



QC Development

PO Box 916

Storrs, CT 06268

860-670-9068

Mark.Roberts@QCDevelopment.net

March 16, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2220
150 North Main Street, Branford, CT 06405
N 41-17-18.90
W 72-48-49.90

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 112-foot level of the existing 157-foot Monopole at 150 North Main Street, Branford, CT. The structure is owned by Crown Castle and the property is owned by Premier Realty Holdings LLC. AT&T now intends to add three (3) Andrew SBNHH-1D65A antennas and three (3) Ericsson RRUS-32 B66 Remote Radio Units (RRU). These antennas and RRUs would be installed at the 112-foot level of the tower.

This facility was approved by the Connecticut Siting Council, Petition No. 887 on March 12, 2009. There were no conditions that could feasibly be violated by this modification, including the stealth design, total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to James B. Cosgrove, First Selectman for the Town of Branford, and the Branford Planning & Zoning Department, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: James B. Cosgrove - Elected Official
Harry Smith – Town Planner
Premier Realty Holdings LLC - Property Owner
Crown Castle - Tower Owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							4.73%
AT&T GSM	2	500	112	0.0320	1900	1.0000	0.32%
AT&T UMTS	8	296	112	0.0787	880	0.5867	1.34%
AT&T UMTS	1	500	112	0.0166	1900	1.0000	0.17%
AT&T LTE	1	500	112	0.0160	700	0.4667	0.34%
AT&T LTE	8	427	112	0.1093	1900	1.0000	1.09%
AT&T LTE	1	500	112	0.0160	2300	1.0000	0.16%
Site Total							8.16%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							4.73%
AT&T UMTS	1	292	112	0.0093	850	0.5667	0.16%
AT&T LTE	1	1476	112	0.0482	700	0.4667	1.01%
AT&T LTE	2	4842	112	0.3099	1900	1.0000	3.10%
AT&T LTE	1	5070	112	0.1623	2100	1.0000	1.62%
AT&T LTE	1	1285	112	0.0411	2300	1.0000	0.41%
Site Total							11.04%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON MONOPOLE TOWER:

- NEW AT&T RRUS: (3) RRUS-32 B66.
- NEW JUMPER CABLES: COAX JUMPER (1) PER SECTOR FROM EACH RRU (TOTAL OF 3)
- NEW ANTENNA: (1) SBNHH-1D65A PER SECTOR (TOTAL OF 3)

ITEMS TO REMAIN:

- (9) ANTENNAS, (9) RRU'S, (2) SURGE ARRESTORS, (2) DC POWER CABLES, (1) FIBER RUN & (12) 1-1/4" COAX CABLES

SITE ADDRESS: 150 NORTH MAIN STREET
BRANFORD, CT 06405

LATITUDE: 41.2886031° N 41° 17' 18.97" N
LONGITUDE: 72.8138600° W 72° 48' 49.89" W

TYPE OF SITE: MONOPOLE / INDOOR EQUIPMENT

TOWER HEIGHT: 147'-0"±
RAD CENTER: 112'-0"±

JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT2220

SITE NAME: BRANFORD CENTRAL

PROJECT: LTE 4C 2018 UPGRADE

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLAN	B
A-2	ELEVATION & ANTENNA LAYOUTS	B
A-3	DETAILS	B
RF-1	RF-PLUMBING DIAGRAM	B
G-1	GROUNDING DETAILS	B

VICINITY MAP

DIRECTIONS TO SITE:
I-95 SOUTH TO EXIT 54. FROM SOUTH GO LEFT TO 2ND LIGHT. FROM NORTH GO TO 1ST LIGHT. TURN LEFT ONTO RT. 1 EAST. SITE .3 MILES ON LEFT. BEHIND SUBARU DEALERSHIP. GATE COMBO 2500. ACCESS: 24/7



GENERAL NOTES

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

72 HOURS



CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

CCI SITE #: 876321
CCI SITE NAME: BRANFORD BANM TOWER

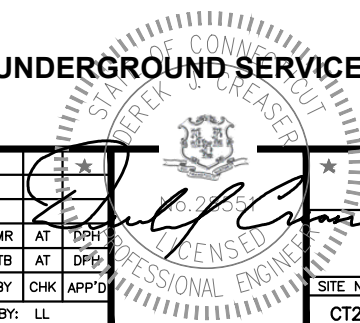


SITE NUMBER: CT2220
SITE NAME: BRANFORD CENTRAL
CCI SITE NUMBER: 876321
150 NORTH MAIN STREET
BRANFORD, CT 06405
NEW HAVEN COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/07/18	ISSUED FOR PERMITTING	MR	AT	DPH
A	02/19/18	ISSUED FOR REVIEW	TB	AT	DPH

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: LL



AT&T		
TITLE SHEET LTE 4C 2018 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT2220	T-1	B

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR – SAI
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LTE SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
BUILDING CODE: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

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

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

EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

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

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

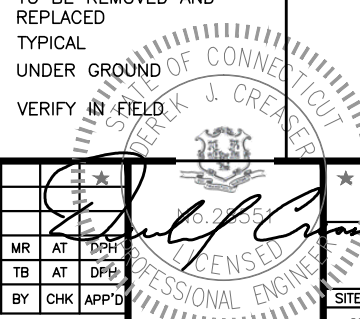
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2220
SITE NAME: BRANFORD CENTRAL

CCI SITE NUMBER: 876321
150 NORTH MAIN STREET
BRANFORD, CT 06405
NEW HAVEN COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	02/19/18	ISSUED FOR REVIEW	TB	AT	DPH
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		

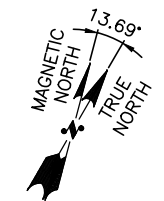
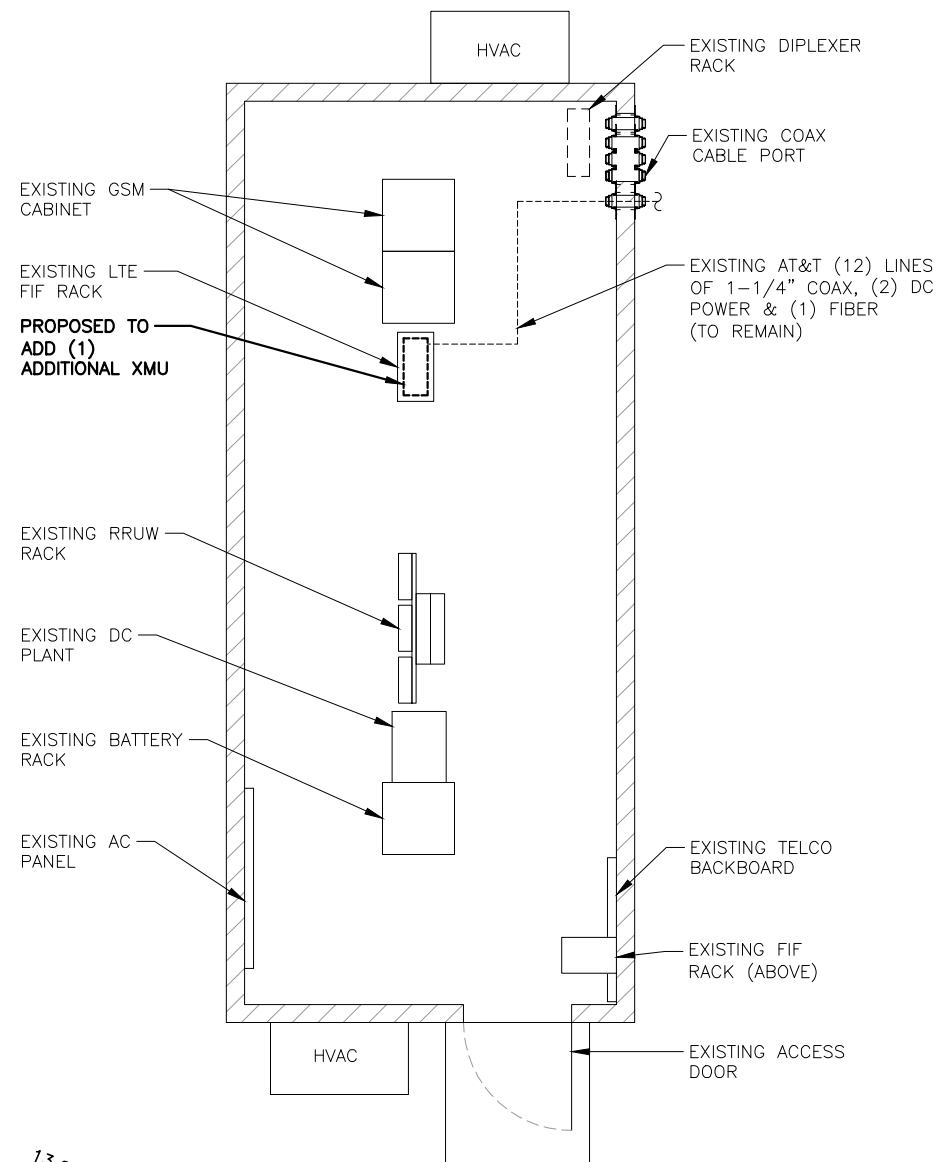
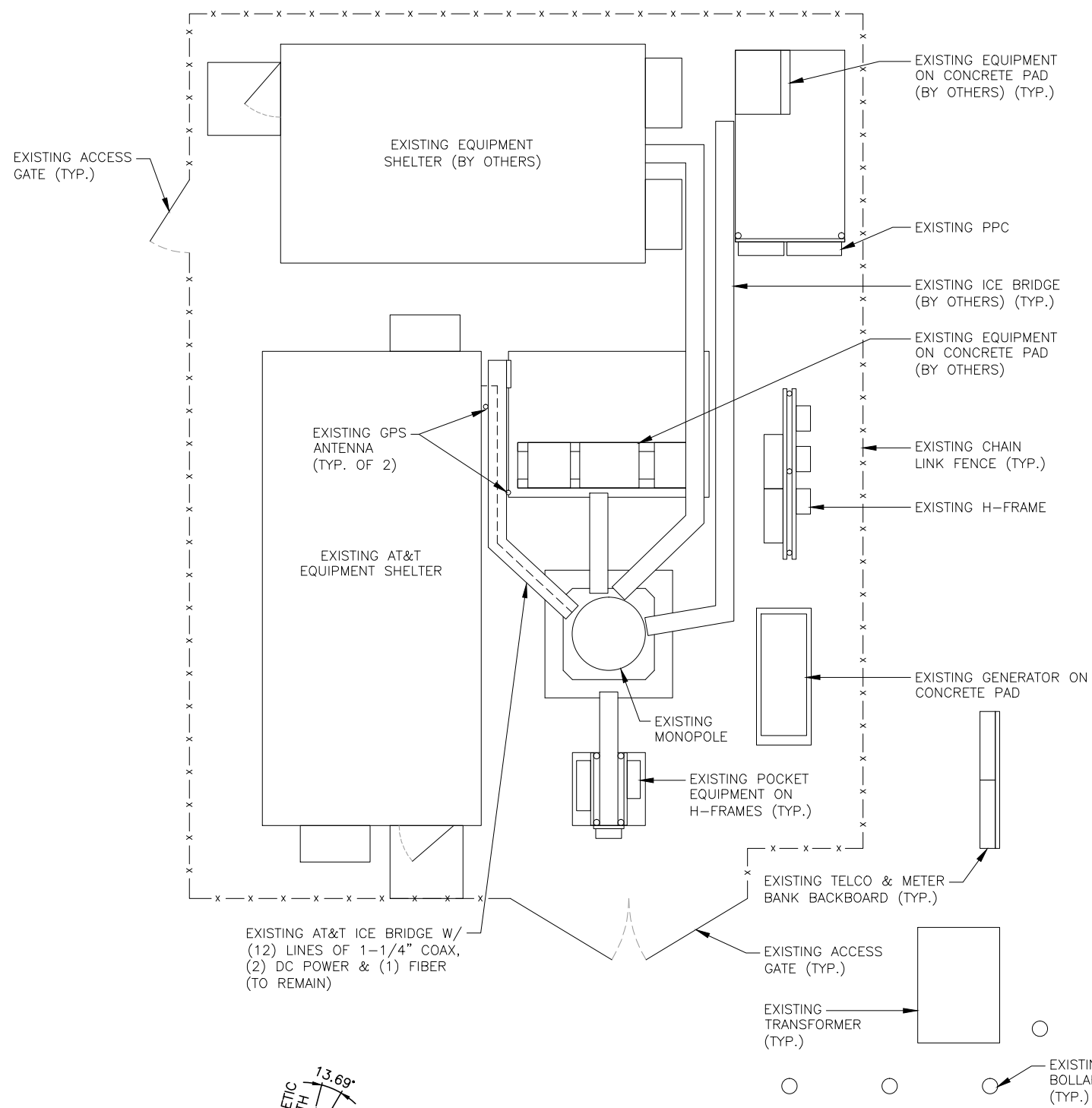


AT&T
GENERAL NOTES
LTE 4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2220	GN-1	B

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

NOTE:
ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

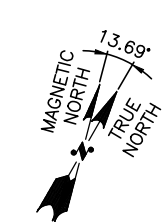


COMPOUND PLAN
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

1

A-1

0 2'-0" 4'-0" 8'-0" 12'-0"



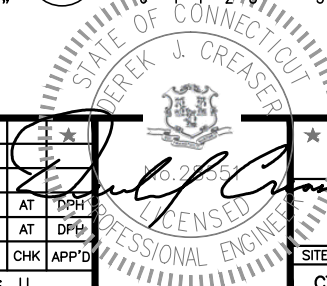
EQUIPMENT PLAN
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

2

A-1

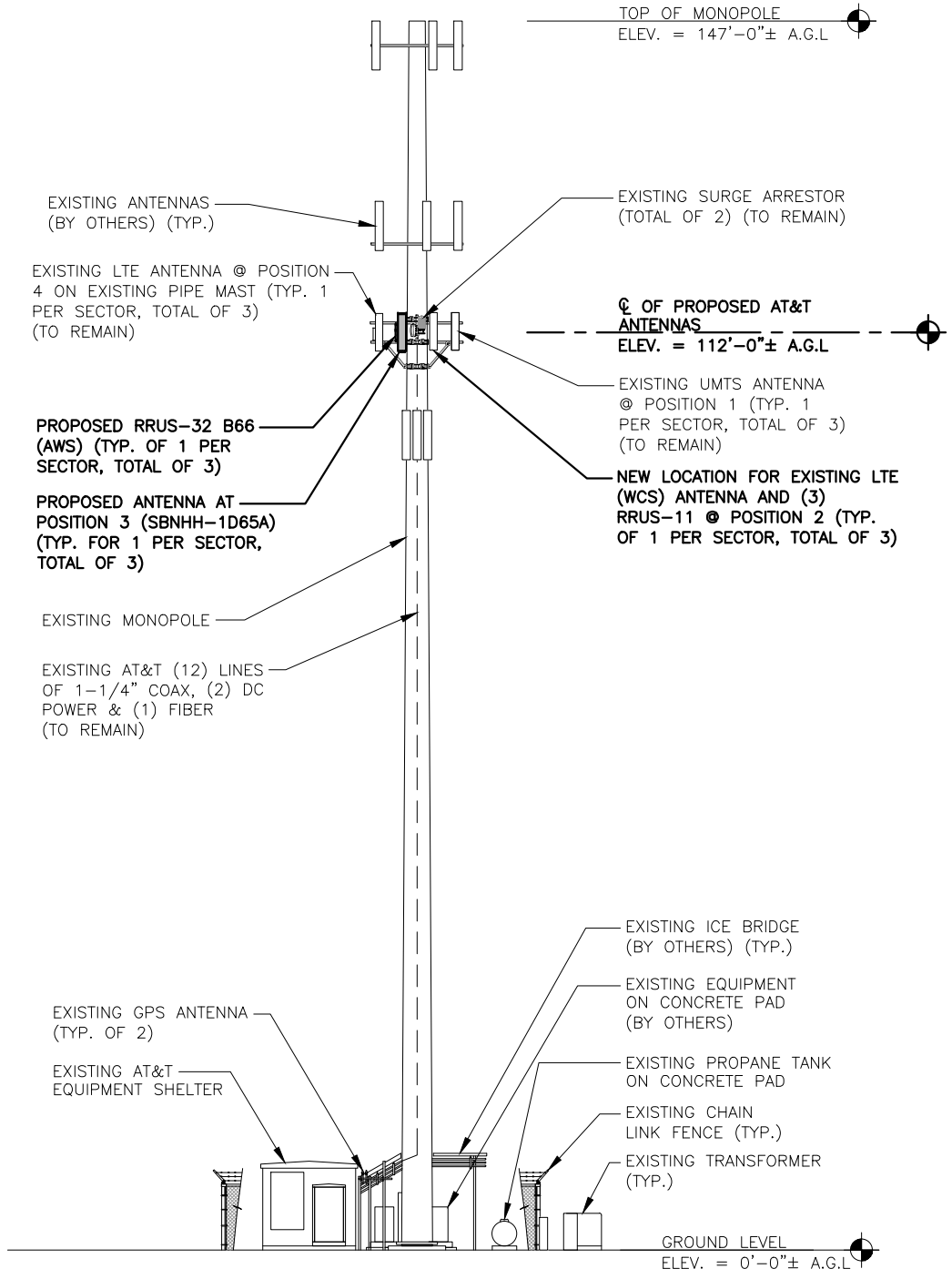
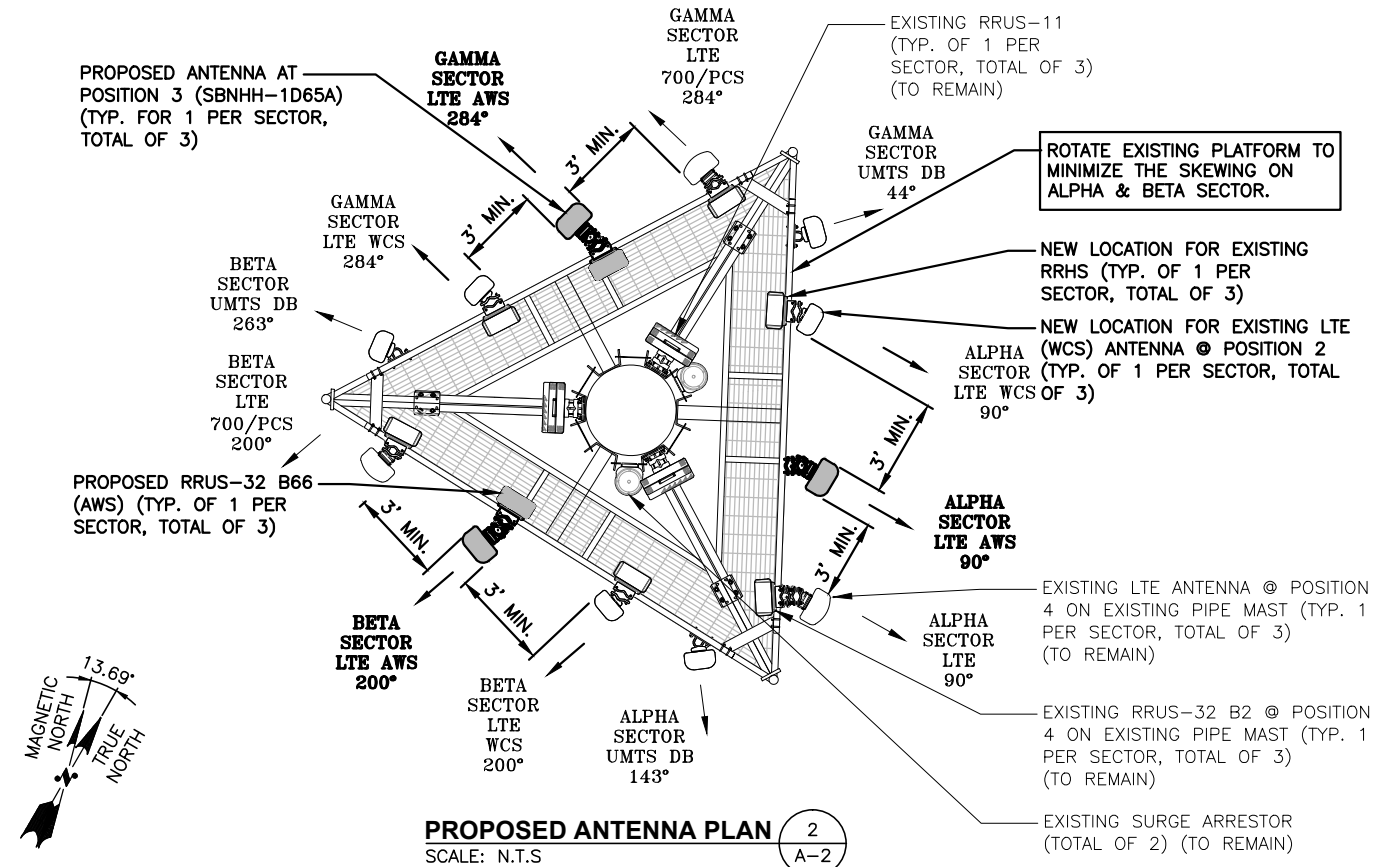
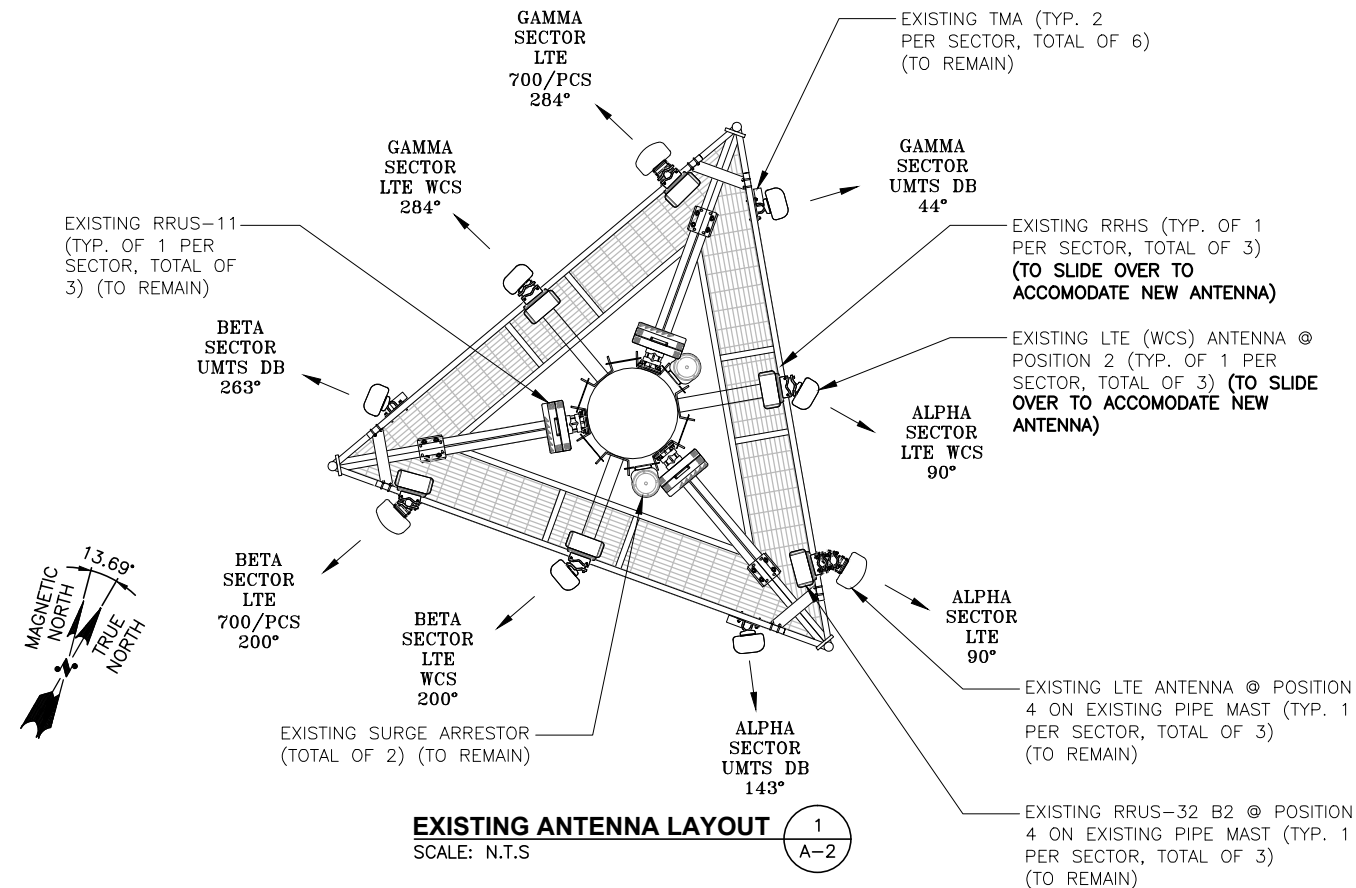
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SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		

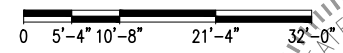


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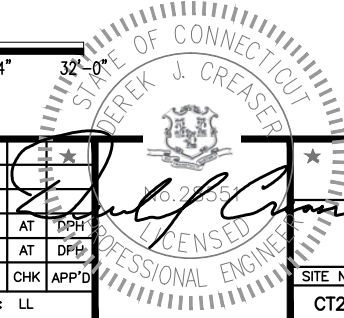
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



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



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NOTE:
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NOTE:
ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

***COAX JUMPER NOTE:**
COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6).

****FIBER JUMPER NOTE:**
FIBER JUMPERS (1) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 3).

FINAL ANTENNA SCHEDULE														
SECTOR	BAND	ANTENNA		SIZE (INCHES) (L X W X D)	RAD CENTER	AZIMUTH	TMA'S		RRU'S		SIZE (INCHES) (L X W X D)	COAX JUMPERS	FIBER JUMPERS	COAX
ALPHA	UMTS 850	EXISTING	7770	55X11X5	112'-0"±	143'	EXISTING	(2) LGP21401	-	-	-	-	-	(2) 1-1/4"
	LTE PCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	90'	-	-	EXISTING	RRUS-32 B2 (PCS)	-	-	-	(2) 1-1/4"
	LTE AWS	PROPOSED	SBNHH-1D65A	55X11.9X7.1	112'-0"±	90'	-	-	PROPOSED	RRUS-32 B66	27.2X12.1X7.0	1*	2*	-
	LTE 700 BC/WCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	90'	-	-	EXISTING EXISTING	RRUS-11 (700) RRUS-32 LTE (WCS)	- -	- -	- -	-
BETA	UMTS 850	EXISTING	7770	55X11X5	112'-0"±	263'	EXISTING	(2) LGP21401	-	-	-	-	-	(2) 1-1/4"
	LTE PCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	200'	-	-	EXISTING	RRUS-32 B2 (PCS)	-	-	-	(2) 1-1/4"
	LTE AWS	PROPOSED	SBNHH-1D65A	55X11.9X7.1	112'-0"±	200'	-	-	PROPOSED	RRUS-32 B66	27.2X12.1X7.0	1*	2*	-
	LTE 700 BC/WCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	200'	-	-	EXISTING EXISTING	RRUS-11 (700) RRUS-32 LTE (WCS)	- -	- -	- -	-
GAMMA	UMTS 850	EXISTING	7770	55X11X5	112'-0"±	44'	EXISTING	(2) LGP21401	-	-	-	-	-	(2) 1-1/4"
	LTE PCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	284'	-	-	EXISTING	RRUS-32 B2 (PCS)	-	-	-	(2) 1-1/4"
	LTE AWS	PROPOSED	SBNHH-1D65A	55X11.9X7.1	112'-0"±	284'	-	-	PROPOSED	RRUS-32 B66	27.2X12.1X7.0	1*	2*	-
	LTE 700 BC/WCS	EXISTING	SBNHH-1D65A	55X11.9X7.1	112'-0"±	284'	-	-	EXISTING EXISTING	RRUS-11 (700) RRUS-32 LTE (WCS)	- -	- -	- -	-

PROPOSED 2" STD. (2.38" O.D.) 7' LONG PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING MOUNTING PIPE TO REMAIN (TYP.)

