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

March 4, 2019

Nora Oliver
Site Acquisition Manger
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

RE: **EM-AT&T-062-190204** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 975 Mix Avenue, Hamden, Connecticut.

Dear Ms. Oliver:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on February 4, 2019. On February 27, 2019, the Council issued a letter (enclosed) stating that the request for exempt modification was incomplete because the Structural Analysis Report (SA) and Construction Drawings (CD) both reference the 2016 Connecticut State Building Code (CSBC) which is no longer applicable to projects with permit applications after September 30, 2018. The Council recommended that Empire Telecom provide an updated Structural Analysis Report and Construction Drawings that reference the current 2018 CSBC on or before March 27, 2019.

On March 1, 2019, the Council received a revised SA dated February 28, 2019 which referenced the 2018 CSBC. However, the submission does not contain updated CDs referencing the 2018 CSBC as requested in the first letter of incompletion.

Therefore, the exempt modification request remains incomplete at this time. The Council recommends that Empire Telecom provide updated Construction Drawings that reference the current 2018 CSBC on or before April 4, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to April 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/IN/emr

Enclosure: Incomplete Letter dated February 27, 2019.

c: The Honorable Curt B. Leng, Mayor, Town of Hamden
Dan Kops, Planning & Zoning, Town of Hamden

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February 27, 2019

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Billerica, MA 01862

RE: **EM-AT&T-062-190204** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 975 Mix Avenue, Hamden, Connecticut.

Dear Ms. Oliver:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on February 4, 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 Structural Analysis Report dated November 2, 2018 and construction drawings dated August 23, 2018 both prepared by Centek Engineering. The above-referenced documents refer to the 2016 Connecticut State Building Code (CSBC); however, the 2018 CSBC became effective on October 1, 2018 and should be applied to this project.

Therefore, the exempt modification request is incomplete at this time. The Council recommends that Empire Telecom provide an updated Structural Analysis Report and construction drawings that reference the current 2018 CSBC on or before March 27, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to March 27, 2019.

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c: The Honorable Curt B. Leng, Mayor, Town of Hamden
Dan Kops, Planning & Zoning, Town of Hamden

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Pipe Mast & Support Platform

AT&T Site #: CT2035

AT&T Site Name: Hamden

Project: LTE 6C/7C

PACE #: MRCTB032299/ MRCTB032288/ MRCTB032250

PT #: 2051A0GWFL/ 2051A0GWEG/ 2051A0GWFN

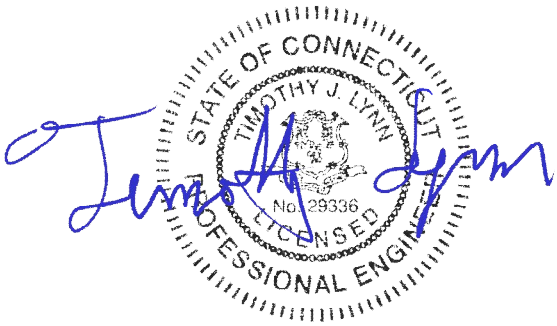
FA #: 10035036

975 Mix Avenue
Hamden, CT 06514

Centek Project No. 18000.36

~~Date: November 2, 2018~~

Rev 1: February 28, 2018



Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by AT&T on the existing roof mounted platform located in Hamden, Connecticut.

The host structure is a roof mounted steel equipment platform with an existing 8" diameter antenna pipe mast.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- AT&T (EXISTING TO REMOVED):
  Antennas: Three (3) Ericsson RRUS-12 mounted on the existing support platform.
- AT&T (EXISTING TO RELOCATE):
  Antennas: Three (3) Kathrein 800-10121 panel antennas, three (3) Qunitel QS66512-2 panel antennas, three (3) CCI HPA-65R-BUU-H6 panel antennas, three (3) Powerwave TT19-08BP111-001 TMAs, three (3) Ericsson RRUS-11, three (3) Ericsson RRUS-E2, three (3) Ericsson RRUS-32, three (3) Ericsson RRUS-32 B2 and three (3) Raycap DC6-48-60-18-8F surge arrestors relocated to the proposed antenna mast on a proposed 13-ft platform with handrails with a RAD center elevation of 61-ft above grade level.
- **AT&T (PROPOSED):**
  Antennas: Three (3) Kathrein 800-10965 panel antenna, six (6) Kaelus DBC0061F1V51-2 diplexers, six (6) Ericsson 4478 remote radio heads, three (3) Ericsson 4426 B66 remote radio heads and three (3) DC squids mounted on the proposed antenna mast on a proposed 13-ft platform with handrails with a RAD center elevation of 61-ft above grade level.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables, three (3) fiber cables and twelve (12) dc control cables running on the exterior of the pipe mast.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables to be installed as indicated in this report.

Analysis

The proposed antenna mast was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

The existing/modified antenna mast support platform was analyzed using a comprehensive computer program titled Risa3D. The program analyzes the antenna mounts, considering the worst case loading condition. The antenna support mounts were considered to be loaded by concentric forces along the pipe masts, and the model assumes that the members are subjected to bending, axial, and shear forces.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 0.75" radial ice on the tower structure and its components.

Basic Wind Speed:	New Haven County; v = 95-115 mph	*[Annex B of TIA-222-G-2005]*
	Hamden; v = 97 mph (Nominal)	*[Appendix N of the 2018 CT Building Code]*
Load Cases:	Load Case 1; 97 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2018 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Results

- Calculated stresses were found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Proposed P18x0.375	0.00’	43.6%	**PASS**

- The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	24.4%	**PASS**
Base Plate	Bending	31.0%	**PASS**

- Calculated stresses were found to be within allowable limits.

Support Frame Component	Stress Ratio (percentage of capacity)	Result
W10x100	27.8%	**PASS**
HSS4x4x5/16	32.8%	**PASS**

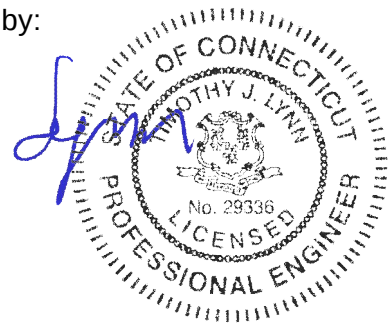
Conclusion

This analysis shows that the antenna mast and equipment frame **with the proposed modifications is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

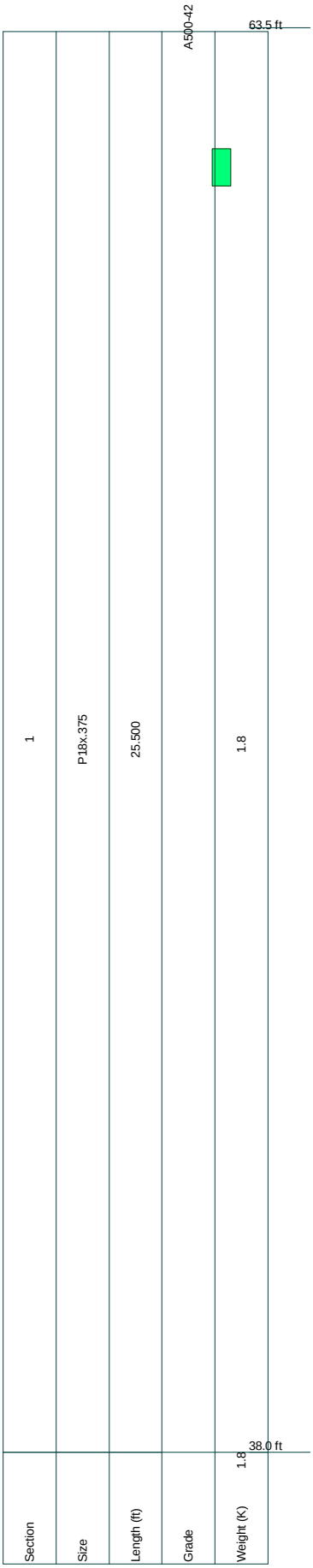
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

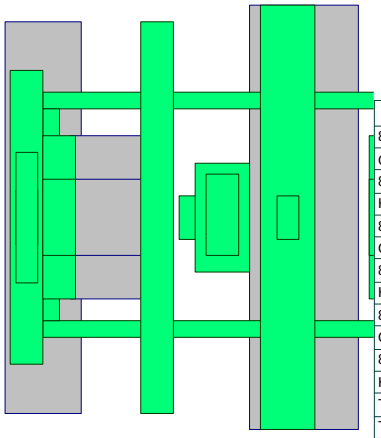
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800-10121	61	(2) RRUS-32	61
QS66512-2	61	RRUS-E2	61
80010965	61	4426 B66	61
HPA-65R-BUU-H6	61	(2) B14 4478	61
800-10121	61	RRUS-11	61
QS66512-2	61	(2) RRUS-32	61
80010965	61	RRUS-E2	61
HPA-65R-BUU-H6	61	4426 B66	61
800-10121	61	(2) B14 4478	61
QS66512-2	61	RRUS-11	61
80010965	61	(2) RRUS-32	61
HPA-65R-BUU-H6	61	RRUS-E2	61
TT19-08BP111-001 TMA	61	4426 B66	61
TT19-08BP111-001 TMA	61	(2) B14 4478	61
TT19-08BP111-001 TMA	61	13' Platform w/rails	61
(2) DBC0061F1V51-2	61	DC6-48-60-18-8F Surge Arrestor	61
(2) DBC0061F1V51-2	61	DC6-48-60-18-8F Surge Arrestor	61
(2) DBC0061F1V51-2	61	DC6-48-60-18-8F Surge Arrestor	61
RRUS-11	61		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-42	42 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.000 ft
7. TOWER RATING: 43.6%

ALL REACTIONS ARE FACTORED

AXIAL
15 K

SHEAR
2 K

MOMENT
38 kip-ft

50 mph WIND - 0.750 in ICE

AXIAL
8 K

SHEAR
7 K

MOMENT
156 kip-ft

REACTIONS - 97 mph WIND

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **18000.36 - CT2035**			
Project: **25.5-ft Monopole - 975 Mix Ave Hamden, CT**			
Client: AT&T	Drawn by: TJL		App'd:
Code: TIA-222-G	Date: 11/02/18		Scale: NTS
Path: J:\Jobs\18000\0.W\36_CT2035\04_Structural\Backup Documentation\ERI Files\25.5' Pole_Hamden CT.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	63.500-38.000	25.500	P18x.375	A500-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 63.500-38.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 5/8	C	No	Inside Pole	60.000 - 38.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
Fiber Trunk	C	No	Inside Pole	60.000 - 38.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
DC Trunk	C	No	Inside Pole	60.000 - 38.000	12	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	63.500-38.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.232

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	63.500-38.000	A	1.566	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.232

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	63.500-38.000	0.000	0.000	0.000	0.000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800-10121	A	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	5.162 5.514 5.874	3.293 3.639 3.994	0.046 0.079 0.117
QS66512-2	A	From Leg	3.000 2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	8.133 8.590 9.053	6.800 7.267 7.723	0.112 0.169 0.233
80010965	A	From Leg	3.000 -2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	13.814 14.347 14.888	5.833 6.324 6.821	0.109 0.186 0.269
HPA-65R-BUU-H6	A	From Leg	3.000 -6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	9.658 10.128 10.606	6.450 6.913 7.384	0.051 0.114 0.183
800-10121	B	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	5.162 5.514 5.874	3.293 3.639 3.994	0.046 0.079 0.117
QS66512-2	B	From Leg	3.000 2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	8.133 8.590 9.053	6.800 7.267 7.723	0.112 0.169 0.233
80010965	B	From Leg	3.000 -2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	13.814 14.347 14.888	5.833 6.324 6.821	0.109 0.186 0.269
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800-10121	C	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	5.162 5.514 5.874	3.293 3.639 3.994	0.046 0.079 0.117
QS66512-2	C	From Leg	3.000 2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	8.133 8.590 9.053	6.800 7.267 7.723	0.112 0.169 0.233
80010965	C	From Leg	3.000 -2.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	13.814 14.347 14.888	5.833 6.324 6.821	0.109 0.186 0.269
HPA-65R-BUU-H6	C	From Leg	3.000 -6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	9.658 10.128 10.606	6.450 6.913 7.384	0.051 0.114 0.183
TT19-08BP111-001 TMA	A	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.553 0.649 0.752	0.446 0.534 0.630	0.016 0.022 0.029
TT19-08BP111-001 TMA	B	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.553 0.649 0.752	0.446 0.534 0.630	0.016 0.022 0.029
TT19-08BP111-001 TMA	C	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.553 0.649 0.752	0.446 0.534 0.630	0.016 0.022 0.029

