.32% at 50.0 ft
0.02
0.13
0.26
0.40
0.44
0.57
0.53
0.64
0.75
0.87
0.12
0.17
0.15
0.17
0.19
0.22
0.24
0.26
0.29
0.31
0.34
1.00
1.00
89.000
85.000
80.000
75.000
69.000
65.000
60.000
55.000
49.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:22 AM

Customer: AT&T MOBILITY

Analysis Parameters

Location :	NEW HAVEN County, CT	Height (ft) :	89
Code :	ANSI/TIA-222-G	Base Diameter (in) :	23.00
Shape :	18 Sides. Sect 2: Round. Sect 3: Round	Top Diameter (in) :	12.75
Pole Type :	Custom	Taper (in/ft) :	0.184
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	1.95				
T_L (sec):	6	p:	1.3	C_s:	0.033
S_s:	0.190	S_1:	0.060	C_s Max:	0.033
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.203	S_{d1}:	0.096		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:22 AM

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	49.000	0.1875	65		0.00	1,817	23.00	0.00	13.58	892.6	20.22	122.67	14.00	49.00	8.22	198.1	11.76	74.67	0.183673
2-R	20.000	0.5000	35	Butt	0.00	1,310	12.75	49.00	19.24	361.2	0.00	25.50	12.75	69.00	19.24	361.2	0.00	25.50	0.000000
3-R	20.000	0.3750	35	Butt	0.00	992	12.75	69.00	14.58	279.3	0.00	34.00	12.75	89.00	14.58	279.3	0.00	34.00	0.000000
				Shaft Weight		4,119													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
40.00	Alcatel-Lucent B66 RRH4x45	3	0.80	0.000	67.00	2.580	0.67	128.81	3.563	0.67
40.00	Alcatel-Lucent RRH2x60 700	3	0.80	0.000	56.70	2.150	0.67	116.07	3.024	0.67
40.00	Alcatel-Lucent RRH2X60-1900	3	0.80	0.000	43.00	1.880	0.50	91.27	2.699	0.50
40.00	Commscope SBNHH-1D65B	6	0.80	2.000	50.70	8.170	0.69	203.80	10.638	0.69
40.00	RFS DB-T1-6Z-8AB-0Z	2	0.80	2.000	44.00	4.800	0.72	153.79	6.040	0.72
42.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,070.24	42.904	1.00
42.00	RFS FD9R6004/1C-3L	3	0.80	0.000	3.10	0.310	0.50	10.15	0.645	0.50
89.00	CCI DTMABP7819VG12A	4	0.75	1.000	19.20	0.970	0.50	43.37	1.590	0.50
89.00	CCI OPA-65R-LCUU-H6	2	0.75	1.000	73.00	9.660	0.75	266.13	12.291	0.75
89.00	Ericsson 4478 Band 14 (15"	2	0.75	1.000	59.90	1.840	0.50	112.37	2.690	0.50
89.00	Ericsson RRUS 11 (Band 12) (55	2	0.75	1.000	55.00	2.520	0.67	118.85	3.506	0.67
89.00	Ericsson RRUS 32 (50.8 lbs)	2	0.75	1.000	50.80	2.690	0.67	118.67	3.785	0.67
89.00	Ericsson RRUS 32 B2	2	0.75	1.000	53.00	2.740	0.67	122.79	3.849	0.67
89.00	Ericsson RRUS 4426 B66	2	0.75	1.000	48.40	1.650	0.50	90.76	2.456	0.50
89.00	Ericsson RRUS 4478 B5 (56.1 lbs)	2	0.75	1.000	56.10	2.040	0.67	112.99	2.940	0.67
89.00	Kaelus DBCT108F1V92-1	4	0.75	1.000	13.90	0.630	0.50	37.78	1.145	0.50
89.00	Kathrein Scala 80010965	2	0.75	1.000	97.60	13.810	0.72	350.59	16.704	0.72
89.00	Modified Platform w/ Handrails	1	1.00	0.000	2,466.20	30.000	1.00	4,096.55	49.832	1.00
89.00	Powerwave Allgon 7770.00	2	0.75	1.000	35.00	5.510	0.74	161.46	6.505	0.74
89.00	Quintel QS66512-2	2	0.75	1.000	111.00	8.130	0.80	300.10	10.774	0.80
89.00	Raycap DC6-48-60-0-8F	1	0.75	1.000	32.80	1.360	1.00	87.96	1.989	1.00
89.00	Raycap DC6-48-60-18-8F	2	0.75	1.000	31.80	1.470	1.00	90.35	2.133	1.00
Totals	Num Loadings:22	53			6,376.20			12,838.75		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	90.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T MOBILITY
0.00	90.00	1	0.51" (13mm) Hybrid	0.51	0.14	N	0.00	N	AT&T MOBILITY
0.00	90.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T MOBILITY
0.00	90.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T MOBILITY
0.00	90.00	8	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T MOBILITY
0.00	90.00	2	2" conduit	2.38	3.65	N	0.00	N	AT&T MOBILITY
0.00	53.50	3	#20 Threaded Bar	2.72	0.00	N	6.00	Y	
0.00	40.00	10	1 5/8" Coax	1.98	0.82	N	0.00	N	VERIZON WIRELESS
0.00	40.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	VERIZON WIRELESS

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections				Continuation?
						Description	Spacing (in)	Len (in)	Connectors	
0.00	50.00	3	SOL #20 All Thread	80	6.25	6" Angle Bracket	48.0	3.31	5/8" A36 U-Bolt	No

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.1875	23.000	13.576	892.6	20.22	122.67	77.6	76.4	0.0	0.0	14.73	2,664	0.0
5.00		0.1875	22.082	13.029	789.1	19.36	117.77	78.6	70.4	0.0	226.3	14.73	2,537	250.5
10.00		0.1875	21.163	12.483	693.9	18.49	112.87	79.7	64.6	0.0	217.0	14.73	2,413	250.5
15.00		0.1875	20.245	11.936	606.7	17.63	107.97	80.7	59.0	0.0	207.7	14.73	2,293	250.5
20.00		0.1875	19.327	11.390	527.1	16.76	103.07	81.7	53.7	0.0	198.4	14.73	2,175	250.5
25.00		0.1875	18.408	10.843	454.8	15.90	98.18	82.6	48.7	0.0	189.1	14.73	2,060	250.5
30.00		0.1875	17.490	10.297	389.5	15.04	93.28	82.6	43.9	0.0	179.8	14.73	1,949	250.5
35.00		0.1875	16.571	9.750	330.7	14.17	88.38	82.6	39.3	0.0	170.5	14.73	1,841	250.5
40.00		0.1875	15.653	9.204	278.1	13.31	83.48	82.6	35.0	0.0	161.2	14.73	1,735	250.5
42.00		0.1875	15.286	8.985	258.8	12.96	81.52	82.6	33.3	0.0	61.9	14.73	1,694	100.2
45.00		0.1875	14.735	8.657	231.5	12.45	78.59	82.6	30.9	0.0	90.0	14.73	1,633	150.3
49.00	Top - Section 1	0.1875	14.000	8.220	198.1	11.76	74.67	82.6	27.9	0.0	114.9	14.73	1,554	200.4
49.00	Bot - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1		14.73	1,554	
50.00	Reinf. Top	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	65.5	14.73	1,423	50.1
55.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
60.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
65.00		0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	327.4			
69.00	Top - Section 2	0.5000	12.750	19.242	361.2	0.00	25.50	35.0	56.7	75.1	261.9			
69.00	Bot - Section 3	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
70.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	49.6			
75.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
80.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
85.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
89.00		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	198.4			
											4,118.8			2,505.0

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:23 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		161.3	0.0					0.0	0.0	161.3	0.0	0.0	0.0
5.00		316.1	271.6					66.7	471.4	382.8	743.0	0.0	0.0
10.00		302.9	260.4					66.7	471.4	369.6	731.8	0.0	0.0
15.00		289.8	249.3					66.7	471.4	356.5	720.6	0.0	0.0
20.00		276.6	238.1					66.7	471.4	343.3	709.5	0.0	0.0
25.00		263.5	227.0					66.7	471.4	330.2	698.3	0.0	0.0
30.00		253.3	215.8					66.7	471.4	320.0	687.2	0.0	0.0
35.00		247.8	204.6					67.5	471.4	315.3	676.0	0.0	0.0
40.00	Appurtenance(s)	171.5	193.5	1,314.4	0.0	2,024.6	1,070.8	68.9	471.4	1,554.7	1,735.6	0.0	0.0
42.00	Appurtenance(s)	120.2	74.3	822.3	0.0	0.0	1,811.2	27.9	162.6	970.4	2,048.1	0.0	0.0
45.00		165.3	108.1					42.2	243.9	207.5	352.0	0.0	0.0
49.00	Top - Section 1	114.3	137.8					56.9	325.2	171.3	463.1	0.0	0.0
50.00	Reinf. Top	126.3	78.6					14.3	81.3	140.6	159.9	0.0	0.0
55.00		159.7	392.9					50.6	106.0	210.3	498.8	0.0	0.0
60.00		109.6	392.9					0.0	106.0	109.6	498.8	0.0	0.0
65.00		100.7	392.9					0.0	106.0	100.7	498.8	0.0	0.0
69.00	Top - Section 2	56.7	314.3					0.0	84.8	56.7	399.1	0.0	0.0
70.00		69.3	59.5					0.0	21.2	69.3	80.7	0.0	0.0
75.00		116.8	297.7					0.0	106.0	116.8	403.6	0.0	0.0
80.00		119.0	297.7					0.0	106.0	119.0	403.6	0.0	0.0
85.00		108.8	297.7					0.0	106.0	108.8	403.6	0.0	0.0
89.00	Appurtenance(s)	48.8	238.1	3,469.6	0.0	2,314.7	4,769.5	0.0	84.8	3,518.4	5,092.4	0.0	0.0
								Totals:		10,033.0	18,004.4	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:25 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 97 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.98	-9.91	0.00	-577.45	0.00	577.45	948.37	474.19	888.66	444.99	0.00	0.00	0.335
5.00	-17.21	-9.59	0.00	-527.91	0.00	527.91	922.11	461.05	828.98	415.11	0.12	-0.22	0.311
10.00	-16.44	-9.28	0.00	-479.97	0.00	479.97	894.84	447.42	770.44	385.79	0.47	-0.44	0.287
15.00	-15.69	-8.97	0.00	-433.59	0.00	433.59	866.57	433.29	713.14	357.10	1.04	-0.65	0.263
20.00	-14.96	-8.67	0.00	-388.75	0.00	388.75	837.31	418.65	657.22	329.10	1.83	-0.85	0.239
25.00	-14.24	-8.37	0.00	-345.41	0.00	345.41	805.59	402.80	601.69	301.29	2.82	-1.04	0.215
30.00	-13.53	-8.08	0.00	-303.55	0.00	303.55	764.99	382.50	542.27	271.54	4.01	-1.22	0.194
35.00	-12.84	-7.79	0.00	-263.14	0.00	263.14	724.39	362.19	485.94	243.33	5.39	-1.40	0.172
40.00	-11.13	-6.21	0.00	-222.18	0.00	222.18	683.78	341.89	432.70	216.67	6.94	-1.56	0.148
42.00	-9.11	-5.20	0.00	-209.76	0.00	209.76	667.54	333.77	412.27	206.44	7.61	-1.62	0.140
45.00	-8.75	-4.99	0.00	-194.17	0.00	194.17	643.18	321.59	382.55	191.56	8.65	-1.71	0.131
49.00	-8.29	-4.82	0.00	-174.20	0.00	174.20	610.70	305.35	344.65	172.58	10.13	-1.82	0.119
49.00	-8.29	-4.82	0.00	-174.20	0.00	174.20	606.13	303.07	297.07	197.07	10.13	-1.82	0.175
50.00	-8.13	-4.68	0.00	-169.38	0.00	169.38	606.13	303.07	297.07	197.07	10.51	-1.85	0.182
50.00	-8.13	-4.68	0.00	-169.38	0.00	169.38	606.13	303.07	297.07	197.07	10.51	-1.85	0.873
55.00	-7.61	-4.50	0.00	-145.97	0.00	145.97	606.13	303.07	297.07	197.07	12.51	-1.97	0.753
60.00	-7.08	-4.43	0.00	-123.47	0.00	123.47	606.13	303.07	297.07	197.07	14.86	-2.50	0.638
65.00	-6.56	-4.35	0.00	-101.31	0.00	101.31	606.13	303.07	297.07	197.07	17.72	-2.94	0.525
69.00	-6.15	-4.29	0.00	-83.91	0.00	83.91	606.13	303.07	297.07	197.07	20.32	-3.24	0.436
69.00	-6.15	-4.29	0.00	-83.91	0.00	83.91	459.24	229.62	229.69	150.79	20.32	-3.24	0.570
70.00	-6.06	-4.24	0.00	-79.62	0.00	79.62	459.24	229.62	229.69	150.79	21.00	-3.30	0.542
75.00	-5.64	-4.13	0.00	-58.43	0.00	58.43	459.24	229.62	229.69	150.79	24.65	-3.65	0.400
80.00	-5.23	-4.00	0.00	-37.79	0.00	37.79	459.24	229.62	229.69	150.79	28.61	-3.90	0.262
85.00	-4.83	-3.87	0.00	-17.80	0.00	17.80	459.24	229.62	229.69	150.79	32.77	-4.04	0.129
89.00	0.00	-3.52	0.00	-2.31	0.00	2.31	459.24	229.62	229.69	150.79	36.17	-4.08	0.016

