



**Crown Castle**  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

December 21, 2016

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

**RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 876364**  
**AT&T Site ID: CT5272**  
**201 Main Street, Cromwell, CT 06416**  
**Latitude: 41° 35' 0.11"/ Longitude: -72° 38' 59.14"**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 117-foot level of the existing 125-foot self-support tower at 201 Main Street in Cromwell, CT. The tower and property is owned by Crown Castle. AT&T now intends to replace three (3) antennas with three (3) new antennas. These antennas would be installed at the 125-foot level of the tower. AT&T also intends to replace three (3) RRU11s with three (3) RRU32 B2s.

This facility was approved by the by the Town of Cromwell Planning and Zoning Commission on March 8, 2000. There were no conditions listed in this approval.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Enzo Faienza, Mayor, Town of Cromwell, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

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4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora  
Real Estate Specialist  
12 Gill Street, Suite 5800, Woburn, MA 01801  
781-729-0053  
[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Enzo Faienza, Mayor  
Town of Cromwell  
41 West Street Town Hall 1<sup>st</sup> Floor  
Cromwell, CT 06416

TOWN OF CROWELL  
PLANNING AND ZONING COMMISSION

APPLICATION FOR AMENDMENT TO THE ZONING REGULATIONS

Applicant's Name: SPRINT SPECTRUM, L.P.  
Address: 9 Barnes Industrial Road  
Wallingford, CT 06492  
Telephone: (203) 294-5600

----- Complete Paragraph A OR B, and Paragraph C: -----

A. Request to Change an Existing Regulation:

1. Article/Section/Paragraph of Current Regulation:

Section XII, Paragraph 12.1 h. 1. a.

2. Wording of Current Regulation: (attach if necessary)  
See attached

B. Request to Create a New Regulation:

1. Article/Section/Paragraph of New Regulation:

2. Zoning District(s) to be Affected by New Regulation:

3. Wording of New Regulation: (attach if necessary)

C. Reason for Proposed Change or New Regulation:

To allow for telecommunications tower in a Flood Plain District

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*Thomas J. Ragan*

(applicant) - Thomas J. Ragan  
Brown, Rudnick, Freed & Gesmer, P.C.  
185 Asylum Street, 38th Floor  
Hartford, CT 06103-3402  
Telephone: (860) 509-6522

July 28, 1999  
(date)

TOWN OF CROMWELL PLANNING AND ZONING COMMISSION  
ZONING PERMIT

Date of Application 2-21-00 Permit Number \_\_\_\_\_  
Name of Permit Requester SPRINT SPECTRUM L.P., A DELAWARE LIMITED PARTNERSHIP  
Address of Permit Requester ONE INTERNATIONAL BLVD, STE 800, MAHWAH, NJ 07495  
Phone Number: Day (860) 919-7204 / (201) 681-4065 Evening (203) 748-6404, PG: (860) 588-2783  
Property Owner if different S+S PARTNERS, INC.  
Property Owner Address if different S+S PARTNERS, INC., ATTN: ARTHUR SIBLEY  
Type of Permit: P.O. BOX 301, CROMWELL, CT 06416

Sign  Filling  New Construction (860) 434-0079

Addition  Other  Swimming Pool

E & S Bond required  Yes  No Permit Number 00624  
Zoning District F Assessor's Map# 51 Block# 47 Lot# 36

ZBA Approved  Yes  No Volume 412 Page 142

Wetlands/watercourses on property  Yes  No Permit# N/A NOTE: ALL CONSTRUCTION IS OUTSIDE THE REGULATED AREAS  
Description of proposed activity PROPOSED SPRINT PCS ANTENNA FACILITY WITH A 125-FOOT MONOPOLE, RELATED CABLES, EQUIPMENT CABINETS, AND POWER + TELCO HOOKUPS  
Dimensions: H 125' W SEE PLANS L SEE PLANS  
Livable Floor Area: First N/A (NONE) Second N/A (NONE)  
Garage Area N/A (NONE) Special Permit needed  Yes  No

Volume 412 Page 142  Plot Plan attached

This permit, if issued, is based upon the plot plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit shall constitute a violation of the Town of Cromwell Zoning Regulations.

Signature [Signature] Marc Goodman  
Check one:  Owner  Applicant  Agent

Conditions of approval \_\_\_\_\_

Approved by [Signature] Date 3/8/00  
Rejected by \_\_\_\_\_ Date \_\_\_\_\_

CURRENT OWNER		TOPO.	UTILITIES	STRT./ROAD	LOCATION	CURRENT ASSESSMENT			
S & S PARTNERS INC			5 Private Well	10 None		Description	Code	Appraised Value	Assessed Value
PO BOX 734			6 Septic			COM LAND	2-1	158,200	110,740
OLD LYME, CT 06371						COM BLDG	2-2	393,390	275,370
Additional Owners:						COM OUTBL	2-5	26,730	18,720
<b>SUPPLEMENTAL DATA</b>									
Other ID:		DV Lot #							
Prior Zoning F		I&E Penalty 2011							
Census Tr. 5703		BAA 06G;05G							
Color		Callback							
100 Yr Flood Yes		Prior Value 404830							
DV Map #		ASSOC PID#							
GIS ID: 00015800									
<b>Total</b>								<b>578,320</b>	<b>404,830</b>

6033  
CROMWELL, CT

**VISION**

RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.	PREVIOUS ASSESSMENTS (HISTORY)								
S & S PARTNERS INC		412/ 142	05/24/1989			0		Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
								2015	2-1	110,740	2014	2-1	110,740	2013	2-1	110,740
								2015	2-2	275,370	2014	2-2	275,370	2013	2-2	275,370
								2015	2-5	18,720	2014	2-5	18,720	2013	2-5	18,720
<b>Total:</b>								<b>404,830</b>	<b>Total:</b>	<b>404,830</b>	<b>Total:</b>	<b>404,830</b>	<b>Total:</b>	<b>404,830</b>	<b>Total:</b>	<b>404,830</b>

EXEMPTIONS				OTHER ASSESSMENTS				
Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.
<b>Total:</b>								

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD				
NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

APPRAISED VALUE SUMMARY	
Appraised Bldg. Value (Card)	404,430
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	26,730
Appraised Land Value (Bldg)	158,200
Special Land Value	0
Total Appraised Parcel Value	578,320
Valuation Method:	C
Adjustment:	0
<b>Net Total Appraised Parcel Value</b>	<b>578,320</b>

**NOTES**

(3)24X12 OHD & (1)24X14 OHD; CELL BLDG & PLATFORM ON EXISTING TOWER; COMMERCIAL DIESEL NEW ENGLAND ASPHALT 120' POLE TOWER (38 RECEIVERS) ON ACCOUNT #00015810

BUILDING PERMIT RECORD								VISIT/ CHANGE HISTORY						
Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	Type	IS	ID	Cd.	Purpose/Result
23606	08/31/2015	OT	Other	20,000	09/28/2015	100		Structural Upgrade on M	09/28/2015			MM	53	Permit- Drive By
23040	11/26/2014	HV	HVAC	4,000	11/26/2014	99		250,000 Hanging Furnace	09/12/2012			TWM	52	Permit- Miscellaneous
23051	11/26/2014	PL	Plumbing	4,000	11/26/2014	99		Install gas line to Hanging	03/16/2012			TWM	53	Permit- Drive By
23033	11/19/2014	PR	Propane Tank	1,300	11/19/2014	99		2 - 120 Gal LP Tanks	09/23/2011			AO	53	Permit- Drive By
20102	08/23/2011	PR	Propane Tank	100,000	09/12/2012	100	05/08/2012	30,000 gal tank	11/19/2007			JQ	40	No change
19218	08/02/2010	AC	Air Condition	3,500	03/16/2012	100		Ductless						
19181	07/14/2010	EL	Electric	3,000	08/27/2010	101	08/27/2010	100amp sub-panel for rad						

LAND LINE VALUATION SECTION																			
B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes-Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value
1	201	Commercial Improv	IND				43,560	SF 2.24	1.73	1.7500	H 1.0000	1.00	5000	1.00			1.00		131,880
420.	201	Commercial Improv	IND	NI					AC	11,750.00	000		H 1.00						

CONSTRUCTION DETAIL				CONSTRUCTION DETAIL (CONTINUED)			
Element	Cd.	Ch.	Description	Element	Cd.	Ch.	Description
Style	95		Garage/Office				
Model	94		Commercial				
Grade	09		C+				
Stories	1						
Occupancy	2						
Exterior Wall 1	15		Concrete				
Exterior Wall 2							
Roof Structure	08		Irregular				
Roof Cover	02		Rolled Compos				
Interior Wall 1	01		Minimum				
Interior Wall 2							
Interior Floor 1	03		Concrete				
Interior Floor 2							
Heating Fuel	02		Oil				
Heating Type	04		Forced Air				
AC Type	01		None				
Bldg Use	201		Commercial Improv				
Sprinkler Type	N		None				
Sprinkler %							
Mezzanine Fin.							
Mezzanine Unf.							
Heat/AC	00		None				
Frame Type	03		Masonry				
Baths/Plumbing	02		Average				
Ceiling/Walls	04		Ceil and Min W				
Rooms/Prtns	02		Average				
Wall Height	16						
% Comn Wall							

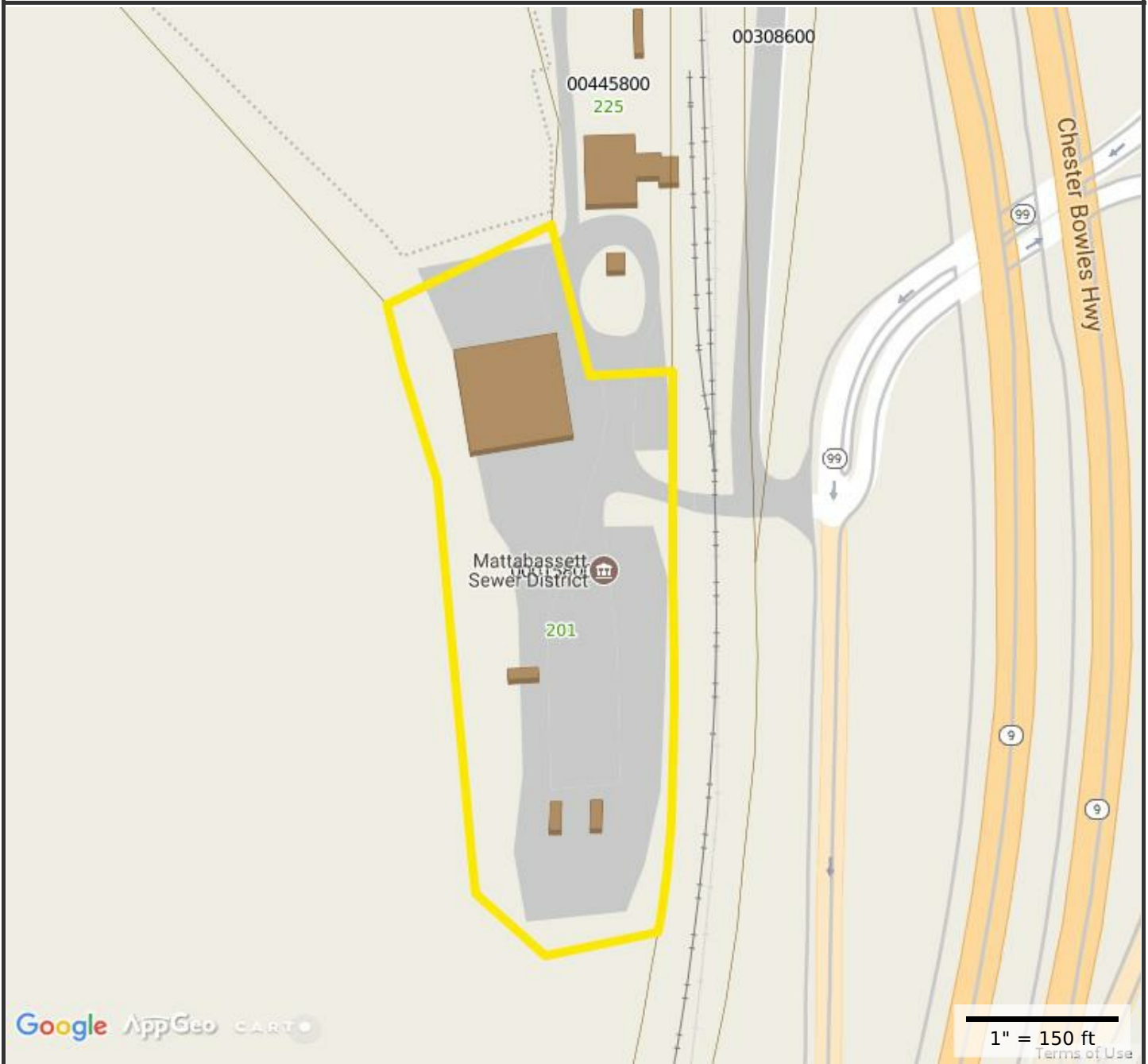
CONSTRUCTION DETAIL (CONTINUED)			
Code	Description	Percentage	
201	Commercial Improv	100	
COST/MARKET VALUATION			
Adj. Base Rate:		56.45	
Net Other Adj:		16,000.00	
AYB		1953	
Dep Code		G	
Remodel Rating			
Year Remodeled			
Dep %		31	
Functional Obslnc			
External Obslnc			
Cost Trend Factor			
Condition			
% Complete			
Overall % Cond		69	
Apprais Val		404,430	
Dep % Ovr		0	
Dep Ovr Comment			
Misc Imp Ovr		0	
Misc Imp Ovr Comment			
Cost to Cure Ovr		0	
Cost to Cure Ovr Comment			



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)												
Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
PAV1	Paving Asp.			L	1,000	2.10	1953				50	1,050
FN6	Fence 6'			L	2,520	13.00	2002				50	16,380
LT2	Light 2			L	2	1,500.00	2011		0		100	3,000
LT3	Light 3			L	3	2,100.00	2011		0		100	6,300

BUILDING SUB-AREA SUMMARY SECTION							
Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value	
FFL	First Floor	10,100	10,100				
<b>Ttl. Gross Liv/Lease Area:</b>		<b>10,100</b>	<b>10,100</b>				

map



**Property Information**

<b>Property ID</b>	00015800
<b>Location</b>	201 MAIN STREET
<b>Owner</b>	S & S PARTNERS INC



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

Town of Cromwell, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 06/2016  
Properties updated daily





# WIRELESS COMMUNICATIONS FACILITY

## CT5272 - LTE BWE

### CROMWELL SE

### CROWN CASTLE BU NO.: 876364

### 201 MAIN STREET

### CROMWELL, CT 06416

#### GENERAL NOTES

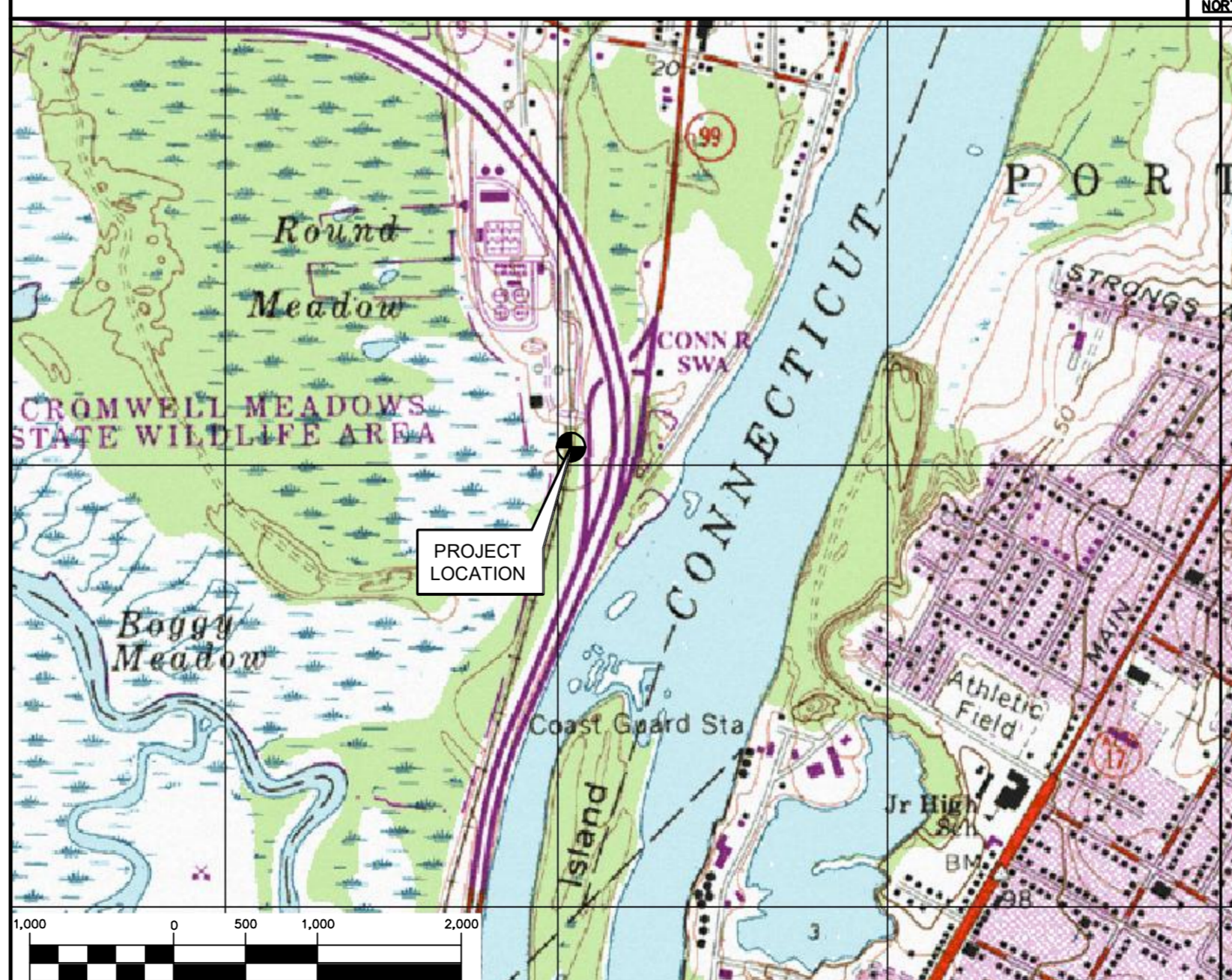
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

#### SITE DIRECTIONS

<b>FROM:</b> 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	<b>TO:</b> 201 MAIN STREET CROMWELL, CONNECTICUT
1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.3 MI
2. TURN RIGHT ONTO CAPITAL BLVD	0.2 MI
3. TURN RIGHT ONTO HENKEL WAY	0.2 MI
4. TURN LEFT ONTO BROOK ST	0.9 MI
5. TURN RIGHT ONTO CT-99 S	4.4 MI
6. 201 MAIN STREET, CROMWELL, CT 06416	

#### VICINITY MAP

SCALE: 1" = 1000'



#### PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE HEXAPORT ANTENNA, (1) PER SECTOR.
  - B. INSTALL (3) NEW RRUS-32 B2 TO REPLACE (3)-RRUS-11 (1900 MHz) BEHIND POSITION 4 ANTENNAS

#### PROJECT INFORMATION

AT&T SITE NUMBER:	CT5272
AT&T SITE NAME:	CROMWELL SE
SITE ADDRESS:	CROWN CASTLE BU NO.: 876364 201 MAIN STREET CROMWELL, CT 06477
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-34'-59.85" N LONGITUDE: 72°-38'-58.92" W GROUND ELEVATION: ±85' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFD5 DOCUMENTS.

#### SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS AND ELEVATION	0
C-2	LTE BWE EQUIPMENT DETAILS	0
E-1	ELECTRICAL DETAILS AND NOTES	0

PROFESSIONAL ENGINEER SEAL



**CENTEK** engineering  
Centered on Solutions™  
(203) 488-0360  
(203) 488-8387 Fax  
63-2 North Branford Road  
Branford, CT 06405  
www.CentekEng.com

AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**CROMWELL SE**  
**CT5272 - LTE BWE**  
201 MAIN STREET  
CROMWELL, CT 06416

DATE: 11/09/16  
SCALE: AS NOTED  
JOB NO. 16071.60

TITLE SHEET

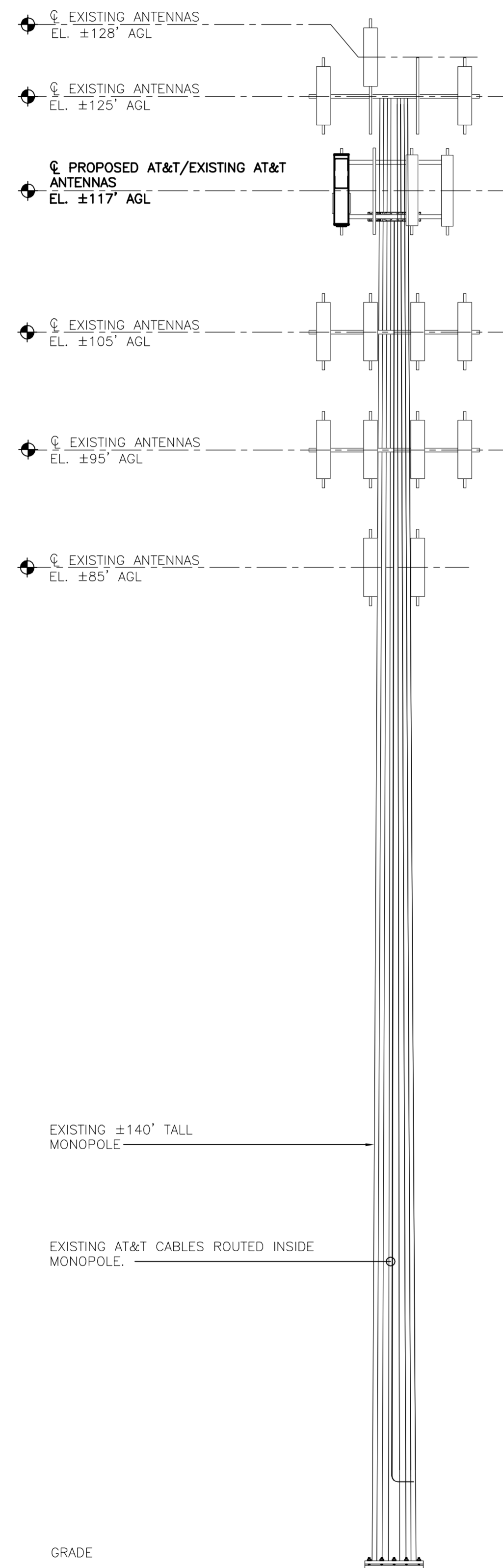
**T-1**  
Sheet No. 1 of 5

REV.	DATE	DRAWN BY	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
0	11/14/16	DRA		









**TOWER STRUCTURAL NOTES:**

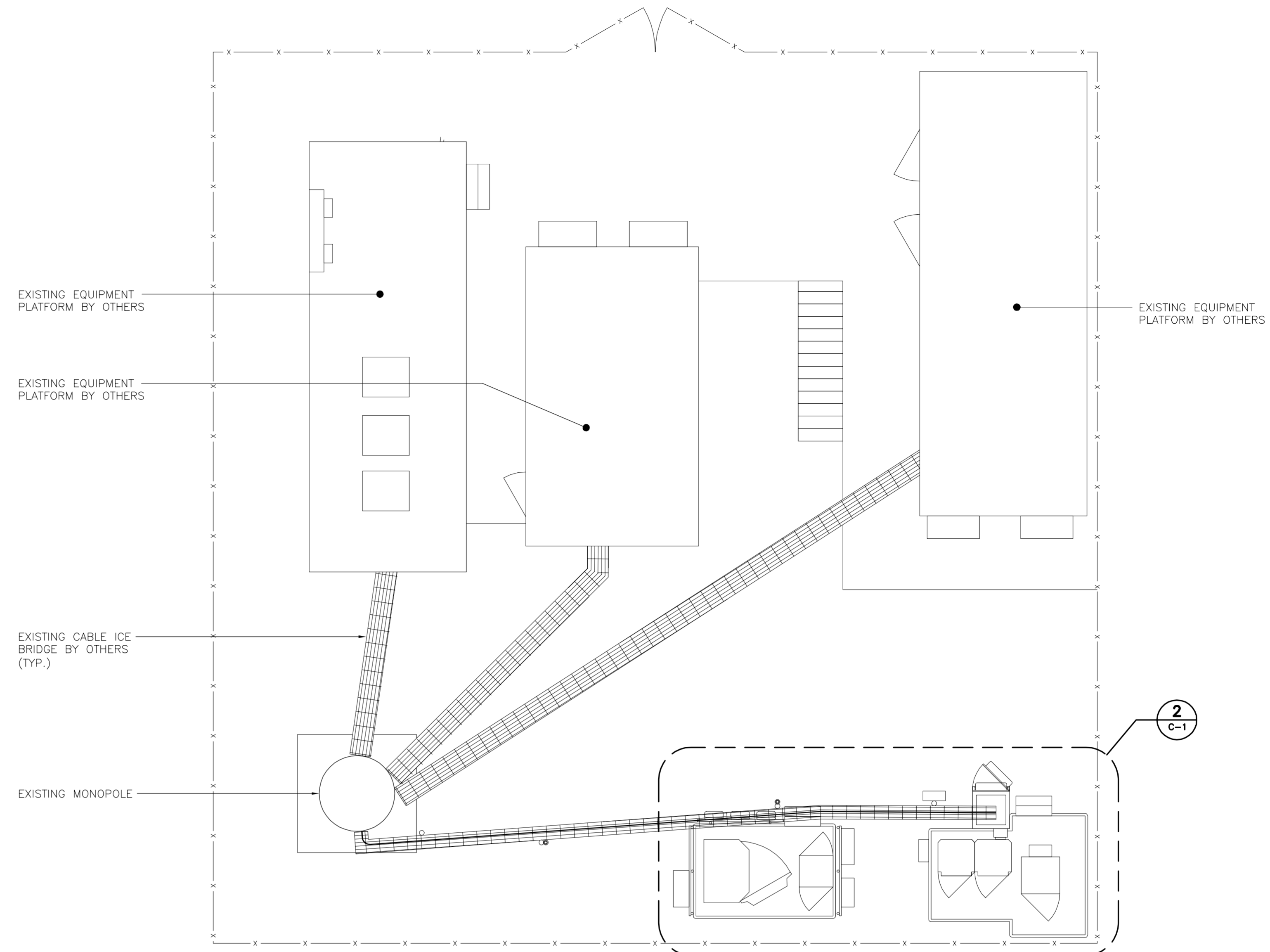
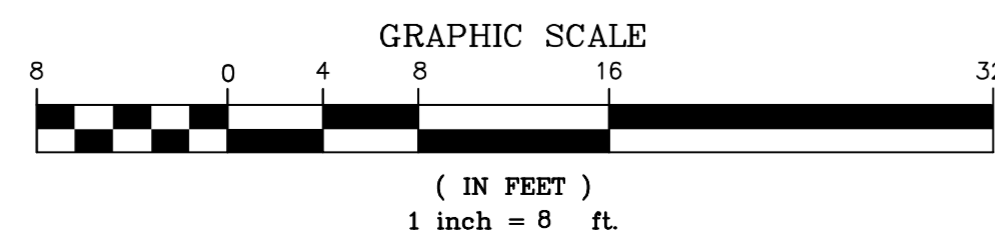
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

