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

9/5/2018

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

RE: **Notice of Exempt Modification for T-Mobile Crown Site BU: 876335**
T-Mobile Site ID: CTHA233B
8040 Birdseye Road, Farmington, CT 06032
Latitude: 41° 42′ 56.94″/ Longitude: -72° 48′ 37.42″

Dear Ms. Bachman:

T-Mobile currently maintains 9 antennas at the 100' foot level of the existing 139-foot Monopole Tower at 8040 Birdseye Road, Farmington, CT 06032. The tower is owned by Crown Castle. The property is owned by GOIS HOLDINGS OF CONNECTICUT, LLC. T-Mobile intends to replace (6) existing panel antennas with (6) proposed panel antennas and to replace (3) existing remote radio units with (3) proposed remote radio units, as well as to add (1) hybrid lines and to remove (1) line of coax.

This facility was approved by a federal judge on 11/4/97 per the attached e-mail provided by the Town of Farmington.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Kathleen Eagan, Town Manager, Arnold, Russell M. Jr. P.E., Director of Public Works / Town Engineer, as well as the property owner, and Crown Castle as the tower owner.

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

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

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

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

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

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

William Stone
Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
518-373-3543
William.stone@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc:

Kathleen Eagen
Town Manager's Office
1 Monteith Drive
Farmington, CT 06032

Arnold, Russell M. Jr. P.E.
Director of Public Works / Town Engineer
1 Monteith Drive
Farmington, CT 06032

GOIS HOLDINGS OF CONNECTICUT, LLC
IVON GOIS
125 BROOKSIDE DR
UXBRIDGE, MA 01569

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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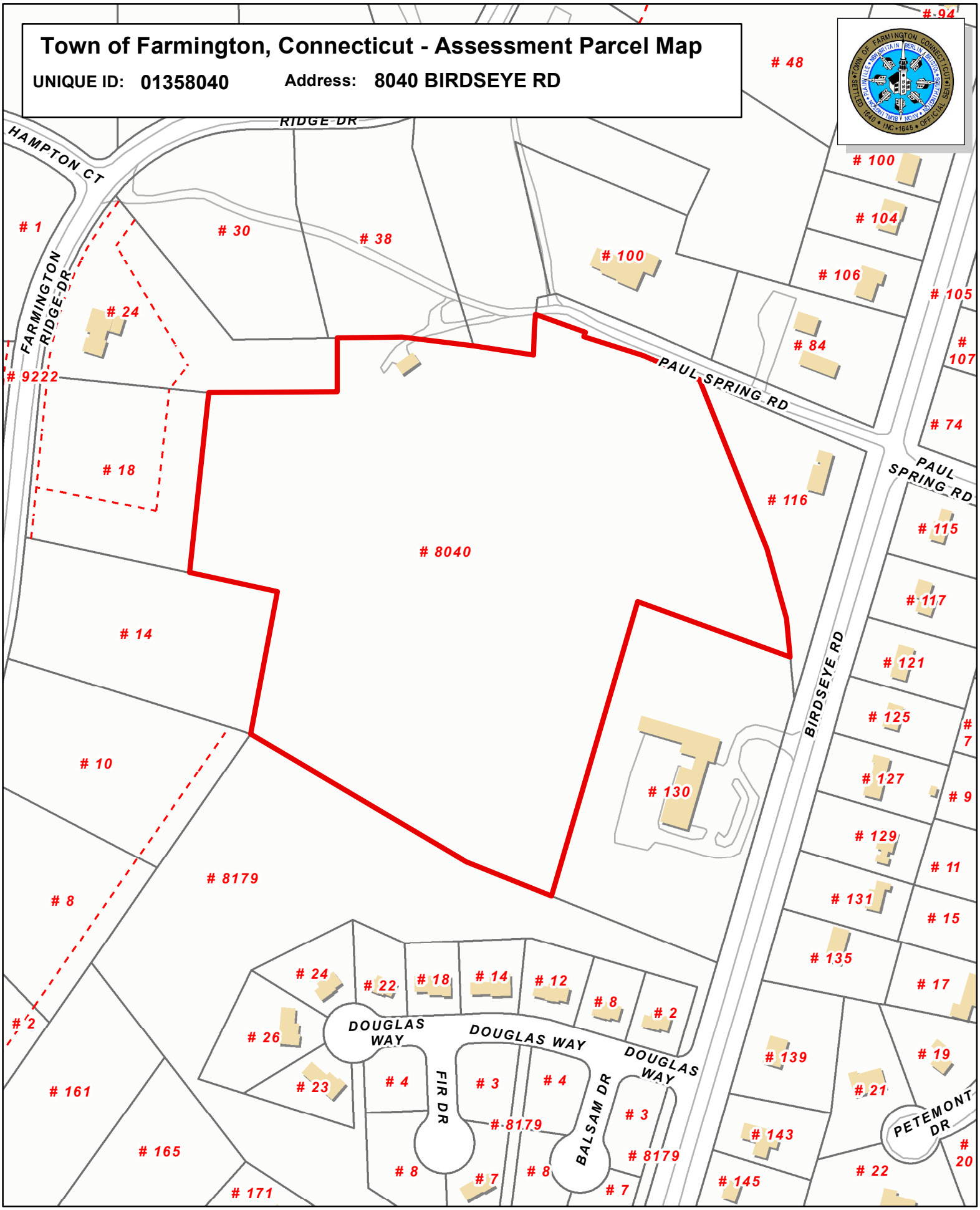
Town of Farmington, Connecticut - Assessment Parcel Map

UNIQUE ID: 01358040 **Address:** 8040 BIRDSEYE RD



Map Produced Aug 2017

Approximate Scale: 1 inch = 200 feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Farmington and its mapping contractors assume no legal responsibility for the information contained herein.

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

Information on the Property Records for the Municipality of Farmington was last updated on 9/4/2018.

Parcel Information

Location:	8040 BIRDSEYE RD	Property Use:	Vacant Land	Primary Use:	Commercial Vacant Land
Unique ID:	01358040	Map Block Lot:	0119 3A	Acres:	13.53
490 Acres:	0.00	Zone:	R80	Volume / Page:	0928/0470
Developers Map / Lot:		Census:	4602-02		

Value Information

	Appraised Value	Assessed Value
Land	375,540	262,880
Buildings	0	0
Detached Outbuildings	0	0
Total	375,540	262,880

Owner's Information

Owner's Data
GOIS HOLDINGS OF CONNECTICUT LLC IVON GOIS 125 BROOKSIDE DR UXBRIDGE, MA 01569

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
GOIS HOLDINGS OF CONNECTICUT	0928	0470	04/09/2008		No	$518,000
CELL TOWER LEASE	0862	0083	12/07/2005		No	$0
UNISON SITE MANAGEMENT LLC	0862	0062	12/07/2005		No	$385,000
FREEDON COMMUNICATIONS OF	0809	0324	06/15/2004		No	$280,000
MEGA BROADCASTING	0530	0225	12/17/1996		No	$75,000
MEGA COMMUNICATIONS OC NB LL	0585	0272			No	$0
AMERICAN RADIO SYSTEMS INC	0484	0674			No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
759		03/23/2017		Closed	Antenna

Information Published With Permission From The Assessor

Mark Roberts

From: Sandra Michaud <michauds@farmington-ct.org>
Sent: Monday, February 27, 2017 4:16 PM
To: Mark Roberts
Subject: 130 Birdseye Road

Hi Mark

I was able to go through documents for this address and it appears on November 4, 1997 a federal judge ordered the Town (within 20 days) to issue a zoning permit so that Sprint Spectrum could install a 140 foot high communications tower. I do not have an approval letter from the Plan & Zoning Commission as it appears they did not formally make a decision in support of the Court's Order but a zoning permit was issued on November 26, 1997.

The Town did appeal this Order but did later withdraw in March 1998.

Sandy

Sandra Michaud
Land Use Coordinator
Town of Farmington
Planning Division
Department of Public Works
1 Monteith Drive
Farmington, CT 06032
860.675.2325 Office
860.675.2319 Fax

SHEET INDEX

NO.	DESCRIPTION
T1	TITLE PAGE
N1	NOTES
C1	PLAN & ELEVATION
C2	RF CHART AND ORIENTATION
D1	EQUIPMENT DETAILS
E1	GROUNDING DIAGRAM
E2	RF PLUMBING DIAGRAM

TOWER OWNER NOTIFICATION

ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

T-Mobile

CROWN CASTLE

CBU

876335

SITE ID

CTHA233B

SITE NAME

CT233/GLOBAL SIGNAL MP

SITE ADDRESS

130 BIRDSEYE RD
FARMINGTON, CT 06032

CONFIGURATION

67D92DB_2XAIR+1OP.

PROJECT SITE INFORMATION

SITE ID:	CTHA233B	
SITE NAME:	CT233/GLOBAL SIGNAL MP	
SITE ADDRESS:	130 BIRDSEYE RD FARMINGTON, CT 06032	
COUNTY:	DAVIS	
SITE COORDINATES: LATITUDE: LONGITUDE:	 41° 43' 09.0" -72° 48' 35.0"	 (NAD 83) (NAD 83)
APPLICANT:	T-MOBILE NORTHEAST LLC 103 MONARCH DRIVE LIVERPOOL, NY 13088	

STRUCTURAL ANALYSIS INFORMATION

TOWER ANALYSIS

INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING **TOWER** FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS FROM TOWER OWNER PRIOR TO ANY CONSTRUCTION.

ANTENNA MOUNTS

BASED ON THE MOUNT ANALYSIS COMPLETED BY **INFINIGY ENGINEERING, PLLC** DATED **07/23/2018.** THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION

PROJECT TEAM INFORMATION

CLIENT REPRESENTATIVE:	CROWN CASTLE 3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
CLIENT REP. CONTACT:	WILL STONE (518) 373-3543
ENGINEER:	INFINIGY 6865 DEERPATH ROAD SUITE 152 ELKRIDGE, MD 21075
ENGINEER CONTACT:	MATTHEW LIVERETTE (518) 690-0790

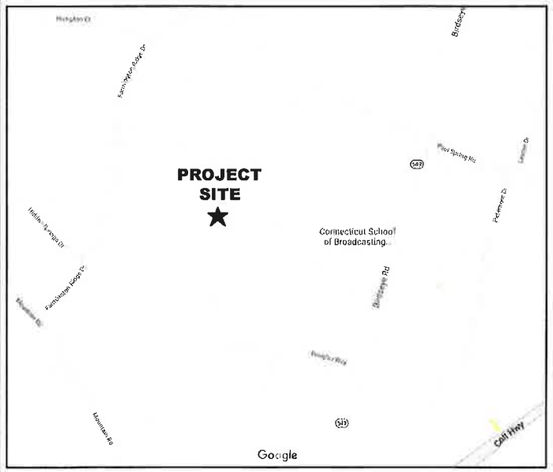
SCOPE OF WORK

SCOPE OF WORK:
L700 4X2 67D92DB_2xAIR+1OP OUTDOOR CONFIG: (UPSTATE NY MARKET)
REPLACING (6) EXISTING ANTENNAS WITH NEW MODELS. ADDING (1) HYBRID FIBER CABLE AND (3) RRUS. REMOVING (3) RRUS AND (1) COAX.

811 Know what's below. Call before you dig.

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG
TOLL FREE: 1-800-922-4455 OR www.cbyd.com
CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

LOCATION MAP



GENERAL NOTES

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- FACILITY HAS NO PLUMBING OR REFRIGERANTS.
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RRH AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
- THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON STORMWATER DRAINAGE.
- NO SANITARY SEWER, POTABLE WATER, OR TRASH DISPOSAL SERVICE IS REQUIRED
- NO COMMERCIAL SIGNAGE IS PROPOSED

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED WITH ANY LOCAL AMENDMENTS BY THE LOCAL GOVERNING AUTHORITIES:

- INTERNATIONAL BUILDING CODE
- NATIONAL ELECTRICAL CODE
- NATIONAL FIRE PROTECTION ASSOCIATION 101
- NATIONAL FIRE PROTECTION ASSOCIATION 1
- LOCAL BUILDING CODES
- CITY/COUNTY ORDINANCES
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS (AISC)
- UNDERWRITERS LABORATORIES APPROVED ELECTRICAL PRODUCTS.
- ANSI EIA/TIA 222 REV. G
- TIA 607
- INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
- IEEE C2 (LATEST EDITION)
- TELCORDIA GR-1275
- ANSI T1.311

T-Mobile
T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY
6865 DEERPATH ROAD SUITE 152
ELKRIDGE, MD 21075
TEL (443) 592-3143

STATE OF CONNECTICUT · JOHN S. STEVENS · No. 24705 · LICENSED PROFESSIONAL ENGINEER
AUG 14 2018

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS

No.	Submittal / Revision	App'd	Date
0	ISSUED FOR CONSTRUCTION	RCD	08/14/18
A	ISSUED FOR REVIEW	RCD	08/03/18

Drawn: RCD
Designed: MRL
Checked: AJD

Project Number: 600-007

Project Title: CTHA233B CT233/GLOBAL SIGNAL MP
130 BIRDSEYE RD
FARMINGTON, CT 06032

Prepared For: CROWN CASTLE

Drawing Title: **TITLE PAGE**

Drawing Number: **T1**

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
- A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
- B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
- C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
- D. AND NFPA 101 (LIFE SAFETY CODE).
- E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
- F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: T-MOBILE CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.

1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.7 NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE T-MOBILE WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY T-MOBILE TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.

2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR T-MOBILE PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
- A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
- B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
- C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
- D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO T-MOBILE OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
- E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
- F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

5.1 TESTS AND INSPECTIONS:
- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.
- C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
- D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
- E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
- F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.

A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.

B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.

C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.

F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBING, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
	UNDERGROUND UTILITIES
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
OR ⊗	GROUND ROD
OR ⊠	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	120AC DUPLEX RECEPTACLE
G	GROUND CONDUCTOR
	DC POWER AND FIBER OPTIC TRUNK CABLES
E	DC POWER CABLES
# / #	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

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AUG 14 2018

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Designed: MRL
Checked: AJD

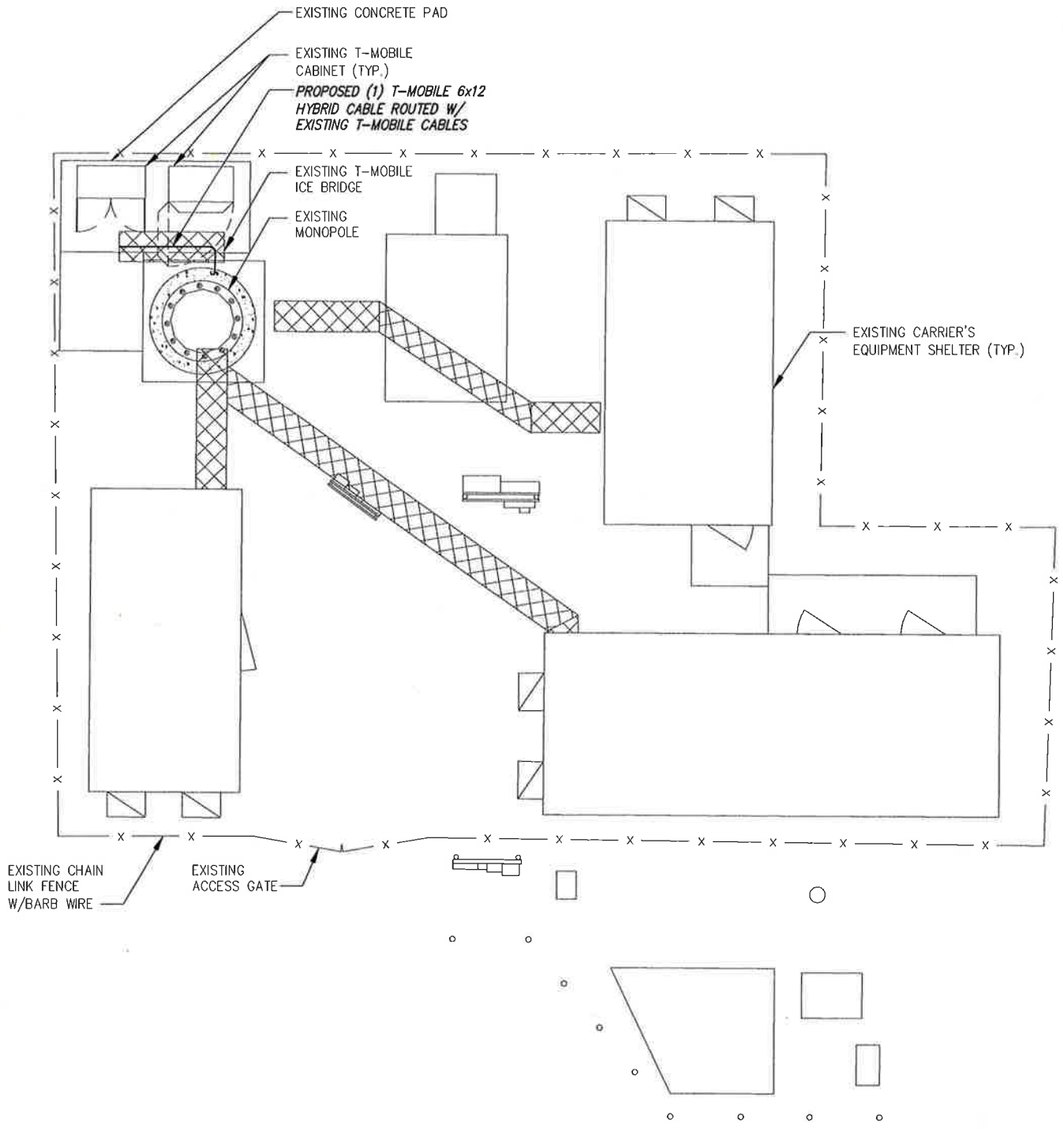
Project Number: 600-007

Project Title:
CTHA233B
CT233/GLOBAL SIGNAL MP
130 BIRDSEYE RD
FARMINGTON, CT 06032

Prepared For:
CROWN CASTLE

Drawing Title
NOTES

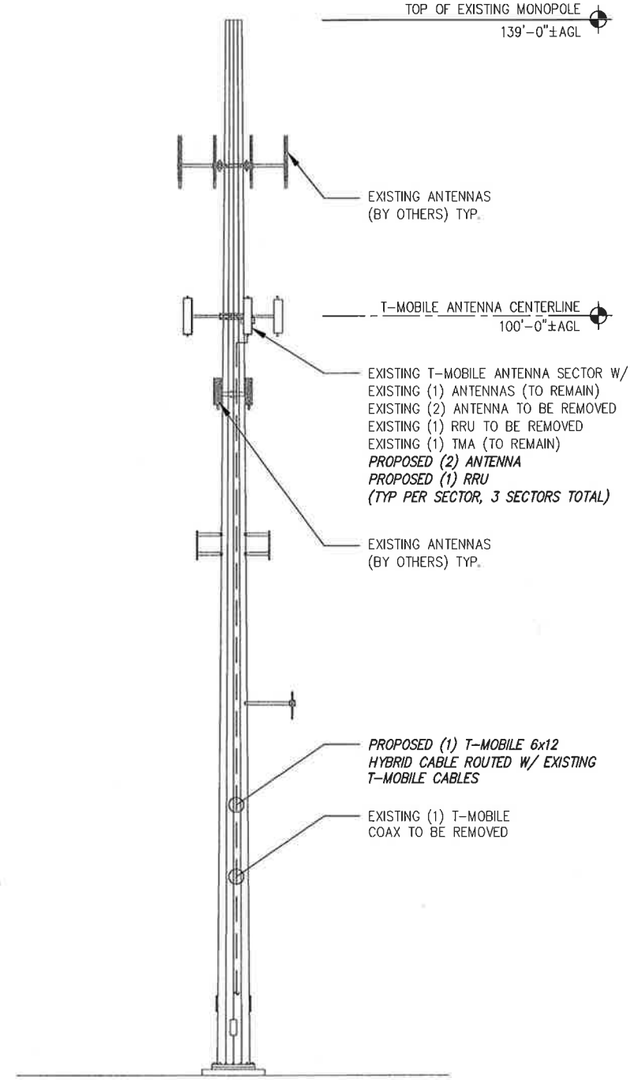
Drawing Number
N1



NORTH

1 C1 PLAN VIEW
SCALE: AS NOTED

GRAPHIC SCALE:
10' 5' 0 5' 10'
SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"



2 C1 ELEVATION
SCALE: NOT TO SCALE

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

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Prepared For:
CROWN CASTLE

Drawing Title
PLAN AND ELEVATION

Drawing Number
C1

SECTOR	ANTENNA POSITION	ANTENNA MODEL #	VENDOR	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA/RRU MODEL #	CABLE LENGTH	CABLE TYPE AND QUANTITY
ALPHA	A-1	AIR21 KRC118023-1_B2A_B4P	ERICSSON	70°	TBD	2/2	100'-0"	(1) GENERIC TWIN STYLE 1B-AWS	120'±	(2) 7/8" COAX
	A-2	**APXVAARR24_43-U-NA20**	**RFS**	**70°**	TBD	2/2	100'-0"	**(1) RRU 449**	**120'±**	**(1) 6X12 HYBRID TRUNK CABLE (SHARED)**
	A-3	**AIR32 KRD901146-1 _B66A_B2A**	**ERICSSON**	**70°**	TBD	2/2	100'-0"	-	-	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
BETA	B-1	AIR21 KRC118023-1_B2A_B4P	ERICSSON	180°	TBD	2/2	100'-0"	(1) GENERIC TWIN STYLE 1B-AWS	120'±	(2) 7/8" COAX
	B-2	**APXVAARR24_43-U-NA20**	**RFS**	**180°**	TBD	2/2	100'-0"	**(1) RRU 449**	**120'±**	**(1) 6X12 HYBRID TRUNK CABLE (SHARED)**
	B-3	**AIR32 KRD901146-1 _B66A_B2A**	**ERICSSON**	**180°**	TBD	2/2	100'-0"	-	-	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
GAMMA	C-1	AIR21 KRC118023-1_B2A_B4P	ERICSSON	310°	TBD	2/2	100'-0"	(1) GENERIC TWIN STYLE 1B-AWS	120'±	(2) 7/8" COAX
	C-2	**APXVAARR24_43-U-NA20**	**RFS**	**310°**	TBD	2/2	100'-0"	**(1) RRU 449**	**120'±**	**(1) 6X12 HYBRID TRUNK CABLE (SHARED)**
	C-3	**AIR32 KRD901146-1 _B66A_B2A**	**ERICSSON**	**310°**	TBD	2/2	100'-0"	-	-	(1) 6X12 HYBRID TRUNK CABLE (SHARED)

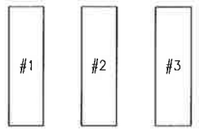
1 C2 RF SYSTEM CHART
SCALE: NOT TO SCALE

KEY

EXISTING
PROPOSED

ANTENNA LOCATION KEY

VIEWED FROM BEHIND

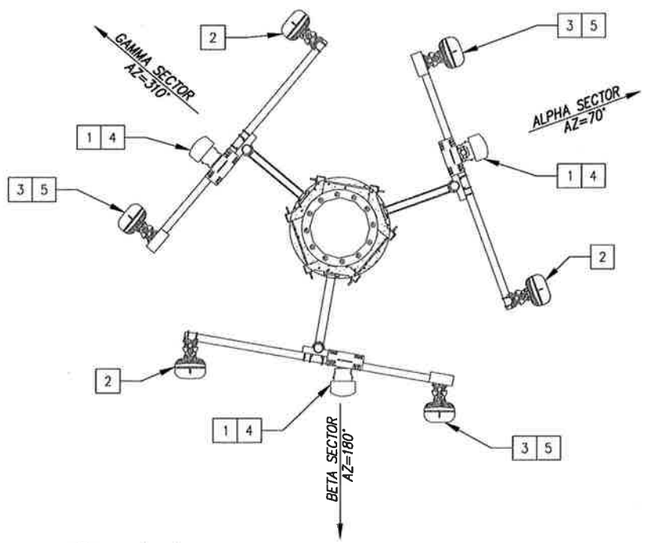


GENERAL NOTES:

1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS FOR ANY PROPOSED CABLES/JUMPERS PRIOR TO CONSTRUCTION.