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:25 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 97 mph with No Ice (Reduced DL) 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		161.3	0.0					0.0	0.0	161.3	0.0	0.0	0.0
5.00		316.1	203.7					66.7	353.5	382.8	557.2	0.0	0.0
10.00		302.9	195.3					66.7	353.5	369.6	548.8	0.0	0.0
15.00		289.8	187.0					66.7	353.5	356.5	540.5	0.0	0.0
20.00		276.6	178.6					66.7	353.5	343.3	532.1	0.0	0.0
25.00		263.5	170.2					66.7	353.5	330.2	523.7	0.0	0.0
30.00		253.3	161.9					66.7	353.5	320.0	515.4	0.0	0.0
35.00		247.8	153.5					67.5	353.5	315.3	507.0	0.0	0.0
40.00	Appurtenance(s)	171.5	145.1	1,314.4	0.0	2,024.6	803.1	68.9	353.5	1,554.7	1,301.7	0.0	0.0
42.00	Appurtenance(s)	120.2	55.7	822.3	0.0	0.0	1,358.4	27.9	122.0	970.4	1,536.0	0.0	0.0
45.00		165.3	81.0					42.2	183.0	207.5	264.0	0.0	0.0
49.00	Top - Section 1	114.3	103.4					56.9	243.9	171.3	347.3	0.0	0.0
50.00	Reinf. Top	126.3	58.9					14.3	61.0	140.6	119.9	0.0	0.0
55.00		159.7	294.6					50.6	79.5	210.3	374.1	0.0	0.0
60.00		109.6	294.6					0.0	79.5	109.6	374.1	0.0	0.0
65.00		100.7	294.6					0.0	79.5	100.7	374.1	0.0	0.0
69.00	Top - Section 2	56.7	235.7					0.0	63.6	56.7	299.3	0.0	0.0
70.00		69.3	44.6					0.0	15.9	69.3	60.5	0.0	0.0
75.00		116.8	223.2					0.0	79.5	116.8	302.7	0.0	0.0
80.00		119.0	223.2					0.0	79.5	119.0	302.7	0.0	0.0
85.00		108.8	223.2					0.0	79.5	108.8	302.7	0.0	0.0
89.00	Appurtenance(s)	48.8	178.6	3,469.6	0.0	2,314.7	3,577.1	0.0	63.6	3,518.4	3,819.3	0.0	0.0
								Totals:		10,033.0	13,503.3	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:26 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 97 mph with No Ice (Reduced DL) 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-13.48	-9.90	0.00	-570.92	0.00	570.92	948.37	474.19	888.66	444.99	0.00	0.00	0.329
5.00	-12.89	-9.56	0.00	-521.43	0.00	521.43	922.11	461.05	828.98	415.11	0.12	-0.22	0.305
10.00	-12.31	-9.23	0.00	-473.62	0.00	473.62	894.84	447.42	770.44	385.79	0.46	-0.43	0.281
15.00	-11.74	-8.92	0.00	-427.45	0.00	427.45	866.57	433.29	713.14	357.10	1.03	-0.64	0.257
20.00	-11.19	-8.60	0.00	-382.87	0.00	382.87	837.31	418.65	657.22	329.10	1.80	-0.84	0.233
25.00	-10.64	-8.30	0.00	-339.86	0.00	339.86	805.59	402.80	601.69	301.29	2.79	-1.03	0.210
30.00	-10.11	-8.00	0.00	-298.37	0.00	298.37	764.99	382.50	542.27	271.54	3.96	-1.21	0.189
35.00	-9.59	-7.70	0.00	-258.37	0.00	258.37	724.39	362.19	485.94	243.33	5.32	-1.38	0.167
40.00	-8.31	-6.13	0.00	-217.84	0.00	217.84	683.78	341.89	432.70	216.67	6.85	-1.53	0.144
42.00	-6.80	-5.12	0.00	-205.59	0.00	205.59	667.54	333.77	412.27	206.44	7.50	-1.59	0.136
45.00	-6.53	-4.92	0.00	-190.21	0.00	190.21	643.18	321.59	382.55	191.56	8.53	-1.68	0.127
49.00	-6.18	-4.75	0.00	-170.53	0.00	170.53	610.70	305.35	344.65	172.58	9.99	-1.79	0.116
49.00	-6.18	-4.75	0.00	-170.53	0.00	170.53	606.13	303.07	297.07	197.07	9.99	-1.79	0.169
50.00	-6.06	-4.61	0.00	-165.78	0.00	165.78	606.13	303.07	297.07	197.07	10.36	-1.82	0.176
50.00	-6.06	-4.61	0.00	-165.78	0.00	165.78	606.13	303.07	297.07	197.07	10.36	-1.82	0.851
55.00	-5.67	-4.42	0.00	-142.73	0.00	142.73	606.13	303.07	297.07	197.07	12.33	-1.94	0.734
60.00	-5.26	-4.34	0.00	-120.63	0.00	120.63	606.13	303.07	297.07	197.07	14.64	-2.46	0.621
65.00	-4.87	-4.25	0.00	-98.92	0.00	98.92	606.13	303.07	297.07	197.07	17.45	-2.89	0.510
69.00	-4.56	-4.19	0.00	-81.91	0.00	81.91	606.13	303.07	297.07	197.07	19.99	-3.18	0.423
69.00	-4.56	-4.19	0.00	-81.91	0.00	81.91	459.24	229.62	229.69	150.79	19.99	-3.18	0.553
70.00	-4.49	-4.14	0.00	-77.72	0.00	77.72	459.24	229.62	229.69	150.79	20.67	-3.24	0.526
75.00	-4.17	-4.02	0.00	-57.03	0.00	57.03	459.24	229.62	229.69	150.79	24.24	-3.58	0.388
80.00	-3.87	-3.90	0.00	-36.91	0.00	36.91	459.24	229.62	229.69	150.79	28.13	-3.82	0.253
85.00	-3.57	-3.78	0.00	-17.42	0.00	17.42	459.24	229.62	229.69	150.79	32.21	-3.96	0.124
89.00	0.00	-3.52	0.00	-2.31	0.00	2.31	459.24	229.62	229.69	150.79	35.54	-4.00	0.016

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:27 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 21 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		29.5	0.0					0.0	0.0	29.5	0.0	0.0	0.0
5.00		58.2	440.2					19.5	525.6	77.7	965.8	0.0	0.0
10.00		56.5	442.3					20.1	531.9	76.6	974.2	0.0	0.0
15.00		54.6	433.4					20.4	535.1	75.0	968.5	0.0	0.0
20.00		52.6	420.9					20.6	537.4	73.2	958.3	0.0	0.0
25.00		50.6	406.4					20.8	539.2	71.4	945.5	0.0	0.0
30.00		49.1	390.6					20.9	540.6	70.0	931.2	0.0	0.0
35.00		48.5	374.0					21.6	541.8	70.1	915.9	0.0	0.0
40.00	Appurtenance(s)	33.8	356.8	288.0	0.0	435.3	3,609.6	22.6	542.9	344.4	4,509.3	0.0	0.0
42.00	Appurtenance(s)	23.9	138.8	225.3	0.0	0.0	3,911.9	9.3	191.5	258.5	4,242.2	0.0	0.0
45.00		33.2	202.3					14.2	287.6	47.4	489.9	0.0	0.0
49.00	Top - Section 1	23.1	258.8					19.4	383.9	42.6	642.7	0.0	0.0
50.00	Reinf. Top	26.1	105.9					4.9	96.1	31.1	201.9	0.0	0.0
55.00		44.3	530.3					17.6	157.9	61.9	688.2	0.0	0.0
60.00		45.5	531.6					0.0	106.0	45.5	637.6	0.0	0.0
65.00		41.9	532.9					0.0	106.0	41.9	638.9	0.0	0.0
69.00	Top - Section 2	23.6	427.2					0.0	84.8	23.6	512.0	0.0	0.0
70.00		28.9	87.9					0.0	21.2	28.9	109.1	0.0	0.0
75.00		48.7	440.1					0.0	106.0	48.7	546.0	0.0	0.0
80.00		49.7	441.1					0.0	106.0	49.7	547.1	0.0	0.0
85.00		45.5	442.1					0.0	106.0	45.5	548.1	0.0	0.0
89.00	Appurtenance(s)	20.4	354.4	824.1	0.0	505.5	12,898.7	0.0	84.8	844.5	13,337.9	0.0	0.0
								Totals:		2,457.61	34,310.2	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:28 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 21 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-34.31	-2.45	0.00	-156.10	0.00	156.10	948.37	474.19	888.66	444.99	0.00	0.00	0.105
5.00	-33.34	-2.40	0.00	-143.86	0.00	143.86	922.11	461.05	828.98	415.11	0.03	-0.06	0.099
10.00	-32.36	-2.36	0.00	-131.85	0.00	131.85	894.84	447.42	770.44	385.79	0.13	-0.12	0.093
15.00	-31.39	-2.31	0.00	-120.06	0.00	120.06	866.57	433.29	713.14	357.10	0.28	-0.18	0.087
20.00	-30.43	-2.26	0.00	-108.51	0.00	108.51	837.31	418.65	657.22	329.10	0.50	-0.23	0.080
25.00	-29.49	-2.22	0.00	-97.19	0.00	97.19	805.59	402.80	601.69	301.29	0.77	-0.29	0.074
30.00	-28.55	-2.17	0.00	-86.11	0.00	86.11	764.99	382.50	542.27	271.54	1.10	-0.34	0.068
35.00	-27.64	-2.11	0.00	-75.28	0.00	75.28	724.39	362.19	485.94	243.33	1.48	-0.39	0.062
40.00	-23.13	-1.75	0.00	-64.29	0.00	64.29	683.78	341.89	432.70	216.67	1.91	-0.43	0.054
42.00	-18.89	-1.46	0.00	-60.79	0.00	60.79	667.54	333.77	412.27	206.44	2.10	-0.45	0.050
45.00	-18.40	-1.42	0.00	-56.40	0.00	56.40	643.18	321.59	382.55	191.56	2.39	-0.48	0.047
49.00	-17.76	-1.38	0.00	-50.71	0.00	50.71	610.70	305.35	344.65	172.58	2.81	-0.51	0.044
49.00	-17.76	-1.38	0.00	-50.71	0.00	50.71	606.13	303.07	297.07	197.07	2.81	-0.51	0.065
50.00	-17.55	-1.35	0.00	-49.33	0.00	49.33	606.13	303.07	297.07	197.07	2.91	-0.52	0.067
50.00	-17.55	-1.35	0.00	-49.33	0.00	49.33	606.13	303.07	297.07	197.07	2.91	-0.52	0.279
55.00	-16.86	-1.31	0.00	-42.56	0.00	42.56	606.13	303.07	297.07	197.07	3.48	-0.55	0.244
60.00	-16.22	-1.30	0.00	-35.98	0.00	35.98	606.13	303.07	297.07	197.07	4.14	-0.71	0.209
65.00	-15.58	-1.28	0.00	-29.47	0.00	29.47	606.13	303.07	297.07	197.07	4.95	-0.84	0.175
69.00	-15.07	-1.26	0.00	-24.35	0.00	24.35	606.13	303.07	297.07	197.07	5.69	-0.92	0.148
69.00	-15.07	-1.26	0.00	-24.35	0.00	24.35	459.24	229.62	229.69	150.79	5.69	-0.92	0.194
70.00	-14.96	-1.25	0.00	-23.09	0.00	23.09	459.24	229.62	229.69	150.79	5.89	-0.94	0.186
75.00	-14.41	-1.21	0.00	-16.85	0.00	16.85	459.24	229.62	229.69	150.79	6.93	-1.04	0.143
80.00	-13.87	-1.17	0.00	-10.79	0.00	10.79	459.24	229.62	229.69	150.79	8.06	-1.11	0.102
85.00	-13.32	-1.11	0.00	-4.96	0.00	4.96	459.24	229.62	229.69	150.79	9.25	-1.15	0.062
89.00	0.00	-0.84	0.00	-0.51	0.00	0.51	459.24	229.62	229.69	150.79	10.22	-1.16	0.003

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		38.6	0.0					0.0	0.0	38.6	0.0	0.0	0.0
5.00		75.6	226.3					20.2	392.8	95.8	619.1	0.0	0.0
10.00		72.4	217.0					20.2	392.8	92.7	609.8	0.0	0.0
15.00		69.3	207.7					20.2	392.8	89.5	600.5	0.0	0.0
20.00		66.1	198.4					20.2	392.8	86.4	591.2	0.0	0.0
25.00		63.0	189.1					20.2	392.8	83.2	581.9	0.0	0.0
30.00		60.6	179.8					20.2	392.8	80.8	572.6	0.0	0.0
35.00		59.3	170.5					20.7	392.8	80.0	563.3	0.0	0.0
40.00	Appurtenance(s)	41.0	161.2	314.3	0.0	484.1	892.3	21.6	392.8	376.9	1,446.3	0.0	0.0
42.00	Appurtenance(s)	28.7	61.9	196.6	0.0	0.0	1,509.3	8.9	135.5	234.2	1,706.7	0.0	0.0
45.00		39.5	90.0					13.5	203.3	53.0	293.3	0.0	0.0
49.00	Top - Section 1	27.3	114.9					18.4	271.0	45.8	385.9	0.0	0.0
50.00	Reinf. Top	30.2	65.5					4.7	67.8	34.9	133.2	0.0	0.0
55.00		39.4	327.4					16.6	88.3	56.0	415.7	0.0	0.0
60.00		28.5	327.4					0.0	88.3	28.5	415.7	0.0	0.0
65.00		25.9	327.4					0.0	88.3	25.9	415.7	0.0	0.0
69.00	Top - Section 2	14.5	261.9					0.0	70.6	14.5	332.5	0.0	0.0
70.00		17.5	49.6					0.0	17.7	17.5	67.3	0.0	0.0
75.00		29.4	248.0					0.0	88.3	29.4	336.3	0.0	0.0
80.00		29.7	248.0					0.0	88.3	29.7	336.3	0.0	0.0
85.00		26.9	248.0					0.0	88.3	26.9	336.3	0.0	0.0
89.00	Appurtenance(s)	12.0	198.4	829.7	0.0	553.5	3,974.6	0.0	70.6	841.7	4,243.7	0.0	0.0
								Totals:		2,461.81	15,003.7	0.00	0.00