**NOTES:**

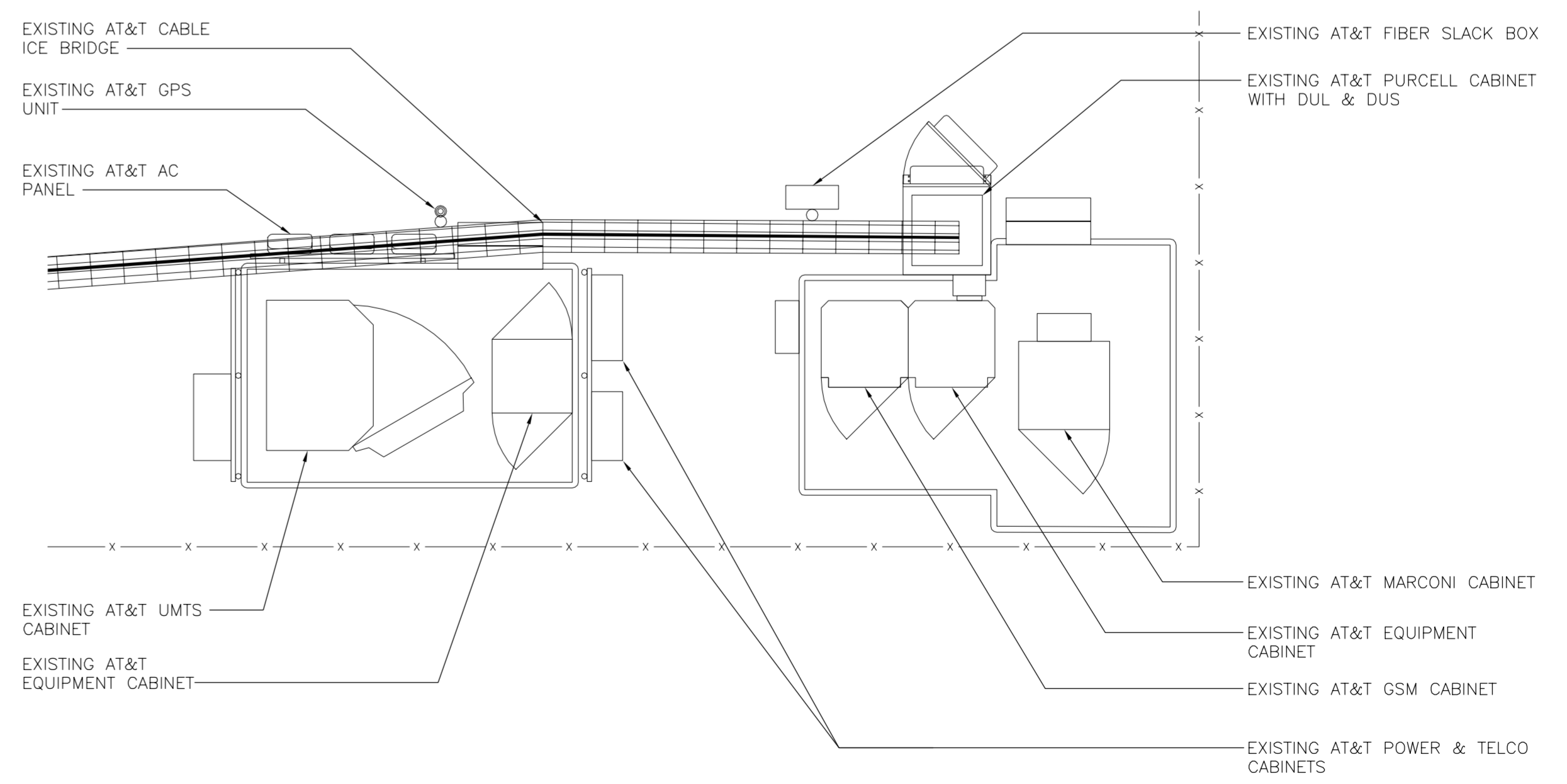
1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

**NOTE:**  
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

**3 TOWER ELEVATION**  
C-1 SCALE: 1/8" = 1'-0"

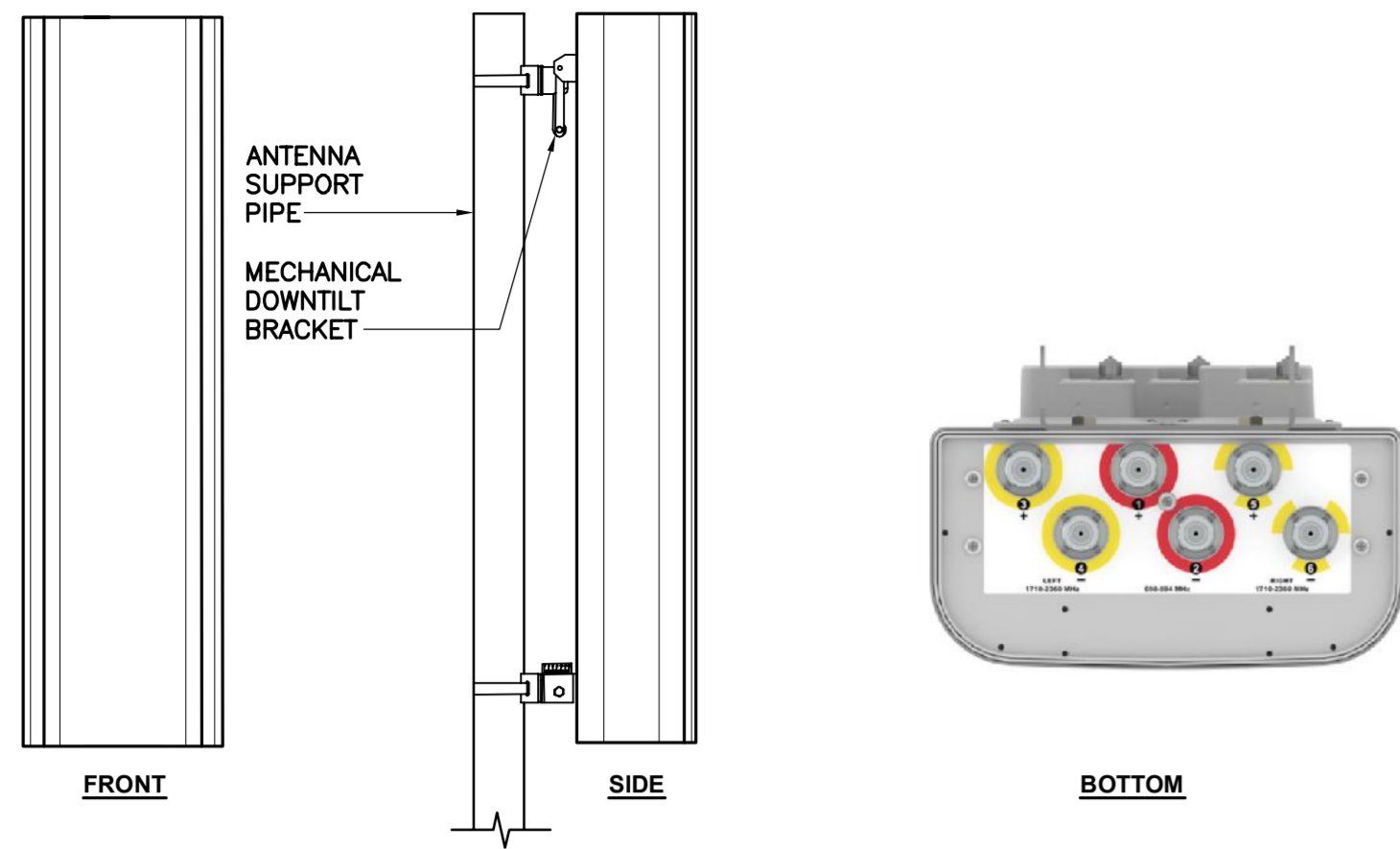


**1 COMPOUND PLAN**  
C-1 SCALE: 3/16" = 1'-0" TRUE NORTH



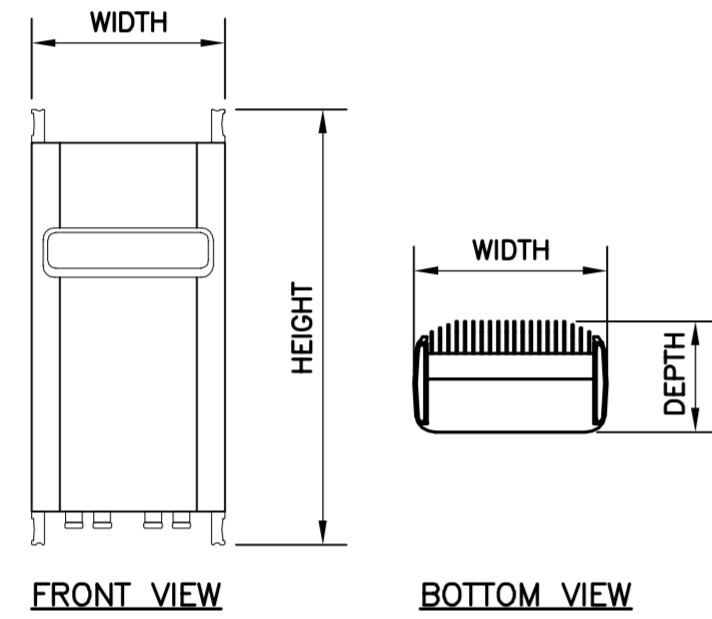
**2 EQUIPMENT LAYOUT PLAN**  
C-1 SCALE: 1/2" = 1'-0" TRUE NORTH

PROFESSIONAL ENGINEER SEAL	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
	CAG
DATE	11/14/16
REV.	0
DRAWN BY	CHK'D BY
DATE	11/14/16
REV.	0
 Centered on Solutions™ (203) 488-0360 (203) 488-8387 Fax 63-2 North Branford Road Branford, CT 06405 www.CentekEng.com	
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY <b>CROMWELL SE</b> <b>CT5272 - LTE BWE</b> 201 MAIN STREET CROMWELL, CT 06416	
DATE:	11/09/16
SCALE:	AS NOTED
JOB NO.	16071.60
PLANS AND ELEVATION	
<b>C-1</b>	
Sheet No. 3	of 5



ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT	DIMENSIONS	WEIGHT	
MAKE: CCI MODEL: HPA-65R-BUU-H6	72.3"L x 14.4"W x 7.3"D	42.9 LBS.	

**5 PROPOSED ANTENNA DETAIL**  
SCALE: 1/2" = 1'-0"

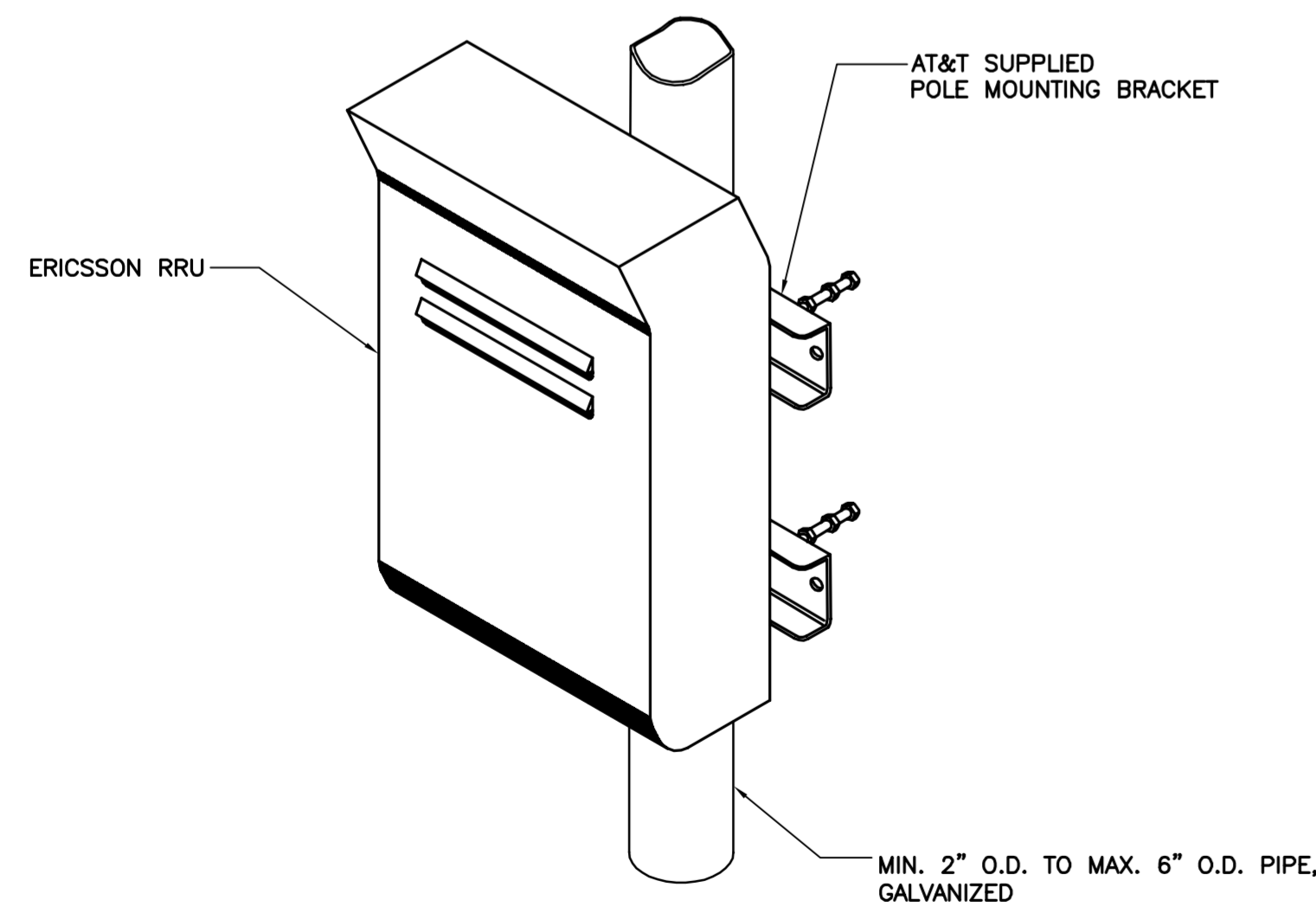


RRUS-32 B2

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 32 B2	27.17"L x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:  
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

**6 ERICSSON RRUS 32 DETAIL**  
SCALE: 1" = 1'-0"

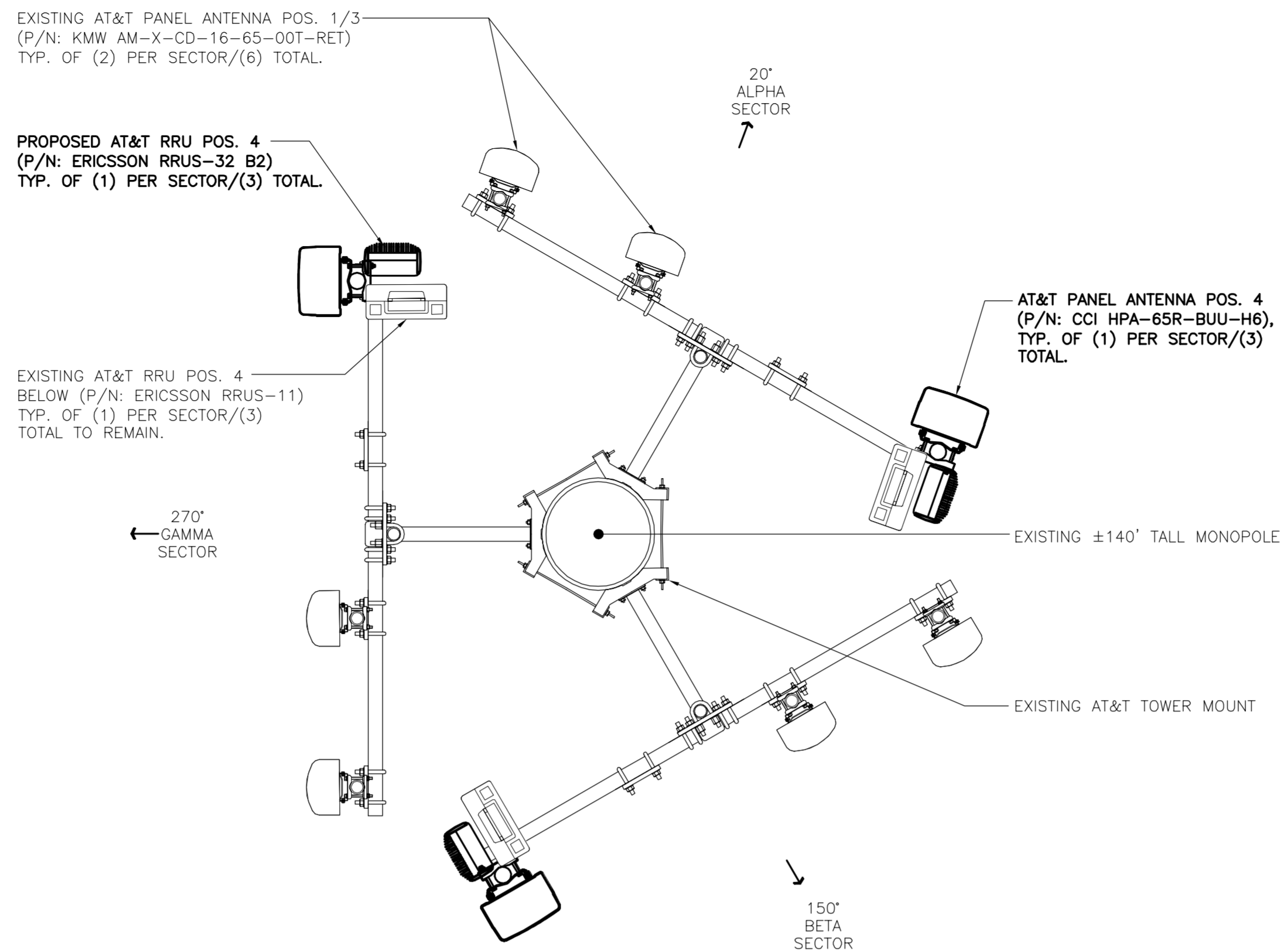


ISOMETRIC VIEW

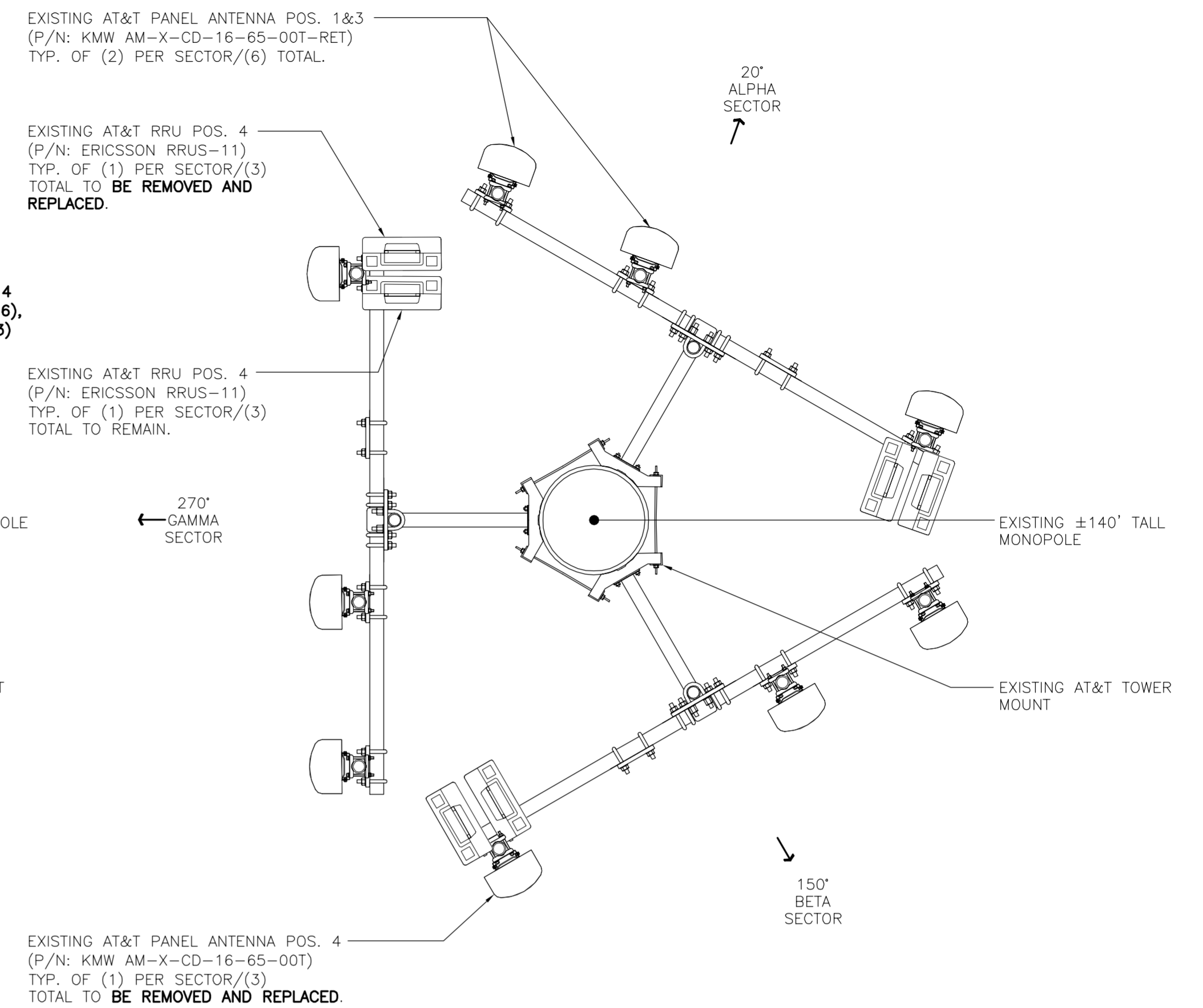
NOTES:

- AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
- NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

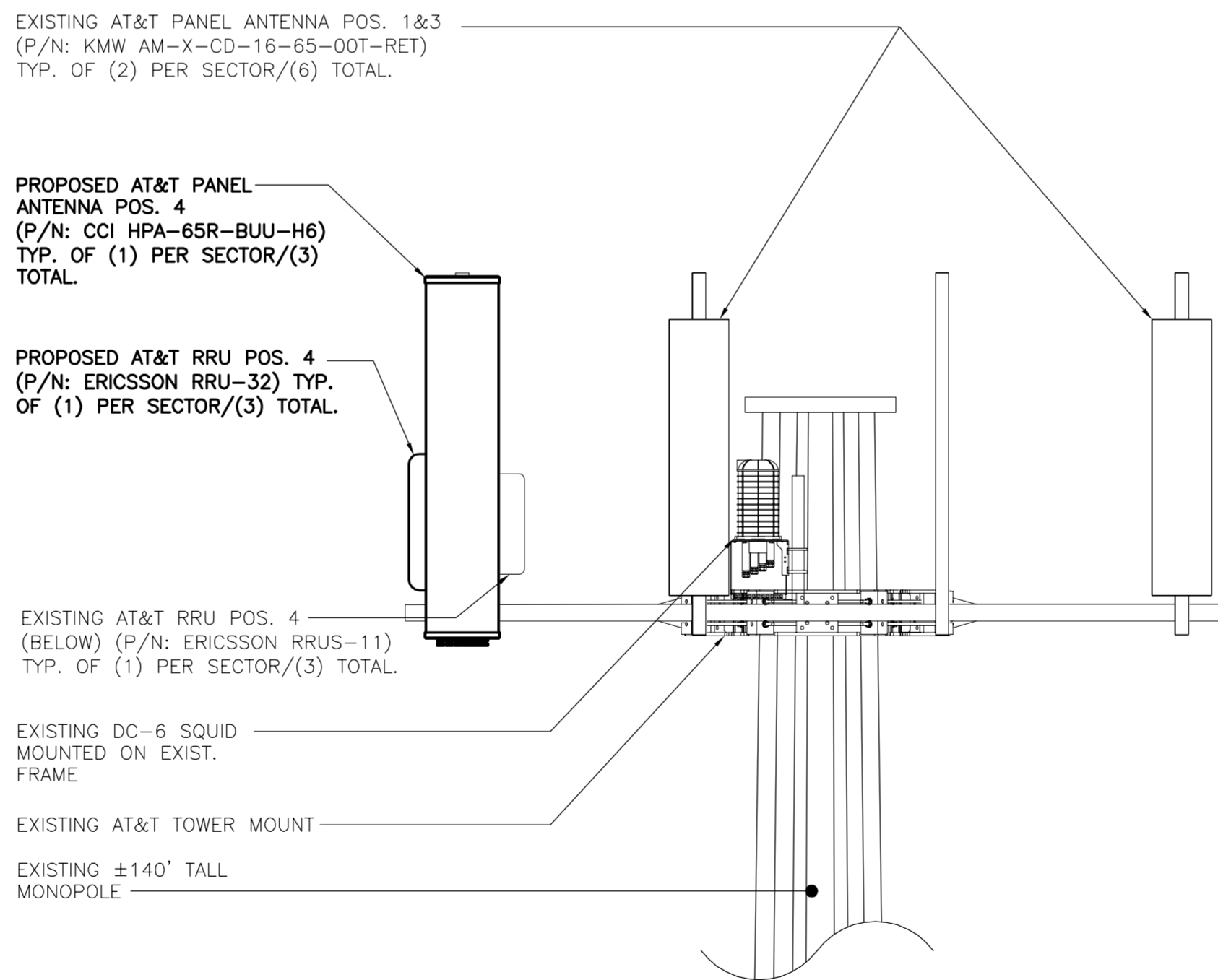
**7 TYPICAL RRUS MOUNTING DETAILS**  
SCALE: NTS