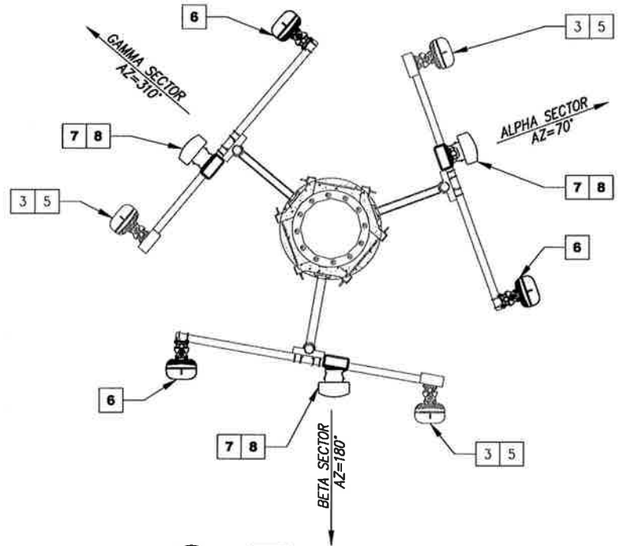
ORIENTATION PLAN KEY

KEY	DESCRIPTION	TYPE	QTY	STATUS
1	LNX-6515DS-A1M	ANTENNA	3	REMOVED
2	AIR21 KRC118023-1_B2P_B4A	ANTENNA	3	REMOVED
3	AIR21 KRC118023-1_B2A_B4P	ANTENNA	3	REMAIN
4	RRUS 11-B12	RRU	3	REMOVED
5	GENERIC TWIN STYLE 1B-AWS	TMA	3	REMAIN
6	**AIR32 KRD901146-1_B66A_B2A**	**ANTENNA**	**3**	**PROPOSED**
7	**APXVAARR24_43-U-NA20**	**ANTENNA**	**3**	**PROPOSED**
8	**RRUS 4449**	**RRU**	**3**	**PROPOSED**



NORTH

2 C2 EXISTING ANTENNA ORIENTATION
SCALE: NOT TO SCALE



NORTH

3 C2 PROPOSED ANTENNA ORIENTATION
SCALE: NOT TO SCALE

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CT233/GLOBAL SIGNAL MP
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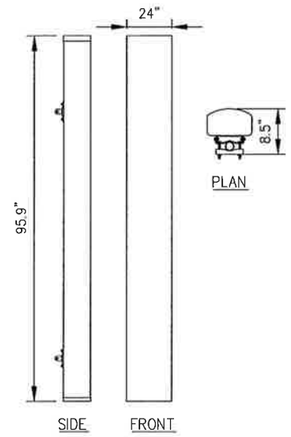
FARMINGTON, CT 06032

Prepared For:
CROWN CASTLE

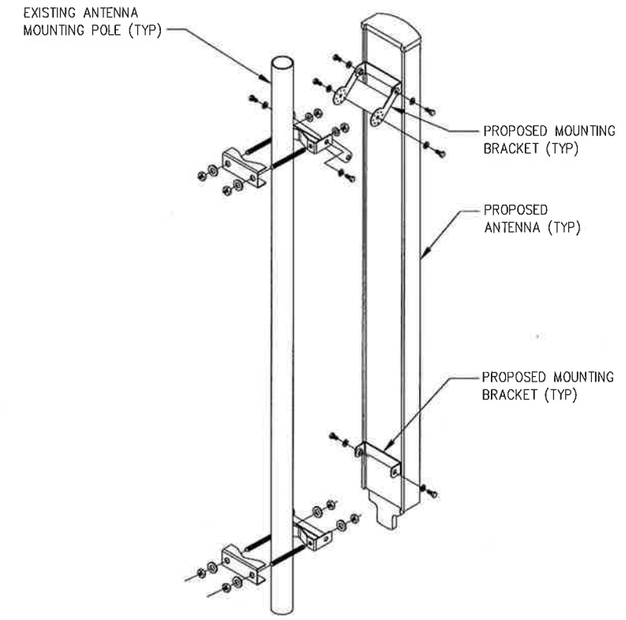
Drawing Title
RF CHART

Drawing Number
C2

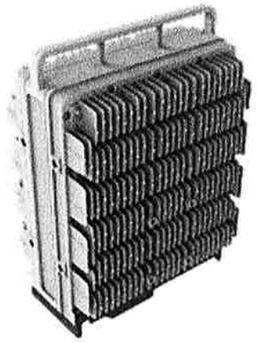


RFS MODEL NO.:	APXVAARR24_43-U-NA20
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD:	95.9"x24"x8.5"
WEIGHT, W/O MOUNTING KIT:	128 LBS

1/D1 APX ANTENNA DETAIL
SCALE: NOT TO SCALE



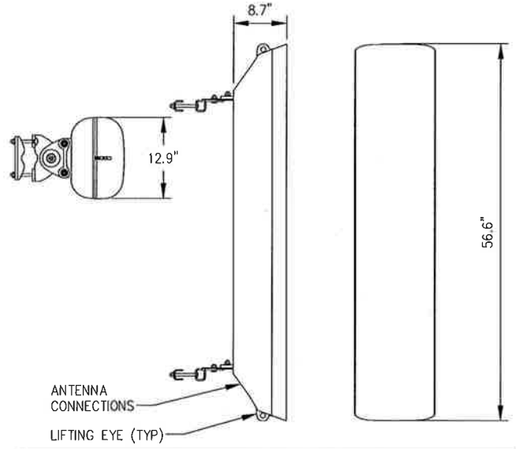
2/D1 ANTENNA/RRU MOUNTING DETAIL
SCALE: NOT TO SCALE



ERICSSON 4449 B71+B12 SPECIFICATIONS

- HxWxD, (INCHES) : 17.91"x13.19"x10.63"
- WEIGHT (LBS) : 74.96
- COLOR : GRAY

3/D1 4449 B71+B12 RRU DETAIL
SCALE: NOT TO SCALE



ERICSSON MODEL NO.:	AIR32 B66
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	56.6"x12.9"x8.7"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	132.2 LBS

4/D1 ERICSSON ANTENNA DETAIL
SCALE: NOT TO SCALE

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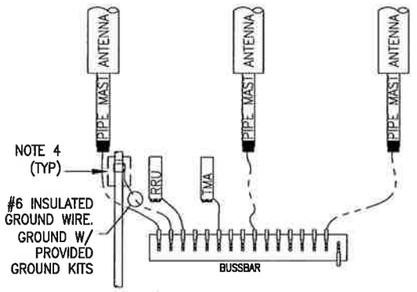
FARMINGTON, CT 06032

Prepared For: CROWN CASTLE

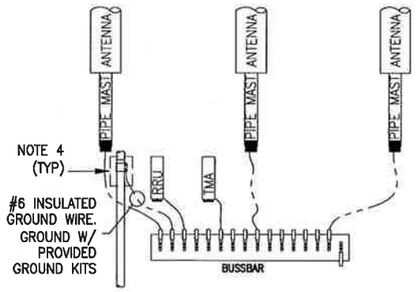
Drawing Title
EQUIPMENT DETAILS

Drawing Number
D1

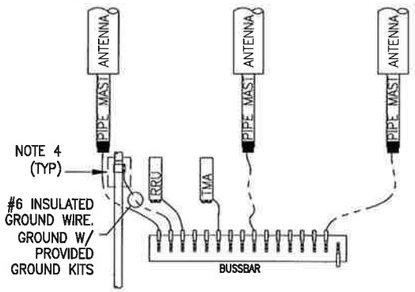
ALPHA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)



BETA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)

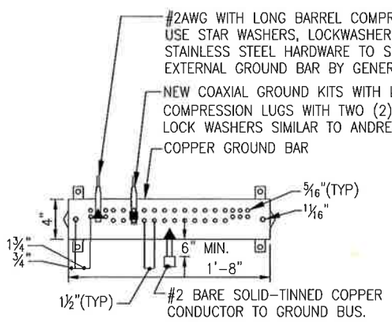


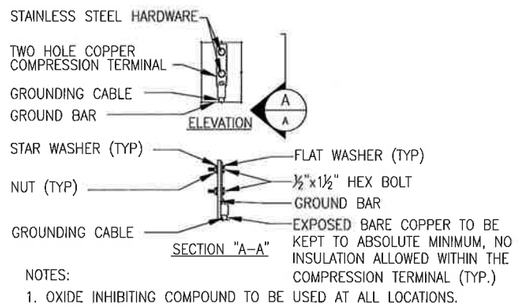
GAMMA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)



NOTES:
1. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
3. PROVIDE SOLID TINNED BARE COPPER WIRE (BCW) GROUNDING CONDUCTOR.
4. PROVIDE STANDARD COAX OR HYBRID CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. TOTAL LENGTH OF GROUNDING CONDUCTOR SHALL NOT EXCEED 10'-0".
5. PROVIDE GROUNDING ELECTRODES QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
6. LEAVE GROUND WIRE COILED UP ABOVE GRADE. CAP END OF CONDUIT.
7. ADD COAX OR HYBRID CABLE GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF CABLE TRAY (FROM TOWER OR MONOPOLE TO EQUIPMENT) IS GREATER THAN 20'-0".
8. ADD #2/0 GREEN INSULATED CONDUCTOR BETWEEN CABLE TRAY AND GRIPSTRUT/COVER.
9. BUSSBARS ARE TO BE TINNED COPPER BARS (¼"X2"X12") MOUNTED ON INSULATORS, U.O.N.
10. GROUND ALL PROPOSED ANTENNAS, DIPLEXERS, TMAS, AND RRUS PER MANU. SPECS.

1 / E1 GROUNDING DIAGRAM
SCALE: NOT TO SCALE

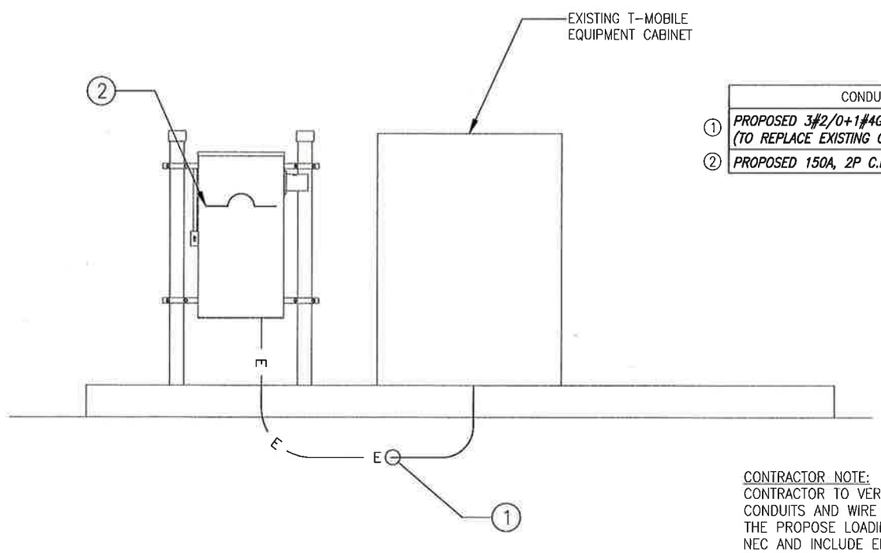




NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

2 / E1 GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



CONDUIT SCHEDULE
① *PROPOSED 3#2/0+1#4G IN 2" CONDUIT (TO REPLACE EXISTING CONDUCTOR AND CONDUIT)*
② *PROPOSED 150A, 2P C.B.*

CONTRACTOR NOTE:
CONTRACTOR TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSE LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

3 / E1 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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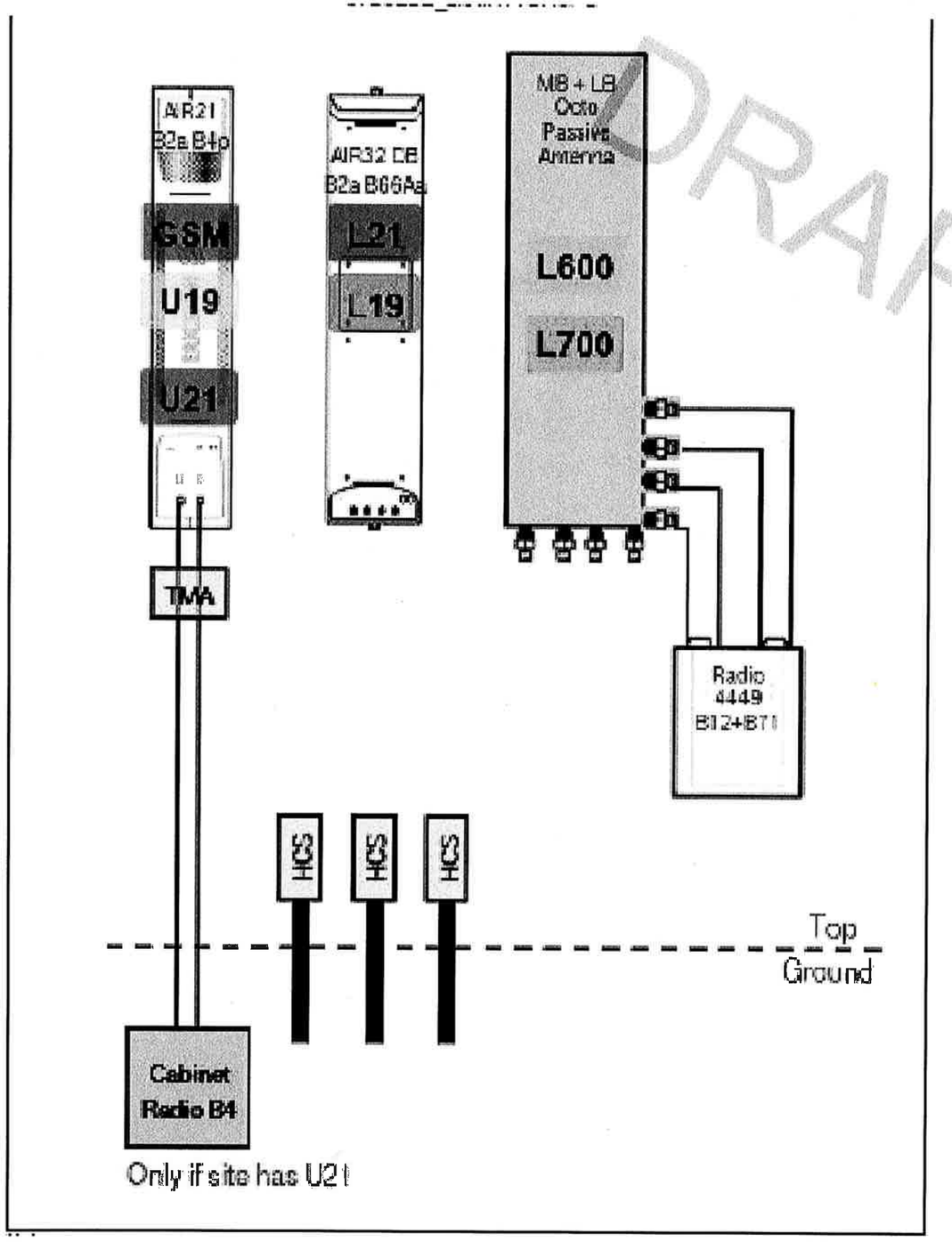
CROWN CASTLE

Drawing Title
RISER AND ONE-LINE DIAGRAMS

Drawing Number
E1



1 E2 RF PLUMBING DIAGRAM
SCALE: AS NOTED

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CROWN CASTLE

Drawing Title
RF PLUMBING DIAGRAM

Drawing Number
E2

August 1, 2018

Denice Nicholson
Crown Castle
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Clifton Park, NY 12065
(518) 373-3516

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CTHA233B
	Carrier Site Name:	CT233/Global Signal MP
Crown Castle Designation:	**Crown Castle BU Number:**	876335
	Crown Castle Site Name:	East Farmington
	Crown Castle JDE Job Number:	512465
	Crown Castle Work Order Number:	1606960
	Crown Castle Order Number:	446035 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	77969.014.01
Site Data:	**3 A Birdseye Road, Farmington, Hartford County, CT** **Latitude *41° 42' 56.94"*, Longitude *-72° 48' 37.42"*** **140 Foot - Monopole Tower**	

Dear Denice Nicholson,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1227015, in accordance with order 446035, revision 0.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by: James Lindsey

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2019

8/1/18

Scott S. Vance, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by Summit in November of 1997. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower has been modified multiple times and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

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
100.0	100.0	3	Ericsson	AIR 32 B2A/B66AA	1	1-3/8	--
		3	Ericsson	RADIO 4449 B12/B71			
		3	Rfs Celwave	APXVAARR24_43-U-NA20			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
139.0	140.0	3	Alcatel Lucent	TD-RRH8X20-25	3	1-1/4	1
		3	Rfs Celwave	APXV9ERR18-C-A20			
		3	Rfs Celwave	APXVTM14-C-120			
	139.0	1	--	Platform Mount [LP 1201-1]			
137.0	140.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	--	--	1
	137.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
		1	--	Side Arm Mount [SO 102-3]			
129.0	130.0	3	Ericsson	RRUS 32	--	--	2
		3	Ericsson	RRUS 11-700	--	--	1
	129.0	1	--	Side Arm Mount [SO 102-3]			
128.0	130.0	3	Cci Antennas	HPA-65R-BUU-H6	--	--	2
		3	Powerwave Tech.	7770.00	9 2 1	7/8 3/4 3/8	1
	128.0	6	Powerwave Tech.	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
		1	--	T-Arm Mount [TA 602-3]			
108.0	109.0	3	Alcatel Lucent	RRH2X60-700	14	1-5/8	1
		3	Alcatel Lucent	RRH2X60-PCS			
		9	Andrew	SBNHH-1D65B			
		3	Antel	BXA-70063-4CF-EDIN-X			
		2	Rfs Celwave	DB-T1-6Z-8AB-0Z			
	108.0	1	--	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	**3**	**Commscope**	**LNX-6515DS-VTM**	**1**	**7/8**	**3**
		3	**Ericsson**	**ERICSSON AIR 21 B4A B2P**			
		3	**Ericsson**	**RRUS 11 B12**			
		3	Ericsson	ERICSSON AIR 21 B2A B4P	1 11	1-5/8 7/8	1
		3	Ericsson	KRY 112 144/1			
		1	--	T-Arm Mount [TA 602-3]			
90.0	90.0	1	--	Pipe Mount [PM 601-3]	--	--	1
70.0	72.0	2	Lucent	KS24019-L112A	2	5/16	1
	70.0	2	--	Side Arm Mount [SO 701-1]			
49.0	51.0	1	Lucent	KS24019-L112A	1	1/2	1
	49.0	1	--	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) 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)
Information Not Available						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	T-Mobile Co-Locate, Rev # 0	446035	CCI Sites
Tower Manufacturing Drawing	Summit, Date: 11/03/1997	1615361	CCI Sites
Tower Modification Drawing	B&T Engineering, Project No: 79880	2397525	CCI Sites
Post Modification Inspection	B&T Engineering, Project No: 79880	2397526	CCI Sites
Tower Modification Drawing	B&T Group, Project No: 77969.005	3262310	CCI Sites
Post Modification Inspection	TEP, Project No: 127152	3413367	CCI Sites
Tower Modification Drawing	B&T Group, Project No: 77969.007.01	3672042	CCI Sites
Post Modification Inspection	TEP, Project No: 131001.876335	4836319	CCI Sites
Tower Modification Drawing	B&T Group, Project No: 77969.011.01	4456376	CCI Sites
Post Modification Inspection	TEP, Project Number: 25671.19664	5400317	CCI Sites
Mount Analysis	Infinigy, Project No: 600-005	7692013	CCI Sites
Foundation Drawing	Summit, Job No.2933	1440555	CCI Sites
Geotech Report	FDH, Project No: 1421BO1600	1531892	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 07/24/2018	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.2.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	140 - 135	Pole	TP17.025x16x0.25	1	-4.100	--	7.1	Pass
L2	135 - 130	Pole	TP18.05x17.025x0.25	2	-4.591	--	13.9	Pass
L3	130 - 125	Pole	TP19.075x18.05x0.25	3	-6.744	--	23.2	Pass
L4	125 - 120	Pole	TP20.099x19.075x0.25	4	-7.116	--	31.2	Pass
L5	120 - 115	Pole	TP21.124x20.099x0.25	5	-7.513	--	38.1	Pass
L6	115 - 110	Pole	TP22.149x21.124x0.25	6	-7.936	--	43.8	Pass
L7	110 - 105	Pole	TP23.174x22.149x0.25	7	-10.895	--	51.9	Pass
L8	105 - 102.33	Pole	TP23.721x23.174x0.25	8	-11.210	--	56.4	Pass
L9	102.33 - 102.08	Pole + Reinf.	TP23.772x23.721x0.3875	9	-11.257	--	51.3	Pass
L10	102.08 - 97.08	Pole + Reinf.	TP24.797x23.772x0.375	10	-14.451	--	59.9	Pass
L11	97.08 - 95	Pole + Reinf.	TP25.89x24.797x0.375	11	-14.775	--	63.5	Pass
L12	95 - 90.75	Pole + Reinf.	TP25.595x24.724x0.3563	12	-15.941	--	55.5	Pass
L13	90.75 - 85.75	Pole + Reinf.	TP26.62x25.595x0.3563	13	-17.158	--	60.9	Pass
L14	85.75 - 85.33	Pole + Reinf.	TP26.706x26.62x0.3563	14	-17.251	--	61.4	Pass
L15	85.33 - 85.08	Pole + Reinf.	TP26.757x26.706x0.5625	15	-17.312	--	55.7	Pass
L16	85.08 - 82.5	Pole + Reinf.	TP27.287x26.757x0.5625	16	-17.904	--	58.4	Pass
L17	82.5 - 82.25	Pole + Reinf.	TP27.338x27.287x0.3563	17	-17.964	--	64.4	Pass
L18	82.25 - 77.15	Pole + Reinf.	TP28.383x27.337x0.55	18	-19.229	--	63.4	Pass
L19	77.15 - 76.92	Pole + Reinf.	TP28.431x28.383x0.55	19	-19.295	--	63.6	Pass
L20	76.92 - 71.92	Pole + Reinf.	TP29.457x28.431x0.5375	20	-20.795	--	68.1	Pass
L21	71.92 - 66.92	Pole + Reinf.	TP30.482x29.457x0.525	21	-22.275	--	72.2	Pass
L22	66.92 - 66.67	Pole + Reinf.	TP30.534x30.482x0.525	22	-22.350	--	72.4	Pass
L23	66.67 - 66.42	Pole + Reinf.	TP30.585x30.534x0.5125	23	-22.411	--	71.2	Pass
L24	66.42 - 61.42	Pole + Reinf.	TP31.61x30.585x0.5125	24	-23.623	--	75.1	Pass
L25	61.42 - 60	Pole + Reinf.	TP31.901x31.61x0.5063	25	-23.971	--	76.2	Pass
L26	60 - 59.75	Pole + Reinf.	TP31.952x31.901x0.5125	26	-24.053	--	70.4	Pass
L27	59.75 - 54.75	Pole + Reinf.	TP32.978x31.952x0.5125	27	-25.426	--	73.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L28	54.75 - 51	Pole + Reinf.	TP34.67x32.978x0.5063	28	-26.481	--	76.1	Pass
L29	51 - 45.5	Pole + Reinf.	TP34.25x33.122x0.55	29	-29.141	--	78.6	Pass
L30	45.5 - 44.25	Pole + Reinf.	TP34.506x34.25x0.55	30	-29.503	--	79.3	Pass
L31	44.25 - 44	Pole + Reinf.	TP34.557x34.506x0.675	31	-29.601	--	67.6	Pass
L32	44 - 39	Pole + Reinf.	TP35.583x34.557x0.6625	32	-31.291	--	69.9	Pass
L33	39 - 34	Pole + Reinf.	TP36.608x35.583x0.65	33	-33.022	--	72.0	Pass
L34	34 - 29	Pole + Reinf.	TP37.633x36.608x0.6375	34	-34.787	--	74.0	Pass
L35	29 - 27.75	Pole + Reinf.	TP37.89x37.633x0.6375	35	-35.231	--	74.5	Pass
L36	27.75 - 27.5	Pole + Reinf.	TP37.941x37.89x0.6375	36	-35.333	--	74.6	Pass
L37	27.5 - 24.08	Pole + Reinf.	TP38.642x37.941x0.6375	37	-36.553	--	75.9	Pass
L38	24.08 - 23.83	Pole + Reinf.	TP38.693x38.642x0.525	38	-36.643	--	88.3	Pass
L39	23.83 - 18.83	Pole + Reinf.	TP39.718x38.693x0.525	39	-38.240	--	90.2	Pass
L40	18.83 - 18.08	Pole + Reinf.	TP39.872x39.718x0.525	40	-38.488	--	90.4	Pass
L41	18.08 - 17.83	Pole + Reinf.	TP39.923x39.872x0.6375	41	-38.591	--	81.8	Pass
L42	17.83 - 12.83	Pole + Reinf.	TP40.948x39.923x0.625	42	-40.481	--	83.5	Pass
L43	12.83 - 7.83	Pole + Reinf.	TP41.974x40.948x0.625	43	-42.643	--	85.0	Pass
L44	7.83 - 2.83	Pole + Reinf.	TP42.999x41.974x0.6125	44	-44.563	--	86.5	Pass
L45	2.83 - 0	Pole + Reinf.	TP43.58x42.999x0.6125	45	-45.630	--	87.3	Pass
							Summary	
						Pole(L40)	90.4	Pass
						Reinforcement	90.9	Pass
						Overall	90.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rod Brackets	Base	85.3	Pass
1	Anchor Rods	Base	76.6	Pass
1	Base Plate	Base	65.9	Pass
1	Base Foundation (Structural)	Base	37.2	Pass
1	Base Foundation (Soil Interaction)	Base	50.3	Pass

Structure Rating (max from all components) =	**90.9%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

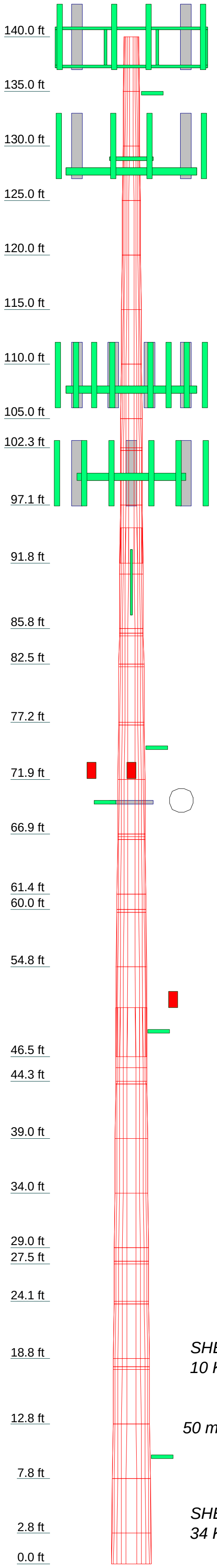
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.000	12	0.250		16.000	17.025	A607-60	0.2
2	5.000	12	0.250		17.025	18.050		0.2
3	5.000	12	0.250		18.050	19.075		0.3
4	5.000	12	0.250		19.075	20.099		0.3
5	5.000	12	0.250		20.099	21.124		0.3
6	5.000	12	0.250		21.124	22.149		0.3
7	5.000	12	0.250		22.149	23.174		0.3
11	4.250	12	0.375	3.250	24.797	25.890		0.5
28	5.500	12	0.506	4.500	32.978	34.670	A607-65	1.6
33	5.000	12	0.650		35.583	36.608		1.2
43	5.000	12	0.625		40.948	41.974		1.4
44	5.000	12	0.613		41.974	42.999		1.4
45	2.833	12	0.613		42.999	43.580		0.8
								23.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	139	T-Arm Mount [TA 602-3] (E)	128
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	139	7770.00 w/ Mount Pipe (E)	128
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	139	(3) SBNHH-1D65B w/ Mount Pipe (E)	108
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	139	(3) SBNHH-1D65B w/ Mount Pipe (E)	108
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	139	BXA-70063-4CF-EDIN-X w/ Mount Pipe (E)	108
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	139	BXA-70063-4CF-EDIN-X w/ Mount Pipe (E)	108
TD-RRH8X20-25 (E-Per photo)	139	BXA-70063-4CF-EDIN-X w/ Mount Pipe (E)	108
TD-RRH8X20-25 (E-Per photo)	139	RRH2X60-700 (E)	108
TD-RRH8X20-25 (E-Per photo)	139	RRH2X60-700 (E)	108
(2) 5' x 2' Pipe Mount (E)	139	RRH2X60-700 (E)	108
(2) 5' x 2' Pipe Mount (E)	139	RRH2X60-PCS (E)	108
(2) 5' x 2' Pipe Mount (E)	139	RRH2X60-PCS (E)	108
Miscellaneous [NA 510-1] (E)	139	RRH2X60-PCS (E)	108
Platform Mount [LP 1201-1] (E)	139	(2) DB-T1-6Z-8AB-0Z (E)	108
PCS 1900MHz 4x45W-65MHz (E)	137	Platform Mount [LP 303-1] (E)	108
PCS 1900MHz 4x45W-65MHz (E)	137	(3) SBNHH-1D65B w/ Mount Pipe (E)	108
PCS 1900MHz 4x45W-65MHz (E)	137	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (E)	100
800MHz 2X50W RRH W/FILTER (E)	137	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (E)	100
800MHz 2X50W RRH W/FILTER (E)	137	KRY 112 144/1 (E)	100
800MHz 2X50W RRH W/FILTER (E)	137	KRY 112 144/1 (E)	100
Side Arm Mount [SO 102-3] (E)	137	KRY 112 144/1 (E)	100
DETUNNING MOUNT (E)	135	APXVAARR24_43-U-NA20 w/ Mount Pipe (P)	100
RRUS 11-700 (E)	129	APXVAARR24_43-U-NA20 w/ Mount Pipe (P)	100
RRUS 11-700 (E)	129	APXVAARR24_43-U-NA20 w/ Mount Pipe (P)	100
RRUS 32 (R)	129	AIR 32 B2A/B66AA w/ Mount Pipe (P)	100
RRUS 32 (R)	129	AIR 32 B2A/B66AA w/ Mount Pipe (P)	100
RRUS 32 (R)	129	AIR 32 B2A/B66AA w/ Mount Pipe (P)	100
5' x 2' Pipe Mount (E)	129	RADIO 4449 B12/B71 (P)	100
5' x 2' Pipe Mount (E)	129	RADIO 4449 B12/B71 (P)	100
5' x 2' Pipe Mount (E)	129	RADIO 4449 B12/B71 (P)	100
Side Arm Mount [SO 102-3] (E)	129	T-Arm Mount [TA 602-3] (E)	100
RRUS 11-700 (E)	129	ERICSSON AIR 21 B2A B4P w/ Mount Pipe (E)	100
7770.00 w/ Mount Pipe (E)	128	Pipe Mount [PM 601-3] (E)	90
7770.00 w/ Mount Pipe (E)	128	DETUNNING MOUNT (E)	75
(2) LGP21401 (E)	128	Side Arm Mount [SO 701-1] (E)	70
(2) LGP21401 (E)	128	Side Arm Mount [SO 701-1] (E)	70
(2) LGP21401 (E)	128	KS24019-L112A (E)	70
DC6-48-60-18-8F (E)	128	KS24019-L112A (E)	70
HPA-65R-BUU-H6 w/ Mount Pipe (R)	128	KS24019-L112A (E)	49
HPA-65R-BUU-H6 w/ Mount Pipe (R)	128	Side Arm Mount [SO 701-1] (E)	49
HPA-65R-BUU-H6 w/ Mount Pipe (R)	128	DETUNNING MOUNT (E)	10
6' x 2" Mount Pipe (E)	128		
6' x 2" Mount Pipe (E)	128		
6' x 2" Mount Pipe (E)	128		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 90.9%