Site Number: 302526 Code: ANSI/TIA-222-G

Site Name: Naugatuck (telephone Pole), CT Engineering Number:OAA742050_C3_02 2/15/2019 11:15:30 AM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-15.00	-2.43	0.00	-139.52	0.00	139.52	948.37	474.19	888.66	444.99	0.00	0.00	0.086
5.00	-14.38	-2.35	0.00	-127.37	0.00	127.37	922.11	461.05	828.98	415.11	0.03	-0.05	0.080
10.00	-13.77	-2.27	0.00	-115.63	0.00	115.63	894.84	447.42	770.44	385.79	0.11	-0.11	0.074
15.00	-13.17	-2.19	0.00	-104.30	0.00	104.30	866.57	433.29	713.14	357.10	0.25	-0.16	0.068
20.00	-12.57	-2.11	0.00	-93.37	0.00	93.37	837.31	418.65	657.22	329.10	0.44	-0.20	0.062
25.00	-11.99	-2.03	0.00	-82.83	0.00	82.83	805.59	402.80	601.69	301.29	0.68	-0.25	0.056
30.00	-11.42	-1.96	0.00	-72.67	0.00	72.67	764.99	382.50	542.27	271.54	0.97	-0.29	0.051
35.00	-10.85	-1.88	0.00	-62.88	0.00	62.88	724.39	362.19	485.94	243.33	1.30	-0.34	0.045
40.00	-9.41	-1.50	0.00	-52.99	0.00	52.99	683.78	341.89	432.70	216.67	1.67	-0.37	0.039
42.00	-7.70	-1.26	0.00	-49.99	0.00	49.99	667.54	333.77	412.27	206.44	1.83	-0.39	0.036
45.00	-7.41	-1.21	0.00	-46.21	0.00	46.21	643.18	321.59	382.55	191.56	2.08	-0.41	0.034
49.00	-7.02	-1.16	0.00	-41.39	0.00	41.39	610.70	305.35	344.65	172.58	2.44	-0.44	0.031
49.00	-7.02	-1.16	0.00	-41.39	0.00	41.39	606.13	303.07	297.07	197.07	2.44	-0.44	0.046
50.00	-6.89	-1.12	0.00	-40.24	0.00	40.24	606.13	303.07	297.07	197.07	2.53	-0.44	0.048
50.00	-6.89	-1.12	0.00	-40.24	0.00	40.24	606.13	303.07	297.07	197.07	2.53	-0.44	0.216
55.00	-6.47	-1.07	0.00	-34.61	0.00	34.61	606.13	303.07	297.07	197.07	3.01	-0.47	0.186
60.00	-6.06	-1.05	0.00	-29.24	0.00	29.24	606.13	303.07	297.07	197.07	3.57	-0.60	0.158
65.00	-5.64	-1.03	0.00	-23.97	0.00	23.97	606.13	303.07	297.07	197.07	4.25	-0.70	0.131
69.00	-5.31	-1.02	0.00	-19.84	0.00	19.84	606.13	303.07	297.07	197.07	4.87	-0.77	0.109
69.00	-5.31	-1.02	0.00	-19.84	0.00	19.84	459.24	229.62	229.69	150.79	4.87	-0.77	0.143
70.00	-5.24	-1.00	0.00	-18.82	0.00	18.82	459.24	229.62	229.69	150.79	5.04	-0.79	0.136
75.00	-4.90	-0.98	0.00	-13.80	0.00	13.80	459.24	229.62	229.69	150.79	5.91	-0.87	0.102
80.00	-4.57	-0.94	0.00	-8.93	0.00	8.93	459.24	229.62	229.69	150.79	6.85	-0.93	0.069
85.00	-4.23	-0.91	0.00	-4.21	0.00	4.21	459.24	229.62	229.69	150.79	7.84	-0.96	0.037
89.00	0.00	-0.84	0.00	-0.55	0.00	0.55	459.24	229.62	229.69	150.79	8.65	-0.97	0.004

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.95	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.73	
Total Unfactored Dead Load:	15.00	k
Seismic Base Shear (E):	0.64	k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
21	87.00	269	596	0.036	23	334
20	82.50	336	680	0.041	26	417
19	77.50	336	611	0.037	23	417
18	72.50	336	544	0.033	21	417
17	69.50	67	101	0.006	4	83
16	67.00	333	470	0.028	18	413
15	62.50	416	521	0.031	20	516
14	57.50	416	451	0.027	17	516
13	52.50	416	386	0.023	15	516
12	49.50	133	112	0.007	4	165
11	47.00	386	296	0.018	11	479
10	43.50	293	197	0.012	8	364
9	41.00	197	120	0.007	5	245
8	37.50	554	288	0.017	11	687
7	32.50	563	228	0.014	9	699
6	27.50	573	174	0.010	7	710
5	22.50	582	125	0.008	5	722
4	17.50	591	82	0.005	3	733
3	12.50	601	47	0.003	2	745
2	7.50	610	20	0.001	1	757
1	2.50	619	3	0.000	0	768
Kaelus DBCT108F1V92-	89.00	56	128	0.008	5	69
CCI DTMABP7819VG12A	89.00	77	177	0.011	7	95

Raycap DC6-48-60-0-8	89.00	33	76	0.005	3	41
Raycap DC6-48-60-18-	89.00	64	147	0.009	6	79
Ericsson RRUS 4426 B	89.00	97	223	0.013	9	120
Ericsson 4478 Band 1	89.00	120	276	0.017	11	149
Ericsson RRUS 4478 B	89.00	112	259	0.016	10	139
Ericsson RRUS 11 (Ba	89.00	110	254	0.015	10	136
Ericsson RRUS 32 (50	89.00	102	234	0.014	9	126
Ericsson RRUS 32 B2	89.00	106	244	0.015	9	131
Powerwave Allgon 777	89.00	70	161	0.010	6	87
Quintel QS66512-2	89.00	222	512	0.031	20	275
CCI OPA-65R-LCUU-H6	89.00	146	337	0.020	13	181
Kathrein Scala 80010	89.00	195	450	0.027	17	242
Modified Platform w/	89.00	2,466	5,686	0.341	218	3,059
RFS FD9R6004/1C-3L	42.00	9	6	0.000	0	12
Flat Low Profile Pla	42.00	1,500	947	0.057	36	1,861
Alcatel-Lucent RRH2X	40.00	129	75	0.004	3	160
Alcatel-Lucent RRH2x	40.00	170	99	0.006	4	211
Alcatel-Lucent B66 R	40.00	201	117	0.007	4	249
RFS DB-T1-6Z-8AB-0Z	40.00	88	51	0.003	2	109
Commscope SBNHH-1D65	40.00	304	177	0.011	7	377
		15,004	16,685	1.000	640	18,613

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
21	87.00	269	596	0.036	23	231
20	82.50	336	680	0.041	26	289
19	77.50	336	611	0.037	23	289
18	72.50	336	544	0.033	21	289
17	69.50	67	101	0.006	4	58
16	67.00	333	470	0.028	18	286
15	62.50	416	521	0.031	20	357
14	57.50	416	451	0.027	17	357
13	52.50	416	386	0.023	15	357
12	49.50	133	112	0.007	4	115
11	47.00	386	296	0.018	11	332
10	43.50	293	197	0.012	8	252
9	41.00	197	120	0.007	5	170
8	37.50	554	288	0.017	11	476
7	32.50	563	228	0.014	9	484
6	27.50	573	174	0.010	7	492
5	22.50	582	125	0.008	5	500
4	17.50	591	82	0.005	3	508
3	12.50	601	47	0.003	2	516
2	7.50	610	20	0.001	1	524
1	2.50	619	3	0.000	0	532
Kaelus DBCT108F1V92-	89.00	56	128	0.008	5	48
CCI DTMABP7819VG12A	89.00	77	177	0.011	7	66
Raycap DC6-48-60-0-8	89.00	33	76	0.005	3	28
Raycap DC6-48-60-18-	89.00	64	147	0.009	6	55
Ericsson RRUS 4426 B	89.00	97	223	0.013	9	83
Ericsson 4478 Band 1	89.00	120	276	0.017	11	103
Ericsson RRUS 4478 B	89.00	112	259	0.016	10	96
Ericsson RRUS 11 (Ba	89.00	110	254	0.015	10	95
Ericsson RRUS 32 (50	89.00	102	234	0.014	9	87
Ericsson RRUS 32 B2	89.00	106	244	0.015	9	91
Powerwave Allgon 777	89.00	70	161	0.010	6	60
Quintel QS66512-2	89.00	222	512	0.031	20	191
CCI OPA-65R-LCUU-H6	89.00	146	337	0.020	13	125

Kathrein Scala 80010	89.00	195	450	0.027	17	168
Modified Platform w/	89.00	2,466	5,686	0.341	218	2,120
RFS FD9R6004/1C-3L	42.00	9	6	0.000	0	8
Flat Low Profile Pla	42.00	1,500	947	0.057	36	1,289
Alcatel-Lucent RRH2X	40.00	129	75	0.004	3	111
Alcatel-Lucent RRH2x	40.00	170	99	0.006	4	146
Alcatel-Lucent B66 R	40.00	201	117	0.007	4	173
RFS DB-T1-6Z-8AB-0Z	40.00	88	51	0.003	2	76
Commscope SBNHH-1D65	40.00	304	177	0.011	7	261
		15,004	16,685	1.000	640	12,895

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.84	-0.64	0.00	-49.69	0.00	49.69	948.37	474.19	888.66	444.99	0.00	0.00	0.037
5.00	-17.09	-0.65	0.00	-46.48	0.00	46.48	922.11	461.05	828.98	415.11	0.01	-0.02	0.035
10.00	-16.34	-0.65	0.00	-43.24	0.00	43.24	894.84	447.42	770.44	385.79	0.04	-0.04	0.033
15.00	-15.61	-0.65	0.00	-39.99	0.00	39.99	866.57	433.29	713.14	357.10	0.09	-0.06	0.031
20.00	-14.89	-0.65	0.00	-36.73	0.00	36.73	837.31	418.65	657.22	329.10	0.16	-0.08	0.030
25.00	-14.18	-0.65	0.00	-33.48	0.00	33.48	805.59	402.80	601.69	301.29	0.25	-0.09	0.028
30.00	-13.48	-0.64	0.00	-30.24	0.00	30.24	764.99	382.50	542.27	271.54	0.36	-0.11	0.026
35.00	-12.79	-0.63	0.00	-27.03	0.00	27.03	724.39	362.19	485.94	243.33	0.49	-0.13	0.024
40.00	-11.44	-0.61	0.00	-23.86	0.00	23.86	683.78	341.89	432.70	216.67	0.63	-0.15	0.022
42.00	-9.20	-0.56	0.00	-22.65	0.00	22.65	667.54	333.77	412.27	206.44	0.70	-0.15	0.020
45.00	-8.72	-0.55	0.00	-20.97	0.00	20.97	643.18	321.59	382.55	191.56	0.80	-0.16	0.019
49.00	-8.56	-0.54	0.00	-18.77	0.00	18.77	610.70	305.35	344.65	172.58	0.94	-0.18	0.017
49.00	-8.56	-0.54	0.00	-18.77	0.00	18.77	606.13	303.07	297.07	197.07	0.94	-0.18	0.026
50.00	-8.04	-0.53	0.00	-18.23	0.00	18.23	606.13	303.07	297.07	197.07	0.98	-0.18	0.026
50.00	-8.04	-0.53	0.00	-18.23	0.00	18.23	606.13	303.07	297.07	197.07	0.98	-0.18	0.106
55.00	-7.53	-0.52	0.00	-15.58	0.00	15.58	606.13	303.07	297.07	197.07	1.17	-0.19	0.091
60.00	-7.01	-0.50	0.00	-13.01	0.00	13.01	606.13	303.07	297.07	197.07	1.40	-0.25	0.078
65.00	-6.60	-0.48	0.00	-10.51	0.00	10.51	606.13	303.07	297.07	197.07	1.69	-0.29	0.064
69.00	-6.51	-0.48	0.00	-8.57	0.00	8.57	606.13	303.07	297.07	197.07	1.94	-0.32	0.054
69.00	-6.51	-0.48	0.00	-8.57	0.00	8.57	459.24	229.62	229.69	150.79	1.94	-0.32	0.071
70.00	-6.10	-0.46	0.00	-8.09	0.00	8.09	459.24	229.62	229.69	150.79	2.01	-0.33	0.067
75.00	-5.68	-0.44	0.00	-5.79	0.00	5.79	459.24	229.62	229.69	150.79	2.38	-0.37	0.051
80.00	-5.26	-0.41	0.00	-3.60	0.00	3.60	459.24	229.62	229.69	150.79	2.78	-0.39	0.035
85.00	-4.93	-0.39	0.00	-1.55	0.00	1.55	459.24	229.62	229.69	150.79	3.19	-0.40	0.021
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	3.53	-0.41	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-12.36	-0.64	0.00	-48.94	0.00	48.94	948.37	474.19	888.66	444.99	0.00	0.00	0.034
5.00	-11.84	-0.64	0.00	-45.74	0.00	45.74	922.11	461.05	828.98	415.11	0.01	-0.02	0.032
10.00	-11.32	-0.65	0.00	-42.51	0.00	42.51	894.84	447.42	770.44	385.79	0.04	-0.04	0.030
15.00	-10.81	-0.65	0.00	-39.28	0.00	39.28	866.57	433.29	713.14	357.10	0.09	-0.06	0.029
20.00	-10.31	-0.64	0.00	-36.05	0.00	36.05	837.31	418.65	657.22	329.10	0.16	-0.08	0.027
25.00	-9.82	-0.64	0.00	-32.83	0.00	32.83	805.59	402.80	601.69	301.29	0.25	-0.09	0.025
30.00	-9.34	-0.63	0.00	-29.64	0.00	29.64	764.99	382.50	542.27	271.54	0.35	-0.11	0.023
35.00	-8.86	-0.62	0.00	-26.47	0.00	26.47	724.39	362.19	485.94	243.33	0.48	-0.13	0.021
40.00	-7.92	-0.60	0.00	-23.35	0.00	23.35	683.78	341.89	432.70	216.67	0.62	-0.14	0.019
42.00	-6.37	-0.55	0.00	-22.16	0.00	22.16	667.54	333.77	412.27	206.44	0.68	-0.15	0.018
45.00	-6.04	-0.54	0.00	-20.50	0.00	20.50	643.18	321.59	382.55	191.56	0.78	-0.16	0.017
49.00	-5.93	-0.54	0.00	-18.34	0.00	18.34	610.70	305.35	344.65	172.58	0.92	-0.17	0.015
49.00	-5.93	-0.54	0.00	-18.34	0.00	18.34	606.13	303.07	297.07	197.07	0.92	-0.17	0.023
50.00	-5.57	-0.52	0.00	-17.81	0.00	17.81	606.13	303.07	297.07	197.07	0.96	-0.17	0.023
50.00	-5.57	-0.52	0.00	-17.81	0.00	17.81	606.13	303.07	297.07	197.07	0.96	-0.17	0.100
55.00	-5.21	-0.51	0.00	-15.20	0.00	15.20	606.13	303.07	297.07	197.07	1.15	-0.19	0.086
60.00	-4.86	-0.49	0.00	-12.67	0.00	12.67	606.13	303.07	297.07	197.07	1.37	-0.24	0.072
65.00	-4.57	-0.47	0.00	-10.23	0.00	10.23	606.13	303.07	297.07	197.07	1.65	-0.29	0.059
69.00	-4.51	-0.47	0.00	-8.34	0.00	8.34	606.13	303.07	297.07	197.07	1.91	-0.32	0.050
69.00	-4.51	-0.47	0.00	-8.34	0.00	8.34	459.24	229.62	229.69	150.79	1.91	-0.32	0.065
70.00	-4.22	-0.45	0.00	-7.87	0.00	7.87	459.24	229.62	229.69	150.79	1.97	-0.32	0.061
75.00	-3.93	-0.43	0.00	-5.62	0.00	5.62	459.24	229.62	229.69	150.79	2.33	-0.36	0.046
80.00	-3.64	-0.40	0.00	-3.50	0.00	3.50	459.24	229.62	229.69	150.79	2.72	-0.38	0.031
85.00	-3.41	-0.38	0.00	-1.50	0.00	1.50	459.24	229.62	229.69	150.79	3.13	-0.39	0.017
89.00	0.00	-0.35	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	3.46	-0.40	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.95
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
21	87.00	269	1.806	1.566	0.988	0.331	77	334
20	82.50	336	1.624	0.855	0.703	0.221	64	417
19	77.50	336	1.433	0.350	0.467	0.121	35	417
18	72.50	336	1.254	0.062	0.297	0.046	13	417
17	69.50	67	1.153	-0.035	0.221	0.012	1	83
16	67.00	333	1.071	-0.085	0.170	-0.009	-3	413
15	62.50	416	0.932	-0.121	0.100	-0.033	-12	516
14	57.50	416	0.789	-0.110	0.051	-0.039	-14	516
13	52.50	416	0.658	-0.073	0.022	-0.024	-9	516
12	49.50	133	0.585	-0.047	0.013	-0.010	-1	165
11	47.00	386	0.527	-0.026	0.008	0.004	1	479
10	43.50	293	0.452	0.001	0.006	0.022	6	364
9	41.00	197	0.401	0.018	0.007	0.033	6	245
8	37.50	554	0.336	0.037	0.010	0.044	21	687
7	32.50	563	0.252	0.055	0.017	0.051	25	699
6	27.50	573	0.180	0.065	0.026	0.053	26	710
5	22.50	582	0.121	0.070	0.034	0.051	26	722
4	17.50	591	0.073	0.072	0.040	0.049	25	733
3	12.50	601	0.037	0.070	0.041	0.046	24	745
2	7.50	610	0.013	0.059	0.034	0.040	21	757
1	2.50	619	0.001	0.028	0.016	0.021	11	768
Kaelus DBCT108F1V92-	89.00	56	1.890	1.980	1.140	0.387	19	69
CCI DTMABP7819VG12A	89.00	77	1.890	1.980	1.140	0.387	26	95
Raycap DC6-48-60-0-8	89.00	33	1.890	1.980	1.140	0.387	11	41
Raycap DC6-48-60-18-	89.00	64	1.890	1.980	1.140	0.387	21	79
Ericsson RRUS 4426 B	89.00	97	1.890	1.980	1.140	0.387	32	120
Ericsson 4478 Band 1	89.00	120	1.890	1.980	1.140	0.387	40	149
Ericsson RRUS 4478 B	89.00	112	1.890	1.980	1.140	0.387	38	139
Ericsson RRUS 11 (Ba	89.00	110	1.890	1.980	1.140	0.387	37	136
Ericsson RRUS 32 (50	89.00	102	1.890	1.980	1.140	0.387	34	126
Ericsson RRUS 32 B2	89.00	106	1.890	1.980	1.140	0.387	36	131
Powerwave Allgon 777	89.00	70	1.890	1.980	1.140	0.387	23	87
Quintel QS66512-2	89.00	222	1.890	1.980	1.140	0.387	74	275
CCI OPA-65R-LCUU-H6	89.00	146	1.890	1.980	1.140	0.387	49	181