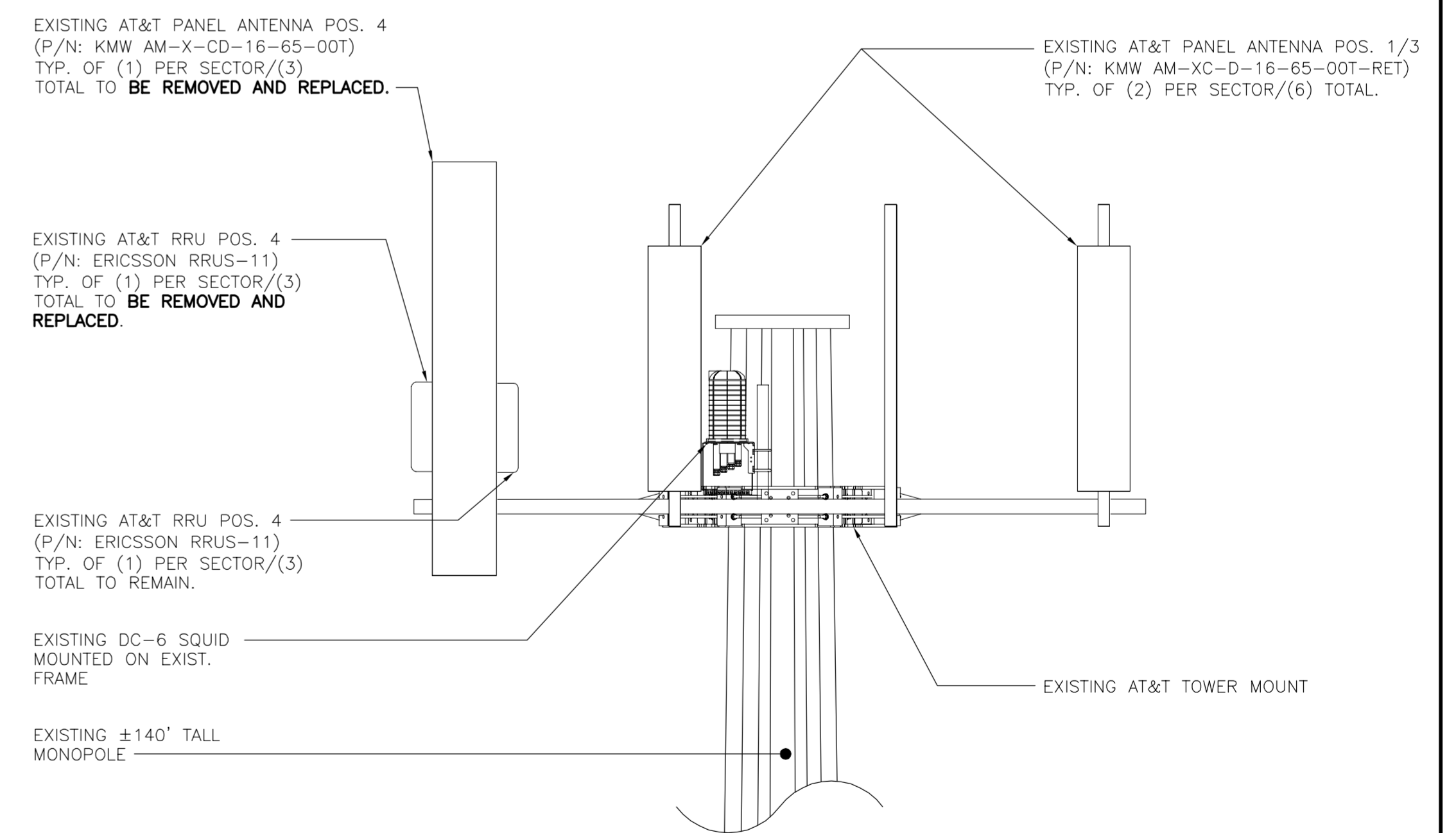
**2 PROPOSED ANTENNA PLAN**  
SCALE: 1/2" = 1'-0" NORTH



**1 EXISTING ANTENNA PLAN**  
SCALE: 1/2" = 1'-0" NORTH



**4 PROPOSED ANTENNA ELEVATION**  
SCALE: 1/2" = 1'-0"



**3 EXISTING ANTENNA ELEVATION**  
SCALE: 1/2" = 1'-0"

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CROMWELL, CT 06416

DATE: 11/09/16  
SCALE: AS NOTED  
JOB NO. 16071.60

LTE BWE  
EQUIPMENT  
DETAILS

**C-2**  
Sheet No. 4 of 5

CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION  
CAG  
DRAWN BY: CHK'D BY: DESCRIPTION  
DATE: 11/14/16  
REV. 0







B+T Group  
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December 6<sup>th</sup>, 2016

Sean Dempsey  
 Crown Castle  
 3530 Toringdon Way Suite 300  
 Charlotte, NC 28277  
 (704) 405-6565

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **AT&T Mobility Co-Locate**  
**Carrier Site Number:** CT5272  
**Carrier Site Name:** Cromwell SE

**Crown Castle Designation:** **Crown Castle BU Number:** 876364  
**Crown Castle Site Name:** Cromwell / First Line Emergenc  
**Crown Castle JDE Job Number:** 408412  
**Crown Castle Work Order Number:** 1332211  
**Crown Castle Application Number:** 368634 Rev. 0

**Engineering Firm Designation:** **B+T Group Project Number:** 84470.015.01

**Site Data:** **201 Main St., Cromwell, Middlesex County, CT**  
**Latitude 41° 35' 0.11", Longitude -72° 38' 59.14"**  
**125 Foot - Monopole Tower**

Dear Sean Dempsey,

B+T Group is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 976829, in accordance with application 368634, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Reserved + Proposed Equipment

**Sufficient Capacity**

Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2012 International Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

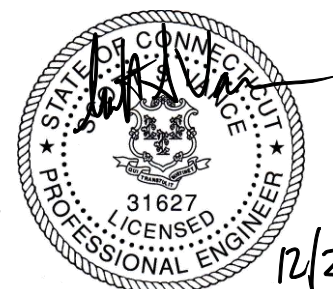
All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully submitted by:  
 B+T Engineering, Inc.

Tharun Cheriyan, E.I.T.  
 Project Engineer

Scott S. Vance, P.E.  
 Engineer of Record  
 COA: PEC.0001564 Expires: 02/10/2017



12/21/16

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## 1) INTRODUCTION

This is a 125 ft. monopole designed by Engineered Endeavors, Inc. in February of 2002. The monopole was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This monopole was modified several times and those modifications were incorporated into this analysis.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75-inch ice thickness and 60 mph under service loads, exposure category C.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
115.0	117.0	3	CCI Antennas	HPA-65R-BUU-H6	--	--	--
		3	Ericsson	RRUS 32 B2			
		6	Powerwave Tech.	TT19-08BP111-001			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
125.0	129.0	3	Argus Technologies	LLPX310R-V1	3 3 2 1 3	5/16 1/4 1/2 3/4 1-1/4	1	
	127.0	3	Alcatel Lucent	TD-RRH8x20-25				
		3	RFS Celwave	APXVSP18-C-A20				
		3	RFS Celwave	APXVTM14-C-120				
	125.0	2	Dragonwave	HORIZON COMPACT				
		3	Samsung Telecomm.	WIMAX DAP HEAD				
		1	--	Platform Mount [LP 714-1]				
	124.0	1	Andrew	VHLP2-11				
		1	Andrew	VHLP2-18				
	123.0	123.0	3	Alcatel Lucent				800MHZ 2X50W RRH W/FILTER
3			Alcatel Lucent	PCS 1900MHz 4x45W-65MHz				
1			--	Side Arm Mount [SO 102-3]				
115.0	117.0	<b>3</b>	<b>KMW Comm.</b>	<b>AM-X-CD-16-65-00T-RET</b>	--	--	<b>2</b>	
		3	Ericsson	RRUS 11 B12	1	3/8	1	
		6	KMW Comm.	AM-X-CD-16-65-00T-RET	2	3/4		
		1	Raycap	DC6-48-60-18-8F	12	1-1/4		
	115.0	115.0	<b>6</b>	<b>Communication Components Inc.</b>	<b>DTMABP7819VG12A</b>	--	--	<b>2</b>
			1	--	Platform Mount [LP 304-1]	--	--	1
105.0	105.0	3	Alcatel Lucent	RRH2X60-AWS	14	1-5/8	1	
		3	Alcatel Lucent	RRH2X60-PCS				



Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	Alcatel Lucent	RRH2x60-700			
		6	Andrew	LNx-6514DS-A1M			
		6	Commscope	HBXX-6517DS-A2M			
		2	Rfs Celwave	DB-T1-6Z-8AB-0Z			
		1	--	Platform Mount [LP 1201-1]			
82.0	85.0	3	Ericsson	Ericsson Air 21 B2A B4P	6 1	1-5/8 1-3/16	1
		3	Ericsson	Ericsson Air 21 B4A B2P			
	82.0	1	--	T-Arm Mount [TA 602-3]			

Notes:

- 1) Existing Equipment
- 2) Equipment to Be Removed; Not Considered in This Analysis

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125	125	1	Generic	L.P. Platform	--	--
		6	Decibel	DB980H65		
		3	Decibel	DB980H90		
115	115	1	Generic	T-Arm	--	--
		6	Allgon	7250		
105	105	1	Generic	L.P. Platform	--	--
		12	Decibel	DB844		

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Locate, Rev# 0	368634	CCI Sites
Tower Manufacturer Drawing	EEl, Job No. 10554	2068958	CCI Sites
Tower Modification Drawing	Semaan Engineering Solutions, Date: 12/08/2004	2055765	CCI Sites
Post Modification Inspection	VSI, Date: 10/11/2007	1956332	CCI Sites
Tower Modification Drawing	VSI, Date: 10/09/2007	2296089	CCI Sites
Post Modification Inspection	VSI, Date: 10/11/2007	2182292	CCI Sites
Tower Modification Drawing	B+T Group, Date: 07/11/2012	3373019	CCI Sites
Post Modification Inspection	B+T Group, Date: 12/07/2012	3394680	CCI Sites
Tower Modification Drawing	B+T Group, Date: 03/01/2013	3669962	CCI Sites
Post-Modification Inspection	TEP, Date: 09/10/2013	4009982	CCI Sites
Tower Modification Drawing	B+T Group, Date: 05/21/2015	5685167	CCI Sites
Post-Modification Inspection	ETS, Date: 10/21/2015	5947318	CCI Sites
Foundation Drawing	EEl, Project No. 6464	1613909	CCI Sites
Base Plate Details	Crown, Project No. 320820	2608627	CCI Sites
Geotech Report	Dr. Clarence Welti, P.E., Date: 08/02/1999	1532312	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 11/30/2016	CCI Sites

#### 3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Mount areas and weights are assumed based on photographs provided.
- 5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	125 - 99.375	Pole	TP24.008x18.5x0.188	1	-11.055	981.975	74.3	Pass
L2	99.375 - 94.458	Pole	TP25.065x24.008x0.409	2	-11.931	1159.580	79.7	Pass
L3	94.458 - 89	Pole	TP26.239x25.065x0.571	3	-13.152	1684.170	66.8	Pass
L4	89 - 85.04	Pole	TP27.09x26.239x0.676	4	-13.171	1956.680	58.0	Pass
L5	85.04 - 73.583	Pole	TP29.14x25.873x0.475	5	-18.915	1851.070	89.6	Pass
L6	73.583 - 73	Pole	TP29.264x29.14x0.609	6	-19.083	2372.930	71.3	Pass
L7	73 - 63	Pole	TP31.389x29.264x0.369	7	-21.257	2118.330	92.9	Pass
L8	63 - 57.333	Pole	TP32.594x31.389x0.566	8	-22.880	2333.980	92.3	Pass
L9	57.333 - 40.457	Pole	TP36.18x32.594x0.436	9	-25.913	2788.520	87.7	Pass
L10	40.457 - 37.833	Pole	TP36.233x34.6x0.493	10	-29.043	3260.870	82.1	Pass
L11	37.833 - 12.25	Pole	TP41.654x36.233x0.466	11	-36.838	3554.960	90.8	Pass
L12	12.25 - 0	Pole	TP44.25x41.654x0.546	12	-41.947	4149.840	83.6	Pass
							Summary	
						Pole (L7)	92.9	Pass
						Rating =	92.9	Pass

**Table 6 - Tower Component Stresses vs. Capacity – LC5**

Notes	Component	Elevation	% Capacity	Pass / Fail
1	Anchor Rods	Base	78.0	Pass
1	Base Plate	Base	76.4	Pass
1	Base Foundation	Structure	45.0	Pass
		Soil	69.2	Pass

<b>Structure Rating (max from all components) =</b>	<b>92.9%</b>
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

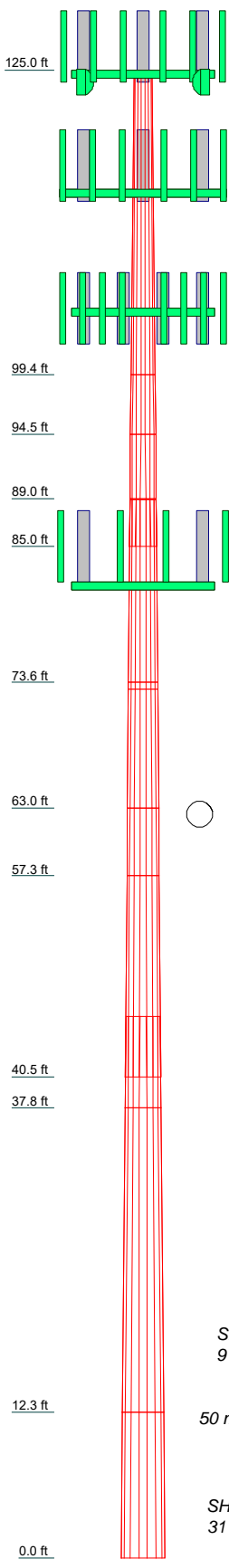
#### 4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

**APPENDIX A**

**TNXTOWER OUTPUT**

Section	11	10	9	8	7	6	5	4	3	2	1
Length (ft)	25.563	7.707	16.876	5.667	10.000	0.583	15.374	3.960	5.458	4.917	25.625
Number of Sides	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.466	0.493	0.436	0.566	0.369	0.609	0.475	0.676	0.571	0.409	0.188
Socket Length (ft)			5.083					3.917			
Top Dia (in)	36.233	34.600	32.594	31.389	29.264	29.140	25.873	26.239	25.065	24.008	18.500
Bot Dia (in)	41.654	36.233	36.180	32.594	31.389	29.264	28.140	27.090	26.239	25.065	24.008
Grade	50.999452ksi	50.979223ksi	50.892182ksi	51.046761ksi	37.467825ksi	31.208794ksi	47.5447ksi	31.208794ksi	1.693018ksi	68498ksi	A572-65
Weight (K)	4.8	1.4	2.6	1.0	1.2	0.1	2.0	0.7	0.8	0.5	1.1



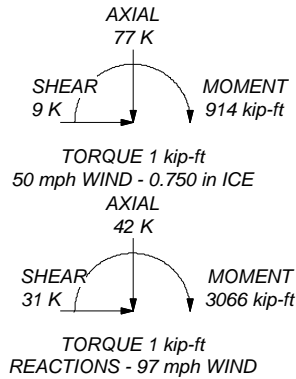
### MATERIAL STRENGTH


GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	51.046761ksi	51 ksi	66 ksi
31.68498ksi	32 ksi	47 ksi	35.518165ksi	36 ksi	51 ksi
31.693018ksi	32 ksi	47 ksi	50.892182ksi	51 ksi	66 ksi
31.208794ksi	31 ksi	46 ksi	50.979223ksi	51 ksi	66 ksi
37.475447ksi	37 ksi	52 ksi	50.999452ksi	51 ksi	66 ksi
37.467825ksi	37 ksi	52 ksi	47.941ksi	48 ksi	63 ksi

### TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 92.9%

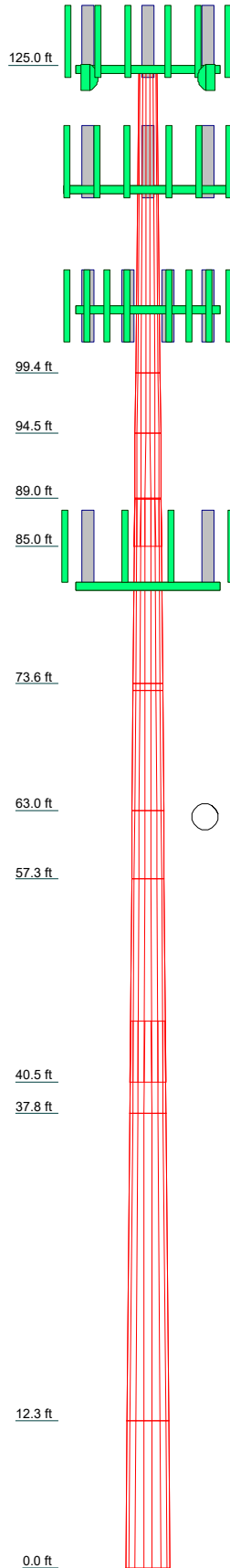
ALL REACTIONS  
ARE FACTORED




 <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587 - 4630 FAX: (918) 295 - 0265	Job: <b>84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 87636)</b>
	Project:
	Client: <b>Crown Castle</b>
	Code: <b>TIA-222-G</b>
Drawn by: <b>T. Cheriyan</b>	Date: <b>12/06/16</b>
App'd:	Scale: <b>NTS</b>
Path:	Dwg No. <b>E-1</b>

**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
APXVTM14-C-120 w/ Mount Pipe (E)	125	RRUS 32 B2 (P)	115
APXVTM14-C-120 w/ Mount Pipe (E)	125	(2) TT19-08BP111-001 (P)	115
APXVTM14-C-120 w/ Mount Pipe (E)	125	(2) TT19-08BP111-001 (P)	115
LLPX310R-V1 w/ Mount Pipe (E)	125	(2) TT19-08BP111-001 (P)	115
LLPX310R-V1 w/ Mount Pipe (E)	125	3' x 2" Pipe Mount (E)	115
LLPX310R-V1 w/ Mount Pipe (E)	125	3' x 2" Pipe Mount (E)	115
APXVSPP18-C-A20 w/ Mount Pipe (E)	125	3' x 2" Pipe Mount (E)	115
APXVSPP18-C-A20 w/ Mount Pipe (E)	125	Platform Mount [LP 304-1] (E)	115
APXVSPP18-C-A20 w/ Mount Pipe (E)	125	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	115
TD-RRH8x20-25 (E)	125	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	115
TD-RRH8x20-25 (E)	125	(2) LNX-6514DS-A1M w/ Mount Pipe (E)	105
TD-RRH8x20-25 (E)	125	(2) LNX-6514DS-A1M w/ Mount Pipe (E)	105
WIMAX DAP HEAD (E)	125	(2) HBXX-6517DS-A2M w/ Mount Pipe (E)	105
WIMAX DAP HEAD (E)	125	(2) HBXX-6517DS-A2M w/ Mount Pipe (E)	105
HORIZON COMPACT (E)	125	(2) HBXX-6517DS-A2M w/ Mount Pipe (E)	105
HORIZON COMPACT (E)	125	(2) HBXX-6517DS-A2M w/ Mount Pipe (E)	105
(2) 6' x 2" Mount Pipe (E)	125	RRH2X60-AWS (E)	105
(2) 6' x 2" Mount Pipe (E)	125	RRH2X60-AWS (E)	105
(2) 6' x 2" Mount Pipe (E)	125	RRH2X60-AWS (E)	105
Platform Mount [LP 714-1] (E)	125	RRH2X60-PCS (E)	105
VHLP2-18 (E)	125	RRH2X60-PCS (E)	105
VHLP2-11 (E)	125	RRH2X60-PCS (E)	105
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	123	RRH2X60-PCS (E)	105
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	123	RRH2x60-700 (E)	105
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	123	RRH2x60-700 (E)	105
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	123	RRH2x60-700 (E)	105
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	123	(2) DB-T1-6Z-8AB-0Z (E)	105
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	123	Platform Mount [LP 1201-1] (E)	105
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	123	(2) LNX-6514DS-A1M w/ Mount Pipe (E)	105
Side Arm Mount [SO 102-3] (E)	123	(2) LNX-6514DS-A1M w/ Mount Pipe (E)	105
Climbing Ladder (Flat) (E)	123	(2) ERICSSON AIR 21 B2A B4P w/ Mount Pipe (E)	82
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	123	(2) ERICSSON AIR 21 B4A B2P w/ Mount Pipe (E)	82
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	115	6' x 2" Mount Pipe (E)	82
RRUS 11 B12 (E)	115	6' x 2" Mount Pipe (E)	82
RRUS 11 B12 (E)	115	6' x 2" Mount Pipe (E)	82
RRUS 11 B12 (E)	115	T-Arm Mount [TA 602-3] (E)	82
DC6-48-60-18-8F (E)	115	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (E)	82
HPA-65R-BUU-H6 w/ Mount Pipe (P)	115	ERICSSON AIR 21 B4A B2P w/ Mount Pipe (E)	82
HPA-65R-BUU-H6 w/ Mount Pipe (P)	115		
HPA-65R-BUU-H6 w/ Mount Pipe (P)	115		
RRUS 32 B2 (P)	115		
RRUS 32 B2 (P)	115		



Section	1	2	3	4	5	6	7	8	9	10	11	12
Length (ft)	25.625	4.917	5.458	3.960	15.374	0.583	10.000	5.667	16.876	7.707	25.553	12.250
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.188	0.409	0.571	0.676	0.475	0.609	0.369	0.566	0.436	0.493	0.466	0.546
Socket Length (ft)				3.917					5.083			
Top Dia (in)	18.500	24.008	25.065	26.239	25.873	29.140	29.264	31.389	32.594	34.600	36.233	41.654
Bot Dia (in)	24.008	25.065	26.239	27.090	28.140	29.264	31.389	32.594	36.180	36.233	41.654	44.250
Grade	A572-65			68498ksi	68498ksi	68498ksi	68498ksi	68498ksi	68498ksi	68498ksi	68498ksi	68498ksi
Weight (K)	1.1	0.5	0.8	0.7	2.0	0.1	1.2	1.0	2.6	1.4	4.8	3.5



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Phone: (918) 587 - 4630  
FAX: (918) 295 - 0265

Job: **84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 87636)**

Project:	Client: Crown Castle	Drawn by: T. Cheriyan	App'd:
Code: TIA-222-G	Date: 12/06/16	Scale: NTS	Dwg No. E-1
Path:			

Vx

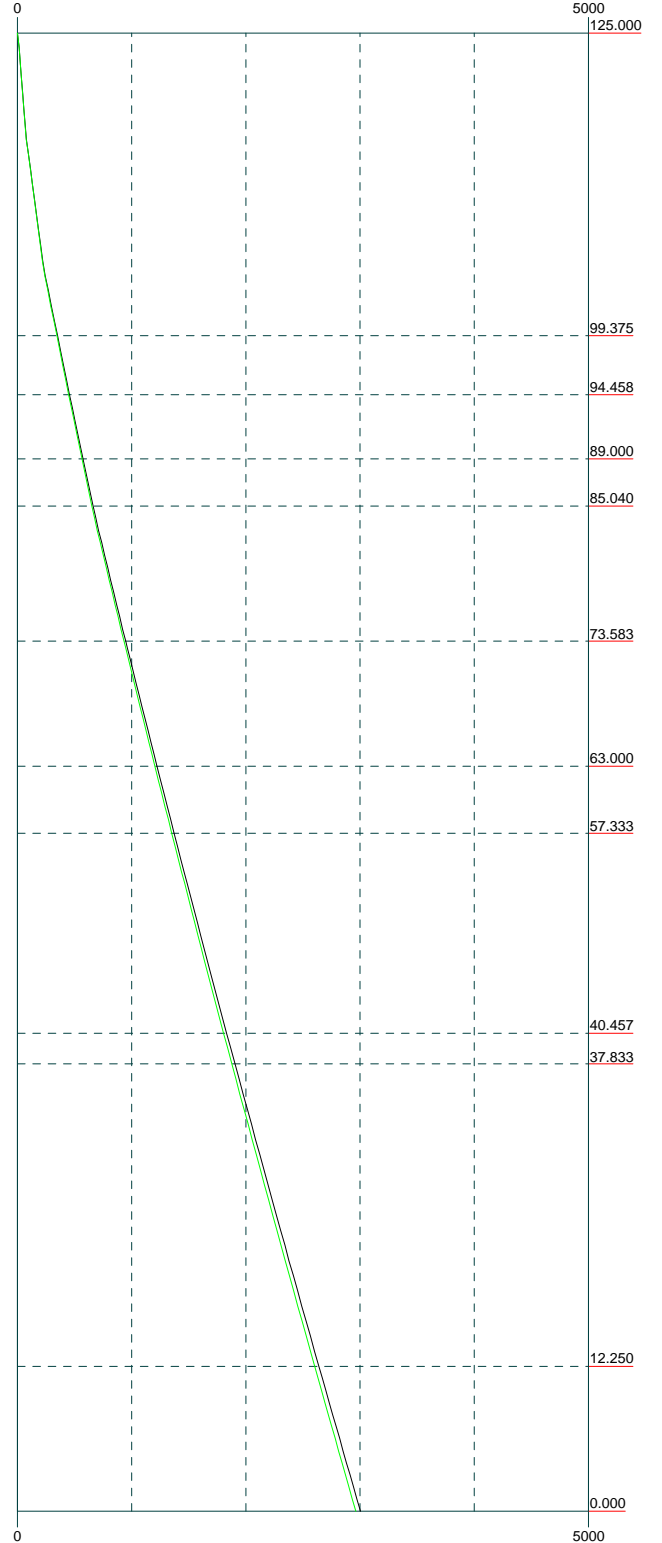
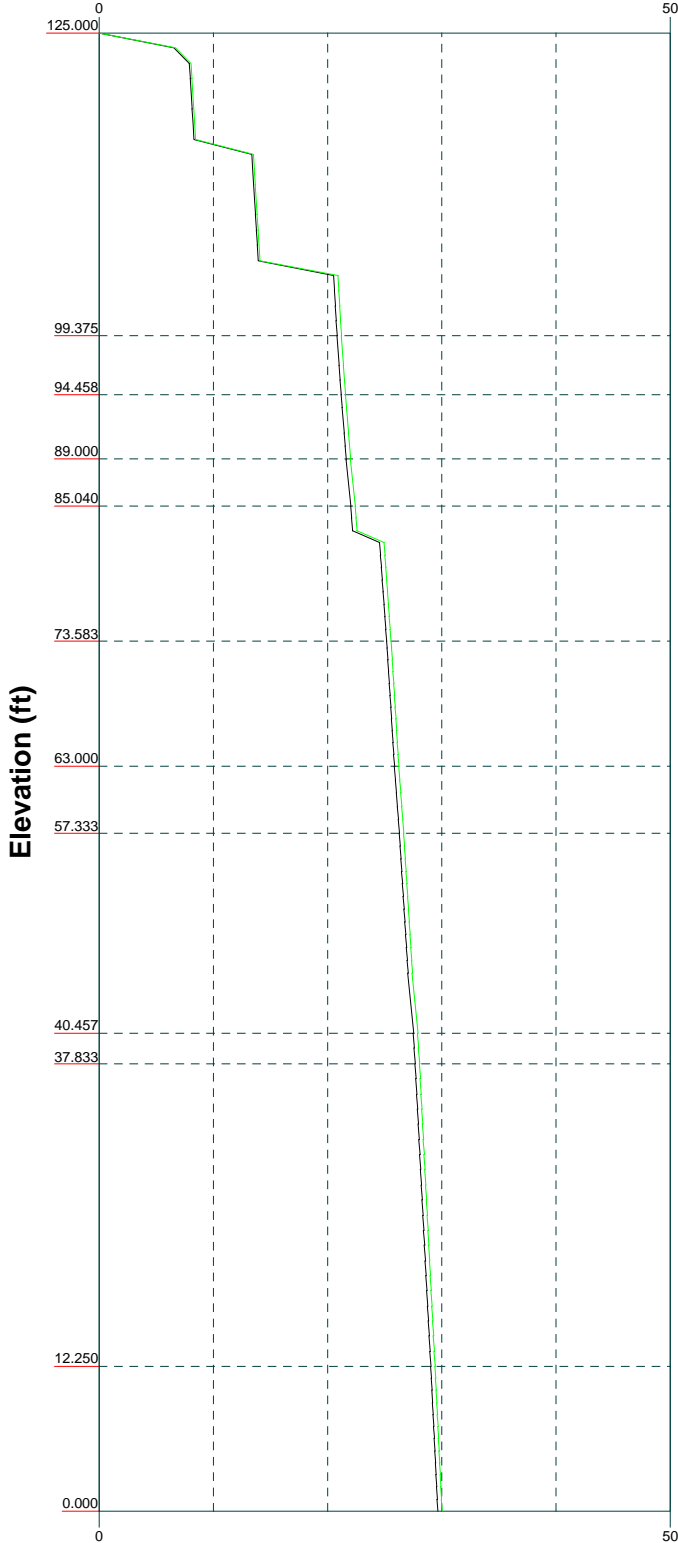
Vz