ALL REACTIONS ARE FACTORED

AXIAL 95 K

SHEAR 10 K — *MOMENT 951 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL 46 K

SHEAR 34 K — *MOMENT 3049 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 97 mph WIND

B+T Group 1717 S. Boulder, Suite 300, Tulsa, OK 74119, Phone: (918) 587-4630, FAX: (918) 295-0265	Job: **77969.014.001 - East Farmington, CT (BU# 876335**		
	Project:		
	Client: Crown Castle	Drawn by: Vishwas	App'd:
	Code: TIA-222-G	Date: 07/31/18	Scale: NTS
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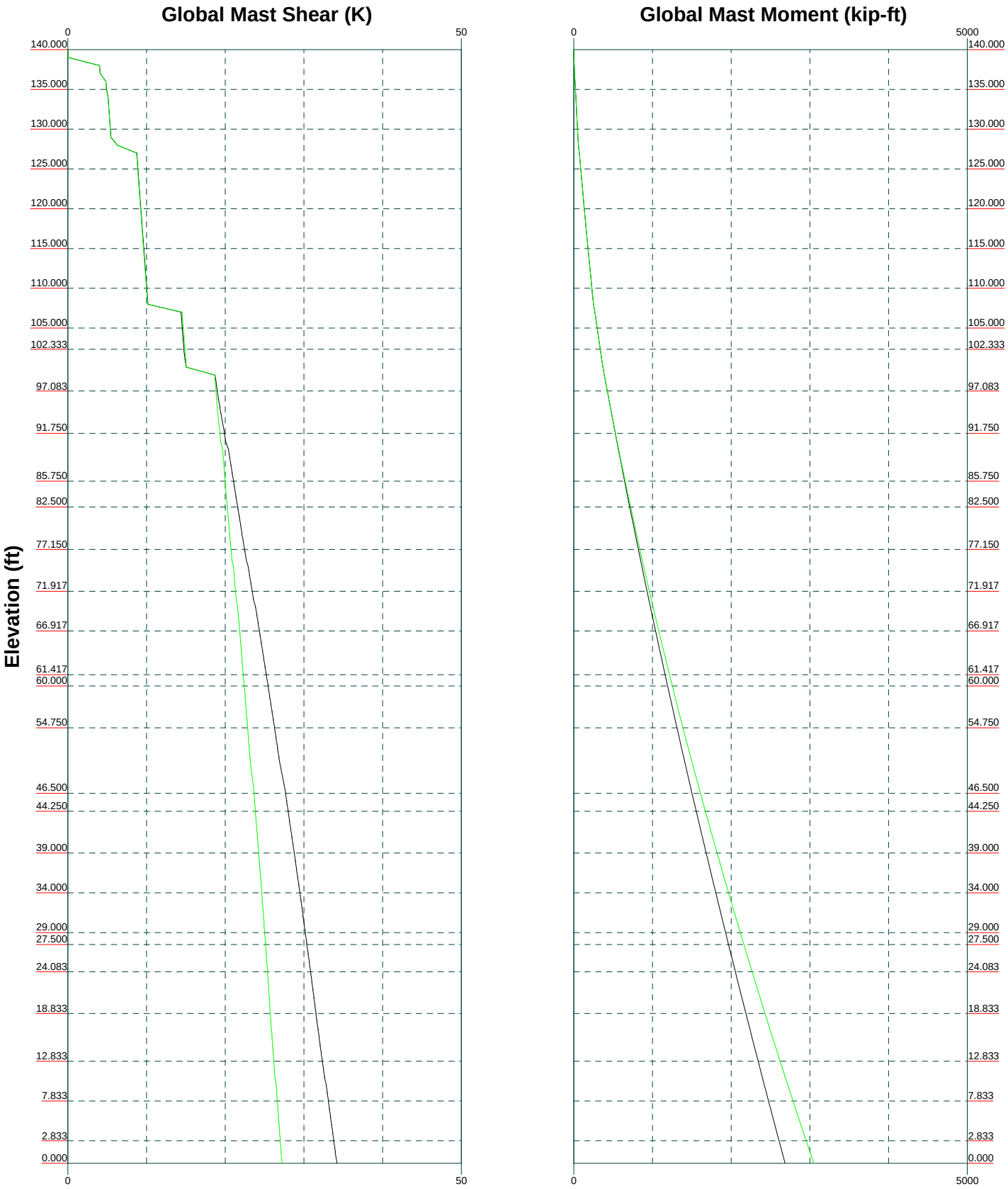
TIA-222-G - 97 mph/50 mph 1.000 in Ice Exposure B

Maximum Values

Vx Vz Mx Mz



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Job: 77969.014.001 - East Farmington, CT (BU# 876335		
Project:		
Client: Crown Castle	Drawn by: Vishwas	App'd:
Code: TIA-222-G	Date: 07/31/18	Scale: NTS
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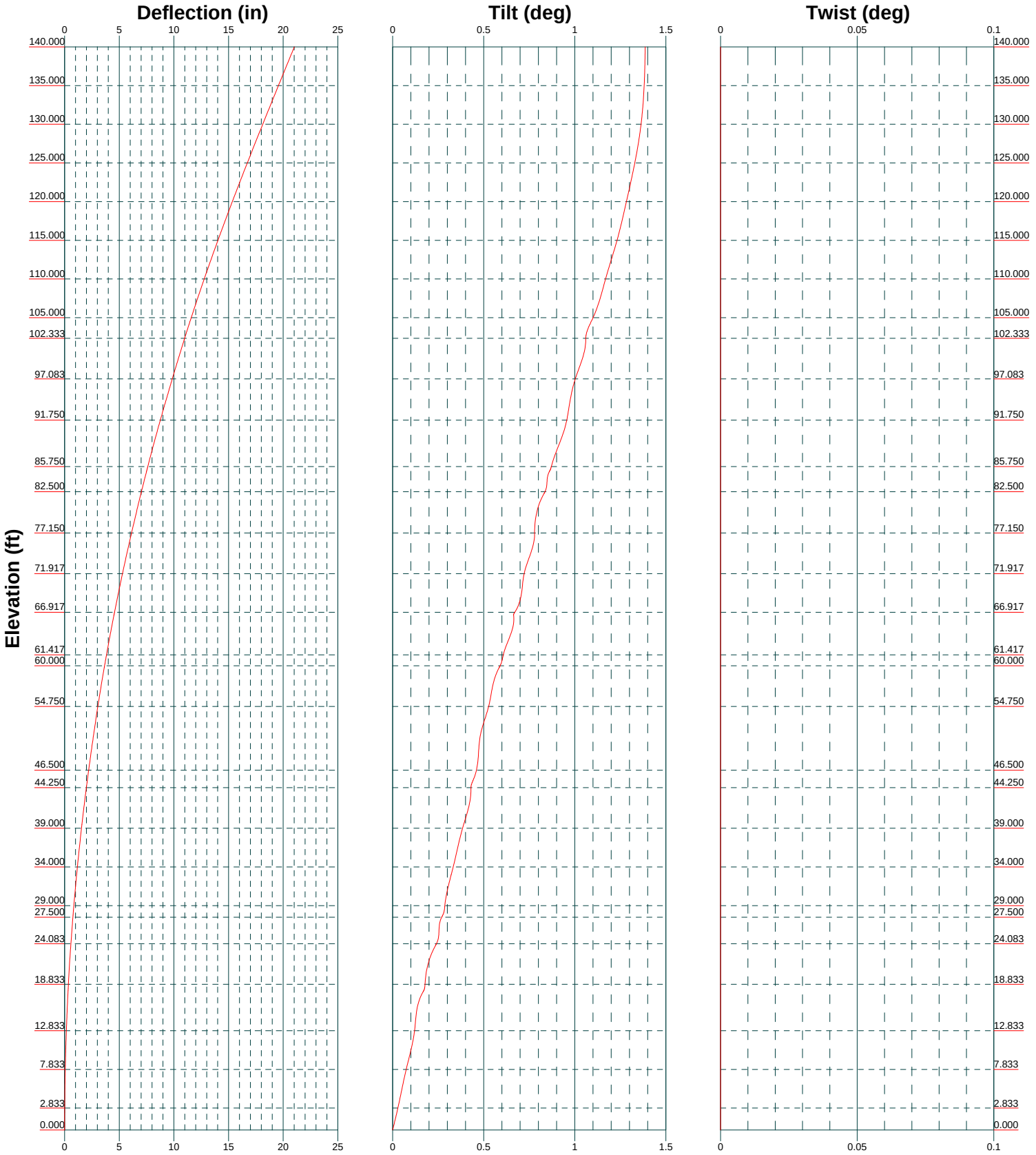
TIA-222-G - Service - 60 mph

Maximum Values



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

Job:	***77969.014.001 - East Farmington, CT (BU# 876335***		
Project:			
Client: Crown Castle		Drawn by: Vishwas	App'd:
Code: TIA-222-G		Date: 07/31/18	Scale: NTS
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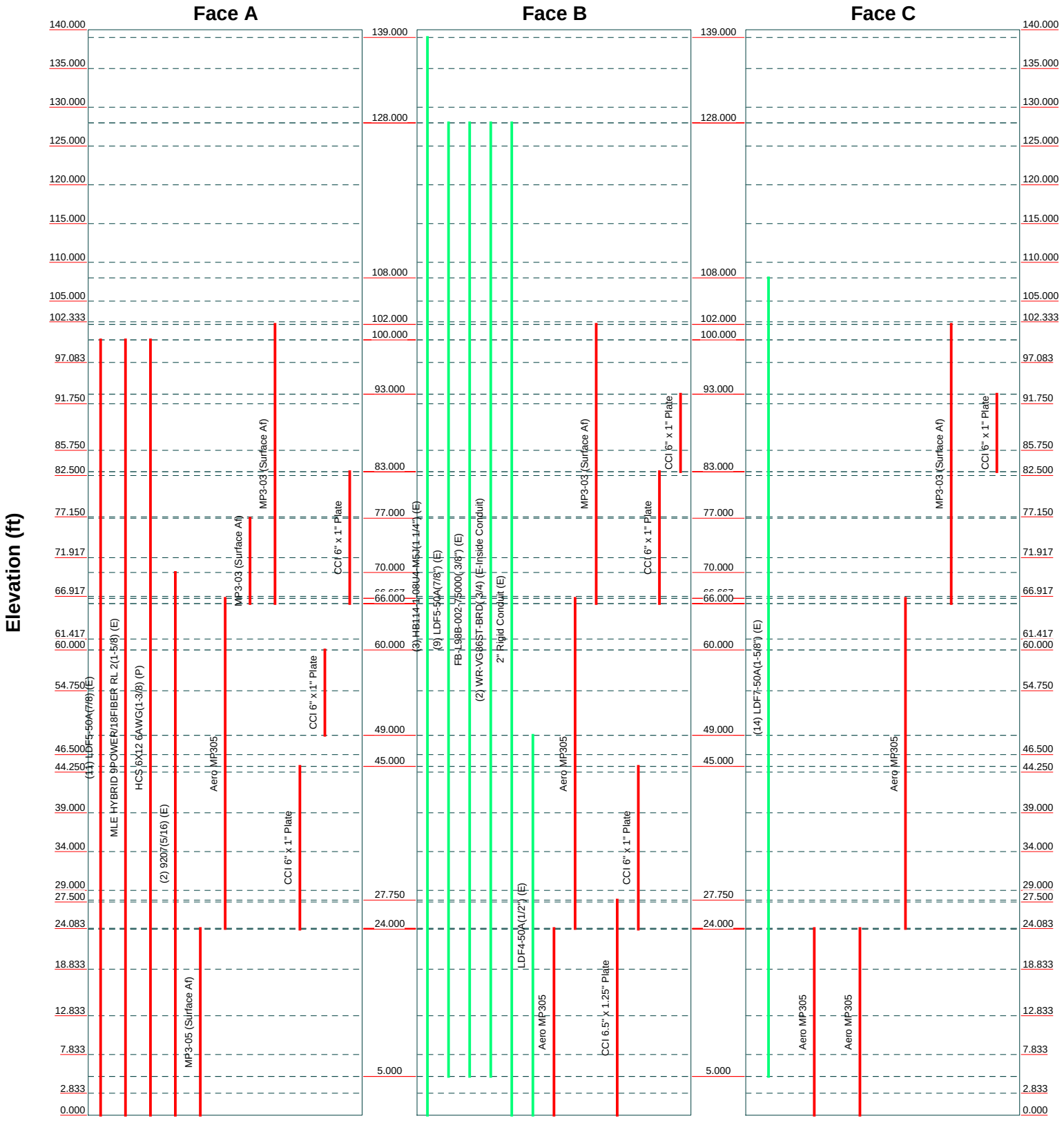
Feed Line Distribution Chart
0' - 140'

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



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Phone: (918) 587-4630
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Job: 77969.014.001 - East Farmington, CT (BU# 876335		
Project:		
Client: Crown Castle	Drawn by: Vishwas	App'd:
Code: TIA-222-G	Date: 07/31/18	Scale: NTS
Path: C:\Users\VISHWAS\Desktop\OFF HOLD_Compile_77969_876335_East Farmington---FDN QC-\tnxTower\MODS.eri		Dwg No. E-7

tnxTower	Job	Page
B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	77969.014.001 - East Farmington, CT (BU# 876335)	1 of 45
	Project	Date 11:59:19 07/31/18
	Client Crown Castle	Designed by Vishwas

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TOWER RATING: 90.9%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

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*

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	140.000-135.000	5.000	0.000	12	16.000	17.025	0.250	1.000	A607-60 (60 ksi)
L2	135.000-130.000	5.000	0.000	12	17.025	18.050	0.250	1.000	A607-60 (60 ksi)
L3	130.000-125.000	5.000	0.000	12	18.050	19.075	0.250	1.000	A607-60 (60 ksi)
L4	125.000-120.000	5.000	0.000	12	19.075	20.099	0.250	1.000	A607-60 (60 ksi)
L5	120.000-115.000	5.000	0.000	12	20.099	21.124	0.250	1.000	A607-60 (60 ksi)
L6	115.000-110.000	5.000	0.000	12	21.124	22.149	0.250	1.000	A607-60 (60 ksi)
L7	110.000-105.000	5.000	0.000	12	22.149	23.174	0.250	1.000	A607-60 (60 ksi)
L8	105.000-102.333	2.667	0.000	12	23.174	23.721	0.250	1.000	A607-60 (60 ksi)
L9	102.333-102.083	0.250	0.000	12	23.721	23.772	0.388	1.550	A607-60 (60 ksi)
L10	102.083-97.083	5.000	0.000	12	23.772	24.797	0.375	1.500	A607-60 (60 ksi)
L11	97.083-91.750	5.333	3.250	12	24.797	25.890	0.375	1.500	A607-60 (60 ksi)
L12	91.750-90.750	4.250	0.000	12	24.724	25.595	0.356	1.425	A607-65 (65 ksi)
L13	90.750-85.750	5.000	0.000	12	25.595	26.620	0.356	1.425	A607-65 (65 ksi)
L14	85.750-85.333	0.417	0.000	12	26.620	26.706	0.356	1.425	A607-65 (65 ksi)
L15	85.333-85.083	0.250	0.000	12	26.706	26.757	0.563	2.250	A607-65 (65 ksi)
L16	85.083-82.500	2.583	0.000	12	26.757	27.287	0.563	2.250	A607-65 (65 ksi)
L17	82.500-82.250	0.250	0.000	12	27.287	27.338	0.356	1.425	A607-65 (65 ksi)
L18	82.250-77.150	5.100	0.000	12	27.337	28.383	0.550	2.200	A607-65 (65 ksi)
L19	77.150-76.917	0.233	0.000	12	28.383	28.431	0.550	2.200	A607-65 (65 ksi)
L20	76.917-71.917	5.000	0.000	12	28.431	29.457	0.537	2.150	A607-65 (65 ksi)
L21	71.917-66.917	5.000	0.000	12	29.457	30.482	0.525	2.100	A607-65 (65 ksi)
L22	66.917-66.667	0.250	0.000	12	30.482	30.534	0.525	2.100	A607-65 (65 ksi)
L23	66.667-66.417	0.250	0.000	12	30.534	30.585	0.512	2.050	A607-65 (65 ksi)
L24	66.417-61.417	5.000	0.000	12	30.585	31.610	0.512	2.050	A607-65 (65 ksi)
L25	61.417-60.000	1.417	0.000	12	31.610	31.901	0.506	2.025	A607-65 (65 ksi)
L26	60.000-59.750	0.250	0.000	12	31.901	31.952	0.512	2.050	A607-65 (65 ksi)
L27	59.750-54.750	5.000	0.000	12	31.952	32.978	0.512	2.050	A607-65 (65 ksi)
L28	54.750-46.500	8.250	4.500	12	32.978	34.670	0.506	2.025	A607-65 (65 ksi)
L29	46.500-45.500	5.500	0.000	12	33.122	34.250	0.550	2.200	A607-65 (65 ksi)
L30	45.500-44.250	1.250	0.000	12	34.250	34.506	0.550	2.200	A607-65 (65 ksi)
L31	44.250-44.000	0.250	0.000	12	34.506	34.557	0.675	2.700	A607-65

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
									(65 ksi)
L32	44.000-39.000	5.000	0.000	12	34.557	35.583	0.662	2.650	A607-65 (65 ksi)
L33	39.000-34.000	5.000	0.000	12	35.583	36.608	0.650	2.600	A607-65 (65 ksi)
L34	34.000-29.000	5.000	0.000	12	36.608	37.633	0.637	2.550	A607-65 (65 ksi)
L35	29.000-27.750	1.250	0.000	12	37.633	37.890	0.637	2.550	A607-65 (65 ksi)
L36	27.750-27.500	0.250	0.000	12	37.890	37.941	0.637	2.550	A607-65 (65 ksi)
L37	27.500-24.083	3.417	0.000	12	37.941	38.642	0.637	2.550	A607-65 (65 ksi)
L38	24.083-23.833	0.250	0.000	12	38.642	38.693	0.525	2.100	A607-65 (65 ksi)
L39	23.833-18.833	5.000	0.000	12	38.693	39.718	0.525	2.100	A607-65 (65 ksi)
L40	18.833-18.083	0.750	0.000	12	39.718	39.872	0.525	2.100	A607-65 (65 ksi)
L41	18.083-17.833	0.250	0.000	12	39.872	39.923	0.637	2.550	A607-65 (65 ksi)
L42	17.833-12.833	5.000	0.000	12	39.923	40.948	0.625	2.500	A607-65 (65 ksi)
L43	12.833-7.833	5.000	0.000	12	40.948	41.974	0.625	2.500	A607-65 (65 ksi)
L44	7.833-2.833	5.000	0.000	12	41.974	42.999	0.613	2.450	A607-65 (65 ksi)
L45	2.833-0.000	2.833		12	42.999	43.580	0.613	2.450	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	16.476	12.679	401.443	5.638	8.288	48.437	813.432	6.240	3.618	14.472
	17.537	13.504	485.020	6.005	8.819	54.998	982.781	6.646	3.893	15.571
L2	17.537	13.504	485.020	6.005	8.819	54.998	982.781	6.646	3.893	15.571
	18.598	14.329	579.459	6.372	9.350	61.976	1174.141	7.052	4.167	16.669
L3	18.598	14.329	579.459	6.372	9.350	61.976	1174.141	7.052	4.167	16.669
	19.659	15.154	685.425	6.739	9.881	69.370	1388.857	7.458	4.442	17.768
L4	19.659	15.154	685.425	6.739	9.881	69.370	1388.857	7.458	4.442	17.768
	20.720	15.979	803.580	7.106	10.412	77.182	1628.272	7.864	4.717	18.867
L5	20.720	15.979	803.580	7.106	10.412	77.182	1628.272	7.864	4.717	18.867
	21.781	16.804	934.589	7.473	10.942	85.410	1893.731	8.270	4.991	19.965
L6	21.781	16.804	934.589	7.473	10.942	85.410	1893.731	8.270	4.991	19.965
	22.842	17.629	1079.116	7.840	11.473	94.055	2186.581	8.676	5.266	21.064
L7	22.842	17.629	1079.116	7.840	11.473	94.055	2186.581	8.676	5.266	21.064
	23.903	18.454	1237.822	8.207	12.004	103.116	2508.164	9.082	5.541	22.163
L8	23.903	18.454	1237.822	8.207	12.004	103.116	2508.164	9.082	5.541	22.163
	24.469	18.894	1328.505	8.403	12.287	108.120	2691.912	9.299	5.687	22.749
L9	24.421	29.114	2023.204	8.353	12.287	164.657	4099.560	14.329	5.319	13.726
	24.474	29.178	2036.564	8.372	12.314	165.387	4126.630	14.361	5.332	13.761
L10	24.478	28.252	1974.030	8.376	12.314	160.309	3999.920	13.905	5.366	14.309
	25.539	29.489	2244.967	8.743	12.845	174.777	4548.912	14.514	5.641	15.041
L11	25.539	29.489	2244.967	8.743	12.845	174.777	4548.912	14.514	5.641	15.041
	26.671	30.809	2560.117	9.134	13.411	190.897	5187.491	15.163	5.934	15.823

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
L12	26.160	27.953	2118.528	8.724	12.807	165.420	4292.711	13.757	5.671	15.919
	26.372	28.952	2354.012	9.036	13.258	177.550	4769.867	14.249	5.905	16.575
L13	26.372	28.952	2354.012	9.036	13.258	177.550	4769.867	14.249	5.905	16.575
	27.434	30.128	2652.649	9.403	13.789	192.370	5374.986	14.828	6.179	17.346
L14	27.434	30.128	2652.649	9.403	13.789	192.370	5374.986	14.828	6.179	17.346
	27.522	30.226	2678.638	9.433	13.834	193.633	5427.646	14.876	6.202	17.41
L15	27.449	47.352	4130.886	9.359	13.834	298.613	8370.295	23.305	5.650	10.044
	27.502	47.445	4155.230	9.378	13.860	299.797	8419.623	23.351	5.663	10.068
L16	27.502	47.445	4155.230	9.378	13.860	299.797	8419.623	23.351	5.663	10.068
	28.051	48.404	4412.373	9.567	14.134	312.172	8940.665	23.823	5.805	10.321
L17	28.123	30.892	2859.706	9.641	14.134	202.322	5794.539	15.204	6.358	17.847
	28.177	30.951	2876.065	9.659	14.161	203.098	5827.687	15.233	6.372	17.886
L18	28.108	47.440	4345.051	9.590	14.161	306.837	8804.251	23.349	5.852	10.641
	29.191	49.293	4874.213	9.964	14.703	331.520	9876.476	24.261	6.133	11.15
L19	29.191	49.293	4874.213	9.964	14.703	331.520	9876.476	24.261	6.133	11.15
	29.240	49.378	4899.395	9.981	14.727	332.672	9927.503	24.302	6.146	11.174
L20	29.245	48.277	4794.488	9.986	14.727	325.549	9714.933	23.761	6.179	11.496
	30.306	50.052	5342.992	10.353	15.259	350.162	10826.350	24.634	6.454	12.007
L21	30.311	48.909	5225.506	10.358	15.259	342.462	10588.293	24.072	6.487	12.357
	31.372	50.643	5801.120	10.725	15.790	367.395	11754.641	24.925	6.762	12.881
L22	31.372	50.643	5801.120	10.725	15.790	367.395	11754.641	24.925	6.762	12.881
	31.425	50.729	5830.923	10.743	15.816	368.663	11815.031	24.968	6.776	12.907
L23	31.430	49.542	5699.208	10.748	15.816	360.336	11548.140	24.383	6.809	13.287
	31.483	49.627	5728.461	10.766	15.843	361.578	11607.415	24.425	6.823	13.314
L24	31.483	49.627	5728.461	10.766	15.843	361.578	11607.415	24.425	6.823	13.314
	32.545	51.319	6334.739	11.133	16.374	386.874	12835.899	25.258	7.098	13.85
L25	32.547	50.704	6261.260	11.135	16.374	382.386	12687.010	24.955	7.115	14.054
	32.848	51.177	6438.422	11.239	16.525	389.623	13045.989	25.188	7.193	14.208
L26	32.846	51.799	6514.017	11.237	16.525	394.198	13199.164	25.494	7.176	14.002
	32.899	51.884	6545.993	11.255	16.551	395.497	13263.957	25.536	7.190	14.029
L27	32.899	51.884	6545.993	11.255	16.551	395.497	13263.957	25.536	7.190	14.029
	33.960	53.576	7207.691	11.623	17.083	421.933	14604.736	26.368	7.465	14.565
L28	33.963	52.933	7123.905	11.625	17.083	417.029	14434.963	26.052	7.481	14.778
	35.714	55.691	8296.663	12.231	17.959	461.976	16811.289	27.410	7.935	15.674
L29	35.052	57.685	7811.569	11.661	17.157	455.294	15828.356	28.391	7.403	13.459
	35.264	59.682	8651.428	12.065	17.741	487.640	17530.139	29.374	7.705	14.009
L30	35.264	59.682	8651.428	12.065	17.741	487.640	17530.139	29.374	7.705	14.009
	35.529	60.136	8850.343	12.156	17.874	495.147	17933.195	29.597	7.774	14.134
L31	35.485	73.532	10742.272	12.112	17.874	600.994	21766.756	36.190	7.439	11.02
	35.538	73.643	10791.180	12.130	17.901	602.834	21865.856	36.245	7.452	11.041
L32	35.543	72.306	10603.070	12.134	17.901	592.326	21484.694	35.587	7.486	11.299
	36.604	74.494	11594.671	12.501	18.432	629.056	23493.947	36.663	7.761	11.714
L33	36.609	73.114	11388.124	12.506	18.432	617.850	23075.427	35.985	7.794	11.991
	37.670	75.260	12420.585	12.873	18.963	654.992	25167.473	37.041	8.069	12.414
L34	37.675	73.838	12194.436	12.877	18.963	643.066	24709.234	36.341	8.102	12.71
	38.736	75.943	13267.201	13.244	19.494	680.577	26882.947	37.377	8.377	13.141
L35	38.736	75.943	13267.201	13.244	19.494	680.577	26882.947	37.377	8.377	13.141
	39.001	76.469	13544.879	13.336	19.627	690.121	27445.597	37.636	8.446	13.249
L36	39.001	76.469	13544.879	13.336	19.627	690.121	27445.597	37.636	8.446	13.249
	39.054	76.575	13600.876	13.355	19.653	692.037	27559.062	37.688	8.460	13.27
L37	39.054	76.575	13600.876	13.355	19.653	692.037	27559.062	37.688	8.460	13.27
	39.780	78.013	14381.775	13.605	20.016	718.502	29141.374	38.396	8.647	13.565
L38	39.820	64.436	11949.306	13.646	20.016	596.978	24212.535	31.713	8.949	17.046
	39.873	64.523	11997.585	13.664	20.043	598.596	24310.360	31.756	8.963	17.072
L39	39.873	64.523	11997.585	13.664	20.043	598.596	24310.360	31.756	8.963	17.072
	40.934	66.256	12990.655	14.031	20.574	631.411	26322.588	32.609	9.237	17.595
L40	40.934	66.256	12990.655	14.031	20.574	631.411	26322.588	32.609	9.237	17.595
	41.093	66.516	13144.182	14.086	20.654	636.409	26633.675	32.737	9.279	17.674
L41	41.054	80.538	15824.279	14.046	20.654	766.173	32064.279	39.639	8.977	14.082
	41.107	80.644	15886.388	14.064	20.680	768.193	32190.129	39.690	8.991	14.103
L42	41.111	79.088	15589.762	14.069	20.680	753.849	31589.084	38.925	9.024	14.439
	42.173	81.151	16842.089	14.436	21.211	794.014	34126.638	39.940	9.299	14.879