HANDRAIL KIT

PROPOSED RRUS-32 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING PLATFORM MOUNT (TYP.)

PROPOSED PIPE TO PIPE CLAMP, SITE PRO1 DCP12K (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED ANTENNA AT POSITION 3 (SBNHH-1D65A) (TYP. FOR 1 PER SECTOR, TOTAL OF 3)

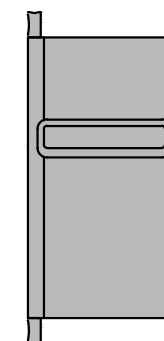
☉ OF EXISTING & PROPOSED AT&T ANTENNAS
ELEV. = 112'-0"± A.G.L.

FINAL ANTENNA CONFIGURATION
SCALE: N.T.S.

3
A-3

RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
3(P)	RRUS-32	27.2"	12.1"	7.0"
6(E)	RRUS-32	27.2"	12.1"	7.0"
-	RRUS-E2	20.4"	18.5"	7.5"
-	LTE-A2	16.4"	15.2"	3.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

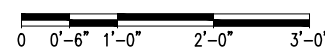


PROPOSED RRUS REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

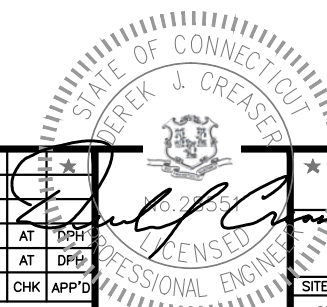
PROPOSED ANTENNA & RRU MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

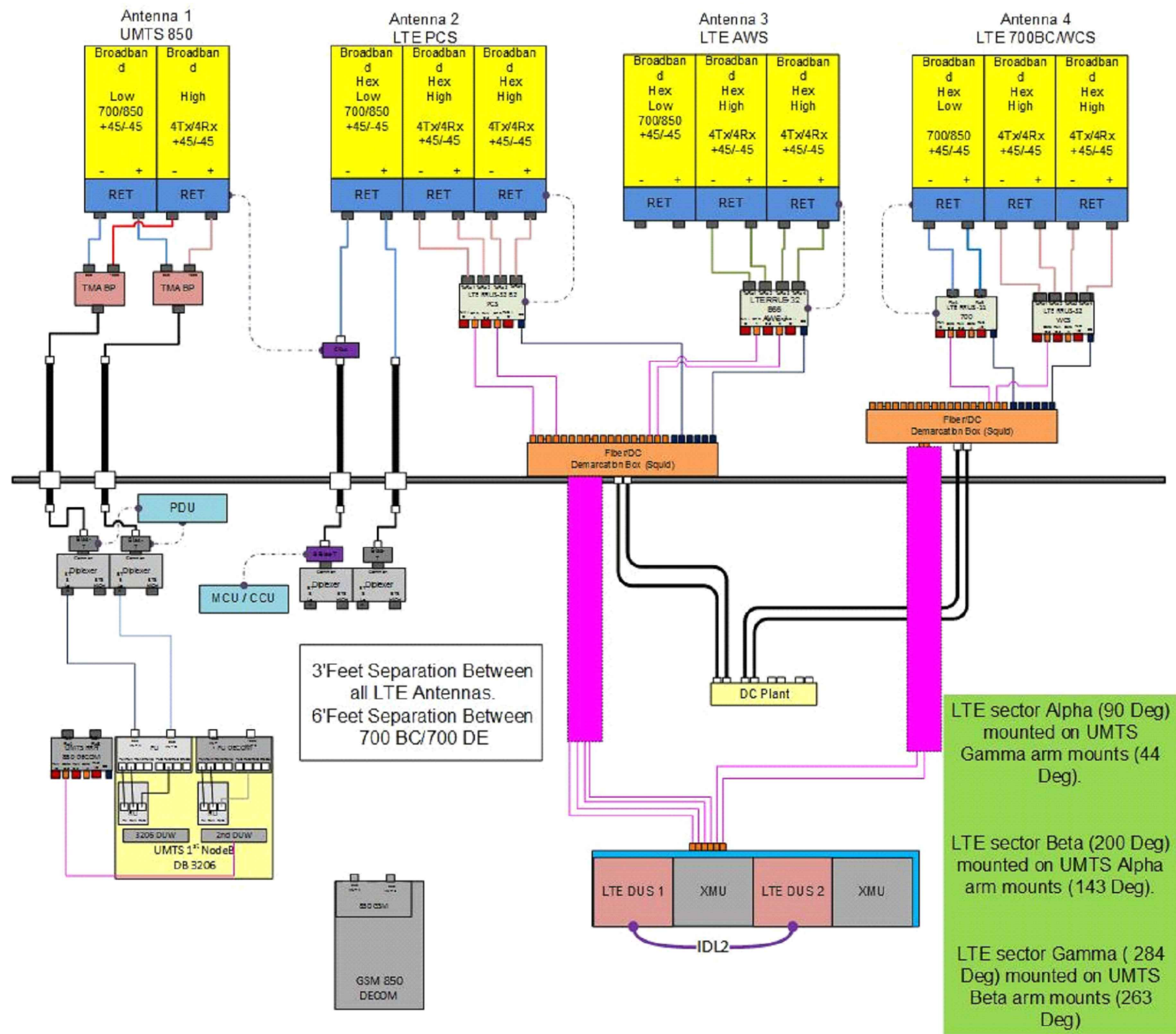
1
A-3



RRUS DETAIL
SCALE: N.T.S.

2
A-3





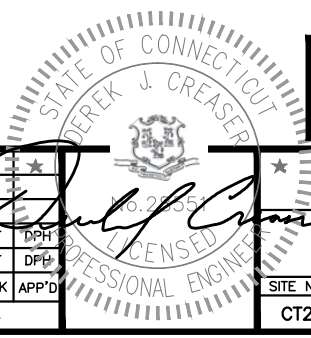
RF PLUMBING DIAGRAM
SCALE: N.T.S

1
RF-1

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

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

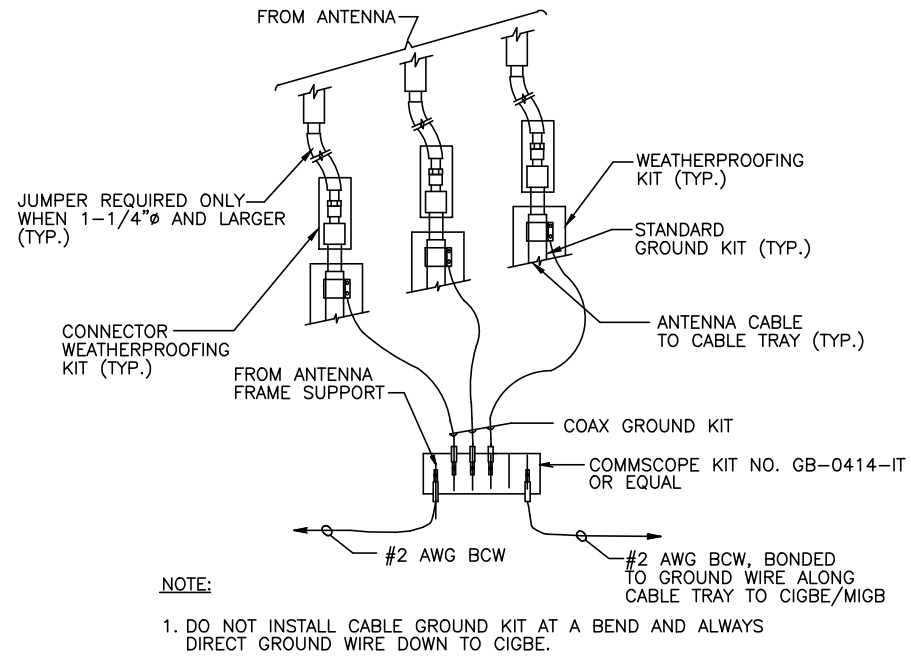
B	03/07/18	ISSUED FOR PERMITTING	MR	AT	DPH
A	02/19/18	ISSUED FOR REVIEW	TB	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		



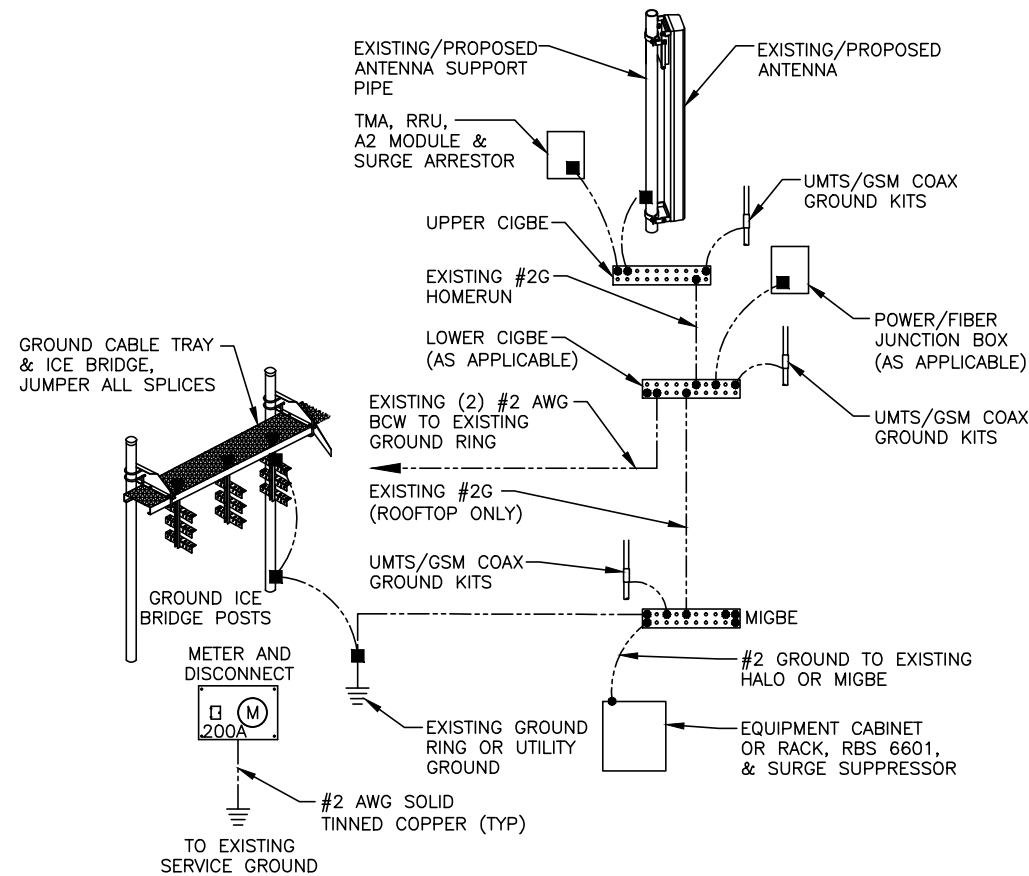
AT&T

RF PLUMBING DIAGRAM
LTE 4C 2018 UPGRADE

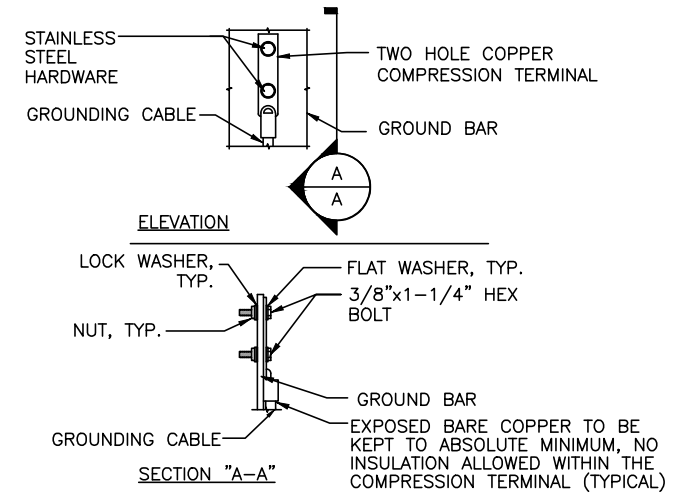
SITE NUMBER	DRAWING NUMBER	REV
CT2220	RF-1	B



GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1



TYPICAL GROUND BAR CONNECTION DETAIL 3
SCALE: N.T.S. G-1

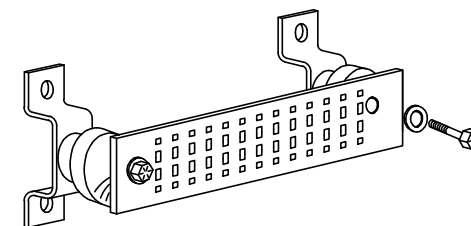
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

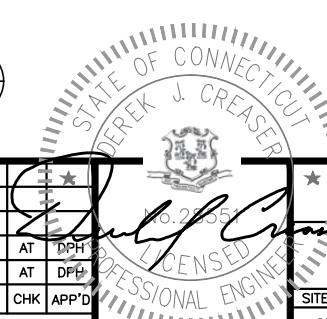
SECTION "A" - SURGE ABSORBERS

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



GROUND BAR - DETAIL 4
SCALE: N.T.S. G-1

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/07/18	ISSUED FOR PERMITTING	MR	AT	DPH
A	02/19/18	ISSUED FOR REVIEW	TB	AT	DPH
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: LL		



Date: **January 31, 2018**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT2220
Carrier Site Name: Branford Central

Crown Castle Designation: **Crown Castle BU Number:** 876321
Crown Castle Site Name: Branford Banm Tower
Crown Castle JDE Job Number: 478073
Crown Castle Work Order Number: 1517629
Crown Castle Application Number: 421199 Rev. 1

Engineering Firm Designation: **TEP Project Number:** 25579.155918

Site Data: **150 North Main Street, Branford, New Haven County, CT 06405**
Latitude 41° 17' 19.00", Longitude -72° 48' 49.90"
147 Foot - Monopole Tower

Dear Darcy Tarr,

Tower Engineering Professionals 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 1133918, in accordance with application 421199, revision 1.

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 + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code (2012 International Building Code) based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N 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.

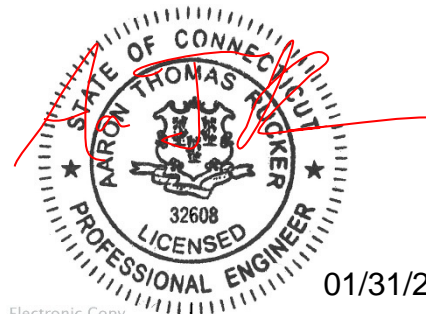
All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* 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.

Structural analysis prepared by: Alex Bramhall, E.I. / AAS

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

01/31/2018

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1) INTRODUCTION

This tower is a 147-ft monopole tower designed by Paul J. Ford and Company in March of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F for the appurtenances listed in Table 3. The tower has been modified multiple times in the past to accommodate additional loading. The transition stiffeners designed by Paul J. Ford and Company in May of 2009 (CCI Doc ID 2431042) and in September of 2012 (CCI Doc ID 3316256) were considered ineffective in this analysis due to insufficient capacity of the horizontal PJP welds to the base plate. TEP visited the site in March of 2013 to perform a post modification inspection. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a nominal 3-second gust wind speed of 101 mph with no ice, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads with the following design criteria:

Type of Analysis: **Rigorous Structural Analysis**

Classification of Structure: **Class II**

Exposure Category: **Exposure C**

Topographic Category: **Category 1**

Earthquake Category: **Not Considered**

Earthquake effects may be ignored per this standard for site locations where S_s does not exceed 1.0. (New Haven County Max S_s = 0.32).

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
110.0	112.0	6	Andrew	SBNHH-1D65A w/ Mount Pipe	2 1	3/4 3/8	1
		3	Ericsson	RRUS 32 B2			
		3	Ericsson	RRUS 32 B66			

Notes:

- 1) See "Appendix B - Base Level Drawing" for assumed feed line configuration.

Table 2 - Existing 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
147.0	149.0	2	Dragonwave	A-ANT-23G-2-C	6 4 3	5/16 1/2 1-1/4	1
		1	Andrew	VLHP2-18			
	148.0	3	Alcatel Lucent	TD-RRH8x20-25			
	147.0	3	Argus Technologies	LLPX310R w/ Mount Pipe			
		3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe			
		2	RFS Celwave	APXVSP18-C-A20 w/ Mount Pipe			
		1	KMW Communications	ET-X-TU-42-15-37-18-iR-SP w/ Mount Pipe			
	146.0	1	Tower Mounts	Platform Mount [LP 1201-1]			
		9	RFS Celwave	ACU-A20-N			
	145.0	146.0	3	Alcatel Lucent			
3			Alcatel Lucent	800 External Notch Filter			
145.0		1	Tower Mounts	Pipe Mount [PM 601-3]			
143.0		3	Alcatel Lucent	TME-1900MHz RRH (65 MHz)			
119.0	121.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	12 1	1-5/8 1-1/4	1
		3	Andrew	LNx-6515DS-VTM w/ Mount Pipe			
		3	Ericsson	AIR 21 B4A B2P w/ Mount Pipe			
		3	Ericsson	KRY 112 144/1			
		3	Ericsson	RRUS 11 B12			
	119.0	1	Tower Mounts	T-Arm Mount [TA 602-3]			
110.0	112.0	2	Kathrein	800 10764 w/ Mount Pipe	2 2 2	3/4 5/8 3/8	2
		1	KMW Communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		3	Ericsson	RRUS 11			
		3	Powerwave Technologies	7770.00 w/ Mount Pipe	12 2 1	1-1/4 3/4 3/8	1
		3	Andrew	SBNHH-1D65A w/ Mount Pipe			
		6	Powerwave Technologies	7020.00			
		6	Powerwave Technologies	LGP2140X			
		3	Ericsson	RRUS 11			
		3	Ericsson	RRUS 32			
	110.0	110.0	2	Raycap	DC6-48-60-18-8F		
			1	Tower Mounts	Miscellaneous [NA 509-3]		
			1	Tower Mounts	Miscellaneous [NA 510-1]		
			1	Tower Mounts	Platform Mount [LP 1201-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
53.0	54.0	1	GPS	GPS_A	1	1/2	1
	53.0	1	Tower Mounts	Side Arm Mount [SO 701-1]			
49.0	50.0	1	Lucent	KS24019-L112A	1	1/2	1
	49.0	1	Tower Mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing equipment
- 2) Existing 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)
147.0	147.0	12	Decibel	DB980H PCS	-	-
130.0	130.0	12	Decibel	DB980H PCS	-	-
110.0	110.0	12	Allgon	7129.16	-	-
90.0	90.0	2	Generic	PG1D0F0093	-	-
		1	Generic	PG1N0F0091		
50.0	50.0	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	Dr. Clarence Welti, P.E., P.C.	2135657	CCISites
Tower Foundation Drawings	Paul J. Ford and Company	1613620	CCISites
Tower Manufacturer Drawings	Paul J. Ford and Company	1614568	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Company	2431042	CCISites
Post Modification Inspection	Paul J. Ford and Company	2448190	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Company	3316256	CCISites
Post Modification Inspection	Tower Engineering Professionals	3890848	CCISites
Tower Reinforcement Drawings	Aero Solutions, LLC	4988798	CCISites
Post Modification Inspection	Sinnott Gering and Schmitt Towers, Inc.	4699667	CCISites

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) The tower and foundation were built in accordance with the manufacturer's specifications.
- 2) The tower and foundation 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 "Appendix B – Base Level Drawing".
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not analyze antennas supporting mounts as part of this structural analysis report.
- 7) The transition stiffeners designed by Paul J. Ford and Company in May of 2009 (CCI Doc ID 2431042) and in September of 2012 (CCI Doc ID 3316256) were considered ineffective in this analysis due to insufficient capacity of the horizontal PJP welds to the base plate.
- 8) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked. Refer to Crown document PRC-10012, Base Plate Grout Repair.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)¹

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.875x22x0.25	Pole	7.2%	Pass
142 - 137	Pole	TP23.75x22.875x0.25	Pole	13.7%	Pass
137 - 132	Pole	TP24.625x23.75x0.25	Pole	20.0%	Pass
132 - 127	Pole	TP25.5x24.625x0.25	Pole	26.0%	Pass
127 - 122	Pole	TP26.375x25.5x0.25	Pole	31.9%	Pass
122 - 117	Pole	TP27.25x26.375x0.25	Pole	39.7%	Pass
117 - 112	Pole	TP28.125x27.25x0.25	Pole	47.9%	Pass
112 - 107	Pole	TP29x28.125x0.25	Pole	59.9%	Pass
107 - 103.25	Pole	TP30.313x29x0.25	Pole	68.7%	Pass
103.25 - 98.25	Pole	TP30.032x29.157x0.3125	Pole	56.5%	Pass
98.25 - 93.25	Pole	TP30.907x30.032x0.3125	Pole	63.7%	Pass
93.25 - 88.25	Pole	TP31.782x30.907x0.3125	Pole	70.5%	Pass
88.25 - 83.25	Pole	TP32.657x31.782x0.3125	Pole	76.9%	Pass
83.25 - 78.25	Pole	TP33.531x32.657x0.3125	Pole	83.0%	Pass
78.25 - 73.25	Pole	TP34.406x33.531x0.3125	Pole	88.8%	Pass
73.25 - 69.5	Pole	TP35.063x34.406x0.3125	Pole	93.0%	Pass
69.5 - 69.25	Pole + Reinf.	TP35.106x35.063x0.4375	Reinf. 3 Tension Rupture	90.8%	Pass
69.25 - 64.25	Pole + Reinf.	TP35.981x35.106x0.4313	Reinf. 3 Tension Rupture	95.6%	Pass
64.25 - 63.75	Pole + Reinf.	TP36.9x35.981x0.4313	Reinf. 3 Tension Rupture	96.1%	Pass
63.75 - 58	Pole	TP36.45x35.444x0.375	Pole	83.9%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
58 - 57.75	Pole	TP36.494x36.45x0.375	Pole	84.1%	Pass
57.75 - 57.5	Pole	TP36.537x36.494x0.375	Pole	84.3%	Pass
57.5 - 52.5	Pole	TP37.412x36.537x0.375	Pole	88.0%	Pass
52.5 - 50.5	Pole	TP37.762x37.412x0.375	Pole	89.4%	Pass
50.5 - 50.25	Pole + Reinf.	TP37.806x37.762x0.575	Reinf. 5 Tension Rupture	84.1%	Pass
50.25 - 50	Pole	TP37.85x37.806x0.375	Pole	89.7%	Pass
50 - 45	Pole	TP38.725x37.85x0.375	Pole	93.2%	Pass
45 - 40	Pole	TP39.6x38.725x0.375	Pole	96.5%	Pass
40 - 35	Pole	TP40.475x39.6x0.375	Pole	99.6%	Pass
35 - 34.5	Pole	TP41.481x40.475x0.375	Pole	99.9%	Pass
34.5 - 28.25	Pole	TP40.906x39.812x0.4375	Pole	86.7%	Pass
28.25 - 24	Pole	TP41.65x40.906x0.4375	Pole	88.6%	Pass
24 - 23.75	Pole + Reinf.	TP41.694x41.65x0.625	Reinf. 1 Tension Rupture	91.9%	Pass
23.75 - 18.75	Pole + Reinf.	TP42.569x41.694x0.6125	Reinf. 1 Tension Rupture	93.9%	Pass
18.75 - 13.75	Pole + Reinf.	TP43.444x42.569x0.6125	Reinf. 1 Tension Rupture	95.9%	Pass
13.75 - 8.75	Pole + Reinf.	TP44.319x43.444x0.6125	Reinf. 1 Tension Rupture	97.7%	Pass
8.75 - 3.75	Pole + Reinf.	TP45.194x44.319x0.6	Reinf. 1 Tension Rupture	99.4%	Pass
3.75 - 2	Pole + Reinf.	TP45.5x45.194x0.6	Reinf. 1 Tension Rupture	100.0%	Pass
2 - 1.75	Pole	TP45.544x45.5x0.4375	Pole	97.6%	Pass
1.75 - 0	Pole	TP45.85x45.544x0.4375	Pole	98.2%	Pass
				Summary	
			Pole	99.9%	Pass
			Reinforcement	100.0%	Pass
			Overall	100.0%	Pass

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Original Anchor Rods	-	82.3	Pass
1	Reinforcing Anchor Rods	-	67.7	Pass
1	Base Plate	-	62.4	Pass
1	Base Foundation Soil Interaction	-	87.0	Pass
1	Base Foundation Structural	-	84.3	Pass

Structure Rating (max from all components) =	100.0%
---	---------------

Notes:

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

4.1) Recommendations

- 1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.
- 3) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked. Refer to Crown document PRC-10012, Base Plate Grout Repair.

APPENDIX A
TNXTOWER OUTPUT

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Branford Banm Tower (BU 876321)	Page 1 of 39
	Project TEP No. 25579.155918	Date 14:13:50 01/31/18
	Client Crown Castle	Designed by AAS

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 New Haven County, Connecticut.

Basic wind speed of 101 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.750 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Equivalent Thickness Model..