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) DBC0061F1V51-2	A	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.413 0.496 0.586	0.430 0.514 0.605	0.019 0.024 0.031
(2) DBC0061F1V51-2	B	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.413 0.496 0.586	0.430 0.514 0.605	0.019 0.024 0.031
(2) DBC0061F1V51-2	C	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	0.413 0.496 0.586	0.430 0.514 0.605	0.019 0.024 0.031
RRUS-11	A	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	2.566 2.765 2.971	1.068 1.211 1.361	0.050 0.070 0.092
(2) RRUS-32	A	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.314 3.558 3.809	2.424 2.638 2.860	0.077 0.105 0.136
RRUS-E2	A	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.145 3.365 3.592	1.285 1.438 1.600	0.058 0.081 0.108
4426 B66	A	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	0.727 0.844 0.971	0.049 0.062 0.077
(2) B14 4478	A	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.627 1.786 1.953	0.906 1.033 1.168	0.060 0.074 0.091
RRUS-11	B	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	2.566 2.765 2.971	1.068 1.211 1.361	0.050 0.070 0.092
(2) RRUS-32	B	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.314 3.558 3.809	2.424 2.638 2.860	0.077 0.105 0.136
RRUS-E2	B	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.145 3.365 3.592	1.285 1.438 1.600	0.058 0.081 0.108
4426 B66	B	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	0.727 0.844 0.971	0.049 0.062 0.077
(2) B14 4478	B	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.627 1.786 1.953	0.906 1.033 1.168	0.060 0.074 0.091
RRUS-11	C	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	2.566 2.765 2.971	1.068 1.211 1.361	0.050 0.070 0.092
(2) RRUS-32	C	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.314 3.558 3.809	2.424 2.638 2.860	0.077 0.105 0.136
RRUS-E2	C	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	3.145 3.365 3.592	1.285 1.438 1.600	0.058 0.081 0.108
4426 B66	C	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.650 1.810 1.978	0.727 0.844 0.971	0.049 0.062 0.077
(2) B14 4478	C	From Leg	3.000 0.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.627 1.786 1.953	0.906 1.033 1.168	0.060 0.074 0.091
13' Platform w/rails	A	None		0.000	61.000	No Ice 1/2" Ice 1" Ice	31.300 40.200 49.100	31.300 40.200 49.100	1.822 2.452 3.082

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F Surge Arrestor	A	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.909 2.098 2.294	1.909 2.098 2.294	0.020 0.039 0.062
DC6-48-60-18-8F Surge Arrestor	B	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.909 2.098 2.294	1.909 2.098 2.294	0.020 0.039 0.062
DC6-48-60-18-8F Surge Arrestor	C	From Leg	3.000 6.000 0.000	0.000	61.000	No Ice 1/2" Ice 1" Ice	1.909 2.098 2.294	1.909 2.098 2.294	0.020 0.039 0.062

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 63.500-38.000	50.750	1.097	0.025	38.250	A B C	0.000 0.000 0.000	38.250 38.250 38.250	38.250	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 63.500-38.000	50.750	1.097	0.007	1.566	44.905	A B C	0.000 0.000 0.000	44.905 44.905 44.905	44.905	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	50.750	1.097	0.009	38.250	A	0.000	38.250	38.250	100.00	0.000	0.000
63.500-38.000					B	0.000	38.250		100.00	0.000	0.000
					C	0.000	38.250		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.025	1	1	38.250	0.634	0.025	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	8.081 kip-ft	0.634		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.025	1	1	38.250	0.634	0.025	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	8.081 kip-ft	0.634		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.025	1	1	38.250	0.634	0.025	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	8.081 kip-ft	0.634		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.025	1	1	38.250	0.634	0.025	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	8.081 kip-ft	0.634		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	2.756	A	1	1.2	0.007	1	1	44.905	0.395	0.016	C
63.500-38.000			B	1	1.2		1	1	44.905			
			C	1	1.2		1	1	44.905			
Sum Weight:	0.232	2.756						OTM	5.042 kip-ft	0.395		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	2.756	A	1	1.2	0.007	1	1	44.905	0.395	0.016	C
63.500-38.000			B	1	1.2		1	1	44.905			
			C	1	1.2		1	1	44.905			
Sum Weight:	0.232	2.756						OTM	5.042 kip-ft	0.395		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.232	2.756	A	1	1.2	0.007	1	1	44.905	0.395	0.016	C
63.500-38.000			B	1	1.2		1	1	44.905			
			C	1	1.2		1	1	44.905			
Sum Weight:	0.232	2.756						OTM	5.042 kip-ft	0.395		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.232	2.756	A	1	1.2	0.007	1	1	44.905	0.395	0.016	C
63.500-38.000			B	1	1.2		1	1	44.905			
			C	1	1.2		1	1	44.905			
Sum Weight:	0.232	2.756						OTM	5.042 kip-ft	0.395		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.009	1	1	38.250	0.217	0.009	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	2.767 kip-ft	0.217		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.009	1	1	38.250	0.217	0.009	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	2.767 kip-ft	0.217		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.009	1	1	38.250	0.217	0.009	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	2.767 kip-ft	0.217		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.232	1.802	A	1	0.6	0.009	1	1	38.250	0.217	0.009	C
63.500-38.000			B	1	0.6		1	1	38.250			
			C	1	0.6		1	1	38.250			
Sum Weight:	0.232	1.802						OTM	2.767 kip-ft	0.217		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	1.802					
Bracing Weight	0.000					
Total Member Self-Weight	1.802			0.000	0.000	
Total Weight	6.325			0.000	0.000	
Wind 0 deg - No Ice		0.000	-4.499	-96.977	0.000	0.000
Wind 30 deg - No Ice		2.249	-3.896	-83.984	-48.488	0.000
Wind 45 deg - No Ice		3.181	-3.181	-68.573	-68.573	0.000
Wind 60 deg - No Ice		3.896	-2.249	-48.488	-83.984	0.000
Wind 90 deg - No Ice		4.499	0.000	0.000	-96.977	0.000
Wind 120 deg - No Ice		3.896	2.249	48.488	-83.984	0.000
Wind 135 deg - No Ice		3.181	3.181	68.573	-68.573	0.000
Wind 150 deg - No Ice		2.249	3.896	83.984	-48.488	0.000
Wind 180 deg - No Ice		0.000	4.499	96.977	0.000	0.000
Wind 210 deg - No Ice		-2.249	3.896	83.984	48.488	0.000
Wind 225 deg - No Ice		-3.181	3.181	68.573	68.573	0.000
Wind 240 deg - No Ice		-3.896	2.249	48.488	83.984	0.000
Wind 270 deg - No Ice		-4.499	0.000	0.000	96.977	0.000
Wind 300 deg - No Ice		-3.896	-2.249	-48.488	83.984	0.000
Wind 315 deg - No Ice		-3.181	-3.181	-68.573	68.573	0.000
Wind 330 deg - No Ice		-2.249	-3.896	-83.984	48.488	0.000
Member Ice	0.955					
Total Weight Ice	13.818			0.000	0.000	
Wind 0 deg - Ice		0.000	-1.795	-37.239	0.000	0.000
Wind 30 deg - Ice		0.898	-1.555	-32.250	-18.620	0.000
Wind 45 deg - Ice		1.269	-1.269	-26.332	-26.332	0.000
Wind 60 deg - Ice		1.555	-0.898	-18.620	-32.250	0.000

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 90 deg - Ice		1.795	0.000	0.000	-37.239	0.000
Wind 120 deg - Ice		1.555	0.898	18.620	-32.250	0.000
Wind 135 deg - Ice		1.269	1.269	26.332	-26.332	0.000
Wind 150 deg - Ice		0.898	1.555	32.250	-18.620	0.000
Wind 180 deg - Ice		0.000	1.795	37.239	0.000	0.000
Wind 210 deg - Ice		-0.898	1.555	32.250	18.620	0.000
Wind 225 deg - Ice		-1.269	1.269	26.332	26.332	0.000
Wind 240 deg - Ice		-1.555	0.898	18.620	32.250	0.000
Wind 270 deg - Ice		-1.795	0.000	0.000	37.239	0.000
Wind 300 deg - Ice		-1.555	-0.898	-18.620	32.250	0.000
Wind 315 deg - Ice		-1.269	-1.269	-26.332	26.332	0.000
Wind 330 deg - Ice		-0.898	-1.555	-32.250	18.620	0.000
Total Weight	6.325			0.000	0.000	
Wind 0 deg - Service		0.000	-1.540	-33.199	0.000	0.000
Wind 30 deg - Service		0.770	-1.334	-28.751	-16.599	0.000
Wind 45 deg - Service		1.089	-1.089	-23.475	-23.475	0.000
Wind 60 deg - Service		1.334	-0.770	-16.599	-28.751	0.000
Wind 90 deg - Service		1.540	0.000	0.000	-33.199	0.000
Wind 120 deg - Service		1.334	0.770	16.599	-28.751	0.000
Wind 135 deg - Service		1.089	1.089	23.475	-23.475	0.000
Wind 150 deg - Service		0.770	1.334	28.751	-16.599	0.000
Wind 180 deg - Service		0.000	1.540	33.199	0.000	0.000
Wind 210 deg - Service		-0.770	1.334	28.751	16.599	0.000
Wind 225 deg - Service		-1.089	1.089	23.475	23.475	0.000
Wind 240 deg - Service		-1.334	0.770	16.599	28.751	0.000
Wind 270 deg - Service		-1.540	0.000	0.000	33.199	0.000
Wind 300 deg - Service		-1.334	-0.770	-16.599	28.751	0.000
Wind 315 deg - Service		-1.089	-1.089	-23.475	23.475	0.000
Wind 330 deg - Service		-0.770	-1.334	-28.751	16.599	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice

Comb. No.	Description
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	63.5 - 38	Pole	Max Tension	34	0.000	0.000	0.000
			Max. Compression	34	-15.083	0.000	0.000
			Max. Mx	10	-7.586	-156.199	0.000
			Max. My	2	-7.586	0.000	156.199
			Max. Vy	10	7.203	-156.199	0.000
			Max. Vx	2	-7.203	0.000	156.199

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	35	15.083	0.000	1.795
	Max. H_x	27	5.693	7.198	0.000
	Max. H_z	2	7.590	0.000	7.198
	Max. M_x	2	156.199	0.000	7.198
	Max. M_z	10	156.199	-7.198	0.000
	Max. Torsion	16	0.000	-3.599	-6.234
	Min. Vert	7	5.693	-5.090	5.090
	Min. H_x	10	7.590	-7.198	0.000
	Min. H_z	18	7.590	0.000	-7.198
	Min. M_x	18	-156.199	0.000	-7.198
	Min. M_z	26	-156.199	7.198	0.000
	Min. Torsion	20	0.000	3.599	-6.234

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	6.325	0.000	0.000	0.000	0.000	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	7.590	0.000	-7.198	-156.199	0.000	0.000
0.9 Dead+1.6 Wind 0 deg - No Ice	5.693	0.000	-7.198	-155.938	0.000	0.000
1.2 Dead+1.6 Wind 30 deg - No Ice	7.590	3.599	-6.234	-135.273	-78.100	0.000
0.9 Dead+1.6 Wind 30 deg - No Ice	5.693	3.599	-6.234	-135.046	-77.969	0.000
1.2 Dead+1.6 Wind 45 deg - No Ice	7.590	5.090	-5.090	-110.450	-110.450	0.000
0.9 Dead+1.6 Wind 45 deg - No Ice	5.693	5.090	-5.090	-110.265	-110.265	0.000
1.2 Dead+1.6 Wind 60 deg - No Ice	7.590	6.234	-3.599	-78.100	-135.273	0.000
0.9 Dead+1.6 Wind 60 deg - No Ice	5.693	6.234	-3.599	-77.969	-135.046	0.000
1.2 Dead+1.6 Wind 90 deg - No Ice	7.590	7.198	0.000	0.000	-156.199	0.000
0.9 Dead+1.6 Wind 90 deg - No Ice	5.693	7.198	0.000	0.000	-155.938	0.000
1.2 Dead+1.6 Wind 120 deg - No Ice	7.590	6.234	3.599	78.100	-135.273	0.000
0.9 Dead+1.6 Wind 120 deg - No Ice	5.693	6.234	3.599	77.969	-135.046	0.000
1.2 Dead+1.6 Wind 135 deg - No Ice	7.590	5.090	5.090	110.450	-110.450	0.000
0.9 Dead+1.6 Wind 135 deg - No Ice	5.693	5.090	5.090	110.265	-110.265	0.000
1.2 Dead+1.6 Wind 150 deg - No Ice	7.590	3.599	6.234	135.273	-78.100	0.000
0.9 Dead+1.6 Wind 150 deg - No Ice	5.693	3.599	6.234	135.046	-77.969	0.000
1.2 Dead+1.6 Wind 180 deg - No Ice	7.590	0.000	7.198	156.199	0.000	0.000