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
L43	42.173	81.151	16842.089	14.436	21.211	794.014	34126.638	39.940	9.299	14.879
	43.234	83.214	18159.748	14.803	21.742	835.222	36796.572	40.956	9.574	15.318
L44	43.238	81.575	17812.698	14.807	21.742	819.260	36093.355	40.149	9.607	15.686
	44.300	83.597	19170.468	15.174	22.274	860.684	38844.565	41.144	9.882	16.134
L45	44.300	83.597	19170.468	15.174	22.274	860.684	38844.565	41.144	9.882	16.134
	44.901	84.743	19969.545	15.382	22.574	884.609	40463.712	41.708	10.038	16.388

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.000-135.000				1	1	1			
L2 135.000-130.000				1	1	1			
L3 130.000-125.000				1	1	1			
L4 125.000-120.000				1	1	1			
L5 120.000-115.000				1	1	1			
L6 115.000-110.000				1	1	1			
L7 110.000-105.000				1	1	1			
L8 105.000-102.333				1	1	1			
L9 102.333-102.083				1	1	0.949611			
L10 102.083-97.083				1	1	0.967561			
L11 97.083-91.750				1	1	0.96239			
L12 91.750-90.750				1	1	1.29378			
L13 90.750-85.750				1	1	1.27752			
L14 85.750-85.333				1	1	1.27623			
L15 85.333-85.083				1	1	0.999046			
L16 85.083-82.500				1	1	0.990258			
L17 82.500-82.250				1	1	1.26688			
L18 82.250-77.150				1	1	1.05411			
L19 77.150-76.917				1	1	1.05328			
L20				1	1	1.0597			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
76.917-71.917									
L21				1	1	1.06772			
71.917-66.917									
L22				1	1	1.06691			
66.917-66.667									
L23				1	1	0.95585			
66.667-66.417									
L24				1	1	0.944436			
66.417-61.417									
L25				1	1	0.952769			
61.417-60.000									
L26				1	1	1.05661			
60.000-59.750									
L27				1	1	1.04249			
59.750-54.750									
L28				1	1	1.04503			
54.750-46.500									
L29				1	1	0.969769			
46.500-45.500									
L30				1	1	0.967596			
45.500-44.250									
L31				1	1	0.954148			
44.250-44.000									
L32				1	1	0.959879			
44.000-39.000									
L33				1	1	0.966553			
39.000-34.000									
L34				1	1	0.974162			
34.000-29.000									
L35				1	1	0.971506			
29.000-27.750									
L36				1	1	0.97098			
27.750-27.500									
L37				1	1	0.963923			
27.500-24.083									
L38				1	1	0.980168			
24.083-23.833									
L39				1	1	0.973212			
23.833-18.833									
L40				1	1	0.9722			
18.833-18.083									
L41				1	1	0.973709			
18.083-17.833									
L42				1	1	0.982878			
17.833-12.833									
L43				1	1	0.973384			
12.833-7.833									
L44				1	1	0.98374			
7.833-2.833									
L45				1	1	0.978717			
2.833-0.000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
V									
LDF5-50A(7/8) (E)	A	Surface Ar (CaAa)	100.000 - 0.000	11	6	0.350 0.450	1.090		0.000
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8) (E)	A	Surface Ar (CaAa)	100.000 - 0.000	1	1	0.300 0.360	1.625		0.001
HCS 6X12 6AWG(1-3/8) (P)	A	Surface Ar (CaAa)	100.000 - 0.000	1	1	0.450 0.480	1.380		0.002
V									
9207(5/16) (E)	A	Surface Ar (CaAa)	70.000 - 0.000	2	2	0.450 0.480	0.330		0.001
*									
MP3-05 (Surface Af)	A	Surface Af (CaAa)	24.083 - 0.000	1	1	0.000 0.000	5.330	14.840	0.000
Aero MP305	B	Surface Af (CaAa)	24.083 - 0.000	1	1	0.100 0.100	5.330	14.840	0.000
Aero MP305	C	Surface Af (CaAa)	24.083 - 0.000	1	1	-0.100 0.100	5.330	14.840	0.000
Aero MP305	C	Surface Af (CaAa)	24.083 - 0.000	1	1	0.400 0.500	5.330	14.840	0.000
Aero MP305	A	Surface Af (CaAa)	66.667 - 24.083	1	1	-0.500 -0.400	5.330	14.840	0.000
Aero MP305	B	Surface Af (CaAa)	66.667 - 24.083	1	1	-0.100 0.100	5.330	14.840	0.000
Aero MP305	C	Surface Af (CaAa)	66.667 - 24.083	1	1	-0.100 0.100	5.330	14.840	0.000
*									
MP3-03 (Surface Af)	A	Surface Af (CaAa)	77.000 - 66.000	1	1	0.000 0.000	4.060	11.260	0.000
MP3-03 (Surface Af)	A	Surface Af (CaAa)	102.000 - 66.000	1	1	0.000 0.000	4.060	11.260	0.000
MP3-03 (Surface Af)	B	Surface Af (CaAa)	102.000 - 66.000	1	1	0.000 0.000	4.060	11.260	0.000
MP3-03 (Surface Af)	C	Surface Af (CaAa)	102.000 - 66.000	1	1	0.000 0.000	4.060	11.260	0.000
***									
CCI 6.5" x 1.25" Plate	B	Surface Af (CaAa)	27.750 - 0.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6" x 1" Plate	A	Surface Af (CaAa)	45.000 - 24.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	Surface Af (CaAa)	45.000 - 24.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	A	Surface Af (CaAa)	60.000 - 49.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	Surface Af (CaAa)	83.000 - 66.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	A	Surface Af (CaAa)	83.000 - 66.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	Surface Af (CaAa)	93.000 - 83.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	C	Surface Af (CaAa)	93.000 - 83.000	1	1	0.000 0.000	6.000	14.000	0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-08U4-M5J(1 1/4") (E)	B	No	Inside Pole	139.000 - 0.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
V								
LDF5-50A(7/8") (E)	B	No	Inside Pole	128.000 - 5.000	9	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
FB-L98B-002-75000(3/8") (E)	B	No	Inside Pole	128.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (E-Inside Conduit)	B	No	Inside Pole	128.000 - 5.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
2" Rigid Conduit (E)	B	No	Inside Pole	128.000 - 0.000	1	No Ice	0.000	0.003
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.003
V								
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	108.000 - 5.000	14	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
V								
LDF4-50A(1/2") (E)	B	No	Inside Pole	49.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
V								
////								
////								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-135.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.013
		C	0.000	0.000	0.000	0.000	0.000
L2	135.000-130.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.016
		C	0.000	0.000	0.000	0.000	0.000
L3	130.000-125.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.037
		C	0.000	0.000	0.000	0.000	0.000
L4	125.000-120.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.051
		C	0.000	0.000	0.000	0.000	0.000
L5	120.000-115.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.051
		C	0.000	0.000	0.000	0.000	0.000
L6	115.000-110.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.051
		C	0.000	0.000	0.000	0.000	0.000
L7	110.000-105.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.051
		C	0.000	0.000	0.000	0.000	0.034
L8	105.000-102.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.027
		C	0.000	0.000	0.000	0.000	0.031
L9	102.333-102.083	A	0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.003
		C	0.000	0.000	0.000	0.000	0.003
L10	102.083-97.083	A	0.000	0.000	6.111	0.000	0.019
		B	0.000	0.000	3.327	0.000	0.051
		C	0.000	0.000	3.327	0.000	0.057
L11	97.083-91.750	A	0.000	0.000	8.699	0.000	0.034
		B	0.000	0.000	4.749	0.000	0.055
		C	0.000	0.000	4.749	0.000	0.061
L12	91.750-90.750	A	0.000	0.000	1.631	0.000	0.006
		B	0.000	0.000	1.589	0.000	0.010
		C	0.000	0.000	1.589	0.000	0.011
L13	90.750-85.750	A	0.000	0.000	8.156	0.000	0.032
		B	0.000	0.000	7.944	0.000	0.051
		C	0.000	0.000	7.944	0.000	0.057
L14	85.750-85.333	A	0.000	0.000	0.680	0.000	0.003
		B	0.000	0.000	0.663	0.000	0.004
		C	0.000	0.000	0.663	0.000	0.005
L15	85.333-85.083	A	0.000	0.000	0.408	0.000	0.002
		B	0.000	0.000	0.397	0.000	0.003
		C	0.000	0.000	0.397	0.000	0.003
L16	85.083-82.500	A	0.000	0.000	4.713	0.000	0.017
		B	0.000	0.000	4.148	0.000	0.026
		C	0.000	0.000	3.648	0.000	0.030
L17	82.500-82.250	A	0.000	0.000	0.658	0.000	0.002
		B	0.000	0.000	0.419	0.000	0.003
		C	0.000	0.000	0.169	0.000	0.003
L18	82.250-77.150	A	0.000	0.000	13.419	0.000	0.033
		B	0.000	0.000	8.551	0.000	0.052
		C	0.000	0.000	3.451	0.000	0.059
L19	77.150-76.917	A	0.000	0.000	0.670	0.000	0.001
		B	0.000	0.000	0.391	0.000	0.002
		C	0.000	0.000	0.158	0.000	0.003
L20	76.917-71.917	A	0.000	0.000	16.539	0.000	0.032
		B	0.000	0.000	8.383	0.000	0.051
		C	0.000	0.000	3.383	0.000	0.057
L21	71.917-66.917	A	0.000	0.000	16.743	0.000	0.036
		B	0.000	0.000	8.383	0.000	0.051
		C	0.000	0.000	3.383	0.000	0.057
L22	66.917-66.667	A	0.000	0.000	0.842	0.000	0.002
		B	0.000	0.000	0.419	0.000	0.003
		C	0.000	0.000	0.169	0.000	0.003
L23	66.667-66.417	A	0.000	0.000	1.066	0.000	0.002
		B	0.000	0.000	0.641	0.000	0.003
		C	0.000	0.000	0.391	0.000	0.003
L24	66.417-61.417	A	0.000	0.000	10.526	0.000	0.038
		B	0.000	0.000	5.141	0.000	0.051
		C	0.000	0.000	4.724	0.000	0.057
L25	61.417-60.000	A	0.000	0.000	2.705	0.000	0.011
		B	0.000	0.000	1.259	0.000	0.015
		C	0.000	0.000	1.259	0.000	0.016
L26	60.000-59.750	A	0.000	0.000	0.713	0.000	0.002
		B	0.000	0.000	0.222	0.000	0.003
		C	0.000	0.000	0.222	0.000	0.003
L27	59.750-54.750	A	0.000	0.000	14.269	0.000	0.038
		B	0.000	0.000	4.442	0.000	0.051
		C	0.000	0.000	4.442	0.000	0.057
L28	54.750-46.500	A	0.000	0.000	21.182	0.000	0.063
		B	0.000	0.000	7.329	0.000	0.085
		C	0.000	0.000	7.329	0.000	0.095
L29	46.500-45.500	A	0.000	0.000	1.909	0.000	0.008
		B	0.000	0.000	0.888	0.000	0.010

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.888	0.000	0.011
L30	45.500-44.250	A	0.000	0.000	3.136	0.000	0.009
		B	0.000	0.000	1.860	0.000	0.013
		C	0.000	0.000	1.110	0.000	0.014
L31	44.250-44.000	A	0.000	0.000	0.727	0.000	0.002
		B	0.000	0.000	0.472	0.000	0.003
		C	0.000	0.000	0.222	0.000	0.003
L32	44.000-39.000	A	0.000	0.000	14.544	0.000	0.038
		B	0.000	0.000	9.442	0.000	0.052
		C	0.000	0.000	4.442	0.000	0.057
L33	39.000-34.000	A	0.000	0.000	14.544	0.000	0.038
		B	0.000	0.000	9.442	0.000	0.052
		C	0.000	0.000	4.442	0.000	0.057
L34	34.000-29.000	A	0.000	0.000	14.544	0.000	0.038
		B	0.000	0.000	9.442	0.000	0.052
		C	0.000	0.000	4.442	0.000	0.057
L35	29.000-27.750	A	0.000	0.000	3.636	0.000	0.009
		B	0.000	0.000	2.360	0.000	0.013
		C	0.000	0.000	1.110	0.000	0.014
L36	27.750-27.500	A	0.000	0.000	0.727	0.000	0.002
		B	0.000	0.000	0.743	0.000	0.003
		C	0.000	0.000	0.222	0.000	0.003
L37	27.500-24.083	A	0.000	0.000	9.939	0.000	0.026
		B	0.000	0.000	10.154	0.000	0.036
		C	0.000	0.000	3.035	0.000	0.039
L38	24.083-23.833	A	0.000	0.000	0.560	0.000	0.002
		B	0.000	0.000	0.576	0.000	0.003
		C	0.000	0.000	0.444	0.000	0.003
L39	23.833-18.833	A	0.000	0.000	9.544	0.000	0.038
		B	0.000	0.000	9.858	0.000	0.052
		C	0.000	0.000	8.883	0.000	0.057
L40	18.833-18.083	A	0.000	0.000	1.432	0.000	0.006
		B	0.000	0.000	1.479	0.000	0.008
		C	0.000	0.000	1.333	0.000	0.009
L41	18.083-17.833	A	0.000	0.000	0.477	0.000	0.002
		B	0.000	0.000	0.493	0.000	0.003
		C	0.000	0.000	0.444	0.000	0.003
L42	17.833-12.833	A	0.000	0.000	9.544	0.000	0.038
		B	0.000	0.000	9.858	0.000	0.052
		C	0.000	0.000	8.883	0.000	0.057
L43	12.833-7.833	A	0.000	0.000	9.544	0.000	0.038
		B	0.000	0.000	9.858	0.000	0.052
		C	0.000	0.000	8.883	0.000	0.057
L44	7.833-2.833	A	0.000	0.000	9.544	0.000	0.038
		B	0.000	0.000	9.858	0.000	0.043
		C	0.000	0.000	8.883	0.000	0.033
L45	2.833-0.000	A	0.000	0.000	5.408	0.000	0.022
		B	0.000	0.000	5.586	0.000	0.018
		C	0.000	0.000	5.033	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.000-135.000	A	2.307	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.013
		C		0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L2	135.000-130.000	A	2.298	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.016
		C		0.000	0.000	0.000	0.000	0.000
L3	130.000-125.000	A	2.289	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.037
		C		0.000	0.000	0.000	0.000	0.000
L4	125.000-120.000	A	2.280	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.051
		C		0.000	0.000	0.000	0.000	0.000
L5	120.000-115.000	A	2.271	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.051
		C		0.000	0.000	0.000	0.000	0.000
L6	115.000-110.000	A	2.261	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.051
		C		0.000	0.000	0.000	0.000	0.000
L7	110.000-105.000	A	2.251	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.051
		C		0.000	0.000	0.000	0.000	0.034
L8	105.000-102.333	A	2.243	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.027
		C		0.000	0.000	0.000	0.000	0.031
L9	102.333-102.083	A	2.239	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.003
		C		0.000	0.000	0.000	0.000	0.003
L10	102.083-97.083	A	2.234	0.000	0.000	13.020	0.000	0.238
		B		0.000	0.000	5.524	0.000	0.135
		C		0.000	0.000	5.524	0.000	0.142
L11	97.083-91.750	A	2.222	0.000	0.000	19.642	0.000	0.370
		B		0.000	0.000	7.411	0.000	0.169
		C		0.000	0.000	7.411	0.000	0.176
L12	91.750-90.750	A	2.214	0.000	0.000	3.683	0.000	0.069
		B		0.000	0.000	2.267	0.000	0.047
		C		0.000	0.000	2.267	0.000	0.048
L13	90.750-85.750	A	2.207	0.000	0.000	18.352	0.000	0.344
		B		0.000	0.000	11.311	0.000	0.231
		C		0.000	0.000	11.311	0.000	0.237
L14	85.750-85.333	A	2.200	0.000	0.000	1.528	0.000	0.029
		B		0.000	0.000	0.943	0.000	0.019
		C		0.000	0.000	0.943	0.000	0.020
L15	85.333-85.083	A	2.199	0.000	0.000	0.916	0.000	0.017
		B		0.000	0.000	0.565	0.000	0.012
		C		0.000	0.000	0.565	0.000	0.012
L16	85.083-82.500	A	2.195	0.000	0.000	10.137	0.000	0.186
		B		0.000	0.000	5.945	0.000	0.119
		C		0.000	0.000	5.263	0.000	0.112
L17	82.500-82.250	A	2.192	0.000	0.000	1.255	0.000	0.022
		B		0.000	0.000	0.620	0.000	0.011
		C		0.000	0.000	0.279	0.000	0.007
L18	82.250-77.150	A	2.184	0.000	0.000	25.571	0.000	0.443
		B		0.000	0.000	12.628	0.000	0.233
		C		0.000	0.000	5.679	0.000	0.143
L19	77.150-76.917	A	2.177	0.000	0.000	1.248	0.000	0.022
		B		0.000	0.000	0.577	0.000	0.011
		C		0.000	0.000	0.259	0.000	0.007
L20	76.917-71.917	A	2.169	0.000	0.000	29.818	0.000	0.513
		B		0.000	0.000	12.358	0.000	0.227
		C		0.000	0.000	5.553	0.000	0.140
L21	71.917-66.917	A	2.154	0.000	0.000	31.654	0.000	0.534
		B		0.000	0.000	12.336	0.000	0.225
		C		0.000	0.000	5.538	0.000	0.139
L22	66.917-66.667	A	2.146	0.000	0.000	1.638	0.000	0.027

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.615	0.000	0.011
		C		0.000	0.000	0.276	0.000	0.007
L23	66.667-66.417	A	2.145	0.000	0.000	1.969	0.000	0.032
		B		0.000	0.000	0.945	0.000	0.016
		C		0.000	0.000	0.606	0.000	0.012
L24	66.417-61.417	A	2.137	0.000	0.000	23.623	0.000	0.408
		B		0.000	0.000	7.605	0.000	0.161
		C		0.000	0.000	7.039	0.000	0.159
L25	61.417-60.000	A	2.126	0.000	0.000	6.273	0.000	0.109
		B		0.000	0.000	1.861	0.000	0.041
		C		0.000	0.000	1.861	0.000	0.043
L26	60.000-59.750	A	2.123	0.000	0.000	1.398	0.000	0.024
		B		0.000	0.000	0.328	0.000	0.007
		C		0.000	0.000	0.328	0.000	0.008
L27	59.750-54.750	A	2.113	0.000	0.000	27.898	0.000	0.472
		B		0.000	0.000	6.555	0.000	0.145
		C		0.000	0.000	6.555	0.000	0.151
L28	54.750-46.500	A	2.087	0.000	0.000	42.865	0.000	0.722
		B		0.000	0.000	10.773	0.000	0.237
		C		0.000	0.000	10.773	0.000	0.247
L29	46.500-45.500	A	2.068	0.000	0.000	4.385	0.000	0.075
		B		0.000	0.000	1.306	0.000	0.029
		C		0.000	0.000	1.306	0.000	0.030
L30	45.500-44.250	A	2.062	0.000	0.000	6.506	0.000	0.106
		B		0.000	0.000	2.685	0.000	0.049
		C		0.000	0.000	1.626	0.000	0.037
L31	44.250-44.000	A	2.059	0.000	0.000	1.441	0.000	0.023
		B		0.000	0.000	0.678	0.000	0.011
		C		0.000	0.000	0.325	0.000	0.007
L32	44.000-39.000	A	2.046	0.000	0.000	28.745	0.000	0.454
		B		0.000	0.000	13.534	0.000	0.228
		C		0.000	0.000	6.488	0.000	0.147
L33	39.000-34.000	A	2.020	0.000	0.000	28.575	0.000	0.447
		B		0.000	0.000	13.482	0.000	0.225
		C		0.000	0.000	6.462	0.000	0.146
L34	34.000-29.000	A	1.991	0.000	0.000	28.383	0.000	0.439
		B		0.000	0.000	13.423	0.000	0.222
		C		0.000	0.000	6.432	0.000	0.144
L35	29.000-27.750	A	1.970	0.000	0.000	7.062	0.000	0.108
		B		0.000	0.000	3.345	0.000	0.055
		C		0.000	0.000	1.603	0.000	0.036
L36	27.750-27.500	A	1.965	0.000	0.000	1.411	0.000	0.022
		B		0.000	0.000	1.038	0.000	0.015
		C		0.000	0.000	0.320	0.000	0.007
L37	27.500-24.083	A	1.951	0.000	0.000	19.222	0.000	0.293
		B		0.000	0.000	14.155	0.000	0.208
		C		0.000	0.000	4.369	0.000	0.097
L38	24.083-23.833	A	1.937	0.000	0.000	1.170	0.000	0.019
		B		0.000	0.000	0.802	0.000	0.012
		C		0.000	0.000	0.638	0.000	0.011
L39	23.833-18.833	A	1.915	0.000	0.000	20.974	0.000	0.339
		B		0.000	0.000	13.687	0.000	0.219
		C		0.000	0.000	12.712	0.000	0.222
L40	18.833-18.083	A	1.887	0.000	0.000	3.123	0.000	0.050
		B		0.000	0.000	2.045	0.000	0.032
		C		0.000	0.000	1.899	0.000	0.033
L41	18.083-17.833	A	1.882	0.000	0.000	1.040	0.000	0.017
		B		0.000	0.000	0.681	0.000	0.011
		C		0.000	0.000	0.632	0.000	0.011
L42	17.833-12.833	A	1.852	0.000	0.000	20.632	0.000	0.327
		B		0.000	0.000	13.563	0.000	0.212

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	12.588	0.000	0.215
L43	12.833-7.833	A	1.781	0.000	0.000	20.237	0.000	0.313
		B		0.000	0.000	13.419	0.000	0.204
		C		0.000	0.000	12.444	0.000	0.207
L44	7.833-2.833	A	1.666	0.000	0.000	19.610	0.000	0.290
		B		0.000	0.000	13.191	0.000	0.182
		C		0.000	0.000	12.216	0.000	0.170
L45	2.833-0.000	A	1.459	0.000	0.000	10.466	0.000	0.143
		B		0.000	0.000	7.240	0.000	0.084
		C		0.000	0.000	6.687	0.000	0.065

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140.000-135.000	0.000	0.000	0.000	0.000
L2	135.000-130.000	0.000	0.000	0.000	0.000
L3	130.000-125.000	0.000	0.000	0.000	0.000
L4	125.000-120.000	0.000	0.000	0.000	0.000
L5	120.000-115.000	0.000	0.000	0.000	0.000
L6	115.000-110.000	0.000	0.000	0.000	0.000
L7	110.000-105.000	0.000	0.000	0.000	0.000
L8	105.000-102.333	0.000	0.000	0.000	0.000
L9	102.333-102.083	0.000	0.000	0.000	0.000
L10	102.083-97.083	-0.345	-1.595	-0.521	-2.432
L11	97.083-91.750	-0.063	-2.084	-0.430	-3.252
L12	91.750-90.750	1.089	-1.015	0.468	-2.303
L13	90.750-85.750	1.106	-1.028	0.479	-2.335
L14	85.750-85.333	1.121	-1.040	0.488	-2.366
L15	85.333-85.083	1.124	-1.042	0.489	-2.371
L16	85.083-82.500	0.825	-1.599	0.268	-2.805
L17	82.500-82.250	-0.413	-3.840	-0.635	-4.498
L18	82.250-77.150	-0.419	-3.890	-0.644	-4.563
L19	77.150-76.917	-0.820	-4.048	-0.979	-4.700
L20	76.917-71.917	-1.491	-4.284	-1.547	-4.891
L21	71.917-66.917	-1.522	-4.432	-1.534	-5.157
L22	66.917-66.667	-1.537	-4.515	-1.524	-5.303
L23	66.667-66.417	-0.778	-1.219	-0.871	-2.292
L24	66.417-61.417	0.012	0.914	-0.338	-1.336
L25	61.417-60.000	0.139	1.266	-0.263	-1.206
L26	60.000-59.750	-1.707	0.052	-1.504	-1.831
L27	59.750-54.750	-1.723	0.054	-1.521	-1.847
L28	54.750-46.500	-1.227	0.412	-1.190	-1.694
L29	46.500-45.500	0.148	1.325	-0.269	-1.235
L30	45.500-44.250	0.126	-0.230	-0.235	-2.162
L31	44.250-44.000	0.115	-1.029	-0.217	-2.673
L32	44.000-39.000	0.117	-1.038	-0.218	-2.696
L33	39.000-34.000	0.120	-1.054	-0.219	-2.738
L34	34.000-29.000	0.123	-1.070	-0.220	-2.776
L35	29.000-27.750	0.125	-1.080	-0.220	-2.798
L36	27.750-27.500	1.945	-2.024	1.314	-3.428
L37	27.500-24.083	1.958	-2.036	1.326	-3.446
L38	24.083-23.833	-0.693	-3.431	-1.005	-4.746
L39	23.833-18.833	-0.750	-2.976	-1.074	-4.461
L40	18.833-18.083	-0.757	-3.003	-1.082	-4.493
L41	18.083-17.833	-0.758	-3.008	-1.083	-4.500

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L42	17.833-12.833	-0.764	-3.032	-1.089	-4.526
L43	12.833-7.833	-0.775	-3.076	-1.099	-4.564
L44	7.833-2.833	-0.785	-3.120	-1.102	-4.573
L45	2.833-0.000	-0.794	-3.153	-1.085	-4.501