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

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retention Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="background-color: #e0e0e0;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

Tapered Pole Section Geometry

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
L1	147.00-142.00	5.00	0.000	12	22.000	22.875	0.250	1.000	A607-60 (60 ksi)
L2	142.00-137.00	5.00	0.000	12	22.875	23.750	0.250	1.000	A607-60

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Branford Banm Tower (BU 876321)	Page	2 of 39
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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	137.00-132.00	5.00	0.000	12	23.750	24.625	0.250	1.000	(60 ksi) A607-60
L4	132.00-127.00	5.00	0.000	12	24.625	25.500	0.250	1.000	(60 ksi) A607-60
L5	127.00-122.00	5.00	0.000	12	25.500	26.375	0.250	1.000	(60 ksi) A607-60
L6	122.00-117.00	5.00	0.000	12	26.375	27.250	0.250	1.000	(60 ksi) A607-60
L7	117.00-112.00	5.00	0.000	12	27.250	28.125	0.250	1.000	(60 ksi) A607-60
L8	112.00-107.00	5.00	0.000	12	28.125	29.000	0.250	1.000	(60 ksi) A607-60
L9	107.00-99.50	7.50	3.750	12	29.000	30.313	0.250	1.000	(60 ksi) A607-60
L10	99.50-98.25	5.00	0.000	12	29.157	30.032	0.313	1.250	(60 ksi) A607-65
L11	98.25-93.25	5.00	0.000	12	30.032	30.907	0.313	1.250	(65 ksi) A607-65
L12	93.25-88.25	5.00	0.000	12	30.907	31.782	0.313	1.250	(65 ksi) A607-65
L13	88.25-83.25	5.00	0.000	12	31.782	32.657	0.313	1.250	(65 ksi) A607-65
L14	83.25-78.25	5.00	0.000	12	32.657	33.531	0.313	1.250	(65 ksi) A607-65
L15	78.25-73.25	5.00	0.000	12	33.531	34.406	0.313	1.250	(65 ksi) A607-65
L16	73.25-69.50	3.75	0.000	12	34.406	35.063	0.313	1.250	(65 ksi) A607-65
L17	69.50-69.25	0.25	0.000	12	35.063	35.106	0.438	1.750	(65 ksi) A607-65
L18	69.25-64.25	5.00	0.000	12	35.106	35.981	0.431	1.725	(65 ksi) A607-65
L19	64.25-59.00	5.25	4.750	12	35.981	36.900	0.431	1.725	(65 ksi) A607-65
L20	59.00-58.00	5.75	0.000	12	35.444	36.450	0.375	1.500	(65 ksi) A607-65
L21	58.00-57.75	0.25	0.000	12	36.450	36.494	0.375	1.500	(65 ksi) A607-65
L22	57.75-57.50	0.25	0.000	12	36.494	36.537	0.375	1.500	(65 ksi) A607-65
L23	57.50-52.50	5.00	0.000	12	36.537	37.412	0.375	1.500	(65 ksi) A607-65
L24	52.50-50.50	2.00	0.000	12	37.412	37.762	0.375	1.500	(65 ksi) A607-65
L25	50.50-50.25	0.25	0.000	12	37.762	37.806	0.575	2.300	(65 ksi) A607-65
L26	50.25-50.00	0.25	0.000	12	37.806	37.850	0.375	1.500	(65 ksi) A607-65
L27	50.00-45.00	5.00	0.000	12	37.850	38.725	0.375	1.500	(65 ksi) A607-65
L28	45.00-40.00	5.00	0.000	12	38.725	39.600	0.375	1.500	(65 ksi) A607-65
L29	40.00-35.00	5.00	0.000	12	39.600	40.475	0.375	1.500	(65 ksi) A607-65
L30	35.00-29.25	5.75	5.250	12	40.475	41.481	0.375	1.500	(65 ksi) A607-65
L31	29.25-28.25	6.25	0.000	12	39.812	40.906	0.438	1.750	(65 ksi) A607-65
L32	28.25-24.00	4.25	0.000	12	40.906	41.650	0.438	1.750	(65 ksi) A607-65

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Branford Banm Tower (BU 876321)	Page	3 of 39
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	Client	Crown Castle	Designed by	AAS

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
L33	24.00-23.75	0.25	0.000	12	41.650	41.694	0.625	2.500	A607-65 (65 ksi)
L34	23.75-18.75	5.00	0.000	12	41.694	42.569	0.613	2.450	A607-65 (65 ksi)
L35	18.75-13.75	5.00	0.000	12	42.569	43.444	0.613	2.450	A607-65 (65 ksi)
L36	13.75-8.75	5.00	0.000	12	43.444	44.319	0.613	2.450	A607-65 (65 ksi)
L37	8.75-3.75	5.00	0.000	12	44.319	45.194	0.600	2.400	A607-65 (65 ksi)
L38	3.75-2.00	1.75	0.000	12	45.194	45.500	0.600	2.400	A607-65 (65 ksi)
L39	2.00-1.75	0.25	0.000	12	45.500	45.544	0.438	1.750	A607-65 (65 ksi)
L40	1.75-0.00	1.75		12	45.544	45.850	0.438	1.750	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.776	17.509	1057.206	7.786	11.396	92.770	2142.186	8.617	5.226	20.904
	23.682	18.213	1190.010	8.100	11.849	100.429	2411.283	8.964	5.461	21.842
L2	23.682	18.213	1190.010	8.100	11.849	100.429	2411.283	8.964	5.461	21.842
	24.588	18.918	1333.495	8.413	12.303	108.392	2702.022	9.311	5.695	22.78
L3	24.588	18.918	1333.495	8.413	12.303	108.392	2702.022	9.311	5.695	22.78
	25.494	19.622	1488.073	8.726	12.756	116.658	3015.239	9.657	5.930	23.718
L4	25.494	19.622	1488.073	8.726	12.756	116.658	3015.239	9.657	5.930	23.718
	26.400	20.326	1654.157	9.040	13.209	125.229	3351.771	10.004	6.164	24.656
L5	26.400	20.326	1654.157	9.040	13.209	125.229	3351.771	10.004	6.164	24.656
	27.306	21.031	1832.162	9.353	13.662	134.103	3712.457	10.351	6.399	25.594
L6	27.306	21.031	1832.162	9.353	13.662	134.103	3712.457	10.351	6.399	25.594
	28.212	21.735	2022.499	9.666	14.116	143.280	4098.132	10.697	6.633	26.532
L7	28.212	21.735	2022.499	9.666	14.116	143.280	4098.132	10.697	6.633	26.532
	29.118	22.440	2225.582	9.979	14.569	152.762	4509.633	11.044	6.868	27.47
L8	29.118	22.440	2225.582	9.979	14.569	152.762	4509.633	11.044	6.868	27.47
	30.023	23.144	2441.825	10.293	15.022	162.548	4947.799	11.391	7.102	28.408
L9	30.023	23.144	2441.825	10.293	15.022	162.548	4947.799	11.391	7.102	28.408
	31.382	24.201	2791.765	10.763	15.702	177.795	5656.872	11.911	7.454	29.816
L10	31.382	24.201	2791.765	10.763	15.702	177.795	5656.872	11.911	7.454	29.816
	31.091	29.905	3371.331	10.639	15.556	216.717	6831.230	14.718	7.211	23.075
L11	31.091	29.905	3371.331	10.639	15.556	216.717	6831.230	14.718	7.211	23.075
	31.997	30.785	3677.944	10.953	16.010	229.733	7452.513	15.152	7.445	23.826
L12	31.997	30.785	3677.944	10.953	16.010	229.733	7452.513	15.152	7.445	23.826
	32.903	31.666	4002.607	11.266	16.463	243.130	8110.366	15.585	7.680	24.576
L13	32.903	31.666	4002.607	11.266	16.463	243.130	8110.366	15.585	7.680	24.576
	33.808	32.546	4345.834	11.579	16.916	256.906	8805.838	16.018	7.914	25.326
L14	33.808	32.546	4345.834	11.579	16.916	256.906	8805.838	16.018	7.914	25.326
	34.714	33.427	4708.142	11.892	17.369	271.061	9539.972	16.452	8.149	26.077
L15	34.714	33.427	4708.142	11.892	17.369	271.061	9539.972	16.452	8.149	26.077
	35.620	34.307	5090.047	12.206	17.823	285.596	10313.816	16.885	8.383	26.827
L16	35.620	34.307	5090.047	12.206	17.823	285.596	10313.816	16.885	8.383	26.827
	36.299	34.967	5389.648	12.441	18.162	296.747	10920.887	17.210	8.559	27.39
L17	36.299	34.967	5389.648	12.441	18.162	296.747	10920.887	17.210	8.559	27.39
	36.345	48.778	7464.373	12.396	18.162	410.979	15124.844	24.007	8.224	18.798
L18	36.345	48.778	7464.373	12.396	18.162	410.979	15124.844	24.007	8.224	18.798
	36.345	48.840	7492.702	12.411	18.185	412.024	15182.245	24.037	8.236	18.825
L18	36.345	48.840	7492.702	12.411	18.185	412.024	15182.245	24.037	8.236	18.825
	36.345	48.151	7389.658	12.414	18.185	406.358	14973.451	23.698	8.253	19.137

<p>tnxTower</p> <p>Tower Engineering Professionals</p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p>Job</p> <p>Branford Banm Tower (BU 876321)</p>	<p>Page</p> <p>4 of 39</p>
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	<p>Client</p> <p>Crown Castle</p>	<p>Designed by</p> <p>AAS</p>

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L19	37.251	49.366	7963.276	12.727	18.638	427.253	16135.755	24.296	8.487	19.681
	37.251	49.366	7963.276	12.727	18.638	427.253	16135.755	24.296	8.487	19.681
	38.202	50.641	8596.735	13.056	19.114	449.756	17419.317	24.924	8.733	20.251
L20	37.555	42.346	6647.155	12.555	18.360	362.048	13468.937	20.841	8.494	22.651
	37.736	43.561	7235.892	12.915	18.881	383.235	14661.879	21.439	8.764	23.37
L21	37.736	43.561	7235.892	12.915	18.881	383.235	14661.879	21.439	8.764	23.37
	37.781	43.613	7262.249	12.931	18.904	384.170	14715.285	21.465	8.775	23.401
L22	37.781	43.613	7262.249	12.931	18.904	384.170	14715.285	21.465	8.775	23.401
	37.826	43.666	7288.669	12.946	18.926	385.106	14768.820	21.491	8.787	23.432
L23	37.826	43.666	7288.669	12.946	18.926	385.106	14768.820	21.491	8.787	23.432
	38.732	44.723	7830.624	13.259	19.380	404.064	15866.968	22.011	9.022	24.057
L24	38.732	44.723	7830.624	13.259	19.380	404.064	15866.968	22.011	9.022	24.057
	39.095	45.145	8054.713	13.385	19.561	411.775	16321.033	22.219	9.115	24.308
L25	39.095	45.145	8054.713	13.385	19.561	411.775	16321.033	22.219	9.115	24.308
	39.140	45.198	8083.021	13.400	19.584	412.744	16378.393	22.245	9.127	24.339
L26	39.140	45.198	8083.021	13.400	19.584	412.744	16378.393	22.245	9.127	24.339
	39.185	45.251	8111.396	13.416	19.606	413.714	16435.887	22.271	9.139	24.37
L27	39.185	45.251	8111.396	13.416	19.606	413.714	16435.887	22.271	9.139	24.37
	40.091	46.307	8692.913	13.729	20.059	433.357	17614.199	22.791	9.373	24.995
L28	40.091	46.307	8692.913	13.729	20.059	433.357	17614.199	22.791	9.373	24.995
	40.997	47.364	9301.580	14.042	20.513	453.454	18847.524	23.311	9.608	25.621
L29	40.997	47.364	9301.580	14.042	20.513	453.454	18847.524	23.311	9.608	25.621
	41.903	48.421	9938.016	14.356	20.966	474.008	20137.115	23.831	9.842	26.246
L30	41.903	48.421	9938.016	14.356	20.966	474.008	20137.115	23.831	9.842	26.246
	42.944	49.635	10705.051	14.716	21.487	498.207	21691.336	24.429	10.112	26.965
L31	42.944	49.635	10705.051	14.716	21.487	498.207	21691.336	24.429	10.112	26.965
	42.168	55.469	10976.776	14.096	20.623	532.265	22241.925	27.300	9.497	21.708
L32	42.168	55.469	10976.776	14.096	20.623	532.265	22241.925	27.300	9.497	21.708
	42.349	57.010	11917.190	14.488	21.189	562.414	24147.458	28.059	9.790	22.378
L33	42.349	57.010	11917.190	14.488	21.189	562.414	24147.458	28.059	9.790	22.378
	43.119	58.058	12586.421	14.754	21.575	583.390	25503.502	28.574	9.990	22.834
L34	43.119	58.058	12586.421	14.754	21.575	583.390	25503.502	28.574	9.990	22.834
	43.164	82.563	17736.303	14.687	21.575	822.091	35938.558	40.635	9.487	15.179
L35	43.164	82.563	17736.303	14.687	21.575	822.091	35938.558	40.635	9.487	15.179
	43.164	82.651	17793.109	14.703	21.597	823.858	36053.662	40.678	9.499	15.198
L36	43.164	82.651	17793.109	14.703	21.597	823.858	36053.662	40.678	9.499	15.198
	44.070	81.022	17453.173	14.707	21.597	808.119	35364.861	39.877	9.532	15.563
L37	44.070	81.022	17453.173	14.707	21.597	808.119	35364.861	39.877	9.532	15.563
	44.070	82.748	18592.357	15.020	22.051	843.170	37673.157	40.726	9.767	15.946
L38	44.070	82.748	18592.357	15.020	22.051	843.170	37673.157	40.726	9.767	15.946
	44.976	84.474	19780.064	15.334	22.504	878.965	40079.772	41.575	10.001	16.329
L39	44.976	84.474	19780.064	15.334	22.504	878.965	40079.772	41.575	10.001	16.329
	45.882	86.200	21017.304	15.647	22.957	915.504	42586.756	42.425	10.236	16.712
L40	45.882	86.200	21017.304	15.647	22.957	915.504	42586.756	42.425	10.236	16.712
	45.882	84.465	20606.049	15.651	22.957	897.590	41753.443	41.571	10.269	17.116
L41	45.882	84.465	20606.049	15.651	22.957	897.590	41753.443	41.571	10.269	17.116
	46.788	86.155	21868.269	15.965	23.410	934.128	44311.042	42.403	10.504	17.507
L42	46.788	86.155	21868.269	15.965	23.410	934.128	44311.042	42.403	10.504	17.507
	47.105	86.747	22321.930	16.074	23.569	947.089	45230.283	42.694	10.586	17.643
L43	47.105	86.747	22321.930	16.074	23.569	947.089	45230.283	42.694	10.586	17.643
	47.105	63.482	16453.769	16.132	23.569	698.111	33339.796	31.244	11.021	25.192
L44	47.105	63.482	16453.769	16.132	23.569	698.111	33339.796	31.244	11.021	25.192
	47.150	63.543	16501.740	16.148	23.592	699.474	33437.000	31.274	11.033	25.219
L45	47.150	63.543	16501.740	16.148	23.592	699.474	33437.000	31.274	11.033	25.219
	47.150	63.543	16501.740	16.148	23.592	699.474	33437.000	31.274	11.033	25.219
L46	47.150	63.543	16501.740	16.148	23.592	699.474	33437.000	31.274	11.033	25.219
	47.467	63.975	16840.156	16.258	23.750	709.050	34122.722	31.486	11.115	25.406

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1				1	1	1			
147.00-142.00				1	1	1			
L2				1	1	1			
142.00-137.00				1	1	1			
L3				1	1	1			
137.00-132.00				1	1	1			
L4				1	1	1			
132.00-127.00				1	1	1			
L5				1	1	1			
127.00-122.00				1	1	1			

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Branford Banm Tower (BU 876321)	Page 5 of 39
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	Client Crown Castle	Designed by AAS

<i>Tower Elevation</i>	<i>Gusset Area (per face)</i>	<i>Gusset Thickness</i>	<i>Gusset Grade</i>	<i>Adjust. Factor A_f</i>	<i>Adjust. Factor A_r</i>	<i>Weight Mult.</i>	<i>Double Angle Stitch Bolt Spacing Diagonals in</i>	<i>Double Angle Stitch Bolt Spacing Horizontals in</i>	<i>Double Angle Stitch Bolt Spacing Redundants in</i>
<i>ft</i>	<i>ft²</i>	<i>in</i>							
L6				1	1	1			
122.00-117.00									
L7				1	1	1			
117.00-112.00									
L8				1	1	1			
112.00-107.00									
L9				1	1	1			
107.00-99.50									
L10				1	1	1			
99.50-98.25									
L11				1	1	1			
98.25-93.25									
L12				1	1	1			
93.25-88.25									
L13				1	1	1			
88.25-83.25									
L14				1	1	1			
83.25-78.25									
L15				1	1	1			
78.25-73.25									
L16				1	1	1			
73.25-69.50									
L17				1	1	0.970912			
69.50-69.25									
L18				1	1	0.978402			
69.25-64.25									
L19				1	1	0.977779			
64.25-59.00									
L20				1	1	1			
59.00-58.00									
L21				1	1	1			
58.00-57.75									
L22				1	1	1			
57.75-57.50									
L23				1	1	1			
57.50-52.50									
L24				1	1	1			
52.50-50.50									
L25				1	1	0.962934			
50.50-50.25									
L26				1	1	1			
50.25-50.00									
L27				1	1	1			
50.00-45.00									
L28				1	1	1			
45.00-40.00									
L29				1	1	1			
40.00-35.00									
L30				1	1	1			
35.00-29.25									
L31				1	1	1			
29.25-28.25									
L32				1	1	1			
28.25-24.00									
L33				1	1	1.00344			
24.00-23.75									
L34				1	1	1.01716			
23.75-18.75									
L35				1	1	1.01097			

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	Client Crown Castle	Designed by AAS

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
18.75-13.75									
L36 13.75-8.75				1	1	1.00503			
L37 8.75-3.75				1	1	1.01986			
L38 3.75-2.00				1	1	1.01787			
L39 2.00-1.75				1	1	1			
L40 1.75-0.00				1	1	1			

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	plf
Misc									
Step Pegs (5/8" SR) 7-in. w/30" step	B	Surface Ar (CaAa)	147.00 - 0.00	1	1	0.250 0.250	0.350		0.487
Safety Line 3/8	B	Surface Ar (CaAa)	147.00 - 0.00	1	1	0.250 0.250	0.375		0.220
147									
7983A(ELLIPTICAL)	A	Surface Ar (CaAa)	147.00 - 0.00	4	1	0.500 0.500	0.573		0.084
Aero MP3-04	A	Surface Ar (CaAa)	52.00 - 35.50	1	1	-0.250 -0.250	1.610		0.000
Aero MP3-04	B	Surface Ar (CaAa)	52.00 - 35.50	1	1	0.250 0.250	1.610		0.000
Aero MP3-04	C	Surface Ar (CaAa)	52.00 - 35.50	1	1	0.000 0.000	1.610		0.000
*									
Aero MP3-04	A	Surface Ar (CaAa)	71.00 - 61.00	1	1	-0.250 -0.250	1.610		0.000
Aero MP3-04	B	Surface Ar (CaAa)	71.00 - 61.00	1	1	0.250 0.250	1.610		0.000
Aero MP3-04	C	Surface Ar (CaAa)	71.00 - 61.00	1	1	0.000 0.000	1.610		0.000
*									
Aero MP3-04	A	Surface Ar (CaAa)	35.50 - 0.00	1	1	-0.250 -0.250	1.610		0.000
Aero MP3-04	B	Surface Ar (CaAa)	35.50 - 0.00	1	1	0.250 0.250	1.610		0.000
Aero MP3-04	C	Surface Ar (CaAa)	35.50 - 0.00	1	1	0.000 0.000	1.610		0.000
Aero MP3-03	A	Surface Ar (CaAa)	59.00 - 52.00	1	1	-0.250 -0.250	1.570		0.000
Aero MP3-03	B	Surface Ar (CaAa)	59.00 - 52.00	1	1	0.250 0.250	1.570		0.000
Aero MP3-03	C	Surface Ar (CaAa)	59.00 - 52.00	1	1	0.000 0.000	1.570		0.000

Feed Line/Linear Appurtenances - Entered As Area

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	Client		Crown Castle		Designed by		AAS	

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	147.00 - 0.00	3	No Ice	0.00	1.200
						1/2" Ice	0.00	1.200
						1" Ice	0.00	1.200
9207(5/16)	A	No	Inside Pole	147.00 - 0.00	6	No Ice	0.00	0.063
						1/2" Ice	0.00	0.063
						1" Ice	0.00	0.063
2" Flexible Conduit	A	No	CaAa (Out Of Face)	147.00 - 0.00	2	No Ice	0.00	0.340
						1/2" Ice	0.00	1.867
						1" Ice	0.00	4.005
119								
LDF7-50A(1-5/8)	B	No	Inside Pole	119.00 - 0.00	12	No Ice	0.00	0.820
						1/2" Ice	0.00	0.820
						1" Ice	0.00	0.820
HB114-1-0813U4-M5J(1-1/4)	B	No	Inside Pole	119.00 - 0.00	1	No Ice	0.00	1.200
						1/2" Ice	0.00	1.200
						1" Ice	0.00	1.200
110								
LDF6-50A(1-1/4)	C	No	Inside Pole	110.00 - 0.00	12	No Ice	0.00	0.600
						1/2" Ice	0.00	0.600
						1" Ice	0.00	0.600
FB-L98B-034-XXX(3/8)	C	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.057
						1/2" Ice	0.00	0.057
						1" Ice	0.00	0.057
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.584
						1/2" Ice	0.00	0.584
						1" Ice	0.00	0.584
FB-L98B-034-XXX(3/8)	C	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.057
						1/2" Ice	0.00	0.057
						1" Ice	0.00	0.057
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.584
						1/2" Ice	0.00	0.584
						1" Ice	0.00	0.584
2" Flexible Conduit	C	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.340
						1/2" Ice	0.00	0.340
						1" Ice	0.00	0.340
53								
LDF4-50A(1/2)	A	No	CaAa (Out Of Face)	53.00 - 0.00	1	No Ice	0.00	0.150
						1/2" Ice	0.00	0.837
						1" Ice	0.00	2.135
49								
LDF4-50A(1/2)	A	No	CaAa (Out Of Face)	49.00 - 0.00	1	No Ice	0.00	0.150
						1/2" Ice	0.00	0.837
						1" Ice	0.00	2.135
Modifications								
Aero MP3-04	A	No	CaAa (Out Of Face)	25.50 - 0.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Aero MP3-04	B	No	CaAa (Out Of Face)	25.50 - 0.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Aero MP3-04	C	No	CaAa (Out Of Face)	25.50 - 0.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
*								
Aero MP3-04	A	No	CaAa (Out Of Face)	35.50 - 32.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Aero MP3-04	B	No	CaAa (Out Of Face)	35.50 - 32.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Aero MP3-04	C	No	CaAa (Out Of Face)	35.50 - 32.00	1	No Ice	0.00	0.000

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	Client	Crown Castle	Designed by	AAS

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA	Weight
			Face)			ft ² /ft	plf
*						1/2" Ice 1" Ice	0.00 0.00 0.000
Aero MP3-03	A	No	CaAa (Out Of Face)	52.00 - 49.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.000
Aero MP3-03	B	No	CaAa (Out Of Face)	52.00 - 49.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.000
Aero MP3-03	C	No	CaAa (Out Of Face)	52.00 - 49.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.000
*							
Aero Step Ladder	A	No	CaAa (Out Of Face)	26.33 - 12.33	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 4.679 5.403 6.472
Aero Step Ladder	A	No	CaAa (Out Of Face)	35.67 - 26.67	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 4.679 5.403 6.472
Aero Step Ladder	A	No	CaAa (Out Of Face)	58.17 - 49.17	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 4.679 5.403 6.472

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	CAAA In Face ft ²	CAAA Out Face ft ²	Weight lb
L1	147.00-142.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	3.54
		C	0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	3.54
		C	0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	3.54
		C	0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	3.54
		C	0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	3.54
		C	0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	25.61
		C	0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	0.00
L8	112.00-107.00	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	30.99
L9	107.00-99.50	A	0.000	0.000	0.430	0.000	37.45
		B	0.000	0.000	0.544	0.000	88.10
		C	0.000	0.000	0.000	0.000	77.48
L10	99.50-98.25	A	0.000	0.000	0.072	0.000	6.24
		B	0.000	0.000	0.091	0.000	14.68

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i> ft ²	<i>A_F</i> ft ²	<i>C_{AA}</i> <i>In Face</i> ft ²	<i>C_{AA}</i> <i>Out Face</i> ft ²	<i>Weight</i> lb
L11	98.25-93.25	C	0.000	0.000	0.000	0.000	12.91
		A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	51.65
L12	93.25-88.25	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	51.65
L13	88.25-83.25	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	51.65
L14	83.25-78.25	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	51.65
L15	78.25-73.25	A	0.000	0.000	0.286	0.000	24.97
		B	0.000	0.000	0.362	0.000	58.73
		C	0.000	0.000	0.000	0.000	51.65
L16	73.25-69.50	A	0.000	0.000	0.456	0.000	18.73
		B	0.000	0.000	0.513	0.000	44.05
		C	0.000	0.000	0.241	0.000	38.74
L17	69.50-69.25	A	0.000	0.000	0.055	0.000	1.25
		B	0.000	0.000	0.058	0.000	2.94
		C	0.000	0.000	0.040	0.000	2.58
L18	69.25-64.25	A	0.000	0.000	1.091	0.000	24.97
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L19	64.25-59.00	A	0.000	0.000	0.824	0.000	26.22
		B	0.000	0.000	0.904	0.000	61.67
		C	0.000	0.000	0.523	0.000	54.23
L20	59.00-58.00	A	0.000	0.000	0.214	0.000	5.79
		B	0.000	0.000	0.230	0.000	11.75
		C	0.000	0.000	0.157	0.000	10.33
L21	58.00-57.75	A	0.000	0.000	0.054	0.000	2.42
		B	0.000	0.000	0.057	0.000	2.94
		C	0.000	0.000	0.039	0.000	2.58
L22	57.75-57.50	A	0.000	0.000	0.054	0.000	2.42
		B	0.000	0.000	0.057	0.000	2.94
		C	0.000	0.000	0.039	0.000	2.58
L23	57.50-52.50	A	0.000	0.000	1.071	0.000	48.44
		B	0.000	0.000	1.148	0.000	58.73
		C	0.000	0.000	0.785	0.000	51.65
L24	52.50-50.50	A	0.000	0.000	0.435	0.000	19.65
		B	0.000	0.000	0.465	0.000	23.49
		C	0.000	0.000	0.320	0.000	20.66
L25	50.50-50.25	A	0.000	0.000	0.055	0.000	2.46
		B	0.000	0.000	0.058	0.000	2.94
		C	0.000	0.000	0.040	0.000	2.58
L26	50.25-50.00	A	0.000	0.000	0.055	0.000	2.46
		B	0.000	0.000	0.058	0.000	2.94
		C	0.000	0.000	0.040	0.000	2.58
L27	50.00-45.00	A	0.000	0.000	1.091	0.000	30.20
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L28	45.00-40.00	A	0.000	0.000	1.091	0.000	26.47
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L29	40.00-35.00	A	0.000	0.000	1.091	0.000	29.60
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L30	35.00-29.25	A	0.000	0.000	1.255	0.000	57.34
		B	0.000	0.000	1.343	0.000	67.55
		C	0.000	0.000	0.926	0.000	59.40

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L31	29.25-28.25	A	0.000	0.000	0.218	0.000	9.97
		B	0.000	0.000	0.234	0.000	11.75
		C	0.000	0.000	0.161	0.000	10.33
L32	28.25-24.00	A	0.000	0.000	0.928	0.000	40.79
		B	0.000	0.000	0.992	0.000	49.92
		C	0.000	0.000	0.684	0.000	43.90
L33	24.00-23.75	A	0.000	0.000	0.055	0.000	2.49
		B	0.000	0.000	0.058	0.000	2.94
		C	0.000	0.000	0.040	0.000	2.58
L34	23.75-18.75	A	0.000	0.000	1.091	0.000	49.86
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L35	18.75-13.75	A	0.000	0.000	1.091	0.000	49.86
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L36	13.75-8.75	A	0.000	0.000	1.091	0.000	33.11
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L37	8.75-3.75	A	0.000	0.000	1.091	0.000	26.47
		B	0.000	0.000	1.168	0.000	58.73
		C	0.000	0.000	0.805	0.000	51.65
L38	3.75-2.00	A	0.000	0.000	0.382	0.000	9.26
		B	0.000	0.000	0.409	0.000	20.56
		C	0.000	0.000	0.282	0.000	18.08
L39	2.00-1.75	A	0.000	0.000	0.055	0.000	1.32
		B	0.000	0.000	0.058	0.000	2.94
		C	0.000	0.000	0.040	0.000	2.58
L40	1.75-0.00	A	0.000	0.000	0.382	0.000	9.26
		B	0.000	0.000	0.409	0.000	20.56
		C	0.000	0.000	0.282	0.000	18.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	147.00-142.00	A	1.739	0.000	0.000	2.025	0.000	204.96
		B		0.000	0.000	3.840	0.000	48.17
		C		0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	1.733	0.000	0.000	2.019	0.000	203.98
		B		0.000	0.000	3.828	0.000	47.88
		C		0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	1.726	0.000	0.000	2.013	0.000	202.97
		B		0.000	0.000	3.815	0.000	47.59
		C		0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	1.720	0.000	0.000	2.006	0.000	201.93
		B		0.000	0.000	3.802	0.000	47.28
		C		0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	1.713	0.000	0.000	1.999	0.000	200.86
		B		0.000	0.000	3.788	0.000	46.97
		C		0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	1.706	0.000	0.000	1.992	0.000	199.75
		B		0.000	0.000	3.774	0.000	68.73
		C		0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	1.699	0.000	0.000	1.985	0.000	198.59
		B		0.000	0.000	3.760	0.000	101.51
		C		0.000	0.000	0.000	0.000	0.00
L8	112.00-107.00	A	1.691	0.000	0.000	1.978	0.000	197.40