Kathrein Scala 80010	89.00	195	1.890	1.980	1.140	0.387	65	242
Modified Platform w/	89.00	2,466	1.890	1.980	1.140	0.387	827	3,059
RFS FD9R6004/1C-3L	42.00	9	0.421	0.011	0.006	0.029	0	12
Flat Low Profile Pla	42.00	1,500	0.421	0.011	0.006	0.029	37	1,861
Alcatel-Lucent RRH2X	40.00	129	0.382	0.024	0.007	0.036	4	160
Alcatel-Lucent RRH2x	40.00	170	0.382	0.024	0.007	0.036	5	211
Alcatel-Lucent B66 R	40.00	201	0.382	0.024	0.007	0.036	6	249
RFS DB-T1-6Z-8AB-0Z	40.00	88	0.382	0.024	0.007	0.036	3	109
Commscope SBNHH-	40.00	304	0.382	0.024	0.007	0.036	10	377
		15,004	44.799	32.650	20.418	7.076	1,744	18,613

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
21	87.00	269	1.806	1.566	0.988	0.331	77	231
20	82.50	336	1.624	0.855	0.703	0.221	64	289
19	77.50	336	1.433	0.350	0.467	0.121	35	289
18	72.50	336	1.254	0.062	0.297	0.046	13	289
17	69.50	67	1.153	-0.035	0.221	0.012	1	58
16	67.00	333	1.071	-0.085	0.170	-0.009	-3	286
15	62.50	416	0.932	-0.121	0.100	-0.033	-12	357
14	57.50	416	0.789	-0.110	0.051	-0.039	-14	357
13	52.50	416	0.658	-0.073	0.022	-0.024	-9	357
12	49.50	133	0.585	-0.047	0.013	-0.010	-1	115
11	47.00	386	0.527	-0.026	0.008	0.004	1	332
10	43.50	293	0.452	0.001	0.006	0.022	6	252
9	41.00	197	0.401	0.018	0.007	0.033	6	170
8	37.50	554	0.336	0.037	0.010	0.044	21	476
7	32.50	563	0.252	0.055	0.017	0.051	25	484
6	27.50	573	0.180	0.065	0.026	0.053	26	492
5	22.50	582	0.121	0.070	0.034	0.051	26	500
4	17.50	591	0.073	0.072	0.040	0.049	25	508
3	12.50	601	0.037	0.070	0.041	0.046	24	516
2	7.50	610	0.013	0.059	0.034	0.040	21	524
1	2.50	619	0.001	0.028	0.016	0.021	11	532
Kaelus DBCT108F1V92-	89.00	56	1.890	1.980	1.140	0.387	19	48
CCI DTMABP7819VG12A	89.00	77	1.890	1.980	1.140	0.387	26	66
Raycap DC6-48-60-0-8	89.00	33	1.890	1.980	1.140	0.387	11	28
Raycap DC6-48-60-18-	89.00	64	1.890	1.980	1.140	0.387	21	55
Ericsson RRUS 4426 B	89.00	97	1.890	1.980	1.140	0.387	32	83
Ericsson 4478 Band 1	89.00	120	1.890	1.980	1.140	0.387	40	103
Ericsson RRUS 4478 B	89.00	112	1.890	1.980	1.140	0.387	38	96
Ericsson RRUS 11 (Ba	89.00	110	1.890	1.980	1.140	0.387	37	95
Ericsson RRUS 32 (50	89.00	102	1.890	1.980	1.140	0.387	34	87
Ericsson RRUS 32 B2	89.00	106	1.890	1.980	1.140	0.387	36	91
Powerwave Allgon 777	89.00	70	1.890	1.980	1.140	0.387	23	60
Quintel QS66512-2	89.00	222	1.890	1.980	1.140	0.387	74	191
CCI OPA-65R-LCUU-H6	89.00	146	1.890	1.980	1.140	0.387	49	125
Kathrein Scala 80010	89.00	195	1.890	1.980	1.140	0.387	65	168
Modified Platform w/	89.00	2,466	1.890	1.980	1.140	0.387	827	2,120
RFS FD9R6004/1C-3L	42.00	9	0.421	0.011	0.006	0.029	0	8
Flat Low Profile Pla	42.00	1,500	0.421	0.011	0.006	0.029	37	1,289
Alcatel-Lucent RRH2X	40.00	129	0.382	0.024	0.007	0.036	4	111
Alcatel-Lucent RRH2x	40.00	170	0.382	0.024	0.007	0.036	5	146
Alcatel-Lucent B66 R	40.00	201	0.382	0.024	0.007	0.036	6	173
RFS DB-T1-6Z-8AB-0Z	40.00	88	0.382	0.024	0.007	0.036	3	76
Commscope SBNHH-	40.00	304	0.382	0.024	0.007	0.036	10	261

	15,004	44.799	32.650	20.418	7.076	1,744	12,895

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.84	-1.74	0.00	-145.83	0.00	145.83	948.37	474.19	888.66	444.99	0.00	0.00	0.091
5.00	-17.09	-1.74	0.00	-137.13	0.00	137.13	922.11	461.05	828.98	415.11	0.03	-0.06	0.087
10.00	-16.34	-1.73	0.00	-128.45	0.00	128.45	894.84	447.42	770.44	385.79	0.12	-0.11	0.083
15.00	-15.60	-1.72	0.00	-119.81	0.00	119.81	866.57	433.29	713.14	357.10	0.27	-0.17	0.078
20.00	-14.88	-1.70	0.00	-111.23	0.00	111.23	837.31	418.65	657.22	329.10	0.48	-0.23	0.074
25.00	-14.17	-1.69	0.00	-102.72	0.00	102.72	805.59	402.80	601.69	301.29	0.75	-0.28	0.069
30.00	-13.47	-1.67	0.00	-94.29	0.00	94.29	764.99	382.50	542.27	271.54	1.07	-0.34	0.065
35.00	-12.78	-1.66	0.00	-85.93	0.00	85.93	724.39	362.19	485.94	243.33	1.46	-0.39	0.061
40.00	-11.43	-1.62	0.00	-77.64	0.00	77.64	683.78	341.89	432.70	216.67	1.90	-0.45	0.056
42.00	-9.19	-1.56	0.00	-74.40	0.00	74.40	667.54	333.77	412.27	206.44	2.09	-0.47	0.053
45.00	-8.71	-1.56	0.00	-69.71	0.00	69.71	643.18	321.59	382.55	191.56	2.40	-0.50	0.050
49.00	-8.54	-1.57	0.00	-63.45	0.00	63.45	610.70	305.35	344.65	172.58	2.83	-0.54	0.047
49.00	-8.54	-1.57	0.00	-63.45	0.00	63.45	606.13	303.07	297.07	197.07	2.83	-0.54	0.069
50.00	-8.03	-1.58	0.00	-61.88	0.00	61.88	606.13	303.07	297.07	197.07	2.95	-0.55	0.071
50.00	-8.03	-1.58	0.00	-61.88	0.00	61.88	606.13	303.07	297.07	197.07	2.95	-0.55	0.327
55.00	-7.51	-1.60	0.00	-54.00	0.00	54.00	606.13	303.07	297.07	197.07	3.55	-0.60	0.286
60.00	-6.99	-1.63	0.00	-45.99	0.00	45.99	606.13	303.07	297.07	197.07	4.28	-0.79	0.245
65.00	-6.57	-1.64	0.00	-37.85	0.00	37.85	606.13	303.07	297.07	197.07	5.20	-0.96	0.203
69.00	-6.49	-1.65	0.00	-31.28	0.00	31.28	606.13	303.07	297.07	197.07	6.05	-1.07	0.169
69.00	-6.49	-1.65	0.00	-31.28	0.00	31.28	459.24	229.62	229.69	150.79	6.05	-1.07	0.222
70.00	-6.07	-1.63	0.00	-29.64	0.00	29.64	459.24	229.62	229.69	150.79	6.28	-1.09	0.210
75.00	-5.65	-1.60	0.00	-21.47	0.00	21.47	459.24	229.62	229.69	150.79	7.50	-1.22	0.155
80.00	-5.23	-1.53	0.00	-13.47	0.00	13.47	459.24	229.62	229.69	150.79	8.83	-1.31	0.101
85.00	-4.90	-1.45	0.00	-5.80	0.00	5.80	459.24	229.62	229.69	150.79	10.23	-1.36	0.049
89.00	0.00	-1.33	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	11.37	-1.37	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-12.36	-1.74	0.00	-143.46	0.00	143.46	948.37	474.19	888.66	444.99	0.00	0.00	0.087
5.00	-11.84	-1.73	0.00	-134.77	0.00	134.77	922.11	461.05	828.98	415.11	0.03	-0.06	0.083
10.00	-11.32	-1.71	0.00	-126.13	0.00	126.13	894.84	447.42	770.44	385.79	0.12	-0.11	0.079
15.00	-10.81	-1.70	0.00	-117.56	0.00	117.56	866.57	433.29	713.14	357.10	0.27	-0.17	0.074
20.00	-10.31	-1.68	0.00	-109.06	0.00	109.06	837.31	418.65	657.22	329.10	0.47	-0.22	0.070
25.00	-9.81	-1.66	0.00	-100.66	0.00	100.66	805.59	402.80	601.69	301.29	0.73	-0.28	0.066
30.00	-9.33	-1.64	0.00	-92.35	0.00	92.35	764.99	382.50	542.27	271.54	1.05	-0.33	0.062
35.00	-8.85	-1.63	0.00	-84.13	0.00	84.13	724.39	362.19	485.94	243.33	1.43	-0.39	0.058
40.00	-7.91	-1.59	0.00	-75.99	0.00	75.99	683.78	341.89	432.70	216.67	1.86	-0.44	0.053
42.00	-6.36	-1.54	0.00	-72.80	0.00	72.80	667.54	333.77	412.27	206.44	2.05	-0.46	0.050
45.00	-6.03	-1.54	0.00	-68.19	0.00	68.19	643.18	321.59	382.55	191.56	2.35	-0.49	0.048
49.00	-5.92	-1.54	0.00	-62.03	0.00	62.03	610.70	305.35	344.65	172.58	2.78	-0.53	0.044
49.00	-5.92	-1.54	0.00	-62.03	0.00	62.03	606.13	303.07	297.07	197.07	2.78	-0.53	0.065
50.00	-5.56	-1.55	0.00	-60.49	0.00	60.49	606.13	303.07	297.07	197.07	2.89	-0.54	0.067
50.00	-5.56	-1.55	0.00	-60.49	0.00	60.49	606.13	303.07	297.07	197.07	2.89	-0.54	0.316
55.00	-5.20	-1.57	0.00	-52.73	0.00	52.73	606.13	303.07	297.07	197.07	3.48	-0.59	0.276
60.00	-4.83	-1.59	0.00	-44.88	0.00	44.88	606.13	303.07	297.07	197.07	4.20	-0.78	0.236
65.00	-4.55	-1.60	0.00	-36.90	0.00	36.90	606.13	303.07	297.07	197.07	5.10	-0.94	0.195
69.00	-4.49	-1.61	0.00	-30.49	0.00	30.49	606.13	303.07	297.07	197.07	5.93	-1.04	0.162
69.00	-4.49	-1.61	0.00	-30.49	0.00	30.49	459.24	229.62	229.69	150.79	5.93	-1.04	0.212
70.00	-4.19	-1.59	0.00	-28.88	0.00	28.88	459.24	229.62	229.69	150.79	6.15	-1.07	0.201
75.00	-3.90	-1.56	0.00	-20.92	0.00	20.92	459.24	229.62	229.69	150.79	7.34	-1.19	0.147
80.00	-3.61	-1.49	0.00	-13.12	0.00	13.12	459.24	229.62	229.69	150.79	8.64	-1.28	0.095
85.00	-3.38	-1.41	0.00	-5.65	0.00	5.65	459.24	229.62	229.69	150.79	10.01	-1.33	0.045
89.00	0.00	-1.33	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	11.13	-1.34	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	9.91	0.00	17.98	0.00	0.00	577.45	50.00	0.87
0.9D + 1.6W	9.90	0.00	13.48	0.00	0.00	570.92	50.00	0.85
1.2D + 1.0Di + 1.0Wi	2.45	0.00	34.31	0.00	0.00	156.10	50.00	0.28
(1.2 + 0.2Sds) * DL + E ELFM	0.64	0.00	17.84	0.00	0.00	49.69	50.00	0.11
(1.2 + 0.2Sds) * DL + E EMAM	1.74	0.00	17.84	0.00	0.00	145.83	50.00	0.33
(0.9 - 0.2Sds) * DL + E ELFM	0.64	0.00	12.36	0.00	0.00	48.94	50.00	0.10
(0.9 - 0.2Sds) * DL + E EMAM	1.74	0.00	12.36	0.00	0.00	143.46	50.00	0.32
1.0D + 1.0W	2.43	0.00	15.00	0.00	0.00	139.52	50.00	0.22