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L10	10	LDF5-50A(7/8)	97.08 - 100.00	1.0000	1.0000
L10	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	97.08 - 100.00	1.0000	1.0000
L10	13	HCS 6X12 6AWG(1-3/8)	97.08 - 100.00	1.0000	1.0000
L10	41	MP3-03 (Surface Af)	97.08 - 102.00	1.0000	1.0000
L10	42	MP3-03 (Surface Af)	97.08 - 102.00	1.0000	1.0000
L10	43	MP3-03 (Surface Af)	97.08 - 102.00	1.0000	1.0000
L11	10	LDF5-50A(7/8)	91.75 - 97.08	1.0000	1.0000
L11	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	91.75 - 97.08	1.0000	1.0000
L11	13	HCS 6X12 6AWG(1-3/8)	91.75 - 97.08	1.0000	1.0000
L11	41	MP3-03 (Surface Af)	91.75 - 97.08	1.0000	1.0000
L11	42	MP3-03 (Surface Af)	91.75 - 97.08	1.0000	1.0000
L11	43	MP3-03 (Surface Af)	91.75 - 97.08	1.0000	1.0000
L11	51	CCI 6" x 1" Plate	91.75 - 93.00	1.0000	1.0000
L11	52	CCI 6" x 1" Plate	91.75 - 93.00	1.0000	1.0000
L13	10	LDF5-50A(7/8)	85.75 - 90.75	1.0000	1.0000
L13	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	85.75 - 90.75	1.0000	1.0000
L13	13	HCS 6X12 6AWG(1-3/8)	85.75 - 90.75	1.0000	1.0000
L13	41	MP3-03 (Surface Af)	85.75 - 90.75	1.0000	1.0000
L13	42	MP3-03 (Surface Af)	85.75 - 90.75	1.0000	1.0000
L13	43	MP3-03 (Surface Af)	85.75 - 90.75	1.0000	1.0000
L13	51	CCI 6" x 1" Plate	85.75 - 90.75	1.0000	1.0000
L13	52	CCI 6" x 1" Plate	85.75 - 90.75	1.0000	1.0000
L14	10	LDF5-50A(7/8)	85.33 - 85.75	1.0000	1.0000
L14	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	85.33 - 85.75	1.0000	1.0000
L14	13	HCS 6X12 6AWG(1-3/8)	85.33 - 85.75	1.0000	1.0000
L14	41	MP3-03 (Surface Af)	85.33 - 85.75	1.0000	1.0000
L14	42	MP3-03 (Surface Af)	85.33 - 85.75	1.0000	1.0000
L14	43	MP3-03 (Surface Af)	85.33 - 85.75	1.0000	1.0000
L14	51	CCI 6" x 1" Plate	85.33 - 85.75	1.0000	1.0000
L14	52	CCI 6" x 1" Plate	85.33 - 85.75	1.0000	1.0000
L15	10	LDF5-50A(7/8)	85.08 - 85.33	1.0000	1.0000
L15	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	85.08 - 85.33	1.0000	1.0000
L15	13	HCS 6X12 6AWG(1-3/8)	85.08 - 85.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	41	MP3-03 (Surface Af)	85.08 - 85.33	1.0000	1.0000
L15	42	MP3-03 (Surface Af)	85.08 - 85.33	1.0000	1.0000
L15	43	MP3-03 (Surface Af)	85.08 - 85.33	1.0000	1.0000
L15	51	CCI 6" x 1" Plate	85.08 - 85.33	1.0000	1.0000
L15	52	CCI 6" x 1" Plate	85.08 - 85.33	1.0000	1.0000
L16	10	LDF5-50A(7/8)	82.50 - 85.08	1.0000	1.0000
L16	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	82.50 - 85.08	1.0000	1.0000
L16	13	HCS 6X12 6AWG(1-3/8)	82.50 - 85.08	1.0000	1.0000
L16	41	MP3-03 (Surface Af)	82.50 - 85.08	1.0000	1.0000
L16	42	MP3-03 (Surface Af)	82.50 - 85.08	1.0000	1.0000
L16	43	MP3-03 (Surface Af)	82.50 - 85.08	1.0000	1.0000
L16	49	CCI 6" x 1" Plate	82.50 - 83.00	1.0000	1.0000
L16	50	CCI 6" x 1" Plate	82.50 - 83.00	1.0000	1.0000
L16	51	CCI 6" x 1" Plate	83.00 - 85.08	1.0000	1.0000
L16	52	CCI 6" x 1" Plate	83.00 - 85.08	1.0000	1.0000
L17	10	LDF5-50A(7/8)	82.25 - 82.50	1.0000	1.0000
L17	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	82.25 - 82.50	1.0000	1.0000
L17	13	HCS 6X12 6AWG(1-3/8)	82.25 - 82.50	1.0000	1.0000
L17	41	MP3-03 (Surface Af)	82.25 - 82.50	1.0000	1.0000
L17	42	MP3-03 (Surface Af)	82.25 - 82.50	1.0000	1.0000
L17	43	MP3-03 (Surface Af)	82.25 - 82.50	1.0000	1.0000
L17	49	CCI 6" x 1" Plate	82.25 - 82.50	1.0000	1.0000
L17	50	CCI 6" x 1" Plate	82.25 - 82.50	1.0000	1.0000
L18	10	LDF5-50A(7/8)	77.15 - 82.25	1.0000	1.0000
L18	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	77.15 - 82.25	1.0000	1.0000
L18	13	HCS 6X12 6AWG(1-3/8)	77.15 - 82.25	1.0000	1.0000
L18	41	MP3-03 (Surface Af)	77.15 - 82.25	1.0000	1.0000
L18	42	MP3-03 (Surface Af)	77.15 - 82.25	1.0000	1.0000
L18	43	MP3-03 (Surface Af)	77.15 - 82.25	1.0000	1.0000
L18	49	CCI 6" x 1" Plate	77.15 - 82.25	1.0000	1.0000
L18	50	CCI 6" x 1" Plate	77.15 - 82.25	1.0000	1.0000
L19	10	LDF5-50A(7/8)	76.92 - 77.15	1.0000	1.0000
L19	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	76.92 - 77.15	1.0000	1.0000
L19	13	HCS 6X12 6AWG(1-3/8)	76.92 - 77.15	1.0000	1.0000
L19	40	MP3-03 (Surface Af)	76.92 - 77.00	1.0000	1.0000
L19	41	MP3-03 (Surface Af)	76.92 - 77.15	1.0000	1.0000
L19	42	MP3-03 (Surface Af)	76.92 - 77.15	1.0000	1.0000
L19	43	MP3-03 (Surface Af)	76.92 - 77.15	1.0000	1.0000
L19	49	CCI 6" x 1" Plate	76.92 - 77.15	1.0000	1.0000
L19	50	CCI 6" x 1" Plate	76.92 - 77.15	1.0000	1.0000
L20	10	LDF5-50A(7/8)	71.92 - 76.92	1.0000	1.0000
L20	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	71.92 - 76.92	1.0000	1.0000
L20	13	HCS 6X12 6AWG(1-3/8)	71.92 - 76.92	1.0000	1.0000
L20	40	MP3-03 (Surface Af)	71.92 - 76.92	1.0000	1.0000
L20	41	MP3-03 (Surface Af)	71.92 - 76.92	1.0000	1.0000
L20	42	MP3-03 (Surface Af)	71.92 - 76.92	1.0000	1.0000
L20	43	MP3-03 (Surface Af)	71.92 - 76.92	1.0000	1.0000
L20	49	CCI 6" x 1" Plate	71.92 - 76.92	1.0000	1.0000
L20	50	CCI 6" x 1" Plate	71.92 - 76.92	1.0000	1.0000
L21	10	LDF5-50A(7/8)	66.92 - 71.92	1.0000	1.0000
L21	11	MLE HYBRID 9POWER/18FIBER RL	66.92 - 71.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		2(1-5/8)			
L21	13	HCS 6X12 6AWG(1-3/8)	66.92 - 71.92	1.0000	1.0000
L21	15	9207(5/16)	66.92 - 70.00	1.0000	1.0000
L21	40	MP3-03 (Surface Af)	66.92 - 71.92	1.0000	1.0000
L21	41	MP3-03 (Surface Af)	66.92 - 71.92	1.0000	1.0000
L21	42	MP3-03 (Surface Af)	66.92 - 71.92	1.0000	1.0000
L21	43	MP3-03 (Surface Af)	66.92 - 71.92	1.0000	1.0000
L21	49	CCI 6" x 1" Plate	66.92 - 71.92	1.0000	1.0000
L21	50	CCI 6" x 1" Plate	66.92 - 71.92	1.0000	1.0000
L22	10	LDF5-50A(7/8)	66.67 - 66.92	1.0000	1.0000
L22	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	66.67 - 66.92	1.0000	1.0000
L22	13	HCS 6X12 6AWG(1-3/8)	66.67 - 66.92	1.0000	1.0000
L22	15	9207(5/16)	66.67 - 66.92	1.0000	1.0000
L22	40	MP3-03 (Surface Af)	66.67 - 66.92	1.0000	1.0000
L22	41	MP3-03 (Surface Af)	66.67 - 66.92	1.0000	1.0000
L22	42	MP3-03 (Surface Af)	66.67 - 66.92	1.0000	1.0000
L22	43	MP3-03 (Surface Af)	66.67 - 66.92	1.0000	1.0000
L22	49	CCI 6" x 1" Plate	66.67 - 66.92	1.0000	1.0000
L22	50	CCI 6" x 1" Plate	66.67 - 66.92	1.0000	1.0000
L23	10	LDF5-50A(7/8)	66.42 - 66.67	1.0000	1.0000
L23	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	66.42 - 66.67	1.0000	1.0000
L23	13	HCS 6X12 6AWG(1-3/8)	66.42 - 66.67	1.0000	1.0000
L23	15	9207(5/16)	66.42 - 66.67	1.0000	1.0000
L23	36	Aero MP305	66.42 - 66.67	1.0000	1.0000
L23	37	Aero MP305	66.42 - 66.67	1.0000	1.0000
L23	38	Aero MP305	66.42 - 66.67	1.0000	1.0000
L23	40	MP3-03 (Surface Af)	66.42 - 66.67	1.0000	1.0000
L23	41	MP3-03 (Surface Af)	66.42 - 66.67	1.0000	1.0000
L23	42	MP3-03 (Surface Af)	66.42 - 66.67	1.0000	1.0000
L23	43	MP3-03 (Surface Af)	66.42 - 66.67	1.0000	1.0000
L23	49	CCI 6" x 1" Plate	66.42 - 66.67	1.0000	1.0000
L23	50	CCI 6" x 1" Plate	66.42 - 66.67	1.0000	1.0000
L24	10	LDF5-50A(7/8)	61.42 - 66.42	1.0000	1.0000
L24	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	61.42 - 66.42	1.0000	1.0000
L24	13	HCS 6X12 6AWG(1-3/8)	61.42 - 66.42	1.0000	1.0000
L24	15	9207(5/16)	61.42 - 66.42	1.0000	1.0000
L24	36	Aero MP305	61.42 - 66.42	1.0000	1.0000
L24	37	Aero MP305	61.42 - 66.42	1.0000	1.0000
L24	38	Aero MP305	61.42 - 66.42	1.0000	1.0000
L24	40	MP3-03 (Surface Af)	66.00 - 66.42	1.0000	1.0000
L24	41	MP3-03 (Surface Af)	66.00 - 66.42	1.0000	1.0000
L24	42	MP3-03 (Surface Af)	66.00 - 66.42	1.0000	1.0000
L24	43	MP3-03 (Surface Af)	66.00 - 66.42	1.0000	1.0000
L24	49	CCI 6" x 1" Plate	66.00 - 66.42	1.0000	1.0000
L24	50	CCI 6" x 1" Plate	66.00 - 66.42	1.0000	1.0000
L25	10	LDF5-50A(7/8)	60.00 - 61.42	1.0000	1.0000
L25	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	60.00 - 61.42	1.0000	1.0000
L25	13	HCS 6X12 6AWG(1-3/8)	60.00 - 61.42	1.0000	1.0000
L25	15	9207(5/16)	60.00 - 61.42	1.0000	1.0000
L25	36	Aero MP305	60.00 - 61.42	1.0000	1.0000
L25	37	Aero MP305	60.00 - 61.42	1.0000	1.0000
L25	38	Aero MP305	60.00 - 61.42	1.0000	1.0000
L26	10	LDF5-50A(7/8)	59.75 - 60.00	1.0000	1.0000
L26	11	MLE HYBRID	59.75 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		9POWER/18FIBER RL 2(1-5/8)			
L26	13	HCS 6X12 6AWG(1-3/8)	59.75 - 60.00	1.0000	1.0000
L26	15	9207(5/16)	59.75 - 60.00	1.0000	1.0000
L26	36	Aero MP305	59.75 - 60.00	1.0000	1.0000
L26	37	Aero MP305	59.75 - 60.00	1.0000	1.0000
L26	38	Aero MP305	59.75 - 60.00	1.0000	1.0000
L26	48	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L27	10	LDF5-50A(7/8)	54.75 - 59.75	1.0000	1.0000
L27	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	54.75 - 59.75	1.0000	1.0000
L27	13	HCS 6X12 6AWG(1-3/8)	54.75 - 59.75	1.0000	1.0000
L27	15	9207(5/16)	54.75 - 59.75	1.0000	1.0000
L27	36	Aero MP305	54.75 - 59.75	1.0000	1.0000
L27	37	Aero MP305	54.75 - 59.75	1.0000	1.0000
L27	38	Aero MP305	54.75 - 59.75	1.0000	1.0000
L27	48	CCI 6" x 1" Plate	54.75 - 59.75	1.0000	1.0000
L28	10	LDF5-50A(7/8)	46.50 - 54.75	1.0000	1.0000
L28	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	46.50 - 54.75	1.0000	1.0000
L28	13	HCS 6X12 6AWG(1-3/8)	46.50 - 54.75	1.0000	1.0000
L28	15	9207(5/16)	46.50 - 54.75	1.0000	1.0000
L28	36	Aero MP305	46.50 - 54.75	1.0000	1.0000
L28	37	Aero MP305	46.50 - 54.75	1.0000	1.0000
L28	38	Aero MP305	46.50 - 54.75	1.0000	1.0000
L28	48	CCI 6" x 1" Plate	49.00 - 54.75	1.0000	1.0000
L30	10	LDF5-50A(7/8)	44.25 - 45.50	1.0000	1.0000
L30	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	44.25 - 45.50	1.0000	1.0000
L30	13	HCS 6X12 6AWG(1-3/8)	44.25 - 45.50	1.0000	1.0000
L30	15	9207(5/16)	44.25 - 45.50	1.0000	1.0000
L30	36	Aero MP305	44.25 - 45.50	1.0000	1.0000
L30	37	Aero MP305	44.25 - 45.50	1.0000	1.0000
L30	38	Aero MP305	44.25 - 45.50	1.0000	1.0000
L30	46	CCI 6" x 1" Plate	44.25 - 45.00	1.0000	1.0000
L30	47	CCI 6" x 1" Plate	44.25 - 45.00	1.0000	1.0000
L31	10	LDF5-50A(7/8)	44.00 - 44.25	1.0000	1.0000
L31	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	44.00 - 44.25	1.0000	1.0000
L31	13	HCS 6X12 6AWG(1-3/8)	44.00 - 44.25	1.0000	1.0000
L31	15	9207(5/16)	44.00 - 44.25	1.0000	1.0000
L31	36	Aero MP305	44.00 - 44.25	1.0000	1.0000
L31	37	Aero MP305	44.00 - 44.25	1.0000	1.0000
L31	38	Aero MP305	44.00 - 44.25	1.0000	1.0000
L31	46	CCI 6" x 1" Plate	44.00 - 44.25	1.0000	1.0000
L31	47	CCI 6" x 1" Plate	44.00 - 44.25	1.0000	1.0000
L32	10	LDF5-50A(7/8)	39.00 - 44.00	1.0000	1.0000
L32	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	39.00 - 44.00	1.0000	1.0000
L32	13	HCS 6X12 6AWG(1-3/8)	39.00 - 44.00	1.0000	1.0000
L32	15	9207(5/16)	39.00 - 44.00	1.0000	1.0000
L32	36	Aero MP305	39.00 - 44.00	1.0000	1.0000
L32	37	Aero MP305	39.00 - 44.00	1.0000	1.0000
L32	38	Aero MP305	39.00 - 44.00	1.0000	1.0000
L32	46	CCI 6" x 1" Plate	39.00 - 44.00	1.0000	1.0000
L32	47	CCI 6" x 1" Plate	39.00 - 44.00	1.0000	1.0000
L33	10	LDF5-50A(7/8)	34.00 - 39.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	34.00 - 39.00	1.0000	1.0000
L33	13	HCS 6X12 6AWG(1-3/8)	34.00 - 39.00	1.0000	1.0000
L33	15	9207(5/16)	34.00 - 39.00	1.0000	1.0000
L33	36	Aero MP305	34.00 - 39.00	1.0000	1.0000
L33	37	Aero MP305	34.00 - 39.00	1.0000	1.0000
L33	38	Aero MP305	34.00 - 39.00	1.0000	1.0000
L33	46	CCI 6" x 1" Plate	34.00 - 39.00	1.0000	1.0000
L33	47	CCI 6" x 1" Plate	34.00 - 39.00	1.0000	1.0000
L34	10	LDF5-50A(7/8)	29.00 - 34.00	1.0000	1.0000
L34	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	29.00 - 34.00	1.0000	1.0000
L34	13	HCS 6X12 6AWG(1-3/8)	29.00 - 34.00	1.0000	1.0000
L34	15	9207(5/16)	29.00 - 34.00	1.0000	1.0000
L34	36	Aero MP305	29.00 - 34.00	1.0000	1.0000
L34	37	Aero MP305	29.00 - 34.00	1.0000	1.0000
L34	38	Aero MP305	29.00 - 34.00	1.0000	1.0000
L34	46	CCI 6" x 1" Plate	29.00 - 34.00	1.0000	1.0000
L34	47	CCI 6" x 1" Plate	29.00 - 34.00	1.0000	1.0000
L35	10	LDF5-50A(7/8)	27.75 - 29.00	1.0000	1.0000
L35	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	27.75 - 29.00	1.0000	1.0000
L35	13	HCS 6X12 6AWG(1-3/8)	27.75 - 29.00	1.0000	1.0000
L35	15	9207(5/16)	27.75 - 29.00	1.0000	1.0000
L35	36	Aero MP305	27.75 - 29.00	1.0000	1.0000
L35	37	Aero MP305	27.75 - 29.00	1.0000	1.0000
L35	38	Aero MP305	27.75 - 29.00	1.0000	1.0000
L35	46	CCI 6" x 1" Plate	27.75 - 29.00	1.0000	1.0000
L35	47	CCI 6" x 1" Plate	27.75 - 29.00	1.0000	1.0000
L36	10	LDF5-50A(7/8)	27.50 - 27.75	1.0000	1.0000
L36	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	27.50 - 27.75	1.0000	1.0000
L36	13	HCS 6X12 6AWG(1-3/8)	27.50 - 27.75	1.0000	1.0000
L36	15	9207(5/16)	27.50 - 27.75	1.0000	1.0000
L36	36	Aero MP305	27.50 - 27.75	1.0000	1.0000
L36	37	Aero MP305	27.50 - 27.75	1.0000	1.0000
L36	38	Aero MP305	27.50 - 27.75	1.0000	1.0000
L36	45	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L36	46	CCI 6" x 1" Plate	27.50 - 27.75	1.0000	1.0000
L36	47	CCI 6" x 1" Plate	27.50 - 27.75	1.0000	1.0000
L37	10	LDF5-50A(7/8)	24.08 - 27.50	1.0000	1.0000
L37	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	24.08 - 27.50	1.0000	1.0000
L37	13	HCS 6X12 6AWG(1-3/8)	24.08 - 27.50	1.0000	1.0000
L37	15	9207(5/16)	24.08 - 27.50	1.0000	1.0000
L37	36	Aero MP305	24.08 - 27.50	1.0000	1.0000
L37	37	Aero MP305	24.08 - 27.50	1.0000	1.0000
L37	38	Aero MP305	24.08 - 27.50	1.0000	1.0000
L37	45	CCI 6.5" x 1.25" Plate	24.08 - 27.50	1.0000	1.0000
L37	46	CCI 6" x 1" Plate	24.08 - 27.50	1.0000	1.0000
L37	47	CCI 6" x 1" Plate	24.08 - 27.50	1.0000	1.0000
L38	10	LDF5-50A(7/8)	23.83 - 24.08	1.0000	1.0000
L38	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	23.83 - 24.08	1.0000	1.0000
L38	13	HCS 6X12 6AWG(1-3/8)	23.83 - 24.08	1.0000	1.0000
L38	15	9207(5/16)	23.83 - 24.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	32	MP3-05 (Surface Af)	23.83 - 24.08	1.0000	1.0000
L38	33	Aero MP305	23.83 - 24.08	1.0000	1.0000
L38	34	Aero MP305	23.83 - 24.08	1.0000	1.0000
L38	35	Aero MP305	23.83 - 24.08	1.0000	1.0000
L38	45	CCI 6.5" x 1.25" Plate	23.83 - 24.08	1.0000	1.0000
L38	46	CCI 6" x 1" Plate	24.00 - 24.08	1.0000	1.0000
L38	47	CCI 6" x 1" Plate	24.00 - 24.08	1.0000	1.0000
L39	10	LDF5-50A(7/8)	18.83 - 23.83	1.0000	1.0000
L39	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	18.83 - 23.83	1.0000	1.0000
L39	13	HCS 6X12 6AWG(1-3/8)	18.83 - 23.83	1.0000	1.0000
L39	15	9207(5/16)	18.83 - 23.83	1.0000	1.0000
L39	32	MP3-05 (Surface Af)	18.83 - 23.83	1.0000	1.0000
L39	33	Aero MP305	18.83 - 23.83	1.0000	1.0000
L39	34	Aero MP305	18.83 - 23.83	1.0000	1.0000
L39	35	Aero MP305	18.83 - 23.83	1.0000	1.0000
L39	45	CCI 6.5" x 1.25" Plate	18.83 - 23.83	1.0000	1.0000
L40	10	LDF5-50A(7/8)	18.08 - 18.83	1.0000	1.0000
L40	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	18.08 - 18.83	1.0000	1.0000
L40	13	HCS 6X12 6AWG(1-3/8)	18.08 - 18.83	1.0000	1.0000
L40	15	9207(5/16)	18.08 - 18.83	1.0000	1.0000
L40	32	MP3-05 (Surface Af)	18.08 - 18.83	1.0000	1.0000
L40	33	Aero MP305	18.08 - 18.83	1.0000	1.0000
L40	34	Aero MP305	18.08 - 18.83	1.0000	1.0000
L40	35	Aero MP305	18.08 - 18.83	1.0000	1.0000
L40	45	CCI 6.5" x 1.25" Plate	18.08 - 18.83	1.0000	1.0000
L41	10	LDF5-50A(7/8)	17.83 - 18.08	1.0000	1.0000
L41	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	17.83 - 18.08	1.0000	1.0000
L41	13	HCS 6X12 6AWG(1-3/8)	17.83 - 18.08	1.0000	1.0000
L41	15	9207(5/16)	17.83 - 18.08	1.0000	1.0000
L41	32	MP3-05 (Surface Af)	17.83 - 18.08	1.0000	1.0000
L41	33	Aero MP305	17.83 - 18.08	1.0000	1.0000
L41	34	Aero MP305	17.83 - 18.08	1.0000	1.0000
L41	35	Aero MP305	17.83 - 18.08	1.0000	1.0000
L41	45	CCI 6.5" x 1.25" Plate	17.83 - 18.08	1.0000	1.0000
L42	10	LDF5-50A(7/8)	12.83 - 17.83	1.0000	1.0000
L42	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	12.83 - 17.83	1.0000	1.0000
L42	13	HCS 6X12 6AWG(1-3/8)	12.83 - 17.83	1.0000	1.0000
L42	15	9207(5/16)	12.83 - 17.83	1.0000	1.0000
L42	32	MP3-05 (Surface Af)	12.83 - 17.83	1.0000	1.0000
L42	33	Aero MP305	12.83 - 17.83	1.0000	1.0000
L42	34	Aero MP305	12.83 - 17.83	1.0000	1.0000
L42	35	Aero MP305	12.83 - 17.83	1.0000	1.0000
L42	45	CCI 6.5" x 1.25" Plate	12.83 - 17.83	1.0000	1.0000
L43	10	LDF5-50A(7/8)	7.83 - 12.83	1.0000	1.0000
L43	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	7.83 - 12.83	1.0000	1.0000
L43	13	HCS 6X12 6AWG(1-3/8)	7.83 - 12.83	1.0000	1.0000
L43	15	9207(5/16)	7.83 - 12.83	1.0000	1.0000
L43	32	MP3-05 (Surface Af)	7.83 - 12.83	1.0000	1.0000
L43	33	Aero MP305	7.83 - 12.83	1.0000	1.0000
L43	34	Aero MP305	7.83 - 12.83	1.0000	1.0000
L43	35	Aero MP305	7.83 - 12.83	1.0000	1.0000
L43	45	CCI 6.5" x 1.25" Plate	7.83 - 12.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	10	LDF5-50A(7/8)	2.83 - 7.83	1.0000	1.0000
L44	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	2.83 - 7.83	1.0000	1.0000
L44	13	HCS 6X12 6AWG(1-3/8)	2.83 - 7.83	1.0000	1.0000
L44	15	9207(5/16)	2.83 - 7.83	1.0000	1.0000
L44	32	MP3-05 (Surface Af)	2.83 - 7.83	1.0000	1.0000
L44	33	Aero MP305	2.83 - 7.83	1.0000	1.0000
L44	34	Aero MP305	2.83 - 7.83	1.0000	1.0000
L44	35	Aero MP305	2.83 - 7.83	1.0000	1.0000
L44	45	CCI 6.5" x 1.25" Plate	2.83 - 7.83	1.0000	1.0000
L45	10	LDF5-50A(7/8)	0.00 - 2.83	1.0000	1.0000
L45	11	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	0.00 - 2.83	1.0000	1.0000
L45	13	HCS 6X12 6AWG(1-3/8)	0.00 - 2.83	1.0000	1.0000
L45	15	9207(5/16)	0.00 - 2.83	1.0000	1.0000
L45	32	MP3-05 (Surface Af)	0.00 - 2.83	1.0000	1.0000
L45	33	Aero MP305	0.00 - 2.83	1.0000	1.0000
L45	34	Aero MP305	0.00 - 2.83	1.0000	1.0000
L45	35	Aero MP305	0.00 - 2.83	1.0000	1.0000
L45	45	CCI 6.5" x 1.25" Plate	0.00 - 2.83	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	A	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	7.471 8.656 9.556	0.088 0.158 0.237
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	B	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	7.471 8.656 9.556	0.088 0.158 0.237
APXV9ERR18-C-A20 w/ Mount Pipe (E-Per photo)	C	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	7.471 8.656 9.556	0.088 0.158 0.237
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	A	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	B	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
APXVTM14-C-120 w/ Mount Pipe (E-Per photo)	C	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
TD-RRH8X20-25 (E-Per photo)	A	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8X20-25 (E-Per photo)	B	From Leg	4.000 0.000	0.000	139.000	No Ice 1/2" Ice	4.045 4.298	1.535 1.714	0.070 0.097

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.000			1" Ice	4.557	1.901	0.128
TD-RRH8X20-25	C	From Leg	4.000	0.000	139.000	No Ice	4.045	1.535	0.070
(E-Per photo)			0.000			1/2" Ice	4.298	1.714	0.097
			1.000			1" Ice	4.557	1.901	0.128
(2) 5' x 2' Pipe Mount	A	From Leg	4.000	0.000	139.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			1.000			1" Ice	1.807	1.807	0.040
(2) 5' x 2' Pipe Mount	B	From Leg	4.000	0.000	139.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			1.000			1" Ice	1.807	1.807	0.040
(2) 5' x 2' Pipe Mount	C	From Leg	4.000	0.000	139.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			1.000			1" Ice	1.807	1.807	0.040
Miscellaneous [NA 510-1]	C	None		0.000	139.000	No Ice	6.000	6.000	0.256
(E)						1/2" Ice	8.500	8.500	0.340
						1" Ice	11.000	11.000	0.423
Platform Mount [LP 1201-1]	C	None		0.000	139.000	No Ice	23.100	23.100	2.100
(E)						1/2" Ice	26.800	26.800	2.500
						1" Ice	30.500	30.500	2.900
V									
PCS 1900MHz	A	From Leg	2.000	0.000	137.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
PCS 1900MHz	B	From Leg	2.000	0.000	137.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
PCS 1900MHz	C	From Leg	2.000	0.000	137.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
800MHz 2X50W RRH	A	From Leg	2.000	0.000	137.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			3.000			1" Ice	2.429	2.293	0.111
800MHz 2X50W RRH	B	From Leg	2.000	0.000	137.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			3.000			1" Ice	2.429	2.293	0.111
800MHz 2X50W RRH	C	From Leg	2.000	0.000	137.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			3.000			1" Ice	2.429	2.293	0.111
Side Arm Mount [SO 102-3]	C	None		0.000	137.000	No Ice	3.000	3.000	0.081
(E)						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
V									
RRUS 11-700	A	From Leg	2.000	0.000	129.000	No Ice	2.522	1.068	0.055
(E)			0.000			1/2" Ice	2.719	1.211	0.074
			1.000			1" Ice	2.923	1.361	0.097
RRUS 11-700	B	From Leg	2.000	0.000	129.000	No Ice	2.522	1.068	0.055
(E)			0.000			1/2" Ice	2.719	1.211	0.074
			1.000			1" Ice	2.923	1.361	0.097
RRUS 11-700	C	From Leg	2.000	0.000	129.000	No Ice	2.522	1.068	0.055
(E)			0.000			1/2" Ice	2.719	1.211	0.074
			1.000			1" Ice	2.923	1.361	0.097
RRUS 32	A	From Leg	2.000	0.000	129.000	No Ice	2.857	1.777	0.055
(R)			0.000			1/2" Ice	3.083	1.968	0.077
			1.000			1" Ice	3.316	2.166	0.103
RRUS 32	B	From Leg	2.000	0.000	129.000	No Ice	2.857	1.777	0.055
(R)			0.000			1/2" Ice	3.083	1.968	0.077
			1.000			1" Ice	3.316	2.166	0.103