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
		B		0.000	0.000	3.745	0.000	101.16
		C		0.000	0.000	0.000	0.000	30.99
L9	107.00-99.50	A	1.681	0.000	0.000	2.952	0.000	293.75
		B		0.000	0.000	5.587	0.000	151.07
		C		0.000	0.000	0.000	0.000	77.48
L10	99.50-98.25	A	1.674	0.000	0.000	0.492	0.000	48.96
		B		0.000	0.000	0.931	0.000	25.18
		C		0.000	0.000	0.000	0.000	12.91
L11	98.25-93.25	A	1.669	0.000	0.000	1.955	0.000	193.86
		B		0.000	0.000	3.700	0.000	100.14
		C		0.000	0.000	0.000	0.000	51.65
L12	93.25-88.25	A	1.660	0.000	0.000	1.946	0.000	192.46
		B		0.000	0.000	3.682	0.000	99.74
		C		0.000	0.000	0.000	0.000	51.65
L13	88.25-83.25	A	1.650	0.000	0.000	1.937	0.000	191.00
		B		0.000	0.000	3.663	0.000	99.32
		C		0.000	0.000	0.000	0.000	51.65
L14	83.25-78.25	A	1.640	0.000	0.000	1.927	0.000	189.46
		B		0.000	0.000	3.643	0.000	98.88
		C		0.000	0.000	0.000	0.000	51.65
L15	78.25-73.25	A	1.630	0.000	0.000	1.916	0.000	187.84
		B		0.000	0.000	3.622	0.000	98.41
		C		0.000	0.000	0.000	0.000	51.65
L16	73.25-69.50	A	1.620	0.000	0.000	2.158	0.000	149.35
		B		0.000	0.000	3.430	0.000	83.08
		C		0.000	0.000	0.728	0.000	48.33
L17	69.50-69.25	A	1.616	0.000	0.000	0.216	0.000	10.87
		B		0.000	0.000	0.301	0.000	6.48
		C		0.000	0.000	0.121	0.000	4.17
L18	69.25-64.25	A	1.609	0.000	0.000	4.310	0.000	216.33
		B		0.000	0.000	5.996	0.000	129.16
		C		0.000	0.000	2.414	0.000	83.30
L19	64.25-59.00	A	1.597	0.000	0.000	3.538	0.000	212.18
		B		0.000	0.000	5.295	0.000	122.13
		C		0.000	0.000	1.561	0.000	74.56
L20	59.00-58.00	A	1.588	0.000	0.000	0.794	0.000	44.14
		B		0.000	0.000	1.129	0.000	25.57
		C		0.000	0.000	0.418	0.000	16.51
L21	58.00-57.75	A	1.587	0.000	0.000	0.198	0.000	12.67
		B		0.000	0.000	0.281	0.000	6.36
		C		0.000	0.000	0.104	0.000	4.11
L22	57.75-57.50	A	1.586	0.000	0.000	0.198	0.000	12.67
		B		0.000	0.000	0.281	0.000	6.35
		C		0.000	0.000	0.104	0.000	4.11
L23	57.50-52.50	A	1.579	0.000	0.000	3.941	0.000	254.22
		B		0.000	0.000	5.596	0.000	126.53
		C		0.000	0.000	2.076	0.000	82.01
L24	52.50-50.50	A	1.568	0.000	0.000	1.661	0.000	109.35
		B		0.000	0.000	2.319	0.000	50.43
		C		0.000	0.000	0.919	0.000	32.80
L25	50.50-50.25	A	1.565	0.000	0.000	0.211	0.000	13.64
		B		0.000	0.000	0.293	0.000	6.30
		C		0.000	0.000	0.118	0.000	4.10
L26	50.25-50.00	A	1.564	0.000	0.000	0.211	0.000	13.63
		B		0.000	0.000	0.293	0.000	6.29
		C		0.000	0.000	0.118	0.000	4.10
L27	50.00-45.00	A	1.556	0.000	0.000	4.203	0.000	254.75
		B		0.000	0.000	5.834	0.000	125.27
		C		0.000	0.000	2.361	0.000	81.73
L28	45.00-40.00	A	1.538	0.000	0.000	4.168	0.000	248.66
		B		0.000	0.000	5.783	0.000	124.05

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L29	40.00-35.00	C		0.000	0.000	2.343	0.000	81.24
		A	1.519	0.000	0.000	4.130	0.000	249.84
		B		0.000	0.000	5.725	0.000	122.70
		C		0.000	0.000	2.324	0.000	80.69
L30	35.00-29.25	A	1.496	0.000	0.000	4.696	0.000	321.39
		B		0.000	0.000	6.504	0.000	139.24
		C		0.000	0.000	2.646	0.000	92.04
L31	29.25-28.25	A	1.479	0.000	0.000	0.817	0.000	55.89
		B		0.000	0.000	1.131	0.000	24.22
		C		0.000	0.000	0.460	0.000	16.01
L32	28.25-24.00	A	1.465	0.000	0.000	3.419	0.000	228.72
		B		0.000	0.000	4.729	0.000	101.14
		C		0.000	0.000	1.930	0.000	67.30
L33	24.00-23.75	A	1.452	0.000	0.000	0.200	0.000	13.46
		B		0.000	0.000	0.276	0.000	5.90
		C		0.000	0.000	0.113	0.000	3.94
L34	23.75-18.75	A	1.435	0.000	0.000	3.962	0.000	265.26
		B		0.000	0.000	5.474	0.000	116.96
		C		0.000	0.000	2.240	0.000	78.35
L35	18.75-13.75	A	1.397	0.000	0.000	3.886	0.000	256.46
		B		0.000	0.000	5.360	0.000	114.45
		C		0.000	0.000	2.202	0.000	77.32
L36	13.75-8.75	A	1.347	0.000	0.000	3.785	0.000	217.79
		B		0.000	0.000	5.208	0.000	111.19
		C		0.000	0.000	2.152	0.000	75.98
L37	8.75-3.75	A	1.270	0.000	0.000	3.631	0.000	190.94
		B		0.000	0.000	4.977	0.000	106.40
		C		0.000	0.000	2.075	0.000	73.99
L38	3.75-2.00	A	1.175	0.000	0.000	1.205	0.000	60.07
		B		0.000	0.000	1.643	0.000	35.28
		C		0.000	0.000	0.693	0.000	25.08
L39	2.00-1.75	A	1.126	0.000	0.000	0.167	0.000	8.09
		B		0.000	0.000	0.227	0.000	4.90
		C		0.000	0.000	0.097	0.000	3.52
L40	1.75-0.00	A	1.043	0.000	0.000	1.112	0.000	50.98
		B		0.000	0.000	1.504	0.000	32.75
		C		0.000	0.000	0.647	0.000	24.00

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	147.00-142.00	0.100	-0.086	0.644	-0.368
L2	142.00-137.00	0.100	-0.086	0.653	-0.373
L3	137.00-132.00	0.100	-0.086	0.661	-0.376
L4	132.00-127.00	0.101	-0.085	0.669	-0.380
L5	127.00-122.00	0.101	-0.085	0.677	-0.383
L6	122.00-117.00	0.101	-0.085	0.684	-0.387
L7	117.00-112.00	0.101	-0.085	0.690	-0.389
L8	112.00-107.00	0.101	-0.085	0.696	-0.392
L9	107.00-99.50	0.101	-0.085	0.703	-0.395
L10	99.50-98.25	0.101	-0.085	0.705	-0.396
L11	98.25-93.25	0.101	-0.085	0.706	-0.397
L12	93.25-88.25	0.101	-0.085	0.711	-0.399
L13	88.25-83.25	0.101	-0.085	0.715	-0.400
L14	83.25-78.25	0.102	-0.085	0.718	-0.402

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L15	78.25-73.25	0.102	-0.085	0.721	-0.403
L16	73.25-69.50	0.096	0.009	0.639	-0.178
L17	69.50-69.25	0.088	0.129	0.545	0.076
L18	69.25-64.25	0.088	0.130	0.547	0.076
L19	64.25-59.00	0.093	0.054	0.607	-0.077
L20	59.00-58.00	0.089	0.125	0.568	0.028
L21	58.00-57.75	0.089	0.125	0.567	0.029
L22	57.75-57.50	0.089	0.125	0.567	0.029
L23	57.50-52.50	0.089	0.125	0.569	0.029
L24	52.50-50.50	0.089	0.129	0.558	0.068
L25	50.50-50.25	0.089	0.131	0.554	0.080
L26	50.25-50.00	0.089	0.131	0.554	0.080
L27	50.00-45.00	0.089	0.131	0.556	0.080
L28	45.00-40.00	0.090	0.131	0.558	0.082
L29	40.00-35.00	0.090	0.132	0.559	0.083
L30	35.00-29.25	0.090	0.132	0.560	0.084
L31	29.25-28.25	0.090	0.132	0.559	0.084
L32	28.25-24.00	0.090	0.132	0.555	0.085
L33	24.00-23.75	0.091	0.132	0.554	0.086
L34	23.75-18.75	0.091	0.132	0.553	0.087
L35	18.75-13.75	0.091	0.133	0.549	0.088
L36	13.75-8.75	0.091	0.133	0.542	0.090
L37	8.75-3.75	0.091	0.133	0.527	0.093
L38	3.75-2.00	0.092	0.133	0.506	0.095
L39	2.00-1.75	0.092	0.133	0.493	0.097
L40	1.75-0.00	0.092	0.134	0.471	0.099

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	2	Step Pegs (5/8" SR) 7-in. w/30" step	142.00 - 147.00	1.0000	1.0000
L1	3	Safety Line 3/8	142.00 - 147.00	1.0000	1.0000
L1	5	7983A(ELLIPTICAL)	142.00 - 147.00	1.0000	1.0000
L2	2	Step Pegs (5/8" SR) 7-in. w/30" step	137.00 - 142.00	1.0000	1.0000
L2	3	Safety Line 3/8	137.00 - 142.00	1.0000	1.0000
L2	5	7983A(ELLIPTICAL)	137.00 - 142.00	1.0000	1.0000
L3	2	Step Pegs (5/8" SR) 7-in. w/30" step	132.00 - 137.00	1.0000	1.0000
L3	3	Safety Line 3/8	132.00 - 137.00	1.0000	1.0000
L3	5	7983A(ELLIPTICAL)	132.00 - 137.00	1.0000	1.0000
L4	2	Step Pegs (5/8" SR) 7-in. w/30" step	127.00 - 132.00	1.0000	1.0000
L4	3	Safety Line 3/8	127.00 - 132.00	1.0000	1.0000
L4	5	7983A(ELLIPTICAL)	127.00 - 132.00	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L5	2	Step Pegs (5/8" SR) 7-in. w/30" step	122.00 - 127.00	1.0000	1.0000
L5	3	Safety Line 3/8	122.00 - 127.00	1.0000	1.0000
L5	5	7983A(ELLIPTICAL)	122.00 - 127.00	1.0000	1.0000
L6	2	Step Pegs (5/8" SR) 7-in. w/30" step	117.00 - 122.00	1.0000	1.0000
L6	3	Safety Line 3/8	117.00 - 122.00	1.0000	1.0000
L6	5	7983A(ELLIPTICAL)	117.00 - 122.00	1.0000	1.0000
L7	2	Step Pegs (5/8" SR) 7-in. w/30" step	112.00 - 117.00	1.0000	1.0000
L7	3	Safety Line 3/8	112.00 - 117.00	1.0000	1.0000
L7	5	7983A(ELLIPTICAL)	112.00 - 117.00	1.0000	1.0000
L8	2	Step Pegs (5/8" SR) 7-in. w/30" step	107.00 - 112.00	1.0000	1.0000
L8	3	Safety Line 3/8	107.00 - 112.00	1.0000	1.0000
L8	5	7983A(ELLIPTICAL)	107.00 - 112.00	1.0000	1.0000
L9	2	Step Pegs (5/8" SR) 7-in. w/30" step	99.50 - 107.00	1.0000	1.0000
L9	3	Safety Line 3/8	99.50 - 107.00	1.0000	1.0000
L9	5	7983A(ELLIPTICAL)	99.50 - 107.00	1.0000	1.0000
L11	2	Step Pegs (5/8" SR) 7-in. w/30" step	93.25 - 98.25	1.0000	1.0000
L11	3	Safety Line 3/8	93.25 - 98.25	1.0000	1.0000
L11	5	7983A(ELLIPTICAL)	93.25 - 98.25	1.0000	1.0000
L12	2	Step Pegs (5/8" SR) 7-in. w/30" step	88.25 - 93.25	1.0000	1.0000
L12	3	Safety Line 3/8	88.25 - 93.25	1.0000	1.0000
L12	5	7983A(ELLIPTICAL)	88.25 - 93.25	1.0000	1.0000
L13	2	Step Pegs (5/8" SR) 7-in. w/30" step	83.25 - 88.25	1.0000	1.0000
L13	3	Safety Line 3/8	83.25 - 88.25	1.0000	1.0000
L13	5	7983A(ELLIPTICAL)	83.25 - 88.25	1.0000	1.0000
L14	2	Step Pegs (5/8" SR) 7-in. w/30" step	78.25 - 83.25	1.0000	1.0000
L14	3	Safety Line 3/8	78.25 - 83.25	1.0000	1.0000
L14	5	7983A(ELLIPTICAL)	78.25 - 83.25	1.0000	1.0000
L15	2	Step Pegs (5/8" SR) 7-in. w/30" step	73.25 - 78.25	1.0000	1.0000
L15	3	Safety Line 3/8	73.25 - 78.25	1.0000	1.0000
L15	5	7983A(ELLIPTICAL)	73.25 - 78.25	1.0000	1.0000
L16	2	Step Pegs (5/8" SR) 7-in. w/30" step	69.50 - 73.25	1.0000	1.0000
L16	3	Safety Line 3/8	69.50 - 73.25	1.0000	1.0000
L16	5	7983A(ELLIPTICAL)	69.50 - 73.25	1.0000	1.0000
L16	37	Aero MP3-04	69.50 - 71.00	1.0000	1.0000
L16	38	Aero MP3-04	69.50 - 71.00	1.0000	1.0000
L16	39	Aero MP3-04	69.50 - 71.00	1.0000	1.0000
L17	2	Step Pegs (5/8" SR) 7-in. w/30" step	69.25 - 69.50	1.0000	1.0000
L17	3	Safety Line 3/8	69.25 - 69.50	1.0000	1.0000
L17	5	7983A(ELLIPTICAL)	69.25 - 69.50	1.0000	1.0000
L17	37	Aero MP3-04	69.25 - 69.50	1.0000	1.0000
L17	38	Aero MP3-04	69.25 - 69.50	1.0000	1.0000
L17	39	Aero MP3-04	69.25 - 69.50	1.0000	1.0000

<p>tnxTower</p> <p><i>Tower Engineering Professionals</i></p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p>Job</p> <p>Branford Banm Tower (BU 876321)</p>	<p>Page</p> <p>15 of 39</p>
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L18	2	Step Pegs (5/8" SR) 7-in. w/30" step	64.25 - 69.25	1.0000	1.0000
L18	3	Safety Line 3/8	64.25 - 69.25	1.0000	1.0000
L18	5	7983A(ELLIPTICAL)	64.25 - 69.25	1.0000	1.0000
L18	37	Aero MP3-04	64.25 - 69.25	1.0000	1.0000
L18	38	Aero MP3-04	64.25 - 69.25	1.0000	1.0000
L18	39	Aero MP3-04	64.25 - 69.25	1.0000	1.0000
L19	2	Step Pegs (5/8" SR) 7-in. w/30" step	59.00 - 64.25	1.0000	1.0000
L19	3	Safety Line 3/8	59.00 - 64.25	1.0000	1.0000
L19	5	7983A(ELLIPTICAL)	59.00 - 64.25	1.0000	1.0000
L19	37	Aero MP3-04	61.00 - 64.25	1.0000	1.0000
L19	38	Aero MP3-04	61.00 - 64.25	1.0000	1.0000
L19	39	Aero MP3-04	61.00 - 64.25	1.0000	1.0000
L19	46	Aero MP3-03	59.00 - 59.00	1.0000	1.0000
L19	48	Aero MP3-03	59.00 - 59.00	1.0000	1.0000
L19	50	Aero MP3-03	59.00 - 59.00	1.0000	1.0000
L21	2	Step Pegs (5/8" SR) 7-in. w/30" step	57.75 - 58.00	1.0000	1.0000
L21	3	Safety Line 3/8	57.75 - 58.00	1.0000	1.0000
L21	5	7983A(ELLIPTICAL)	57.75 - 58.00	1.0000	1.0000
L21	46	Aero MP3-03	57.75 - 58.00	1.0000	1.0000
L21	48	Aero MP3-03	57.75 - 58.00	1.0000	1.0000
L21	50	Aero MP3-03	57.75 - 58.00	1.0000	1.0000
L22	2	Step Pegs (5/8" SR) 7-in. w/30" step	57.50 - 57.75	1.0000	1.0000
L22	3	Safety Line 3/8	57.50 - 57.75	1.0000	1.0000
L22	5	7983A(ELLIPTICAL)	57.50 - 57.75	1.0000	1.0000
L22	46	Aero MP3-03	57.50 - 57.75	1.0000	1.0000
L22	48	Aero MP3-03	57.50 - 57.75	1.0000	1.0000
L22	50	Aero MP3-03	57.50 - 57.75	1.0000	1.0000
L23	2	Step Pegs (5/8" SR) 7-in. w/30" step	52.50 - 57.50	1.0000	1.0000
L23	3	Safety Line 3/8	52.50 - 57.50	1.0000	1.0000
L23	5	7983A(ELLIPTICAL)	52.50 - 57.50	1.0000	1.0000
L23	46	Aero MP3-03	52.50 - 57.50	1.0000	1.0000
L23	48	Aero MP3-03	52.50 - 57.50	1.0000	1.0000
L23	50	Aero MP3-03	52.50 - 57.50	1.0000	1.0000
L24	2	Step Pegs (5/8" SR) 7-in. w/30" step	50.50 - 52.50	1.0000	1.0000
L24	3	Safety Line 3/8	50.50 - 52.50	1.0000	1.0000
L24	5	7983A(ELLIPTICAL)	50.50 - 52.50	1.0000	1.0000
L24	31	Aero MP3-04	50.50 - 52.00	1.0000	1.0000
L24	33	Aero MP3-04	50.50 - 52.00	1.0000	1.0000
L24	35	Aero MP3-04	50.50 - 52.00	1.0000	1.0000
L24	46	Aero MP3-03	52.00 - 52.50	1.0000	1.0000
L24	48	Aero MP3-03	52.00 - 52.50	1.0000	1.0000
L24	50	Aero MP3-03	52.00 - 52.50	1.0000	1.0000
L25	2	Step Pegs (5/8" SR) 7-in. w/30" step	50.25 - 50.50	1.0000	1.0000
L25	3	Safety Line 3/8	50.25 - 50.50	1.0000	1.0000
L25	5	7983A(ELLIPTICAL)	50.25 - 50.50	1.0000	1.0000
L25	31	Aero MP3-04	50.25 - 50.50	1.0000	1.0000
L25	33	Aero MP3-04	50.25 - 50.50	1.0000	1.0000
L25	35	Aero MP3-04	50.25 - 50.50	1.0000	1.0000
L26	2	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 50.25	1.0000	1.0000
L26	3	Safety Line 3/8	50.00 - 50.25	1.0000	1.0000
L26	5	7983A(ELLIPTICAL)	50.00 - 50.25	1.0000	1.0000
L26	31	Aero MP3-04	50.00 - 50.25	1.0000	1.0000
L26	33	Aero MP3-04	50.00 - 50.25	1.0000	1.0000
L26	35	Aero MP3-04	50.00 - 50.25	1.0000	1.0000

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Branford Banm Tower (BU 876321)	Page 16 of 39
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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
L27	2	Step Pegs (5/8" SR) 7-in. w/30" step	45.00 - 50.00	1.0000	1.0000
L27	3	Safety Line 3/8	45.00 - 50.00	1.0000	1.0000
L27	5	7983A(ELLIPTICAL)	45.00 - 50.00	1.0000	1.0000
L27	31	Aero MP3-04	45.00 - 50.00	1.0000	1.0000
L27	33	Aero MP3-04	45.00 - 50.00	1.0000	1.0000
L27	35	Aero MP3-04	45.00 - 50.00	1.0000	1.0000
L28	2	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 45.00	1.0000	1.0000
L28	3	Safety Line 3/8	40.00 - 45.00	1.0000	1.0000
L28	5	7983A(ELLIPTICAL)	40.00 - 45.00	1.0000	1.0000
L28	31	Aero MP3-04	40.00 - 45.00	1.0000	1.0000
L28	33	Aero MP3-04	40.00 - 45.00	1.0000	1.0000
L28	35	Aero MP3-04	40.00 - 45.00	1.0000	1.0000
L29	2	Step Pegs (5/8" SR) 7-in. w/30" step	35.00 - 40.00	1.0000	1.0000
L29	3	Safety Line 3/8	35.00 - 40.00	1.0000	1.0000
L29	5	7983A(ELLIPTICAL)	35.00 - 40.00	1.0000	1.0000
L29	31	Aero MP3-04	35.50 - 40.00	1.0000	1.0000
L29	33	Aero MP3-04	35.50 - 40.00	1.0000	1.0000
L29	35	Aero MP3-04	35.50 - 40.00	1.0000	1.0000
L29	41	Aero MP3-04	35.00 - 35.50	1.0000	1.0000
L29	42	Aero MP3-04	35.00 - 35.50	1.0000	1.0000
L29	43	Aero MP3-04	35.00 - 35.50	1.0000	1.0000
L30	2	Step Pegs (5/8" SR) 7-in. w/30" step	29.25 - 35.00	1.0000	1.0000
L30	3	Safety Line 3/8	29.25 - 35.00	1.0000	1.0000
L30	5	7983A(ELLIPTICAL)	29.25 - 35.00	1.0000	1.0000
L30	41	Aero MP3-04	29.25 - 35.00	1.0000	1.0000
L30	42	Aero MP3-04	29.25 - 35.00	1.0000	1.0000
L30	43	Aero MP3-04	29.25 - 35.00	1.0000	1.0000
L32	2	Step Pegs (5/8" SR) 7-in. w/30" step	24.00 - 28.25	1.0000	1.0000
L32	3	Safety Line 3/8	24.00 - 28.25	1.0000	1.0000
L32	5	7983A(ELLIPTICAL)	24.00 - 28.25	1.0000	1.0000
L32	41	Aero MP3-04	24.00 - 28.25	1.0000	1.0000
L32	42	Aero MP3-04	24.00 - 28.25	1.0000	1.0000
L32	43	Aero MP3-04	24.00 - 28.25	1.0000	1.0000
L33	2	Step Pegs (5/8" SR) 7-in. w/30" step	23.75 - 24.00	1.0000	1.0000
L33	3	Safety Line 3/8	23.75 - 24.00	1.0000	1.0000
L33	5	7983A(ELLIPTICAL)	23.75 - 24.00	1.0000	1.0000
L33	41	Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L33	42	Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L33	43	Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L34	2	Step Pegs (5/8" SR) 7-in. w/30" step	18.75 - 23.75	1.0000	1.0000
L34	3	Safety Line 3/8	18.75 - 23.75	1.0000	1.0000
L34	5	7983A(ELLIPTICAL)	18.75 - 23.75	1.0000	1.0000
L34	41	Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L34	42	Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L34	43	Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L35	2	Step Pegs (5/8" SR) 7-in. w/30" step	13.75 - 18.75	1.0000	1.0000
L35	3	Safety Line 3/8	13.75 - 18.75	1.0000	1.0000
L35	5	7983A(ELLIPTICAL)	13.75 - 18.75	1.0000	1.0000
L35	41	Aero MP3-04	13.75 - 18.75	1.0000	1.0000
L35	42	Aero MP3-04	13.75 - 18.75	1.0000	1.0000
L35	43	Aero MP3-04	13.75 - 18.75	1.0000	1.0000
L36	2	Step Pegs (5/8" SR) 7-in. w/30" step	8.75 - 13.75	1.0000	1.0000
L36	3	Safety Line 3/8	8.75 - 13.75	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L36	5	7983A(ELLIPTICAL)	8.75 - 13.75	1.0000	1.0000
L36	41	Aero MP3-04	8.75 - 13.75	1.0000	1.0000
L36	42	Aero MP3-04	8.75 - 13.75	1.0000	1.0000
L36	43	Aero MP3-04	8.75 - 13.75	1.0000	1.0000
L37	2	Step Pegs (5/8" SR) 7-in. w/30" step	3.75 - 8.75	1.0000	1.0000
L37	3	Safety Line 3/8	3.75 - 8.75	1.0000	1.0000
L37	5	7983A(ELLIPTICAL)	3.75 - 8.75	1.0000	1.0000
L37	41	Aero MP3-04	3.75 - 8.75	1.0000	1.0000
L37	42	Aero MP3-04	3.75 - 8.75	1.0000	1.0000
L37	43	Aero MP3-04	3.75 - 8.75	1.0000	1.0000
L38	2	Step Pegs (5/8" SR) 7-in. w/30" step	2.00 - 3.75	1.0000	1.0000
L38	3	Safety Line 3/8	2.00 - 3.75	1.0000	1.0000
L38	5	7983A(ELLIPTICAL)	2.00 - 3.75	1.0000	1.0000
L38	41	Aero MP3-04	2.00 - 3.75	1.0000	1.0000
L38	42	Aero MP3-04	2.00 - 3.75	1.0000	1.0000
L38	43	Aero MP3-04	2.00 - 3.75	1.0000	1.0000
L39	2	Step Pegs (5/8" SR) 7-in. w/30" step	1.75 - 2.00	1.0000	1.0000
L39	3	Safety Line 3/8	1.75 - 2.00	1.0000	1.0000
L39	5	7983A(ELLIPTICAL)	1.75 - 2.00	1.0000	1.0000
L39	41	Aero MP3-04	1.75 - 2.00	1.0000	1.0000
L39	42	Aero MP3-04	1.75 - 2.00	1.0000	1.0000
L39	43	Aero MP3-04	1.75 - 2.00	1.0000	1.0000
L40	2	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 1.75	1.0000	1.0000
L40	3	Safety Line 3/8	0.00 - 1.75	1.0000	1.0000
L40	5	7983A(ELLIPTICAL)	0.00 - 1.75	1.0000	1.0000
L40	41	Aero MP3-04	0.00 - 1.75	1.0000	1.0000
L40	42	Aero MP3-04	0.00 - 1.75	1.0000	1.0000
L40	43	Aero MP3-04	0.00 - 1.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
147								
LLPX310R w/ Mount Pipe	A	From Centroid-Le	4.00 -4.00	0.000	147.00	No Ice 1/2" Ice	4.45 4.79	43.87 80.95
		g	0.000			1" Ice	5.13	123.32
LLPX310R w/ Mount Pipe	B	From Centroid-Le	4.00 -2.00	0.000	147.00	No Ice 1/2" Ice	4.45 4.79	43.87 80.95
		g	0.000			1" Ice	5.13	123.32
LLPX310R w/ Mount Pipe	C	From Centroid-Le	4.00 -2.00	0.000	147.00	No Ice 1/2" Ice	4.45 4.79	43.87 80.95
		g	0.000			1" Ice	5.13	123.32
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Le	4.00 -6.00	0.000	147.00	No Ice 1/2" Ice	6.65 7.14	78.10 133.51
		g	0.000			1" Ice	7.60	195.67