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 180 deg - No Ice	5.693	0.000	7.198	155.938	0.000	0.000
1.2 Dead+1.6 Wind 210 deg - No Ice	7.590	-3.599	6.234	135.273	78.100	0.000
0.9 Dead+1.6 Wind 210 deg - No Ice	5.693	-3.599	6.234	135.046	77.969	0.000
1.2 Dead+1.6 Wind 225 deg - No Ice	7.590	-5.090	5.090	110.450	110.450	0.000
0.9 Dead+1.6 Wind 225 deg - No Ice	5.693	-5.090	5.090	110.265	110.265	0.000
1.2 Dead+1.6 Wind 240 deg - No Ice	7.590	-6.234	3.599	78.100	135.273	0.000
0.9 Dead+1.6 Wind 240 deg - No Ice	5.693	-6.234	3.599	77.969	135.046	0.000
1.2 Dead+1.6 Wind 270 deg - No Ice	7.590	-7.198	0.000	0.000	156.199	0.000
0.9 Dead+1.6 Wind 270 deg - No Ice	5.693	-7.198	0.000	0.000	155.938	0.000
1.2 Dead+1.6 Wind 300 deg - No Ice	7.590	-6.234	-3.599	-78.100	135.273	0.000
0.9 Dead+1.6 Wind 300 deg - No Ice	5.693	-6.234	-3.599	-77.969	135.046	0.000
1.2 Dead+1.6 Wind 315 deg - No Ice	7.590	-5.090	-5.090	-110.450	110.450	0.000
0.9 Dead+1.6 Wind 315 deg - No Ice	5.693	-5.090	-5.090	-110.265	110.265	0.000
1.2 Dead+1.6 Wind 330 deg - No Ice	7.590	-3.599	-6.234	-135.273	78.100	0.000
0.9 Dead+1.6 Wind 330 deg - No Ice	5.693	-3.599	-6.234	-135.046	77.969	0.000
1.2 Dead+1.0 Ice+1.0 Temp	15.083	0.000	0.000	0.000	0.000	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	15.083	0.000	-1.795	-37.767	0.000	0.000
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	15.083	0.898	-1.555	-32.707	-18.884	0.000
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	15.083	1.269	-1.269	-26.705	-26.705	0.000
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	15.083	1.555	-0.898	-18.884	-32.707	0.000
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	15.083	1.795	0.000	0.000	-37.767	0.000
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	15.083	1.555	0.898	18.884	-32.707	0.000
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	15.083	1.269	1.269	26.705	-26.705	0.000
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	15.083	0.898	1.555	32.707	-18.884	0.000
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	15.083	0.000	1.795	37.767	0.000	0.000
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	15.083	-0.898	1.555	32.707	18.884	0.000
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	15.083	-1.269	1.269	26.705	26.705	0.000
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	15.083	-1.555	0.898	18.884	32.707	0.000
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	15.083	-1.795	0.000	0.000	37.767	0.000
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	15.083	-1.555	-0.898	-18.884	32.707	0.000
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	15.083	-1.269	-1.269	-26.705	26.705	0.000

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	15.083	-0.898	-1.555	-32.707	18.884	0.000
Dead+Wind 0 deg - Service	6.325	0.000	-1.540	-33.384	0.000	0.000
Dead+Wind 30 deg - Service	6.325	0.770	-1.334	-28.912	-16.692	0.000
Dead+Wind 45 deg - Service	6.325	1.089	-1.089	-23.606	-23.606	0.000
Dead+Wind 60 deg - Service	6.325	1.334	-0.770	-16.692	-28.912	0.000
Dead+Wind 90 deg - Service	6.325	1.540	0.000	0.000	-33.384	0.000
Dead+Wind 120 deg - Service	6.325	1.334	0.770	16.692	-28.912	0.000
Dead+Wind 135 deg - Service	6.325	1.089	1.089	23.606	-23.606	0.000
Dead+Wind 150 deg - Service	6.325	0.770	1.334	28.912	-16.692	0.000
Dead+Wind 180 deg - Service	6.325	0.000	1.540	33.384	0.000	0.000
Dead+Wind 210 deg - Service	6.325	-0.770	1.334	28.912	16.692	0.000
Dead+Wind 225 deg - Service	6.325	-1.089	1.089	23.606	23.606	0.000
Dead+Wind 240 deg - Service	6.325	-1.334	0.770	16.692	28.912	0.000
Dead+Wind 270 deg - Service	6.325	-1.540	0.000	0.000	33.384	0.000
Dead+Wind 300 deg - Service	6.325	-1.334	-0.770	-16.692	28.912	0.000
Dead+Wind 315 deg - Service	6.325	-1.089	-1.089	-23.606	23.606	0.000
Dead+Wind 330 deg - Service	6.325	-0.770	-1.334	-28.912	16.692	0.000

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-6.325	0.000	0.000	6.325	0.000	0.000%
2	0.000	-7.590	-7.198	0.000	7.590	7.198	0.000%
3	0.000	-5.693	-7.198	0.000	5.693	7.198	0.000%
4	3.599	-7.590	-6.234	-3.599	7.590	6.234	0.000%
5	3.599	-5.693	-6.234	-3.599	5.693	6.234	0.000%
6	5.090	-7.590	-5.090	-5.090	7.590	5.090	0.000%
7	5.090	-5.693	-5.090	-5.090	5.693	5.090	0.000%
8	6.234	-7.590	-3.599	-6.234	7.590	3.599	0.000%
9	6.234	-5.693	-3.599	-6.234	5.693	3.599	0.000%
10	7.198	-7.590	0.000	-7.198	7.590	0.000	0.000%
11	7.198	-5.693	0.000	-7.198	5.693	0.000	0.000%
12	6.234	-7.590	3.599	-6.234	7.590	-3.599	0.000%
13	6.234	-5.693	3.599	-6.234	5.693	-3.599	0.000%
14	5.090	-7.590	5.090	-5.090	7.590	-5.090	0.000%
15	5.090	-5.693	5.090	-5.090	5.693	-5.090	0.000%
16	3.599	-7.590	6.234	-3.599	7.590	-6.234	0.000%
17	3.599	-5.693	6.234	-3.599	5.693	-6.234	0.000%
18	0.000	-7.590	7.198	0.000	7.590	-7.198	0.000%
19	0.000	-5.693	7.198	0.000	5.693	-7.198	0.000%
20	-3.599	-7.590	6.234	3.599	7.590	-6.234	0.000%
21	-3.599	-5.693	6.234	3.599	5.693	-6.234	0.000%
22	-5.090	-7.590	5.090	5.090	7.590	-5.090	0.000%
23	-5.090	-5.693	5.090	5.090	5.693	-5.090	0.000%
24	-6.234	-7.590	3.599	6.234	7.590	-3.599	0.000%
25	-6.234	-5.693	3.599	6.234	5.693	-3.599	0.000%
26	-7.198	-7.590	0.000	7.198	7.590	0.000	0.000%
27	-7.198	-5.693	0.000	7.198	5.693	0.000	0.000%
28	-6.234	-7.590	-3.599	6.234	7.590	3.599	0.000%
29	-6.234	-5.693	-3.599	6.234	5.693	3.599	0.000%
30	-5.090	-7.590	-5.090	5.090	7.590	5.090	0.000%
31	-5.090	-5.693	-5.090	5.090	5.693	5.090	0.000%
32	-3.599	-7.590	-6.234	3.599	7.590	6.234	0.000%
33	-3.599	-5.693	-6.234	3.599	5.693	6.234	0.000%
34	0.000	-15.083	0.000	0.000	15.083	0.000	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
35	0.000	-15.083	-1.795	0.000	15.083	1.795	0.000%
36	0.898	-15.083	-1.555	-0.898	15.083	1.555	0.000%
37	1.269	-15.083	-1.269	-1.269	15.083	1.269	0.000%
38	1.555	-15.083	-0.898	-1.555	15.083	0.898	0.000%
39	1.795	-15.083	0.000	-1.795	15.083	0.000	0.000%
40	1.555	-15.083	0.898	-1.555	15.083	-0.898	0.000%
41	1.269	-15.083	1.269	-1.269	15.083	-1.269	0.000%
42	0.898	-15.083	1.555	-0.898	15.083	-1.555	0.000%
43	0.000	-15.083	1.795	0.000	15.083	-1.795	0.000%
44	-0.898	-15.083	1.555	0.898	15.083	-1.555	0.000%
45	-1.269	-15.083	1.269	1.269	15.083	-1.269	0.000%
46	-1.555	-15.083	0.898	1.555	15.083	-0.898	0.000%
47	-1.795	-15.083	0.000	1.795	15.083	0.000	0.000%
48	-1.555	-15.083	-0.898	1.555	15.083	0.898	0.000%
49	-1.269	-15.083	-1.269	1.269	15.083	1.269	0.000%
50	-0.898	-15.083	-1.555	0.898	15.083	1.555	0.000%
51	0.000	-6.325	-1.540	0.000	6.325	1.540	0.000%
52	0.770	-6.325	-1.334	-0.770	6.325	1.334	0.000%
53	1.089	-6.325	-1.089	-1.089	6.325	1.089	0.000%
54	1.334	-6.325	-0.770	-1.334	6.325	0.770	0.000%
55	1.540	-6.325	0.000	-1.540	6.325	0.000	0.000%
56	1.334	-6.325	0.770	-1.334	6.325	-0.770	0.000%
57	1.089	-6.325	1.089	-1.089	6.325	-1.089	0.000%
58	0.770	-6.325	1.334	-0.770	6.325	-1.334	0.000%
59	0.000	-6.325	1.540	0.000	6.325	-1.540	0.000%
60	-0.770	-6.325	1.334	0.770	6.325	-1.334	0.000%
61	-1.089	-6.325	1.089	1.089	6.325	-1.089	0.000%
62	-1.334	-6.325	0.770	1.334	6.325	-0.770	0.000%
63	-1.540	-6.325	0.000	1.540	6.325	0.000	0.000%
64	-1.334	-6.325	-0.770	1.334	6.325	0.770	0.000%
65	-1.089	-6.325	-1.089	1.089	6.325	1.089	0.000%
66	-0.770	-6.325	-1.334	0.770	6.325	1.334	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001

20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00001652
36	Yes	4	0.00000001	0.00001661
37	Yes	4	0.00000001	0.00001665
38	Yes	4	0.00000001	0.00001661
39	Yes	4	0.00000001	0.00001652
40	Yes	4	0.00000001	0.00001661
41	Yes	4	0.00000001	0.00001665
42	Yes	4	0.00000001	0.00001661
43	Yes	4	0.00000001	0.00001652
44	Yes	4	0.00000001	0.00001661
45	Yes	4	0.00000001	0.00001665
46	Yes	4	0.00000001	0.00001661
47	Yes	4	0.00000001	0.00001652
48	Yes	4	0.00000001	0.00001661
49	Yes	4	0.00000001	0.00001665
50	Yes	4	0.00000001	0.00001661
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	63.5 - 38	0.498	63	0.133	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
61.000	800-10121	63	0.449	0.120	0.000	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	63.5 - 38	2.328	26	0.621	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
61.000	800-10121	26	2.100	0.560	0.000	Inf

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	63.5 - 62.225	P18x.375	25.500	0.000	0.0	20.764	-0.170	784.878	0.000 [1]
	62.225 - 60.95					20.764	-12.024	784.878	0.015
	60.95 - 59.675					20.764	-5.446	784.878	0.007
	59.675 - 58.4					20.764	-5.568	784.878	0.007
	58.4 - 57.125					20.764	-5.691	784.878	0.007
	57.125 - 55.85					20.764	-5.813	784.878	0.007
	55.85 - 54.575					20.764	-5.937	784.878	0.008
	54.575 - 53.3					20.764	-6.060	784.878	0.008
	53.3 - 52.025					20.764	-6.185	784.878	0.008
	52.025 - 50.75					20.764	-6.309	784.878	0.008
	50.75 - 49.475					20.764	-6.434	784.878	0.008
	49.475 - 48.2					20.764	-6.560	784.878	0.008
	48.2 - 46.925					20.764	-6.686	784.878	0.009
	46.925 - 45.65					20.764	-6.813	784.878	0.009
	45.65 - 44.375					20.764	-6.940	784.878	0.009
	44.375 - 43.1					20.764	-7.068	784.878	0.009
	43.1 - 41.825					20.764	-7.197	784.878	0.009
	41.825 - 40.55					20.764	-7.326	784.878	0.009
	40.55 - 39.275					20.764	-7.455	784.878	0.009
	39.275 - 38					20.764	-7.586	784.878	0.010