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Max Member Pu (kip)	phiPn (kip)	Ratio
0.00	50.00	(3) SOL-#20 All Thread Bar	278.0	13.3	16.8	0.794	184.8	297.5	0.621

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	Lower Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	50.00	(3) SOL-#20 All Thread Bar	77.6	12.0	7	8	0.808	0.0	12.0	0	0	0.000

Base Plate & Anchor Rod Analysis

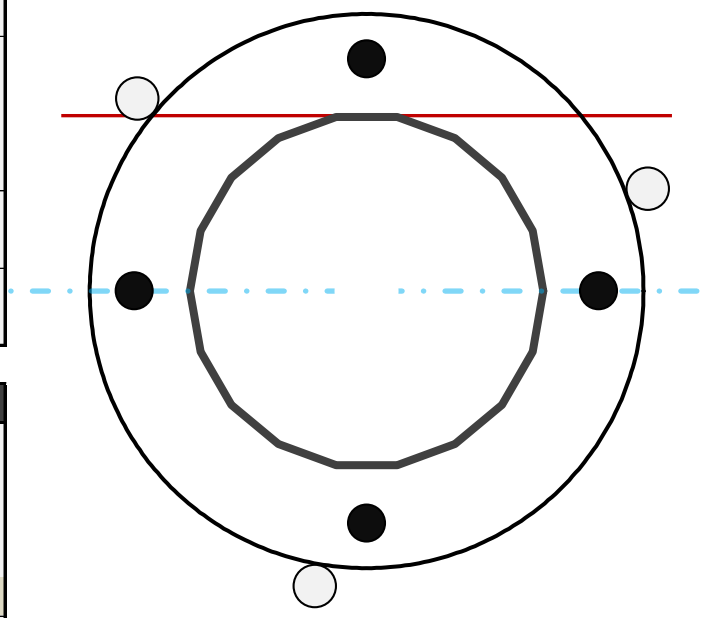
Pole Dimensions		
Number of Sides	18	-
Diameter	23	in
Thickness	0.1875	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	577.5	k-ft
Axial, Pu	18.0	k
Shear, Vu	9.9	k
Neutral Axis	0	°

Report Capacities		
Component	Capacity	Result
Base Plate	24%	Pass
Anchor Rods	20%	Pass
Dwyidag	30%	Pass

Base Plate		
Shape	Round	-
Diameter, ø	37	in
Thickness	1 1/2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	200.7	k
Bending Stress, ϕMn	823.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	4	-
Diameter, ø	2 1/4	in
Bolt Circle	31	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	24.3	in
Orientation Offset	0	°
Applied Force, Pu	51.8	k
Anchor Rods, ϕPn	259.8	k



Dywidag Reinforcement		
Quantity	3	-
Bar Size	#20	in
Diameter, ø	2.5	in
Bracket Type	Angle	-
Circle	40.00	in
Orientation Offset	20	°
Applied Force, Pu	119.1	k
Dywidag Bar, ϕPn	392.7	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	9.9	131.5	0.23
Anchor Rod Forces	9.9	131.5	0.23
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	446.0	0.77
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	13.3696	0.7428	0.0087		869.86
Bolt	3.9761	3.2477	0.8393	4.5	1563.87
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		2951.00
Stiffener	0.0000	0.0000	0.0000		0.00

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

Anchor Rods		
Anchor Rod Quantity, N	4	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	31	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	51.8	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.199	OK
Interaction Capacity	0.199	OK

External Base Plate		
Chord Length AA	24.118	in
Additional AA	3.000	in
Section Modulus, Z	15.254	in^3
Applied Moment, Mu	200.7	k-ft
Bending Capacity, ϕMn	823.7	k-ft
Capacity, Mu/ϕMn	0.244	OK
Chord Length AB	23.767	in
Additional AB	3.000	in
Section Modulus, Z	15.057	in^3
Applied Moment, Mu	191.4	k-ft
Bending Capacity, ϕMn	813.1	k-ft
Capacity, Mu/ϕMn	0.235	OK
Bend Line Length	34.038	in
Additional Bend Line	0.000	in
Section Modulus, Z	19.146	in^3
Applied Moment, Mu	200.7	k-ft
Bending Capacity, ϕMn	1033.9	k-ft
Capacity, Mu/ϕMn	0.194	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Dywidag Reinforcement		
Dywidag Quantity, N	3	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	40	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	119.1	k
Compressive Capacity, ϕPn	392.7	k
Capacity, Pu/ϕPn	0.303	OK

Code Rev.	G	
Moment	174.2 k-ft	
Axial	8.3 k	

Date	2/15/2019
Engineer	Travis.Gatling
Site #	302526
Carrier	AT&T MOBILITY

Required Flange Thickness: 0.76 in OK

Base/Flange Plate	Plate Type	*Flange* @ 49 ft	
	Pole Diameter	12.75	in
	Pole Thickness	0.5	in
	Plate Diameter	28.5	in
	Plate Thickness	2	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	100.14	k-in
	Applied	14.57	k-in
Stiffeners	#		

Bolts	#	*18*	
	Bolt Circle	25.75	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	2.59	k
Reinforcement ●	#	*3*	
	DYW. Circle	31	in
	Offset Angle	20	°
	Type	#20	
	Diameter	2.5	in
	Fu	100	ksi
	ϕ_s Resistance	392.70	k
	Applied	73.32	k
Extra Bolts O	#	*0*	

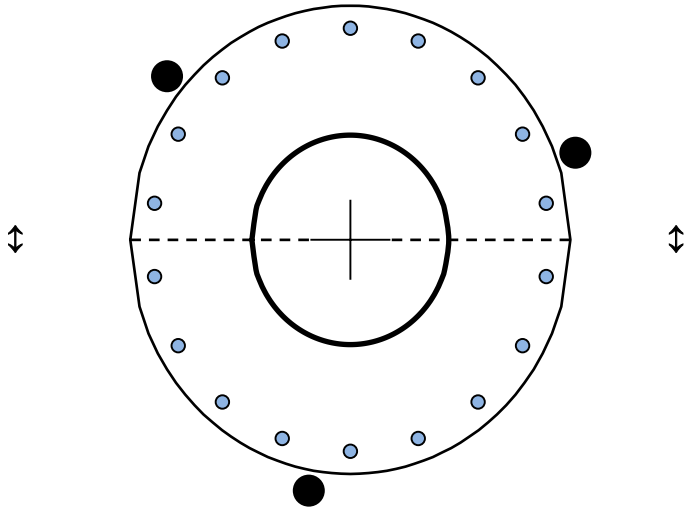


Plate Stress Ratio: 0.15 (Pass)

Bolt Stress Ratio: 0.05 (Pass)

Reinforcement Stress Ratio: 0.19 (Pass)

Base/Flange Plate	Plate Type	***Flange***	***@ 69 ft***
	Pole Diameter	12.75	in
	Pole Thickness	0.375	in
	Plate Diameter	20	in
	Plate Thickness	1.5	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	84.49	k-in
	Applied	15.33	k-in
Stiffeners	#		

Bolts	#	***12***	
	Bolt Circle	16	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	20.43	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment 83.9 k-ft
Axial 6.2 k

Date 2/15/2019
Engineer Travis.Gatling
Site # 302526
Carrier AT&T MOBILITY

Required Flange Thickness:
0.64 in OK

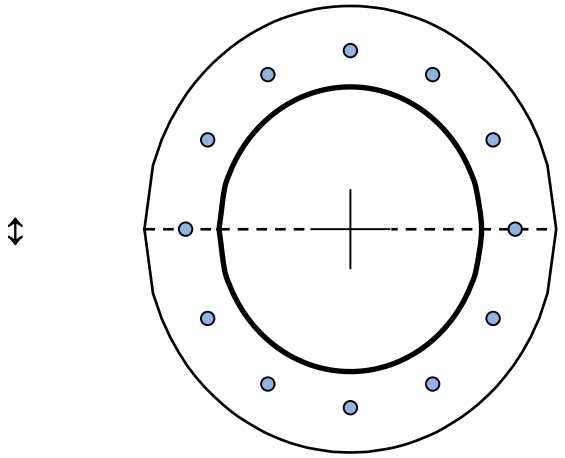
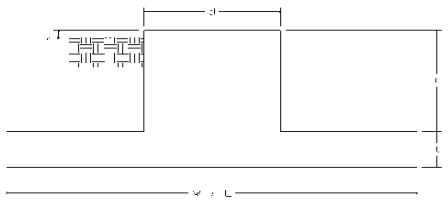


Plate Stress Ratio:
0.18 (Pass)

Bolt Stress Ratio:
0.37 (Pass)

Site Name:	Naugatuck, CT
Site Number:	302526
Engineering Number:	OAA742050
Engineer:	Travis.Gatling
Date:	02/15/19
Tower Type:	MP

Program Last Updated: *5/13/2014*



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

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	18.0	k	Concrete Strength (f'_c):	4000	psi
Uplift/Leg:	0.0	k	Pad Tension Steel Depth:	32.00	in
Total Shear:	9.9	k	ϕ_{Shear}:	0.75	
Moment:	577.5	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	18.0	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation (l + t - h):	5.25	ft	β:	0.85	
Diameter of Pier (d):	4.50	ft	Bottom Pad Rebar Size #:	6	
Height of Pier above Ground (h):	1.00		# of Bottom Pad Rebar:	20	
Width of Pad (W):	12.00	ft	Pad Bottom Steel Area:	8.80	in^2
Length of Pad (L):	12.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	6	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	20	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	8.80	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	6	
Depth Below Ground Surface to Water Table:	25.00	ft	Pier Steel Area (Single Bar):	0.44	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	24	
Unit Weight of Soil Above Water Table:	110.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	46.0	in
Unit Weight of Soil Below Water Table:	47.6	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	30.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.35		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	6000.0	psf	Tie Steel Area (Single Bar):	0.20	in^2
Ultimate Passive Pressure on Pad Face:	0.0	psf	Tie Spacing:	12	in
$\phi_{Soil\ and\ Concrete\ Weight}$:	0.9		Tie Steel F_y:	60000	psi
ϕ_{Soil}:	0.75				

Overturning Moment Usage

Design OTM:	639.4	k-ft
OTM Resistance:	698.6	k-ft
Design OTM / OTM Resistance:	0.92	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	4369	psf
Factored Nominal Bearing Pressure:	4500	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.97	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

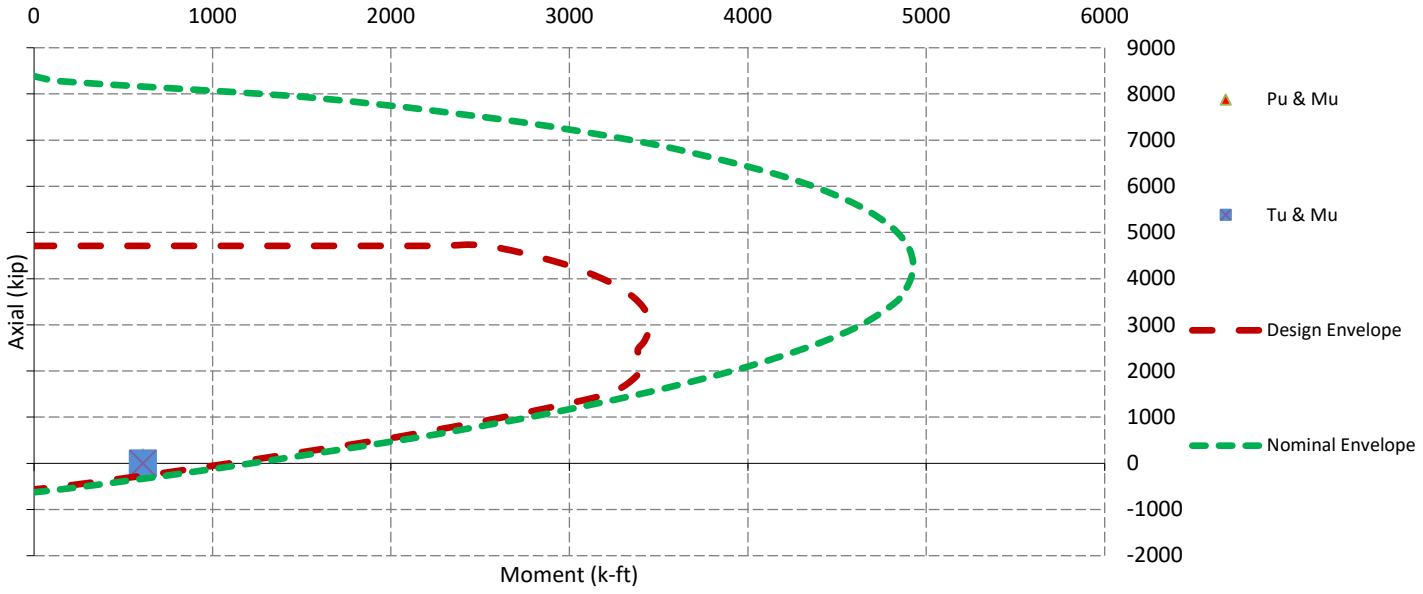
Sliding Factor of Safety

Total Factored Sliding Resistance:	31.3	k
Sliding Design / Sliding Resistance:	0.32	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	40.3	k
One Way Shear Capacity (ϕV_c):	260.0	k - ACI11.3.1.1
$V_u / \phi V_c$:	0.15	Result: OK
Load Direction Controling Shear Capacity:	Diagonal to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	225.5	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	1234.3	k-ft - ACI10.3
$M_u / \phi M_n$:	0.18	Result: OK
Load Direction Controling Flexural Capacity:	Diagonal to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	94.2	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1249.1	k-ft
$M_u / \phi M_n$:	0.08	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0019	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0019	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	7	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	7	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1640.4	k - ACI11.12.2.1
$V_u / \phi V_c$:	0.00	Result: OK
Factored Moment in Pier (M_u):	609.7	k-ft
Pier Moment Capacity (ϕM_n):	1070.4	k-ft
$M_u / \phi M_n$:	0.57	Result: OK
Factored Shear in Pier (V_u):	9.9	k
Pier Shear Capacity (ϕV_n):	218.1	k
$V_u / \phi V_c$:	0.05	Result: OK
Pier Shear Reinforcement Ratio:	0.0009	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	570.2	k
$T_u / \phi T_n$:	0.00	Result: OK
Factored Compression in Pier (P_u):	18.0	k
Pier Compression Capacity (ϕP_n):	4030.4	k - ACI10.3.6.2
$P_u / \phi P_n$:	0.00	Result: OK
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.57	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING
CONNECTICUT