Mx

Mz

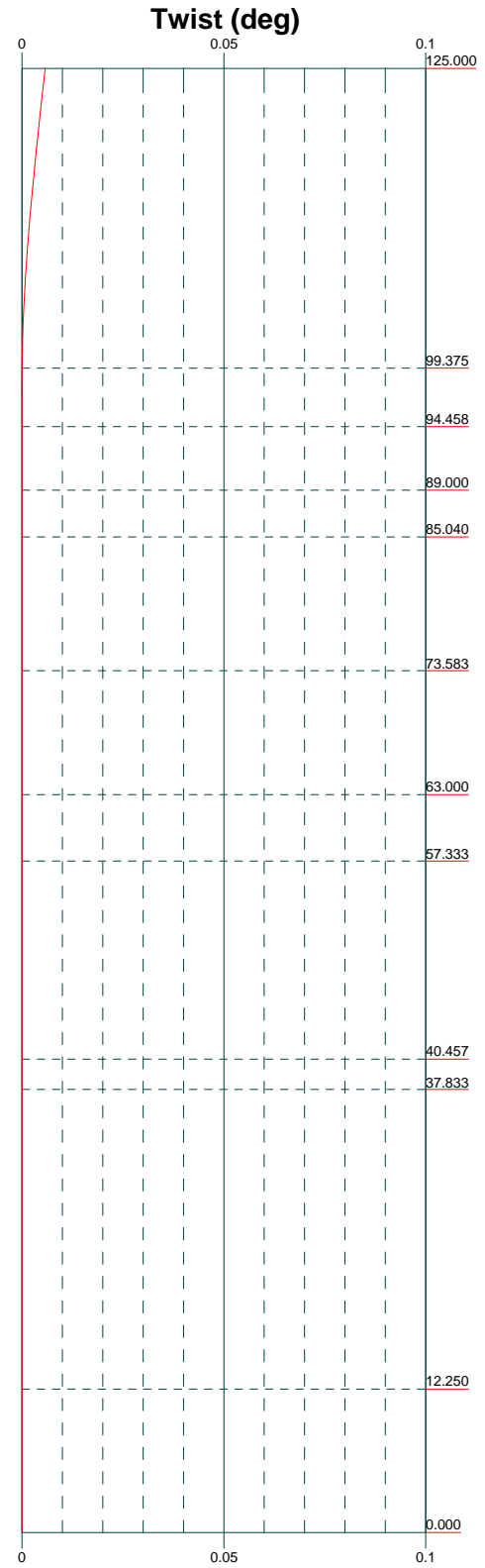
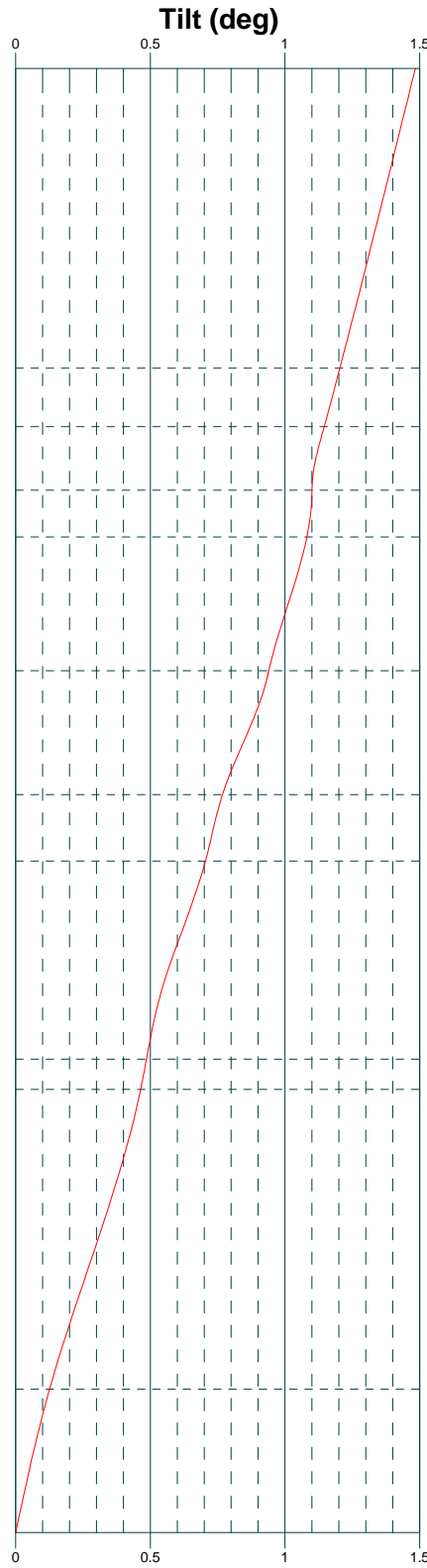
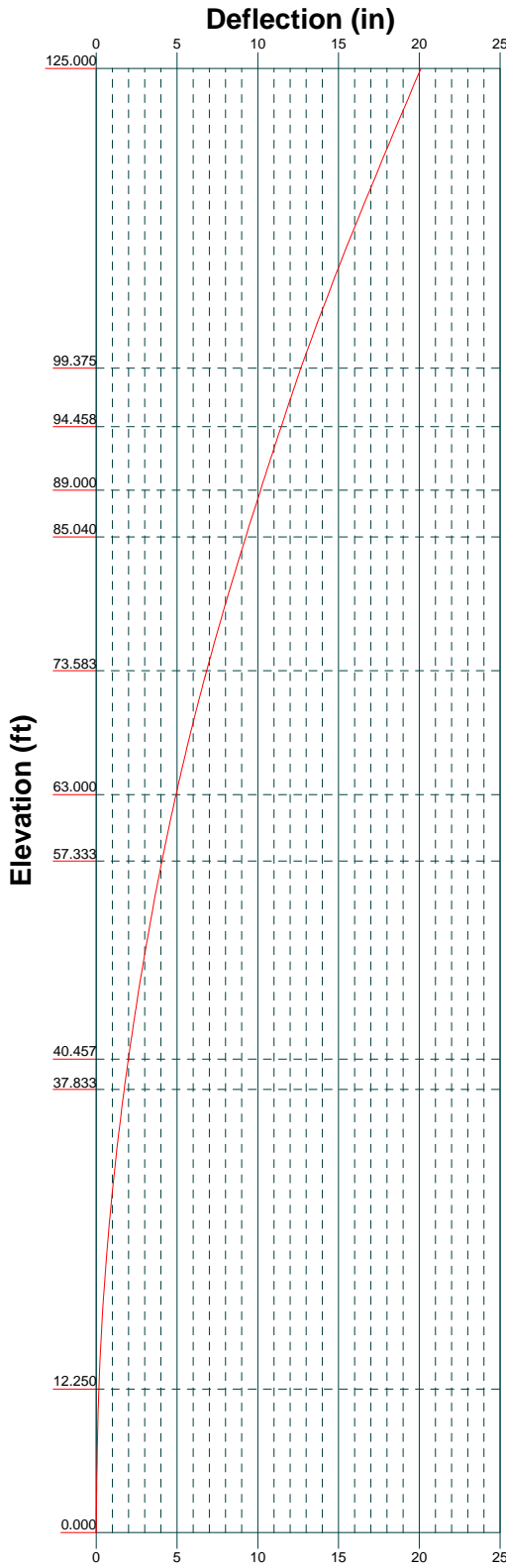
Global Mast Shear (K)


Global Mast Moment (kip-ft)



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 FAX: (918) 295-0265

Job: <b>84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 87636)</b>		
Project:		
Client: Crown Castle	Drawn by: Harisha	App'd:
Code: TIA-222-G	Date: 12/02/16	Scale: NTS
Path:	Dwg No. E-4	



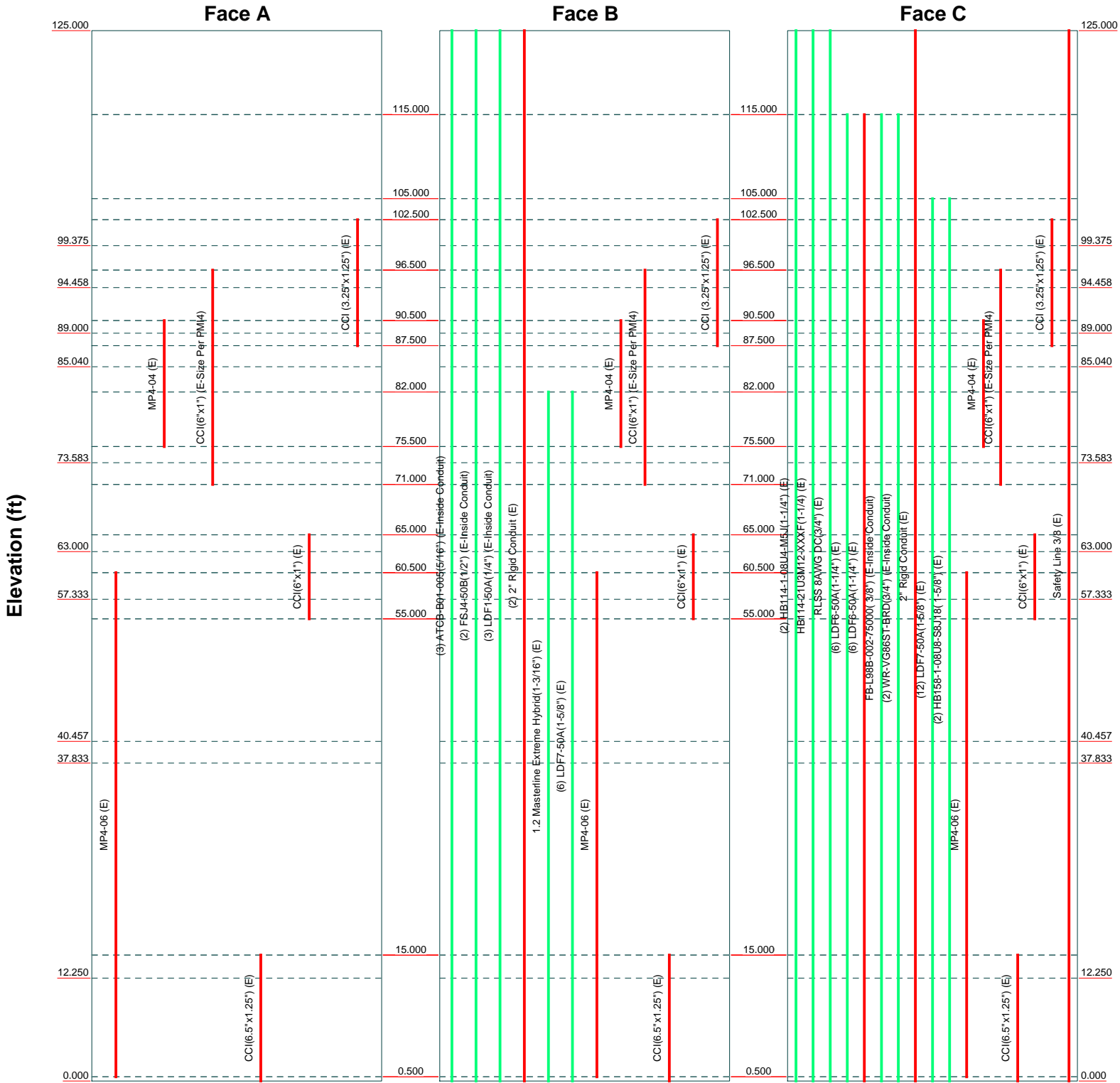
 <p><b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job: <b>84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 87636)</b>		
	Project:		
	Client: Crown Castle	Drawn by: Harisha	App'd:
	Code: TIA-222-G	Date: 12/02/16	Scale: NTS
	Path:	Dwg No. E-5	



# Feed Line Distribution Chart

## 0' - 125'

— Round   
 — Flat   
 — App In Face   
 — App Out Face   
 — Truss Leg



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	Project:		
	Client: Crown Castle	Drawn by: Harisha	App'd:
	Code: TIA-222-G	Date: 12/02/16	Scale: NTS
	Path:	Dwg No. E-7	

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	<b>Project</b>	<b>Date</b> 15:00:35 12/02/16
	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

## Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Middlesex County, Connecticut.

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 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °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		

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	125.000-99.375	25.625	0.000	18	18.500	24.008	0.188	0.750	A572-65 (65 ksi)
L2	99.375-94.458	4.917	0.000	18	24.008	25.065	0.409	1.637	31.68498ksi (32 ksi)

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	94.458-89.000	5.458	0.000	18	25.065	26.239	0.571	2.283	31.693018ksi (32 ksi)
L4	89.000-85.040	3.960	3.917	18	26.239	27.090	0.676	2.703	31.208794ksi (31 ksi)
L5	85.040-73.583	15.374	0.000	18	25.873	29.140	0.475	1.900	37.475447ksi (37 ksi)
L6	73.583-73.000	0.583	0.000	18	29.140	29.264	0.609	2.437	37.467825ksi (37 ksi)
L7	73.000-63.000	10.000	0.000	18	29.264	31.389	0.369	1.475	51.046761ksi (51 ksi)
L8	63.000-57.333	5.667	0.000	18	31.389	32.594	0.566	2.262	35.518165ksi (36 ksi)
L9	57.333-40.457	16.876	5.083	18	32.594	36.180	0.436	1.743	50.892182ksi (51 ksi)
L10	40.457-37.833	7.707	0.000	18	34.600	36.233	0.493	1.973	50.979223ksi (51 ksi)
L11	37.833-12.250	25.583	0.000	18	36.233	41.654	0.466	1.866	50.999452ksi (51 ksi)
L12	12.250-0.000	12.250		18	41.654	44.250	0.546	2.184	47.941ksi (48 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	18.785	10.898	461.730	6.501	9.398	49.131	924.069	5.450	2.926	15.605
	24.379	14.176	1016.306	8.456	12.196	83.329	2033.949	7.090	3.895	20.776
L2	24.379	30.646	2156.297	8.378	12.196	176.799	4315.432	15.326	3.505	8.568
	25.452	32.018	2459.201	8.753	12.733	193.132	4921.638	16.012	3.691	9.023
L3	25.452	44.367	3363.118	8.696	12.733	264.121	6730.661	22.188	3.407	5.971
	26.644	46.492	3869.907	9.112	13.329	290.331	7744.905	23.250	3.614	6.332
L4	26.644	54.833	4526.868	9.075	13.329	339.618	9059.693	27.422	3.429	5.073
	27.508	56.659	4994.338	9.377	13.762	362.915	9995.247	28.335	3.578	5.295
L5	27.508	58.289	5120.402	9.016	13.143	237.411	6244.910	19.148	3.718	7.827
	29.590	43.214	4486.191	10.176	14.803	303.055	8978.284	21.611	4.293	9.038
L6	29.590	55.169	5673.738	10.128	14.803	383.277	11354.941	27.590	4.056	6.658
	29.716	55.409	5747.975	10.172	14.866	386.648	11503.512	27.710	4.078	6.694
L7	29.716	33.819	3567.394	10.258	14.866	239.967	7139.482	16.913	4.501	12.208
	31.873	36.306	4413.813	11.012	15.946	276.802	8833.434	18.156	4.876	13.222
L8	31.873	55.329	6641.447	10.942	15.946	416.503	13291.632	27.670	4.529	8.009
	33.096	57.491	7450.731	11.370	16.558	449.990	14911.267	28.751	4.741	8.383
L9	33.096	44.472	5810.281	11.416	16.558	350.915	11628.208	22.240	4.970	11.406
	36.738	49.432	7979.124	12.689	18.379	434.133	15968.747	24.720	5.601	12.855
L10	36.738	53.405	7848.573	12.108	17.577	446.533	15707.473	26.707	5.221	10.584
	36.792	55.962	9030.892	12.688	18.406	490.640	18073.668	27.986	5.509	11.166
L11	36.792	52.598	8558.953	12.697	18.406	465.000	17129.169	26.484	5.556	11.91
	42.297	60.985	13070.561	14.622	21.160	617.692	26158.321	30.498	6.510	13.955
L12	42.297	71.234	15208.230	14.593	21.160	718.715	30436.472	35.624	6.370	11.668
	44.933	75.732	18275.046	15.515	22.479	812.983	36574.138	37.873	6.827	12.505

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft <sup>2</sup>	in							
L1 125.000-99.37				1	1	1			
5									
L2 99.375-94.458				1	1	0.970813			
L3 94.458-89.000				1	1	0.942063			
L4 89.000-85.040				1	1	0.908095			
L5 85.040-73.583				1	1	0.947761			
L6 73.583-73.000				1	1	0.93408			
L7 73.000-63.000				1	1	0.975654			
L8 63.000-57.333				1	1	0.946262			
L9 57.333-40.457				1	1	0.959022			
L10 40.457-37.833				1	1	0.964013			
L11 37.833-12.250				1	1	0.972895			
L12 12.250-0.000				1	1	1.13976			

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	klf
2" Rigid Conduit (E)	B	Surface Ar (CaAa)	125.000 - 0.000	2	2	0.000 0.050	2.000		0.003
LDF6-50A(1-1/4") (E)	C	Surface Ar (CaAa)	115.000 - 0.000	6	6	-0.470 -0.250	1.550		0.001
2" Rigid Conduit (E)	C	Surface Ar (CaAa)	125.000 - 0.000	1	1	-0.500 -0.470	2.000		0.003
*hh*									
MP4-06 (E)	A	Surface Af (CaAa)	60.500 - 0.500	1	1	0.000 0.050	4.875	12.250	0.000
MP4-06 (E)	B	Surface Af (CaAa)	60.500 - 0.500	1	1	0.000 0.050	4.875	12.250	0.000
MP4-06 (E)	C	Surface Af (CaAa)	60.500 - 0.500	1	1	0.000 0.050	4.875	12.250	0.000
*hh*									
MP4-04 (E)	A	Surface Af (CaAa)	75.500 - 90.500	1	1	0.000 0.050	4.750	11.000	0.000
MP4-04 (E)	B	Surface Af (CaAa)	75.500 - 90.500	1	1	0.000 0.050	4.750	11.000	0.000
MP4-04 (E)	C	Surface Af (CaAa)	75.500 - 90.500	1	1	0.000 0.050	4.750	11.000	0.000
*hh*									
CCI(6"x1") (E-Size Per PMI4)	A	Surface Af (CaAa)	96.500 - 71.000	1	1	0.200 0.250	6.000	14.000	0.000
CCI(6"x1")	B	Surface Af	96.500 - 71.000	1	1	0.200	6.000	14.000	0.000

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
(E-Size Per PMI4) CCI(6"x1")	C	(CaAa) Surface Af	96.500 - 71.000	1	1	0.250 0.200	6.000	14.000	0.000
(E-Size Per PMI4) *hh*		(CaAa)				0.250			
CCI(6.5"x1.25") (E)	A	Surface Af (CaAa)	15.000 - 0.000	1	1	0.100 0.150	6.500	15.500	0.000
CCI(6.5"x1.25") (E)	B	Surface Af (CaAa)	15.000 - 0.000	1	1	0.100 0.150	6.500	15.500	0.000
CCI(6.5"x1.25") (E)	C	Surface Af (CaAa)	15.000 - 0.000	1	1	0.100 0.150	6.500	15.500	0.000
*hh*									
CCI(6"x1") (E)	A	Surface Af (CaAa)	65.000 - 55.000	1	1	0.100 0.150	6.000	14.000	0.000
CCI(6"x1") (E)	B	Surface Af (CaAa)	65.000 - 55.000	1	1	0.100 0.150	6.000	14.000	0.000
CCI(6"x1") (E)	C	Surface Af (CaAa)	65.000 - 55.000	1	1	0.100 0.150	6.000	14.000	0.000
*hh*									
CCI(3.25"x1.25") (E)	A	Surface Af (CaAa)	102.500 - 87.500	1	1	0.100 0.150	3.250	9.000	0.000
CCI(3.25"x1.25") (E)	B	Surface Af (CaAa)	102.500 - 87.500	1	1	0.100 0.150	3.250	9.000	0.000
CCI(3.25"x1.25") (E)	C	Surface Af (CaAa)	102.500 - 87.500	1	1	0.100 0.150	3.250	9.000	0.000
*hh*									
Safety Line 3/8 (E)	C	Surface Ar (CaAa)	125.000 - 0.000	1	1	0.000 0.010	0.375		0.000
*hh*									

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>i</sub> ft <sup>2</sup> /ft	Weight klf
ATCB-B01-005(5/16") (E-Inside Conduit)	B	No	Inside Pole	125.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
FSJ4-50B(1/2") (E-Inside Conduit)	B	No	Inside Pole	125.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
LDF1-50A(1/4") (E-Inside Conduit)	B	No	Inside Pole	125.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
HB114-1-08U4-M5J(1-1/4") (E)	C	No	Inside Pole	125.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
HB114-21U3M12-XXX F(1-1/4") (E)	C	No	Inside Pole	125.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
RLSS 8AWG DC(3/4") (E)	C	No	Inside Pole	125.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
*hh*								
LDF6-50A(1-1/4") (E)	C	No	Inside Pole	115.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
FB-L98B-002-75000(3/8")	C	No	Inside Pole	115.000 - 0.000	1	No Ice 1/2" Ice	0.000 0.000	0.000 0.000

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	<p><b>Project</b></p>	<p><b>Date</b> 15:00:35 12/02/16</p>
	<p><b>Client</b> Crown Castle</p>	<p><b>Designed by</b> Harisha</p>

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight klf
(E-Inside Conduit)						1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	115.000 - 0.000	2	No Ice	0.000	0.001
(E-Inside Conduit)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*hh*								
LDF7-50A(1-5/8")	C	No	Inside Pole	105.000 - 0.000	12	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HB158-1-08U8-S8J18(	C	No	Inside Pole	105.000 - 0.000	2	No Ice	0.000	0.001
1-5/8")						1/2" Ice	0.000	0.001
(E)						1" Ice	0.000	0.001
*hh*								
1.2 Masterline Extreme	B	No	Inside Pole	82.000 - 0.000	1	No Ice	0.000	0.001
Hybrid(1-3/16")						1/2" Ice	0.000	0.001
(E)						1" Ice	0.000	0.001
LDF7-50A(1-5/8")	B	No	Inside Pole	82.000 - 0.000	6	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*hh*								

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	125.000-99.375	A	0.000	0.000	1.693	0.000	0.000
		B	0.000	0.000	11.943	0.000	0.161
		C	0.000	0.000	22.310	0.000	0.389
L2	99.375-94.458	A	0.000	0.000	4.705	0.000	0.000
		B	0.000	0.000	6.672	0.000	0.031
		C	0.000	0.000	10.446	0.000	0.140
L3	94.458-89.000	A	0.000	0.000	9.602	0.000	0.000
		B	0.000	0.000	11.785	0.000	0.034
		C	0.000	0.000	15.974	0.000	0.155
L4	89.000-85.040	A	0.000	0.000	7.907	0.000	0.000
		B	0.000	0.000	9.492	0.000	0.025
		C	0.000	0.000	12.531	0.000	0.113
L5	85.040-73.583	A	0.000	0.000	19.009	0.000	0.000
		B	0.000	0.000	23.592	0.000	0.121
		C	0.000	0.000	32.386	0.000	0.326
L6	73.583-73.000	A	0.000	0.000	0.583	0.000	0.000
		B	0.000	0.000	0.816	0.000	0.007
		C	0.000	0.000	1.264	0.000	0.017
L7	73.000-63.000	A	0.000	0.000	4.000	0.000	0.000
		B	0.000	0.000	8.000	0.000	0.122
		C	0.000	0.000	15.675	0.000	0.285
L8	63.000-57.333	A	0.000	0.000	8.240	0.000	0.000
		B	0.000	0.000	10.507	0.000	0.069
		C	0.000	0.000	14.856	0.000	0.161
L9	57.333-40.457	A	0.000	0.000	16.045	0.000	0.000
		B	0.000	0.000	22.795	0.000	0.205
		C	0.000	0.000	35.747	0.000	0.481
L10	40.457-37.833	A	0.000	0.000	2.132	0.000	0.000
		B	0.000	0.000	3.182	0.000	0.032
		C	0.000	0.000	5.196	0.000	0.075
L11	37.833-12.250	A	0.000	0.000	23.765	0.000	0.000
		B	0.000	0.000	33.999	0.000	0.311
		C	0.000	0.000	53.634	0.000	0.728

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Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
L12	12.250-0.000	A	0.000	0.000	22.818	0.000	0.000
		B	0.000	0.000	27.718	0.000	0.149
		C	0.000	0.000	37.120	0.000	0.349

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
L1	125.000-99.375	A	1.694	0.000	0.000	2.752	0.000	0.032
		B		0.000	0.000	26.419	0.000	0.465
		C		0.000	0.000	50.988	0.000	1.007
L2	99.375-94.458	A	1.671	0.000	0.000	7.031	0.000	0.076
		B		0.000	0.000	11.543	0.000	0.158
		C		0.000	0.000	19.254	0.000	0.360
L3	94.458-89.000	A	1.661	0.000	0.000	13.706	0.000	0.142
		B		0.000	0.000	18.702	0.000	0.233
		C		0.000	0.000	27.242	0.000	0.456
L4	89.000-85.040	A	1.653	0.000	0.000	10.967	0.000	0.110
		B		0.000	0.000	14.583	0.000	0.176
		C		0.000	0.000	20.765	0.000	0.337
L5	85.040-73.583	A	1.637	0.000	0.000	25.824	0.000	0.255
		B		0.000	0.000	36.286	0.000	0.494
		C		0.000	0.000	54.171	0.000	0.912
L6	73.583-73.000	A	1.625	0.000	0.000	0.772	0.000	0.007
		B		0.000	0.000	1.301	0.000	0.020
		C		0.000	0.000	2.204	0.000	0.040
L7	73.000-63.000	A	1.612	0.000	0.000	4.817	0.000	0.050
		B		0.000	0.000	13.848	0.000	0.272
		C		0.000	0.000	29.297	0.000	0.615
L8	63.000-57.333	A	1.593	0.000	0.000	9.726	0.000	0.106
		B		0.000	0.000	14.816	0.000	0.231
		C		0.000	0.000	23.526	0.000	0.424
L9	57.333-40.457	A	1.560	0.000	0.000	21.497	0.000	0.214
		B		0.000	0.000	36.515	0.000	0.580
		C		0.000	0.000	62.232	0.000	1.147
L10	40.457-37.833	A	1.526	0.000	0.000	2.951	0.000	0.029
		B		0.000	0.000	5.286	0.000	0.086
		C		0.000	0.000	9.284	0.000	0.174
L11	37.833-12.250	A	1.457	0.000	0.000	31.770	0.000	0.290
		B		0.000	0.000	53.883	0.000	0.825
		C		0.000	0.000	91.822	0.000	1.647
L12	12.250-0.000	A	1.266	0.000	0.000	27.999	0.000	0.221
		B		0.000	0.000	38.001	0.000	0.460
		C		0.000	0.000	55.231	0.000	0.822