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Le g	4.00 -6.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	6.65 7.14 6.63	5.03 5.89 6.63	78.10 133.51 195.67
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Le g	4.00 6.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	6.65 7.14 6.63	5.03 5.89 6.63	78.10 133.51 195.67
APXVSP18-C-A20 w/ Mount Pipe	A	From Centroid-Le g	4.00 4.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	87.55 158.03 236.54
ET-X-TU-42-15-37-18-iR-SP w/ Mount Pipe	B	From Centroid-Le g	4.00 6.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	7.99 8.66 9.21	4.95 5.98 6.72	75.55 139.81 210.89
APXVSP18-C-A20 w/ Mount Pipe	C	From Centroid-Le g	4.00 -6.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	87.55 158.03 236.54
(3) ACU-A20-N	A	From Centroid-Le g	4.00 4.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	1.04 2.32 4.41
(3) ACU-A20-N	B	From Centroid-Le g	4.00 6.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	1.04 2.32 4.41
(3) ACU-A20-N	C	From Centroid-Le g	4.00 -6.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.12 0.16 0.21	1.04 2.32 4.41
FDD_R6_RRH	A	From Centroid-Le g	4.00 -4.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.53 1.69 1.85	0.68 0.80 0.92	33.00 44.50 58.31
FDD_R6_RRH	B	From Centroid-Le g	4.00 -2.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.53 1.69 1.85	0.68 0.80 0.92	33.00 44.50 58.31
FDD_R6_RRH	C	From Centroid-Le g	4.00 -2.000 -1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.53 1.69 1.85	0.68 0.80 0.92	33.00 44.50 58.31
TD-RRH8x20-25	A	From Centroid-Le g	4.00 -6.000 1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	66.00 89.94 117.22
TD-RRH8x20-25	B	From Centroid-Le g	4.00 -6.000 1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	66.00 89.94 117.22
TD-RRH8x20-25	C	From Centroid-Le g	4.00 6.000 1.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	66.00 89.94 117.22
(2) 2.4" Dia x 6-ft Mount Pipe	A	From Centroid-Le g	4.00 3.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	21.96 32.81 47.71
(2) 2.4" Dia x 6-ft Mount Pipe	B	From Centroid-Le g	4.00 -2.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	21.96 32.81 47.71
(2) 2.4" Dia x 6-ft Mount Pipe	C	From Centroid-Le g	4.00 -2.000 0.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	21.96 32.81 47.71
2.4" Dia x 8-ft Mount Pipe	C	From Leg	0.00 0.000 4.000		0.000	147.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	29.28 43.62 63.24
Platform Mount [LP 1201-1]	C	None			0.000	147.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2100.00 2500.00 2900.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
145									
TME-800MHZ RRH	A	From Leg	1.00	0.000	0.000	145.00	No Ice 2.13	1.77	53.00
			0.000				1/2" Ice 2.32	1.95	74.19
			1.000				1" Ice 2.51	2.13	98.39
TME-800MHZ RRH	B	From Leg	1.00	0.000	0.000	145.00	No Ice 2.13	1.77	53.00
			0.000				1/2" Ice 2.32	1.95	74.19
			1.000				1" Ice 2.51	2.13	98.39
TME-800MHZ RRH	C	From Leg	1.00	0.000	0.000	145.00	No Ice 2.13	1.77	53.00
			0.000				1/2" Ice 2.32	1.95	74.19
			1.000				1" Ice 2.51	2.13	98.39
800 EXTERNAL NOTCH FILTER	A	From Leg	1.00	0.000	0.000	145.00	No Ice 0.66	0.32	11.00
			0.000				1/2" Ice 0.76	0.40	16.81
			1.000				1" Ice 0.87	0.48	24.26
800 EXTERNAL NOTCH FILTER	B	From Leg	1.00	0.000	0.000	145.00	No Ice 0.66	0.32	11.00
			0.000				1/2" Ice 0.76	0.40	16.81
			1.000				1" Ice 0.87	0.48	24.26
800 EXTERNAL NOTCH FILTER	C	From Leg	1.00	0.000	0.000	145.00	No Ice 0.66	0.32	11.00
			0.000				1/2" Ice 0.76	0.40	16.81
			1.000				1" Ice 0.87	0.48	24.26
TME-1900MHZ RRH (65 MHz)	A	From Leg	1.00	0.000	0.000	145.00	No Ice 2.70	2.77	60.00
			0.000				1/2" Ice 2.94	3.01	83.90
			-2.000				1" Ice 3.18	3.26	111.08
TME-1900MHZ RRH (65 MHz)	B	From Leg	1.00	0.000	0.000	145.00	No Ice 2.70	2.77	60.00
			0.000				1/2" Ice 2.94	3.01	83.90
			-2.000				1" Ice 3.18	3.26	111.08
TME-1900MHZ RRH (65 MHz)	C	From Leg	1.00	0.000	0.000	145.00	No Ice 2.70	2.77	60.00
			0.000				1/2" Ice 2.94	3.01	83.90
			-2.000				1" Ice 3.18	3.26	111.08
Pipe Mount [PM 601-3]	C	None		0.000	0.000	145.00	No Ice 4.39	4.39	195.00
							1/2" Ice 5.48	5.48	237.41
							1" Ice 6.57	6.57	279.82
119									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.00	-10.000	0.000	119.00	No Ice 6.33	5.64	112.18
			-6.000				1/2" Ice 6.78	6.43	169.02
			2.000				1" Ice 7.21	7.13	232.59
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.00	0.000	0.000	119.00	No Ice 6.33	5.64	112.18
			-6.000				1/2" Ice 6.78	6.43	169.02
			2.000				1" Ice 7.21	7.13	232.59
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.00	20.000	0.000	119.00	No Ice 6.33	5.64	112.18
			-6.000				1/2" Ice 6.78	6.43	169.02
			2.000				1" Ice 7.21	7.13	232.59
LNx-6515DS-VTM w/ Mount Pipe	A	From Face	3.00	-10.000	0.000	119.00	No Ice 11.21	9.36	75.35
			-2.000				1/2" Ice 11.83	10.68	158.69
			2.000				1" Ice 12.45	11.71	251.57
LNx-6515DS-VTM w/ Mount Pipe	B	From Face	3.00	0.000	0.000	119.00	No Ice 11.21	9.36	75.35
			-2.000				1/2" Ice 11.83	10.68	158.69
			2.000				1" Ice 12.45	11.71	251.57
LNx-6515DS-VTM w/ Mount Pipe	C	From Face	3.00	20.000	0.000	119.00	No Ice 11.21	9.36	75.35
			-2.000				1/2" Ice 11.83	10.68	158.69
			2.000				1" Ice 12.45	11.71	251.57
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	3.00	-10.000	0.000	119.00	No Ice 6.33	5.64	112.18
			6.000				1/2" Ice 6.78	6.43	169.02
			2.000				1" Ice 7.21	7.13	232.59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	3.00	0.000	0.000	119.00	No Ice 6.33	5.64	112.18
			6.000				1/2" Ice 6.78	6.43	169.02
			2.000				1" Ice 7.21	7.13	232.59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	3.00	20.000	0.000	119.00	No Ice 6.33	5.64	112.18

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	Project		TEP No. 25579.155918				Date		14:13:50 01/31/18	
	Client		Crown Castle				Designed by		AAS	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	lb
B2P w/ Mount Pipe			6.000			1/2" Ice	6.78	6.43	169.02
			2.000			1" Ice	7.21	7.13	232.59
KRY 112 144/1	A	From Face	3.00		-10.000	No Ice	0.35	0.16	11.02
			-6.000			1/2" Ice	0.43	0.22	14.12
			2.000			1" Ice	0.51	0.28	18.44
KRY 112 144/1	B	From Face	3.00		0.000	No Ice	0.35	0.16	11.02
			-6.000			1/2" Ice	0.43	0.22	14.12
			2.000			1" Ice	0.51	0.28	18.44
KRY 112 144/1	C	From Face	3.00		20.000	No Ice	0.35	0.16	11.02
			-6.000			1/2" Ice	0.43	0.22	14.12
			2.000			1" Ice	0.51	0.28	18.44
RRUS 11 B12	A	From Face	3.00		-10.000	No Ice	2.83	1.18	50.70
			-2.000			1/2" Ice	3.04	1.33	71.57
			2.000			1" Ice	3.26	1.48	95.49
RRUS 11 B12	B	From Face	3.00		0.000	No Ice	2.83	1.18	50.70
			-2.000			1/2" Ice	3.04	1.33	71.57
			2.000			1" Ice	3.26	1.48	95.49
RRUS 11 B12	C	From Face	3.00		20.000	No Ice	2.83	1.18	50.70
			-2.000			1/2" Ice	3.04	1.33	71.57
			2.000			1" Ice	3.26	1.48	95.49
T-Arm Mount [TA 602-3]	C	None			0.000	No Ice	11.59	11.59	774.30
						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
110									
7770.00 w/ Mount Pipe	A	From Centroid-Le g	4.00		44.000	No Ice	5.75	4.25	55.38
			6.000			1/2" Ice	6.18	5.01	102.81
			2.000			1" Ice	6.61	5.71	156.64
7770.00 w/ Mount Pipe	B	From Centroid-Le g	4.00		23.000	No Ice	5.75	4.25	55.38
			6.000			1/2" Ice	6.18	5.01	102.81
			2.000			1" Ice	6.61	5.71	156.64
7770.00 w/ Mount Pipe	C	From Centroid-Le g	4.00		23.000	No Ice	5.75	4.25	55.38
			6.000			1/2" Ice	6.18	5.01	102.81
			2.000			1" Ice	6.61	5.71	156.64
(3) SBNHH-1D65A w/ Mount Pipe	A	From Centroid-Le g	4.00		-76.000	No Ice	6.35	5.64	68.24
			-2.000			1/2" Ice	6.80	6.36	126.39
			2.000			1" Ice	7.26	7.09	192.05
(3) SBNHH-1D65A w/ Mount Pipe	B	From Centroid-Le g	4.00		-30.000	No Ice	6.35	5.64	68.24
			-2.000			1/2" Ice	6.80	6.36	126.39
			2.000			1" Ice	7.26	7.09	192.05
(3) SBNHH-1D65A w/ Mount Pipe	C	From Centroid-Le g	4.00		-40.000	No Ice	6.35	5.64	68.24
			-2.000			1/2" Ice	6.80	6.36	126.39
			2.000			1" Ice	7.26	7.09	192.05
(2) 7020.00	A	From Centroid-Le g	4.00		44.000	No Ice	0.10	0.17	2.20
			6.000			1/2" Ice	0.15	0.24	5.16
			2.000			1" Ice	0.20	0.31	9.33
(2) 7020.00	B	From Centroid-Le g	4.00		23.000	No Ice	0.10	0.17	2.20
			6.000			1/2" Ice	0.15	0.24	5.16
			2.000			1" Ice	0.20	0.31	9.33
(2) 7020.00	C	From Centroid-Le g	4.00		23.000	No Ice	0.10	0.17	2.20
			6.000			1/2" Ice	0.15	0.24	5.16
			2.000			1" Ice	0.20	0.31	9.33
(2) LGP2140X	A	From Centroid-Le g	4.00		44.000	No Ice	1.08	0.36	14.10
			6.000			1/2" Ice	1.21	0.45	21.23
			2.000			1" Ice	1.35	0.56	30.24
(2) LGP2140X	B	From Centroid-Le g	4.00		23.000	No Ice	1.08	0.36	14.10
			6.000			1/2" Ice	1.21	0.45	21.23
			2.000			1" Ice	1.35	0.56	30.24

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	Client	Crown Castle	Designed by	AAS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
(2) LGP2140X	C	From	4.00		23.000	110.00	No Ice	1.08	0.36	14.10
		Centroid-Le	6.000				1/2" Ice	1.21	0.45	21.23
		g	2.000				1" Ice	1.35	0.56	30.24
RRUS 11	A	From	4.00		-76.000	110.00	No Ice	2.79	1.19	50.70
		Centroid-Le	-6.000				1/2" Ice	3.00	1.34	71.57
		g	2.000				1" Ice	3.21	1.50	95.48
RRUS 11	B	From	4.00		-30.000	110.00	No Ice	2.79	1.19	50.70
		Centroid-Le	-6.000				1/2" Ice	3.00	1.34	71.57
		g	2.000				1" Ice	3.21	1.50	95.48
RRUS 11	C	From	4.00		-40.000	110.00	No Ice	2.79	1.19	50.70
		Centroid-Le	-6.000				1/2" Ice	3.00	1.34	71.57
		g	2.000				1" Ice	3.21	1.50	95.48
RRUS 32	A	From	4.00		-76.000	110.00	No Ice	2.86	1.78	55.12
		Centroid-Le	-6.000				1/2" Ice	3.08	1.97	77.39
		g	2.000				1" Ice	3.32	2.17	102.93
RRUS 32	B	From	4.00		-30.000	110.00	No Ice	2.86	1.78	55.12
		Centroid-Le	-6.000				1/2" Ice	3.08	1.97	77.39
		g	2.000				1" Ice	3.32	2.17	102.93
RRUS 32	C	From	4.00		-40.000	110.00	No Ice	2.86	1.78	55.12
		Centroid-Le	-6.000				1/2" Ice	3.08	1.97	77.39
		g	2.000				1" Ice	3.32	2.17	102.93
(2) DC6-48-60-18-8F	C	From Leg	0.50		0.000	110.00	No Ice	1.21	1.21	32.80
			0.000				1/2" Ice	1.89	1.89	54.76
			2.000				1" Ice	2.11	2.11	79.58
RRUS 32 B2	A	From	4.00		-76.000	110.00	No Ice	2.73	1.67	52.90
		Centroid-Le	-2.000				1/2" Ice	2.95	1.86	73.96
		g	2.000				1" Ice	3.18	2.05	98.21
RRUS 32 B2	B	From	4.00		-30.000	110.00	No Ice	2.73	1.67	52.90
		Centroid-Le	-2.000				1/2" Ice	2.95	1.86	73.96
		g	2.000				1" Ice	3.18	2.05	98.21
RRUS 32 B2	C	From	4.00		-40.000	110.00	No Ice	2.73	1.67	52.90
		Centroid-Le	-2.000				1/2" Ice	2.95	1.86	73.96
		g	2.000				1" Ice	3.18	2.05	98.21
RRUS 32 B66	A	From	4.00		-76.000	110.00	No Ice	2.74	1.67	53.00
		Centroid-Le	2.000				1/2" Ice	2.96	1.86	74.11
		g	2.000				1" Ice	3.19	2.05	98.42
RRUS 32 B66	B	From	4.00		-30.000	110.00	No Ice	2.74	1.67	53.00
		Centroid-Le	2.000				1/2" Ice	2.96	1.86	74.11
		g	2.000				1" Ice	3.19	2.05	98.42
RRUS 32 B66	C	From	4.00		-40.000	110.00	No Ice	2.74	1.67	53.00
		Centroid-Le	2.000				1/2" Ice	2.96	1.86	74.11
		g	2.000				1" Ice	3.19	2.05	98.42
Miscellaneous [NA 509-3]	B	None			0.000	110.00	No Ice	11.84	11.84	275.00
							1/2" Ice	16.96	16.96	296.20
							1" Ice	22.08	22.08	317.40
Miscellaneous [NA 510-1]	B	None			0.000	110.00	No Ice	6.00	6.00	255.70
							1/2" Ice	8.50	8.50	339.50
							1" Ice	11.00	11.00	409.12
Platform Mount [LP 1201-1]	B	None			0.000	110.00	No Ice	23.10	23.10	2100.00
							1/2" Ice	26.80	26.80	2500.00
							1" Ice	30.50	30.50	2900.00
53										
GPS_A	B	From Leg	3.00		0.000	53.00	No Ice	0.26	0.26	0.87
			0.000				1/2" Ice	0.32	0.32	4.66
			1.000				1" Ice	0.39	0.39	9.76
Side Arm Mount [SO 701-1]	B	From Leg	1.50		0.000	53.00	No Ice	0.85	1.67	65.00
			0.000				1/2" Ice	1.14	2.34	79.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
			0.000			1" Ice	1.43	3.01	93.00
49									
KS24019-L112A	C	From Leg	3.00	0.000	49.00	No Ice	0.08	0.08	5.00
			0.000			1/2" Ice	0.13	0.13	6.25
			1.000			1" Ice	0.19	0.19	8.26
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.000	49.00	No Ice	0.85	1.67	65.00
			0.000			1/2" Ice	1.14	2.34	79.00
			0.000			1" Ice	1.43	3.01	93.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
			ft	ft	°	°	ft	ft	ft ²	lb	
A-ANT-23G-2-C	A	Paraboloid w/Shroud (HP)	From Centroid	4.00	0.000	0.000		147.00	2.17	No Ice	3.72
			-Leg	2.000						1/2" Ice	4.01
				2.000						1" Ice	4.30
VHLP2-18	A	Paraboloid w/Shroud (HP)	From Centroid	4.00	90.000	6.000		147.00	2.00	No Ice	3.14
			-Leg	2.000						1/2" Ice	3.41
				2.000						1" Ice	3.68
A-ANT-23G-2-C	C	Paraboloid w/Shroud (HP)	From Centroid	4.00	0.000	2.000		147.00	2.17	No Ice	3.72
			-Leg	2.000						1/2" Ice	4.01
				2.000						1" Ice	4.30

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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	147 - 142	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10694.92	746.49	1837.90
			Max. Mx	20	-3893.94	38824.68	438.64
			Max. My	2	-3932.88	-775.84	38616.19
			Max. Vy	8	8156.01	-38099.90	1093.64
			Max. Vx	14	8057.59	373.71	-36988.21
			Max. Torque	6			4028.40
L2	142 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11603.21	703.10	2063.37
			Max. Mx	20	-4231.87	81150.85	486.24
			Max. My	2	-4272.40	-1348.06	80292.33
			Max. Vy	8	8798.17	-80478.73	1469.18
			Max. Vx	14	8698.92	480.95	-78862.68
			Max. Torque	6			4027.89
L3	137 - 132	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12532.99	657.82	2295.17
			Max. Mx	20	-4589.34	126725.11	531.42
			Max. My	2	-4631.32	-1923.89	125212.24
			Max. Vy	8	9455.97	-126106.17	1845.09

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L4	132 - 127	Pole	Max. Vx	14	9355.87	588.16	-123981.18
			Max. Torque	6			4027.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13484.09	610.71	2532.92
			Max. Mx	20	-4966.90	175623.62	574.20
			Max. My	2	-5010.19	-2503.15	173452.05
			Max. Vy	8	10128.60	-175058.36	2221.31
L5	127 - 122	Pole	Max. Vx	14	10027.64	695.34	-172419.79
			Max. Torque	6			4026.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14456.37	561.83	2776.21
			Max. Mx	20	-5365.06	227918.40	614.58
			Max. My	2	-5409.53	-3085.68	225083.74
			Max. Vy	8	10815.22	-227407.32	2597.78
L6	122 - 117	Pole	Max. Vx	14	10713.39	802.48	-224250.47
			Max. Torque	6			4025.31
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21098.93	511.68	3030.14
			Max. Mx	20	-7510.64	299282.98	268.53
			Max. My	2	-7581.97	-4028.36	295307.22
			Max. Vy	8	15872.41	-298825.88	3402.02
L7	117 - 112	Pole	Max. Vx	14	15649.58	1366.18	-294672.41
			Max. Torque	6			4023.81
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22179.28	460.44	3296.33
			Max. Mx	20	-8037.73	380352.70	-195.60
			Max. My	2	-8109.18	-5129.60	375102.76
			Max. Vy	8	16583.82	-379950.04	4304.45
L8	112 - 107	Pole	Max. Vx	14	16359.98	1990.37	-374667.86
			Max. Torque	6			3752.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34201.52	778.87	3365.64
			Max. Mx	20	-12812.01	498004.02	-1082.98
			Max. My	2	-12952.32	-6394.79	489095.72
			Max. Vy	8	25020.19	-497427.77	5255.46
L9	107 - 99.5	Pole	Max. Vx	14	24353.16	2928.64	-488995.57
			Max. Torque	6			4864.12
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35088.81	738.33	3587.40
			Max. Mx	20	-13325.12	592754.86	-1603.97
			Max. My	14	-13455.38	3580.10	-581275.75
			Max. Vy	8	25549.78	-592220.09	6124.32
L10	99.5 - 98.25	Pole	Max. Vx	14	24882.11	3580.10	-581275.75
			Max. Torque	6			4862.05
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37010.74	683.54	3882.75
			Max. Mx	20	-14456.56	722431.73	-2300.77
			Max. My	14	-14584.86	4449.66	-707651.56
			Max. Vy	8	26341.60	-721952.53	7283.45
L11	98.25 - 93.25	Pole	Max. Vx	14	25671.95	4449.66	-707651.56
			Max. Torque	6			4857.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38338.75	627.36	4179.16
			Max. Mx	20	-15307.94	855827.92	-3004.08
			Max. My	14	-15431.27	5317.23	-837741.22
			Max. Vy	8	27056.64	-855404.88	8437.63
L12	93.25 - 88.25	Pole	Max. Vx	14	26386.40	5317.23	-837741.22
			Max. Torque	6			4856.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39690.14	569.31	4476.83
			Max. Mx	20	-16192.66	992799.37	-3711.32

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L13	88.25 - 83.25	Pole	Max. My	14	-16310.41	6182.42	-971404.24
			Max. Vy	8	27772.19	-992433.12	9586.93
			Max. Vx	14	27101.65	6182.42	-971404.24
			Max. Torque	6			4852.78
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41064.64	509.52	4775.35
			Max. Mx	20	-17113.32	1133336.40	-4422.05
			Max. My	14	-17224.80	7044.82	-1108632.5
			Max. Vy	8	28485.21	-1133027.5	10730.83
L14	83.25 - 78.25	Pole	Max. Vx	14	27814.69	7044.82	-1108632.5
			Max. Torque	6			4848.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42461.91	448.15	5074.25
			Max. Mx	20	-18069.15	1277423.45	-5135.71
			Max. My	14	-18173.76	7904.07	-1249412.1
			Max. Vy	8	29194.48	-1277172.5	11868.93
			Max. Vx	14	28524.34	7904.07	-1249412.1
			Max. Torque	6			4843.73
L15	78.25 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43881.63	385.33	5373.06
			Max. Mx	20	-19059.43	1425038.69	-5851.76
			Max. My	14	-19156.62	8759.81	-1393722.9
			Max. Vy	8	29898.72	-1424846.2	13000.83
			Max. Vx	14	29229.30	8759.81	-1393722.9
			Max. Torque	6			4839.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44989.69	337.34	5582.21
L16	73.25 - 69.5	Pole	Max. Mx	20	-19818.95	1538050.24	-6389.85
			Max. My	14	-19910.50	9399.19	-1504259.1
			Max. Vy	8	30426.27	-1537902.0	13845.64
			Max. Vx	14	29757.56	9399.19	-1504259.1
			Max. Torque	6			4834.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45079.51	334.15	5595.30
			Max. Mx	20	-19903.28	1545654.59	-6426.49
			Max. My	14	-19993.56	9441.46	-1511698.6
L17	69.5 - 69.25	Pole	Max. Vy	8	30449.83	-1545509.3	13901.17
			Max. Vx	14	29781.52	9441.46	-1511698.6
			Max. Torque	6			4831.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46883.75	269.11	5844.26
			Max. Mx	20	-21131.02	1699738.67	-7142.99
			Max. My	14	-21215.98	10292.23	-1662492.6
			Max. Vy	8	31219.92	-1699652.7	15025.26
			Max. Vx	14	29781.52	9441.46	-1511698.6

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	14	30554.52	10292.23	-1662492.69
L19	64.25 - 59	Pole	Max. Torque	6			4831.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47062.09	262.52	5871.40
			Max. Mx	20	-21265.34	1715356.15	-7215.05
			Max. My	14	-21349.36	10377.04	-1677781.96
			Max. Vy	8	31288.15	-1715276.22	15137.15
			Max. Vx	14	30622.90	10377.04	-1677781.96
L20	59 - 58	Pole	Max. Torque	6			4828.09
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50302.77	186.65	6179.97
			Max. Mx	20	-23465.44	1897967.20	-8037.44
			Max. My	14	-23545.92	11355.69	-1856612.58
			Max. Vy	8	32244.72	-1897956.00	16432.07
			Max. Vx	14	31578.21	11355.69	-1856612.58
L21	58 - 57.75	Pole	Max. Torque	6			4825.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50390.90	183.39	6196.39
			Max. Mx	20	-23543.20	1906026.23	-8071.93
			Max. My	14	-23622.63	11397.92	-1864505.12
			Max. Vy	8	32268.00	-1906018.02	16489.71
			Max. Vx	14	31601.77	11397.92	-1864505.12
L22	57.75 - 57.5	Pole	Max. Torque	6			4825.45
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50479.09	180.12	6212.35
			Max. Mx	20	-23605.25	1914093.90	-8105.86
			Max. My	14	-23684.30	11440.36	-1872406.33
			Max. Vy	8	32302.61	-1914088.69	16547.83
			Max. Vx	14	31636.47	11440.36	-1872406.33
L23	57.5 - 52.5	Pole	Max. Torque	6			4825.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52397.49	-281.61	6306.06
			Max. Mx	8	-24922.85	-2077550.60	17603.56
			Max. My	14	-24994.51	12099.57	-2032404.05
			Max. Vy	8	33065.47	-2077550.60	17603.56
			Max. Vx	14	32420.69	12099.57	-2032404.05
L24	52.5 - 50.5	Pole	Max. Torque	6			4824.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53123.58	-308.12	6447.91
			Max. Mx	8	-25436.32	-2143919.93	18100.81
			Max. My	14	-25504.75	12471.49	-2097461.30
			Max. Vy	8	33334.41	-2143919.93	18100.81