Antenna Mount Modification Analysis

FOR

CT2166

FA # 10035065
585 South Main Street
Naugatuck, CT 06770
New Haven County
4C – MRCTB031935
5C – MRCTB031373
6C – MRCTB031912

Modified Mount Utilization: 45.8%

October 17, 2018

Prepared For

AT&T
550 Cochituate Road
Framingham, MA 01701

Prepared By

Maser Consulting Connecticut
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STATE OF CONNECTICUT
PETROS TSOUKALAS
32577
REGISTERED PROFESSIONAL ENGINEER

Petros E. Tsoukalas, P.E.
Geographic Discipline Leader
Connecticut License No. 32557

MC Project No. 18963006A

Objective:

The objective of this report is to determine the capacity of the existing antenna support mount with the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has performed limited field observations on May 31, 2018 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances where possible, from ground level. Maser Consulting Connecticut has reviewed the following documents in completing this report:

- Previous Construction Drawings prepared by Comex Consultants, dated October 07, 2014.
- Commscope Assembly drawing P/N MTC3607
- RFDS 2311484 Version 2.00 provided by Empire, dated June 13, 2018.
- Previous Mount Analysis prepared by Maser Consulting Connecticut (MC Project # 18963006A), dated October 01, 2018

The proposed **AT&T** equipment is to be supported on an existing antenna support mount constructed of structural steel antenna support pipes supported by pipes at a centerline of approximately 90-0" above ground level. This report is based only upon this information.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 Connecticut State Building Code, Incorporating the 2012 IBC
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - Ultimate Wind Speed- 125 mph (3 second Gust)
    - Basic Wind Speed – 97 mph (3 Second Gust)
    - Exposure Category – B
    - Structural Class – II
    - Topographic Category – 1
    - Ice Wind – 50 mph
    - Ice Thickness – 0.75"
- Specification for Structural Steel Buildings ANSI/AISC 360-10, American Institute of Steel Construction (AISC)

Loading used in this analysis is found in Appendix A of this report.

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the modified antenna support mount is structurally adequate to support the proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure is deemed to be negligible or acceptable, then the proposed equipment can be installed as intended.

The modified antenna mount has been modeled in RISA-3D, a comprehensive structural analysis program. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes. The program performs an analysis based on the steel code to determine the adequacy of the members, and produces the reactions at the connection points of the mounts to the existing structure. Additional calculations were then prepared to analyze the mount connection points with the proposed loading conditions.

General Site Design Assumption:

- All engineering services are performed on the basis that the information used is current and correct.
- It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report, if any.
- It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.
- It is the responsibility of the client to ensure that the information provided to Maser Consulting Connecticut and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that the original design, material production, fabrication, and erection of the existing structure was performed in accordance with accepted industry design standards and in accordance with all applicable codes. Further, it is assumed that the existing structure and appurtenances have been properly maintained in accordance with all applicable codes and manufacturer's specifications and no structural defects and/or deterioration to the structural members has occurred.
- It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.
- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information we supply.

Modification Description:

The following modifications have been utilized in this report:

- Install one site pro 1 P/N PRK-1245L or equivalent at a height of 4'-0" below the existing platform connection.
    - The proposed kit shall be attached to the existing 3.0 STD pipe standoff arms of the platform using the attachments included by the manufacturer.

Please refer to the construction drawings provided for further information

Site Specific Design Parameters:

The following design parameters have been utilized in this report:

- *Structural Steel Angles are constructed of A36 Steel*
- *Structural Steel Pipes are constructed of A53 Grade B Steel*
- *It is assumed that all antenna pipes are 2.0 STD pipe, 8'-0" long*
- *The proposed Kathrein 800-10965 antenna shall be mounted in position 3 in all sectors on the existing antenna mast*
- *The proposed RRUS-4426 B66 and existing RRUS 11 shall be mounted in position 4 in all sectors on the existing dual RRU mount, behind the existing antenna*
- *The proposed RRUS-4478 B5 and proposed RRUS-4478 B14 shall be mounted in position 3 behind the proposed antenna on a proposed dual RRU mount, in all sectors*
- *The existing RRUS 32-B2 and existing RRUS 32 shall be mounted in position 3 behind the existing antenna on a proposed dual RRU mount, in all sectors*

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

Maser Consulting Connecticut has determined the existing antenna support mount has **ADEQUATE** structural capacity to support the proposed loading. The existing antenna support mount has been determined to be stressed to a maximum of **45.8%** of its structural capacity with the maximum usage occurring at the platform standoff arms. The existing connections have been determined to be stressed to a maximum of **22.9%** of its structural capacity. Therefore, the proposed **AT&T** installation **CAN** be installed as intended **once the proposed modifications have been implemented**.

The conclusions reached by Maser Consulting Connecticut in this evaluation are only applicable for the existing structural members supporting the proposed **AT&T** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure. The existing mount was checked up to, and including, the bolts that attach to the mount collar. However, no structural qualifications are made or implied by this document for the existing mount collar.

Maser Consulting Connecticut reserves the right to amend this report if additional information about the existing members is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.
Sincerely,

Maser Consulting Connecticut

Petros E. Tsoukalas, P.E.
Geographic Discipline Leader

Anthony Bassett
Engineer

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APPENDIX A

Client:	ATT	Computed By:	AB
Site Name:	Naugatuck South Main	Date:	10/17/2018
Project No.	18963006A	Verified By:	SMS
Title:	Antenna Mount Design	Page:	1

Version 4.0

LOADING SUMMARY

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
2	POWERWAVE	7770	Existing	Alpha & Beta
2	CCI	OPA-65R-LCUU-H6	Existing	Alpha & Beta
2	**KATHREIN**	**80010965**	**Proposed**	**Alpha & Beta**
2	QUINTEL	QS66512-2	Existing	Alpha & Beta
2	CCI	DTMABP7819VG12A	Existing	Alpha & Beta
2	ERICSSON	RRUS 32	Existing	Alpha & Beta
2	**ERICSSON**	**RRUS 4478 B14**	**Proposed**	**Alpha & Beta**
2	ERICSSON	RRUS 32 B2	Existing	Alpha & Beta
2	**ERICSSON**	**RRUS 4478 B5**	**Proposed**	**Alpha & Beta**
2	ERICSSON	RRUS 11	Existing	Alpha & Beta
2	**ERICSSON**	**RRUS 4426 B66**	**Proposed**	**Alpha & Beta**
2	**RAYCAP**	**DC6-48-60-18-8F**	**Existing/Proposed**	**Alpha & Beta**
4	**KAELUS**	**DBCT108F1V92-1**	**Proposed**	**Alpha & Beta**

Client:	ATT	Computed By:	AB
Site Name:	Naugatuck South Main	Date:	10/17/2018
Project No.	18963006A	Verified By:	SMS
Title:	Antenna Mount Design	Page:	2

I. DESIGN INPUTS

Calculations for gravity and lateral loading on equipment and support mounts are determined as per the ANSI/TIA-222-G Code, Addendum 2

Wind Load Inputs Parameters

				Reference	Equation
Antenna Centerline	z	90	ft		
Ultimate Wind Speed	V_U	125	mph		
Nominal Wind Speed (3 sec. Gust):	V	97	mph	Ref. 1, Eqn. 16-33	
Nominal Wind Speed with Ice (3 sec. gust):	V_i	50.0	mph	(Figure a5-2a, p. 233)	
Maintenance Wind Speed:	V_m	30.0	mph		
Service Wind Speed:	V_s	60.0	mph	(Figure a5-2a, p. 233)	
Design Ice Thickness:	t_i	0.75	in	(Figure A1-2a, p. 233)	
Exposure Category:		B		Ref. 3, Section 2.6.5.1	
Structure Class:		II		Ref. 3, Table 2-1	
Gust Effect Factor:	G_h	1.10		Ref. 3, Section 2.6.7	
Wind Directionality Factor:	K_d	0.95		Ref. 3, Table 2-2	
Topographic Category:		1		Ref. 3, Section 2.6.6.2	

Wind Load Coefficients

Importance Factors:

			Reference
Non-Iced:	I	1	Ref. 3, Table 2-3
Iced:	I_{ice}	1	(Table 2-3, P. 39)

Exposure Category Coefficients:

				Reference	Equation
3-s Gust-Speed Power Law Exponent:	α	7.0		Ref. 3, Table 2-4	
Nominal Height of the Atmospheric Boundary Layer:	Z_g	1200	ft	Ref. 3, Table 2-4	
Min. Value for k_z:	Kz_{min}	0.70		Ref. 3, Table 2-4	
Terrain Constant:	K_e	0.90		Ref. 3, Table 2-4	
Velocity Pressure Exposure Coefficient:	K_z	0.959		Ref. 3, Section 2.6.5.2	$=2.01\cdot(z/z_g)^{2/\alpha}$

Topographic Category Coefficients:

				Reference	Equation
Topographic Constant:	K_t	N/A		Ref. 3, Table 2-5	
Height Attenuation Factor:	f	N/A		Ref. 3, Table 2-5	
Height Reduction Factor:	K_h	N/A		Ref. 3, Section 2.6.6.4	$=e^{(f\cdot z/H)}$
Topographic Factor:	K_{zt}	1.00		Ref.3, Section 2.6.6.4	$=[1+(K_e\cdot K_t/K_h)]^2$

Ice Accumulation:

				Reference	Equation
Ice Velocity Pressure Exposure Coefficient:	K_{iz}	1.11			$=(z/33)^{0.10}$
Factored Ice Thickness:	t_{iz}	1.66	in	(Section 2.6.8, p. 16)	$=2.0\cdot t_i\cdot I\cdot K_{iz}\cdot K_{zt}$
Ice Density:	ρ_i	56.00	pcf		

Design Wind Pressures:

				Reference	Equation
Velocity Pressure:	q_z	21.86	psf	Ref. 3, Section 2.6.9.6	$=0.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V^2\cdot I$
Velocity Pressure (With Ice):	q_{zi}	5.83	psf	(Section 2.6.9.6, P. 25)	$=.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V_i^2\cdot I$
Velocity Pressure (Maintenance):	q_{zm}	2.10	psf	(Section 2.6.9.6, P. 25)	$=.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V_m^2\cdot I$
Velocity Pressure (Service):	q_{zs}	8.40	psf	(Section 2.6.9.6, P. 25)	$=.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V_i^2\cdot I$

II. CALCULATIONS

- ***Wind Load on Appurtenances***

Dimensions and Force Coefficients

Antenna/ Appurtenance	Non-Iced Condition								Iced Condition							
	Mounting Pipe			Equipment					Mounting Pipe			Equipment				
	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	Force Coefficient $C_{a\ Side}$	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	Force Coefficient $C_{a\ Side}$
7770	96.0	2.375	1.200	55.00	11.00	5.00	1.31	1.53	99.3	5.7	1.032	58.32	14.32	8.32	1.27	1.40
OPA-65R-LCUU-H6	96.0	2.375	1.200	72.30	14.40	7.30	1.31	1.50	99.3	5.7	1.032	75.62	17.72	10.62	1.28	1.40
80010965	96.0	2.375	1.200	78.70	20.00	6.90	1.26	1.55	99.3	5.7	1.032	82.02	23.32	10.22	1.25	1.43
QS66512-2	96.0	2.375	1.200	72.00	12.00	9.60	1.36	1.42	99.3	5.7	1.032	75.32	15.32	12.92	1.31	1.35
DTMABP7819VG12A	0.0	0.000	0.000	14.25	11.46	4.17	1.20	1.24	0.0	0.0	0.000	17.57	14.78	7.49	1.20	1.20
RRUS 32	0.0	0.000	0.000	27.20	12.00	7.00	1.20	1.26	0.0	0.0	0.000	30.52	15.32	10.32	1.20	1.22
RRUS 4478 B14	0.0	0.000	0.000	18.10	13.40	8.30	1.20	1.20	0.0	0.0	0.000	21.42	16.72	11.62	1.20	1.20
RRUS 32 B2	0.0	0.000	0.000	27.20	12.00	7.00	1.20	1.26	0.0	0.0	0.000	30.52	15.32	10.32	1.20	1.22
RRUS 4478 B5	0.0	0.000	0.000	16.50	13.40	7.70	1.20	1.20	0.0	0.0	0.000	19.82	16.72	11.02	1.20	1.20
RRUS 11	0.0	0.000	0.000	19.70	17.00	7.20	1.20	1.21	0.0	0.0	0.000	23.02	20.32	10.52	1.20	1.20
RRUS 4426 B66	0.0	0.000	0.000	14.96	13.20	5.90	1.20	1.20	0.0	0.0	0.000	18.28	16.52	9.22	1.20	1.20
DC6-48-60-18-8F	36.0	2.375	0.981	31.40	10.20	10.20	0.71	0.71	39.3	5.7	0.798	34.72	13.52	13.52	0.70	0.70
DBCT108F1V92-1	0.0	0.000	0.000	10.71	6.77	7.14	1.20	1.20	0.0	0.0	0.000	14.03	10.09	10.46	1.20	1.20

Antenna/ Appurtenance	# of Brackets	Non-Iced Condition			Iced Condition			Maintenance Condition	
		Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)	
		F_N	F_T		F_N	F_T		F_N	F_T
7770	2	76.0	58.1	**17.5**	29.8	28.1	**67.6**	7.3	5.6
OPA-65R-LCUU-H6	2	119.7	88.8	**34.8**	41.7	38.1	**113.6**	11.5	8.5
80010965	2	170.2	93.0	**54.3**	55.7	39.8	**158.0**	16.3	8.9
QS66512-2	2	103.5	104.6	**63.3**	37.2	42.2	**108.2**	9.9	10.0
DTMABP7819VG12A	1	32.7	12.3	**19.2**	13.9	7.0	**41.1**	3.1	1.2
RRUS 32	1	65.4	40.1	**52.9**	25.0	17.1	**80.1**	6.3	3.9
RRUS 4478 B14	1	48.6	30.1	**59.4**	19.1	13.3	**63.0**	4.7	2.9
RRUS 32 B2	1	65.4	40.1	**52.9**	25.0	17.1	**80.1**	6.3	3.9
RRUS 4478 B5	1	44.3	25.5	**59.9**	17.7	11.7	**57.3**	4.3	2.4
RRUS 11	1	67.1	28.7	**55.7**	25.0	12.9	**78.2**	6.4	2.8
RRUS 4426 B66	1	39.6	17.7	**48.5**	16.1	9.0	**49.7**	3.8	1.7
DC6-48-60-18-8F	1	39.9	52.1	**26.2**	15.8	22.6	**69.5**	3.8	5.0
DBCT108F1V92-1	1	14.5	15.3	**28.7**	7.6	7.8	**27.2**	1.4	1.5

**** ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS***

- ***Wind Load on Framing Members***

Member Category	Member Shape	Length (in)	Member Surface	Non-Iced Condition			Iced Condition						Maintenance Condition
				Exposed Wind Height (in)	Force Coefficient C_a	Wind Load (plf)	Exposed Wind Height (in)	Depth (in)	Length (in)	Force Coefficient C_a	Wind Load (plf)	Ice Weight (plf)	Wind Load (plf)
Pipe	Pipe 3.0	150	Round	3.50	1.20	8.42	6.82	6.82	153.32	1.14	4.17	10.45	0.81
Pipe	Pipe 2.0	150	Round	2.38	1.20	5.71	5.69	5.69	153.32	1.20	3.65	8.17	0.55
Pipe	Pipe 3.0	78	Round	3.50	1.14	7.99	6.82	6.82	81.32	0.91	3.31	10.45	0.77
Channel	C3X3.5	34	Square	3.00	1.54	9.29	6.32	4.69	37.32	1.35	4.56	10.04	0.89
Pipe	Pipe 2.0	96	Round	2.38	1.20	5.71	5.69	5.69	99.32	1.03	3.14	8.17	0.55
Equal Angle	L1.5x1.5	46	Square	1.50	2.00	6.01	4.82	4.82	49.32	1.51	3.88	7.66	0.58
Equal Angle	L2.5x2.5	88	Square	2.50	2.00	10.02	5.82	5.82	91.32	1.69	5.25	10.52	0.96
Grating												15.50	

BASIC EQUATIONS

ANSI/TIA-222-G Reference

Importance Factor:

$$I := \begin{cases} 1.0 & \text{if Class} = \text{"II"} \\ 1.15 & \text{if Class} = \text{"III"} \end{cases}$$

Table 2-3, Pg. 39

Force Coefficient:
(Square)

$$C_{f\_square}(h, w) := \begin{cases} 1.2 & \text{if } \frac{h}{w} \le 2.5 \\ \left[1.2 + \frac{0.2}{4.5} \cdot \left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[1.4 + \frac{0.6}{18} \cdot \left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 2.0 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Force Coefficient:
(Round)

$$C_{f\_round}(h, w) := \begin{cases} 0.7 & \text{if } \frac{h}{w} \le 2.5 \\ \left[0.7 + \frac{0.1}{4.5} \cdot \left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[0.8 + \frac{0.4}{18} \cdot \left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 1.2 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Terrain Exposure Constants:

Table 2-4, P. 40

$$\alpha := \begin{cases} 7.0 & \text{if Exp} = \text{"B"} \\ 9.5 & \text{if Exp} = \text{"C"} \\ 11.5 & \text{if Exp} = \text{"D"} \end{cases} \quad Z_g := \begin{cases} 1200\text{ft} & \text{if Exp} = \text{"B"} \\ 900\text{ft} & \text{if Exp} = \text{"C"} \\ 700\text{ft} & \text{if Exp} = \text{"D"} \end{cases} \quad K_{zmin} := \begin{cases} 0.70 & \text{if Exp} = \text{"B"} \\ 0.85 & \text{if Exp} = \text{"C"} \\ 1.03 & \text{if Exp} = \text{"D"} \end{cases}$$

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BASIC EQUATIONS

ANSI/TIA-222-G Reference

Velocity Pressure Coefficient:

$$Kz(z) := \left| \begin{array}{l} K_z \leftarrow \max\left[2.01 \cdot \left(\frac{z}{Z_g} \right)^{\frac{2}{\alpha}}, K_{zmin} \right] \\ K_z \leftarrow \min\left(K_z, 2.01 \right) \end{array} \right.$$

$K_z := Kz(z)$ — Section 2.6.5, P. 13

$$Kzt(z) := K_{zt} \leftarrow \left| \begin{array}{l} 1.0 \quad \text{if Topo = "1"} \\ \text{otherwise} \\ \quad K_e \leftarrow \left| \begin{array}{l} 0.90 \quad \text{if Exp = "B"} \\ 1.00 \quad \text{if Exp = "C"} \\ 1.10 \quad \text{if Exp = "D"} \end{array} \right. \quad \text{Table 2-4 p. 40} \\ \quad K_t \leftarrow \left| \begin{array}{l} 0.43 \quad \text{if Topo = "2"} \\ 0.53 \quad \text{if Topo = "3"} \\ 0.72 \quad \text{if Topo = "4"} \end{array} \right. \quad \text{Table 2-5 p. 40} \\ \quad f \leftarrow \left| \begin{array}{l} 1.25 \quad \text{if Topo = "2"} \\ 2.00 \quad \text{if Topo = "3"} \\ 1.50 \quad \text{if Topo = "4"} \end{array} \right. \quad \text{Table 2-5 p. 40} \\ \quad K_h \leftarrow e^{\left(\frac{f \cdot z}{CH} \right)} \quad \text{Section 2.6.6.4, P. 14} \\ \quad \left(1 + \frac{K_e \cdot K_t}{K_h} \right)^2 \quad \text{Section 2.6.6.4, P. 14} \end{array} \right.$$

Section 2.6.6.4, p. 14

$K_{zt} := Kzt(z)$

Velocity Pressure: — Section 2.6.9.6, P. 25

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf$$

LOAD EQUATIONS

WIND LOAD

Area (Normal): $AN_{area} = H_{ant} \cdot Want$

Area (Side): $AT_{area} = H_{ant} \cdot Dant$

Force Coefficient (Normal): $C_{fn} = C_{fsquare}(H_{ant}, Want)$

Force Coefficient (Side): $C_{fs} = C_{fsquare}(H_{ant}, Dant)$

Pipe Area (Normal): $AN_p = \max[(L_p - H_{ant}) * Dp, 0]$

Pipe Area (Side): $AT_p = L_p \cdot Dp$

Force Coefficient (Normal): $C_{fp} = C_{fround}(Lp, Dp)$

Normal Effective Projected Area: $E_{pan} = (C_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

Side Effective Projected Area: $E_{pat} = (C_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

Effective Projected Area: $EPA = max(E_{pan}, Epat)$

Wind Force: $F_{ant} = q_z \cdot Gh \cdot EPA$

ICE DEAD LOAD

Largest Out-to-Out Dimension: $D_{ant} = \sqrt{{D_{ant}}^2 + {W_{ant}}^2}$

Cross Sectional Area of Ice: $A_{ice\_ant} = \pi \cdot tiz \cdot (Dant + tiz)$

Total Ice Dead Load: $DL_{ice\_ant} = \boldsymbol{\rho_i} \cdot (Aice_{\_ant} \cdot Hant)$

ICE WIND LOAD

Dimensions: $H_{i_{ant}} = H_{ant} + 2tiz$

$W_{i_{ant}} = W_{ant} + 2tiz$

$D_{i_{ant}} = D_{ant} + 2tiz$

Area (Normal): $AIN_{area} = H_{i\_ant} \cdot W_{i\_ant}$

Area (Side): $AIT_{area} = H_{i\_ant} \cdot D_{i\_ant}$

Force Coefficient (Normal): $Ci_{fn} = C_{fsquare}(H_{i\_ant}, W_{i\_ant})$

Force Coefficient (Side): $Ci_{fs} = C_{fsquare}(H_{i\_ant}, D_{i\_ant})$

Pipe Area (Normal): $AN_p = \max[(L_{ip} - H_{i\_ant}) * D_{ip}, 0]$

Pipe Area (Side): $AT_p = L_{ip} \cdot Dip$

Force Coefficient (Normal): $C_{fp} = C_{fround}(L_{ip}, D_{ip})$

Normal Effective Projected Area: $E_{pain} = (Ci_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

Side Effective Projected Area: $E_{pait} = (Ci_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

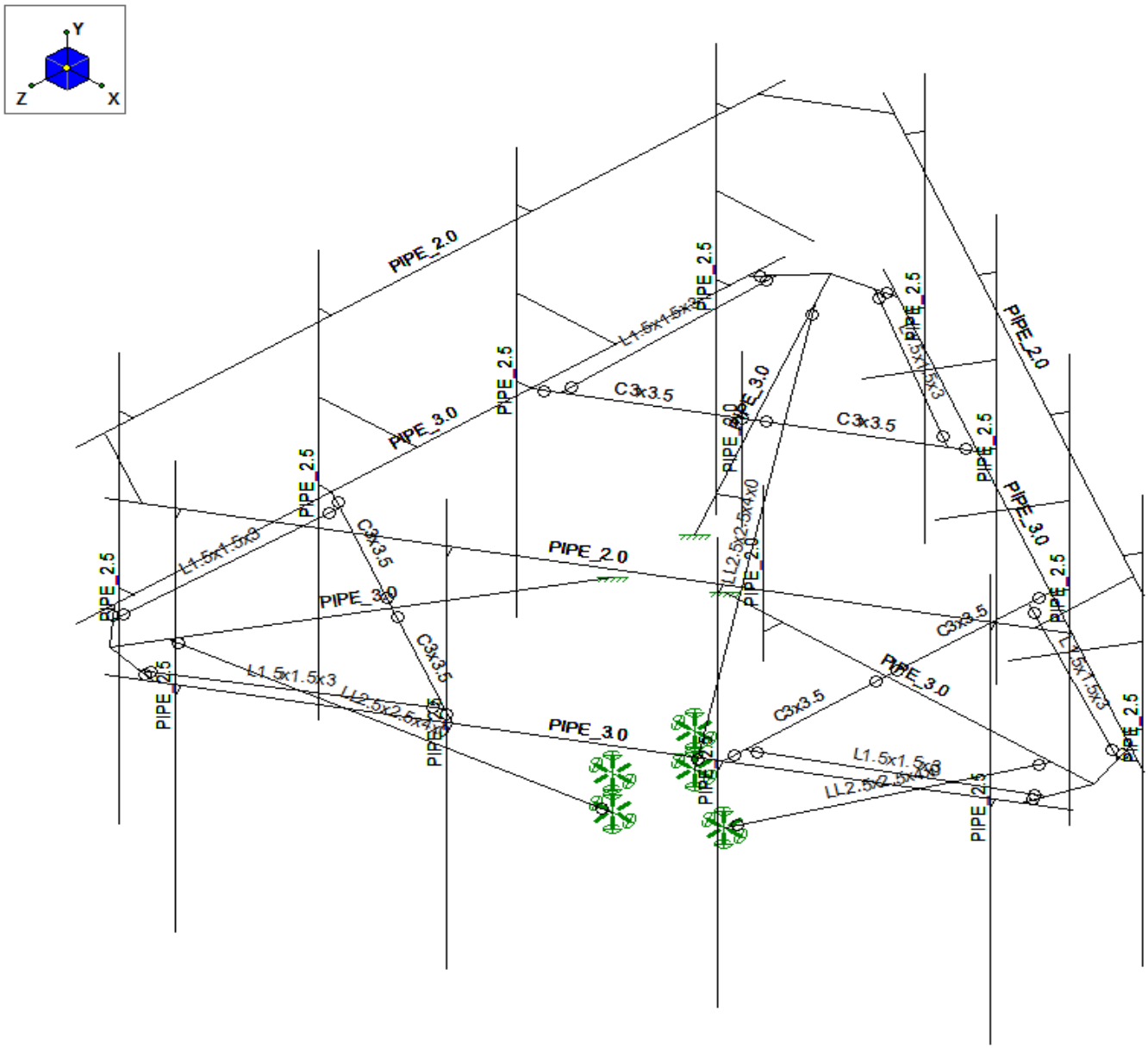
Effective Projected Area: $EPA_i = max(E_{pain}, Epait)$

Wind Force: $F_{i\_ant} = q_z \cdot Gh \cdot EPAi$

III. ATTACHMENTS

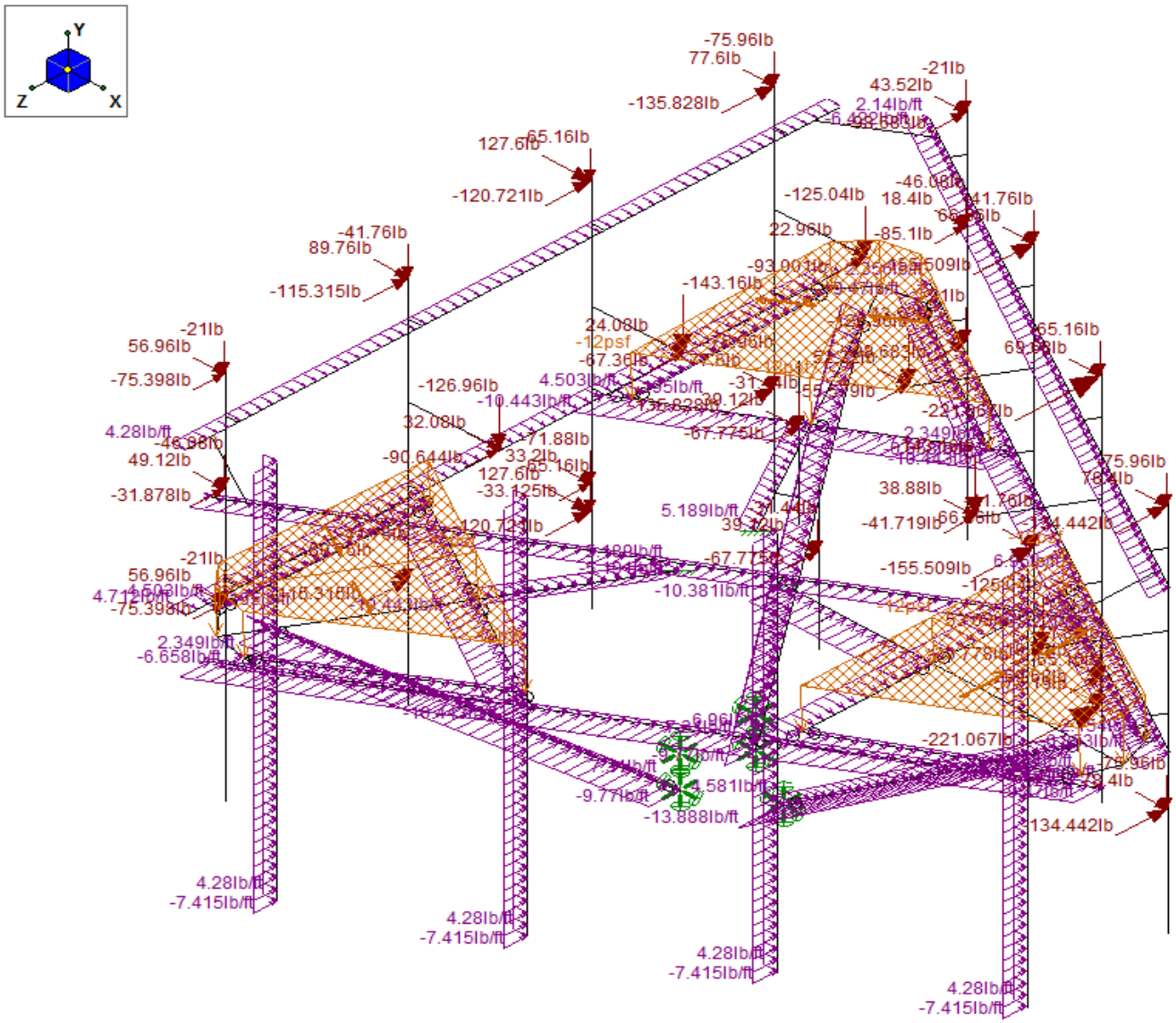
Client:	ATT	Computed By:	AB
Site Name:	Naugatuck South Main	Date:	10/17/2018
Project No.	18963006A	Verified By:	SMS
Title:	Antenna Mount Design	Page:	8