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$ Ice in	$CP_z$ in	$CP_x$ Ice in	$CP_z$ Ice in
L1	125.000-99.375	0.840	0.348	0.909	0.436
L2	99.375-94.458	0.586	0.318	0.683	0.394
L3	94.458-89.000	0.442	0.240	0.549	0.317

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Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L4	89.000-85.040	0.421	0.229	0.537	0.310
L5	85.040-73.583	0.484	0.263	0.618	0.358
L6	73.583-73.000	0.639	0.348	0.794	0.460
L7	73.000-63.000	0.874	0.476	1.047	0.606
L8	63.000-57.333	0.568	0.309	0.767	0.444
L9	57.333-40.457	0.717	0.390	0.898	0.520
L10	40.457-37.833	0.778	0.424	0.963	0.558
L11	37.833-12.250	0.773	0.422	0.975	0.564
L12	12.250-0.000	0.602	0.329	0.801	0.461

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	7	2" Rigid Conduit	99.38 - 125.00	1.0000	1.0000
L1	10	LDF6-50A(1-1/4")	99.38 - 115.00	1.0000	1.0000
L1	13	2" Rigid Conduit	99.38 - 125.00	1.0000	1.0000
L1	41	CCI (3.25"x1.25")	99.38 - 102.50	1.0000	1.0000
L1	42	CCI (3.25"x1.25")	99.38 - 102.50	1.0000	1.0000
L1	43	CCI (3.25"x1.25")	99.38 - 102.50	1.0000	1.0000
L1	45	Safety Line 3/8	99.38 - 125.00	1.0000	1.0000
L2	7	2" Rigid Conduit	94.46 - 99.38	1.0000	1.0000
L2	10	LDF6-50A(1-1/4")	94.46 - 99.38	1.0000	1.0000
L2	13	2" Rigid Conduit	94.46 - 99.38	1.0000	1.0000
L2	29	CCI(6"x1")	94.46 - 96.50	1.0000	1.0000
L2	30	CCI(6"x1")	94.46 - 96.50	1.0000	1.0000
L2	31	CCI(6"x1")	94.46 - 96.50	1.0000	1.0000
L2	41	CCI (3.25"x1.25")	94.46 - 99.38	1.0000	1.0000
L2	42	CCI (3.25"x1.25")	94.46 - 99.38	1.0000	1.0000
L2	43	CCI (3.25"x1.25")	94.46 - 99.38	1.0000	1.0000
L2	45	Safety Line 3/8	94.46 - 99.38	1.0000	1.0000
L3	7	2" Rigid Conduit	89.00 - 94.46	1.0000	1.0000
L3	10	LDF6-50A(1-1/4")	89.00 - 94.46	1.0000	1.0000
L3	13	2" Rigid Conduit	89.00 - 94.46	1.0000	1.0000
L3	25	MP4-04	89.00 - 90.50	1.0000	1.0000
L3	26	MP4-04	89.00 - 90.50	1.0000	1.0000
L3	27	MP4-04	89.00 - 90.50	1.0000	1.0000
L3	29	CCI(6"x1")	89.00 - 94.46	1.0000	1.0000
L3	30	CCI(6"x1")	89.00 - 94.46	1.0000	1.0000
L3	31	CCI(6"x1")	89.00 - 94.46	1.0000	1.0000
L3	41	CCI (3.25"x1.25")	89.00 - 94.46	1.0000	1.0000
L3	42	CCI (3.25"x1.25")	89.00 - 94.46	1.0000	1.0000
L3	43	CCI (3.25"x1.25")	89.00 - 94.46	1.0000	1.0000
L3	45	Safety Line 3/8	89.00 - 94.46	1.0000	1.0000
L4	7	2" Rigid Conduit	85.04 - 89.00	1.0000	1.0000
L4	10	LDF6-50A(1-1/4")	85.04 - 89.00	1.0000	1.0000
L4	13	2" Rigid Conduit	85.04 - 89.00	1.0000	1.0000
L4	25	MP4-04	85.04 - 89.00	1.0000	1.0000
L4	26	MP4-04	85.04 - 89.00	1.0000	1.0000
L4	27	MP4-04	85.04 - 89.00	1.0000	1.0000
L4	29	CCI(6"x1")	85.04 - 89.00	1.0000	1.0000
L4	30	CCI(6"x1")	85.04 - 89.00	1.0000	1.0000
L4	31	CCI(6"x1")	85.04 - 89.00	1.0000	1.0000
L4	41	CCI (3.25"x1.25")	87.50 - 89.00	1.0000	1.0000
L4	42	CCI (3.25"x1.25")	87.50 - 89.00	1.0000	1.0000



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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L4	43	CCI (3.25"x1.25")	87.50 - 89.00	1.0000	1.0000
L4	45	Safety Line 3/8	85.04 - 89.00	1.0000	1.0000
L6	7	2" Rigid Conduit	73.00 - 73.58	1.0000	1.0000
L6	10	LDF6-50A(1-1/4")	73.00 - 73.58	1.0000	1.0000
L6	13	2" Rigid Conduit	73.00 - 73.58	1.0000	1.0000
L6	29	CCI(6"x1")	73.00 - 73.58	1.0000	1.0000
L6	30	CCI(6"x1")	73.00 - 73.58	1.0000	1.0000
L6	31	CCI(6"x1")	73.00 - 73.58	1.0000	1.0000
L6	45	Safety Line 3/8	73.00 - 73.58	1.0000	1.0000
L7	7	2" Rigid Conduit	63.00 - 73.00	1.0000	1.0000
L7	10	LDF6-50A(1-1/4")	63.00 - 73.00	1.0000	1.0000
L7	13	2" Rigid Conduit	63.00 - 73.00	1.0000	1.0000
L7	29	CCI(6"x1")	71.00 - 73.00	1.0000	1.0000
L7	30	CCI(6"x1")	71.00 - 73.00	1.0000	1.0000
L7	31	CCI(6"x1")	71.00 - 73.00	1.0000	1.0000
L7	37	CCI(6"x1")	63.00 - 65.00	1.0000	1.0000
L7	38	CCI(6"x1")	63.00 - 65.00	1.0000	1.0000
L7	39	CCI(6"x1")	63.00 - 65.00	1.0000	1.0000
L7	45	Safety Line 3/8	63.00 - 73.00	1.0000	1.0000
L8	7	2" Rigid Conduit	57.33 - 63.00	1.0000	1.0000
L8	10	LDF6-50A(1-1/4")	57.33 - 63.00	1.0000	1.0000
L8	13	2" Rigid Conduit	57.33 - 63.00	1.0000	1.0000
L8	21	MP4-06	57.33 - 60.50	1.0000	1.0000
L8	22	MP4-06	57.33 - 60.50	1.0000	1.0000
L8	23	MP4-06	57.33 - 60.50	1.0000	1.0000
L8	37	CCI(6"x1")	57.33 - 63.00	1.0000	1.0000
L8	38	CCI(6"x1")	57.33 - 63.00	1.0000	1.0000
L8	39	CCI(6"x1")	57.33 - 63.00	1.0000	1.0000
L8	45	Safety Line 3/8	57.33 - 63.00	1.0000	1.0000
L9	7	2" Rigid Conduit	40.46 - 57.33	1.0000	1.0000
L9	10	LDF6-50A(1-1/4")	40.46 - 57.33	1.0000	1.0000
L9	13	2" Rigid Conduit	40.46 - 57.33	1.0000	1.0000
L9	21	MP4-06	40.46 - 57.33	1.0000	1.0000
L9	22	MP4-06	40.46 - 57.33	1.0000	1.0000
L9	23	MP4-06	40.46 - 57.33	1.0000	1.0000
L9	37	CCI(6"x1")	55.00 - 57.33	1.0000	1.0000
L9	38	CCI(6"x1")	55.00 - 57.33	1.0000	1.0000
L9	39	CCI(6"x1")	55.00 - 57.33	1.0000	1.0000
L9	45	Safety Line 3/8	40.46 - 57.33	1.0000	1.0000
L11	7	2" Rigid Conduit	12.25 - 37.83	1.0000	1.0000
L11	10	LDF6-50A(1-1/4")	12.25 - 37.83	1.0000	1.0000
L11	13	2" Rigid Conduit	12.25 - 37.83	1.0000	1.0000
L11	21	MP4-06	12.25 - 37.83	1.0000	1.0000
L11	22	MP4-06	12.25 - 37.83	1.0000	1.0000
L11	23	MP4-06	12.25 - 37.83	1.0000	1.0000
L11	33	CCI(6.5"x1.25")	12.25 - 15.00	1.0000	1.0000
L11	34	CCI(6.5"x1.25")	12.25 - 15.00	1.0000	1.0000
L11	35	CCI(6.5"x1.25")	12.25 - 15.00	1.0000	1.0000
L11	45	Safety Line 3/8	12.25 - 37.83	1.0000	1.0000
L12	7	2" Rigid Conduit	0.00 - 12.25	1.0000	1.0000
L12	10	LDF6-50A(1-1/4")	0.00 - 12.25	1.0000	1.0000
L12	13	2" Rigid Conduit	0.00 - 12.25	1.0000	1.0000
L12	21	MP4-06	0.50 - 12.25	1.0000	1.0000
L12	22	MP4-06	0.50 - 12.25	1.0000	1.0000
L12	23	MP4-06	0.50 - 12.25	1.0000	1.0000
L12	33	CCI(6.5"x1.25")	0.00 - 12.25	1.0000	1.0000
L12	34	CCI(6.5"x1.25")	0.00 - 12.25	1.0000	1.0000
L12	35	CCI(6.5"x1.25")	0.00 - 12.25	1.0000	1.0000
L12	45	Safety Line 3/8	0.00 - 12.25	1.0000	1.0000

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## Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		$C_{AA}$	$C_{AA}$	Weight K
							Front ft <sup>2</sup>	Side ft <sup>2</sup>	
APXVTM14-C-120 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	125.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.131
			2.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	125.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.131
			2.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	125.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.131
			2.000			1" Ice	7.473	6.472	0.193
LLPX310R-V1 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	125.000	No Ice	4.538	2.983	0.045
			0.000			1/2" Ice	4.891	3.526	0.083
			4.000			1" Ice	5.254	4.086	0.126
LLPX310R-V1 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	125.000	No Ice	4.538	2.983	0.045
			0.000			1/2" Ice	4.891	3.526	0.083
			4.000			1" Ice	5.254	4.086	0.126
LLPX310R-V1 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	125.000	No Ice	4.538	2.983	0.045
			0.000			1/2" Ice	4.891	3.526	0.083
			4.000			1" Ice	5.254	4.086	0.126
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	125.000	No Ice	8.262	6.946	0.083
			0.000			1/2" Ice	8.822	8.127	0.151
			2.000			1" Ice	9.346	9.021	0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	125.000	No Ice	8.262	6.946	0.083
			0.000			1/2" Ice	8.822	8.127	0.151
			2.000			1" Ice	9.346	9.021	0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	125.000	No Ice	8.262	6.946	0.083
			0.000			1/2" Ice	8.822	8.127	0.151
			2.000			1" Ice	9.346	9.021	0.227
TD-RRH8x20-25 (E)	A	From Leg	4.000	0.000	125.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25 (E)	B	From Leg	4.000	0.000	125.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25 (E)	C	From Leg	4.000	0.000	125.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
WIMAX DAP HEAD (E)	A	From Leg	4.000	0.000	125.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			0.000			1" Ice	1.868	0.923	0.058
WIMAX DAP HEAD (E)	B	From Leg	4.000	0.000	125.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			0.000			1" Ice	1.868	0.923	0.058
WIMAX DAP HEAD (E)	C	From Leg	4.000	0.000	125.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			0.000			1" Ice	1.868	0.923	0.058
HORIZON COMPACT (E)	B	From Leg	4.000	0.000	125.000	No Ice	0.721	0.368	0.012
			0.000			1/2" Ice	0.828	0.450	0.018
			0.000			1" Ice	0.942	0.539	0.026
HORIZON COMPACT (E)	C	From Leg	4.000	0.000	125.000	No Ice	0.721	0.368	0.012
			0.000			1/2" Ice	0.828	0.450	0.018

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	<b>Project</b>				<b>Date</b>		15:00:35 12/02/16	
	<b>Client</b>		Crown Castle		<b>Designed by</b>		Harisha	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
(2) 6' x 2" Mount Pipe (E)	A	From Leg	0.000	0.000	125.000	1" Ice	0.942	0.539	0.026
			4.000			No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
(2) 6' x 2" Mount Pipe (E)	B	From Leg	0.000	0.000	125.000	1" Ice	2.294	2.294	0.048
			4.000			No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
(2) 6' x 2" Mount Pipe (E)	C	From Leg	0.000	0.000	125.000	1" Ice	2.294	2.294	0.048
			4.000			No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
Platform Mount [LP 714-1] (E)	C	None	0.000	0.000	125.000	No Ice	37.470	37.470	1.600
			0.000			1/2" Ice	44.230	44.230	2.040
			0.000			1" Ice	50.990	50.990	2.480
Climbing Ladder (Flat) (E)	A	From Leg	3.000	0.000	123.000	No Ice	5.844	5.844	0.048
			0.000			1/2" Ice	10.300	10.300	0.071
			0.000			1" Ice	14.756	14.756	0.094
*hh* PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	A	From Leg	1.000	0.000	123.000	No Ice	2.905	3.218	0.071
			0.000			1/2" Ice	3.206	3.647	0.101
			0.000			1" Ice	3.519	4.094	0.138
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	B	From Leg	1.000	0.000	123.000	No Ice	2.905	3.218	0.071
			0.000			1/2" Ice	3.206	3.647	0.101
			0.000			1" Ice	3.519	4.094	0.138
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (E)	C	From Leg	1.000	0.000	123.000	No Ice	2.905	3.218	0.071
			0.000			1/2" Ice	3.206	3.647	0.101
			0.000			1" Ice	3.519	4.094	0.138
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	A	From Leg	1.000	0.000	123.000	No Ice	2.586	2.731	0.073
			0.000			1/2" Ice	2.861	3.102	0.101
			0.000			1" Ice	3.149	3.490	0.135
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	B	From Leg	1.000	0.000	123.000	No Ice	2.586	2.731	0.073
			0.000			1/2" Ice	2.861	3.102	0.101
			0.000			1" Ice	3.149	3.490	0.135
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (E)	C	From Leg	1.000	0.000	123.000	No Ice	2.586	2.731	0.073
			0.000			1/2" Ice	2.861	3.102	0.101
			0.000			1" Ice	3.149	3.490	0.135
Side Arm Mount [SO 102-3] (E)	C	None	0.000	0.000	123.000	No Ice	3.000	3.000	0.081
			0.000			1/2" Ice	3.480	3.480	0.111
			0.000			1" Ice	3.960	3.960	0.141
*hh* (2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	A	From Leg	4.000	0.000	115.000	No Ice	8.262	6.304	0.074
			0.000			1/2" Ice	8.822	7.479	0.139
			2.000			1" Ice	9.346	8.368	0.212
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	B	From Leg	4.000	0.000	115.000	No Ice	8.262	6.304	0.074
			0.000			1/2" Ice	8.822	7.479	0.139
			2.000			1" Ice	9.346	8.368	0.212
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	C	From Leg	4.000	0.000	115.000	No Ice	8.262	6.304	0.074
			0.000			1/2" Ice	8.822	7.479	0.139
			2.000			1" Ice	9.346	8.368	0.212
RRUS 11 B12 (E)	A	From Leg	4.000	0.000	115.000	No Ice	2.833	1.182	0.051
			0.000			1/2" Ice	3.043	1.330	0.072
			2.000			1" Ice	3.259	1.485	0.095

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
RRUS 11 B12 (E)	B	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	2.833 3.043 3.259	1.182 1.330 1.485	0.051 0.072 0.095
RRUS 11 B12 (E)	C	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	2.833 3.043 3.259	1.182 1.330 1.485	0.051 0.072 0.095
DC6-48-60-18-8F (E)	A	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.917 1.458 1.643	0.917 1.458 1.643	0.019 0.037 0.057
HPA-65R-BUU-H6 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	9.895 10.470 11.010	8.113 9.304 10.209	0.077 0.158 0.248
HPA-65R-BUU-H6 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	9.895 10.470 11.010	8.113 9.304 10.209	0.077 0.158 0.248
HPA-65R-BUU-H6 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	9.895 10.470 11.010	8.113 9.304 10.209	0.077 0.158 0.248
RRUS 32 B2 (P)	A	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
RRUS 32 B2 (P)	B	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
RRUS 32 B2 (P)	C	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
(2) TT19-08BP111-001 (P)	A	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.545 0.641 0.743	0.442 0.530 0.626	0.016 0.022 0.029
(2) TT19-08BP111-001 (P)	B	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.545 0.641 0.743	0.442 0.530 0.626	0.016 0.022 0.029
(2) TT19-08BP111-001 (P)	C	From Leg	4.000 0.000 2.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.545 0.641 0.743	0.442 0.530 0.626	0.016 0.022 0.029
3' x 2" Pipe Mount (E)	A	From Leg	4.000 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.583 0.770 0.967	0.583 0.770 0.967	0.011 0.017 0.024
3' x 2" Pipe Mount (E)	B	From Leg	4.000 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.583 0.770 0.967	0.583 0.770 0.967	0.011 0.017 0.024
3' x 2" Pipe Mount (E)	C	From Leg	4.000 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	0.583 0.770 0.967	0.583 0.770 0.967	0.011 0.017 0.024
Platform Mount [LP 304-1] (E)	C	None		0.000	115.000	No Ice 1/2" Ice 1" Ice	17.460 22.440 27.420	17.460 22.440 27.420	1.349 1.625 1.900
*hh*									
(2) LNX-6514DS-A1M w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice	8.411 8.975 9.505	7.082 8.273 9.185	0.065 0.134 0.211
(2) LNX-6514DS-A1M w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice	8.411 8.975 9.505	7.082 8.273 9.185	0.065 0.134 0.211
(2) LNX-6514DS-A1M w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice	8.411 8.975	7.082 8.273	0.065 0.134

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
(E)			0.000			1" Ice	9.505	9.185	0.211
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.000	0.000	105.000	No Ice	8.765	6.963	0.067
(E)			0.000			1/2" Ice	9.342	8.182	0.137
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.000	0.000	105.000	No Ice	8.765	6.963	0.067
(E)			0.000			1/2" Ice	9.342	8.182	0.137
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.000	0.000	105.000	No Ice	8.765	6.963	0.067
(E)			0.000			1/2" Ice	9.342	8.182	0.137
RRH2X60-AWS	A	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
RRH2X60-AWS	B	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
RRH2X60-AWS	C	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
RRH2X60-PCS	A	From Leg	4.000	0.000	105.000	No Ice	2.200	1.723	0.055
(E)			0.000			1/2" Ice	2.393	1.901	0.075
RRH2X60-PCS	B	From Leg	4.000	0.000	105.000	No Ice	2.200	1.723	0.055
(E)			0.000			1/2" Ice	2.393	1.901	0.075
RRH2X60-PCS	C	From Leg	4.000	0.000	105.000	No Ice	2.200	1.723	0.055
(E)			0.000			1/2" Ice	2.393	1.901	0.075
RRH2x60-700	A	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
RRH2x60-700	B	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
RRH2x60-700	C	From Leg	4.000	0.000	105.000	No Ice	3.500	1.816	0.060
(E)			0.000			1/2" Ice	3.761	2.052	0.083
(2) DB-T1-6Z-8AB-OZ	A	From Leg	4.000	0.000	105.000	No Ice	4.800	2.000	0.044
(E)			0.000			1/2" Ice	5.070	2.193	0.080
Platform Mount [LP 1201-1]	C	None	0.000	0.000	105.000	No Ice	5.348	2.393	0.120
(E)						1" Ice	23.100	23.100	2.100
						1/2" Ice	26.800	26.800	2.500
						1" Ice	30.500	30.500	2.900
*hh*									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000	0.000	82.000	No Ice	6.329	5.642	0.112
(E)			0.000			1/2" Ice	6.775	6.426	0.169
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	3.000	0.000	82.000	No Ice	7.214	7.131	0.233
(E)			0.000			1/2" Ice	6.329	5.642	0.112
(2) ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000	0.000	82.000	No Ice	6.329	5.642	0.112
(E)			0.000			1/2" Ice	6.775	6.426	0.169
(2) ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	3.000	0.000	82.000	No Ice	7.214	7.131	0.233
(E)			0.000			1/2" Ice	6.329	5.642	0.112
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	82.000	No Ice	6.329	5.642	0.112
			0.000			1/2" Ice	6.775	6.426	0.169
			3.000			1" Ice	7.214	7.131	0.233
			4.000			No Ice	1.425	1.425	0.022

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
(E)			0.000		1/2" Ice	1.925	1.925	0.033
			0.000		1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe (E)	B	From Leg	4.000	0.000	82.000	No Ice	1.425	1.425
			0.000		1/2" Ice	1.925	1.925	0.033
			0.000		1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe (E)	C	From Leg	4.000	0.000	82.000	No Ice	1.425	1.425
			0.000		1/2" Ice	1.925	1.925	0.033
			0.000		1" Ice	2.294	2.294	0.048
T-Arm Mount [TA 602-3] (E)	C	None		0.000	82.000	No Ice	11.590	11.590
					1/2" Ice	15.440	15.440	0.774
					1" Ice	19.290	19.290	0.990
								1.206
*hh*								

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K
VHLP2-18 (E)	B	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 -1.000	62.000		125.000	2.175	No Ice 1/2" Ice 1" Ice	3.720 4.010 4.300
										0.031 0.050 0.070
VHLP2-11 (E)	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 -1.000	90.000		125.000	2.175	No Ice 1/2" Ice 1" Ice	3.720 4.010 4.300
										0.027 0.050 0.070
*hh*										

## 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 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice

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Comb. No.	Description
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	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	125 - 99.375	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.669	-0.986	1.927
			Max. Mx	8	-11.158	-345.699	-2.971
			Max. My	2	-11.092	1.240	350.859
			Max. Vy	8	20.837	-345.699	-2.971
			Max. Vx	2	-21.218	1.240	350.859
			Max. Torque	23			-1.461
L2	99.375 - 94.458	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.174	-1.237	1.841
			Max. Mx	8	-12.038	-449.048	-3.688
			Max. My	2	-11.974	1.481	456.007
			Max. Vy	8	21.193	-449.048	-3.688
			Max. Vx	2	-21.575	1.481	456.007
			Max. Torque	23			-1.459
L3	94.458 - 89	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-34.303	-1.524	1.739
			Max. Mx	8	-13.265	-565.962	-4.487
			Max. My	2	-13.204	1.747	574.917

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	89 - 85.04	Pole	Max. Vy	8	21.633	-565.962	-4.487
			Max. Vx	2	-22.016	1.747	574.917
			Max. Torque	23			-1.459
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-34.321	-1.527	1.738
			Max. Mx	8	-13.284	-566.893	-4.493
			Max. My	2	-13.223	1.749	575.864
			Max. Vy	8	21.633	-566.893	-4.493
L5	85.04 - 73.583	Pole	Max. Vx	2	-22.016	1.749	575.864
			Max. Torque	23			-1.458
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.083	-2.394	1.426
			Max. Mx	8	-19.035	-933.409	-6.768
			Max. My	2	-18.979	2.488	948.038
			Max. Vy	8	25.177	-933.409	-6.768
			Max. Vx	2	-25.564	2.488	948.038
L6	73.583 - 73	Pole	Max. Torque	23			-1.458
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.315	-2.428	1.414
			Max. Mx	8	-19.203	-948.104	-6.854
			Max. My	2	-19.147	2.516	962.948
			Max. Vy	8	25.218	-948.104	-6.854
			Max. Vx	2	-25.605	2.516	962.948
			Max. Torque	23			-1.453
L7	73 - 63	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.366	-3.021	1.189
			Max. Mx	8	-21.361	-1203.589	-8.339
			Max. My	2	-21.315	2.983	1222.102
			Max. Vy	8	25.865	-1203.589	-8.339
			Max. Vx	2	-26.251	2.983	1222.102
			Max. Torque	23			-1.453
			Max Tension	1	0.000	0.000	0.000
L8	63 - 57.333	Pole	Max. Compression	26	-50.782	-3.365	1.054
			Max. Mx	8	-22.980	-1351.402	-9.178
			Max. My	2	-22.938	3.241	1371.982
			Max. Vy	8	26.293	-1351.402	-9.178
			Max. Vx	2	-26.679	3.241	1371.982
			Max. Torque	23			-1.451
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.184	-4.106	0.757
L9	57.333 - 40.457	Pole	Max. Mx	8	-25.996	-1666.043	-10.921
			Max. My	2	-25.964	3.761	1690.892
			Max. Vy	8	27.059	-1666.043	-10.921
			Max. Vx	2	-27.442	3.761	1690.892
			Max. Torque	23			-1.450
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.644	-4.548	0.556
			Max. Mx	8	-29.120	-1877.183	-12.054
L10	40.457 - 37.833	Pole	Max. My	2	-29.091	4.097	1904.809
			Max. Vy	8	27.684	-1877.183	-12.054
			Max. Vx	2	-28.066	4.097	1904.809
			Max. Torque	23			-1.448
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-70.264	-6.089	-0.130
			Max. Mx	8	-36.863	-2602.931	-15.776
			Max. My	2	-36.854	5.141	2639.585
L11	37.833 - 12.25	Pole	Max. Vy	8	29.055	-2602.931	-15.776
			Max. Vx	2	-29.427	5.141	2639.585
			Max. Torque	23			-1.448



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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L12	12.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-76.903	-6.816	-0.441
			Max. Mx	8	-41.948	-2962.631	-17.522
			Max. My	2	-41.947	5.603	3003.483
			Max. Vy	8	29.664	-2962.631	-17.522
			Max. Vx	2	-30.031	5.603	3003.483
			Max. Torque	23			-1.446