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
L25	50.5 - 50.25	Pole	Max. Vx	14	32691.21	12471.49	-2097461.3	
			Max. Torque	6			0	4565.02
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-53236.21	-311.42	6466.28	
			Max. Mx	8	-25537.17	-2152254.3	18162.50	
			Max. My	14	-25604.60	12517.79	-2105631.9	
			Max. Vy	8	33357.86	-2152254.3	18162.50	
L26	50.25 - 50	Pole	Max. Vx	14	32715.04	12517.79	-2105631.9	
			Max. Torque	6			1	4563.96
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-53327.28	-314.74	6483.75	
			Max. Mx	8	-25599.96	-2160597.6	18224.61	
			Max. My	14	-25667.05	12564.24	-2113811.3	
			Max. Vy	8	33392.69	-2160597.6	18224.61	
L27	50 - 45	Pole	Max. Vx	14	32750.03	12564.24	-2113811.3	
			Max. Torque	6			8	4563.83
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-55274.71	-4.09	6587.91	
			Max. Mx	8	-26952.10	-2329196.2	19233.04	
			Max. My	14	-27010.92	13643.89	-2279619.9	
			Max. Vy	8	34122.89	-2329196.2	19233.04	
L28	45 - 40	Pole	Max. Vx	14	33501.64	13643.89	-2279619.9	
			Max. Torque	6			1	4563.43
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-57104.30	-70.95	6902.98	
			Max. Mx	8	-28267.89	-2501331.7	20336.93	
			Max. My	14	-28318.51	14480.67	-2448637.2	
			Max. Vy	8	34765.53	-2501331.7	20336.93	
L29	40 - 35	Pole	Max. Vx	14	34146.88	14480.67	-2448637.2	
			Max. Torque	6			1	4560.31
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-58958.64	-136.89	7198.68	
			Max. Mx	8	-29619.48	-2676628.4	21439.29	
			Max. My	14	-29661.73	15312.01	-2620822.8	
			Max. Vy	8	35389.07	-2676628.4	21439.29	
L30	35 - 29.25	Pole	Max. Vx	14	34773.36	15312.01	-2620822.8	
			Max. Torque	6			7	4557.61
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-59148.65	-143.47	7234.98	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L31	29.25 - 28.25	Pole	Max. Mx	8	-29770.74	-2694328.8	21552.86
			Max. My	14	-29811.69	15394.64	-2638208.7
			Max. Vy	8	35439.06	-2694328.8	21552.86
			Max. Vx	14	34823.86	15394.64	-2638208.7
			Max. Torque	6			4555.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63184.38	-225.68	7687.16
			Max. Mx	8	-32623.11	-2918649.4	22979.68
			Max. My	14	-32658.90	16430.54	-2858601.6
			Max. Vy	8	36343.16	-2918649.4	22979.68
L32	28.25 - 24	Pole	Max. Vx	14	35728.98	16430.54	-2858601.6
			Max. Torque	6			4554.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64940.26	-280.20	7983.71
			Max. Mx	8	-33954.72	-3074063.5	23939.32
			Max. My	14	-33983.91	17130.32	-3011357.1
			Max. Vy	8	36831.47	-3074063.5	23939.32
			Max. Vx	14	36220.05	17130.32	-3011357.1
			Max. Torque	6			4553.79
			Max Tension	1	0.00	0.00	0.00
L33	24 - 23.75	Pole	Max. Compression	26	-65069.39	-283.38	8001.73
			Max. Mx	8	-34075.88	-3083270.2	23995.29
			Max. My	14	-34104.07	17171.11	-3020407.6
			Max. Vy	8	36844.69	-3083270.2	23995.29
			Max. Vx	14	36233.74	17171.11	-3020407.6
			Max. Torque	6			4552.63
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67654.06	-346.72	8354.07
			Max. Mx	8	-36104.63	-3269001.2	25124.92
			Max. My	14	-36127.65	17990.80	-3203018.9
L34	23.75 - 18.75	Pole	Max. Vy	8	37463.99	-3269001.2	25124.92
			Max. Vx	14	36855.09	17990.80	-3203018.9
			Max. Torque	6			4552.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70248.61	-408.67	8701.61
			Max. Mx	8	-38176.32	-3457664.9	26249.44
			Max. My	14	-38193.65	18806.12	-3388573.8
			Max. Vy	8	38030.45	-3457664.9	26249.44
			Max. Torque	6			4552.52
			Max Tension	1	0.00	0.00	0.00
L35	18.75 - 13.75	Pole	Max. Compression	26	-70248.61	-408.67	8701.61
			Max. Mx	8	-38176.32	-3457664.9	26249.44
			Max. My	14	-38193.65	18806.12	-3388573.8
			Max. Vy	8	38030.45	-3457664.9	26249.44
			Max. Torque	6			4552.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70248.61	-408.67	8701.61
			Max. Mx	8	-38176.32	-3457664.9	26249.44
			Max. My	14	-38193.65	18806.12	-3388573.8
			Max. Vy	8	38030.45	-3457664.9	26249.44

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
L36	13.75 - 8.75	Pole	Max. Vx	14	37424.14	18806.12	-3388573.8	
			Max. Torque	6			1	4551.65
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-72814.73	-468.35	8983.74	
			Max. Mx	8	-40257.69	-3649124.9	27331.86	
			Max. My	14	-40269.30	19616.88	-3576974.1	
			Max. Vy	8	38584.00	-3649124.9	27331.86	
L37	8.75 - 3.75	Pole	Max. Vx	14	37980.60	19616.88	-3576974.1	
			Max. Torque	6			1	4550.97
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-75355.72	-523.93	9225.98	
			Max. Mx	8	-42363.59	-3843335.1	28392.90	
			Max. My	14	-42369.36	20422.62	-3768154.2	
			Max. Vy	8	39132.34	-3843335.1	28392.90	
L38	3.75 - 2	Pole	Max. Vx	14	38532.22	20422.62	-3768154.2	
			Max. Torque	6			2	4550.49
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-76234.34	-541.48	9302.01	
			Max. Mx	8	-43095.63	-3911955.2	28762.95	
			Max. My	14	-43099.81	20703.57	-3835717.6	
			Max. Vy	8	39338.12	-3911955.2	28762.95	
L39	2 - 1.75	Pole	Max. Vx	14	38738.93	20703.57	-3835717.6	
			Max. Torque	6			6	4550.21
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-76333.50	-543.84	9312.22	
			Max. Mx	8	-43204.15	-3921785.0	28814.86	
			Max. My	14	-43207.10	20743.24	-3845396.6	
			Max. Vy	8	39335.74	-3921785.0	28814.86	
L40	1.75 - 0	Pole	Max. Vx	14	38737.31	20743.24	-3845396.6	
			Max. Torque	6			6	4550.17
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-77013.27	-558.73	9375.38	
			Max. Mx	8	-43762.78	-3990761.5	29183.68	
			Max. My	14	-43764.17	21023.28	-3913319.4	
			Max. Vy	8	39541.95	-3990761.5	29183.68	
		Pole	Max. Vx	14	38944.49	21023.28	-3913319.4	
			Max. Torque	6			3	4550.17

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Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	27	77013.27	-30.93	8828.13
	Max. H _x	21	32852.43	39487.86	-142.13
	Max. H _z	2	43803.24	-256.26	38858.10
	Max. M _x	2	3909336.12	-256.26	38858.10
	Max. M _z	8	3990761.53	-39497.13	208.08
	Max. Torsion	6	4550.14	-34246.05	19570.99
	Min. Vert	5	32852.43	-19905.97	33704.53
	Min. H _x	9	32852.43	-39497.13	208.08
	Min. H _z	15	32852.43	161.74	-38900.54
	Min. M _x	14	-3913319.43	161.74	-38900.54
	Min. M _z	20	-3990103.91	39487.86	-142.13
	Min. Torsion	18	-4523.67	34230.60	-19606.94

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	36502.70	-0.00	-0.00	-1040.71	304.30	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	43803.24	256.26	-38858.10	-3909336.12	-35120.57	-2026.88
0.9 Dead+1.6 Wind 0 deg - No Ice	32852.43	256.26	-38858.10	-3865229.25	-34764.32	-2007.46
1.2 Dead+1.6 Wind 30 deg - No Ice	43803.24	19905.97	-33704.53	-3393207.10	-2016812.53	-3769.33
0.9 Dead+1.6 Wind 30 deg - No Ice	32852.43	19905.97	-33704.53	-3354883.41	-1994259.49	-3739.19
1.2 Dead+1.6 Wind 60 deg - No Ice	43803.24	34246.05	-19570.99	-1974271.79	-3461581.38	-4550.14
0.9 Dead+1.6 Wind 60 deg - No Ice	32852.43	34246.05	-19570.99	-1951832.15	-3422864.91	-4516.61
1.2 Dead+1.6 Wind 90 deg - No Ice	43803.24	39497.13	-208.08	-29182.46	-3990761.53	-4162.97
0.9 Dead+1.6 Wind 90 deg - No Ice	32852.43	39497.13	-208.08	-28501.27	-3946124.18	-4134.67
1.2 Dead+1.6 Wind 120 deg - No Ice	43803.24	34116.48	19285.58	1935210.44	-3446083.83	-2500.61
0.9 Dead+1.6 Wind 120 deg - No Ice	32852.43	34116.48	19285.58	1913878.72	-3407548.10	-2485.78
1.2 Dead+1.6 Wind 150 deg - No Ice	43803.24	19597.31	33620.15	3382212.16	-1976596.11	-84.33
0.9 Dead+1.6 Wind 150 deg - No Ice	32852.43	19597.31	33620.15	3344647.27	-1954541.53	-87.75
1.2 Dead+1.6 Wind 180 deg - No Ice	43803.24	-161.74	38900.54	3913319.43	21022.71	1975.64
0.9 Dead+1.6 Wind 180 deg - No Ice	32852.43	-161.74	38900.54	3869816.12	20676.67	1954.59
1.2 Dead+1.6 Wind 210 deg - No Ice	43803.24	-19920.69	33708.30	3391211.16	2019813.01	4089.72
0.9 Dead+1.6 Wind 210 deg - No Ice	32852.43	-19920.69	33708.30	3353560.18	1997040.67	4057.39
1.2 Dead+1.6 Wind 240 deg - No Ice	43803.24	-34230.60	19606.94	1977383.02	3459879.70	4523.67

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
0.9 Dead+1.6 Wind 240 deg - No Ice	32852.43	-34230.60	19606.94	1955530.94	3421001.84	4489.65
1.2 Dead+1.6 Wind 270 deg - No Ice	43803.24	-39487.86	142.13	16316.14	3990103.91	4142.36
0.9 Dead+1.6 Wind 270 deg - No Ice	32852.43	-39487.86	142.13	16444.57	3945274.47	4115.67
1.2 Dead+1.6 Wind 300 deg - No Ice	43803.24	-34142.60	-19284.05	-1937533.17	3450977.30	2477.55
0.9 Dead+1.6 Wind 300 deg - No Ice	32852.43	-34142.60	-19284.05	-1915525.61	3412164.82	2464.90
1.2 Dead+1.6 Wind 330 deg - No Ice	43803.24	-19670.80	-33525.66	-3370057.95	1988938.96	185.05
0.9 Dead+1.6 Wind 330 deg - No Ice	32852.43	-19670.80	-33525.66	-3332003.01	1966509.23	189.19
1.2 Dead+1.0 Ice+1.0 Temp	77013.27	-0.00	-0.00	-9375.38	-558.73	-0.61
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	77013.27	30.93	-8828.13	-939925.20	-5418.08	-396.89
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	77013.27	4244.46	-7273.71	-799736.28	-463883.05	-661.73
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	77013.27	7325.28	-4210.17	-467333.12	-798970.24	-751.32
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	77013.27	8456.68	-21.46	-12750.53	-922372.98	-646.96
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	77013.27	7319.11	4187.60	445158.61	-798277.49	-344.28
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	77013.27	4217.37	7276.35	781540.23	-459927.63	58.27
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	77013.27	-12.36	8836.39	922329.19	1163.72	368.39
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	77013.27	-4247.51	7274.40	780870.80	463258.81	701.67
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	77013.27	-7322.46	4217.21	449538.14	797364.83	739.54
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	77013.27	-8455.05	8.62	-8387.07	920972.12	657.13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	77013.27	-7324.39	-4187.35	-464099.77	798034.78	361.94
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	77013.27	-4231.86	-7257.89	-797426.53	461229.39	-29.93
Dead+Wind 0 deg - Service	36502.70	50.57	-7668.61	-768430.35	-6638.72	-415.05
Dead+Wind 30 deg - Service	36502.70	3928.42	-6651.56	-667128.37	-395759.57	-767.12
Dead+Wind 60 deg - Service	36502.70	6758.43	-3862.32	-388530.46	-679491.71	-916.56
Dead+Wind 90 deg - Service	36502.70	7794.72	-41.06	-6572.33	-783418.81	-828.32
Dead+Wind 120 deg - Service	36502.70	6732.86	3805.99	379162.59	-676427.87	-492.15
Dead+Wind 150 deg - Service	36502.70	3867.51	6634.91	663270.23	-387859.55	-14.81
Dead+Wind 180 deg - Service	36502.70	-31.92	7676.98	767548.63	4378.85	388.72
Dead+Wind 210 deg - Service	36502.70	-3931.33	6652.30	665058.37	396861.38	809.10
Dead+Wind 240 deg - Service	36502.70	-6755.38	3869.41	387452.76	679665.69	906.10
Dead+Wind 270 deg - Service	36502.70	-7792.89	28.05	2358.12	783785.14	838.46
Dead+Wind 300 deg - Service	36502.70	-6738.01	-3805.69	-381301.33	677884.32	508.78
Dead+Wind 330 deg - Service	36502.70	-3882.01	-6616.26	-662549.41	390773.60	43.59

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-36502.70	0.00	0.00	36502.70	0.00	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
2	256.26	-43803.24	-38858.10	-256.26	43803.24	38858.10	0.000%
3	256.26	-32852.43	-38858.10	-256.26	32852.43	38858.10	0.000%
4	19905.97	-43803.24	-33704.53	-19905.97	43803.24	33704.53	0.000%
5	19905.97	-32852.43	-33704.53	-19905.97	32852.43	33704.53	0.000%
6	34246.05	-43803.24	-19570.99	-34246.05	43803.24	19570.99	0.000%
7	34246.05	-32852.43	-19570.99	-34246.05	32852.43	19570.99	0.000%
8	39497.13	-43803.24	-208.08	-39497.13	43803.24	208.08	0.000%
9	39497.13	-32852.43	-208.08	-39497.13	32852.43	208.08	0.000%
10	34116.48	-43803.24	19285.58	-34116.48	43803.24	-19285.58	0.000%
11	34116.48	-32852.43	19285.58	-34116.48	32852.43	-19285.58	0.000%
12	19597.31	-43803.24	33620.15	-19597.31	43803.24	-33620.15	0.000%
13	19597.31	-32852.43	33620.15	-19597.31	32852.43	-33620.15	0.000%
14	-161.74	-43803.24	38900.54	161.74	43803.24	-38900.54	0.000%
15	-161.74	-32852.43	38900.54	161.74	32852.43	-38900.54	0.000%
16	-19920.69	-43803.24	33708.30	19920.69	43803.24	-33708.30	0.000%
17	-19920.69	-32852.43	33708.30	19920.69	32852.43	-33708.30	0.000%
18	-34230.60	-43803.24	19606.94	34230.60	43803.24	-19606.94	0.000%
19	-34230.60	-32852.43	19606.94	34230.60	32852.43	-19606.94	0.000%
20	-39487.86	-43803.24	142.13	39487.86	43803.24	-142.13	0.000%
21	-39487.86	-32852.43	142.13	39487.86	32852.43	-142.13	0.000%
22	-34142.60	-43803.24	-19284.05	34142.60	43803.24	19284.05	0.000%
23	-34142.60	-32852.43	-19284.05	34142.60	32852.43	19284.05	0.000%
24	-19670.80	-43803.24	-33525.66	19670.80	43803.24	33525.66	0.000%
25	-19670.80	-32852.43	-33525.66	19670.80	32852.43	33525.66	0.000%
26	0.00	-77013.27	0.00	0.00	77013.27	0.00	0.000%
27	30.93	-77013.27	-8828.12	-30.93	77013.27	8828.12	0.000%
28	4244.46	-77013.27	-7273.71	-4244.46	77013.27	7273.71	0.000%
29	7325.28	-77013.27	-4210.17	-7325.28	77013.27	4210.17	0.000%
30	8456.67	-77013.27	-21.46	-8456.68	77013.27	21.46	0.000%
31	7319.11	-77013.27	4187.60	-7319.11	77013.27	-4187.60	0.000%
32	4217.37	-77013.27	7276.35	-4217.37	77013.27	-7276.35	0.000%
33	-12.36	-77013.27	8836.39	12.36	77013.27	-8836.39	0.000%
34	-4247.50	-77013.27	7274.39	4247.51	77013.27	-7274.40	0.000%
35	-7322.46	-77013.27	4217.21	7322.46	77013.27	-4217.21	0.000%
36	-8455.05	-77013.27	8.62	8455.05	77013.27	-8.62	0.000%
37	-7324.39	-77013.27	-4187.35	7324.39	77013.27	4187.35	0.000%
38	-4231.86	-77013.27	-7257.89	4231.86	77013.27	7257.89	0.000%
39	50.57	-36502.70	-7668.61	-50.57	36502.70	7668.61	0.000%
40	3928.42	-36502.70	-6651.56	-3928.42	36502.70	6651.56	0.000%
41	6758.43	-36502.70	-3862.32	-6758.43	36502.70	3862.32	0.000%
42	7794.72	-36502.70	-41.06	-7794.72	36502.70	41.06	0.000%
43	6732.86	-36502.70	3805.99	-6732.86	36502.70	-3805.99	0.000%
44	3867.51	-36502.70	6634.91	-3867.51	36502.70	-6634.91	0.000%
45	-31.92	-36502.70	7676.98	31.92	36502.70	-7676.98	0.000%
46	-3931.33	-36502.70	6652.30	3931.33	36502.70	-6652.30	0.000%
47	-6755.38	-36502.70	3869.41	6755.38	36502.70	-3869.41	0.000%
48	-7792.89	-36502.70	28.05	7792.89	36502.70	-28.05	0.000%
49	-6738.01	-36502.70	-3805.69	6738.01	36502.70	3805.69	0.000%
50	-3882.01	-36502.70	-6616.26	3882.01	36502.70	6616.26	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00043572

<p>tnxTower</p> <p><i>Tower Engineering Professionals</i></p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	Job Branford Banm Tower (BU 876321)	Page 33 of 39
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3	Yes	5	0.00000001	0.00017742
4	Yes	6	0.00000001	0.00098173
5	Yes	6	0.00000001	0.00026926
6	Yes	7	0.00000001	0.00005336
7	Yes	6	0.00000001	0.00030647
8	Yes	6	0.00000001	0.00011555
9	Yes	5	0.00000001	0.00094573
10	Yes	6	0.00000001	0.00097654
11	Yes	6	0.00000001	0.00027011
12	Yes	7	0.00000001	0.00004923
13	Yes	6	0.00000001	0.00028281
14	Yes	6	0.00000001	0.00006039
15	Yes	5	0.00000001	0.00049025
16	Yes	7	0.00000001	0.00005281
17	Yes	6	0.00000001	0.00030366
18	Yes	6	0.00000001	0.00096929
19	Yes	6	0.00000001	0.00026475
20	Yes	6	0.00000001	0.00008154
21	Yes	5	0.00000001	0.00067039
22	Yes	7	0.00000001	0.00005125
23	Yes	6	0.00000001	0.00029431
24	Yes	7	0.00000001	0.00004907
25	Yes	6	0.00000001	0.00028176
26	Yes	5	0.00000001	0.00017520
27	Yes	7	0.00000001	0.00016322
28	Yes	7	0.00000001	0.00019773
29	Yes	7	0.00000001	0.00020053
30	Yes	7	0.00000001	0.00016218
31	Yes	7	0.00000001	0.00019244
32	Yes	7	0.00000001	0.00019246
33	Yes	7	0.00000001	0.00015898
34	Yes	7	0.00000001	0.00019475
35	Yes	7	0.00000001	0.00019332
36	Yes	7	0.00000001	0.00016231
37	Yes	7	0.00000001	0.00019933
38	Yes	7	0.00000001	0.00019787
39	Yes	5	0.00000001	0.00006783
40	Yes	5	0.00000001	0.00026667
41	Yes	5	0.00000001	0.00035306
42	Yes	5	0.00000001	0.00011709
43	Yes	5	0.00000001	0.00025998
44	Yes	5	0.00000001	0.00028079
45	Yes	5	0.00000001	0.00007100
46	Yes	5	0.00000001	0.00033858
47	Yes	5	0.00000001	0.00026274
48	Yes	5	0.00000001	0.00011215
49	Yes	5	0.00000001	0.00031690
50	Yes	5	0.00000001	0.00028091

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	26.435	48	1.542	0.012
L2	142 - 137	24.823	48	1.537	0.011
L3	137 - 132	23.221	48	1.523	0.010
L4	132 - 127	21.636	48	1.502	0.009
L5	127 - 122	20.077	48	1.475	0.008
L6	122 - 117	18.548	48	1.443	0.007

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	117 - 112	17.057	48	1.405	0.006
L8	112 - 107	15.608	48	1.360	0.006
L9	107 - 99.5	14.210	48	1.308	0.005
L10	103.25 - 98.25	13.200	48	1.263	0.005
L11	98.25 - 93.25	11.894	48	1.225	0.004
L12	93.25 - 88.25	10.644	48	1.163	0.004
L13	88.25 - 83.25	9.461	48	1.096	0.003
L14	83.25 - 78.25	8.351	48	1.024	0.003
L15	78.25 - 73.25	7.317	48	0.950	0.003
L16	73.25 - 69.5	6.362	48	0.873	0.002
L17	69.5 - 69.25	5.700	48	0.814	0.002
L18	69.25 - 64.25	5.657	48	0.811	0.002
L19	64.25 - 59	4.839	48	0.752	0.002
L20	63.75 - 58	4.760	48	0.746	0.002
L21	58 - 57.75	3.885	48	0.700	0.002
L22	57.75 - 57.5	3.849	48	0.696	0.002
L23	57.5 - 52.5	3.812	48	0.693	0.002
L24	52.5 - 50.5	3.125	48	0.619	0.001
L25	50.5 - 50.25	2.872	48	0.589	0.001
L26	50.25 - 50	2.842	48	0.587	0.001
L27	50 - 45	2.811	48	0.583	0.001
L28	45 - 40	2.239	48	0.509	0.001
L29	40 - 35	1.746	48	0.434	0.001
L30	35 - 29.25	1.331	48	0.359	0.001
L31	34.5 - 28.25	1.294	48	0.351	0.001
L32	28.25 - 24	0.864	48	0.300	0.001
L33	24 - 23.75	0.623	48	0.242	0.000
L34	23.75 - 18.75	0.610	48	0.239	0.000
L35	18.75 - 13.75	0.385	48	0.190	0.000
L36	13.75 - 8.75	0.212	48	0.141	0.000
L37	8.75 - 3.75	0.089	48	0.093	0.000
L38	3.75 - 2	0.018	48	0.043	0.000
L39	2 - 1.75	0.006	48	0.026	0.000
L40	1.75 - 0	0.004	48	0.023	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	A-ANT-23G-2-C	48	26.435	1.542	0.012	29255
147.00	LLPX310R w/ Mount Pipe	48	26.435	1.542	0.012	29255
145.00	TME-800MHZ RRH	48	25.790	1.540	0.012	29255
119.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	17.648	1.421	0.007	7354
110.00	7770.00 w/ Mount Pipe	48	15.042	1.341	0.006	5439
53.00	GPS_A	48	3.191	0.627	0.001	3907
49.00	KS24019-L112A	48	2.690	0.568	0.001	3897

Maximum Tower Deflections - Design Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	134.385	20	7.844	0.062
L2	142 - 137	126.206	20	7.819	0.056
L3	137 - 132	118.074	20	7.752	0.050
L4	132 - 127	110.031	20	7.648	0.045
L5	127 - 122	102.115	8	7.512	0.041
L6	122 - 117	94.356	8	7.347	0.036
L7	117 - 112	86.780	8	7.156	0.033
L8	112 - 107	79.423	8	6.928	0.030
L9	107 - 99.5	72.319	8	6.663	0.026
L10	103.25 - 98.25	67.186	8	6.433	0.023
L11	98.25 - 93.25	60.547	8	6.242	0.022
L12	93.25 - 88.25	54.187	8	5.924	0.019
L13	88.25 - 83.25	48.171	8	5.582	0.017
L14	83.25 - 78.25	42.523	8	5.219	0.015
L15	78.25 - 73.25	37.260	8	4.841	0.013
L16	73.25 - 69.5	32.401	8	4.449	0.011
L17	69.5 - 69.25	29.028	8	4.147	0.010
L18	69.25 - 64.25	28.811	8	4.132	0.010
L19	64.25 - 59	24.644	8	3.832	0.009
L20	63.75 - 58	24.245	8	3.801	0.008
L21	58 - 57.75	19.790	8	3.568	0.008
L22	57.75 - 57.5	19.603	8	3.549	0.008
L23	57.5 - 52.5	19.418	8	3.530	0.008
L24	52.5 - 50.5	15.920	8	3.155	0.006
L25	50.5 - 50.25	14.630	8	3.003	0.006
L26	50.25 - 50	14.474	8	2.991	0.006
L27	50 - 45	14.318	8	2.972	0.006
L28	45 - 40	11.405	8	2.592	0.005
L29	40 - 35	8.892	8	2.210	0.004
L30	35 - 29.25	6.778	8	1.827	0.003
L31	34.5 - 28.25	6.589	8	1.789	0.003
L32	28.25 - 24	4.399	8	1.527	0.003
L33	24 - 23.75	3.171	8	1.232	0.002
L34	23.75 - 18.75	3.107	8	1.219	0.002
L35	18.75 - 13.75	1.962	8	0.969	0.002
L36	13.75 - 8.75	1.078	8	0.719	0.001
L37	8.75 - 3.75	0.455	8	0.471	0.001
L38	3.75 - 2	0.093	8	0.220	0.000
L39	2 - 1.75	0.028	8	0.134	0.000
L40	1.75 - 0	0.021	8	0.117	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	A-ANT-23G-2-C	20	134.385	7.844	0.062	6449
147.00	LLPX310R w/ Mount Pipe	20	134.385	7.844	0.062	6449
145.00	TME-800MHZ RRH	20	131.111	7.837	0.059	6449
119.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	89.786	7.237	0.034	1502
110.00	7770.00 w/ Mount Pipe	8	76.547	6.831	0.028	1100
53.00	GPS_A	8	16.252	3.197	0.007	771
49.00	KS24019-L112A	8	13.703	2.892	0.006	768

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Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	147 - 142 (1)	TP22.875x22x0.25	5.00	0.00	0.0	18.213	-3902.10	1238120.00	0.003
L2	142 - 137 (2)	TP23.75x22.875x0.25	5.00	0.00	0.0	18.918	-4240.69	1270560.00	0.003
L3	137 - 132 (3)	TP24.625x23.75x0.25	5.00	0.00	0.0	19.622	-4598.83	1301850.00	0.004
L4	132 - 127 (4)	TP25.5x24.625x0.25	5.00	0.00	0.0	20.326	-4977.06	1331990.00	0.004
L5	127 - 122 (5)	TP26.375x25.5x0.25	5.00	0.00	0.0	21.031	-5375.91	1360970.00	0.004
L6	122 - 117 (6)	TP27.25x26.375x0.25	5.00	0.00	0.0	21.735	-7510.64	1388810.00	0.005
L7	117 - 112 (7)	TP28.125x27.25x0.25	5.00	0.00	0.0	22.440	-8037.73	1415490.00	0.006
L8	112 - 107 (8)	TP29x28.125x0.25	5.00	0.00	0.0	23.144	-12812.00	1441030.00	0.009
L9	107 - 99.5 (9)	TP30.313x29x0.25	7.50	0.00	0.0	23.672	-13325.10	1459420.00	0.009
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	5.00	0.00	0.0	29.905	-14456.60	2140980.00	0.007
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	5.00	0.00	0.0	30.785	-15307.90	2181340.00	0.007
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	5.00	0.00	0.0	31.666	-16192.70	2220400.00	0.007
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	5.00	0.00	0.0	32.546	-17113.30	2258160.00	0.008
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	5.00	0.00	0.0	33.427	-18069.10	2294630.00	0.008
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	5.00	0.00	0.0	34.307	-19059.40	2329800.00	0.008
L16	73.25 - 69.5 (16)	TP35.063x34.406x0.313	3.75	0.00	0.0	34.967	-19818.90	2355330.00	0.008
L17	69.5 - 69.25 (17)	TP35.106x35.063x0.438	0.25	0.00	0.0	48.840	-19903.30	3599980.00	0.006
L18	69.25 - 64.25 (18)	TP35.981x35.106x0.431	5.00	0.00	0.0	49.366	-21131.00	3638750.00	0.006
L19	64.25 - 59 (19)	TP36.9x35.981x0.431	5.25	0.00	0.0	49.487	-21265.30	3647700.00	0.006
L20	59 - 58 (20)	TP36.45x35.444x0.375	5.75	0.00	0.0	43.561	-23464.60	3106040.00	0.008
L21	58 - 57.75 (21)	TP36.494x36.45x0.375	0.25	0.00	0.0	43.613	-23542.30	3108470.00	0.008
L22	57.75 - 57.5 (22)	TP36.537x36.494x0.375	0.25	0.00	0.0	43.666	-23604.40	3110900.00	0.008
L23	57.5 - 52.5 (23)	TP37.412x36.537x0.375	5.00	0.00	0.0	44.723	-24922.80	3158720.00	0.008
L24	52.5 - 50.5 (24)	TP37.762x37.412x0.375	2.00	0.00	0.0	45.145	-25436.30	3177480.00	0.008
L25	50.5 - 50.25 (25)	TP37.806x37.762x0.575	0.25	0.00	0.0	68.934	-25537.20	5081090.00	0.005
L26	50.25 - 50 (26)	TP37.85x37.806x0.375	0.25	0.00	0.0	45.251	-25600.00	3182140.00	0.008
L27	50 - 45 (27)	TP38.725x37.85x0.375	5.00	0.00	0.0	46.307	-26952.10	3228010.00	0.008
L28	45 - 40 (28)	TP39.6x38.725x0.375	5.00	0.00	0.0	47.364	-28267.90	3272590.00	0.009
L29	40 - 35 (29)	TP40.475x39.6x0.375	5.00	0.00	0.0	48.421	-29619.50	3315870.00	0.009
L30	35 - 29.25 (30)	TP41.481x40.475x0.375 4.8.2 (1.00 CR) - 30	5.75	0.00	0.0	48.526	-29770.70	3320120.00	0.009
L31	29.25 - 28.25 (31)	TP40.906x39.812x0.438	6.25	0.00	0.0	57.010	-32623.10	4120550.00	0.008
L32	28.25 - 24 (32)	TP41.65x40.906x0.438	4.25	0.00	0.0	58.058	-33954.70	4170320.00	0.008
L33	24 - 23.75 (33)	TP41.694x41.65x0.625	0.25	0.00	0.0	82.651	-34075.90	6092170.00	0.006
L34	23.75 - 18.75 (34)	TP42.569x41.694x0.613	5.00	0.00	0.0	82.748	-36104.60	6099350.00	0.006
L35	18.75 - 13.75 (35)	TP43.444x42.569x0.613	5.00	0.00	0.0	84.474	-38176.30	6226560.00	0.006
L36	13.75 - 8.75 (36)	TP44.319x43.444x0.613	5.00	0.00	0.0	86.200	-40257.70	6353770.00	0.006