RISA MODEL



Client:	ATT	Computed By:	AB
Site Name:	Naugatuck South Main	Date:	10/17/2018
Project No.	18963006A	Verified By:	SMS
Title:	Antenna Mount Design	Page:	9

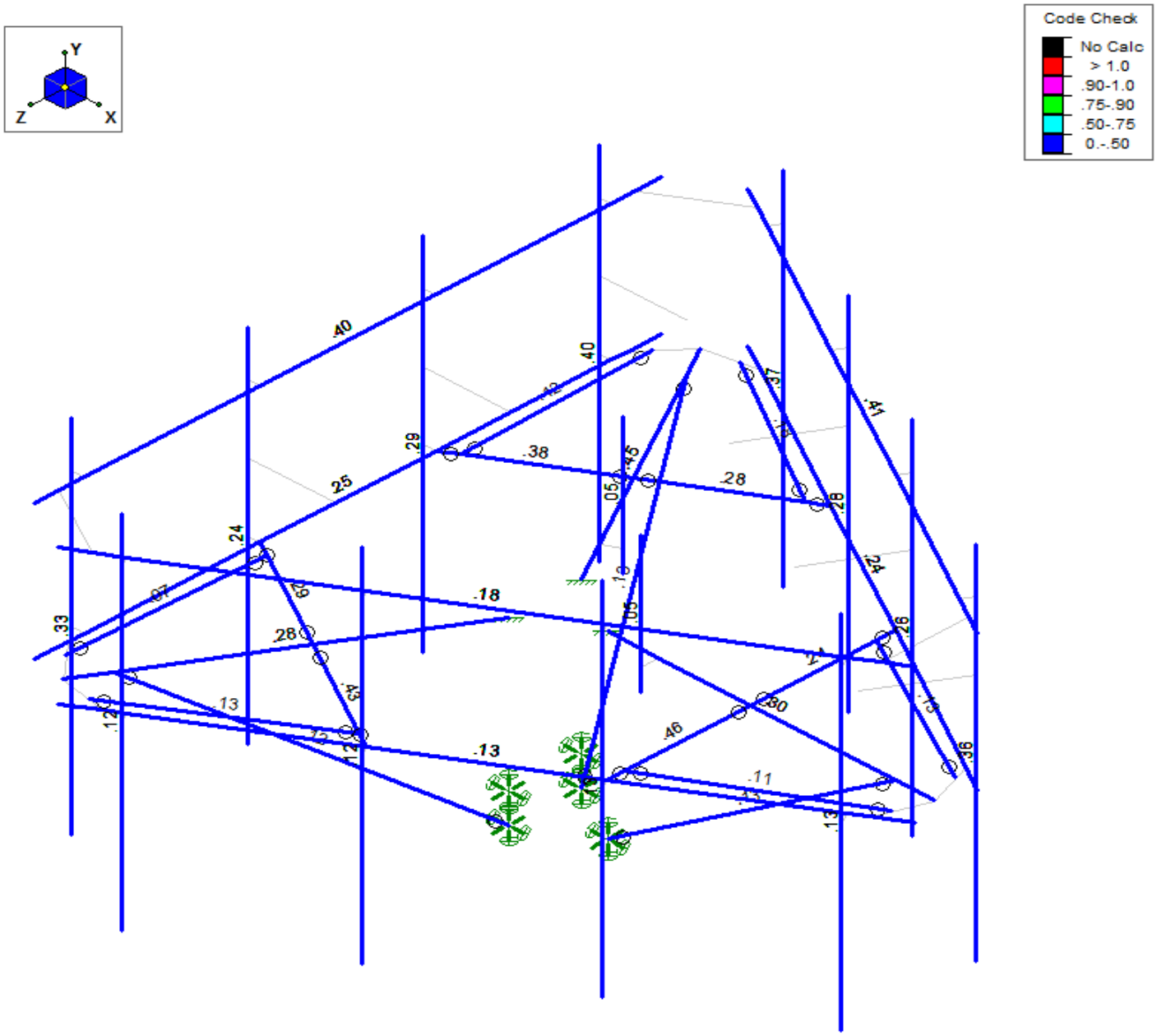
RISA WORST CASE LOADING



Loads: LC 12, 1.2D+1.6W11
Envelope Only Solution

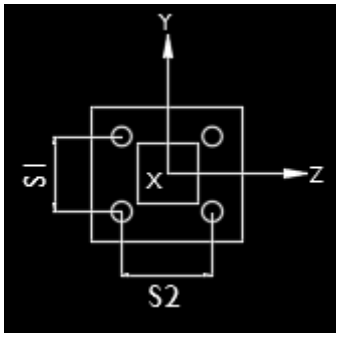
Client:	ATT	Computed By:	AB
Site Name:	Naugatuck South Main	Date:	10/17/2018
Project No.	18963006A	Verified By:	SMS
Title:	Antenna Mount Design	Page:	10

RISA CODE CHECK



Mount to Monopole Ring Mount Kit Connection Check:

Applied Tension:	$Rx := 3246.8 \cdot lbf$	From Risa 3D LRFD Loading
Applied Shear:	$Ry := 3682.3 lbf$	From Risa 3D LRFD Loading
Applied Shear:	$Rz := 1159.1 \cdot lbf$	From Risa 3D LRFD Loading
Applied Torque:	$Mx := 402.9 \cdot lbf \cdot ft$	From Risa 3D LRFD Loading
Applied Moment:	$My := 2122.7 lbf \cdot ft$	From Risa 3D LRFD Loading
Applied Moment:	$Mz := 2457.5 \cdot lbf \cdot ft$	From Risa 3D LRFD Loading
Number of Bolts:	$n := 4$	Per Specifications
Bolts Vertical Spacing:	$S_1 := 7in$	Per Specifications
Bolts Horizontal Spacing:	$S_2 := 7in$	Per Specifications
Applied Tension at Bolt:	$P_{a.t} := \frac{Rx}{n} + \frac{2My}{n \cdot S_2} + \frac{2Mz}{n \cdot S_1} = 4737.6\,lbf$	
Applied Shear at Bolt:	$P_{a.v} := \frac{\sqrt{Ry^2 + Rz^2}}{n} + \frac{2Mx}{n\sqrt{S_1^2 + S_2^2}} = 1209.3\,lbf$	
Bolt Type Used:	**A325N**	
Nominal Tensile Stress, Fnt:	$F_{n.t} := 90ksi$	AISC, Table J3-2, P. 16.1-104
Nominal Shear Stress, Fnv:	$F_{n.v} := 54ksi$	AISC, Table J3-2, P. 16.1-104
Nominal Bolt Diameter:	$d_b := \frac{5}{8}in$	Per Specifications
Gross Area of the Bolt:	$A_{b.g} := 0.307in^2$	AISC, Table 7-18, P. 7-83
Net Area of the Bolt:	$A_{b.n} := 0.226in^2$	AISC, Table 7-18, P. 7-83
Strength Reduction Factor, ϕ:	$\phi := 0.75$	



Combined Tension And Shear Check

Nominal Tensile Reduced Fntr

$$F_{n.t.r} := 1.3 \cdot F_{n.t} - \frac{F_{n.t}}{\phi \cdot F_{n.v}} \cdot \frac{P_{a.v}}{A_{b.g}} = 108.2 \cdot ksi$$

AISC Eq. J3-3a, P. 16.1-109

Nominal Shear Reduced Fntv

$$F_{n.v.r} := 1.3 \cdot F_{n.v} - \frac{F_{n.v}}{\phi \cdot F_{n.t}} \cdot \frac{P_{a.t}}{A_{b.g}} = 57.9 \cdot ksi$$

AISC Eq. J3-3a, P. 16.1-109

Bolt Nominal Tensive Strength

$$R_{n.t} := F_{n.t} \cdot A_{b.g} = 27.6 \cdot kip$$

Tension Check

$$Check := \begin{cases} \text{"OK"} & \text{if } \phi \cdot R_{n.t} \geq P_{a.t} \\ \text{"NOT GOOD"} & \text{otherwise} \end{cases}$$

$$Check = \text{"OK"}$$

Tension Ratio

$$Ratio_t := \frac{P_{a.t}}{\phi \cdot R_{n.t}} \qquad Ratio_t = 22.9 \cdot \%$$

Bolt Nominal Shear Strength

$$R_{n.v} := F_{n.v} \cdot A_{b.g} = 16.6 \cdot kip$$

Shear Check

$$Check := \begin{cases} \text{"OK"} & \text{if } \phi \cdot R_{n.v} \geq P_{a.v} \\ \text{"NOT GOOD"} & \text{otherwise} \end{cases}$$

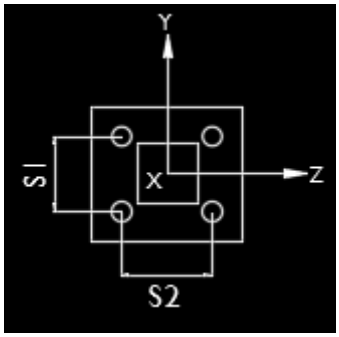
$$Check = \text{"OK"}$$

Shear Ratio

$$Ratio_v := \frac{P_{a.v}}{\phi \cdot R_{n.v}} \qquad Ratio_v = 9.7 \cdot \%$$

Proposed Mount to Monopole Ring Mount PRK-1245L Kit Connection Check:

Applied Tension:	$Rx := 6919.9 \cdot lbf$	From Risa 3D LRFD Loading
Applied Shear:	$Ry := 67 lbf$	From Risa 3D LRFD Loading
Applied Shear:	$Rz := 130.3 \cdot lbf$	From Risa 3D LRFD Loading
Applied Torque:	$Mx := 2 \cdot lbf \cdot ft$	From Risa 3D LRFD Loading
Applied Moment:	$My := 371 lbf \cdot ft$	From Risa 3D LRFD Loading
Applied Moment:	$Mz := 117.2 \cdot lbf \cdot ft$	From Risa 3D LRFD Loading
Number of Bolts:	$n := 4$	Per Specifications
Bolts Vertical Spacing:	$S_1 := 7in$	Per Specifications
Bolts Horizontal Spacing:	$S_2 := 7in$	Per Specifications



Applied Tension at Bolt:

$$P_{a.t} := \frac{Rx}{n} + \frac{2My}{n \cdot S_2} + \frac{2Mz}{n \cdot S_1} = 2148.4\,lbf$$

Applied Shear at Bolt:

$$P_{a.v} := \frac{\sqrt{Ry^2 + Rz^2}}{n} + \frac{2Mx}{n\sqrt{S_1^{\,2} + S_2^{\,2}}} = 37.8\,lbf$$

Bolt Type Used:	**A325N**	
Nominal Tensile Stress, Fnt:	$F_{n.t} := 90ksi$	AISC, Table J3-2, P. 16.1-104
Nominal Shear Stress, Fnv:	$F_{n.v} := 54ksi$	AISC, Table J3-2, P. 16.1-104
Nominal Bolt Diameter:	$d_b := \frac{5}{8}in$	Per Specifications
Gross Area of the Bolt:	$A_{b.g} := 0.307in^2$	AISC, Table 7-18, P. 7-83
Net Area of the Bolt:	$A_{b.n} := 0.226in^2$	AISC, Table 7-18, P. 7-83
Strength Reduction Factor, ϕ:	$\phi := 0.75$	

Combined Tension And Shear Check

Nominal Tensile Reduced Fntr

$$F_{n.t.r} := 1.3 \cdot F_{n.t} - \frac{F_{n.t}}{\phi \cdot F_{n.v}} \cdot \frac{P_{a.v}}{A_{b.g}} = 116.7 \cdot ksi$$

AISC Eq. J3-3a, P. 16.1-109

Nominal Shear Reduced Fntv

$$F_{n.v.r} := 1.3 \cdot F_{n.v} - \frac{F_{n.v}}{\phi \cdot F_{n.t}} \cdot \frac{P_{a.t}}{A_{b.g}} = 64.6 \cdot ksi$$

AISC Eq. J3-3a, P. 16.1-109

Bolt Nominal Tensive Strength

$$R_{n.t} := F_{n.t} \cdot A_{b.g} = 27.6 \cdot kip$$

Tension Check

$$Check := \begin{cases} \text{"OK"} & \text{if } \phi \cdot R_{n.t} \geq P_{a.t} \\ \text{"NOT GOOD"} & \text{otherwise} \end{cases}$$

$$Check = \text{"OK"}$$

Tension Ratio

$$Ratio_t := \frac{P_{a.t}}{\phi \cdot R_{n.t}} \qquad Ratio_t = 10.4 \cdot \%$$

Bolt Nominal Shear Strength

$$R_{n.v} := F_{n.v} \cdot A_{b.g} = 16.6 \cdot kip$$

Shear Check

$$Check := \begin{cases} \text{"OK"} & \text{if } \phi \cdot R_{n.v} \geq P_{a.v} \\ \text{"NOT GOOD"} & \text{otherwise} \end{cases}$$

$$Check = \text{"OK"}$$

Shear Ratio

$$Ratio_v := \frac{P_{a.v}}{\phi \cdot R_{n.v}} \qquad Ratio_v = 0.3 \cdot \%$$