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	28	76.903	-4.601	8.067
	Max. H <sub>x</sub>	21	31.470	29.638	0.052
	Max. H <sub>z</sub>	3	31.470	0.060	30.014
	Max. M <sub>x</sub>	2	3003.483	0.060	30.014
	Max. M <sub>z</sub>	8	2962.631	-29.647	-0.137
	Max. Torsion	7	0.943	-25.677	15.103
	Min. Vert	25	31.470	14.854	26.084
	Min. H <sub>x</sub>	8	41.960	-29.647	-0.137
	Min. H <sub>z</sub>	15	31.470	-0.077	-30.014
	Min. M <sub>x</sub>	14	-3002.952	-0.077	-30.014
	Min. M <sub>z</sub>	20	-2957.116	29.638	0.052
	Min. Torsion	23	-1.446	25.630	15.117

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	34.967	0.000	0.000	-0.193	-1.741	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	41.960	-0.060	-30.014	-3003.483	5.603	0.116
0.9 Dead+1.6 Wind 0 deg - No Ice	31.470	-0.060	-30.014	-2970.159	6.068	0.116
1.2 Dead+1.6 Wind 30 deg - No Ice	41.960	15.268	-26.937	-2669.536	-1508.787	-0.628
0.9 Dead+1.6 Wind 30 deg - No Ice	31.470	15.268	-26.937	-2640.048	-1491.650	-0.633
1.2 Dead+1.6 Wind 60 deg - No Ice	41.960	25.677	-15.103	-1512.985	-2563.859	-0.933
0.9 Dead+1.6 Wind 60 deg - No Ice	31.470	25.677	-15.103	-1496.159	-2534.968	-0.943
1.2 Dead+1.6 Wind 90 deg - No Ice	41.960	29.647	0.137	17.523	-2962.631	-0.862
0.9 Dead+1.6 Wind 90 deg - No Ice	31.470	29.647	0.137	17.370	-2929.305	-0.874
1.2 Dead+1.6 Wind 120 deg - No Ice	41.960	25.680	15.113	1515.187	-2566.541	-0.923
0.9 Dead+1.6 Wind 120 deg - No Ice	31.470	25.680	15.113	1498.457	-2537.601	-0.933
1.2 Dead+1.6 Wind 150 deg -	41.960	14.869	26.077	2609.667	-1487.194	-0.515

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Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
No Ice						
0.9 Dead+1.6 Wind 150 deg - No Ice	31.470	14.869	26.077	2580.841	-1470.201	-0.521
1.2 Dead+1.6 Wind 180 deg - No Ice	41.960	0.077	30.014	3002.952	-12.153	0.290
0.9 Dead+1.6 Wind 180 deg - No Ice	31.470	0.077	30.014	2969.770	-11.464	0.290
1.2 Dead+1.6 Wind 210 deg - No Ice	41.960	-15.221	26.919	2666.771	1498.261	1.012
0.9 Dead+1.6 Wind 210 deg - No Ice	31.470	-15.221	26.919	2637.448	1482.328	1.017
1.2 Dead+1.6 Wind 240 deg - No Ice	41.960	-25.709	15.018	1501.559	2563.616	0.864
0.9 Dead+1.6 Wind 240 deg - No Ice	31.470	-25.709	15.018	1485.006	2535.797	0.874
1.2 Dead+1.6 Wind 270 deg - No Ice	41.960	-29.638	-0.052	-7.017	2957.116	0.957
0.9 Dead+1.6 Wind 270 deg - No Ice	31.470	-29.638	-0.052	-6.864	2924.925	0.969
1.2 Dead+1.6 Wind 300 deg - No Ice	41.960	-25.630	-15.117	-1516.247	2555.723	1.435
0.9 Dead+1.6 Wind 300 deg - No Ice	31.470	-25.630	-15.117	-1499.369	2527.983	1.446
1.2 Dead+1.6 Wind 330 deg - No Ice	41.960	-14.854	-26.084	-2611.121	1480.927	0.958
0.9 Dead+1.6 Wind 330 deg - No Ice	31.470	-14.854	-26.084	-2582.141	1465.080	0.964
1.2 Dead+1.0 Ice+1.0 Temp	76.903	0.000	-0.000	0.441	-6.816	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	76.903	-0.013	-8.460	-860.575	-5.219	0.024
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	76.903	4.601	-8.067	-791.655	-456.951	-0.363
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	76.903	7.331	-4.288	-435.356	-749.391	-0.595
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	76.903	8.374	0.029	4.434	-857.716	-0.638
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	76.903	7.131	4.174	426.787	-732.548	-0.589
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	76.903	4.224	7.378	750.202	-435.346	-0.336
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	76.903	0.016	8.460	861.457	-9.202	0.062
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	76.903	-4.591	8.063	792.033	441.633	0.442
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	76.903	-7.337	4.270	433.799	736.381	0.578
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	76.903	-8.372	-0.011	-1.070	843.527	0.661
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	76.903	-7.120	-4.175	-426.017	717.169	0.704
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	76.903	-4.221	-7.380	-749.526	420.991	0.433
Dead+Wind 0 deg - Service	34.967	-0.013	-6.422	-639.248	-0.151	0.025
Dead+Wind 30 deg - Service	34.967	3.267	-5.763	-568.233	-322.410	-0.139
Dead+Wind 60 deg - Service	34.967	5.494	-3.231	-322.085	-546.865	-0.206
Dead+Wind 90 deg - Service	34.967	6.343	0.029	3.563	-631.702	-0.187
Dead+Wind 120 deg - Service	34.967	5.494	3.234	322.229	-547.440	-0.200
Dead+Wind 150 deg - Service	34.967	3.181	5.579	555.126	-317.791	-0.111
Dead+Wind 180 deg - Service	34.967	0.016	6.422	638.810	-3.927	0.062
Dead+Wind 210 deg - Service	34.967	-3.257	5.760	567.313	317.485	0.219
Dead+Wind 240 deg - Service	34.967	-5.501	3.213	319.326	544.125	0.188

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Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead+Wind 270 deg - Service	34.967	-6.341	-0.011	-1.656	627.840	0.210
Dead+Wind 300 deg - Service	34.967	-5.484	-3.234	-322.778	542.446	0.315
Dead+Wind 330 deg - Service	34.967	-3.178	-5.581	-555.760	313.770	0.210

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-34.967	0.000	0.000	34.967	0.000	0.000%
2	-0.060	-41.960	-30.014	0.060	41.960	30.014	0.000%
3	-0.060	-31.470	-30.014	0.060	31.470	30.014	0.000%
4	15.268	-41.960	-26.937	-15.268	41.960	26.937	0.000%
5	15.268	-31.470	-26.937	-15.268	31.470	26.937	0.000%
6	25.677	-41.960	-15.103	-25.677	41.960	15.103	0.000%
7	25.677	-31.470	-15.103	-25.677	31.470	15.103	0.000%
8	29.647	-41.960	0.137	-29.647	41.960	-0.137	0.000%
9	29.647	-31.470	0.137	-29.647	31.470	-0.137	0.000%
10	25.680	-41.960	15.113	-25.680	41.960	-15.113	0.000%
11	25.680	-31.470	15.113	-25.680	31.470	-15.113	0.000%
12	14.869	-41.960	26.077	-14.869	41.960	-26.077	0.000%
13	14.869	-31.470	26.077	-14.869	31.470	-26.077	0.000%
14	0.077	-41.960	30.014	-0.077	41.960	-30.014	0.000%
15	0.077	-31.470	30.014	-0.077	31.470	-30.014	0.000%
16	-15.221	-41.960	26.919	15.221	41.960	-26.919	0.000%
17	-15.221	-31.470	26.919	15.221	31.470	-26.919	0.000%
18	-25.709	-41.960	15.018	25.709	41.960	-15.018	0.000%
19	-25.709	-31.470	15.018	25.709	31.470	-15.018	0.000%
20	-29.638	-41.960	-0.052	29.638	41.960	0.052	0.000%
21	-29.638	-31.470	-0.052	29.638	31.470	0.052	0.000%
22	-25.630	-41.960	-15.117	25.630	41.960	15.117	0.000%
23	-25.630	-31.470	-15.117	25.630	31.470	15.117	0.000%
24	-14.854	-41.960	-26.084	14.854	41.960	26.084	0.000%
25	-14.854	-31.470	-26.084	14.854	31.470	26.084	0.000%
26	0.000	-76.903	0.000	-0.000	76.903	0.000	0.000%
27	-0.013	-76.903	-8.460	0.013	76.903	8.460	0.000%
28	4.601	-76.903	-8.067	-4.601	76.903	8.067	0.000%
29	7.331	-76.903	-4.288	-7.331	76.903	4.288	0.000%
30	8.374	-76.903	0.029	-8.374	76.903	-0.029	0.000%
31	7.131	-76.903	4.174	-7.131	76.903	-4.174	0.000%
32	4.224	-76.903	7.378	-4.224	76.903	-7.378	0.000%
33	0.016	-76.903	8.460	-0.016	76.903	-8.460	0.000%
34	-4.591	-76.903	8.063	4.591	76.903	-8.063	0.000%
35	-7.337	-76.903	4.270	7.337	76.903	-4.270	0.000%
36	-8.372	-76.903	-0.011	8.372	76.903	0.011	0.000%
37	-7.120	-76.903	-4.175	7.120	76.903	4.175	0.000%
38	-4.221	-76.903	-7.380	4.221	76.903	7.380	0.000%
39	-0.013	-34.967	-6.422	0.013	34.967	6.422	0.000%
40	3.267	-34.967	-5.763	-3.267	34.967	5.763	0.000%
41	5.494	-34.967	-3.231	-5.494	34.967	3.231	0.000%
42	6.343	-34.967	0.029	-6.343	34.967	-0.029	0.000%
43	5.494	-34.967	3.234	-5.494	34.967	-3.234	0.000%
44	3.181	-34.967	5.579	-3.181	34.967	-5.579	0.000%
45	0.016	-34.967	6.422	-0.016	34.967	-6.422	0.000%
46	-3.257	-34.967	5.760	3.257	34.967	-5.760	0.000%
47	-5.501	-34.967	3.213	5.501	34.967	-3.213	0.000%
48	-6.341	-34.967	-0.011	6.341	34.967	0.011	0.000%
49	-5.484	-34.967	-3.234	5.484	34.967	3.234	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
50	-3.178	-34.967	-5.581	3.178	34.967	5.581	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	6	0.0000001	0.00009303
3	Yes	5	0.0000001	0.00079145
4	Yes	8	0.0000001	0.00005164
5	Yes	7	0.0000001	0.00023202
6	Yes	8	0.0000001	0.00005312
7	Yes	7	0.0000001	0.00023930
8	Yes	6	0.0000001	0.00018472
9	Yes	6	0.0000001	0.00006263
10	Yes	8	0.0000001	0.00005026
11	Yes	7	0.0000001	0.00023048
12	Yes	8	0.0000001	0.00005212
13	Yes	7	0.0000001	0.00023736
14	Yes	6	0.0000001	0.00011840
15	Yes	5	0.0000001	0.00083800
16	Yes	8	0.0000001	0.00005377
17	Yes	7	0.0000001	0.00024122
18	Yes	8	0.0000001	0.00005099
19	Yes	7	0.0000001	0.00022941
20	Yes	6	0.0000001	0.00081651
21	Yes	6	0.0000001	0.00026336
22	Yes	8	0.0000001	0.00005378
23	Yes	7	0.0000001	0.00024193
24	Yes	8	0.0000001	0.00005110
25	Yes	7	0.0000001	0.00022968
26	Yes	6	0.0000001	0.00014237
27	Yes	8	0.0000001	0.00025056
28	Yes	8	0.0000001	0.00046606
29	Yes	8	0.0000001	0.00044787
30	Yes	8	0.0000001	0.00025145
31	Yes	8	0.0000001	0.00041786
32	Yes	8	0.0000001	0.00044184
33	Yes	8	0.0000001	0.00024959
34	Yes	8	0.0000001	0.00046146
35	Yes	8	0.0000001	0.00041959
36	Yes	8	0.0000001	0.00024787
37	Yes	8	0.0000001	0.00042691
38	Yes	8	0.0000001	0.00042248
39	Yes	5	0.0000001	0.00036014
40	Yes	6	0.0000001	0.00032367
41	Yes	6	0.0000001	0.00033594
42	Yes	5	0.0000001	0.00066654
43	Yes	6	0.0000001	0.00030613
44	Yes	6	0.0000001	0.00033003
45	Yes	5	0.0000001	0.00036974
46	Yes	6	0.0000001	0.00034534
47	Yes	6	0.0000001	0.00029898
48	Yes	5	0.0000001	0.00085370
49	Yes	6	0.0000001	0.00034228
50	Yes	6	0.0000001	0.00030257

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### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 99.375	20.103	40	1.485	0.004
L2	99.375 - 94.458	12.666	40	1.201	0.002
L3	94.458 - 89	11.456	40	1.149	0.002
L4	89 - 85.04	10.170	40	1.101	0.001
L5	88.957 - 73.583	10.160	40	1.101	0.001
L6	73.583 - 73	6.835	40	0.940	0.001
L7	73 - 63	6.721	40	0.934	0.001
L8	63 - 57.333	4.940	40	0.766	0.001
L9	57.333 - 40.457	4.069	40	0.702	0.001
L10	45.54 - 37.833	2.545	40	0.532	0.000
L11	37.833 - 12.25	1.733	40	0.463	0.000
L12	12.25 - 0	0.163	40	0.128	0.000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	APXVTM14-C-120 w/ Mount Pipe	40	20.103	1.485	0.004	14619
124.000	VHLP2-18	40	19.795	1.474	0.004	14619
123.000	Climbing Ladder (Flat)	40	19.487	1.463	0.004	14619
115.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	40	17.048	1.374	0.003	7309
105.000	(2) LNX-6514DS-A1M w/ Mount Pipe	40	14.158	1.263	0.002	3654
82.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	8.593	1.033	0.001	5774

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 99.375	94.158	4	6.964	0.018
L2	99.375 - 94.458	59.393	4	5.637	0.008
L3	94.458 - 89	53.727	4	5.392	0.007
L4	89 - 85.04	47.703	4	5.170	0.006
L5	88.957 - 73.583	47.657	4	5.168	0.006
L6	73.583 - 73	32.078	4	4.414	0.005
L7	73 - 63	31.542	4	4.386	0.005
L8	63 - 57.333	23.188	4	3.598	0.003
L9	57.333 - 40.457	19.100	4	3.297	0.003
L10	45.54 - 37.833	11.949	4	2.499	0.002
L11	37.833 - 12.25	8.135	4	2.176	0.002
L12	12.25 - 0	0.764	4	0.601	0.000

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 876364)	<b>Page</b> 21 of 36
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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	APXVTM14-C-120 w/ Mount Pipe	4	94.158	6.964	0.018	3215
124.000	VHLP2-18	4	92.718	6.912	0.017	3215
123.000	Climbing Ladder (Flat)	4	91.279	6.861	0.017	3215
115.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	4	79.885	6.446	0.014	1606
105.000	(2) LNX-6514DS-A1M w/ Mount Pipe	4	66.374	5.928	0.010	801
82.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	40.315	4.850	0.006	1252

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	125 - 123.719	TP24.008x18.5x0.188	25.625	0.000	0.0	11.062	-2.595	821.862	0.003
	11.226					-3.203	832.905	0.004	
	11.390					-3.289	841.949	0.004	
	11.554					-3.376	850.903	0.004	
	11.718					-3.465	859.768	0.004	
	11.882					-3.556	868.543	0.004	
	12.046					-3.648	877.229	0.004	
	12.210					-6.138	885.824	0.007	
	12.373					-6.237	894.330	0.007	
	12.537					-6.339	902.746	0.007	
	13.029					-6.661	927.457	0.007	
	13.193					-6.773	935.514	0.007	

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	<p><b>Project</b></p>	<p><b>Date</b> 15:00:35 12/02/16</p>
	<p><b>Client</b> Crown Castle</p>	<p><b>Designed by</b> Harisha</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
	107.063 - 105.781					13.357	-6.887	943.482	0.007
	105.781 - 104.5					13.521	-10.512	951.360	0.011
	104.5 - 103.219					13.685	-10.642	959.148	0.011
	103.219 - 101.938					13.849	-10.777	966.847	0.011
	101.938 - 100.656					14.012	-10.914	974.456	0.011
	100.656 - 99.375					14.177	-11.055	981.975	0.011
L2	99.375 - 98.1458	TP25.065x24.008x0.409	4.917	0.000	0.0	30.989	-11.280	1122.290	0.010
	98.1458 - 96.9165					31.332	-11.494	1134.720	0.010
	96.9165 - 95.6873					31.675	-11.711	1147.150	0.010
	95.6873 - 94.458					32.018	-11.931	1159.580	0.010
L3	94.458 - 93.3664	TP26.239x25.065x0.571	5.458	0.000	0.0	44.792	-12.174	1622.580	0.008
	93.3664 - 92.2748					45.217	-12.415	1637.980	0.008
	92.2748 - 91.1832					45.642	-12.659	1653.380	0.008
	91.1832 - 90.0916					46.067	-12.904	1668.770	0.008
L4	90.0916 - 89	TP27.09x26.239x0.676	3.960	0.000	0.0	46.492	-13.152	1684.170	0.008
	89 - 88.957					54.853	-13.171	1956.680	0.007
	88.957 - 85.04					56.659	-8.686	2021.110	0.004
L5	88.957 - 85.04	TP29.14x25.873x0.475	15.374	0.000	0.0	39.544	-6.029	1693.840	0.004
	85.04 - 83.9985					39.878	-14.944	1708.130	0.009
	83.9985 - 82.9569					40.211	-15.169	1722.430	0.009
	82.9569 - 81.9154					40.545	-17.019	1736.720	0.010
	81.9154 - 80.8738					40.879	-17.250	1751.010	0.010
	80.8738 - 79.8323					41.212	-17.483	1765.310	0.010
	79.8323 - 78.7907					41.546	-17.717	1779.600	0.010
	78.7907 - 77.7492					41.880	-17.953	1793.890	0.010
	77.7492 - 76.7076					42.213	-18.191	1808.190	0.010
	76.7076 - 75.6661					42.547	-18.431	1822.480	0.010
	75.6661 - 74.6245					42.881	-18.672	1836.780	0.010
	74.6245 - 73.583					43.215	-18.915	1851.070	0.010
L6	73.583 - 73 (6)	TP29.264x29.14x0.609	0.583	0.000	0.0	55.409	-19.083	2372.930	0.008
L7	73 - 72	TP31.389x29.264x0.369	10.000	0.000	0.0	34.068	-19.285	1987.720	0.010
	72 - 71					34.316	-19.499	2002.230	0.010
	71 - 70					34.565	-19.714	2016.740	0.010
	70 - 69					34.814	-19.930	2031.250	0.010
	69 - 68					35.062	-20.148	2045.770	0.010

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 876364)	<b>Page</b> 23 of 36
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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L8	68 - 67	TP32.594x31.389x0.566	5.667	0.000	0.0	35.311	-20.368	2060.280	0.010
	67 - 66					35.560	-20.588	2074.790	0.010
	66 - 65					35.809	-20.810	2089.300	0.010
	65 - 64					36.057	-21.033	2103.810	0.010
	64 - 63					36.306	-21.257	2118.330	0.010
	63 - 61.8666					55.762	-21.581	2263.770	0.010
	61.8666 - 60.7332					56.194	-21.903	2281.320	0.010
	60.7332 - 59.5998					56.626	-22.226	2298.880	0.010
	59.5998 - 58.4664					57.059	-22.552	2316.430	0.010
	58.4664 - 57.333					57.491	-22.880	2333.980	0.010
L9	57.333 - 56.2609	TP36.18x32.594x0.436	16.876	0.000	0.0	44.787	-23.145	2605.240	0.009
	56.2609 - 55.1888					45.102	-23.416	2623.570	0.009
	55.1888 - 54.1167					45.417	-23.687	2641.900	0.009
	54.1167 - 53.0446					45.732	-23.960	2660.230	0.009
	53.0446 - 51.9725					46.047	-24.235	2678.560	0.009
	51.9725 - 50.9005					46.362	-24.511	2696.880	0.009
	50.9005 - 49.8284					46.677	-24.788	2715.210	0.009
	49.8284 - 48.7563					46.993	-25.067	2733.540	0.009
	48.7563 - 47.6842					47.307	-25.348	2751.870	0.009
	47.6842 - 46.6121					47.623	-25.630	2770.200	0.009
L10	46.6121 - 45.54	TP36.233x34.6x0.493	7.707	0.000	0.0	47.938	-25.913	2788.520	0.009
	45.54 - 40.457					49.431	-13.420	2875.420	0.005
	40.457 - 39.145					55.091	-14.830	3210.130	0.005
	39.145 - 37.833					55.527	-28.656	3235.500	0.009
L11	37.833 - 36.5538	TP41.654x36.233x0.466	25.583	0.000	0.0	55.962	-29.043	3260.870	0.009
	36.5538 - 35.2747					53.359	-29.412	3110.440	0.009
	35.2747 - 33.9956					53.761	-29.784	3133.840	0.010
	33.9956 - 32.7164					54.162	-30.158	3157.230	0.010
	32.7164 - 31.4373					54.563	-30.534	3180.630	0.010
	31.4373 - 30.1581					54.965	-30.913	3204.030	0.010
	30.1581 - 28.879					55.366	-31.293	3227.420	0.010
	28.879 - 27.5998					55.767	-31.675	3250.820	0.010
	27.5998 - 26.3207					56.169	-32.060	3274.210	0.010



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
	26.3207 - 25.0415					56.972	-32.835	3321.000	0.010
	25.0415 - 23.7624					57.373	-33.226	3344.400	0.010
	23.7624 - 22.4832					57.774	-33.619	3367.790	0.010
	22.4832 - 21.204					58.175	-34.014	3391.190	0.010
	21.204 - 19.9249					58.577	-34.411	3414.590	0.010
	19.9249 - 18.6458					58.978	-34.811	3437.980	0.010
	18.6458 - 17.3666					59.380	-35.212	3461.380	0.010
	17.3666 - 16.0875					59.781	-35.615	3484.770	0.010
	16.0875 - 14.8083					60.182	-36.021	3508.170	0.010
	14.8083 - 13.5292					60.584	-36.428	3531.560	0.010
	13.5292 - 12.25					60.985	-36.838	3554.960	0.010
L12	12.25 - 11.2292	TP44.25x41.654x0.546	12.250	0.000	0.0	71.608	-37.260	3923.890	0.009
	11.2292 - 10.2083					71.983	-37.677	3944.430	0.010
	10.2083 - 9.1875					72.358	-38.096	3964.970	0.010
	9.1875 - 8.16667					72.733	-38.516	3985.510	0.010
	8.16667 - 7.14583					73.108	-38.939	4006.050	0.010
	7.14583 - 6.125					73.483	-39.363	4026.590	0.010
	6.125 - 5.10417					73.857	-39.789	4047.130	0.010
	5.10417 - 4.08333					74.232	-40.217	4067.670	0.010
	4.08333 - 3.0625					74.607	-40.647	4088.210	0.010
	3.0625 - 2.04167					74.982	-41.078	4108.750	0.010
	2.04167 - 1.02083					75.357	-41.512	4129.300	0.010
	1.02083 - 0					75.732	-41.947	4149.840	0.010

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	125 - 123.719	TP24.008x18.5x0.188	15.935	313.447	0.051	0.000	313.447	0.000
	123.719 - 122.438		25.078	322.412	0.078	0.000	322.412	0.000
	122.438 - 121.156		35.435	330.718	0.107	0.000	330.718	0.000

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Section No.	Elevation ft	Size	$M_{xx}$ kip-ft	$\phi M_{xx}$ kip-ft	Ratio $\frac{M_{xx}}{\phi M_{xx}}$	$M_{yy}$ kip-ft	$\phi M_{yy}$ kip-ft	Ratio $\frac{M_{yy}}{\phi M_{yy}}$
	121.156 - 119.875		45.896	339.092	0.135	0.000	339.092	0.000
	119.875 - 118.594		56.459	347.533	0.162	0.000	347.533	0.000
	118.594 - 117.313		67.128	356.037	0.189	0.000	356.037	0.000
	117.313 - 116.031		77.901	364.604	0.214	0.000	364.604	0.000
	116.031 - 114.75		97.328	373.233	0.261	0.000	373.233	0.000
	114.75 - 113.469		114.734	381.921	0.300	0.000	381.921	0.000
	113.469 - 112.188		132.256	390.668	0.339	0.000	390.668	0.000
	112.188 - 110.906		149.895	399.471	0.375	0.000	399.471	0.000
	110.906 - 109.625		167.651	408.330	0.411	0.000	408.330	0.000
	109.625 - 108.344		185.523	417.242	0.445	0.000	417.242	0.000
	108.344 - 107.063		203.514	426.207	0.478	0.000	426.207	0.000
	107.063 - 105.781		221.623	435.222	0.509	0.000	435.222	0.000
	105.781 - 104.5		243.654	444.286	0.548	0.000	444.286	0.000
	104.5 - 103.219		270.577	453.397	0.597	0.000	453.397	0.000
	103.219 - 101.938		297.609	462.555	0.643	0.000	462.555	0.000
	101.938 - 100.656		324.752	471.757	0.688	0.000	471.757	0.000
	100.656 - 99.375		352.003	481.003	0.732	0.000	481.003	0.000
L2	99.375 - 98.1458	TP25.065x24.008x0.409	378.268	545.698	0.693	0.000	545.698	0.000
	98.1458 - 96.9165		404.669	557.953	0.725	0.000	557.953	0.000
	96.9165 - 95.6873		431.206	570.344	0.756	0.000	570.344	0.000
	95.6873 - 94.458		457.879	582.872	0.786	0.000	582.872	0.000
L3	94.458 - 93.3664	TP26.239x25.065x0.571	481.685	812.842	0.593	0.000	812.842	0.000
	93.3664 - 92.2748		505.606	828.518	0.610	0.000	828.518	0.000
	92.2748 - 91.1832		529.644	844.342	0.627	0.000	844.342	0.000
	91.1832 - 90.0916		553.799	860.317	0.644	0.000	860.317	0.000
	90.0916 - 89		578.072	876.442	0.660	0.000	876.442	0.000
L4	89 - 88.957	TP27.09x26.239x0.676	579.031	1010.300	0.573	0.000	1010.300	0.000
	88.957 - 85.04		395.249	1078.817	0.366	0.000	1078.817	0.000
L5	88.957 - 85.04	TP29.14x25.873x0.475	272.012	904.433	0.301	0.000	904.433	0.000
	85.04 - 83.9985		691.009	919.900	0.751	0.000	919.900	0.000
	83.9985 - 82.9569		714.849	935.500	0.764	0.000	935.500	0.000
	82.9569 - 81.9154		743.214	951.225	0.781	0.000	951.225	0.000