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	Client	Crown Castle	Designed by	AAS

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
L37	8.75 - 3.75 (37)	TP45.194x44.319x0.6	5.00	0.00	0.0	86.155	-42363.60	6350490.00	0.007
L38	3.75 - 2 (38)	TP45.5x45.194x0.6	1.75	0.00	0.0	86.747	-43095.60	6394110.00	0.007
L39	2 - 1.75 (39)	TP45.544x45.5x0.438	0.25	0.00	0.0	63.543	-43204.10	4415560.00	0.010
L40	1.75 - 0 (40)	TP45.85x45.544x0.438	1.75	0.00	0.0	63.975	-43762.80	4433760.00	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	147 - 142 (1)	TP22.875x22x0.25	39147.17	568926.67	0.069	0.00	568926.67	0.000
L2	142 - 137 (2)	TP23.75x22.875x0.25	81439.17	606659.17	0.134	0.00	606659.17	0.000
L3	137 - 132 (3)	TP24.625x23.75x0.25	126977.50	644987.50	0.197	0.00	644987.50	0.000
L4	132 - 127 (4)	TP25.5x24.625x0.25	175838.33	683850.00	0.257	0.00	683850.00	0.000
L5	127 - 122 (5)	TP26.375x25.5x0.25	228094.17	723184.17	0.315	0.00	723184.17	0.000
L6	122 - 117 (6)	TP27.25x26.375x0.25	299283.33	762927.50	0.392	0.00	762927.50	0.000
L7	117 - 112 (7)	TP28.125x27.25x0.25	380352.50	803018.33	0.474	0.00	803018.33	0.000
L8	112 - 107 (8)	TP29x28.125x0.25	498005.00	843391.67	0.590	0.00	843391.67	0.000
L9	107 - 99.5 (9)	TP30.313x29x0.25	592756.67	873825.00	0.678	0.00	873825.00	0.000
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	722435.83	1292950.00	0.559	0.00	1292950.00	0.000
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	855833.33	1356508.33	0.631	0.00	1356508.33	0.000
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	992808.33	1420691.67	0.699	0.00	1420691.67	0.000
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	1133341.67	1485416.67	0.763	0.00	1485416.67	0.000
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	1277433.33	1550625.00	0.824	0.00	1550625.00	0.000
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	1425050.00	1616250.00	0.882	0.00	1616250.00	0.000
L16	73.25 - 69.5 (16)	TP35.063x34.406x0.313	1538066.67	1665691.67	0.923	0.00	1665691.67	0.000
L17	69.5 - 69.25 (17)	TP35.106x35.063x0.438	1545666.67	2530858.33	0.611	0.00	2530858.33	0.000
L18	69.25 - 64.25 (18)	TP35.981x35.106x0.431	1699750.00	2624400.00	0.648	0.00	2624400.00	0.000
L19	64.25 - 59 (19)	TP36.9x35.981x0.431	1715375.00	2637416.67	0.650	0.00	2637416.67	0.000
L20	59 - 58 (20)	TP36.45x35.444x0.375	1898025.00	2277183.33	0.833	0.00	2277183.33	0.000
L21	58 - 57.75 (21)	TP36.494x36.45x0.375	1906091.67	2281758.33	0.835	0.00	2281758.33	0.000
L22	57.75 - 57.5 (22)	TP36.537x36.494x0.375	1914158.33	2286325.00	0.837	0.00	2286325.00	0.000
L23	57.5 - 52.5 (23)	TP37.412x36.537x0.375	2077625.00	2378216.67	0.874	0.00	2378216.67	0.000
L24	52.5 - 50.5 (24)	TP37.762x37.412x0.375	2144000.00	2415175.00	0.888	0.00	2415175.00	0.000
L25	50.5 - 50.25 (25)	TP37.806x37.762x0.575	2152333.33	3825450.00	0.563	0.00	3825450.00	0.000
L26	50.25 - 50 (26)	TP37.85x37.806x0.375	2160675.00	2424433.33	0.891	0.00	2424433.33	0.000
L27	50 - 45 (27)	TP38.725x37.85x0.375	2329275.00	2517375.00	0.925	0.00	2517375.00	0.000
L28	45 - 40 (28)	TP39.6x38.725x0.375	2501416.67	2610933.33	0.958	0.00	2610933.33	0.000
L29	40 - 35 (29)	TP40.475x39.6x0.375	2676716.67	2705025.00	0.990	0.00	2705025.00	0.000
L30	35 - 29.25 (30)	TP41.481x40.475x0.375	2694416.67	2714466.67	0.993	0.00	2714466.67	0.000
L31	29.25 - 28.25 (31)	TP40.906x39.812x0.438	2918741.67	3387491.67	0.862	0.00	3387491.67	0.000
L32	28.25 - 24 (32)	TP41.65x40.906x0.438	3074158.33	3492091.67	0.880	0.00	3492091.67	0.000
L33	24 - 23.75 (33)	TP41.694x41.65x0.625	3083366.67	5060550.00	0.609	0.00	5060550.00	0.000
L34	23.75 - 18.75	TP42.569x41.694x0.613	3269100.00	5179166.67	0.631	0.00	5179166.67	0.000

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	Project	TEP No. 25579.155918	Date	14:13:50 01/31/18
	Client	Crown Castle	Designed by	AAS

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{rx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} lb-ft	ϕM_{ry} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L35	18.75 - 13.75 (34)	TP43.444x42.569x0.613	3457766.67	5399041.67	0.640	0.00	5399041.67	0.000
L36	13.75 - 8.75 (35)	TP44.319x43.444x0.613	3649225.00	5623483.33	0.649	0.00	5623483.33	0.000
L37	8.75 - 3.75 (37)	TP45.194x44.319x0.6	3843441.67	5737883.33	0.670	0.00	5737883.33	0.000
L38	3.75 - 2 (38)	TP45.5x45.194x0.6	3912058.33	5817491.33	0.672	0.00	5817491.33	0.000
L39	2 - 1.75 (39)	TP45.544x45.5x0.438	3921891.67	4050466.67	0.968	0.00	4050466.67	0.000
L40	1.75 - 0 (40)	TP45.85x45.544x0.438	3990866.67	4095041.67	0.975	0.00	4095041.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147 - 142 (1)	TP22.875x22x0.25	8139.90	619062.00	0.013	1897.25	1153608.33	0.002
L2	142 - 137 (2)	TP23.75x22.875x0.25	8781.64	635281.00	0.014	1897.03	1230116.67	0.002
L3	137 - 132 (3)	TP24.625x23.75x0.25	9439.01	650925.00	0.015	1896.65	1307833.33	0.001
L4	132 - 127 (4)	TP25.5x24.625x0.25	10111.20	665993.00	0.015	1896.10	1386633.33	0.001
L5	127 - 122 (5)	TP26.375x25.5x0.25	10797.40	680486.00	0.016	1895.39	1466391.67	0.001
L6	122 - 117 (6)	TP27.25x26.375x0.25	15863.80	694404.00	0.023	3365.78	1546975.00	0.002
L7	117 - 112 (7)	TP28.125x27.25x0.25	16575.20	707746.00	0.023	3363.84	1628275.00	0.002
L8	112 - 107 (8)	TP29x28.125x0.25	25011.70	720514.00	0.035	4480.07	1710141.67	0.003
L9	107 - 99.5 (9)	TP30.313x29x0.25	25541.20	729712.00	0.035	4477.62	1771850.00	0.003
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	26333.00	1070490.00	0.025	4475.38	2621700.00	0.002
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	27047.90	1090670.00	0.025	4471.53	2750575.00	0.002
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	27763.40	1110200.00	0.025	4467.47	2880708.33	0.002
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	28476.40	1129080.00	0.025	4463.25	3011958.33	0.001
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	29185.60	1147320.00	0.025	4458.96	3144183.33	0.001
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	29889.80	1164900.00	0.026	4454.71	3277241.67	0.001
L16	73.25 - 69.5 (16)	TP35.063x34.406x0.313	30417.30	1177660.00	0.026	4451.72	3377500.00	0.001
L17	69.5 - 69.25 (17)	TP35.106x35.063x0.438	30440.90	1799990.00	0.017	4451.13	5131791.67	0.001
L18	69.25 - 64.25 (18)	TP35.981x35.106x0.431	31210.90	1819370.00	0.017	4448.43	5321466.67	0.001
L19	64.25 - 59 (19)	TP36.9x35.981x0.431	31279.20	1823850.00	0.017	4448.00	5347850.00	0.001
L20	59 - 58 (20)	TP36.45x35.444x0.375	32245.50	1553020.00	0.021	4466.47	4617416.67	0.001
L21	58 - 57.75 (21)	TP36.494x36.45x0.375	32268.80	1554240.00	0.021	4466.06	4626683.33	0.001
L22	57.75 - 57.5 (22)	TP36.537x36.494x0.375	32303.40	1555450.00	0.021	4465.88	4635958.33	0.001
L23	57.5 - 52.5 (23)	TP37.412x36.537x0.375	33066.30	1579360.00	0.021	4462.82	4822283.33	0.001
L24	52.5 - 50.5 (24)	TP37.762x37.412x0.375	33335.30	1588740.00	0.021	4313.74	4897225.00	0.001
L25	50.5 - 50.25 (25)	TP37.806x37.762x0.575	33358.70	2540550.00	0.013	4313.39	7756824.67	0.001
L26	50.25 - 50 (26)	TP37.85x37.806x0.375	33393.50	1591070.00	0.021	4313.27	4916000.00	0.001
L27	50 - 45 (27)	TP38.725x37.85x0.375	34123.60	1614010.00	0.021	4172.73	5104450.00	0.001
L28	45 - 40 (28)	TP39.6x38.725x0.375	34766.20	1636290.00	0.021	4170.22	5294150.00	0.001
L29	40 - 35 (29)	TP40.475x39.6x0.375	35389.70	1657930.00	0.021	4168.06	5484950.00	0.001
L30	35 - 29.25 (30)	TP41.481x40.475x0.375	35439.70	1660060.00	0.021	4167.78	5504083.33	0.001

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	Client Crown Castle	Designed by AAS

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L31	29.25 - 28.25 (31)	TP40.906x39.812x0.438	36343.80	2060270.00	0.018	4166.60	6868774.67	0.001
L32	28.25 - 24 (32)	TP41.65x40.906x0.438	36832.10	2085160.00	0.018	4165.39	7080866.67	0.001
L33	24 - 23.75 (33)	TP41.694x41.65x0.625	36845.30	3046090.00	0.012	4165.25	10261250.00	0.000
L34	23.75 - 18.75 (34)	TP42.569x41.694x0.613	37464.60	3049680.00	0.012	4164.48	10501750.00	0.000
L35	18.75 - 13.75 (35)	TP43.444x42.569x0.613	38031.00	3113280.00	0.012	4163.82	10947583.33	0.000
L36	13.75 - 8.75 (36)	TP44.319x43.444x0.613	38584.60	3176880.00	0.012	4163.35	11402666.67	0.000
L37	8.75 - 3.75 (37)	TP45.194x44.319x0.6	39132.90	3175250.00	0.012	4163.06	11634666.67	0.000
L38	3.75 - 2 (38)	TP45.5x45.194x0.6	39338.70	3197050.00	0.012	4162.99	11796082.67	0.000
L39	2 - 1.75 (39)	TP45.544x45.5x0.438	39336.30	2207780.00	0.018	4163.00	8213091.33	0.001
L40	1.75 - 0 (40)	TP45.85x45.544x0.438	39542.50	2216880.00	0.018	4162.93	8303474.67	0.001

APPENDIX B
BASE LEVEL DRAWING

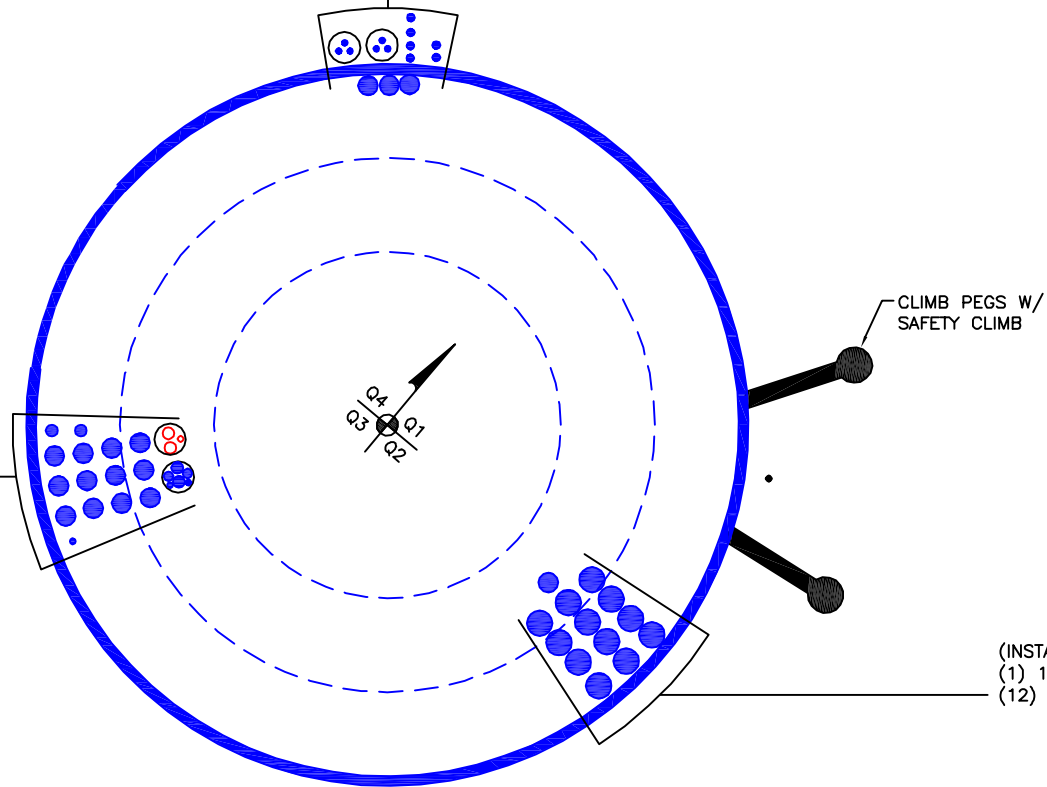


(INSTALLED)
(4) 1/2" TO 147 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(6) 5/16" TO 147 FT LEVEL

(INSTALLED)
(1) 1/2" TO 53 FT LEVEL

(INSTALLED)
(1) 1/2" TO 49 FT LEVEL
(3) 1-1/4" TO 147 FT LEVEL

(PROPOSED-IN CONDUIT)
(1) 3/8" TO 110 FT LEVEL
(2) 3/4" TO 110 FT LEVEL
(INSTALLED-IN 2" CONDUIT-TO BE REMOVED)
(1) 3/8" TO 110 FT LEVEL
(2) 5/8" TO 110 FT LEVEL
(INSTALLED-TO BE REMOVED)
(1) 3/8" TO 110 FT LEVEL
(2) 3/4" TO 110 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(1) 3/8" TO 110 FT LEVEL
(2) 3/4" TO 110 FT LEVEL
(INSTALLED)
(12) 1-1/4" TO 110 FT LEVEL



(INSTALLED)
(1) 1-1/4" TO 119 FT LEVEL
(12) 1-5/8" TO 119 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 876321
Work Order: 1517629

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	147	47.5	3.75	12	22	30.313	0.25	1	A607-60
2	103.25	44.25	4.75	12	29.16	36.9	0.3125	1.25	A607-65
3	63.75	34.5	5.25	12	35.44	41.481	0.375	1.5	A607-65
4	34.5	34.5	0	12	39.81	45.85	0.4375	1.75	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number												
						1	2	3	4	5	6	7	8	9	10	11	12
1	2	24	channel	MP3-04 (1.1875")	3		x				x				x		
2	33.5	50.5	channel	MP3-04 (1.1875")	3			x				x				x	
3	62.5	69.5	channel	MP3-04 (1.1875")	3			x				x				x	
4	2	34	channel	MP3-04 (1.1875")	3					x			x				x
5	50.25	57.75	channel	MP3-03 (1.1875")	3				x				x				x
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _v (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.593	1.1875	A572-65
2	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.593	1.1875	A572-65
3	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.593	1.1875	A572-65
4	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.593	1.1875	A572-65
5	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	147 - 142	5		12	22.000	22.875	0.25	A607-60	1.000
2	142 - 137	5		12	22.875	23.750	0.25	A607-60	1.000
3	137 - 132	5		12	23.750	24.625	0.25	A607-60	1.000
4	132 - 127	5		12	24.625	25.500	0.25	A607-60	1.000
5	127 - 122	5		12	25.500	26.375	0.25	A607-60	1.000
6	122 - 117	5		12	26.375	27.250	0.25	A607-60	1.000
7	117 - 112	5		12	27.250	28.125	0.25	A607-60	1.000
8	112 - 107	5		12	28.125	29.000	0.25	A607-60	1.000
9	107 - 103.25	7.5	3.75	12	29.000	30.313	0.25	A607-60	1.000
10	103.25 - 98.25	5		12	29.157	30.032	0.3125	A607-65	1.000
11	98.25 - 93.25	5		12	30.032	30.907	0.3125	A607-65	1.000
12	93.25 - 88.25	5		12	30.907	31.782	0.3125	A607-65	1.000
13	88.25 - 83.25	5		12	31.782	32.657	0.3125	A607-65	1.000
14	83.25 - 78.25	5		12	32.657	33.531	0.3125	A607-65	1.000
15	78.25 - 73.25	5		12	33.531	34.406	0.3125	A607-65	1.000
16	73.25 - 69.5	3.75		12	34.406	35.063	0.3125	A607-65	1.000
17	69.5 - 69.25	0.25		12	35.063	35.106	0.4375	A607-65	0.971
18	69.25 - 64.25	5		12	35.106	35.981	0.43125	A607-65	0.978
19	64.25 - 63.75	5.25	4.75	12	35.981	36.900	0.43125	A607-65	0.978
20	63.75 - 58	5.75		12	35.444	36.450	0.375	A607-65	1.000
21	58 - 57.75	0.25		12	36.450	36.494	0.375	A607-65	1.000
22	57.75 - 57.5	0.25		12	36.494	36.537	0.375	A607-65	1.000
23	57.5 - 52.5	5		12	36.537	37.412	0.375	A607-65	1.000
24	52.5 - 50.5	2		12	37.412	37.762	0.375	A607-65	1.000
25	50.5 - 50.25	0.25		12	37.762	37.806	0.575	A607-65	0.963
26	50.25 - 50	0.25		12	37.806	37.850	0.375	A607-65	1.000
27	50 - 45	5		12	37.850	38.725	0.375	A607-65	1.000
28	45 - 40	5		12	38.725	39.600	0.375	A607-65	1.000
29	40 - 35	5		12	39.600	40.475	0.375	A607-65	1.000
30	35 - 34.5	5.75	5.25	12	40.475	41.481	0.375	A607-65	1.000
31	34.5 - 28.25	6.25		12	39.812	40.906	0.4375	A607-65	1.000
32	28.25 - 24	4.25		12	40.906	41.650	0.4375	A607-65	1.000
33	24 - 23.75	0.25		12	41.650	41.694	0.625	A607-65	1.003
34	23.75 - 18.75	5		12	41.694	42.569	0.6125	A607-65	1.017
35	18.75 - 13.75	5		12	42.569	43.444	0.6125	A607-65	1.011
36	13.75 - 8.75	5		12	43.444	44.319	0.6125	A607-65	1.005
37	8.75 - 3.75	5		12	44.319	45.194	0.6	A607-65	1.020
38	3.75 - 2	1.75		12	45.194	45.500	0.6	A607-65	1.018
39	2 - 1.75	0.25		12	45.500	45.544	0.4375	A607-65	1.000
40	1.75 - 0	1.75		12	45.544	45.850	0.4375	A607-65	1.000

TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)	
1	147 - 142	3.90	39.15	8.14	
2	142 - 137	4.24	81.44	8.78	
3	137 - 132	4.60	126.98	9.44	
4	132 - 127	4.98	175.84	10.11	
5	127 - 122	5.38	228.09	10.80	
6	122 - 117	7.51	299.28	15.86	
7	117 - 112	8.04	380.35	16.58	
8	112 - 107	12.81	498.01	25.01	
9	107 - 103.25	13.33	592.76	25.54	
10	103.25 - 98.25	14.46	722.44	26.33	
11	98.25 - 93.25	15.31	855.83	27.05	
12	93.25 - 88.25	16.19	992.81	27.76	
13	88.25 - 83.25	17.11	#####	28.48	
14	83.25 - 78.25	18.07	#####	29.19	
15	78.25 - 73.25	19.06	#####	29.89	
16	73.25 - 69.5	19.82	#####	30.42	
17	69.5 - 69.25	19.90	#####	30.44	
18	69.25 - 64.25	21.13	#####	31.21	
19	64.25 - 63.75	21.27	#####	31.28	
20	63.75 - 58	23.46	#####	32.25	
21	58 - 57.75	23.54	#####	32.27	
22	57.75 - 57.5	23.60	#####	32.30	
23	57.5 - 52.5	24.92	#####	33.07	
24	52.5 - 50.5	25.44	#####	33.34	
25	50.5 - 50.25	25.54	#####	33.36	
26	50.25 - 50	25.60	#####	33.39	
27	50 - 45	26.95	#####	34.12	
28	45 - 40	28.27	#####	34.77	
29	40 - 35	29.62	#####	35.39	
30	35 - 34.5	29.77	#####	35.44	
31	34.5 - 28.25	32.62	#####	36.34	
32	28.25 - 24	33.95	#####	36.83	
33	24 - 23.75	34.08	#####	36.85	
34	23.75 - 18.75	36.10	#####	37.46	
35	18.75 - 13.75	38.18	#####	38.03	
36	13.75 - 8.75	40.26	#####	38.58	
37	8.75 - 3.75	42.36	#####	39.13	
38	3.75 - 2	43.10	#####	39.34	
39	2 - 1.75	43.20	#####	39.34	
40	1.75 - 0	43.76	#####	39.54	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.875x22x0.25	Pole	7.2%	Pass
142 - 137	Pole	TP23.75x22.875x0.25	Pole	13.7%	Pass
137 - 132	Pole	TP24.625x23.75x0.25	Pole	20.0%	Pass
132 - 127	Pole	TP25.5x24.625x0.25	Pole	26.0%	Pass
127 - 122	Pole	TP26.375x25.5x0.25	Pole	31.9%	Pass
122 - 117	Pole	TP27.25x26.375x0.25	Pole	39.7%	Pass
117 - 112	Pole	TP28.125x27.25x0.25	Pole	47.9%	Pass
112 - 107	Pole	TP29x28.125x0.25	Pole	59.9%	Pass
107 - 103.25	Pole	TP30.313x29x0.25	Pole	68.7%	Pass
103.25 - 98.25	Pole	TP30.032x29.157x0.3125	Pole	56.5%	Pass
98.25 - 93.25	Pole	TP30.907x30.032x0.3125	Pole	63.7%	Pass
93.25 - 88.25	Pole	TP31.782x30.907x0.3125	Pole	70.5%	Pass
88.25 - 83.25	Pole	TP32.657x31.782x0.3125	Pole	76.9%	Pass
83.25 - 78.25	Pole	TP33.531x32.657x0.3125	Pole	83.0%	Pass
78.25 - 73.25	Pole	TP34.406x33.531x0.3125	Pole	88.8%	Pass
73.25 - 69.5	Pole	TP35.063x34.406x0.3125	Pole	93.0%	Pass
69.5 - 69.25	Pole + Reinf.	TP35.106x35.063x0.4375	Reinf. 3 Tension Rupture	90.8%	Pass
69.25 - 64.25	Pole + Reinf.	TP35.981x35.106x0.4313	Reinf. 3 Tension Rupture	95.6%	Pass
64.25 - 63.75	Pole + Reinf.	TP36.9x35.981x0.4313	Reinf. 3 Tension Rupture	96.1%	Pass
63.75 - 58	Pole	TP36.45x35.444x0.375	Pole	83.9%	Pass
58 - 57.75	Pole	TP36.494x36.45x0.375	Pole	84.1%	Pass
57.75 - 57.5	Pole	TP36.537x36.494x0.375	Pole	84.3%	Pass
57.5 - 52.5	Pole	TP37.412x36.537x0.375	Pole	88.0%	Pass
52.5 - 50.5	Pole	TP37.762x37.412x0.375	Pole	89.4%	Pass
50.5 - 50.25	Pole + Reinf.	TP37.806x37.762x0.575	Reinf. 5 Tension Rupture	84.1%	Pass
50.25 - 50	Pole	TP37.85x37.806x0.375	Pole	89.7%	Pass
50 - 45	Pole	TP38.725x37.85x0.375	Pole	93.2%	Pass
45 - 40	Pole	TP39.6x38.725x0.375	Pole	96.5%	Pass
40 - 35	Pole	TP40.475x39.6x0.375	Pole	99.6%	Pass
35 - 34.5	Pole	TP41.481x40.475x0.375	Pole	99.9%	Pass
34.5 - 28.25	Pole	TP40.906x39.812x0.4375	Pole	86.7%	Pass
28.25 - 24	Pole	TP41.65x40.906x0.4375	Pole	88.6%	Pass
24 - 23.75	Pole + Reinf.	TP41.694x41.65x0.625	Reinf. 1 Tension Rupture	91.9%	Pass
23.75 - 18.75	Pole + Reinf.	TP42.569x41.694x0.6125	Reinf. 1 Tension Rupture	93.9%	Pass
18.75 - 13.75	Pole + Reinf.	TP43.444x42.569x0.6125	Reinf. 1 Tension Rupture	95.9%	Pass
13.75 - 8.75	Pole + Reinf.	TP44.319x43.444x0.6125	Reinf. 1 Tension Rupture	97.7%	Pass
8.75 - 3.75	Pole + Reinf.	TP45.194x44.319x0.6	Reinf. 1 Tension Rupture	99.4%	Pass
3.75 - 2	Pole + Reinf.	TP45.5x45.194x0.6	Reinf. 1 Tension Rupture	100.0%	Pass
2 - 1.75	Pole	TP45.544x45.5x0.4375	Pole	97.6%	Pass
1.75 - 0	Pole	TP45.85x45.544x0.4375	Pole	98.2%	Pass
				Summary	
			Pole	99.9%	Pass
			Reinforcement	100.0%	Pass
			Overall	100.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
147 - 142	1192	n/a	1192	18.19	n/a	18.19	7.2%					
142 - 137	1335	n/a	1335	18.89	n/a	18.89	13.7%					
137 - 132	1490	n/a	1490	19.59	n/a	19.59	20.0%					
132 - 127	1656	n/a	1656	20.30	n/a	20.30	26.0%					
127 - 122	1835	n/a	1835	21.00	n/a	21.00	31.9%					
122 - 117	2025	n/a	2025	21.70	n/a	21.70	39.7%					
117 - 112	2229	n/a	2229	22.41	n/a	22.41	47.9%					
112 - 107	2445	n/a	2445	23.11	n/a	23.11	59.9%					
107 - 103.25	2616	n/a	2616	23.64	n/a	23.64	68.7%					
103.25 - 98.25	3376	n/a	3376	29.86	n/a	29.86	56.5%					
98.25 - 93.25	3683	n/a	3683	30.74	n/a	30.74	63.7%					
93.25 - 88.25	4008	n/a	4008	31.62	n/a	31.62	70.5%					
88.25 - 83.25	4352	n/a	4352	32.50	n/a	32.50	76.9%					
83.25 - 78.25	4714	n/a	4714	33.38	n/a	33.38	83.0%					
78.25 - 73.25	5097	n/a	5097	34.26	n/a	34.26	88.8%					
73.25 - 69.5	5397	n/a	5397	34.92	n/a	34.92	93.0%					
69.5 - 69.25	5417	2050	7468	34.96	12.39	47.35	65.5%			90.8%		
69.25 - 64.25	5836	2150	7986	35.84	12.39	48.23	69.7%			95.6%		
64.25 - 63.75	5879	2160	8040	35.93	12.39	48.32	70.2%			96.1%		
63.75 - 58	7246	n/a	7246	43.50	n/a	43.50	83.9%					
58 - 57.75	7272	n/a	7272	43.55	n/a	43.55	84.1%					
57.75 - 57.5	7299	n/a	7299	43.60	n/a	43.60	84.3%					
57.5 - 52.5	7841	n/a	7841	44.66	n/a	44.66	88.0%					
52.5 - 50.5	8066	n/a	8066	45.08	n/a	45.08	89.4%					
50.5 - 50.25	8094	4033	12127	45.13	21.15	66.28	57.8%		83.6%			84.1%
50.25 - 50	8122	n/a	8122	45.19	n/a	45.19	89.7%					
50 - 45	8705	n/a	8705	46.24	n/a	46.24	93.2%					
45 - 40	9314	n/a	9314	47.30	n/a	47.30	96.5%					
40 - 35	9951	n/a	9951	48.35	n/a	48.35	99.6%					
35 - 34.5	10017	n/a	10017	48.46	n/a	48.46	99.9%					
34.5 - 28.25	11933	n/a	11933	56.93	n/a	56.93	86.7%					
28.25 - 24	12604	n/a	12604	57.97	n/a	57.97	88.6%					
24 - 23.75	12659	5069	17729	58.04	24.78	82.82	63.9%	91.9%			87.6%	
23.75 - 18.75	13482	5278	18760	59.27	24.78	84.05	65.8%	93.9%			89.6%	
18.75 - 13.75	14339	5491	19830	60.50	24.78	85.28	67.7%	95.9%			91.5%	
13.75 - 8.75	15231	5708	20940	61.73	24.78	86.51	69.6%	97.7%			93.3%	
8.75 - 3.75	16160	5930	22090	62.96	24.78	87.74	71.3%	99.4%			94.9%	
3.75 - 2	16494	6008	22502	63.39	24.78	88.17	72.0%	100.0%			95.5%	
2 - 1.75	16524	n/a	16524	63.45	n/a	63.45	97.6%					
1.75 - 0	16863	n/a	16863	63.88	n/a	63.88	98.2%					

Note: Section capacity checked in 5 degree increments.