[1] P_u / ϕP_n controls

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	63.5 - 62.225	P18x.375	0.013	367.000	0.000	0.000	367.000	0.000
	62.225 - 60.95		0.123	367.000	0.000	0.000	367.000	0.000
	60.95 - 59.675		8.566	367.000	0.023	0.000	367.000	0.000
	59.675 - 58.4		16.753	367.000	0.046	0.000	367.000	0.000
	58.4 - 57.125		25.005	367.000	0.068	0.000	367.000	0.000
	57.125 - 55.85		33.322	367.000	0.091	0.000	367.000	0.000
	55.85 - 54.575		41.703	367.000	0.114	0.000	367.000	0.000
	54.575 - 53.3		50.149	367.000	0.137	0.000	367.000	0.000
	53.3 - 52.025		58.657	367.000	0.160	0.000	367.000	0.000
	52.025 - 50.75		67.228	367.000	0.183	0.000	367.000	0.000
	50.75 - 49.475		75.860	367.000	0.207	0.000	367.000	0.000
	49.475 - 48.2		84.553	367.000	0.230	0.000	367.000	0.000
	48.2 - 46.925		93.308	367.000	0.254	0.000	367.000	0.000
	46.925 - 45.65		102.121	367.000	0.278	0.000	367.000	0.000
	45.65 - 44.375		110.993	367.000	0.302	0.000	367.000	0.000
	44.375 - 43.1		119.923	367.000	0.327	0.000	367.000	0.000
	43.1 - 41.825		128.908	367.000	0.351	0.000	367.000	0.000
	41.825 - 40.55		137.951	367.000	0.376	0.000	367.000	0.000
	40.55 - 39.275		147.048	367.000	0.401	0.000	367.000	0.000
	39.275 - 38		156.199	367.000	0.426	0.000	367.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	63.5 - 62.225	P18x.375	0.020	392.439	0.000	0.000	564.642	0.000
	62.225 - 60.95		1.471	392.439	0.004	0.000	564.642	0.000
	60.95 - 59.675		6.395	392.439	0.016	0.000	564.642	0.000
	59.675 - 58.4		6.447	392.439	0.016	0.000	564.642	0.000
	58.4 - 57.125		6.498	392.439	0.017	0.000	564.642	0.000
	57.125 - 55.85		6.549	392.439	0.017	0.000	564.642	0.000
	55.85 - 54.575		6.600	392.439	0.017	0.000	564.642	0.000
	54.575 - 53.3		6.650	392.439	0.017	0.000	564.642	0.000
	53.3 - 52.025		6.699	392.439	0.017	0.000	564.642	0.000
	52.025 - 50.75		6.748	392.439	0.017	0.000	564.642	0.000
	50.75 - 49.475		6.796	392.439	0.017	0.000	564.642	0.000
	49.475 - 48.2		6.844	392.439	0.017	0.000	564.642	0.000
	48.2 - 46.925		6.892	392.439	0.018	0.000	564.642	0.000
	46.925 - 45.65		6.938	392.439	0.018	0.000	564.642	0.000
	45.65 - 44.375		6.984	392.439	0.018	0.000	564.642	0.000
	44.375 - 43.1		7.029	392.439	0.018	0.000	564.642	0.000
	43.1 - 41.825		7.074	392.439	0.018	0.000	564.642	0.000
	41.825 - 40.55		7.118	392.439	0.018	0.000	564.642	0.000
	40.55 - 39.275		7.161	392.439	0.018	0.000	564.642	0.000
	39.275 - 38		7.203	392.439	0.018	0.000	564.642	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	63.5 - 62.225	0.000	0.000	0.000	0.000	0.000	0.000 [1] ✔	1.000	4.8.2 ✔
	62.225 - 60.95	0.015	0.000	0.000	0.004	0.000	0.016 ✔	1.000	4.8.2 ✔
	60.95 - 59.675	0.007	0.023	0.000	0.016	0.000	0.031 ✔	1.000	4.8.2 ✔
	59.675 - 58.4	0.007	0.046	0.000	0.016	0.000	0.053 ✔	1.000	4.8.2 ✔
	58.4 - 57.125	0.007	0.068	0.000	0.017	0.000	0.076 ✔	1.000	4.8.2 ✔
	57.125 - 55.85	0.007	0.091	0.000	0.017	0.000	0.098 ✔	1.000	4.8.2 ✔
	55.85 - 54.575	0.008	0.114	0.000	0.017	0.000	0.121 ✔	1.000	4.8.2 ✔
	54.575 - 53.3	0.008	0.137	0.000	0.017	0.000	0.145 ✔	1.000	4.8.2 ✔
	53.3 - 52.025	0.008	0.160	0.000	0.017	0.000	0.168 ✔	1.000	4.8.2 ✔
	52.025 - 50.75	0.008	0.183	0.000	0.017	0.000	0.192 ✔	1.000	4.8.2 ✔
	50.75 - 49.475	0.008	0.207	0.000	0.017	0.000	0.215 ✔	1.000	4.8.2 ✔
	49.475 - 48.2	0.008	0.230	0.000	0.017	0.000	0.239 ✔	1.000	4.8.2 ✔
	48.2 - 46.925	0.009	0.254	0.000	0.018	0.000	0.263 ✔	1.000	4.8.2 ✔
	46.925 - 45.65	0.009	0.278	0.000	0.018	0.000	0.287 ✔	1.000	4.8.2 ✔
	45.65 - 44.375	0.009	0.302	0.000	0.018	0.000	0.312 ✔	1.000	4.8.2 ✔
	44.375 - 43.1	0.009	0.327	0.000	0.018	0.000	0.336 ✔	1.000	4.8.2 ✔
	43.1 - 41.825	0.009	0.351	0.000	0.018	0.000	0.361 ✔	1.000	4.8.2 ✔
	41.825 - 40.55	0.009	0.376	0.000	0.018	0.000	0.386 ✔	1.000	4.8.2 ✔
	40.55 - 39.275	0.009	0.401	0.000	0.018	0.000	0.411 ✔	1.000	4.8.2 ✔
	39.275 - 38	0.010	0.426	0.000	0.018	0.000	0.436 ✔	1.000	4.8.2 ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	63.5 - 38	Pole	P18x.375	1	-7.586	784.878	43.6	Pass
							Summary	
						Pole (L1)	43.6	Pass
						RATING =	**43.6**	**Pass**

Program Version 7.0.5.1 - 2/1/2016 File:J:/Jobs/1800000.WI/36_CT2035/04_Structural/Backup Documentation/ERI Files/25.5' Pole_ Hamden CT.eri

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Anchor Bolt and Baseplate Analysis
Location:	25.5-FT Monopole Hamden, CT
Rev. 0: 11/2/18	Prepared by: T.J.L. Checked by: C.A.G. Job No. 18000.36

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$M_u := 156 \cdot ft \cdot kips$	(Input From RisaTower)
Shear Force =	$Shear := 7 \cdot kips$	(Input From RisaTower)
Axial Force =	$Axial := 8 \cdot kips$	(Input From RisaTower)

Anchor Bolt Data:

ASTMA325

Number of Anchor Bolts =	$N := 16$	(User Input)
Nominal Tensile Stress =	$F_{nt} := 90 \cdot ksi$	(User Input)
Nominal Shear Stress =	$F_{nv} := 54 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Anchor Bolts =	$D := 1 \cdot in$	(User Input)
Threads per Inch =	$n := 8$	(User Input)
Distance to Bolts 1 =	$D_1 := 3 \cdot in$	(User Input)
Distance to Bolts 2 =	$D_2 := 6 \cdot in$	(User Input)
Distance to Bolts 3 =	$D_3 := 16 \cdot in$	(User Input)
Number of Bolts 1 =	$N_1 := 4$	(User Input)
Number of Bolts 2 =	$N_2 := 4$	(User Input)
Number of Bolts 3 =	$N_3 := 8$	(User Input)

Base Plate Data:

Use AST MA572 Grade 50

Plate Yield Strength =	$F_{ybp} := 50 \cdot ksi$	(User Input)
Base Plate Thickness =	$t_{BP} := 2 \cdot in$	(User Input)
Base Plate Effective Bend Width =	$B_{eff} := 26 \cdot in$	(User Input)
Outer Pole Diameter =	$D_T := 18 \cdot in$	(User Input)

Anchor Bolt Analysis:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.606 \cdot in^2$

Bolt Polar Moment of Inertia = $I_p := D_1^2 \cdot N_1 + D_2^2 \cdot N_2 + D_3^2 \cdot N_3 = 2228 in^2$

Maximum Tension Force = $T_u := M_u \cdot \frac{D_3}{I_p} - \frac{Axial}{N} = 12.9 \cdot kips$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 0.4 \cdot kips$

Strength Resistance Factor = $\phi := 0.75$

Design Shear Strength = $\Phi R_{nv} := \phi \cdot F_{nv} \cdot A_g = 31.8 \cdot k$

$\frac{V_u}{\Phi R_{nv}} = 1.38\%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{V_u}{\Phi R_{nv}} \le 1.00, "OK", "Overstressed" \right)$

Bolt_Shear = "OK"

Design Tensile Strength = $\Phi R_{nt} := \phi \cdot F_{nt} \cdot A_g = 53.0 \cdot k$

Required Shaer Stress = $f_{rv} := \frac{V_u}{A_g} = 0.6 ksi$

Nominal Tensile Stress Modified to Include Shear Stress = $F'_{nt} := \min\left[\left(1.3 \cdot F_{nt} - \frac{F_{nt}}{\phi \cdot F_{nv}} \cdot f_{rv} \right), F_{nt} \right] = 90.0 ksi$

Design Tensile Strength Reduced for Shear Effects = $\Phi R_{nt} := \phi \cdot F'_{nt} \cdot A_g = 53.0 \cdot k$

$\frac{T_u}{\Phi R_{nt}} = 24.41\%$

Check Bolt Tension = $Bolt\_Tension := if\left(\frac{T_u}{\Phi R_{nt}} \le 1.00, "OK", "Overstressed" \right)$

Bolt_Tension = "OK"

Base Plate Analysis:

Strength Resistance Factor Yielding due to Bending = $\phi_b := 0.9$

Bending Moment in Plate = $M_{pl} := T_u \cdot \left(D_3 - \frac{D_T}{2} \right) \cdot \frac{N_3}{2} = 30.201\,ft \cdot kips$

Plate Plastic Section Modulus = $Z_{bp} := B_{eff} \frac{t_{BP}^2}{4} = 26 \cdot in^3$

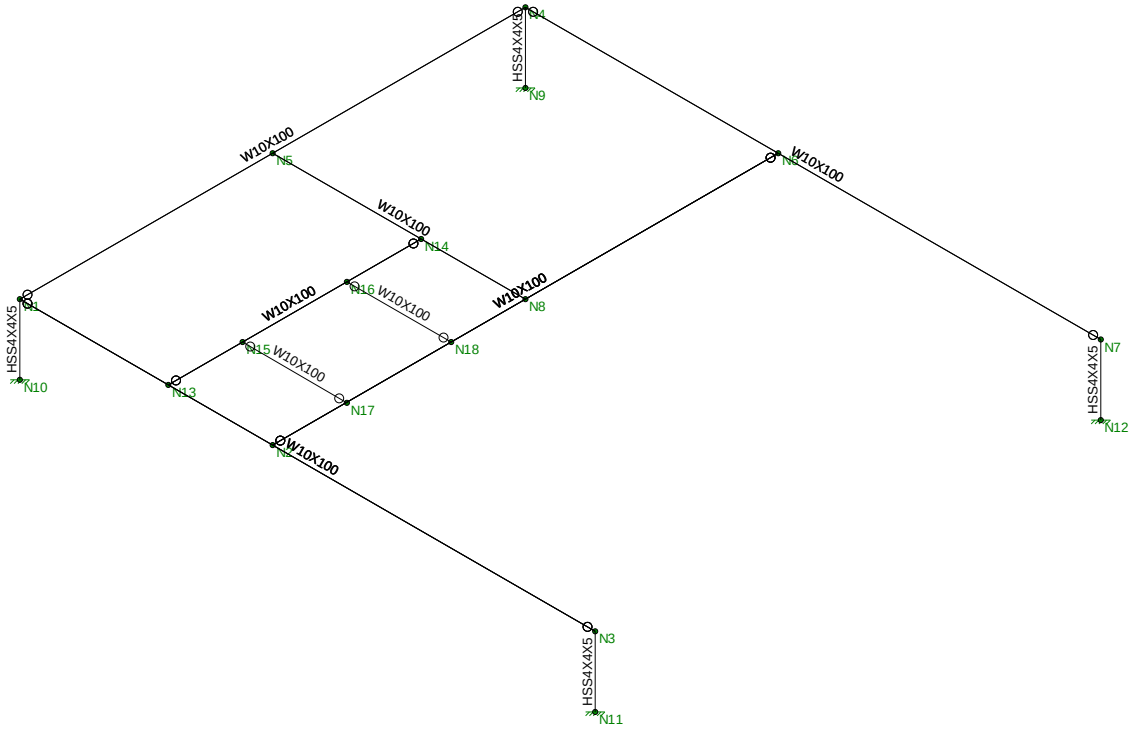
Applied Bending Stress in Plate = $f_{bp} := \frac{M_{pl}}{Z_{bp}} = 13.94 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot F_{ybp} = 45 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 31.0 \cdot \%$

Base Plate Bending = $Plate\_Bending := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed" \right)$

Plate_Bending = "Ok"



Envelope Only Solution

Centek Engineering, Inc.		
TJL	CT2035	Nov 2, 2018 at 11:28 AM
18000.36	Member Framing	18000.36_CT2035_Hamden_Steel ...

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	.145
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#6
Footing Top Bar Cover (in)	1.5
Footing Bottom Bar	#6
Footing Bottom Bar Cover (in)	3
Pedestal Bar	#6
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#4

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W10X100	W10X100	Beam	Wide Flange	A992	Typical	29.3	207	623	10.9
2	HSS4X4X5/16	HSS4X4X5	Column	Tube	A500 Gr.B R...	Typical	4.1	9.14	9.14	15.3

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	W10X100	16.5			Segment	Segment					Lateral
2	M2	W10X100	16.5			Segment	Segment					Lateral
3	M3	W10X100	14.5			Segment	Segment					Lateral
4	M4	W10X100	14.5			Segment	Segment					Lateral
5	M5	W10X100	7.25			Segment	Segment					Lateral
6	M6	HSS4X4X5/...	2									Lateral
7	M7	HSS4X4X5/...	2									Lateral
8	M8	HSS4X4X5/...	2									Lateral
9	M9	HSS4X4X5/...	2									Lateral
10	M10	W10X100	7.25			Segment	Segment					Lateral
11	M11	W10X100	3			Lbyy						Lateral
12	M12	W10X100	3			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N3			W10X100	Beam	Wide Flange	A992	Typical
2	M2	N4	N7			W10X100	Beam	Wide Flange	A992	Typical
3	M3	N2	N6			W10X100	Beam	Wide Flange	A992	Typical
4	M4	N1	N4			W10X100	Beam	Wide Flange	A992	Typical
5	M5	N5	N8			W10X100	Beam	Wide Flange	A992	Typical
6	M6	N12	N7		90	HSS4X4X5/16	Column	Tube	A500 Gr....	Typical
7	M7	N11	N3		90	HSS4X4X5/16	Column	Tube	A500 Gr....	Typical
8	M8	N10	N1		90	HSS4X4X5/16	Column	Tube	A500 Gr....	Typical
9	M9	N9	N4		90	HSS4X4X5/16	Column	Tube	A500 Gr....	Typical
10	M10	N13	N14			W10X100	Beam	Wide Flange	A992	Typical
11	M11	N16	N18			W10X100	Beam	Wide Flange	A992	Typical
12	M12	N15	N17			W10X100	Beam	Wide Flange	A992	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	-7.25	3	7.25	0	
2	N2	0.	3	7.25	0	
3	N3	9.25	3	7.25	0	
4	N4	-7.25	3	-7.25	0	
5	N5	-7.25	3	0.	0	
6	N6	-0.	3	-7.25	0	
7	N7	9.25	3	-7.25	0	
8	N8	0	3	0	0	
9	N9	-7.25	1	-7.25	0	Yes
10	N10	-7.25	1	7.25	0	
11	N11	9.25	1	7.25	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
12	N12	9.25	1	-7.25	0	
13	N13	-3.	3	7.25	0	
14	N14	-3	3	0	0	
15	N15	-3.	3	5.125	0	
16	N16	-3.	3	2.125	0	
17	N17	0.	3	5.125	0	
18	N18	0.	3	2.125	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N10	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M10	Y	-2	%50
2	M11	Y	-2	%50
3	M12	Y	-2	%50
4	M3	Y	-2	%25

Member Point Loads (BLC 3 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M10	X	1.75	%50
2	M11	X	1.75	%50
3	M12	X	1.75	%50
4	M3	X	1.75	%25
5	M10	Y	52	%50
6	M3	Y	-52	%25

Member Point Loads (BLC 4 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M12	Z	1.75	%50
2	M10	Z	1.75	%50
3	M11	Z	1.75	%50
4	M3	Z	1.75	%25
5	M11	Y	52	%50
6	M12	Y	-52	%50

Member Distributed Loads

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
No Data to Print ...					