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Section No.	Elevation ft	Size	$M_{xx}$ kip-ft	$\phi M_{xx}$ kip-ft	Ratio $\frac{M_{xx}}{\phi M_{xx}}$	$M_{yy}$ kip-ft	$\phi M_{yy}$ kip-ft	Ratio $\frac{M_{yy}}{\phi M_{yy}}$
	81.9154 - 80.8738		769.628	967.083	0.796	0.000	967.083	0.000
	80.8738 - 79.8323		796.133	983.075	0.810	0.000	983.075	0.000
	79.8323 - 78.7907		822.729	999.192	0.823	0.000	999.192	0.000
	78.7907 - 77.7492		849.417	1015.442	0.836	0.000	1015.442	0.000
	77.7492 - 76.7076		876.192	1031.825	0.849	0.000	1031.825	0.000
	76.7076 - 75.6661		903.067	1048.342	0.861	0.000	1048.342	0.000
	75.6661 - 74.6245		930.025	1064.992	0.873	0.000	1064.992	0.000
	74.6245 - 73.583		957.075	1081.767	0.885	0.000	1081.767	0.000
L6	73.583 - 73 (6)	TP29.264x29.14x0.609	972.258	1379.875	0.705	0.000	1379.875	0.000
L7	73 - 72	TP31.389x29.264x0.369	998.358	1184.108	0.843	0.000	1184.108	0.000
	72 - 71		1024.525	1201.567	0.853	0.000	1201.567	0.000
	71 - 70		1050.767	1219.158	0.862	0.000	1219.158	0.000
	70 - 69		1077.067	1236.875	0.871	0.000	1236.875	0.000
	69 - 68		1103.442	1254.725	0.879	0.000	1254.725	0.000
	68 - 67		1129.883	1272.692	0.888	0.000	1272.692	0.000
	67 - 66		1156.383	1290.800	0.896	0.000	1290.800	0.000
	66 - 65		1182.967	1309.025	0.904	0.000	1309.025	0.000
	65 - 64		1209.608	1327.383	0.911	0.000	1327.383	0.000
	64 - 63		1236.317	1345.867	0.919	0.000	1345.867	0.000
L8	63 - 61.8666	TP32.594x31.389x0.566	1266.683	1431.383	0.885	0.000	1431.383	0.000
	61.8666 - 60.7332		1297.167	1453.867	0.892	0.000	1453.867	0.000
	60.7332 - 59.5998		1327.767	1476.525	0.899	0.000	1476.525	0.000
	59.5998 - 58.4664		1358.467	1499.358	0.906	0.000	1499.358	0.000
	58.4664 - 57.333		1389.292	1522.367	0.913	0.000	1522.367	0.000
L9	57.333 - 56.2609	TP36.18x32.594x0.436	1418.542	1725.400	0.822	0.000	1725.400	0.000
	56.2609 - 55.1888		1447.875	1749.925	0.827	0.000	1749.925	0.000
	55.1888 - 54.1167		1477.292	1774.625	0.832	0.000	1774.625	0.000
	54.1167 - 53.0446		1506.800	1799.492	0.837	0.000	1799.492	0.000
	53.0446 - 51.9725		1536.383	1824.542	0.842	0.000	1824.542	0.000
	51.9725 - 50.9005		1566.058	1849.758	0.847	0.000	1849.758	0.000
	50.9005 - 49.8284		1595.817	1875.142	0.851	0.000	1875.142	0.000
	49.8284 - 48.7563		1625.658	1900.708	0.855	0.000	1900.708	0.000
	48.7563 - 47.6842		1655.583	1926.442	0.859	0.000	1926.442	0.000
	47.6842 - 46.6121		1685.592	1952.350	0.863	0.000	1952.350	0.000
	46.6121 - 45.54		1715.692	1978.433	0.867	0.000	1978.433	0.000
L10	45.54 - 40.457	TP36.233x34.6x0.493	894.633	2104.450	0.425	0.000	2104.450	0.000
	40.457 - 35.374		965.250	2308.383	0.418	0.000	2308.383	0.000

<p><b>tnxTower</b></p> <p><b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<p><b>Job</b> 84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 876364)</p>	<p><b>Page</b> 27 of 36</p>
	<p><b>Project</b></p>	<p><b>Date</b> 15:00:35 12/02/16</p>
	<p><b>Client</b> Crown Castle</p>	<p><b>Designed by</b> Harisha</p>

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{ux}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	$M_{uy}$ kip-ft	$\phi M_{uy}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L11	40.457 - 39.145	TP41.654x36.233x0.466	1897.500	2345.267	0.809	0.000	2345.267	0.000
	39.145 - 37.833		1935.233	2382.442	0.812	0.000	2382.442	0.000
	37.833 - 36.5538		1972.125	2293.425	0.860	0.000	2293.425	0.000
	36.5538 - 35.2747		2009.117	2328.275	0.863	0.000	2328.275	0.000
	35.2747 - 33.9956		2046.200	2363.392	0.866	0.000	2363.392	0.000
	33.9956 - 32.7164		2083.375	2398.767	0.869	0.000	2398.767	0.000
	32.7164 - 31.4373		2120.650	2434.408	0.871	0.000	2434.408	0.000
	31.4373 - 30.1581		2158.017	2470.308	0.874	0.000	2470.308	0.000
	30.1581 - 28.879		2195.483	2506.475	0.876	0.000	2506.475	0.000
	28.879 - 27.5998		2233.042	2542.908	0.878	0.000	2542.908	0.000
	27.5998 - 26.3207		2270.692	2579.600	0.880	0.000	2579.600	0.000
	26.3207 - 25.0415		2308.442	2616.558	0.882	0.000	2616.558	0.000
	25.0415 - 23.7624		2346.283	2653.775	0.884	0.000	2653.775	0.000
	23.7624 - 22.4832		2384.225	2691.250	0.886	0.000	2691.250	0.000
	22.4832 - 21.204		2422.258	2729.000	0.888	0.000	2729.000	0.000
	21.204 - 19.9249		2460.383	2767.000	0.889	0.000	2767.000	0.000
	19.9249 - 18.6458		2498.608	2805.275	0.891	0.000	2805.275	0.000
	18.6458 - 17.3666		2536.925	2843.808	0.892	0.000	2843.808	0.000
	17.3666 - 16.0875		2575.342	2882.600	0.893	0.000	2882.600	0.000
	L12		16.0875 - 14.8083	TP44.25x41.654x0.546	2613.850	2921.658	0.895	0.000
14.8083 - 13.5292		2652.458	2960.983		0.896	0.000	2960.983	0.000
13.5292 - 12.25		2691.158	3000.567		0.897	0.000	3000.567	0.000
12.25 - 11.2292		2722.108	3316.783		0.821	0.000	3316.783	0.000
11.2292 - 10.2083		2753.117	3351.825		0.821	0.000	3351.825	0.000
10.2083 - 9.1875		2784.192	3387.058		0.822	0.000	3387.058	0.000
9.1875 - 8.16667		2815.317	3422.467		0.823	0.000	3422.467	0.000
8.16667 - 7.14583		2846.500	3458.067		0.823	0.000	3458.067	0.000
7.14583 - 6.125		2877.742	3493.842		0.824	0.000	3493.842	0.000
6.125 - 5.10417		2909.042	3529.808		0.824	0.000	3529.808	0.000
5.10417 - 4.08333	2940.400	3565.958	0.825	0.000	3565.958	0.000		

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 876364)	<b>Page</b> 28 of 36
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Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{ux}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	$M_{uy}$ kip-ft	$\phi M_{uy}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
	4.08333 - 3.0625		2971.817	3602.283	0.825	0.000	3602.283	0.000
	3.0625 - 2.04167		3003.292	3638.800	0.825	0.000	3638.800	0.000
	2.04167 - 1.02083		3034.825	3675.508	0.826	0.000	3675.508	0.000
	1.02083 - 0		3066.408	3712.392	0.826	0.000	3712.392	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$		
L1	125 - 123.719	TP24.008x18.5x0.188	6.683	410.931	0.016	0.291	627.659	0.000		
	123.719 - 122.438		8.038	416.452	0.019	0.548	645.612	0.001		
	122.438 - 121.156		8.118	420.974	0.019	0.031	662.246	0.000		
	121.156 - 119.875		8.199	425.452	0.019	0.031	679.014	0.000		
	119.875 - 118.594		8.280	429.884	0.019	0.031	695.914	0.000		
	118.594 - 117.313		8.363	434.272	0.019	0.031	712.944	0.000		
	117.313 - 116.031		8.445	438.614	0.019	0.031	730.099	0.000		
	116.031 - 114.75		13.539	442.912	0.031	0.242	747.378	0.000		
	114.75 - 113.469		13.630	447.165	0.030	0.242	764.776	0.000		
	113.469 - 112.188		13.721	451.373	0.030	0.242	782.291	0.000		
	112.188 - 110.906		13.812	455.537	0.030	0.242	799.919	0.000		
	110.906 - 109.625		13.904	459.655	0.030	0.242	817.658	0.000		
	109.625 - 108.344		13.996	463.728	0.030	0.242	835.508	0.000		
	108.344 - 107.063		14.088	467.757	0.030	0.242	853.458	0.000		
	107.063 - 105.781		14.181	471.741	0.030	0.242	871.508	0.000		
	105.781 - 104.5		20.974	475.680	0.044	0.636	889.658	0.001		
	104.5 - 103.219		21.061	479.574	0.044	0.635	907.900	0.001		
	103.219 - 101.938		21.148	483.423	0.044	0.635	926.242	0.001		
	101.938 - 100.656		21.234	487.228	0.044	0.635	944.667	0.001		
	100.656 - 99.375		21.320	490.987	0.043	0.635	963.183	0.001		
	L2		99.375 - 98.1458	TP25.065x24.008x0.409	21.423	561.147	0.038	0.635	1092.733	0.001
			98.1458 - 96.9165		21.534	567.361	0.038	0.635	1117.275	0.001

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	<b>Project</b>	<b>Date</b> 15:00:35 12/02/16
	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	96.9165 - 95.6873		21.645	573.575	0.038	0.635	1142.083	0.001
	95.6873 - 94.458		21.757	579.788	0.038	0.635	1167.167	0.001
L3	94.458 - 93.3664	TP26.239x25.065x0.571	21.861	811.292	0.027	0.635	1627.675	0.000
	93.3664 - 92.2748		21.968	818.990	0.027	0.635	1659.058	0.000
	92.2748 - 91.1832		22.075	826.689	0.027	0.634	1690.750	0.000
	91.1832 - 90.0916		22.183	834.387	0.027	0.634	1722.733	0.000
	90.0916 - 89		22.291	842.085	0.026	0.634	1755.025	0.000
L4	89 - 88.957	TP27.09x26.239x0.676	22.291	978.339	0.023	0.634	2023.075	0.000
	88.957 - 85.04		13.553	1010.550	0.013	0.376	2160.267	0.000
L5	88.957 - 85.04	TP29.14x25.873x0.475	9.210	846.920	0.011	0.259	1811.083	0.000
	85.04 - 83.9985		22.848	854.067	0.027	0.634	1842.050	0.000
	83.9985 - 82.9569		22.936	861.214	0.027	0.634	1873.283	0.000
	82.9569 - 81.9154		25.322	868.361	0.029	0.634	1904.775	0.000
	81.9154 - 80.8738		25.409	875.507	0.029	0.632	1936.533	0.000
	80.8738 - 79.8323		25.496	882.654	0.029	0.632	1968.550	0.000
	79.8323 - 78.7907		25.583	889.801	0.029	0.632	2000.833	0.000
	78.7907 - 77.7492		25.671	896.947	0.029	0.632	2033.375	0.000
	77.7492 - 76.7076		25.759	904.094	0.028	0.631	2066.183	0.000
	76.7076 - 75.6661		25.846	911.241	0.028	0.631	2099.250	0.000
	75.6661 - 74.6245		25.935	918.388	0.028	0.631	2132.583	0.000
	74.6245 - 73.583		26.023	925.534	0.028	0.631	2166.175	0.000
L6	73.583 - 73 (6)	TP29.264x29.14x0.609	26.067	1186.470	0.022	0.631	2763.125	0.000
L7	73 - 72	TP31.389x29.264x0.369	26.143	993.858	0.026	0.631	2371.108	0.000
	72 - 71		26.211	1001.110	0.026	0.631	2406.075	0.000
	71 - 70		26.279	1008.370	0.026	0.631	2441.300	0.000
	70 - 69		26.347	1015.630	0.026	0.631	2476.775	0.000
	69 - 68		26.415	1022.880	0.026	0.631	2512.508	0.000
	68 - 67		26.483	1030.140	0.026	0.631	2548.500	0.000
	67 - 66		26.551	1037.390	0.026	0.630	2584.750	0.000
	66 - 65		26.619	1044.650	0.025	0.630	2621.250	0.000
	65 - 64		26.687	1051.910	0.025	0.630	2658.008	0.000
	64 - 63		26.755	1059.160	0.025	0.630	2695.025	0.000
L8	63 - 61.8666	TP32.594x31.389x0.566	26.850	1131.890	0.024	0.630	2866.258	0.000
	61.8666 - 60.7332		26.950	1140.660	0.024	0.630	2911.283	0.000
	60.7332 - 59.5998		27.050	1149.440	0.024	0.630	2956.658	0.000
	59.5998 - 58.4664		27.150	1158.210	0.023	0.630	3002.375	0.000
	58.4664 - 57.333		27.250	1166.990	0.023	0.630	3048.450	0.000
L9	57.333 - 56.2609	TP36.18x32.594x0.436	27.331	1302.620	0.021	0.630	3455.025	0.000

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Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	56.2609 - 55.1888		27.410	1311.790	0.021	0.630	3504.133	0.000
	55.1888 - 54.1167		27.489	1320.950	0.021	0.630	3553.592	0.000
	54.1167 - 53.0446		27.568	1330.110	0.021	0.630	3603.392	0.000
	53.0446 - 51.9725		27.647	1339.280	0.021	0.629	3653.542	0.000
	51.9725 - 50.9005		27.726	1348.440	0.021	0.629	3704.033	0.000
	50.9005 - 49.8284		27.806	1357.610	0.020	0.629	3754.875	0.000
	49.8284 - 48.7563		27.885	1366.770	0.020	0.629	3806.067	0.000
	48.7563 - 47.6842		27.965	1375.930	0.020	0.629	3857.600	0.000
	47.6842 - 46.6121		28.044	1385.100	0.020	0.629	3909.483	0.000
	46.6121 - 45.54		28.124	1394.260	0.020	0.629	3961.708	0.000
	45.54 - 40.457		13.909	1437.710	0.010	0.302	4214.050	0.000
L10	45.54 - 40.457	TP36.233x34.6x0.493	14.747	1605.070	0.009	0.326	4622.417	0.000
	40.457 - 39.145		28.727	1617.750	0.018	0.629	4696.267	0.000
	39.145 - 37.833		28.819	1630.430	0.018	0.629	4770.700	0.000
L11	37.833 - 36.5538	TP41.654x36.233x0.466	28.894	1555.220	0.019	0.629	4592.450	0.000
	36.5538 - 35.2747		28.969	1566.920	0.018	0.629	4662.242	0.000
	35.2747 - 33.9956		29.043	1578.620	0.018	0.628	4732.558	0.000
	33.9956 - 32.7164		29.117	1590.310	0.018	0.628	4803.400	0.000
	32.7164 - 31.4373		29.192	1602.010	0.018	0.628	4874.767	0.000
	31.4373 - 30.1581		29.266	1613.710	0.018	0.628	4946.667	0.000
	30.1581 - 28.879		29.340	1625.410	0.018	0.628	5019.083	0.000
	28.879 - 27.5998		29.415	1637.110	0.018	0.628	5092.033	0.000
	27.5998 - 26.3207		29.489	1648.800	0.018	0.628	5165.508	0.000
	26.3207 - 25.0415		29.564	1660.500	0.018	0.628	5239.508	0.000
	25.0415 - 23.7624		29.638	1672.200	0.018	0.628	5314.033	0.000
	23.7624 - 22.4832		29.713	1683.900	0.018	0.628	5389.092	0.000
	22.4832 - 21.204		29.787	1695.590	0.018	0.628	5464.667	0.000
	21.204 - 19.9249		29.862	1707.290	0.017	0.628	5540.775	0.000
	19.9249 - 18.6458		29.936	1718.990	0.017	0.628	5617.408	0.000
	18.6458 - 17.3666		30.011	1730.690	0.017	0.628	5694.567	0.000
	17.3666 - 16.0875		30.085	1742.390	0.017	0.628	5772.250	0.000

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Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L12	16.0875 - 14.8083	TP44.25x41.654x0.546	30.160	1754.080	0.017	0.628	5850.467	0.000
	14.8083 - 13.5292		30.235	1765.780	0.017	0.628	5929.200	0.000
	13.5292 - 12.25		30.309	1777.480	0.017	0.628	6008.467	0.000
	12.25 - 11.2292		30.359	1961.950	0.015	0.628	6641.683	0.000
	11.2292 - 10.2083		30.416	1972.220	0.015	0.628	6711.858	0.000
	10.2083 - 9.1875		30.473	1982.490	0.015	0.628	6782.400	0.000
	9.1875 - 8.16667		30.530	1992.760	0.015	0.628	6853.308	0.000
	8.16667 - 7.14583		30.587	2003.030	0.015	0.628	6924.583	0.000
	7.14583 - 6.125		30.644	2013.300	0.015	0.628	6996.233	0.000
	6.125 - 5.10417		30.700	2023.570	0.015	0.628	7068.250	0.000
	5.10417 - 4.08333		30.756	2033.840	0.015	0.628	7140.633	0.000
	4.08333 - 3.0625		30.813	2044.110	0.015	0.628	7213.383	0.000
	3.0625 - 2.04167		30.869	2054.380	0.015	0.628	7286.508	0.000
	2.04167 - 1.02083		30.925	2064.650	0.015	0.628	7360.000	0.000
	1.02083 - 0		30.981	2074.920	0.015	0.628	7433.858	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	125 - 123.719	0.003	0.051	0.000	0.016	0.000	0.054	1.000	4.8.2 ✓
	123.719 - 122.438	0.004	0.078	0.000	0.019	0.001	0.082	1.000	4.8.2 ✓
	122.438 - 121.156	0.004	0.107	0.000	0.019	0.000	0.111	1.000	4.8.2 ✓
	121.156 - 119.875	0.004	0.135	0.000	0.019	0.000	0.140	1.000	4.8.2 ✓
	119.875 - 118.594	0.004	0.162	0.000	0.019	0.000	0.167	1.000	4.8.2 ✓
	118.594 - 117.313	0.004	0.189	0.000	0.019	0.000	0.193	1.000	4.8.2 ✓
	117.313 - 116.031	0.004	0.214	0.000	0.019	0.000	0.218	1.000	4.8.2 ✓
	116.031 - 114.75	0.007	0.261	0.000	0.031	0.000	0.269	1.000	4.8.2 ✓
	114.75 -	0.007	0.300	0.000	0.030	0.000	0.308	1.000	4.8.2 ✓



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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$	$\frac{V_u}{\phi V_n}$	$\frac{T_u}{\phi T_n}$			
	113.469						✓		
	113.469 - 112.188	0.007	0.339	0.000	0.030	0.000	0.347	1.000	4.8.2 ✓
	112.188 - 110.906	0.007	0.375	0.000	0.030	0.000	0.383	1.000	4.8.2 ✓
	110.906 - 109.625	0.007	0.411	0.000	0.030	0.000	0.419	1.000	4.8.2 ✓
	109.625 - 108.344	0.007	0.445	0.000	0.030	0.000	0.453	1.000	4.8.2 ✓
	108.344 - 107.063	0.007	0.478	0.000	0.030	0.000	0.486	1.000	4.8.2 ✓
	107.063 - 105.781	0.007	0.509	0.000	0.030	0.000	0.517	1.000	4.8.2 ✓
	105.781 - 104.5	0.011	0.548	0.000	0.044	0.001	0.561	1.000	4.8.2 ✓
	104.5 - 103.219	0.011	0.597	0.000	0.044	0.001	0.610	1.000	4.8.2 ✓
	103.219 - 101.938	0.011	0.643	0.000	0.044	0.001	0.657	1.000	4.8.2 ✓
	101.938 - 100.656	0.011	0.688	0.000	0.044	0.001	0.702	1.000	4.8.2 ✓
	100.656 - 99.375	0.011	0.732	0.000	0.043	0.001	0.745	1.000	4.8.2 ✓
L2	99.375 - 98.1458	0.010	0.693	0.000	0.038	0.001	0.705	1.000	4.8.2 ✓
	98.1458 - 96.9165	0.010	0.725	0.000	0.038	0.001	0.737	1.000	4.8.2 ✓
	96.9165 - 95.6873	0.010	0.756	0.000	0.038	0.001	0.768	1.000	4.8.2 ✓
	95.6873 - 94.458	0.010	0.786	0.000	0.038	0.001	0.797	1.000	4.8.2 ✓
L3	94.458 - 93.3664	0.008	0.593	0.000	0.027	0.000	0.601	1.000	4.8.2 ✓
	93.3664 - 92.2748	0.008	0.610	0.000	0.027	0.000	0.619	1.000	4.8.2 ✓
	92.2748 - 91.1832	0.008	0.627	0.000	0.027	0.000	0.636	1.000	4.8.2 ✓
	91.1832 - 90.0916	0.008	0.644	0.000	0.027	0.000	0.652	1.000	4.8.2 ✓
	90.0916 - 89	0.008	0.660	0.000	0.026	0.000	0.668	1.000	4.8.2 ✓
L4	89 - 88.957	0.007	0.573	0.000	0.023	0.000	0.580	1.000	4.8.2 ✓
	88.957 - 85.04	0.004	0.366	0.000	0.013	0.000	0.371	1.000	4.8.2 ✓
L5	88.957 - 85.04	0.004	0.301	0.000	0.011	0.000	0.304	1.000	4.8.2 ✓
	85.04 - 83.9985	0.009	0.751	0.000	0.027	0.000	0.761	1.000	4.8.2 ✓
	83.9985 - 82.9569	0.009	0.764	0.000	0.027	0.000	0.774	1.000	4.8.2 ✓
	82.9569 -	0.010	0.781	0.000	0.029	0.000	0.792	1.000	4.8.2 ✓

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	<b>Client</b> Crown Castle	<b>Designed by</b> Harisha

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$	$\frac{V_u}{\phi V_n}$	$\frac{T_u}{\phi T_n}$			
	81.9154						✓		
	81.9154 - 80.8738	0.010	0.796	0.000	0.029	0.000	0.807	1.000	4.8.2 ✓
	80.8738 - 79.8323	0.010	0.810	0.000	0.029	0.000	0.821	1.000	4.8.2 ✓
	79.8323 - 78.7907	0.010	0.823	0.000	0.029	0.000	0.834	1.000	4.8.2 ✓
	78.7907 - 77.7492	0.010	0.836	0.000	0.029	0.000	0.847	1.000	4.8.2 ✓
	77.7492 - 76.7076	0.010	0.849	0.000	0.028	0.000	0.860	1.000	4.8.2 ✓
	76.7076 - 75.6661	0.010	0.861	0.000	0.028	0.000	0.872	1.000	4.8.2 ✓
	75.6661 - 74.6245	0.010	0.873	0.000	0.028	0.000	0.884	1.000	4.8.2 ✓
	74.6245 - 73.583	0.010	0.885	0.000	0.028	0.000	0.896	1.000	4.8.2 ✓
L6	73.583 - 73 (6)	0.008	0.705	0.000	0.022	0.000	0.713	1.000	4.8.2 ✓
L7	73 - 72	0.010	0.843	0.000	0.026	0.000	0.854	1.000	4.8.2 ✓
	72 - 71	0.010	0.853	0.000	0.026	0.000	0.863	1.000	4.8.2 ✓
	71 - 70	0.010	0.862	0.000	0.026	0.000	0.872	1.000	4.8.2 ✓
	70 - 69	0.010	0.871	0.000	0.026	0.000	0.881	1.000	4.8.2 ✓
	69 - 68	0.010	0.879	0.000	0.026	0.000	0.890	1.000	4.8.2 ✓
	68 - 67	0.010	0.888	0.000	0.026	0.000	0.898	1.000	4.8.2 ✓
	67 - 66	0.010	0.896	0.000	0.026	0.000	0.906	1.000	4.8.2 ✓
	66 - 65	0.010	0.904	0.000	0.025	0.000	0.914	1.000	4.8.2 ✓
	65 - 64	0.010	0.911	0.000	0.025	0.000	0.922	1.000	4.8.2 ✓
	64 - 63	0.010	0.919	0.000	0.025	0.000	0.929	1.000	4.8.2 ✓
L8	63 - 61.8666	0.010	0.885	0.000	0.024	0.000	0.895	1.000	4.8.2 ✓
	61.8666 - 60.7332	0.010	0.892	0.000	0.024	0.000	0.902	1.000	4.8.2 ✓
	60.7332 - 59.5998	0.010	0.899	0.000	0.024	0.000	0.909	1.000	4.8.2 ✓
	59.5998 - 58.4664	0.010	0.906	0.000	0.023	0.000	0.916	1.000	4.8.2 ✓
	58.4664 - 57.333	0.010	0.913	0.000	0.023	0.000	0.923	1.000	4.8.2 ✓
L9	57.333 - 56.2609	0.009	0.822	0.000	0.021	0.000	0.831	1.000	4.8.2 ✓
	56.2609 -	0.009	0.827	0.000	0.021	0.000	0.837	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$	$\frac{V_u}{\phi V_n}$	$\frac{T_u}{\phi T_n}$			
	55.1888						✓		
	55.1888 - 54.1167	0.009	0.832	0.000	0.021	0.000	0.842	1.000	4.8.2 ✓
	54.1167 - 53.0446	0.009	0.837	0.000	0.021	0.000	0.847	1.000	4.8.2 ✓
	53.0446 - 51.9725	0.009	0.842	0.000	0.021	0.000	0.852	1.000	4.8.2 ✓
	51.9725 - 50.9005	0.009	0.847	0.000	0.021	0.000	0.856	1.000	4.8.2 ✓
	50.9005 - 49.8284	0.009	0.851	0.000	0.020	0.000	0.861	1.000	4.8.2 ✓
	49.8284 - 48.7563	0.009	0.855	0.000	0.020	0.000	0.865	1.000	4.8.2 ✓
	48.7563 - 47.6842	0.009	0.859	0.000	0.020	0.000	0.869	1.000	4.8.2 ✓
	47.6842 - 46.6121	0.009	0.863	0.000	0.020	0.000	0.873	1.000	4.8.2 ✓
	46.6121 - 45.54	0.009	0.867	0.000	0.020	0.000	0.877	1.000	4.8.2 ✓
	45.54 - 40.457	0.005	0.425	0.000	0.010	0.000	0.430	1.000	4.8.2 ✓
L10	45.54 - 40.457	0.005	0.418	0.000	0.009	0.000	0.423	1.000	4.8.2 ✓
	40.457 - 39.145	0.009	0.809	0.000	0.018	0.000	0.818	1.000	4.8.2 ✓
	39.145 - 37.833	0.009	0.812	0.000	0.018	0.000	0.822	1.000	4.8.2 ✓
L11	37.833 - 36.5538	0.009	0.860	0.000	0.019	0.000	0.870	1.000	4.8.2 ✓
	36.5538 - 35.2747	0.010	0.863	0.000	0.018	0.000	0.873	1.000	4.8.2 ✓
	35.2747 - 33.9956	0.010	0.866	0.000	0.018	0.000	0.876	1.000	4.8.2 ✓
	33.9956 - 32.7164	0.010	0.869	0.000	0.018	0.000	0.878	1.000	4.8.2 ✓
	32.7164 - 31.4373	0.010	0.871	0.000	0.018	0.000	0.881	1.000	4.8.2 ✓
	31.4373 - 30.1581	0.010	0.874	0.000	0.018	0.000	0.884	1.000	4.8.2 ✓
	30.1581 - 28.879	0.010	0.876	0.000	0.018	0.000	0.886	1.000	4.8.2 ✓
	28.879 - 27.5998	0.010	0.878	0.000	0.018	0.000	0.888	1.000	4.8.2 ✓
	27.5998 - 26.3207	0.010	0.880	0.000	0.018	0.000	0.890	1.000	4.8.2 ✓
	26.3207 - 25.0415	0.010	0.882	0.000	0.018	0.000	0.892	1.000	4.8.2 ✓
	25.0415 - 23.7624	0.010	0.884	0.000	0.018	0.000	0.894	1.000	4.8.2 ✓
	23.7624 - 22.4832	0.010	0.886	0.000	0.018	0.000	0.896	1.000	4.8.2 ✓
	22.4832 -	0.010	0.888	0.000	0.018	0.000	0.898	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$	$\frac{V_u}{\phi V_n}$	$\frac{T_u}{\phi T_n}$			
	21.204						✓		
	21.204 - 19.9249	0.010	0.889	0.000	0.017	0.000	0.900	1.000	4.8.2 ✓
	19.9249 - 18.6458	0.010	0.891	0.000	0.017	0.000	0.901	1.000	4.8.2 ✓
	18.6458 - 17.3666	0.010	0.892	0.000	0.017	0.000	0.903	1.000	4.8.2 ✓
	17.3666 - 16.0875	0.010	0.893	0.000	0.017	0.000	0.904	1.000	4.8.2 ✓
	16.0875 - 14.8083	0.010	0.895	0.000	0.017	0.000	0.905	1.000	4.8.2 ✓
	14.8083 - 13.5292	0.010	0.896	0.000	0.017	0.000	0.906	1.000	4.8.2 ✓
	13.5292 - 12.25	0.010	0.897	0.000	0.017	0.000	0.908	1.000	4.8.2 ✓
L12	12.25 - 11.2292	0.009	0.821	0.000	0.015	0.000	0.830	1.000	4.8.2 ✓
	11.2292 - 10.2083	0.010	0.821	0.000	0.015	0.000	0.831	1.000	4.8.2 ✓
	10.2083 - 9.1875	0.010	0.822	0.000	0.015	0.000	0.832	1.000	4.8.2 ✓
	9.1875 - 8.16667	0.010	0.823	0.000	0.015	0.000	0.832	1.000	4.8.2 ✓
	8.16667 - 7.14583	0.010	0.823	0.000	0.015	0.000	0.833	1.000	4.8.2 ✓
	7.14583 - 6.125	0.010	0.824	0.000	0.015	0.000	0.834	1.000	4.8.2 ✓
	6.125 - 5.10417	0.010	0.824	0.000	0.015	0.000	0.834	1.000	4.8.2 ✓
	5.10417 - 4.08333	0.010	0.825	0.000	0.015	0.000	0.835	1.000	4.8.2 ✓
	4.08333 - 3.0625	0.010	0.825	0.000	0.015	0.000	0.835	1.000	4.8.2 ✓
	3.0625 - 2.04167	0.010	0.825	0.000	0.015	0.000	0.836	1.000	4.8.2 ✓
	2.04167 - 1.02083	0.010	0.826	0.000	0.015	0.000	0.836	1.000	4.8.2 ✓
	1.02083 - 0	0.010	0.826	0.000	0.015	0.000	0.836	1.000	4.8.2 ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	125 - 99.375	Pole	TP24.008x18.5x0.188	1	-11.055	981.975	74.5	Pass
L2	99.375 - 94.458	Pole	TP25.065x24.008x0.409	2	-11.931	1159.580	79.7	Pass
L3	94.458 - 89	Pole	TP26.239x25.065x0.571	3	-13.152	1684.170	66.8	Pass