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 879321		
Site Name: Branford Barn Tower		
App #: 421199 Rev. 1		
Anchor Rod Data		
Eta Factor, η	0.55	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	54	in
Anchor Spacing:	6	in

Plate Data

W=Side:	54	in
Thick:	3.5	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:	**	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	45.85	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, M_u :	3734	ft-kips
Factored Axial, P_u :	0	kips
Factored Shear, V_u :	0	kips

Anchor Rod Results

TIA G --> Max Rod (Cu): 207.45 Kips

Base Plate Results

Base Plate Stress: 28.1 ksi
 PL Design Bending Strength, $\Phi * F_y$: 45.0 ksi
 Base Plate Stress Ratio: 62.4% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	30.52
Max PL Length:	30.52

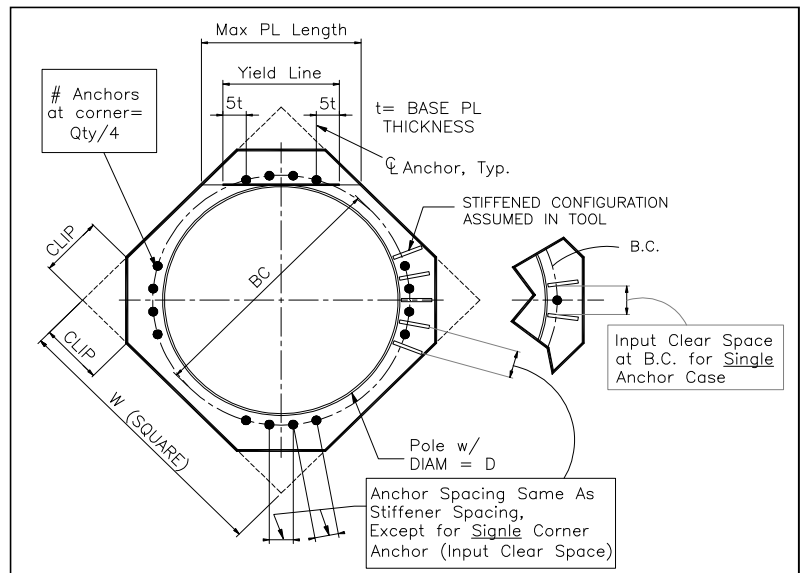
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Pier and Pad Foundation



BU # : 876321
Site Name: Branford Banm Tov
App. Number: 421199 Rev. 1

TIA-222 Revision: G
Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	43.803	kips
Base Shear, V_{u_comp} :	39.498	kips
Moment, M_u :	3990.868	ft-kips
Tower Height, H :	147	ft
BP Dist. Above Fdn, bp_{dist} :	2.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	348.00	39.50	11.3%	Pass
<i>Bearing Pressure (ksf)</i>	6.73	5.29	78.6%	Pass
<i>Overturning (kip*ft)</i>	5120.04	4453.32	87.0%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	See Additional Calculations			
<i>Pier Compression (kip)</i>	23390.64	105.93	0.5%	Pass
<i>Pad Flexure (kip*ft)</i>	4322.10	2474.35	57.2%	Pass
<i>Pad Shear - 1-way (kips)</i>	624.22	359.53	57.6%	Pass
<i>Pad Shear - 2-way (ksi)</i>	0.16	0.00	0.0%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	7.0	ft
Ext. Above Grade, E :	0.50	ft
Pier Rebar Size, S_c :	11	
Pier Rebar Quantity, mc :	16	
Pier Tie/Spiral Size, S_t :	5	
Pier Tie/Spiral Quantity, mt :	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Soil Rating: **87.0%**
 Structural Rating: **57.6%**

Pad Properties		
Depth, D :	11.0	ft
Pad Width, W :	20.5	ft
Pad Thickness, T :	3.0	ft
Pad Rebar Size, S_p :	11	
Pad Rebar Quantity, mp :	21	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	3000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	125	pcf
Ultimate Net Bearing, Q_{net} :	8.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	35	degrees
SPT Blow Count, N_{blows} :	60	
Base Friction, μ :		
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, gw :	4.5	ft

<--Toggle between Gross and Net



PASS PASS

Branford Bann Tower (BU 876321)

Results Summary: LC1 LC2

TEP #: 25579.155918

Soil Interaction: N/A N/A

Analysis: ADB 1/31/2018

Drilled Caisson Tool - Input

Foundation Structural: 84.3% 19.5%

Check: AAS 1/31/2018

Code Revisions: TIA-222-G ACI 318-11

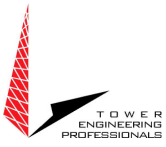
Tower Type: Monopole

	LC1	LC2	
Moment:	4,326.601	1,015.047	kip-ft
Axial (download):	43.803	77.013	kip
Shear:	39.498	8.836	kip
Axial (uplift):			kip

Shaft Information		
Diameter:	7.00	ft
Projection:	0.50	ft
Caisson Length:	8.50	ft
f'c:	3.000	ksi
Max ϵ_c :	0.003	in/in

Cage 1 Reinforcement		
Tie Bar Size:	5	($f_y = 40.0$ ksi)
Clear Cover to Tie:	3.00	in (Cage $\phi = 75.34$ in)
Tie Bar Spacing:	8.00	in
Vertical Bar Size:	11	
Vertical Bar Quantity:	16	($\rho = 0.450\%$)
fy:	60.0	ksi
E:	29,000	ksi

Cage 2 Reinforcement		
Cage Diameter:	61.875	in
Offset Angle:	0.0	degrees
Vertical Bar Size:	Other	→ Anet = 1.90
Vertical Bar Qty:	3	($\rho = 0.103\%$)
Cage 2 resists compression?	No	
Effective Cage Depth:	8	ft
fy:	80	ksi
E:	29,000	ksi



TOWER
ENGINEERING
PROFESSIONALS

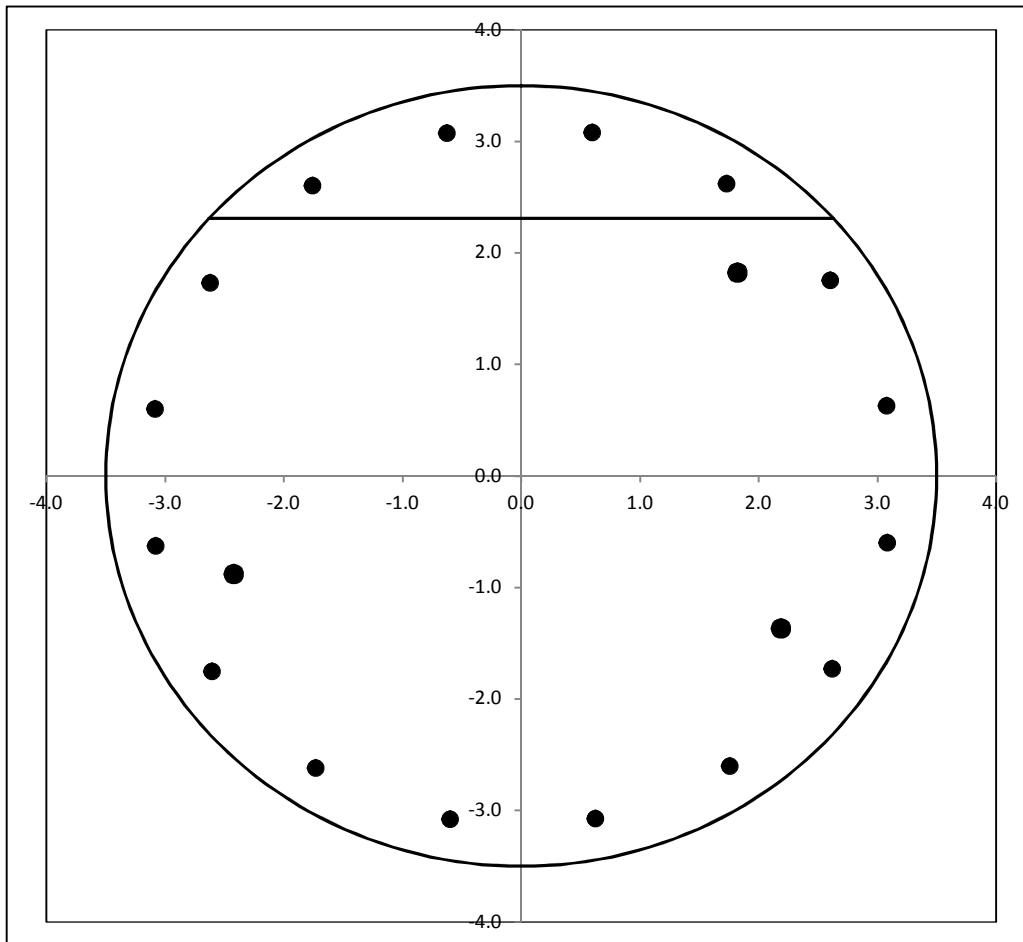
Branford Bann Tower (BU 876321)

TEP #: 25579.155918

Analysis: ADB 1/31/2018

Check: AAS 1/31/2018

Reinforcement Capacity



	LC1	LC2
V_u =	39.5	39.5 kip
V_c =	609.5	611.3 kip
f_y, tie = 40.0 V_s =	244.7	244.7 kip
ϕV_n =	640.7	642.0 kip
Capacity =	6.2%	6.2%
	PASS	PASS

	LC1	LC2
M_u =	4326.6	1015.0 kip-ft
ϕM_n =	5133.5	5211.6 kip-ft
Capacity =	84.3%	19.5%
	PASS	PASS

148-160 NO MAIN ST

Location 148-160 NO MAIN ST

Mblu D06/E06 001/ 001.1/ /

Acct# 005520

Owner PREMIER REALTY HOLDINGS
LLC

Assessment \$1,023,900

Appraisal \$1,462,800

PID 726

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$329,700	\$1,133,100	\$1,462,800
Assessment			
Valuation Year	Improvements	Land	Total
2016	\$230,700	\$793,200	\$1,023,900

Owner of Record

Owner PREMIER REALTY HOLDINGS LLC
Co-Owner
Address 150 NORTH MAIN ST
BRANFORD, CT 06405

Sale Price \$0
Certificate
Book & Page 0877/0469
Sale Date 07/06/2004
Instrument 3

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
PREMIER REALTY HOLDINGS LLC			0877/0469	3	07/06/2004
PREMIER REALTY HOLDINGS LLC	\$875,000		0877/0467	8	07/06/2004
MACULAITIS IRENE			0602/0843		02/26/1996
MACULAITIS ALEXANDER EST + IRENE			0238/0562		

Building Information

Building 1 : Section 1

Year Built: 1965
Living Area: 13144
Replacement Cost: \$720,946
Building Percent 35
Good:
Replacement Cost
Less Depreciation: \$252,300

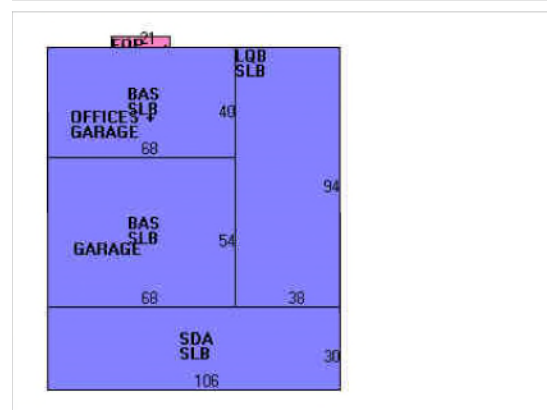
Building Photo

Building Attributes	
Field	Description
STYLE	Car Dealrshp
MODEL	Ind/Comm
Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Pre-finish Metl
Exterior Wall 2	Drivit
Roof Structure	Flat
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	Drywall
Interior Floor 1	Concr-Finished
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	AUTO S S&S MDL96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3310
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & MIN WL
Rooms/Prtns	AVERAGE
Wall Height	15
% Comn Wall	0



(http://images.vgsi.com/photos/BranfordCTPhotos//\00\01\20\95.jpg)

Building Layout



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	6392	6392
LQB	Low Qual Bas	3572	3572
SDA	Store Display Area	3180	3180
FOP	Porch, Open	84	0
SLB	Slab	13144	0
		26372	13144

Building 1 : Section 1

Year Built: 1965
Living Area: 0
Replacement Cost: \$720,946
Building Percent Good: 35
Replacement Cost Less Depreciation: \$252,300

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade:	

Building Photo

Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Cottage Cmplx	
Cottage Adj	



(<http://images.vgsi.com/photos/BranfordCTPhotos/\00\02\25\27.jpg>)

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
MEZ1	MEZZANINE-UNF	1960 S.F.	\$6,900	1
A/C	AIR CONDITION	5984 S.F.	\$4,600	1

Land

Land Use

Use Code 3310
Description AUTO S S&S MDL96
Zone IG-1
Neighborhood 500
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 2.05
Frontage
Depth
Assessed Value \$793,200
Appraised Value \$1,133,100

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAVING-ASPHALT			43000 S.F.	\$42,600	1
LT1	LIGHTS-IN W/PL			16 UNITS	\$7,300	1

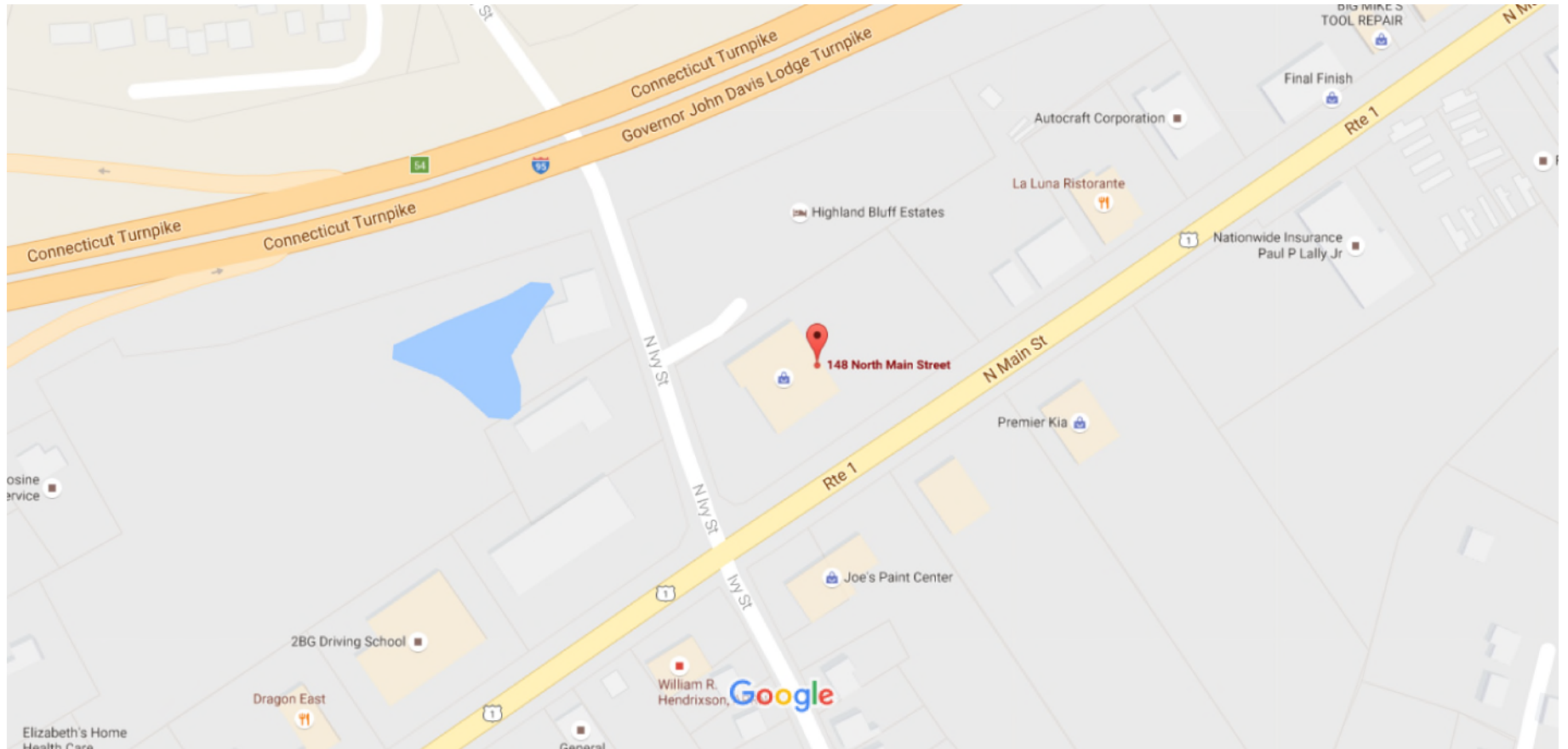
SHD6	SHED COM MAS			312 S.F.	\$6,200	1
FN6	W/O TOP RL-4'			170 L.F.	\$800	1
LT2	W/DOUBLE LIGHT			4 UNITS	\$2,900	1
PAV2	PAVING-CONC			130 S.F.	\$400	1
LT3	W/TRIPLE LIGHT			2 UNITS	\$2,000	1
SHD5	SHED COM WOOD			240 S.F.	\$3,700	1


Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$329,700	\$1,133,100	\$1,462,800
2014	\$329,700	\$1,133,100	\$1,462,800
2013	\$352,300	\$1,133,100	\$1,485,400

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$230,700	\$793,200	\$1,023,900
2014	\$230,700	\$793,200	\$1,023,900
2013	\$246,600	\$793,200	\$1,039,800

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**UNITED STATES
POSTAL SERVICE®**

Click-N-Ship®

P

usps.com 9405 8036 9930 0608 1308 40 0067 0000 0010 6405
US POSTAGE
 Flat Rate Enviv



03/17/2018 Mailed from 06268 024P

PRIORITY MAIL 1-DAY™

Expected Delivery Date: 03/19/18


MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

0024

C035

SHIP TO: JAMES B COSGROVE
 TOWN OF BRANFORD
 1019 MAIN ST
 BRANFORD CT 06405-3731

USPS TRACKING #



9405 8036 9930 0608 1308 40

Electronic Rate Approved #038555749



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

**USPS TRACKING # / Insurance Number:
 9405 8036 9930 0608 1308 40**

Trans. #:	430130260	Priority Mail® Postage:	\$6.70
Print Date:	03/17/2018	Insurance Fee	\$0.00
Ship Date:	03/17/2018	Total	\$6.70
Expected Delivery Date:	03/19/2018		
Insured Value:	\$50.00		

From: MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

To: JAMES B COSGROVE
 TOWN OF BRANFORD
 1019 MAIN ST
 BRANFORD CT 06405-3731

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!
 Check the status of your shipment on the USPS Tracking® page at usps.com



Shipment Confirmation Acceptance Notice

A. Mailer Action

Note To Mailer: The labels and volume associated to this form online, **must** match the labeled packages being presented to the USPS® employee with this form.

Shipment Date: 03/17/18

Shipped From:

MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

Type of Mail	Volume
Priority Mail®	7
Priority Mail Express™*	0
International Mail*	0
Other	0
Total Volume	7

*Start time for products with service guarantees will begin when mail arrives at the local Post Office™ and items receive individual processing and acceptance scans.

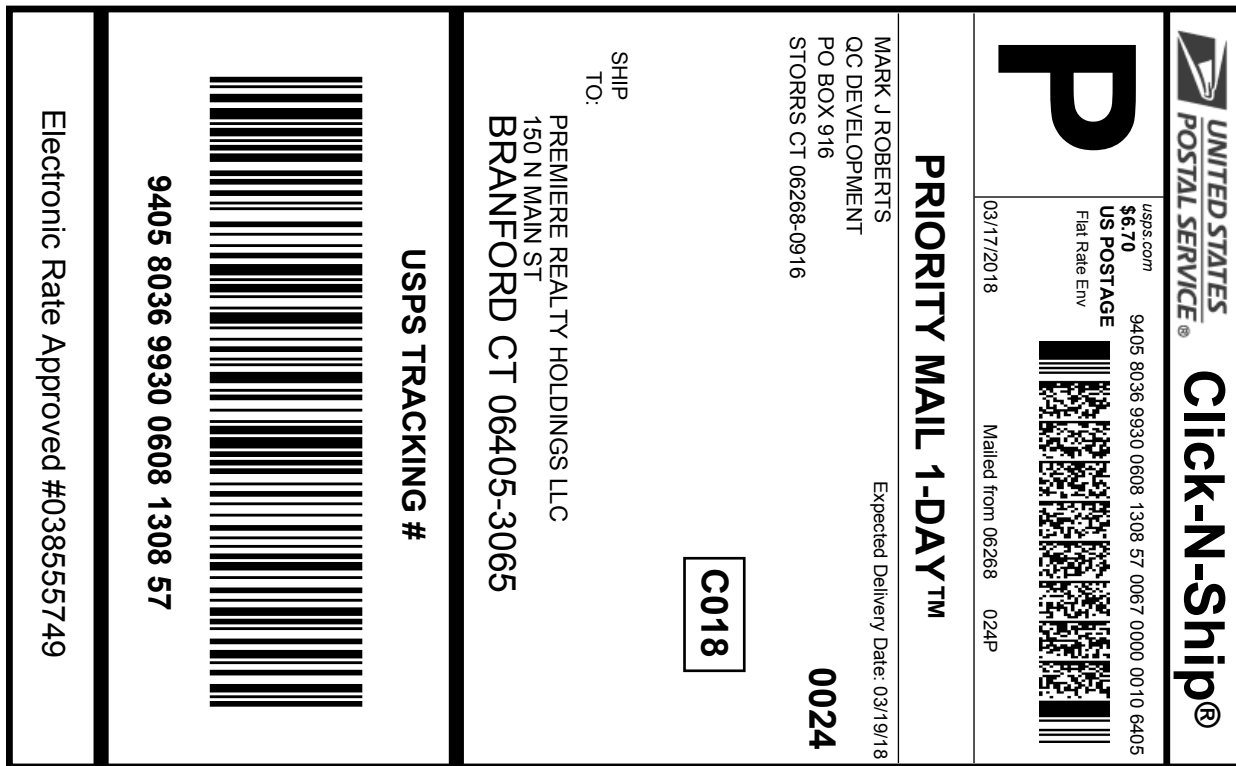
B. USPS Action

- USPS EMPLOYEE: Please scan upon pickup or receipt of mail. Leave form with customer or in customer's mail receptacle.
- Employee verifies the package volume count on the Package Pickup Carrier Manifest.
 - If the volume on the manifest matches the volume being collected from the customer, the employee should make the **1:YES** selection by pressing the number 1 on the keypad of the handheld scanner, or on the keyboard of the POS ONE terminal.
 - If the volume on the manifest does not match the volume being collected from the customer, the employee should make the **2:NO** selection. The mail should still be collected and dispatched as normal.

USPS SCAN



9475 7036 9930 0264 5734 10



Cut on dotted line.

Instructions

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Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0608 1308 57

Trans. #:	430130260	Priority Mail® Postage:	\$6.70
Print Date:	03/17/2018	Insurance Fee	\$0.00
Ship Date:	03/17/2018	Total	\$6.70
Expected Delivery Date:	03/19/2018		
Insured Value:	\$50.00		

From: MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

To: PREMIERE REALTY HOLDINGS LLC
 150 N MAIN ST
 BRANFORD CT 06405-3065

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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STORRS CT 06268-0916

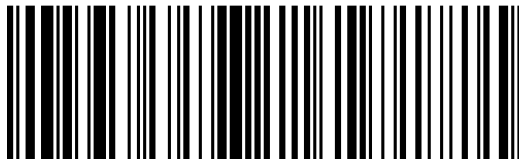
Type of Mail	Volume
Priority Mail®	7
Priority Mail Express™*	0
International Mail*	0
Other	0
Total Volume	7

*Start time for products with service guarantees will begin when mail arrives at the local Post Office™ and items receive individual processing and acceptance scans.

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9475 7036 9930 0264 5734 10