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self	DL		-1						
2	Dead Load	DL					4			
3	Wind X	WLX					6			
4	Wind Z	WLZ					6			

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-12 (a) (a)	Yes	Y		DL	1	W...	.6																
4	IBC 16-12 (a) (b)	Yes	Y		DL	1	W...	.6																
5	IBC 16-12 (a) (c)	Yes	Y		DL	1	W...	-.6																
6	IBC 16-12 (a) (d)	Yes	Y		DL	1	W...	-.6																
7	IBC 16-13 (a) (a)	Yes	Y		DL	1	W...	.45	LL	.75	LLS	.75												
8	IBC 16-13 (a) (b)	Yes	Y		DL	1	W...	.45	LL	.75	LLS	.75												
9	IBC 16-13 (a) (c)	Yes	Y		DL	1	W...	-.45	LL	.75	LLS	.75												
10	IBC 16-13 (a) (d)	Yes	Y		DL	1	W...	-.45	LL	.75	LLS	.75												
11	IBC 16-15 (a)	Yes	Y		DL	.6	W...	.6																
12	IBC 16-15 (b)	Yes	Y		DL	.6	W...	.6																
13	IBC 16-15 (c)	Yes	Y		DL	.6	W...	-.6																
14	IBC 16-15 (d)	Yes	Y		DL	.6	W...	-.6																

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N9	max	.603	5	8.028	6	1.571	6	3.113	6	0	14	1.285	3
2		min	-.537	11	-1.944	12	-1.591	4	-3.113	4	0	1	-1.226	13
3	N10	max	1.535	5	11.128	5	1.582	14	3.11	6	0	14	3.06	3
4		min	-1.488	11	-.122	11	-1.562	12	-3.11	4	0	1	-2.994	13
5	N11	max	1.476	13	7.875	3	.544	6	1.154	6	0	14	3.09	3
6		min	-1.526	3	-2.077	13	-.544	4	-1.161	4	0	1	-2.943	13
7	N12	max	.618	13	4.269	6	.505	6	1.083	6	0	14	1.376	3
8		min	-.684	3	-1.004	12	-.505	4	-1.077	4	0	1	-1.237	13
9	Totals:	max	4.2	13	16.345	10	4.2	14						
10		min	-4.2	3	9.807	11	-4.2	4						

Envelope Joint Displacements

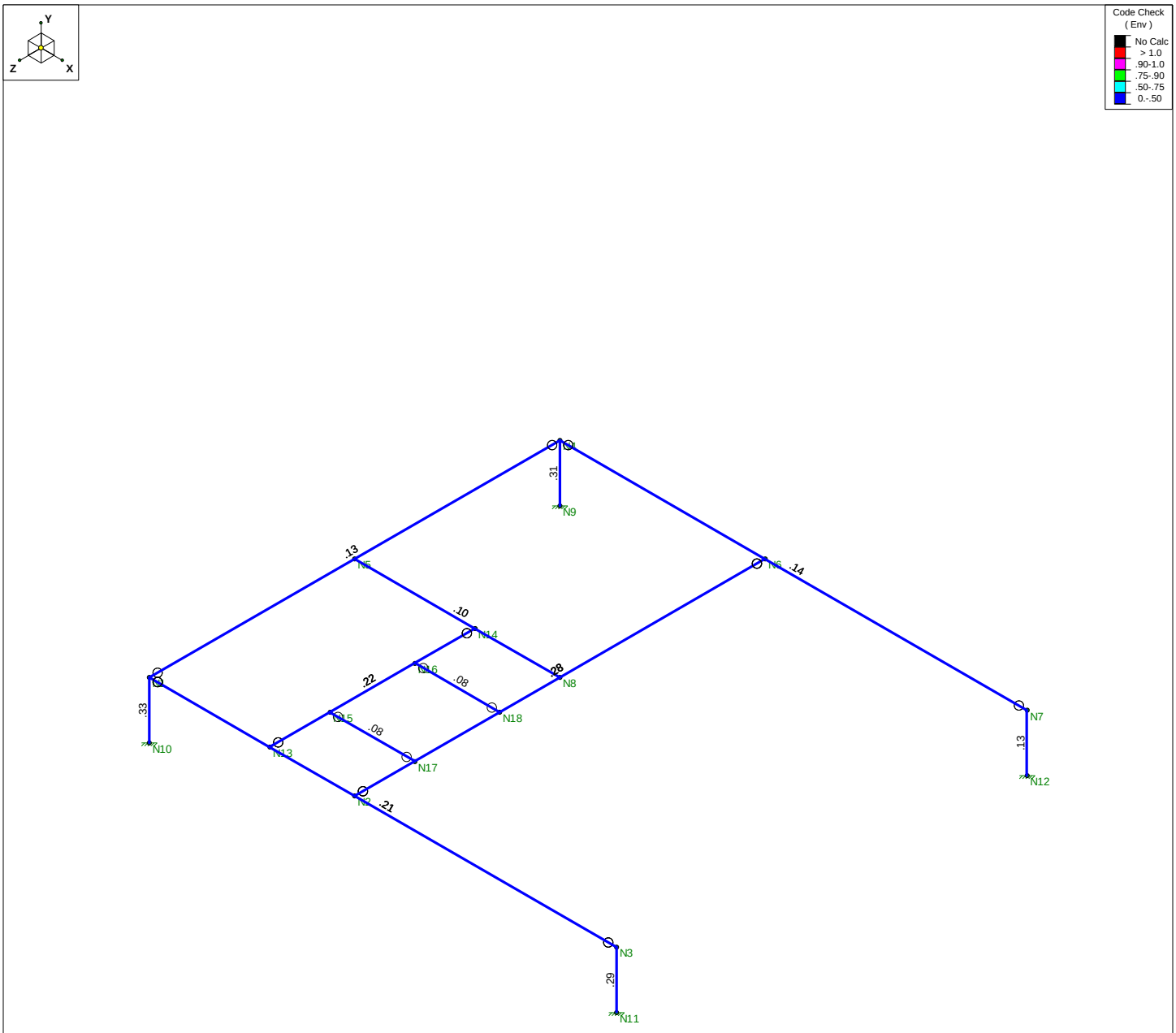
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.035	3	0	11	.035	4	2.069e-03	4	0	14	1.978e-03	13
2		min	-.034	13	-.003	5	-.035	6	-2.068e-03	6	0	1	-2.152e-03	3
3	N2	max	.036	3	.032	13	.063	4	1.525e-03	4	4.592e-05	3	4.076e-04	13
4		min	-.034	13	-.176	3	-.063	6	-1.523e-03	6	-4.59e-05	5	-6.714e-04	3
5	N3	max	.035	3	0	13	.014	4	8.314e-04	4	0	14	1.999e-03	13
6		min	-.034	13	-.002	3	-.013	6	-8.266e-04	6	0	1	-2.098e-03	3
7	N4	max	.016	3	0	12	.035	4	2.069e-03	4	0	14	8.644e-04	13
8		min	-.014	13	-.002	6	-.035	6	-2.069e-03	6	0	1	-1.035e-03	3
9	N5	max	.052	3	.04	11	.035	4	2.143e-05	4	2.486e-04	14	1.27e-03	13

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
10		min	-.051	13	-.073	5	-.035	6	-1.184e-05	14	-2.487e-04	12	-3.091e-03	3
11	N6	max	.016	3	.033	12	.063	4	1.501e-03	4	2.383e-05	3	7.132e-05	12
12		min	-.014	13	-.103	6	-.063	6	-1.503e-03	6	-2.386e-05	5	-2.407e-04	6
13	N7	max	.016	3	0	12	.013	4	7.76e-04	4	0	14	8.397e-04	13
14		min	-.014	13	-.001	6	-.013	6	-7.806e-04	6	0	1	-9.346e-04	3
15	N8	max	.053	3	.09	13	.063	4	1.114e-03	3	1.177e-04	3	2.352e-03	13
16		min	-.051	13	-.27	3	-.063	6	-5.887e-04	13	-1.177e-04	5	-3.869e-03	3
17	N9	max	0	14	0	14	0	14	0	14	0	14	0	14
18		min	0	1	0	1	0	1	0	1	0	1	0	1
19	N10	max	0	14	0	14	0	14	0	14	0	14	0	14
20		min	0	1	0	1	0	1	0	1	0	1	0	1
21	N11	max	0	14	0	14	0	14	0	14	0	14	0	14
22		min	0	1	0	1	0	1	0	1	0	1	0	1
23	N12	max	0	14	0	14	0	14	0	14	0	14	0	14
24		min	0	1	0	1	0	1	0	1	0	1	0	1
25	N13	max	.036	3	.017	14	.056	4	1.75e-03	4	3.279e-04	14	4.651e-04	13
26		min	-.034	13	-.127	4	-.056	6	-1.749e-03	6	-3.279e-04	12	-1.949e-03	3
27	N14	max	.053	3	.019	12	.056	4	6.556e-04	3	3.469e-04	14	1.908e-03	13
28		min	-.051	13	-.144	6	-.056	6	-3.434e-04	13	-3.47e-04	12	-3.554e-03	3
29	N15	max	.046	3	-.02	14	.056	4	1.338e-03	12	3.494e-04	13	8.88e-04	13
30		min	-.044	13	-.102	4	-.056	6	-1.649e-03	6	-3.494e-04	11	-2.42e-03	3
31	N16	max	.053	3	-.014	12	.056	4	1.442e-03	12	7.522e-05	6	1.485e-03	13
32		min	-.052	13	-.113	6	-.056	6	-1.468e-03	6	-7.531e-05	4	-3.084e-03	3
33	N17	max	.046	3	.079	13	.063	4	1.776e-03	12	3.48e-04	13	9.776e-04	13
34		min	-.044	13	-.248	3	-.063	6	-2.505e-03	6	-3.48e-04	11	-1.609e-03	3
35	N18	max	.053	3	.104	13	.063	4	1.482e-03	12	7.12e-05	6	1.782e-03	13
36		min	-.052	13	-.29	3	-.063	6	-1.528e-03	6	-7.127e-05	4	-2.932e-03	3

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc.....	L...	Pnc/o...	Pnt/o...	Mnyy/...	Mnzz/.....		Eqn
1	M1	W10X100	.214	7.3...	3	.113	4.2...	y	3	584.67	877.246	152.196	324.351	1...	H1-1b
2	M2	W10X100	.137	7.2...	6	.038	0	y	6	584.67	877.246	152.196	324.351	1...	H1-1b
3	M3	W10X100	.278	3.6...	3	.179	0	y	3	641.268	877.246	152.196	324.351	1...	H1-1b
4	M4	W10X100	.125	7.25	5	.039	0	y	5	641.268	877.246	152.196	324.351	1...	H1-1b
5	M5	W10X100	.100	4.2...	5	.076	4.6...	y	5	811.149	877.246	152.196	324.351	1...	H1-1b
6	M6	HSS4X4X5	.131	0	3	.023	0	z	3	110.988	112.934	12.831	12.831	1...	H1-1b
7	M7	HSS4X4X5	.288	0	3	.051	0	z	3	110.988	112.934	12.831	12.831	1...	H1-1b
8	M8	HSS4X4X5	.328	0	4	.053	0	y	6	110.988	112.934	12.831	12.831	1...	H1-1b
9	M9	HSS4X4X5	.310	0	6	.053	0	y	4	110.988	112.934	12.831	12.831	1...	H1-1b
10	M10	W10X100	.219	3.6...	5	.130	0	y	5	811.149	877.246	152.196	324.351	1...	H1-1b
11	M11	W10X100	.082	1.5	6	.112	0	y	6	865.558	877.246	152.196	324.351	1...	H1-1b
12	M12	W10X100	.082	1.5	4	.117	0	y	4	865.558	877.246	152.196	324.351	1...	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering, Inc.		
TJL	CT2035	Nov 2, 2018 at 11:28 AM
18000.36	Unity Check	18000.36_CT2035_Hamden_Steel ...