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 32	C	From Leg	2.000	0.000	129.000	No Ice	2.857	1.777	0.055
(R)			0.000			1/2" Ice	3.083	1.968	0.077
			1.000			1" Ice	3.316	2.166	0.103
5' x 2' Pipe Mount	A	From Leg	2.000	0.000	129.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
5' x 2' Pipe Mount	B	From Leg	2.000	0.000	129.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
5' x 2' Pipe Mount	C	From Leg	2.000	0.000	129.000	No Ice	1.188	1.188	0.018
(E)			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
Side Arm Mount [SO 102-3]	C	None		0.000	129.000	No Ice	3.000	3.000	0.081
(E)						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
V									
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	128.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	128.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	128.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
(2) LGP21401	A	From Leg	4.000	0.000	128.000	No Ice	1.104	0.207	0.014
(E)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	128.000	No Ice	1.104	0.207	0.014
(E)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	128.000	No Ice	1.104	0.207	0.014
(E)			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
DC6-48-60-18-8F	A	From Leg	4.000	0.000	128.000	No Ice	0.917	0.917	0.019
(E)			0.000			1/2" Ice	1.458	1.458	0.037
			0.000			1" Ice	1.643	1.643	0.057
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.000	0.000	128.000	No Ice	9.895	8.113	0.077
			0.000			1/2" Ice	10.470	9.304	0.158
(R)			2.000			1" Ice	11.010	10.209	0.248
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.000	0.000	128.000	No Ice	9.895	8.113	0.077
			0.000			1/2" Ice	10.470	9.304	0.158
(R)			2.000			1" Ice	11.010	10.209	0.248
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.000	0.000	128.000	No Ice	9.895	8.113	0.077
			0.000			1/2" Ice	10.470	9.304	0.158
(R)			2.000			1" Ice	11.010	10.209	0.248
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	128.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	128.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	128.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
T-Arm Mount [TA 602-3]	C	None		0.000	128.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice	15.440	15.440	0.990

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	19.290	19.290	1.206
V									
V									
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	8.397 8.960	7.071 8.260	0.066 0.135
(E)			1.000			1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	8.397 8.960	7.071 8.260	0.066 0.135
(E)			1.000			1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	8.397 8.960	7.071 8.260	0.066 0.135
(E)			1.000			1" Ice	9.490	9.170	0.212
BXA-70063-4CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	4.945 5.324	3.693 4.295	0.028 0.070
(E)			1.000			1" Ice	5.712	4.913	0.118
BXA-70063-4CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	4.945 5.324	3.693 4.295	0.028 0.070
(E)			1.000			1" Ice	5.712	4.913	0.118
BXA-70063-4CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	108.000	No Ice 1/2" Ice	4.945 5.324	3.693 4.295	0.028 0.070
(E)			1.000			1" Ice	5.712	4.913	0.118
RRH2X60-700	A	From Leg	4.000	0.000	108.000	No Ice	3.500	1.816	0.060
(E)			0.000 1.000			1/2" Ice 1" Ice	3.761 4.029	2.052 2.289	0.083 0.109
RRH2X60-700	B	From Leg	4.000	0.000	108.000	No Ice	3.500	1.816	0.060
(E)			0.000 1.000			1/2" Ice 1" Ice	3.761 4.029	2.052 2.289	0.083 0.109
RRH2X60-700	C	From Leg	4.000	0.000	108.000	No Ice	3.500	1.816	0.060
(E)			0.000 1.000			1/2" Ice 1" Ice	3.761 4.029	2.052 2.289	0.083 0.109
RRH2X60-PCS	A	From Leg	4.000	0.000	108.000	No Ice	2.200	1.723	0.055
(E)			0.000 1.000			1/2" Ice 1" Ice	2.393 2.593	1.901 2.087	0.075 0.099
RRH2X60-PCS	B	From Leg	4.000	0.000	108.000	No Ice	2.200	1.723	0.055
(E)			0.000 1.000			1/2" Ice 1" Ice	2.393 2.593	1.901 2.087	0.075 0.099
RRH2X60-PCS	C	From Leg	4.000	0.000	108.000	No Ice	2.200	1.723	0.055
(E)			0.000 1.000			1/2" Ice 1" Ice	2.393 2.593	1.901 2.087	0.075 0.099
(2) DB-T1-6Z-8AB-0Z	A	From Leg	4.000	0.000	108.000	No Ice	4.800	2.000	0.044
(E)			0.000 1.000			1/2" Ice 1" Ice	5.070 5.348	2.193 2.393	0.080 0.120
Platform Mount [LP 303-1]	C	None		0.000	108.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice 1" Ice	18.870 23.080	18.870 23.080	1.481 1.713
V									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	100.000	No Ice 1/2" Ice	6.329 6.775	5.642 6.426	0.112 0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	100.000	No Ice 1/2" Ice	6.329 6.775	5.642 6.426	0.112 0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	100.000	No Ice 1/2" Ice	6.329 6.775	5.642 6.426	0.112 0.169
(E)			0.000			1" Ice	7.214	7.131	0.233
KRY 112 144/1	A	From Leg	4.000	0.000	100.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	0.509	0.301	0.019
KRY 112 144/1	B	From Leg	4.000	0.000	100.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014
			0.000			1" Ice	0.509	0.301	0.019
KRY 112 144/1	C	From Leg	4.000	0.000	100.000	No Ice	0.350	0.175	0.011
(E)			0.000			1/2" Ice	0.426	0.234	0.014
			0.000			1" Ice	0.509	0.301	0.019
APXVAARR24_43-U-NA20	A	From Leg	4.000	0.000	100.000	No Ice	20.480	11.024	0.161
w/ Mount Pipe			0.000			1/2" Ice	21.231	12.550	0.297
(P)			0.000			1" Ice	21.990	14.099	0.444
APXVAARR24_43-U-NA20	B	From Leg	4.000	0.000	100.000	No Ice	20.480	11.024	0.161
w/ Mount Pipe			0.000			1/2" Ice	21.231	12.550	0.297
(P)			0.000			1" Ice	21.990	14.099	0.444
APXVAARR24_43-U-NA20	C	From Leg	4.000	0.000	100.000	No Ice	20.480	11.024	0.161
w/ Mount Pipe			0.000			1/2" Ice	21.231	12.550	0.297
(P)			0.000			1" Ice	21.990	14.099	0.444
AIR 32 B2A/B66AA w/	A	From Leg	4.000	0.000	100.000	No Ice	6.747	6.070	0.153
Mount Pipe			0.000			1/2" Ice	7.202	6.867	0.214
(P)			0.000			1" Ice	7.648	7.583	0.282
AIR 32 B2A/B66AA w/	B	From Leg	4.000	0.000	100.000	No Ice	6.747	6.070	0.153
Mount Pipe			0.000			1/2" Ice	7.202	6.867	0.214
(P)			0.000			1" Ice	7.648	7.583	0.282
AIR 32 B2A/B66AA w/	C	From Leg	4.000	0.000	100.000	No Ice	6.747	6.070	0.153
Mount Pipe			0.000			1/2" Ice	7.202	6.867	0.214
(P)			0.000			1" Ice	7.648	7.583	0.282
RADIO 4449 B12/B71	A	From Leg	4.000	0.000	100.000	No Ice	1.650	1.300	0.075
(P)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
RADIO 4449 B12/B71	B	From Leg	4.000	0.000	100.000	No Ice	1.650	1.300	0.075
(P)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
RADIO 4449 B12/B71	C	From Leg	4.000	0.000	100.000	No Ice	1.650	1.300	0.075
(P)			0.000			1/2" Ice	1.810	1.445	0.092
			0.000			1" Ice	1.978	1.597	0.112
T-Arm Mount [TA 602-3]	C	None		0.000	100.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
V									
Pipe Mount [PM 601-3]	C	None		0.000	90.000	No Ice	4.390	4.390	0.195
(E)						1/2" Ice	5.480	5.480	0.237
						1" Ice	6.570	6.570	0.280
V									
KS24019-L112A	A	From Leg	3.000	0.000	70.000	No Ice	0.141	0.141	0.005
(E)			0.000			1/2" Ice	0.198	0.198	0.007
			2.000			1" Ice	0.262	0.262	0.009
KS24019-L112A	C	From Leg	3.000	0.000	70.000	No Ice	0.141	0.141	0.005
(E)			0.000			1/2" Ice	0.198	0.198	0.007
			2.000			1" Ice	0.262	0.262	0.009
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	70.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	70.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
V									
KS24019-L112A	B	From Leg	3.000	0.000	49.000	No Ice	0.141	0.141	0.005
(E)			0.000			1/2" Ice	0.198	0.198	0.007

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.000			1" Ice	0.262	0.262	0.009
Side Arm Mount [SO 701-1]	B	From Leg	1.500	0.000	49.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
V									
DETUNNING MOUNT	B	From Leg	1.500	0.000	135.000	No Ice	2.830	2.830	0.195
(E)			0.000			1/2" Ice	3.920	3.920	0.237
			0.000			1" Ice	5.010	5.010	0.279
DETUNNING MOUNT	B	From Leg	1.500	0.000	75.000	No Ice	2.830	2.830	0.195
(E)			0.000			1/2" Ice	3.920	3.920	0.237
			0.000			1" Ice	5.010	5.010	0.279
DETUNNING MOUNT	B	From Leg	1.500	0.000	10.000	No Ice	2.830	2.830	0.195
(E)			0.000			1/2" Ice	3.920	3.920	0.237
			0.000			1" Ice	5.010	5.010	0.279

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
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

Comb. No.	Description
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 135	Pole	Max Tension	39	0.000	0.000	-0.000
			Max. Compression	26	-11.251	-0.011	0.021
			Max. Mx	8	-4.100	-20.717	0.002
			Max. My	2	-4.125	-0.004	20.641
			Max. Vy	8	4.906	-20.717	0.002
			Max. Vx	2	-4.885	-0.004	20.641
			Max. Torque	24			0.001
L2	135 - 130	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-12.268	-0.843	-0.421
			Max. Mx	8	-4.591	-47.303	-0.236
			Max. My	14	-4.619	-0.430	-46.922
			Max. Vy	8	5.405	-47.303	-0.236
			Max. Vx	2	-5.382	-0.429	46.407
			Max. Torque	4			-0.326
L3	130 - 125	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-20.122	-0.861	0.238
			Max. Mx	8	-6.744	-88.692	-0.139
			Max. My	14	-6.789	-0.437	-88.050
			Max. Vy	8	8.910	-88.692	-0.139
			Max. Vx	2	-8.877	-0.436	87.755
			Max. Torque	4			-0.326
L4	125 - 120	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-20.813	-0.879	0.291
			Max. Mx	8	-7.116	-134.148	-0.132
			Max. My	14	-7.163	-0.444	-133.329
			Max. Vy	8	9.279	-134.148	-0.132
			Max. Vx	2	-9.243	-0.442	133.037
			Max. Torque	2			-0.281
L5	120 - 115	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.535	-0.895	0.345
			Max. Mx	8	-7.513	-181.460	-0.125
			Max. My	14	-7.562	-0.450	-180.456
			Max. Vy	8	9.655	-181.460	-0.125
			Max. Vx	2	-9.617	-0.447	180.168
			Max. Torque	2			-0.281

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	115 - 110	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-22.286	-0.908	0.400
			Max. Mx	8	-7.936	-230.665	-0.118
			Max. My	14	-7.986	-0.455	-229.466
			Max. Vy	8	10.037	-230.665	-0.118
			Max. Vx	2	-9.998	-0.452	229.182
			Max. Torque	2			-0.281
L7	110 - 105	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.435	-0.923	2.963
			Max. Mx	8	-10.895	-297.436	0.350
			Max. My	2	-10.950	-0.457	296.967
			Max. Vy	8	14.545	-297.436	0.350
			Max. Vx	2	-14.673	-0.457	296.967
			Max. Torque	22			-0.738
L8	105 - 102.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.900	-0.931	3.001
			Max. Mx	8	-11.192	-336.480	0.355
			Max. My	2	-11.248	-0.460	336.352
			Max. Vy	8	14.751	-336.480	0.355
			Max. Vx	2	-14.878	-0.460	336.352
			Max. Torque	22			-0.737
L9	102.333 - 102.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.953	-0.932	3.005
			Max. Mx	8	-11.239	-340.168	0.356
			Max. My	2	-11.295	-0.461	340.072
			Max. Vy	8	14.765	-340.168	0.356
			Max. Vx	2	-14.892	-0.461	340.072
			Max. Torque	22			-0.737
L10	102.083 - 97.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.683	-0.909	3.257
			Max. Mx	8	-14.451	-426.016	0.386
			Max. My	2	-14.551	-0.461	425.865
			Max. Vy	8	18.996	-426.016	0.386
			Max. Vx	2	-18.835	-0.461	425.865
			Max. Torque	22			-0.737
L11	97.083 - 91.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.378	-0.898	3.413
			Max. Mx	8	-14.775	-465.909	0.405
			Max. My	2	-14.888	-0.460	465.278
			Max. Vy	8	19.326	-465.909	0.405
			Max. Vx	2	-19.005	-0.460	465.278
			Max. Torque	8			0.766
L12	91.75 - 90.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.604	-0.888	3.722
			Max. Mx	8	-15.941	-549.610	0.446
			Max. My	2	-16.081	-0.457	546.947
			Max. Vy	8	20.071	-549.610	0.446
			Max. Vx	2	-19.412	-0.457	546.947
			Max. Torque	8			0.830
L13	90.75 - 85.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.028	-0.930	4.058
			Max. Mx	8	-17.158	-652.691	0.497
			Max. My	2	-17.326	-0.453	645.782
			Max. Vy	8	21.057	-652.691	0.497
			Max. Vx	2	-19.994	-0.453	645.782
			Max. Torque	8			0.868
L14	85.75 - 85.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.196	-0.933	4.086
			Max. Mx	8	-17.251	-661.481	0.502

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-17.420	-0.453	654.126
			Max. Vy	8	21.118	-661.481	0.502
			Max. Vx	2	-20.021	-0.453	654.126
			Max. Torque	8			0.872
L15	85.333 - 85.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.307	-0.935	4.104
			Max. Mx	8	-17.312	-666.764	0.505
			Max. My	2	-17.482	-0.453	659.136
			Max. Vy	8	21.158	-666.764	0.505
			Max. Vx	2	-20.042	-0.453	659.136
			Max. Torque	8			0.874
L16	85.083 - 82.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.446	-0.947	4.294
			Max. Mx	8	-17.904	-721.959	0.530
			Max. My	2	-18.087	-0.450	711.213
			Max. Vy	8	21.597	-721.959	0.530
			Max. Vx	2	-20.275	-0.450	711.213
			Max. Torque	8			0.904
L17	82.5 - 82.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.548	-0.944	4.320
			Max. Mx	8	-17.964	-727.360	0.533
			Max. My	2	-18.147	-0.450	716.284
			Max. Vy	8	21.630	-727.360	0.533
			Max. Vx	2	-20.290	-0.450	716.284
			Max. Torque	8			0.911
L18	82.25 - 77.15	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.877	-0.886	4.842
			Max. Mx	8	-19.229	-839.752	0.580
			Max. My	2	-19.432	-0.445	820.933
			Max. Vy	8	22.465	-839.752	0.580
			Max. Vx	2	-20.744	-0.445	820.933
			Max. Torque	8			1.048
L19	77.15 - 76.9167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.986	-0.882	4.867
			Max. Mx	8	-19.295	-844.995	0.583
			Max. My	2	-19.499	-0.445	825.775
			Max. Vy	8	22.499	-844.995	0.583
			Max. Vx	2	-20.760	-0.445	825.775
			Max. Torque	8			1.054
L20	76.9167 - 71.9167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.796	-1.705	4.877
			Max. Mx	8	-20.795	-960.379	0.324
			Max. My	2	-21.014	-0.973	930.737
			Max. Vy	8	23.428	-960.379	0.324
			Max. Vx	2	-21.318	-0.973	930.737
			Max. Torque	8			1.082
L21	71.9167 - 66.9167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.562	-1.137	5.730
			Max. Mx	8	-22.275	-1079.634	0.453
			Max. My	2	-22.505	-0.728	1038.867
			Max. Vy	8	24.348	-1079.634	0.453
			Max. Vx	2	-21.851	-0.728	1038.867
			Max. Torque	8			1.288
L22	66.9167 - 66.667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.686	-1.129	5.763
			Max. Mx	8	-22.350	-1085.715	0.453

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-22.579	-0.725	1044.326
			Max. Vy	8	24.382	-1085.715	0.453
			Max. Vx	2	-21.867	-0.725	1044.326
			Max. Torque	8			1.296
L23	66.667 - 66.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.818	-1.123	5.784
			Max. Mx	8	-22.411	-1091.814	0.453
			Max. My	2	-22.640	-0.721	1049.797
			Max. Vy	8	24.424	-1091.814	0.453
			Max. Vx	2	-21.887	-0.721	1049.797
			Max. Torque	8			1.298
L24	66.417 - 61.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.993	-1.083	6.045
			Max. Mx	8	-23.623	-1215.885	0.459
			Max. My	2	-23.859	-0.649	1160.312
			Max. Vy	8	25.228	-1215.885	0.459
			Max. Vx	2	-22.310	-0.649	1160.312
			Max. Torque	8			1.298
L25	61.417 - 60	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.603	-1.074	6.115
			Max. Mx	8	-23.970	-1251.771	0.461
			Max. My	2	-24.208	-0.629	1192.010
			Max. Vy	8	25.456	-1251.771	0.461
			Max. Vx	2	-22.431	-0.629	1192.010
			Max. Torque	8			1.261
L26	60 - 59.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.722	-1.067	6.132
			Max. Mx	8	-24.053	-1258.136	0.461
			Max. My	2	-24.288	-0.625	1197.620
			Max. Vy	8	25.484	-1258.136	0.461
			Max. Vx	2	-22.441	-0.625	1197.620
			Max. Torque	8			1.246
L27	59.75 - 54.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-63.099	-0.924	6.440
			Max. Mx	8	-25.426	-1387.474	0.467
			Max. My	2	-25.660	-0.553	1310.900
			Max. Vy	8	26.275	-1387.474	0.467
			Max. Vx	2	-22.862	-0.553	1310.900
			Max. Torque	8			1.246
L28	54.75 - 46.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.879	-0.840	6.659
			Max. Mx	8	-26.481	-1487.009	0.473
			Max. My	2	-26.711	-0.498	1397.198
			Max. Vy	8	26.845	-1487.009	0.473
			Max. Vx	2	-23.165	-0.498	1397.198
			Max. Torque	8			1.244
L29	46.5 - 45.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.131	-1.155	6.724
			Max. Mx	8	-29.141	-1637.567	0.399
			Max. My	2	-29.371	-0.673	1526.189
			Max. Vy	8	27.820	-1637.567	0.399
			Max. Vx	2	-23.750	-0.673	1526.189
			Max. Torque	20			-1.131
L30	45.5 - 44.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.744	-1.146	6.804
			Max. Mx	8	-29.503	-1672.436	0.416
			Max. My	2	-29.731	-0.669	1555.936
			Max. Vy	8	28.006	-1672.436	0.416
			Max. Vx	2	-23.849	-0.669	1555.936

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-1.122
L31	44.25 - 44	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.882	-1.144	6.824
			Max. Mx	8	-29.601	-1679.437	0.419
			Max. My	2	-29.825	-0.668	1561.901
			Max. Vy	8	28.031	-1679.437	0.419
			Max. Vx	2	-23.857	-0.668	1561.901
			Max. Torque	20			-1.124
L32	44 - 39	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.655	-1.107	7.196
			Max. Mx	8	-31.291	-1821.413	0.485
			Max. My	2	-31.507	-0.651	1682.239
			Max. Vy	8	28.783	-1821.413	0.485
			Max. Vx	2	-24.267	-0.651	1682.239
			Max. Torque	20			-1.157
L33	39 - 34	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-75.448	-1.067	7.562
			Max. Mx	8	-33.022	-1967.045	0.552
			Max. My	2	-33.224	-0.634	1804.553
			Max. Vy	8	29.502	-1967.045	0.552
			Max. Vx	2	-24.654	-0.634	1804.553
			Max. Torque	20			-1.190
L34	34 - 29	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.259	-1.023	7.901
			Max. Mx	8	-34.787	-2116.185	0.621
			Max. My	2	-34.970	-0.616	1928.759
			Max. Vy	8	30.189	-2116.185	0.621
			Max. Vx	2	-25.024	-0.616	1928.759
			Max. Torque	20			-1.222
L35	29 - 27.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.966	-1.012	7.986
			Max. Mx	8	-35.231	-2154.006	0.639
			Max. My	2	-35.409	-0.612	1960.100
			Max. Vy	8	30.362	-2154.006	0.639
			Max. Vx	2	-25.119	-0.612	1960.100
			Max. Torque	20			-1.230
L36	27.75 - 27.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-79.112	-1.016	8.007
			Max. Mx	8	-35.333	-2161.596	0.642
			Max. My	2	-35.507	-0.611	1966.381
			Max. Vy	8	30.383	-2161.596	0.642
			Max. Vx	2	-25.126	-0.611	1966.381
			Max. Torque	20			-1.233
L37	27.5 - 24.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-81.105	-1.070	8.289
			Max. Mx	8	-36.553	-2266.181	0.690
			Max. My	2	-36.715	-0.598	2052.699
			Max. Vy	8	30.859	-2266.181	0.690
			Max. Vx	2	-25.386	-0.598	2052.699
			Max. Torque	20			-1.272
L38	24.083 - 23.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-81.238	-1.064	8.316
			Max. Mx	8	-36.643	-2273.895	0.694
			Max. My	2	-36.801	-0.597	2059.047
			Max. Vy	8	30.880	-2273.895	0.694
			Max. Vx	2	-25.393	-0.597	2059.047
			Max. Torque	20			-1.277
L39	23.833 - 18.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-83.840	-0.935	8.798

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-38.240	-2429.872	0.765
			Max. My	2	-38.369	-0.578	2186.909
			Max. Vy	8	31.541	-2429.872	0.765
			Max. Vx	2	-25.742	-0.578	2186.909
			Max. Torque	20			-1.367
L40	18.833 - 18.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.231	-0.915	8.870
			Max. Mx	8	-38.488	-2453.549	0.775
			Max. My	2	-38.611	-0.575	2206.234
			Max. Vy	8	31.635	-2453.549	0.775
			Max. Vx	2	-25.789	-0.575	2206.234
			Max. Torque	20			-1.381
L41	18.083 - 17.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.375	-0.909	8.894
			Max. Mx	8	-38.591	-2461.458	0.779
			Max. My	2	-38.710	-0.574	2212.685
			Max. Vy	8	31.660	-2461.458	0.779
			Max. Vx	2	-25.800	-0.574	2212.685
			Max. Torque	20			-1.386
L42	17.833 - 12.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.256	-0.781	9.373
			Max. Mx	8	-40.481	-2621.425	0.852
			Max. My	2	-40.574	-0.555	2342.667
			Max. Vy	8	32.354	-2621.425	0.852
			Max. Vx	2	-26.179	-0.555	2342.667
			Max. Torque	20			-1.479
L43	12.833 - 7.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-90.507	-1.728	9.225
			Max. Mx	8	-42.643	-2785.648	0.549
			Max. My	2	-42.704	-1.187	2474.303
			Max. Vy	8	33.123	-2785.648	0.549
			Max. Vx	2	-26.633	-1.187	2474.303
			Max. Torque	20			-1.517
L44	7.833 - 2.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-93.292	-1.608	9.676
			Max. Mx	8	-44.563	-2952.876	0.625
			Max. My	2	-44.588	-1.166	2608.408
			Max. Vy	8	33.809	-2952.876	0.625
			Max. Vx	2	-27.005	-1.166	2608.408
			Max. Torque	20			-1.543
L45	2.833 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.777	-1.548	9.904
			Max. Mx	8	-45.630	-3049.152	0.669
			Max. My	2	-45.635	-1.153	2685.220
			Max. Vy	8	34.207	-3049.152	0.669
			Max. Vx	2	-27.224	-1.153	2685.220
			Max. Torque	20			-1.600

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	94.777	-10.173	-0.001

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	20	45.648	34.182	0.001
	Max. H_z	2	45.648	0.001	27.202
	Max. M_x	2	2685.220	0.001	27.202
	Max. M_z	8	3049.152	-34.182	-0.001
	Max. Torsion	8	1.600	-34.182	-0.001
	Min. Vert	11	34.236	-23.401	-13.602
	Min. H_x	8	45.648	-34.182	-0.001
	Min. H_z	14	45.648	-0.001	-27.202
	Min. M_x	14	-2683.179	-0.001	-27.202
	Min. M_z	20	-3046.162	34.182	0.001
	Min. Torsion	20	-1.600	34.182	0.001

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	38.040	0.000	0.000	-0.807	-1.192	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	45.648	-0.001	-27.202	-2685.220	-1.153	0.745
0.9 Dead+1.6 Wind 0 deg - No Ice	34.236	-0.001	-27.202	-2653.733	-0.768	0.730
1.2 Dead+1.6 Wind 30 deg - No Ice	45.648	13.562	-23.648	-2332.184	-1336.993	0.435
0.9 Dead+1.6 Wind 30 deg - No Ice	34.236	13.562	-23.648	-2304.830	-1321.083	0.426
1.2 Dead+1.6 Wind 60 deg - No Ice	45.648	28.101	-16.314	-1482.726	-2550.567	-0.758
0.9 Dead+1.6 Wind 60 deg - No Ice	34.236	28.101	-16.314	-1465.882	-2521.659	-0.760
1.2 Dead+1.6 Wind 90 deg - No Ice	45.648	34.182	0.001	-0.669	-3049.152	-1.600
0.9 Dead+1.6 Wind 90 deg - No Ice	34.236	34.182	0.001	-0.409	-3015.025	-1.593
1.2 Dead+1.6 Wind 120 deg - No Ice	45.648	23.401	13.602	1341.398	-2308.611	-0.724
0.9 Dead+1.6 Wind 120 deg - No Ice	34.236	23.401	13.602	1326.049	-2281.381	-0.712
1.2 Dead+1.6 Wind 150 deg - No Ice	45.648	13.782	24.026	2341.320	-1343.839	-0.846
0.9 Dead+1.6 Wind 150 deg - No Ice	34.236	13.782	24.026	2314.461	-1327.903	-0.831
1.2 Dead+1.6 Wind 180 deg - No Ice	45.648	0.001	27.202	2683.179	-1.839	-0.745
0.9 Dead+1.6 Wind 180 deg - No Ice	34.236	0.001	27.202	2652.225	-1.446	-0.730
1.2 Dead+1.6 Wind 210 deg - No Ice	45.648	-13.562	23.648	2330.145	1333.999	-0.443
0.9 Dead+1.6 Wind 210 deg - No Ice	34.236	-13.562	23.648	2303.323	1318.867	-0.434
1.2 Dead+1.6 Wind 240 deg - No Ice	45.648	-28.101	16.314	1480.696	2547.571	0.749
0.9 Dead+1.6 Wind 240 deg - No Ice	34.236	-28.101	16.314	1464.382	2519.442	0.751
1.2 Dead+1.6 Wind 270 deg - No Ice	45.648	-34.182	-0.001	-1.354	3046.162	1.600
0.9 Dead+1.6 Wind 270 deg -	34.236	-34.182	-0.001	-1.087	3012.812	1.594