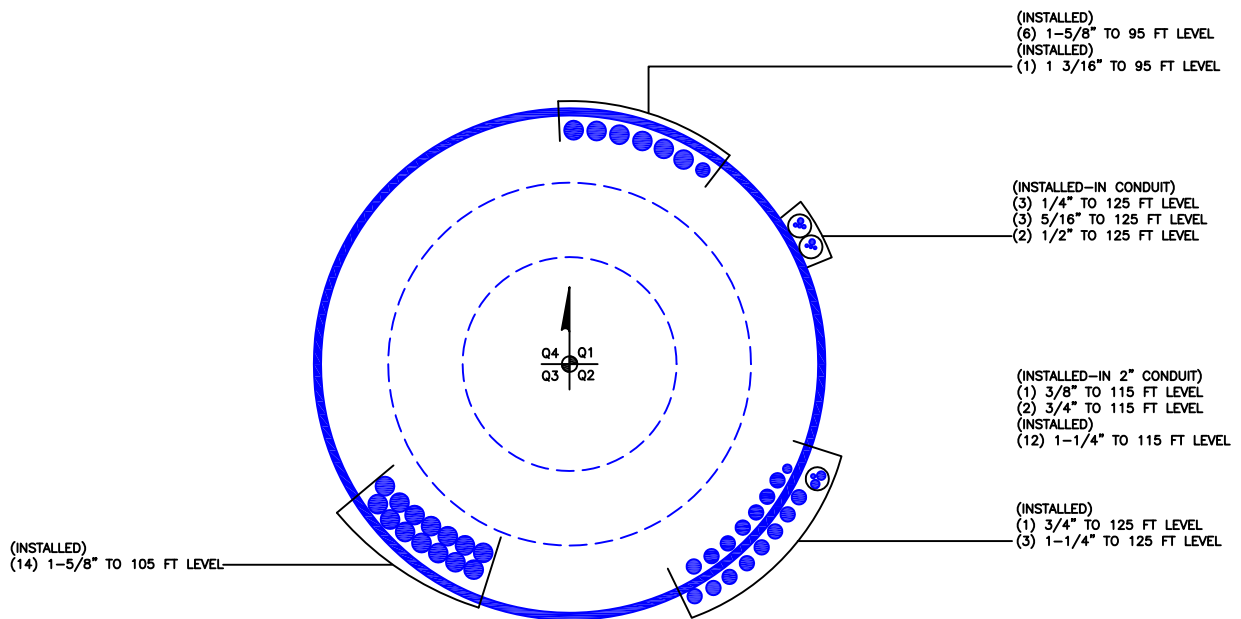
<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84470.014.01 - Cromwell/First Line Emergenc, CT (BU# 876364)	<b>Page</b> 36 of 36
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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L4	89 - 85.04	Pole	TP27.09x26.239x0.676	4	-13.171	1956.680	**	**	
L5	85.04 - 73.583	Pole	TP29.14x25.873x0.475	5	-18.915	1851.070	**	**	
L6	73.583 - 73	Pole	TP29.264x29.14x0.609	6	-19.083	2372.930	**	**	
L7	73 - 63	Pole	TP31.389x29.264x0.369	7	-21.257	2118.330	**	**	
L8	63 - 57.333	Pole	TP32.594x31.389x0.566	8	-22.880	2333.980	**	**	
L9	57.333 - 40.457	Pole	TP36.18x32.594x0.436	9	-25.913	2788.520	**	**	
L10	40.457 - 37.833	Pole	TP36.233x34.6x0.493	10	-29.043	3260.870	**	**	
L11	37.833 - 12.25	Pole	TP41.654x36.233x0.466	11	-36.838	3554.960	**	**	
L12	12.25 - 0	Pole	TP44.25x41.654x0.546	12	-41.947	4149.840	**	**	
							Summary		
							Pole (L7)	**	**
							RATING =	**	**

\*\* - See additional Calculations

Program Version 7.0.5.1

**APPENDIX B**  
**BASE LEVEL DRAWING**



BUSINESS UNIT: 876364

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**



Reinforcement 1						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	37.833	3	MP406	F	0	T&C
37.833	57.333	3	MP406	F	0	T&C
57.333	73.583	3	MP404	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
73	89	3	MS-600 K-1	F	0	T&C
89	94.458	3	MS-600	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3						
Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	12.25	3	CCI-1.25x6.5	F	0	T&C
57.333	63	3	CCI-1x6	F	0	T&C
86.875	99.375	4	CCI-1.25x3.25	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Section				Equivalent		Equivalent Weight Mult.	Bottom Elevation Failure	Top Elevation Failure	Section Failure %		
																Top Height	Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter					Shaft Thickness	Equivalent Shaft Fy
99.3750	125.0000	0.1875	65	80	74.3%							4	CCI-1.25x3.25	79.7%	74.3%	125.0000	25.6250	0.0000	18	18.5000	24.0085	0.1875	65.0	1.00			
94.4580	99.3750	0.1875	65	80	51.4%							4	CCI-1.25x3.25	66.8%	79.7%	99.3750	4.9170	0.0000	18	24.0085	25.0655	0.4091	31.6	0.97			
89.0000	94.4580	0.1875	65	80	43.1%				3	MS-600 K-1	57.7%	4	CCI-1.25x3.25	66.8%	66.8%	94.4580	5.4580	0.0000	18	25.0655	26.2387	0.5707	31.4	0.94			
85.0400	89.0000	0.1875	65	80	36.9%				3	MS-600 K-1	51.0%	4	CCI-1.25x3.25	58.0%	58.0%	89.0000	3.9170	0.0000	18	26.2387	27.0900	0.6758	31.1	0.91			
73.5830	88.9570	0.2500	65	80	65.2%				3	MS-600 K-1	89.6%			89.6%	89.6%	88.9570	15.3740	0.0000	18	25.8730	29.1402	0.4750	36.4	0.95			
73.0000	73.5830	0.2500	65	80	52.2%	3	MP404	47.6%	3	MS-600 K-1	71.3%			71.3%	71.3%	73.5830	0.5830	0.0000	18	29.1402	29.2641	0.6092	36.4	0.93			
63.0000	73.0000	0.2500	65	80	92.9%	3	MP404	88.3%						92.9%	92.9%	73.0000	10.0000	0.0000	18	29.2641	31.3893	0.3687	51.2	0.98			
57.3330	63.0000	0.2500	65	80	63.9%	3	MP404	58.2%				3	CCI-1x6	92.3%	92.3%	63.0000	5.6670	0.0000	18	31.3893	32.5936	0.5655	34.6	0.95			
40.4570	57.3330	0.2500	65	80	87.7%	3	MP406	83.3%						87.7%	87.7%	57.3330	16.8760	5.0830	18	32.5936	36.1800	0.4357	51.2	0.96			
37.8330	45.5400	0.3125	65	80	82.1%	3	MP406	78.1%						82.1%	82.1%	45.5400	7.7070	0.0000	18	34.5998	36.2329	0.4933	51.2	0.96			
12.2500	37.8330	0.3125	65	80	90.8%	3	MP406	85.9%						90.8%	90.8%	37.8330	25.5830	0.0000	18	36.2329	41.6541	0.4665	51.2	0.97			
0.0000	12.2500	0.3125	65	80	83.6%	3	MP406	69.6%				3	CCI-1.25x6.5	61.7%	83.6%	12.2500	12.2500	0.0000	18	41.6541	44.2500	0.5459	44.1	1.14			



Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	37.833	3	MP406	F	T&C
37.833	57.333	3	MP406	F	T&C
57.333	73.583	3	MP404	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
				1						1							1
			1						1						1		
				1						1							1

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
73	89	3	MS-600 K-1	F	T&C
89	94.458	3	MS-600	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

1						1						1					
	1							1						1			

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0	12.25	3	CI-1.25x6.5	F	T&C
57.333	63	3	CCI-1x6	F	T&C
86.875	99.375	4	I-1.25x3.25	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

1						1			1								
1						1					1			1			
			1						1					1			1

Reinforcement Capacity



5500 Flatirons Parkway, Suite 100  
Boulder, CO 80301  
720-304-6882

Dimensions and Properties														Compression				Axial				
Model	Weight (lb/ft)	Area (in <sup>2</sup> )	Moment of Inertia (in <sup>4</sup> )	Moment of Inertia (in <sup>4</sup> )	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	ASD-9			LRFD	
																		Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
<i>Model</i>	<i>Wt</i>	<i>A</i>	<i>I<sub>x</sub></i>	<i>I<sub>y</sub></i>	<i>Y</i>	<i>X</i>	<i>T<sub>w</sub></i>	<i>W</i>	<i>W<sub>f</sub></i>	<i>T<sub>f</sub></i>	<i>D<sub>h</sub></i>	<i>F<sub>y</sub></i>	<i>F<sub>u</sub></i>	<i>K<sub>x</sub></i>	<i>L<sub>x</sub></i>	<i>K<sub>y</sub></i>	<i>L<sub>y</sub></i>	<i>P<sub>all</sub></i>	<i>P<sub>all,inc</sub></i>	<i>P<sub>type,ASD</sub></i>	<i>phiP<sub>n</sub></i>	<i>P<sub>type,LRFD</sub></i>
MP404	12.1	3.56	0.17	6.70	0.375	0	0.75	4.75	0	0	1.21875	100	110	0.80	14	1.00	14	143.1	190.8	Rupture	214.6	Rupture
MP406	20.7	6.09	0.79	12.07	0.625	0	1.25	4.875	0	0	1.21875	100	110	0.80	23	1.00	23	247.1	329.4	Rupture	370.6	Rupture
MS-600	13.6	4.00	0.33	5.33	0.5	0	1	4	0	0	1.21875	65	80	0.80	16.375	1.00	16.375	108.8	145.0	Rupture	163.1	Rupture
MS-600 K-1	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.21875	65	80	1.00	16.375	1.00	16.375	170.8	227.8	Compress.	258.5	Compress.
CCI-1.25x3.25	13.8	4.06	0.53	3.58	0.625	0	1.25	3.25	0	0	1.21875	65	80	0.80	24	1.00	24	98.4	131.3	Rupture	147.7	Rupture
CCI-1x6	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.21875	65	80	0.80	16	1.00	16	188.8	251.7	Rupture	244.4	Rupture
CCI-1.25x6.5	27.6	8.13	1.06	28.61	0.625	0	1.25	6.5	0	0	1.21875	65	80	0.80	19	1.00	19	260.4	347.2	Compress.	391.4	Rupture

## Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	876364
Name:	CROMWELL - FIRST LINE EMERGENC
App. #:	368634 Rev# 0



Base Reactions	
Moment:	3066 ft-kip
Axial:	42 kip
Shear:	31 kip
Base Plate Type:	Circular

Design Information	
TIA Code:	G
ASIF:	1.000
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data	
Quantity:	12
Diameter:	2.25 in
Material:	A615 GR 75
Bolt Circle:	53.0 in
Bolt Spacing:	in
Bolt Group Area:	47.71 in <sup>2</sup>
Bolt Group MOIx:	16753 in <sup>4</sup>
<u>Reactions Seen by Original AR Group</u>	
Moment:	2572.0 kip-ft
Axial:	41.9 kip
Shear:	31.0 kip
<u>Original AR Capacity Check</u>	
Combined Load:	202.8 kip
Allowable load:	259.8 kip
AR Capacity:	78.0% <b>Pass</b>

First Added Anchor Rod Data	
Quantity:	3
Diameter:	1.75 in
Material:	A193 B7
Bolt Circle:	59.8 in
Bolt Group Area:	7.22 in <sup>2</sup>
Bolt Group MOIx:	3220 in <sup>4</sup>
<u>Reactions Seen by First Added AR Group</u>	
Moment:	494.4 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>First Added AR Capacity Check</u>	
Combined Load:	130.4 kip
Allowable load:	189.9 kip
AR Capacity:	68.6% <b>Pass</b>

Second Added Anchor Rod Data	
Quantity:	
Diameter:	in
Material:	
Bolt Circle:	in
Bolt Group Area:	0.00 in <sup>2</sup>
Bolt Group MOIx:	0 in <sup>4</sup>
<u>Reactions Seen by Second Added AR Group</u>	
Moment:	0.0 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>Second Added AR Capacity Check</u>	
Combined Load:	0.0 kip
Allowable load:	0.0 kip
AR Capacity:	0.0%

Third Added Anchor Rod Data	
Quantity:	
Diameter:	in
Material:	
Bolt Circle:	in
Bolt Group Area:	0.00 in <sup>2</sup>
Bolt Group MOIx:	0 in <sup>4</sup>
<u>Reactions Seen by Second Added AR Group</u>	
Moment:	0.0 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
<u>Second Added AR Capacity Check</u>	
Combined Load:	0.0 kip
Allowable load:	0.0 kip
AR Capacity:	0.0%

# Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Materi

**TIA Rev G**

Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)\*(F

Site Data	
BU#:	876364
Site Name:	CROMWELL - FIRST LINE
App #:	368634 Rev# 0
Pole Manufacturer:	Other

Reactions		
Mu:	2572.0382	ft-kips
Axial, Pu:	41.9468	kips
Shear, Vu:	30.98125	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	53	in

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffene

Plate Data		
Diam:	59	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.70	in

**Base Plate Results**

Base Plate Stress:	38.8 ksi
Allowable Plate Stress:	54.0 ksi
Base Plate Stress Ratio:	71.8% <b>Pass</b>

Flexural Check

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.625	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	22	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

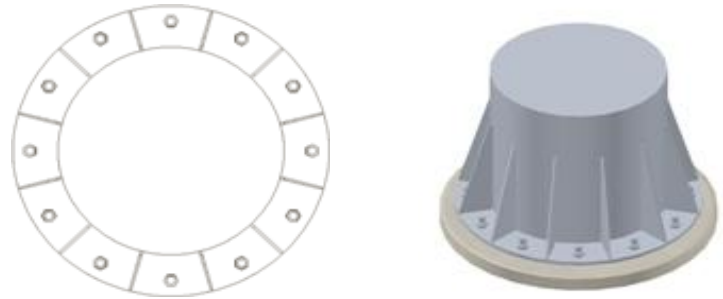
**Stiffener Results**

Horizontal Weld :	76.4% <b>Pass</b>
Vertical Weld:	40.6% <b>Pass</b>
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	18.1% <b>Pass</b>
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	68.1% <b>Pass</b>
Plate Comp. (AISC Bracket):	67.1% <b>Pass</b>

**Pole Results**

Pole Punching Shear Check:	14.1% <b>Pass</b>
----------------------------	-------------------

Pole Data		
Diam:	44.25	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt  
 \*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



## Monopole Pad & Pier Foundation Analysis

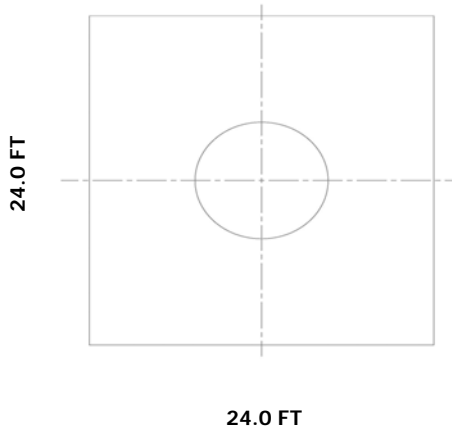
Rev. Type: **G**

Design Loads:

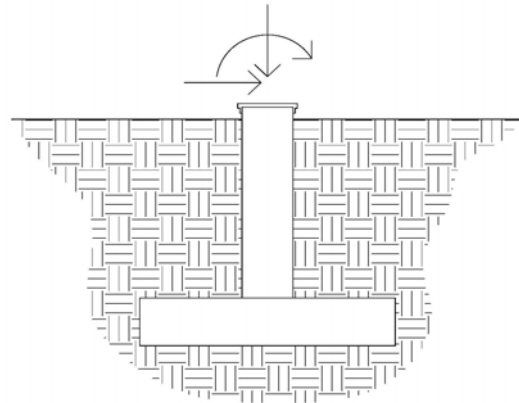
Input factored loads	
Shear:	<u>31.0</u> kips
Moment:	<u>3,066.0</u> ft-kips
Tower Height:	<u>125.0</u> ft
Tower Weight:	<u>42.0</u> kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	<u>44.25</u> in
Bearing Depth:	<u>5.0</u> ft
Pad Width:	<u>24.0</u> ft
Neglected Depth:	<u>3.3</u> ft
Thickness:	<u>3.0</u> ft
Pier Diameter:	<u>14.0</u> ft
Pier Height Above Grade:	<u>1.0</u> ft
BP Dist. Above Pier:	<u>0.0</u> in
Clear Cover:	<u>3.0</u> in
Pier Rebar Size:	<u>8</u>
Pier Rebar Quantity:	<u>24</u>
Pad Rebar Size:	<u>8</u>
Pad Rebar Quantity:	<u>30</u>
Pier Tie Size:	<u>4</u>
Tie Quantity:	<u>7</u>
Rebar Yield Strength:	<u>60000</u> psi
Concrete Strength:	<u>3000</u> psi
Concrete Unit Weight:	<u>0.15</u> kcf



Elevation Overview



Soil Data:

Allowable Values	
Soil Unit Weight:	<u>0.125</u> kcf
Ult. Bearing Capacity:	<u>8.000</u> ksf
Angle of Friction:	<u>30.000</u> deg
Cohesion:	<u>0.000</u> ksf
Passive Pressure:	<u>0.000</u> ksf
Base Friction:	<u>0.300</u>

**\*\* Notes:**

### Summary of Results

Req'd Pier Diam.	OK
Overturning	69.2%
Shear Capacity	28.1%
Bearing	37.0%
Pad Shear - 1-way	16.9%
Pad Shear - 2-way	5.4%
Pad Moment Capacity	13.4%
Pier Moment Capacity	45.0%



[ASCE 7 Windspeed](#)
[ASCE 7 Ground Snow Load](#)
[Related Resources](#)
[Sponsors](#)
[About ATC](#)
[Contact](#)

## Search Results

**Query Date:** Fri Dec 02 2016

**Latitude:** 41.5834

**Longitude:** -72.6498

**ASCE 7-10 Windspeeds  
(3-sec peak gust in mph\*):**

**Risk Category I:** 114

**Risk Category II:** 125

**Risk Category III-IV:** 135

**MRI\*\* 10-Year:** 77

**MRI\*\* 25-Year:** 87

**MRI\*\* 50-Year:** 94

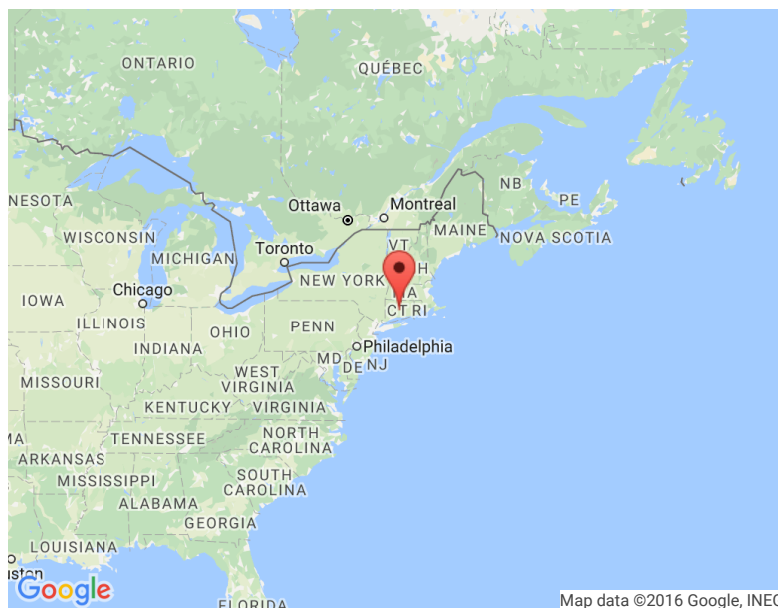
**MRI\*\* 100-Year:** 101

**ASCE 7-05 Windspeed:**

105 (3-sec peak gust in mph)

**ASCE 7-93 Windspeed:**

81 (fastest mile in mph)



\*Miles per hour

\*\*Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.



[Print your results](#)

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

AT&T Existing Facility

Site ID: CT5272

Cromwell SE  
201 Main Street  
Cromwell, CT 06416

**December 5, 2016**

**EBI Project Number: 6216005593**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>12.26 %</b>



December 5, 2016

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

## Emissions Analysis for Site: **CT5272 – Cromwell SE**

EBI Consulting was directed to analyze the proposed AT&T facility located at **201 Main Street, Cromwell, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **201 Main Street, Cromwell, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **KMW AM-X-CD-16-65-00T-RET** and the **CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed antennas are **117 feet** above ground level (AGL) for **Sector A**, **117 feet** above ground level (AGL) for **Sector B** and **117 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd
Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,465.76	ERP (W):	3,465.76	ERP (W):	3,465.76
Antenna A1 MPE%	<b>1.34 %</b>	Antenna B1 MPE%	<b>1.34 %</b>	Antenna C1 MPE%	<b>1.34 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd
Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,465.76	ERP (W):	3,465.76	ERP (W):	3,465.76
Antenna A2 MPE%	<b>1.34 %</b>	Antenna B2 MPE%	<b>1.34 %</b>	Antenna C2 MPE%	<b>1.34 %</b>
Antenna #:	<b>3</b>	Antenna #:	<b>3</b>	Antenna #:	<b>3</b>
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>	Height (AGL):	<b>117 feet</b>
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	<b>2.22 %</b>	Antenna B3 MPE%	<b>2.22 %</b>	Antenna C3 MPE%	<b>2.22 %</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>4.89 %</b>
Sprint	1.02 %
Clearwire	0.14 %
MetroPCS PCS/AWS	2.20 %
Verizon	3.05 %
Nextel	0.96 %
<b>Site Total MPE %:</b>	<b>12.26 %</b>

AT&T Sector A Total:	4.89 %
AT&T Sector B Total:	4.89 %
AT&T Sector C Total:	4.89 %
<b>Site Total:</b>	<b>12.26 %</b>



## AT&T Per Sector Maximum Power Values

AT&T _ Frequency Band / Technology per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	727.98	117	4.25	850 MHz	567	0.75%
AT&T 1900 MHz (PCS) UMTS	2	1,004.90	117	5.86	1900 MHz (PCS)	1000	0.59%
AT&T 850 MHz GSM	2	727.98	117	4.25	850 MHz	567	0.75%
AT&T 1900 MHz (PCS) GSM	2	1,004.90	117	5.86	1900 MHz (PCS)	1000	0.59%
AT&T 700 MHz LTE	2	940.05	117	5.49	700 MHz	467	1.17%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	117	10.45	1900 MHz (PCS)	1000	1.05%
						Total:	4.89%



## Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.89 %
Sector B:	4.89 %
Sector C:	4.89 %
AT&T Maximum Total (per sector):	4.89 %
Site Total:	12.26 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **12.26 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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