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTV2035	**DATE:**	04/24/2018	**RF DESIGN ENG:**	Parminder Singh
ISSUE:	Bronze Standard	**Approved? (Y/N):**	Yes	**RF DESIGN PHONE:**	8602586382
REVISION:	Final	**RF MANAGER:**	John Benedetto	**RF DESIGN EMAIL:**	SP656B@ATT.COM
INITIATIVE /PROJECT:	LTE 6C AWS J, LTE 7C 700 UPPER D & LTE 850 5G NR Upgrade				

RF PERF ENG:	Folarin Ayo	**RFDS PROGRAM TYPE:**	2018 LTE Next Carrier		
RF PERF PHONE:		**RFDS TECHNOLOGY:**	LTE		
RF PERF EMAIL:		**STATE/STATUS:**	Final/Approved		
RFDS VERSION:	2.00	**RFDS ID:**	2346785		
GSM FREQUENCY:		**Created By:**	sp656b	**Updated By:**	om636a
UMTS FREQUENCY:	850	**Date Created:**	4/24/2018 12:00:55 PM	**Date Updated:**	7/23/2018 2:58:03 PM
LTE FREQUENCY:	700, 850, 1900, WCS				
5G FREQUENCY:	850				
I-PLAN JOB # 1:	NER-RCTB-18-03302	**IPLAN PRD GRP || SUB GRP #1:**	LTE Next Carrier || LTE 6C		
I-PLAN JOB # 2:	NER-RCTB-18-03368	**IPLAN PRD GRP || SUB GRP #2:**	LTE Next Carrier || LTE 7C		
I-PLAN JOB # 3:	NER-RCTB-18-02465	**IPLAN PRD GRP || SUB GRP #3:**	Cell Site RF Modifications || 5G NR Upgrade		
I-PLAN JOB # 4:		**IPLAN PRD GRP || SUB GRP #4:**			
I-PLAN JOB # 5:		**IPLAN PRD GRP || SUB GRP #5:**			
I-PLAN JOB # 6:		**IPLAN PRD GRP || SUB GRP #6:**			
I-PLAN JOB # 7:		**IPLAN PRD GRP || SUB GRP #7:**			
I-PLAN JOB # 8:		**IPLAN PRD GRP || SUB GRP #8:**			

Section 2 - LOCATION INFORMATION

USID:	61166	**FA LOCATION CODE:**	10035036	**LOCATION NAME:**	HAMDEN
REGION:	NORTHEAST	**MARKET CLUSTER:**	NEW ENGLAND	**MARKET:**	CONNECTICUT
ADDRESS:	975 MIX AVENUE	**CITY:**	HAMDEN	**STATE:**	CT
ZIP CODE:	06514	**COUNTY:**	NEW HAVEN	**LONG (DEC. DEG.):**	-72.9179161
LATITUDE (D-M-S):	41d 22m 42.672s	**LONGITUDE (D-M-S):**	-72d -55m -4.49796s	**LAT (DEC. DEG.):**	41.3785200
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	2035 - HAMDEN - APARTMENTS. RT. 15 TO EXIT 60. TURN NORTH ONTO DIXWELL AVE. & PROCEED APPROX. 1/2 MILE. TURN LEFT ONTO SKIFF STREET. GO TO THE TOP OF THE HILL & TURN RIGHT AT LIGHT ONTO MIX AVE. GO TO 975 MIX AVE ON RIGHT. SITE IS IN APT. 1-KE. YOU NEED A BUILDING KEY FOR ACCESS LOCKBOX WITH KEY IS NEXT TO SIDE DOOR 0043... NOTE IF KEY IS MISSING YOU NEED TO GO THRU FRONT DOORS AND GO DOWN THE STAIRS AND AROUND BACK UP TO MAIN LEVEL CONTACT: BUILDING MNGR PAT MARCHITTO 203-410-2042DEMARC LOCATED INSIDE SHELTERCID'S: GSM- ET45/DHXV238876 ET120/DHXV238877 ET183/HCGS714899UMTS- SITE ON FIBER				

ORACLE PTN # 1:	2051A0GWFL	**PACE JOB # 1:**	MRCTB032299		
ORACLE PTN # 2:	2051A0GWEG	**PACE JOB # 2:**	MRCTB032288		
ORACLE PTN # 3:	2051A0GWFN	**PACE JOB # 3:**	MRCTB032250		
ORACLE PTN # 4:		**PACE JOB # 4:**			
ORACLE PTN # 5:		**PACE JOB # 5:**			
ORACLE PTN # 6:		**PACE JOB # 6:**			
ORACLE PTN # 7:		**PACE JOB # 7:**			
ORACLE PTN # 8:		**PACE JOB # 8:**			
BORDER CELL WITH CONTOUR COORD:		**SEARCH RING NAME:**			
AM STUDY REQ'D (Y/N):	No	**SEARCH_RING_ID:**			
FREQ COORD:		**BTA:**		**MSA / RSA:**	
OPS DISTRICT:	CT-South	**LAC(GSM):**			
OPS ZONE:	NE_CT_S_NHVN_SW_CS	**LAC(UMTS):**	05988		
RF DISTRICT:	NPO Triage	**BSC(GSM):**			
RF ZONE:	Hotseat	**RNC(UMTS):**	BRPTCT04CRBR07		
PARENT NAME(GSM):		**MME POOL ID(LTE):**	FF01		
PARENT NAME(UMTS):	BRIDGEPORT RNC07 ERICSSON 3820				

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	**CGSA LOSS:**		**PCS REDUCED - UPS ZIP:**	
CGSA - MINOR FILING NEEDED (Yes/No):	No	**CGSA EXT AGMT NEEDED:**		**PCS POPS REDUCED:**	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	**CGSA SCORECARD UPDATED:**			

CGSA CALL SIGNS:	

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	**GROUND ELEVATION (ft):**		**STRUCTURE TYPE:**	ROOFTOP
ADDITIONAL REGULATORY?:	Yes	**HEIGHT OVERALL (ft):**	0.00	**FCC ASR NUMBER:**	NR
SUB-LEASE RIGHTS?:	Yes	**STRUCTURE HEIGHT (ft):**			
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:	
MARKET LOCATION 850 MHz Band:	
MARKET LOCATION 1900 MHz Band:	
MARKET LOCATION AWS Band:	
MARKET LOCATION WCS Band:	
MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B	CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO		0				
SECTOR C	CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO		0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B	CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO		0				
SECTOR C	CONNECTICUT STATE POLICE-I TROOP	1321		INTRADO		0				
SECTOR D	CONNECTICUT STATE POLICE-I TROOP	1321				0				
SECTOR E	CONNECTICUT STATE POLICE-I TROOP	1321				0				
SECTOR F	CONNECTICUT STATE POLICE-I TROOP	1321				0				
OMNI										

Section 6 - RBS GENERAL INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS							
RBS ID:	210601	250427	366807									
CTS COMMON ID:	CTV2035	CTU2035	CTL02035									
CELL ID / BCF:	CTV2035	CTV2035	CTL02035									
BTA/TID:	318U	318V	318L									
4-9 DIGIT SITE ID:	2035	2035	2035									
COW OR TOY?:	No	No	No									
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED									
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL									
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL									
BASE STATION TYPE:	BASE	OVERLAY	BASE									
EQUIPMENT NAME:	HAMDEN	HAMDEN	HAMDEN									
DISASTER PRIORITY:	0	0	3									

Section 6 - RBS GENERAL INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS							
RBS ID:	210601		366807	RFDS_35887491	RFDS_35980018							
CTS COMMON ID:	CTV2035		CTL02035	CTL06035R	CTN0002035							
CELL ID / BCF:	CTV2035		CTL02035	CTL06035R	CTN0002035							
BTA/TID:	318U		318L	318L	318L							
4-9 DIGIT SITE ID:	2035		2035	6035	02035							
COW OR TOY?:	No		No	No	No							
CELL SITE TYPE:	SECTORIZED		SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	MACRO-CONVENTIONAL		MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	INTERNAL		INTERNAL	INTERNAL	INTERNAL							
BASE STATION TYPE:	BASE		BASE	BASE	BASE							
EQUIPMENT NAME:	HAMDEN		HAMDEN	HAMDEN	HAMDEN							
DISASTER PRIORITY:	0		3	3	3							

Section 7 - RBS SPECIFIC INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS							
RAC:												
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON									
EQUIPMENT TYPE:	3206 INDOOR	3206 INDOOR	6601 INDOOR MU									
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT									
AGPS:	Yes	Yes	Yes									
NODE B NUMBER:	0	0	2035									

Section 7 - RBS SPECIFIC INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS							
RAC:												
EQUIPMENT VENDOR:	ERICSSON		ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	3206 INDOOR		6601 INDOOR MU	6601 INDOOR MU	6601 INDOOR MU							
BASEBAND CONFIGURATION:			2x6601 / 2x5216 / 2xXMU03 + IDLe		xxxxx / 1x6630 / xxxxx							
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT	CT	CT							
AGPS:	Yes		Yes	Yes	Yes							
NODE B NUMBER:	0		2035	6035	2035							

Section 8 - RBS/SECTOR ASSOCIATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS														
CTS Common ID	CTV2035	CTU2035	CTL02035																
Soft Sector IDs	CTV20351	CTU20354	CTL02035_3A_1																
	CTV20352	CTU20355	CTL02035_3B_1																
	CTV20353	CTU20356	CTL02035_3C_1																
	CTV2035A	CTU20357	CTL02035_7A_1																
	CTV2035B	CTU20358	CTL02035_7A_2_E																
	CTV2035C	CTU20359	CTL02035_7B_1																
			CTL02035_7B_2_E																
			CTL02035_7C_1																
			CTL02035_7C_2_E																
			CTL02035_8A_1																
			CTL02035_8B_1																
			CTL02035_8C_1																
			CTL02035_9A_1																
			CTL02035_9A_2																
			CTL02035_9B_1																
			CTL02035_9B_2																
			CTL02035_9C_1																
			CTL02035_9C_2																

Section 8 - RBS/SECTOR ASSOCIATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS	5G 1ST RBS														
CTS Common ID	CTV2035		CTL02035	CTL06035R	CTN0002035														
Soft Sector IDs	CTV20351		CTL02035_3A_1	CTL06035_2A_2	CTN0002035_8A_1														
	CTV20352		CTL02035_3B_1	CTL06035_2B_2	CTN0002035_8B_1														
	CTV20353		CTL02035_3C_1	CTL06035_2C_2	CTN0002035_8C_1														
			CTL02035_7A_1	CTL06035_7A_2_E															
			CTL02035_7B_1	CTL06035_7A_3_F															
			CTL02035_7C_1	CTL06035_7B_2_E															
			CTL02035_9A_1	CTL06035_7B_3_F															
			CTL02035_9A_2	CTL06035_7C_2_E															
			CTL02035_9B_1	CTL06035_7C_3_F															
			CTL02035_9B_2	CTL06035_8A_1															
			CTL02035_9C_1	CTL06035_8B_1															
			CTL02035_9C_2	CTL06035_8C_1															

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
USEID (excluding Hard Sector)	61166.850.3G.1	61166.1900.3G.1	61166.850.3G.2	61166.1900.3G.2	61166.850.3G.3																					
SECTOR A **SOFT SECTOR ID**	CTV20351	CTU20357		CTU20354	CTV2035A	CTL02035_7A_1	CTL02035_8A_1	CTL02035_9A_1	CTL02035_3A_1	CTL02035_7A_2_E	CTL02035_9A_2															
SECTOR B	CTV20352	CTU20358	CTV2035B	CTU20355		CTL02035_7B_1	CTL02035_8B_1	CTL02035_9B_1	CTL02035_3B_1	CTL02035_7B_2_E	CTL02035_9B_2															
SECTOR C	CTV20353	CTU20359	CTV2035C	CTU20356		CTL02035_7C_1	CTL02035_8C_1	CTL02035_9C_1	CTL02035_3C_1	CTL02035_7C_2_E	CTL02035_9C_2															
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
USEID (excluding Hard Sector)	61166.850.3G.1																									
SECTOR A **SOFT SECTOR ID**	CTV20351					CTL02035_7A_1	CTL06035_8A_1	CTL02035_9A_1	CTL02035_3A_1	CTL06035_7A_2_E	CTL02035_9A_2	CTL06035_2A_2	CTL06035_7A_3_F	CTN0002035_8A_1												
SECTOR B	CTV20352					CTL02035_7B_1	CTL06035_8B_1	CTL02035_9B_1	CTL02035_3B_1	CTL06035_7B_2_E	CTL02035_9B_2	CTL06035_2B_2	CTL06035_7B_3_F	CTN0002035_8B_1												
SECTOR C	CTV20353					CTL02035_7C_1	CTL06035_8C_1	CTL02035_9C_1	CTL02035_3C_1	CTL06035_7C_2_E	CTL02035_9C_2	CTL06035_2C_2	CTL06035_7C_3_F	CTN0002035_8C_1												
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
USEID (excluding Hard Sector)	61166.850.3G.1	61166.1900.3G.1	61166.850.3G.2	61166.1900.3G.2	61166.850.3G.3																					
SECTOR A CELL NUMBER						15	1	8	149	185	178															
SECTOR B						16	2	9	150	186	179															
SECTOR C						17	3	10	151	187	180															
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
USEID (excluding Hard Sector)	61166.850.3G.1																									
SECTOR A CELL NUMBER						15	1	8	149	185	178	192	171	1												
SECTOR B						16	2	9	150	186	179	193	172	2												
SECTOR C						17	3	10	151	187	180	194	173	3												
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - existing

		UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
SECTOR A	CID/SAC	20351	20357		20354	60351																				
SECTOR B		20352	20358	60352	20355																					
SECTOR C		20353	20359	60353	20356																					
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - final

		UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	UMTS 3RD 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850												
SECTOR A	CID/SAC	20351																								
SECTOR B		20352																								
SECTOR C		20353																								
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2		HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel		CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6		72X14.8X9			
ANTENNA WEIGHT	44.1	111		51			
AZIMUTH	143	20		20			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61		61			
ANTENNA TIP HEIGHT	63	64		64			
MECHANICAL DOWNTILT	1	0		0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		1 DC Fiber Squid					
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Kathrein / 860-10006	LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2 B29		1 RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)		1 RRUS-12					
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61166.A.850.3G.1	CTV20351	CTV20351		UMTS 850	800 10121 @850_Xpol_6dt	13.42	143	6	None	Andrew 1-5/8 (850)	120.030726						293.76			
ANTENNA POSITION 2	PORT 1		61166.A.850.4G.1	CTL02035_8A_1	CTL02035_8A_1		LTE 850	QS66512-2_850MHz_06DT	13.26	20	6	TOP	FIBER	0						1000			
	PORT 2		61166.A.700.4G.1	CTL02035_7A_2_E	CTL02035_7A_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	20	3	TOP	FIBER	0						2182.7299			
	PORT 3		61166.A.1900.4G.1	CTL02035_9A_1	CTL02035_9A_1		LTE 1900	QS66512-2_1930MHz_00DT	17.29	20	0	TOP	FIBER	0						2182.7299			

	PORT 4		61166.A.1900.4G.1	CTL02035_9A_2	CTL02035_9A_2		LTE 1900	QS66512-2_1930MHz_00DT	17.29	20	0	TOP	FIBER	0						2182.7299			
	PORT 7		61166.A.WCS.4G.111	CTL02035_3A_1	CTL02035_3A_1		LTE WCS	QS66512-2_2360MHz_03DT	17.45	20	3	TOP	FIBER	0						1227.4392			
ANTENNA POSITION 4	**PORT 1**		61166.A.700.4G.1	CTL02035_7A_1	CTL02035_7A_1		LTE 700	HPA-65R-BUU-H6_719MHz_05DT	14.11	20	5	TOP	FIBER	0						1119.4378			

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2		HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel		CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6		72X14.8X9			
ANTENNA WEIGHT	44.1	111		51			
AZIMUTH	263	150		150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61		61			
ANTENNA TIP HEIGHT	63	64		64			
MECHANICAL DOWNTILT	1	0		0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		1 DC Fiber Squid					
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2 B29		1 RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)		1 RRUS-12					
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61166.B.850.3G.1	CTV20352	CTV20352		UMTS 850	800 10121 @850_Xpol_6dt	13.42	263	6	None	Andrew 1-5/8 (850)	120.030726						293.76			
ANTENNA POSITION 2	PORT 1		61166.B.850.4G.1	CTL02035_8B_1	CTL02035_8B_1		LTE 850	QS66512-2_850MHz_06DT	13.26	150	6	TOP	FIBER	0						1000			
	PORT 2		61166.B.700.4G.1	CTL02035_7B_2_E	CTL02035_7B_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	150	3	TOP	FIBER	0						2182.7299			
	PORT 3		61166.B.1900.4G.1	CTL02035_9B_1	CTL02035_9B_1		LTE 1900	QS66512-2_1930MHz_00DT	17.29	150	0	TOP	FIBER	0						2182.7299			

	PORT 4		61166.B.1900.4G.1	CTL02035_9B_2	CTL02035_9B_2		LTE 1900	QS66512-2_1930MHz_00DT	17.29	150	0	TOP	FIBER	0						2182.7299			
	PORT 7		61166.B.WCS.4G.111	CTL02035_3B_1	CTL02035_3B_1		LTE WCS	QS66512-2_2360MHz_03DT	17.45	150	3	TOP	FIBER	0						1227.4392			
ANTENNA POSITION 4	**PORT 1**		61166.B.700.4G.1	CTL02035_7B_1	CTL02035_7B_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	150	2	TOP	FIBER	0						1119.4378			

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2		HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel		CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6		72X14.8X9			
ANTENNA WEIGHT	44.1	111		51			
AZIMUTH	23	260		260			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61		61			
ANTENNA TIP HEIGHT	63	64		64			
MECHANICAL DOWNTILT	1	0		0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)		1 DC Fiber Squid					
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2 B29		1 RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)		1 RRUS-12					
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		61166.C.850.3G.1	CTV20353	CTV20353		UMTS 850	800 10121 @850_Xpol_6dt	13.42	23	6	None	Andrew 1-5/8 (850)	120.030726						293.76			
ANTENNA POSITION 2	PORT 1		61166.C.850.4G.1	CTL02035_8C_1	CTL02035_8C_1		LTE 850	QS66512-2_850MHz_06DT	13.26	260	6	TOP	FIBER	0						1000			
	PORT 2		61166.C.700.4G.1	CTL02035_7C_2_E	CTL02035_7C_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	260	3	TOP	FIBER	0						2182.7299			
	PORT 3		61166.C.1900.4G.1	CTL02035_9C_1	CTL02035_9C_1		LTE 1900	QS66512-2_1930MHz_00DT	17.29	260	0	TOP	FIBER	0						2182.7299			

	PORT 4		61166.C.1900.4G.1	CTL02035_9C_2	CTL02035_9C_2		LTE 1900	QS66512-2_1930MHz_00DT	17.29	260	0	TOP	FIBER	0						2182.7299			
	PORT 7		61166.C.WCS.4G.111	CTL02035_3C_1	CTL02035_3C_1		LTE WCS	QS66512-2_2360MHz_03DT	17.45	260	3	TOP	FIBER	0						1227.4392			
ANTENNA POSITION 4	**PORT 1**		61166.C.700.4G.1	CTL02035_7C_1	CTL02035_7C_1		LTE 700	HPA-65R-BUU-H6_719MHz_10DT	13.9	260	10	TOP	FIBER	0						1119.4378			

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrein				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			20				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			61				
ANTENNA TIP HEIGHT			64				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)			Internal				
SURGE ARRESTOR (QTY/MODEL)			1 DC Squid				
DIPLEXER (QTY/MODEL)			2 Kaelus DBC0061F1V51-2				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)			LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 B14 4478				
RRH - 850 band (QTY/MODEL)			1 4478 B5				
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1 4426 B66				
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 3	PORT 1		61166.A.850.4G.1	CTL06035_8A_1	CTL06035_8A_1		LTE 850	80010965_849MHz_05DT	15.4	20	5	TOP	FIBER	0						1000		5	
	PORT 2		61166.A.700.4G.5	CTL06035_7A_3_F	CTL06035_7A_3_F		LTE 700	80010965_777MHz_05DT	15.4	20	5	TOP	FIBER	0						2951.413		5	
	PORT 3		61166.A.AWS.4G.4	CTL06035_2A_2	CTL06035_2A_2		LTE AWS	80010965_2133MHz_03DT	15.4	20	3	TOP	FIBER	0						5070.2572		6	
	PORT 5		61166.A.850.5G.1	CTN0002035_8A_1	CTN0002035_8A_1		5G 850	80010965_849MHz_05DT	15.4	20	5	TOP	FIBER	0						1000		5	

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrein				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			150				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			61				
ANTENNA TIP HEIGHT			64				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)			Internal				
SURGE ARRESTOR (QTY/MODEL)			1 DC Squid				
DIPLEXER (QTY/MODEL)			2 Kaelus DBC0061F1V51-2				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)			LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 B14 4478				
RRH - 850 band (QTY/MODEL)			1 4478 B5				
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1 4426 B66				
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 3	PORT 1		61166.B.850.4G.1	CTL06035_8B_1	CTL06035_8B_1		LTE 850	80010965_849MHz_02DT	15.4	150	2	TOP	FIBER	0						1000		13	
	PORT 2		61166.B.700.4G.5	CTL06035_7B_3_F	CTL06035_7B_3_F		LTE 700	80010965_777MHz_02DT	15.3	150	2	TOP	FIBER	0						2951.413		13	
	PORT 3		61166.B.AWS.4G.4	CTL06035_2B_2	CTL06035_2B_2		LTE AWS	80010965_2133MHz_03DT	15.4	150	3	TOP	FIBER	0						5070.2572		14	
	PORT 5		61166.B.850.5G.1	CTN0002035_8B_1	CTN0002035_8B_1		5G 850	80010965_849MHz_02DT	15.4	150	2	TOP	FIBER	0						1000		13	

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrein				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			260				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			61				
ANTENNA TIP HEIGHT			64				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)			Internal				
SURGE ARRESTOR (QTY/MODEL)			1 DC Squid				
DIPLEXER (QTY/MODEL)			2 Kaelus DBC0061F1V51-2				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)			LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 B14 4478				
RRH - 850 band (QTY/MODEL)			1 4478 B5				
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1 4426 B66				
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 3	PORT 1		61166.C.850.4G.1	CTL06035_8C_1	CTL06035_8C_1		LTE 850	80010965_849MHz_10DT	15.4	260	10	TOP	FIBER	0						1000		21	
	PORT 2		61166.C.700.4G.5	CTL06035_7C_3_F	CTL06035_7C_3_F		LTE 700	80010965_777MHz_10DT	15.2	260	10	TOP	FIBER	0						2951.413		21	
	PORT 3		61166.C.AWS.4G.4	CTL06035_2C_2	CTL06035_2C_2		LTE AWS	80010965_2170MHz_06DT	18.5	260	6	TOP	FIBER	0						5070.2572		22	
	PORT 5		61166.C.850.5G.1	CTN0002035_8C_1	CTN0002035_8C_1		5G 850	80010965_849MHz_10DT	15.4	260	10	TOP	FIBER	0						1000		21	

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2	800-10965	HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel	Kathrein	CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6	78.7X20X6.9	72X14.8X9			
ANTENNA WEIGHT	44.1	111	108.6	51			
AZIMUTH	143	20	20	20			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61	61	61			
ANTENNA TIP HEIGHT	63	64	64	64			
MECHANICAL DOWNTILT	1	0	0	0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		1 DC Fiber Squid	1 DC Squid				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901		2 Kaelus DBC0061F1V51-2				
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Kathrein / 860-10006	LTE RRH	LTE RRH	LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2 B29	1 B14 4478	1 RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)			1 4478 B5				
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)			1 4426 B66				
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61166.A.850.3G.1	61166.A.850.3G.1	CTV20351	CTV20351		UMTS 850	800 10121 @850_Xpol_6dt	13.42	143	6	None	Andrew 1-5/8 (850)	120.030726						293.76		1	
ANTENNA POSITION 2	PORT 2	61166.A.700.4G.tmp2	61166.A.700.4G.4	CTL06035_7A_2_E	CTL06035_7A_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	20	3	TOP	FIBER	0						1475.7065		3	
	PORT 3	61166.A.1900.4G.1	61166.A.1900.4G.1	CTL02035_9A_1	CTL02035_9A_1		LTE 1900	QS66512-2_1930MHz_03DT	15.9	20	3	TOP	FIBER	0						4842.058		4	
	PORT 4	61166.A.1900.4G.4	61166.A.1900.4G.4	CTL02035_9A_2	CTL02035_9A_2		LTE 1900	QS66512-2_1930MHz_03DT	15.9	20	3	TOP	FIBER	0						4842.058		4	

	PORT 7	61166.A.WCS.4G.1	61166.A.WCS.4G.1	CTL02035_3A_1	CTL02035_3A_1		LTE WCS	QS66512-2_2355MHz_03DT	16.7	20	3	TOP	FIBER	0						1285.2866		4	
ANTENNA POSITION 3	**PORT 1**	61166.A.850.4G.tmp1	61166.A.850.4G.1	CTL06035_8A_1	CTL06035_8A_1		LTE 850	80010965_849MHz_05DT	15.4	20	5	TOP	FIBER	0						1000		5	
	PORT 2	61166.A.700.4G.tmp5	61166.A.700.4G.5	CTL06035_7A_3_F	CTL06035_7A_3_F		LTE 700	80010965_777MHz_05DT	15.4	20	5	TOP	FIBER	0						2951.413		5	
	PORT 3	61166.A.AWS.4G.tmp4	61166.A.AWS.4G.4	CTL06035_2A_2	CTL06035_2A_2		LTE AWS	80010965_2133MHz_03DT	15.4	20	3	TOP	FIBER	0						5070.2572		6	
	PORT 5	61166.A.850.5G.tmp1	61166.A.850.5G.1	CTN0002035_8A_1	CTN0002035_8A_1		5G 850	80010965_849MHz_05DT	15.4	20	5	TOP	FIBER	0						1000		5	
ANTENNA POSITION 4	**PORT 1**	61166.A.700.4G.1	61166.A.700.4G.1	CTL02035_7A_1	CTL02035_7A_1		LTE 700	HPA-65R-BUU-H6_719MHz_05DT	14.11	20	5	TOP	FIBER	0						1475.7065		7	