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice 1.2 Dead+1.6 Wind 300 deg - No Ice	45.648	-23.401	-13.602	-1343.435	2305.622	0.733
0.9 Dead+1.6 Wind 300 deg - No Ice	34.236	-23.401	-13.602	-1327.554	2279.169	0.720
1.2 Dead+1.6 Wind 330 deg - No Ice	45.648	-13.782	-24.026	-2343.360	1340.849	0.855
0.9 Dead+1.6 Wind 330 deg - No Ice	34.236	-13.782	-24.026	-2315.969	1325.691	0.839
1.2 Dead+1.0 Ice+1.0 Temp	94.777	0.000	-0.000	-9.904	-1.548	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	94.777	-0.001	-6.923	-771.512	-1.376	0.329
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	94.777	3.501	-6.093	-677.231	-384.675	0.230
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	94.777	8.278	-4.796	-469.653	-794.395	-0.870
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	94.777	10.173	0.001	-9.851	-950.663	-1.341
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	94.777	6.353	3.685	385.049	-682.268	-0.261
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	94.777	3.703	6.442	670.634	-392.685	-0.341
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	94.777	0.001	6.923	751.423	-1.756	-0.329
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	94.777	-3.501	6.093	657.141	381.544	-0.230
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	94.777	-8.278	4.796	449.568	791.259	0.869
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	94.777	-10.173	-0.001	-10.230	947.529	1.341
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	94.777	-6.353	-3.685	-405.139	679.133	0.262
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	94.777	-3.703	-6.442	-690.722	389.551	0.341
Dead+Wind 0 deg - Service	38.040	-0.000	-5.820	-571.426	-1.167	0.158
Dead+Wind 30 deg - Service	38.040	2.902	-5.060	-496.386	-285.129	0.093
Dead+Wind 60 deg - Service	38.040	6.012	-3.491	-315.920	-543.281	-0.163
Dead+Wind 90 deg - Service	38.040	7.314	0.000	-0.772	-649.373	-0.344
Dead+Wind 120 deg - Service	38.040	5.007	2.910	284.510	-491.659	-0.156
Dead+Wind 150 deg - Service	38.040	2.949	5.141	497.082	-286.591	-0.181
Dead+Wind 180 deg - Service	38.040	0.000	5.820	569.735	-1.313	-0.158
Dead+Wind 210 deg - Service	38.040	-2.902	5.060	494.695	282.649	-0.093
Dead+Wind 240 deg - Service	38.040	-6.012	3.491	314.230	540.802	0.163
Dead+Wind 270 deg - Service	38.040	-7.314	-0.000	-0.918	646.894	0.344
Dead+Wind 300 deg - Service	38.040	-5.007	-2.910	-286.200	489.180	0.156
Dead+Wind 330 deg - Service	38.040	-2.949	-5.141	-498.773	284.112	0.182

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-38.040	0.000	0.000	38.040	0.000	0.000%
2	-0.001	-45.648	-27.202	0.001	45.648	27.202	0.000%
3	-0.001	-34.236	-27.202	0.001	34.236	27.202	0.000%
4	13.562	-45.648	-23.648	-13.562	45.648	23.648	0.000%
5	13.562	-34.236	-23.648	-13.562	34.236	23.648	0.000%
6	28.101	-45.648	-16.314	-28.101	45.648	16.314	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	28.101	-34.236	-16.314	-28.101	34.236	16.314	0.000%
8	34.182	-45.648	0.001	-34.182	45.648	-0.001	0.000%
9	34.182	-34.236	0.001	-34.182	34.236	-0.001	0.000%
10	23.401	-45.648	13.602	-23.401	45.648	-13.602	0.000%
11	23.401	-34.236	13.602	-23.401	34.236	-13.602	0.000%
12	13.782	-45.648	24.026	-13.782	45.648	-24.026	0.000%
13	13.782	-34.236	24.026	-13.782	34.236	-24.026	0.000%
14	0.001	-45.648	27.202	-0.001	45.648	-27.202	0.000%
15	0.001	-34.236	27.202	-0.001	34.236	-27.202	0.000%
16	-13.562	-45.648	23.648	13.562	45.648	-23.648	0.000%
17	-13.562	-34.236	23.648	13.562	34.236	-23.648	0.000%
18	-28.101	-45.648	16.314	28.101	45.648	-16.314	0.000%
19	-28.101	-34.236	16.314	28.101	34.236	-16.314	0.000%
20	-34.182	-45.648	-0.001	34.182	45.648	0.001	0.000%
21	-34.182	-34.236	-0.001	34.182	34.236	0.001	0.000%
22	-23.401	-45.648	-13.602	23.401	45.648	13.602	0.000%
23	-23.401	-34.236	-13.602	23.401	34.236	13.602	0.000%
24	-13.782	-45.648	-24.026	13.782	45.648	24.026	0.000%
25	-13.782	-34.236	-24.026	13.782	34.236	24.026	0.000%
26	0.000	-94.777	0.000	-0.000	94.777	0.000	0.000%
27	-0.001	-94.777	-6.923	0.001	94.777	6.923	0.000%
28	3.501	-94.777	-6.093	-3.501	94.777	6.093	0.000%
29	8.278	-94.777	-4.796	-8.278	94.777	4.796	0.000%
30	10.173	-94.777	0.001	-10.173	94.777	-0.001	0.000%
31	6.353	-94.777	3.685	-6.353	94.777	-3.685	0.000%
32	3.703	-94.777	6.442	-3.703	94.777	-6.442	0.000%
33	0.001	-94.777	6.923	-0.001	94.777	-6.923	0.000%
34	-3.501	-94.777	6.093	3.501	94.777	-6.093	0.000%
35	-8.278	-94.777	4.796	8.278	94.777	-4.796	0.000%
36	-10.173	-94.777	-0.001	10.173	94.777	0.001	0.000%
37	-6.353	-94.777	-3.685	6.353	94.777	3.685	0.000%
38	-3.703	-94.777	-6.442	3.703	94.777	6.442	0.000%
39	-0.000	-38.040	-5.820	0.000	38.040	5.820	0.000%
40	2.902	-38.040	-5.060	-2.902	38.040	5.060	0.000%
41	6.012	-38.040	-3.491	-6.012	38.040	3.491	0.000%
42	7.314	-38.040	0.000	-7.314	38.040	-0.000	0.000%
43	5.007	-38.040	2.910	-5.007	38.040	-2.910	0.000%
44	2.949	-38.040	5.141	-2.949	38.040	-5.141	0.000%
45	0.000	-38.040	5.820	-0.000	38.040	-5.820	0.000%
46	-2.902	-38.040	5.060	2.902	38.040	-5.060	0.000%
47	-6.012	-38.040	3.491	6.012	38.040	-3.491	0.000%
48	-7.314	-38.040	-0.000	7.314	38.040	0.000	0.000%
49	-5.007	-38.040	-2.910	5.007	38.040	2.910	0.000%
50	-2.949	-38.040	-5.141	2.949	38.040	5.141	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	0.00038554
3	Yes	5	0.00000001	0.00016373
4	Yes	7	0.00000001	0.00005688
5	Yes	6	0.00000001	0.00033304
6	Yes	7	0.00000001	0.00006224
7	Yes	6	0.00000001	0.00035910

8	Yes	5	0.00000001	0.00082733
9	Yes	5	0.00000001	0.00037539
10	Yes	6	0.00000001	0.00099774
11	Yes	6	0.00000001	0.00032581
12	Yes	7	0.00000001	0.00005760
13	Yes	6	0.00000001	0.00033723
14	Yes	5	0.00000001	0.00039547
15	Yes	5	0.00000001	0.00016874
16	Yes	7	0.00000001	0.00005645
17	Yes	6	0.00000001	0.00033089
18	Yes	7	0.00000001	0.00006040
19	Yes	6	0.00000001	0.00034841
20	Yes	5	0.00000001	0.00083903
21	Yes	5	0.00000001	0.00038091
22	Yes	7	0.00000001	0.00005743
23	Yes	6	0.00000001	0.00033692
24	Yes	7	0.00000001	0.00005581
25	Yes	6	0.00000001	0.00032664
26	Yes	5	0.00000001	0.00021523
27	Yes	7	0.00000001	0.00033062
28	Yes	7	0.00000001	0.00041980
29	Yes	7	0.00000001	0.00049045
30	Yes	7	0.00000001	0.00036937
31	Yes	7	0.00000001	0.00041117
32	Yes	7	0.00000001	0.00041207
33	Yes	7	0.00000001	0.00032024
34	Yes	7	0.00000001	0.00040256
35	Yes	7	0.00000001	0.00046420
36	Yes	7	0.00000001	0.00036692
37	Yes	7	0.00000001	0.00042525
38	Yes	7	0.00000001	0.00041962
39	Yes	4	0.00000001	0.00084281
40	Yes	5	0.00000001	0.00022108
41	Yes	5	0.00000001	0.00026171
42	Yes	5	0.00000001	0.00005905
43	Yes	5	0.00000001	0.00020807
44	Yes	5	0.00000001	0.00022873
45	Yes	4	0.00000001	0.00084038
46	Yes	5	0.00000001	0.00021496
47	Yes	5	0.00000001	0.00023959
48	Yes	5	0.00000001	0.00005882
49	Yes	5	0.00000001	0.00022693
50	Yes	5	0.00000001	0.00020983

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	21.017	42	1.388	0.002
L2	135 - 130	19.565	42	1.382	0.002
L3	130 - 125	18.127	42	1.362	0.002
L4	125 - 120	16.716	42	1.330	0.002
L5	120 - 115	15.346	42	1.285	0.002
L6	115 - 110	14.029	42	1.230	0.002
L7	110 - 105	12.773	42	1.168	0.002
L8	105 - 102.333	11.585	42	1.099	0.001
L9	102.333 - 102.083	10.982	42	1.060	0.001
L10	102.083 - 97.083	10.927	42	1.057	0.001
L11	97.083 - 91.75	9.848	42	1.003	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L12	95 - 90.75	9.416	42	0.978	0.001
L13	90.75 - 85.75	8.558	42	0.943	0.001
L14	85.75 - 85.333	7.608	42	0.871	0.001
L15	85.333 - 85.083	7.532	42	0.865	0.001
L16	85.083 - 82.5	7.487	42	0.862	0.001
L17	82.5 - 82.25	7.027	42	0.837	0.001
L18	82.25 - 77.15	6.983	42	0.833	0.001
L19	77.15 - 76.9167	6.121	42	0.781	0.001
L20	76.9167 - 71.9167	6.083	42	0.778	0.001
L21	71.9167 - 66.9167	5.296	42	0.725	0.001
L22	66.9167 - 66.667	4.567	42	0.669	0.001
L23	66.667 - 66.417	4.532	42	0.666	0.001
L24	66.417 - 61.417	4.497	42	0.663	0.001
L25	61.417 - 60	3.833	42	0.605	0.001
L26	60 - 59.75	3.656	42	0.589	0.000
L27	59.75 - 54.75	3.625	42	0.586	0.000
L28	54.75 - 46.5	3.042	42	0.528	0.000
L29	51 - 45.5	2.645	42	0.484	0.000
L30	45.5 - 44.25	2.107	42	0.446	0.000
L31	44.25 - 44	1.992	42	0.432	0.000
L32	44 - 39	1.969	42	0.429	0.000
L33	39 - 34	1.545	42	0.382	0.000
L34	34 - 29	1.170	42	0.334	0.000
L35	29 - 27.75	0.846	42	0.285	0.000
L36	27.75 - 27.5	0.773	42	0.273	0.000
L37	27.5 - 24.083	0.759	42	0.271	0.000
L38	24.083 - 23.833	0.577	42	0.238	0.000
L39	23.833 - 18.833	0.564	42	0.235	0.000
L40	18.833 - 18.083	0.348	42	0.178	0.000
L41	18.083 - 17.833	0.321	42	0.170	0.000
L42	17.833 - 12.833	0.312	42	0.168	0.000
L43	12.833 - 7.833	0.161	42	0.120	0.000
L44	7.833 - 2.833	0.060	42	0.073	0.000
L45	2.833 - 0	0.008	42	0.026	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.000	APXV9ERR18-C-A20 w/ Mount Pipe	42	20.726	1.387	0.002	21848
137.000	PCS 1900MHz 4x45W-65MHz	42	20.145	1.386	0.002	21848
135.000	DETUNNING MOUNT	42	19.565	1.382	0.002	21848
129.000	RRUS 11-700	42	17.842	1.357	0.002	10128
128.000	7770.00 w/ Mount Pipe	42	17.559	1.351	0.002	9239
108.000	(3) SBNHH-1D65B w/ Mount Pipe	42	12.289	1.142	0.002	4227
100.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	42	10.470	1.036	0.001	4957
90.000	Pipe Mount [PM 601-3]	42	8.411	0.935	0.001	4546
75.000	DETUNNING MOUNT	42	5.775	0.758	0.001	5356
70.000	KS24019-L112A	42	5.010	0.703	0.001	5151
49.000	KS24019-L112A	42	2.444	0.470	0.000	7066
10.000	DETUNNING MOUNT	42	0.098	0.094	0.000	6193

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	98.733	8	6.523	0.008
L2	135 - 130	91.925	8	6.495	0.008
L3	130 - 125	85.181	8	6.405	0.007
L4	125 - 120	78.559	8	6.256	0.007
L5	120 - 115	72.127	8	6.044	0.007
L6	115 - 110	65.940	8	5.786	0.007
L7	110 - 105	60.041	8	5.495	0.007
L8	105 - 102.333	54.459	8	5.174	0.007
L9	102.333 - 102.083	51.625	8	4.986	0.006
L10	102.083 - 97.083	51.365	8	4.974	0.006
L11	97.083 - 91.75	46.294	8	4.718	0.005
L12	95 - 90.75	44.263	8	4.603	0.005
L13	90.75 - 85.75	40.230	8	4.439	0.005
L14	85.75 - 85.333	35.763	8	4.097	0.004
L15	85.333 - 85.083	35.407	8	4.068	0.004
L16	85.083 - 82.5	35.195	8	4.057	0.004
L17	82.5 - 82.25	33.034	8	3.937	0.004
L18	82.25 - 77.15	32.828	8	3.920	0.004
L19	77.15 - 76.9167	28.776	8	3.673	0.004
L20	76.9167 - 71.9167	28.597	8	3.661	0.004
L21	71.9167 - 66.9167	24.897	8	3.408	0.003
L22	66.9167 - 66.667	21.467	8	3.145	0.003
L23	66.667 - 66.417	21.303	8	3.132	0.003
L24	66.417 - 61.417	21.140	8	3.118	0.003
L25	61.417 - 60	18.018	8	2.846	0.002
L26	60 - 59.75	17.185	8	2.769	0.002
L27	59.75 - 54.75	17.041	8	2.755	0.002
L28	54.75 - 46.5	14.300	8	2.481	0.002
L29	51 - 45.5	12.433	8	2.274	0.002
L30	45.5 - 44.25	9.903	8	2.097	0.002
L31	44.25 - 44	9.362	8	2.030	0.001
L32	44 - 39	9.256	8	2.019	0.001
L33	39 - 34	7.260	8	1.795	0.001
L34	34 - 29	5.499	8	1.569	0.001
L35	29 - 27.75	3.976	8	1.340	0.001
L36	27.75 - 27.5	3.633	8	1.284	0.001
L37	27.5 - 24.083	3.566	8	1.273	0.001
L38	24.083 - 23.833	2.710	8	1.119	0.001
L39	23.833 - 18.833	2.652	8	1.106	0.001
L40	18.833 - 18.083	1.634	8	0.838	0.001
L41	18.083 - 17.833	1.506	8	0.798	0.001
L42	17.833 - 12.833	1.464	8	0.787	0.001
L43	12.833 - 7.833	0.757	8	0.564	0.000
L44	7.833 - 2.833	0.281	8	0.344	0.000
L45	2.833 - 0	0.037	8	0.124	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.000	APXV9ERR18-C-A20 w/ Mount Pipe	8	97.369	6.520	0.008	4890

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
137.000	PCS 1900MHz 4x45W-65MHz	8	94.644	6.511	0.008	4890
135.000	DETUNNING MOUNT	8	91.925	6.495	0.008	4890
129.000	RRUS 11-700	8	83.844	6.380	0.007	2247
128.000	7770.00 w/ Mount Pipe	8	82.513	6.352	0.007	2044
108.000	(3) SBNHH-1D65B w/ Mount Pipe	8	57.768	5.376	0.007	914
100.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	49.219	4.874	0.006	1067
90.000	Pipe Mount [PM 601-3]	8	39.538	4.399	0.005	976
75.000	DETUNNING MOUNT	8	27.147	3.566	0.003	1146
70.000	KS24019-L112A	8	23.550	3.308	0.003	1102
49.000	KS24019-L112A	8	11.486	2.211	0.002	1506
10.000	DETUNNING MOUNT	8	0.460	0.439	0.000	1318