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2	800-10965	HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel	Kathrein	CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6	78.7X20X6.9	72X14.8X9			
ANTENNA WEIGHT	44.1	111	108.6	51			
AZIMUTH	263	150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61	61	61			
ANTENNA TIP HEIGHT	63	64	64	64			
MECHANICAL DOWNTILT	1	0	0	0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)	1 DC Fiber Squid	1 DC Squid					
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	2 Kaelus DBC0061F1V51-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	LTE RRH	LTE RRH	LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2 B29	1 B14 4478	1 RRUS-11 (REUSE ONLY)				
RRH - 850 band (QTY/MODEL)	1 4478 B5						
RRH - 1900 band (QTY/MODEL)	1 RRUS-32 B2						
RRH - AWS band (QTY/MODEL)	1 4426 B66						
RRH - WCS band (QTY/MODEL)	1 RRUS-32						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61166.B.850.3G.1	61166.B.850.3G.1	CTV20352	CTV20352		UMTS 850	800 10121 @850_Xpol_6dt	13.42	263	6	None	Andrew 1-5/8 (850)	120.030726						293.76		9	
ANTENNA POSITION 2	PORT 2	61166.B.700.4G.tmp2	61166.B.700.4G.4	CTL06035_7B_2_E	CTL06035_7B_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	150	3	TOP	FIBER	0						1475.7065		11	
	PORT 3	61166.B.1900.4G.1	61166.B.1900.4G.1	CTL02035_9B_1	CTL02035_9B_1		LTE 1900	QS66512-2_1930MHz_02DT	16	150	2	TOP	FIBER	0						4842.058		12	
	PORT 4	61166.B.1900.4G.4	61166.B.1900.4G.4	CTL02035_9B_2	CTL02035_9B_2		LTE 1900	QS66512-2_1930MHz_02DT	16	150	2	TOP	FIBER	0						4842.058		12	

	PORT 7	61166.B.WCS.4G.1	61166.B.WCS.4G.1	CTL02035_3B_1	CTL02035_3B_1		LTE WCS	QS66512-2_2355MHz_03DT	16.7	150	3	TOP	FIBER	0						1285.2866		12	
ANTENNA POSITION 3	**PORT 1**	61166.B.850.4G.tmp1	61166.B.850.4G.1	CTL06035_8B_1	CTL06035_8B_1		LTE 850	80010965_849MHz_02DT	15.4	150	2	TOP	FIBER	0						1000		13	
	PORT 2	61166.B.700.4G.tmp5	61166.B.700.4G.5	CTL06035_7B_3_F	CTL06035_7B_3_F		LTE 700	80010965_777MHz_02DT	15.3	150	2	TOP	FIBER	0						2951.413		13	
	PORT 3	61166.B.AWS.4G.tmp4	61166.B.AWS.4G.4	CTL06035_2B_2	CTL06035_2B_2		LTE AWS	80010965_2133MHz_03DT	15.4	150	3	TOP	FIBER	0						5070.2572		14	
	PORT 5	61166.B.850.5G.tmp1	61166.B.850.5G.1	CTN0002035_8B_1	CTN0002035_8B_1		5G 850	80010965_849MHz_02DT	15.4	150	2	TOP	FIBER	0						1000		13	
ANTENNA POSITION 4	**PORT 1**	61166.B.700.4G.1	61166.B.700.4G.1	CTL02035_7B_1	CTL02035_7B_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	150	2	TOP	FIBER	0						1475.7065		15	

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	QS66512-2	800-10965	HPA-65R-BUU-H6			
ANTENNA VENDOR	Kathrein	Quintel	Kathrein	CCI Products			
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	72X12X9.6	78.7X20X6.9	72X14.8X9			
ANTENNA WEIGHT	44.1	111	108.6	51			
AZIMUTH	23	260	260	260			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	61	61	61	61			
ANTENNA TIP HEIGHT	63	64	64	64			
MECHANICAL DOWNTILT	1	0	0	0			
FEEDER AMOUNT	2	Fiber+ 2Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein / 860-10025	Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)	1 DC Fiber Squid	1 DC Squid					
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	2 Kaelus DBC0061F1V51-2					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	LTE RRH	LTE RRH	LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	1 Powerwave / TT19-08BP111-001						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser / 100860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2 B29	1 B14 4478	1 RRUS-11 (REUSE ONLY)				
RRH - 850 band (QTY/MODEL)	1 4478 B5						
RRH - 1900 band (QTY/MODEL)	1 RRUS-32 B2						
RRH - AWS band (QTY/MODEL)	1 4426 B66						
RRH - WCS band (QTY/MODEL)	1 RRUS-32						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna positions as per PD. Remove existing 850 RRH. Install 8 port antenna. Install LTE 700 B14 RRUS-4478 , LTE 850 RRUS-4478 & LTE AWS RRUS-4426 B66. Add low band combiners. Add 1 DC Fiber Squid. Swap 2x DUS with 2x 5216. Add Idle. Add 6630.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	61166.C.850.3G.1	61166.C.850.3G.1	CTV20353	CTV20353		UMTS 850	800 10121 @850_Xpol_6dt	13.42	23	6	None	Andrew 1-5/8 (850)	120.030726						293.76		17	
ANTENNA POSITION 2	PORT 2	61166.C.700.4G.tmp2	61166.C.700.4G.4	CTL06035_7C_2_E	CTL06035_7C_2_E		LTE 700	QS66512-2_722MHz_03DT	13.5	260	3	TOP	FIBER	0						1475.7065		19	
	PORT 3	61166.C.1900.4G.1	61166.C.1900.4G.1	CTL02035_9C_1	CTL02035_9C_1		LTE 1900	QS66512-2_1930MHz_02DT	16	260	2	TOP	FIBER	0						4842.058		20	
	PORT 4	61166.C.1900.4G.4	61166.C.1900.4G.4	CTL02035_9C_2	CTL02035_9C_2		LTE 1900	QS66512-2_1930MHz_02DT	16	260	2	TOP	FIBER	0						4842.058		20	

	PORT 7	61166.C.WCS.4G.1	61166.C.WCS.4G.1	CTL02035_3C_1	CTL02035_3C_1		LTE WCS	QS66512-2_2355MHz_02DT	16.8	260	2	TOP	FIBER	0						1285.2866		20	
ANTENNA POSITION 3	**PORT 1**	61166.C.850.4G.tmp1	61166.C.850.4G.1	CTL06035_8C_1	CTL06035_8C_1		LTE 850	80010965_849MHz_10DT	15.4	260	10	TOP	FIBER	0						1000		21	
	PORT 2	61166.C.700.4G.tmp5	61166.C.700.4G.5	CTL06035_7C_3_F	CTL06035_7C_3_F		LTE 700	80010965_777MHz_10DT	15.2	260	10	TOP	FIBER	0						2951.413		21	
	PORT 3	61166.C.AWS.4G.tmp4	61166.C.AWS.4G.4	CTL06035_2C_2	CTL06035_2C_2		LTE AWS	80010965_2170MHz_06DT	18.5	260	6	TOP	FIBER	0						5070.2572		22	
	PORT 5	61166.C.850.5G.tmp1	61166.C.850.5G.1	CTN0002035_8C_1	CTN0002035_8C_1		5G 850	80010965_849MHz_10DT	15.4	260	10	TOP	FIBER	0						1000		21	
ANTENNA POSITION 4	**PORT 1**	61166.C.700.4G.1	61166.C.700.4G.1	CTL02035_7C_1	CTL02035_7C_1		LTE 700	HPA-65R-BUU-H6_719MHz_10DT	13.9	260	10	TOP	FIBER	0						1475.7065		23	

Diagram - Sector	A	Diagram File Name - CT2035_ABC_Multicarrier.vsd					
Atoll Site Name -	CTV2035	Location Name -	HAMDEN	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)

Antenna 1
UMTS

Broadband Low 700/850 +45/-45 - +
Broadband High PCS/AWS +45/-45 - +
RET RET

Twin TMA BP

Antenna 2
LTE WCS / PCS / 700 DE

Broadband 12 port 700 +45/-45 - +
Broadband 12 port 800 +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
RET RET RET RET RET RET

LTE RRUS-E2 700 DE
LTE RRUS-32 WCS
LTE RRUS-32 B2 PCS

Antenna 3
LTE 700 B 14/ AWS / 850

Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
RET RET RET RET

Low Band Combiner
Low Band Combiner
Low Band Combiner
Low Band Combiner
LTE RRUS-4478 850 – B5
LTE RRUS-4478 700 B14
LTE RRUS-4426 B66 AWS

Antenna 4
LTE 700 BC

Broadband Hex Low 700/850 +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
RET RET RET

LTE RRUS-11 700

Fiber/DC Demarcation Box (Squid)

DC Demarcation Box (Squid)

PDU

Bias-T
Bias-T
Diplexer
Diplexer

MCU / CCU

3 Feet Minimum Separation between LTE Antennas

6 Feet Minimum Separation between 700BC & 700 DE

DC Plant

FU
FU
RU
RU
OBIF
UMTS 1st NodeB
DB 3206

5216
XMU
XMU
5216
IDLe

6630

LTE sector Alpha mounted on UMTS Gamma arm mounts.

LTE sector Beta mounted on UMTS Alpha arm mounts.

LTE sector Gamma mounted on UMTS Beta arm mounts.

Diagram - Sector	B	Diagram File Name - CT2035_ABC_Multicarrier.vsd					
Atoll Site Name -	CTV2035	Location Name -	HAMDEN	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)

Antenna 1
UMTS

Broadband Low 700/850 +45/-45 - +
Broadband High PCS/AWS +45/-45 - +
RET RET

Twin TMA BP

Antenna 2
LTE WCS / PCS / 700 DE

Broadband 12 port 700 +45/-45 - +
Broadband 12 port 800 +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
RET RET RET RET RET RET

LTE RRUS-E2 700 DE
LTE RRUS-32 WCS
LTE RRUS-32 B2 PCS

Antenna 3
LTE 700 B 14/ AWS / 850

Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
RET RET RET RET

Low Band Combiner
Low Band Combiner
Low Band Combiner
Low Band Combiner
LTE RRUS-4478 850 – B5
LTE RRUS-4478 700 B14
LTE RRUS-4426 B66 AWS

Antenna 4
LTE 700 BC

Broadband Hex Low 700/850 +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
RET RET RET

LTE RRUS-11 700

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DC Demarcation Box (Squid)

PDU

Bias-T
Bias-T
Diplexer
Diplexer

MCU / CCU

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LTE sector Beta mounted on UMTS Alpha arm mounts.

LTE sector Gamma mounted on UMTS Beta arm mounts.

Diagram - Sector	C	Diagram File Name - CT2035_ABC_Multicarrier.vsd					
Atoll Site Name -	CTV2035	Location Name -	HAMDEN	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)

Antenna 1
UMTS

Broadband Low 700/850 +45/-45 - +
Broadband High PCS/AWS +45/-45 - +
RET RET

Twin TMA BP

Antenna 2
LTE WCS / PCS / 700 DE

Broadband 12 port 700 +45/-45 - +
Broadband 12 port 800 +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port AWS/WCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
Broadband 12 port PCS +45/-45 - +
RET RET RET RET RET RET

LTE RRUS-E2 700 DE
LTE RRUS-32 WCS
LTE RRUS-32 B2 PCS

Antenna 3
LTE 700 B 14/ AWS / 850

Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
RET RET RET RET

Low Band Combiner
LTE RRUS-4478 850 – B5
LTE RRUS-4478 700 B14
LTE RRUS-4426 B66 AWS

Antenna 4
LTE 700 BC

Broadband Hex Low 700/850 +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
Broadband Hex High 4Tx/4Rx +45/-45 - +
RET RET RET

LTE RRUS-11 700

Fiber/DC Demarcation Box (Squid)

DC Demarcation Box (Squid)

PDU

Bias-T Bias-T

Diplexer Diplexer

MCU / CCU

FU FU

RU RU

OBIF

UMTS 1st NodeB DB 3206

DC Plant

5216 XMU XMU 5216

IDLe

6630

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NOTES			
Date Time (Eastern)	Version	ATTUID	Note
7/23/2018 2:57:51 PM	2.00	om636a	RFDS VERSION incremented.
7/23/2018 2:58:04 PM	2.00	om636a	Final RF Approved. Possible CIQ erros resolved

WORKFLOW SUMMARY							
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments	PACE Status
04/30/2018	Preliminary In Progress	sp656b	Preliminary Submitted for Approval	RC475S	Promote	Prelim RFDS	NER-RCTB-18-03302 MRCTB032299 SUCCESS 04/30/2018 12:36:32 PM NER-RCTB-18-03368 MRCTB032288 SUCCESS 04/30/2018 12:36:32 PM NER-RCTB-18-02465 MRCTB032250 SUCCESS 04/30/2018 12:36:32 PM
05/04/2018	Preliminary Submitted for Approval	RC475S	Preliminary Approved	DC5778	Promote		
07/09/2018	Preliminary Approved	DC5778	Final RF Approval	OM636A	Promote	Please promote to final	
07/23/2018	Final RF Approval	OM636A	Final Approved	DC5778	Promote	Final RF Approval. Possible CIQ issues are resolved	NER-RCTB-18-03302 MRCTB032299 SUCCESS 07/23/2018 3:20:35 PM NER-RCTB-18-03368 MRCTB032288 SUCCESS 07/23/2018 3:20:35 PM NER-RCTB-18-02465 MRCTB032250 SUCCESS 07/23/2018 3:20:35 PM