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	140 - 135 (1)	TP17.025x16x0.25	5.000	0.000	0.0	13.504	-4.100	918.797	0.004
L2	135 - 130 (2)	TP18.05x17.025x0.25	5.000	0.000	0.0	14.329	-4.591	974.931	0.005
L3	130 - 125 (3)	TP19.075x18.05x0.25	5.000	0.000	0.0	15.154	-6.744	1031.070	0.007
L4	125 - 120 (4)	TP20.099x19.075x0.25	5.000	0.000	0.0	15.979	-7.116	1087.200	0.007
L5	120 - 115 (5)	TP21.124x20.099x0.25	5.000	0.000	0.0	16.804	-7.513	1143.330	0.007
L6	115 - 110 (6)	TP22.149x21.124x0.25	5.000	0.000	0.0	17.629	-7.936	1199.470	0.007
L7	110 - 105 (7)	TP23.174x22.149x0.25	5.000	0.000	0.0	18.454	-10.895	1249.340	0.009
L8	105 - 102.333 (8)	TP23.721x23.174x0.25	2.667	0.000	0.0	18.894	-11.210	1269.490	0.009
L9	102.333 - 102.083 (9)	TP23.772x23.721x0.388	0.250	0.000	0.0	29.178	-11.257	1985.270	0.006
L10	102.083 - 97.083 (10)	TP24.797x23.772x0.375	5.000	0.000	0.0	29.489	-14.451	2006.460	0.007
L11	97.083 - 91.75 (11)	TP25.89x24.797x0.375	5.333	0.000	0.0	30.005	-14.775	2041.540	0.007
L12	91.75 - 90.75 (12)	TP25.595x24.724x0.356	4.250	0.000	0.0	28.952	-15.941	2134.070	0.007
L13	90.75 - 85.75 (13)	TP26.62x25.595x0.356	5.000	0.000	0.0	30.128	-17.158	2220.740	0.008
L14	85.75 - 85.333 (14)	TP26.706x26.62x0.356	0.417	0.000	0.0	30.226	-17.251	2227.970	0.008
L15	85.333 - 85.083 (15)	TP26.757x26.706x0.563	0.250	0.000	0.0	47.445	-17.312	3497.160	0.005
L16	85.083 - 82.5 (16)	TP27.287x26.757x0.563	2.583	0.000	0.0	48.404	-17.904	3567.860	0.005
L17	82.5 - 82.25 (17)	TP27.338x27.287x0.356	0.250	0.000	0.0	30.951	-17.964	2281.420	0.008
L18	82.25 - 77.15 (18)	TP28.383x27.337x0.55	5.100	0.000	0.0	49.293	-19.229	3633.390	0.005
L19	77.15 - 76.9167 (19)	TP28.431x28.383x0.55	0.233	0.000	0.0	49.378	-19.295	3639.630	0.005
L20	76.9167 - 71.9167 (20)	TP29.457x28.431x0.538	5.000	0.000	0.0	50.052	-20.795	3689.340	0.006
L21	71.9167 -	TP30.482x29.457x0.525	5.000	0.000	0.0	50.643	-22.275	3732.890	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	66.9167 (21)								
L22	66.9167 - 66.667 (22)	TP30.534x30.482x0.525	0.250	0.000	0.0	50.729	-22.350	3739.270	0.006
L23	66.667 - 66.417 (23)	TP30.585x30.534x0.513	0.250	0.000	0.0	49.627	-22.411	3658.000	0.006
L24	66.417 - 61.417 (24)	TP31.61x30.585x0.513	5.000	0.000	0.0	51.319	-23.623	3782.750	0.006
L25	61.417 - 60 (25)	TP31.901x31.61x0.506	1.417	0.000	0.0	51.177	-23.971	3772.290	0.006
L26	60 - 59.75 (26)	TP31.952x31.901x0.513	0.250	0.000	0.0	51.884	-24.053	3824.340	0.006
L27	59.75 - 54.75 (27)	TP32.978x31.952x0.513	5.000	0.000	0.0	53.576	-25.426	3949.080	0.006
L28	54.75 - 46.5 (28)	TP34.67x32.978x0.506	8.250	0.000	0.0	54.187	-26.481	3994.090	0.007
L29	46.5 - 45.5 (29)	TP34.25x33.122x0.55	5.500	0.000	0.0	59.682	-29.141	4399.190	0.007
L30	45.5 - 44.25 (30)	TP34.506x34.25x0.55	1.250	0.000	0.0	60.136	-29.503	4432.650	0.007
L31	44.25 - 44 (31)	TP34.557x34.506x0.675	0.250	0.000	0.0	73.643	-29.601	5428.260	0.005
L32	44 - 39 (32)	TP35.583x34.557x0.663	5.000	0.000	0.0	74.493	-31.291	5490.920	0.006
L33	39 - 34 (33)	TP36.608x35.583x0.65	5.000	0.000	0.0	75.260	-33.022	5547.420	0.006
L34	34 - 29 (34)	TP37.633x36.608x0.638	5.000	0.000	0.0	75.943	-34.787	5597.770	0.006
L35	29 - 27.75 (35)	TP37.89x37.633x0.638	1.250	0.000	0.0	76.469	-35.231	5636.550	0.006
L36	27.75 - 27.5 (36)	TP37.941x37.89x0.638	0.250	0.000	0.0	76.575	-35.333	5644.310	0.006
L37	27.5 - 24.083 (37)	TP38.642x37.941x0.638	3.417	0.000	0.0	78.013	-36.553	5750.330	0.006
L38	24.083 - 23.833 (38)	TP38.693x38.642x0.525	0.250	0.000	0.0	64.523	-36.643	4755.970	0.008
L39	23.833 - 18.833 (39)	TP39.718x38.693x0.525	5.000	0.000	0.0	66.256	-38.240	4883.730	0.008
L40	18.833 - 18.083 (40)	TP39.872x39.718x0.525	0.750	0.000	0.0	66.516	-38.488	4902.890	0.008
L41	18.083 - 17.833 (41)	TP39.923x39.872x0.638	0.250	0.000	0.0	80.644	-38.591	5944.250	0.006
L42	17.833 - 12.833 (42)	TP40.948x39.923x0.625	5.000	0.000	0.0	81.151	-40.481	5981.640	0.007
L43	12.833 - 7.833 (43)	TP41.974x40.948x0.625	5.000	0.000	0.0	83.214	-42.643	6133.730	0.007
L44	7.833 - 2.833 (44)	TP42.999x41.974x0.613	5.000	0.000	0.0	83.597	-44.563	6161.930	0.007
L45	2.833 - 0 (45)	TP43.58x42.999x0.613	2.833	0.000	0.0	84.743	-45.630	6246.380	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 135 (1)	TP17.025x16x0.25	20.717	311.837	0.066	0.000	311.837	0.000
L2	135 - 130 (2)	TP18.05x17.025x0.25	47.304	351.402	0.135	0.000	351.402	0.000
L3	130 - 125 (3)	TP19.075x18.05x0.25	88.692	393.330	0.225	0.000	393.330	0.000
L4	125 - 120 (4)	TP20.099x19.075x0.25	134.148	437.621	0.307	0.000	437.621	0.000
L5	120 - 115 (5)	TP21.124x20.099x0.25	181.460	484.273	0.375	0.000	484.273	0.000
L6	115 - 110 (6)	TP22.149x21.124x0.25	230.665	533.289	0.433	0.000	533.289	0.000
L7	110 - 105 (7)	TP23.174x22.149x0.25	297.437	581.751	0.511	0.000	581.751	0.000
L8	105 - 102.333 (8)	TP23.721x23.174x0.25	336.519	605.384	0.556	0.000	605.384	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L9	102.333 - 102.083 (9)	TP23.772x23.721x0.388	340.214	937.750	0.363	0.000	937.750	0.000
L10	102.083 - 97.083 (10)	TP24.797x23.772x0.375	426.016	990.983	0.430	0.000	990.983	0.000
L11	97.083 - 91.75 (11)	TP25.89x24.797x0.375	465.909	1026.200	0.454	0.000	1026.200	0.000
L12	91.75 - 90.75 (12)	TP25.595x24.724x0.356	549.610	1090.600	0.504	0.000	1090.600	0.000
L13	90.75 - 85.75 (13)	TP26.62x25.595x0.356	652.691	1181.633	0.552	0.000	1181.633	0.000
L14	85.75 - 85.333 (14)	TP26.706x26.62x0.356	661.481	1189.392	0.556	0.000	1189.392	0.000
L15	85.333 - 85.083 (15)	TP26.757x26.706x0.563	666.764	1841.508	0.362	0.000	1841.508	0.000
L16	85.083 - 82.5 (16)	TP27.287x26.757x0.563	721.959	1917.517	0.377	0.000	1917.517	0.000
L17	82.5 - 82.25 (17)	TP27.338x27.287x0.356	727.361	1247.525	0.583	0.000	1247.525	0.000
L18	82.25 - 77.15 (18)	TP28.383x27.337x0.55	839.750	2036.358	0.412	0.000	2036.358	0.000
L19	77.15 - 76.9167 (19)	TP28.431x28.383x0.55	844.992	2043.442	0.414	0.000	2043.442	0.000
L20	76.9167 - 71.9167 (20)	TP29.457x28.431x0.538	960.375	2150.867	0.447	0.000	2150.867	0.000
L21	71.9167 - 66.9167 (21)	TP30.482x29.457x0.525	1079.633	2256.725	0.478	0.000	2256.725	0.000
L22	66.9167 - 66.667 (22)	TP30.534x30.482x0.525	1085.717	2264.517	0.479	0.000	2264.517	0.000
L23	66.667 - 66.417 (23)	TP30.585x30.534x0.513	1091.817	2220.992	0.492	0.000	2220.992	0.000
L24	66.417 - 61.417 (24)	TP31.61x30.585x0.513	1215.883	2376.375	0.512	0.000	2376.375	0.000
L25	61.417 - 60 (25)	TP31.901x31.61x0.506	1251.775	2393.258	0.523	0.000	2393.258	0.000
L26	60 - 59.75 (26)	TP31.952x31.901x0.513	1258.133	2429.342	0.518	0.000	2429.342	0.000
L27	59.75 - 54.75 (27)	TP32.978x31.952x0.513	1387.475	2591.725	0.535	0.000	2591.725	0.000
L28	54.75 - 46.5 (28)	TP34.67x32.978x0.506	1487.008	2685.342	0.554	0.000	2685.342	0.000
L29	46.5 - 45.5 (29)	TP34.25x33.122x0.55	1637.567	2995.333	0.547	0.000	2995.333	0.000
L30	45.5 - 44.25 (30)	TP34.506x34.25x0.55	1672.433	3041.442	0.550	0.000	3041.442	0.000
L31	44.25 - 44 (31)	TP34.557x34.506x0.675	1679.433	3702.908	0.454	0.000	3702.908	0.000
L32	44 - 39 (32)	TP35.583x34.557x0.663	1821.417	3863.975	0.471	0.000	3863.975	0.000
L33	39 - 34 (33)	TP36.608x35.583x0.65	1967.042	4023.292	0.489	0.000	4023.292	0.000
L34	34 - 29 (34)	TP37.633x36.608x0.638	2116.183	4180.442	0.506	0.000	4180.442	0.000
L35	29 - 27.75 (35)	TP37.89x37.633x0.638	2154.008	4239.067	0.508	0.000	4239.067	0.000
L36	27.75 - 27.5 (36)	TP37.941x37.89x0.638	2161.600	4250.842	0.509	0.000	4250.842	0.000
L37	27.5 - 24.083 (37)	TP38.642x37.941x0.638	2266.183	4413.400	0.513	0.000	4413.400	0.000
L38	24.083 - 23.833 (38)	TP38.693x38.642x0.525	2273.892	3676.875	0.618	0.000	3676.875	0.000
L39	23.833 - 18.833 (39)	TP39.718x38.693x0.525	2429.875	3878.442	0.627	0.000	3878.442	0.000
L40	18.833 - 18.083 (40)	TP39.872x39.718x0.525	2453.550	3909.142	0.628	0.000	3909.142	0.000
L41	18.083 - 17.833 (41)	TP39.923x39.872x0.638	2461.458	4718.625	0.522	0.000	4718.625	0.000
L42	17.833 -	TP40.948x39.923x0.625	2621.425	4877.233	0.537	0.000	4877.233	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	12.833 (42)							
L43	12.833 - 7.833 (43)	TP41.974x40.948x0.625	2785.650	5130.350	0.543	0.000	5130.350	0.000
L44	7.833 - 2.833 (44)	TP42.999x41.974x0.613	2952.875	5286.750	0.559	0.000	5286.750	0.000
L45	2.833 - 0 (45)	TP43.58x42.999x0.613	3049.150	5433.708	0.561	0.000	5433.708	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 135 (1)	TP17.025x16x0.25	4.906	459.398	0.011	0.000	635.489	0.000
L2	135 - 130 (2)	TP18.05x17.025x0.25	5.405	487.466	0.011	0.164	715.914	0.000
L3	130 - 125 (3)	TP19.075x18.05x0.25	8.910	515.533	0.017	0.003	801.129	0.000
L4	125 - 120 (4)	TP20.099x19.075x0.25	9.279	543.600	0.017	0.004	891.133	0.000
L5	120 - 115 (5)	TP21.124x20.099x0.25	9.655	571.667	0.017	0.004	985.933	0.000
L6	115 - 110 (6)	TP22.149x21.124x0.25	10.037	599.734	0.017	0.004	1085.517	0.000
L7	110 - 105 (7)	TP23.174x22.149x0.25	14.545	624.669	0.023	0.686	1183.958	0.001
L8	105 - 102.333 (8)	TP23.721x23.174x0.25	14.780	634.746	0.023	0.458	1231.950	0.000
L9	102.333 - 102.083 (9)	TP23.772x23.721x0.388	14.793	992.636	0.015	0.457	1912.075	0.000
L10	102.083 - 97.083 (10)	TP24.797x23.772x0.375	18.996	1003.230	0.019	0.732	2019.817	0.000
L11	97.083 - 91.75 (11)	TP25.89x24.797x0.375	19.326	1020.770	0.019	0.766	2091.417	0.000
L12	91.75 - 90.75 (12)	TP25.595x24.724x0.356	20.071	1067.030	0.019	0.830	2221.942	0.000
L13	90.75 - 85.75 (13)	TP26.62x25.595x0.356	21.057	1110.370	0.019	0.868	2406.958	0.000
L14	85.75 - 85.333 (14)	TP26.706x26.62x0.356	21.118	1113.990	0.019	0.872	2422.725	0.000
L15	85.333 - 85.083 (15)	TP26.757x26.706x0.563	21.158	1748.580	0.012	0.874	3760.942	0.000
L16	85.083 - 82.5 (16)	TP27.287x26.757x0.563	21.597	1783.930	0.012	0.904	3915.625	0.000
L17	82.5 - 82.25 (17)	TP27.338x27.287x0.356	21.630	1140.710	0.019	0.911	2540.875	0.000
L18	82.25 - 77.15 (18)	TP28.383x27.337x0.55	22.465	1816.690	0.012	1.048	4156.550	0.000
L19	77.15 - 76.9167 (19)	TP28.431x28.383x0.55	22.499	1819.820	0.012	1.054	4170.950	0.000
L20	76.9167 - 71.9167 (20)	TP29.457x28.431x0.538	23.428	1844.670	0.013	1.044	4388.575	0.000
L21	71.9167 - 66.9167 (21)	TP30.482x29.457x0.525	24.348	1866.440	0.013	1.288	4602.950	0.000
L22	66.9167 - 66.667 (22)	TP30.534x30.482x0.525	24.382	1869.640	0.013	1.296	4618.792	0.000
L23	66.667 - 66.417 (23)	TP30.585x30.534x0.513	24.424	1829.000	0.013	1.298	4529.342	0.000
L24	66.417 - 61.417 (24)	TP31.61x30.585x0.513	25.228	1891.370	0.013	1.268	4845.308	0.000
L25	61.417 - 60 (25)	TP31.901x31.61x0.506	25.456	1886.140	0.013	1.261	4879.167	0.000
L26	60 - 59.75 (26)	TP31.952x31.901x0.513	25.484	1912.170	0.013	1.246	4953.017	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L27	59.75 - 54.75 (27)	TP32.978x31.952x0.513	26.275	1974.540	0.013	1.244	5283.192	0.000
L28	54.75 - 46.5 (28)	TP34.67x32.978x0.506	26.845	1997.050	0.013	1.236	5473.017	0.000
L29	46.5 - 45.5 (29)	TP34.25x33.122x0.55	27.820	2199.600	0.013	1.131	6107.008	0.000
L30	45.5 - 44.25 (30)	TP34.506x34.25x0.55	28.006	2216.330	0.013	1.122	6200.767	0.000
L31	44.25 - 44 (31)	TP34.557x34.506x0.675	28.032	2714.130	0.010	1.124	7558.650	0.000
L32	44 - 39 (32)	TP35.583x34.557x0.663	28.783	2745.460	0.010	1.157	7884.967	0.000
L33	39 - 34 (33)	TP36.608x35.583x0.65	29.502	2773.710	0.011	1.190	8207.633	0.000
L34	34 - 29 (34)	TP37.633x36.608x0.638	30.189	2798.880	0.011	1.222	8525.833	0.000
L35	29 - 27.75 (35)	TP37.89x37.633x0.638	30.362	2818.280	0.011	1.230	8645.083	0.000
L36	27.75 - 27.5 (36)	TP37.941x37.89x0.638	30.383	2822.150	0.011	1.232	8669.000	0.000
L37	27.5 - 24.083 (37)	TP38.642x37.941x0.638	30.859	2875.160	0.011	1.272	8999.583	0.000
L38	24.083 - 23.833 (38)	TP38.693x38.642x0.525	30.880	2377.990	0.013	1.277	7490.183	0.000
L39	23.833 - 18.833 (39)	TP39.718x38.693x0.525	31.541	2441.860	0.013	1.367	7899.858	0.000
L40	18.833 - 18.083 (40)	TP39.872x39.718x0.525	31.635	2451.450	0.013	1.381	7962.250	0.000
L41	18.083 - 17.833 (41)	TP39.923x39.872x0.638	31.660	2972.120	0.011	1.386	9620.250	0.000
L42	17.833 - 12.833 (42)	TP40.948x39.923x0.625	32.355	2990.820	0.011	1.479	9941.250	0.000
L43	12.833 - 7.833 (43)	TP41.974x40.948x0.625	33.123	3066.870	0.011	1.445	10455.833	0.000
L44	7.833 - 2.833 (44)	TP42.999x41.974x0.613	33.809	3080.960	0.011	1.543	10772.167	0.000
L45	2.833 - 0 (45)	TP43.58x42.999x0.613	34.207	3123.190	0.011	1.600	11070.917	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 135 (1)	0.004	0.066	0.000	0.011	0.000	0.071 ✔	1.000	4.8.2 ✔
L2	135 - 130 (2)	0.005	0.135	0.000	0.011	0.000	0.139 ✔	1.000	4.8.2 ✔
L3	130 - 125 (3)	0.007	0.225	0.000	0.017	0.000	0.232 ✔	1.000	4.8.2 ✔
L4	125 - 120 (4)	0.007	0.307	0.000	0.017	0.000	0.313 ✔	1.000	4.8.2 ✔
L5	120 - 115 (5)	0.007	0.375	0.000	0.017	0.000	0.382 ✔	1.000	4.8.2 ✔
L6	115 - 110 (6)	0.007	0.433	0.000	0.017	0.000	0.439 ✔	1.000	4.8.2 ✔
L7	110 - 105 (7)	0.009	0.511	0.000	0.023	0.001	0.521 ✔	1.000	4.8.2 ✔
L8	105 - 102.333 (8)	0.009	0.556	0.000	0.023	0.000	0.565	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L9	102.333 - 102.083 (9)	0.006	0.363	0.000	0.015	0.000	0.369	1.000	4.8.2
L10	102.083 - 97.083 (10)	0.007	0.430	0.000	0.019	0.000	0.437	1.000	4.8.2
L11	97.083 - 91.75 (11)	0.007	0.454	0.000	0.019	0.000	0.462	1.000	4.8.2
L12	91.75 - 90.75 (12)	0.007	0.504	0.000	0.019	0.000	0.512	1.000	4.8.2
L13	90.75 - 85.75 (13)	0.008	0.552	0.000	0.019	0.000	0.560	1.000	4.8.2
L14	85.75 - 85.333 (14)	0.008	0.556	0.000	0.019	0.000	0.564	1.000	4.8.2
L15	85.333 - 85.083 (15)	0.005	0.362	0.000	0.012	0.000	0.367	1.000	4.8.2
L16	85.083 - 82.5 (16)	0.005	0.377	0.000	0.012	0.000	0.382	1.000	4.8.2
L17	82.5 - 82.25 (17)	0.008	0.583	0.000	0.019	0.000	0.591	1.000	4.8.2
L18	82.25 - 77.15 (18)	0.005	0.412	0.000	0.012	0.000	0.418	1.000	4.8.2
L19	77.15 - 76.9167 (19)	0.005	0.414	0.000	0.012	0.000	0.419	1.000	4.8.2
L20	76.9167 - 71.9167 (20)	0.006	0.447	0.000	0.013	0.000	0.452	1.000	4.8.2
L21	71.9167 - 66.9167 (21)	0.006	0.478	0.000	0.013	0.000	0.485	1.000	4.8.2
L22	66.9167 - 66.667 (22)	0.006	0.479	0.000	0.013	0.000	0.486	1.000	4.8.2
L23	66.667 - 66.417 (23)	0.006	0.492	0.000	0.013	0.000	0.498	1.000	4.8.2
L24	66.417 - 61.417 (24)	0.006	0.512	0.000	0.013	0.000	0.518	1.000	4.8.2
L25	61.417 - 60 (25)	0.006	0.523	0.000	0.013	0.000	0.530	1.000	4.8.2
L26	60 - 59.75 (26)	0.006	0.518	0.000	0.013	0.000	0.524	1.000	4.8.2
L27	59.75 - 54.75 (27)	0.006	0.535	0.000	0.013	0.000	0.542	1.000	4.8.2
L28	54.75 - 46.5 (28)	0.007	0.554	0.000	0.013	0.000	0.561	1.000	4.8.2
L29	46.5 - 45.5 (29)	0.007	0.547	0.000	0.013	0.000	0.553	1.000	4.8.2
L30	45.5 - 44.25 (30)	0.007	0.550	0.000	0.013	0.000	0.557	1.000	4.8.2
L31	44.25 - 44 (31)	0.005	0.454	0.000	0.010	0.000	0.459	1.000	4.8.2
L32	44 - 39 (32)	0.006	0.471	0.000	0.010	0.000	0.477	1.000	4.8.2
L33	39 - 34 (33)	0.006	0.489	0.000	0.011	0.000	0.495	1.000	4.8.2
L34	34 - 29 (34)	0.006	0.506	0.000	0.011	0.000	0.513	1.000	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L35	29 - 27.75 (35)	0.006	0.508	0.000	0.011	0.000	0.515	1.000	4.8.2
L36	27.75 - 27.5 (36)	0.006	0.509	0.000	0.011	0.000	0.515	1.000	4.8.2
L37	27.5 - 24.083 (37)	0.006	0.513	0.000	0.011	0.000	0.520	1.000	4.8.2
L38	24.083 - 23.833 (38)	0.008	0.618	0.000	0.013	0.000	0.626	1.000	4.8.2
L39	23.833 - 18.833 (39)	0.008	0.627	0.000	0.013	0.000	0.635	1.000	4.8.2
L40	18.833 - 18.083 (40)	0.008	0.628	0.000	0.013	0.000	0.636	1.000	4.8.2
L41	18.083 - 17.833 (41)	0.006	0.522	0.000	0.011	0.000	0.528	1.000	4.8.2
L42	17.833 - 12.833 (42)	0.007	0.537	0.000	0.011	0.000	0.544	1.000	4.8.2
L43	12.833 - 7.833 (43)	0.007	0.543	0.000	0.011	0.000	0.550	1.000	4.8.2
L44	7.833 - 2.833 (44)	0.007	0.559	0.000	0.011	0.000	0.566	1.000	4.8.2
L45	2.833 - 0 (45)	0.007	0.561	0.000	0.011	0.000	0.569	1.000	4.8.2

Section Capacity Table

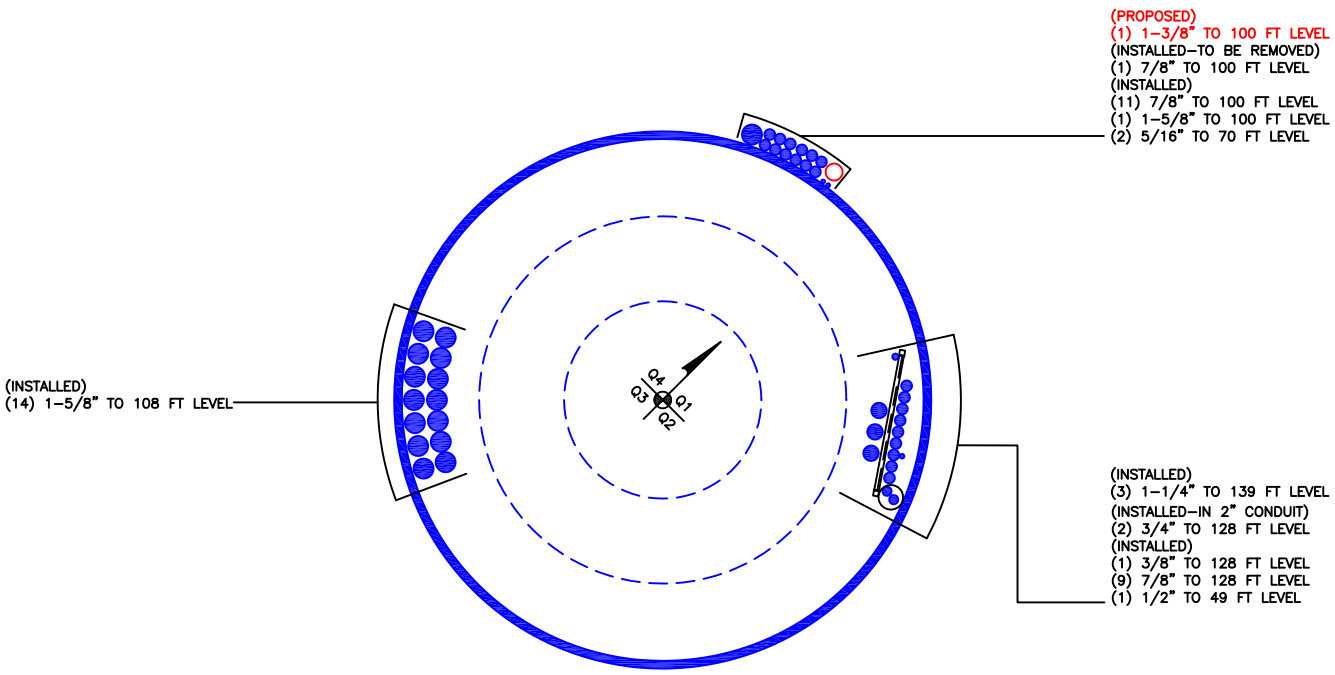
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 135	Pole	TP17.025x16x0.25	1	-4.100	918.797	**	**
L2	135 - 130	Pole	TP18.05x17.025x0.25	2	-4.591	974.931	**	**
L3	130 - 125	Pole	TP19.075x18.05x0.25	3	-6.744	1031.070	**	**
L4	125 - 120	Pole	TP20.099x19.075x0.25	4	-7.116	1087.200	**	**
L5	120 - 115	Pole	TP21.124x20.099x0.25	5	-7.513	1143.330	**	**
L6	115 - 110	Pole	TP22.149x21.124x0.25	6	-7.936	1199.470	**	**
L7	110 - 105	Pole	TP23.174x22.149x0.25	7	-10.895	1249.340	**	**
L8	105 - 102.333	Pole	TP23.721x23.174x0.25	8	-11.210	1269.490	**	**
L9	102.333 - 102.083	Pole	TP23.772x23.721x0.388	9	-11.257	1985.270	**	**
L10	102.083 - 97.083	Pole	TP24.797x23.772x0.375	10	-14.451	2006.460	**	**
L11	97.083 - 91.75	Pole	TP25.89x24.797x0.375	11	-14.775	2041.540	**	**
L12	91.75 - 90.75	Pole	TP25.595x24.724x0.356	12	-15.941	2134.070	**	**
L13	90.75 - 85.75	Pole	TP26.62x25.595x0.356	13	-17.158	2220.740	**	**
L14	85.75 - 85.333	Pole	TP26.706x26.62x0.356	14	-17.251	2227.970	**	**
L15	85.333 - 85.083	Pole	TP26.757x26.706x0.563	15	-17.312	3497.160	**	**
L16	85.083 - 82.5	Pole	TP27.287x26.757x0.563	16	-17.904	3567.860	**	**
L17	82.5 - 82.25	Pole	TP27.338x27.287x0.356	17	-17.964	2281.420	**	**
L18	82.25 - 77.15	Pole	TP28.383x27.337x0.55	18	-19.229	3633.390	**	**
L19	77.15 - 76.9167	Pole	TP28.431x28.383x0.55	19	-19.295	3639.630	**	**
L20	76.9167 - 71.9167	Pole	TP29.457x28.431x0.538	20	-20.795	3689.340	**	**

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L21	71.9167 - 66.9167	Pole	TP30.482x29.457x0.525	21	-22.275	3732.890	**	**
L22	66.9167 - 66.667	Pole	TP30.534x30.482x0.525	22	-22.350	3739.270	**	**
L23	66.667 - 66.417	Pole	TP30.585x30.534x0.513	23	-22.411	3658.000	**	**
L24	66.417 - 61.417	Pole	TP31.61x30.585x0.513	24	-23.623	3782.750	**	**
L25	61.417 - 60	Pole	TP31.901x31.61x0.506	25	-23.971	3772.290	**	**
L26	60 - 59.75	Pole	TP31.952x31.901x0.513	26	-24.053	3824.340	**	**
L27	59.75 - 54.75	Pole	TP32.978x31.952x0.513	27	-25.426	3949.080	**	**
L28	54.75 - 46.5	Pole	TP34.67x32.978x0.506	28	-26.481	3994.090	**	**
L29	46.5 - 45.5	Pole	TP34.25x33.122x0.55	29	-29.141	4399.190	**	**
L30	45.5 - 44.25	Pole	TP34.506x34.25x0.55	30	-29.503	4432.650	**	**
L31	44.25 - 44	Pole	TP34.557x34.506x0.675	31	-29.601	5428.260	**	**
L32	44 - 39	Pole	TP35.583x34.557x0.663	32	-31.291	5490.920	**	**
L33	39 - 34	Pole	TP36.608x35.583x0.65	33	-33.022	5547.420	**	**
L34	34 - 29	Pole	TP37.633x36.608x0.638	34	-34.787	5597.770	**	**
L35	29 - 27.75	Pole	TP37.89x37.633x0.638	35	-35.231	5636.550	**	**
L36	27.75 - 27.5	Pole	TP37.941x37.89x0.638	36	-35.333	5644.310	**	**
L37	27.5 - 24.083	Pole	TP38.642x37.941x0.638	37	-36.553	5750.330	**	**
L38	24.083 - 23.833	Pole	TP38.693x38.642x0.525	38	-36.643	4755.970	**	**
L39	23.833 - 18.833	Pole	TP39.718x38.693x0.525	39	-38.240	4883.730	**	**
L40	18.833 - 18.083	Pole	TP39.872x39.718x0.525	40	-38.488	4902.890	**	**
L41	18.083 - 17.833	Pole	TP39.923x39.872x0.638	41	-38.591	5944.250	**	**
L42	17.833 - 12.833	Pole	TP40.948x39.923x0.625	42	-40.481	5981.640	**	**
L43	12.833 - 7.833	Pole	TP41.974x40.948x0.625	43	-42.643	6133.730	**	**
L44	7.833 - 2.833	Pole	TP42.999x41.974x0.613	44	-44.563	6161.930	**	**
L45	2.833 - 0	Pole	TP43.58x42.999x0.613	45	-45.630	6246.380	**	**
						Summary		
						Pole (L40)	**	**
						RATING =	**	**

** Check Additional Calculations

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876335

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876335

Work Order: 1606960

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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	140	48.25	3.25	12	16	25.89	0.25	Auto	A607-60
2	95	17.8333	0	12	24.72	28.38	0.3125	Auto	A607-65
3	77.1667	30.6667	4.5	12	28.38	34.67	0.3125	Auto	A607-65
4	51	51	0	12	33.12	43.58	0.375	Auto	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	0	18.083	channel	MP3-05 (1.1875in)	4	E				E			E		E		
2	18.083	24.083	channel	MP3-05 (1.1875in)	3	E				E				E			
3	24.083	44.25	channel	MP3-05 (1.1875in)	3	E				E				E			
4	44.25	66.667	channel	MP3-05 (1.1875in)	3		E				E				E		
5	66.667	77.1667	channel	MP3-03 (1.1875in)	4		E	E			E				E		
6	77.1667	85.333	channel	MP3-03 (1.1875in)	3			E				E				E	
7	94.667	102.333	channel	MP3-03 (1.1875in)	3				E				E				E
8	0	27.75	plate	CCI-SFP-065125	1						E						
9	24.083	44.25	plate	CCI-SFP-060100	2			E				E					
10	49	60	plate	CCI-SFP-060100	1				E								
11	66.667	82.5	plate	CCI-SFP-060100	2				E				E				
12	82.5	93	plate	CCI-SFP-060100	2					E				E			
13																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
2	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
3	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
4	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	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
6	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
7	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
8	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
9	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
10	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
11	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
12	6	1	6	0.5	24.000	24.000	16.000	4.750	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	140 - 135	5		12	16.000	17.025	0.25	A607-60	1.000
2	135 - 130	5		12	17.025	18.050	0.25	A607-60	1.000
3	130 - 125	5		12	18.050	19.075	0.25	A607-60	1.000
4	125 - 120	5		12	19.075	20.099	0.25	A607-60	1.000
5	120 - 115	5		12	20.099	21.124	0.25	A607-60	1.000
6	115 - 110	5		12	21.124	22.149	0.25	A607-60	1.000
7	110 - 105	5		12	22.149	23.174	0.25	A607-60	1.000
8	105 - 102.333	2.667		12	23.174	23.721	0.25	A607-60	1.000
9	102.333 - 102.083	0.25		12	23.721	23.772	0.3875	A607-60	0.950
10	102.083 - 97.083	5		12	23.772	24.797	0.375	A607-60	0.968
11	97.083 - 95	5.333	3.25	12	24.797	25.890	0.375	A607-60	0.962
12	95 - 90.75	4.25		12	24.724	25.595	0.35625	A607-65	1.294
13	90.75 - 85.75	5		12	25.595	26.620	0.35625	A607-65	1.278
14	85.75 - 85.333	0.417		12	26.620	26.706	0.35625	A607-65	1.276
15	85.333 - 85.083	0.25		12	26.706	26.757	0.5625	A607-65	0.999
16	85.083 - 82.5	2.583		12	26.757	27.287	0.5625	A607-65	0.990
17	82.5 - 82.25	0.25	0	12	27.287	27.338	0.35625	A607-65	1.267
18	82.25 - 77.15	5.1		12	27.337	28.383	0.55	A607-65	1.054
19	77.15 - 76.9167	0.2333		12	28.383	28.431	0.55	A607-65	1.053
20	76.9167 - 71.9167	5		12	28.431	29.457	0.5375	A607-65	1.060
21	71.9167 - 66.9167	5		12	29.457	30.482	0.525	A607-65	1.068
22	66.9167 - 66.667	0.2497		12	30.482	30.534	0.525	A607-65	1.067
23	66.667 - 66.417	0.25		12	30.534	30.585	0.5125	A607-65	0.956
24	66.417 - 61.417	5		12	30.585	31.610	0.5125	A607-65	0.944
25	61.417 - 60	1.417		12	31.610	31.901	0.50625	A607-65	0.953
26	60 - 59.75	0.25		12	31.901	31.952	0.5125	A607-65	1.057
27	59.75 - 54.75	5		12	31.952	32.978	0.5125	A607-65	1.042
28	54.75 - 51	8.25	4.5	12	32.978	34.670	0.50625	A607-65	1.045
29	51 - 45.5	5.5		12	33.122	34.250	0.55	A607-65	0.970
30	45.5 - 44.25	1.25		12	34.250	34.506	0.55	A607-65	0.968
31	44.25 - 44	0.25		12	34.506	34.557	0.675	A607-65	0.954
32	44 - 39	5		12	34.557	35.583	0.6625	A607-65	0.960
33	39 - 34	5		12	35.583	36.608	0.65	A607-65	0.967
34	34 - 29	5		12	36.608	37.633	0.6375	A607-65	0.974
35	29 - 27.75	1.25		12	37.633	37.890	0.6375	A607-65	0.972
36	27.75 - 27.5	0.25		12	37.890	37.941	0.6375	A607-65	0.971
37	27.5 - 24.083	3.417		12	37.941	38.642	0.6375	A607-65	0.964
38	24.083 - 23.833	0.25		12	38.642	38.693	0.525	A607-65	0.980
39	23.833 - 18.833	5		12	38.693	39.718	0.525	A607-65	0.973
40	18.833 - 18.083	0.75		12	39.718	39.872	0.525	A607-65	0.972
41	18.083 - 17.833	0.25		12	39.872	39.923	0.6375	A607-65	0.974
42	17.833 - 12.833	5		12	39.923	40.948	0.625	A607-65	0.983
43	12.833 - 7.833	5		12	40.948	41.974	0.625	A607-65	0.973
44	7.833 - 2.833	5		12	41.974	42.999	0.6125	A607-65	0.984
45	2.833 - 0	2.833		12	42.999	43.580	0.6125	A607-65	0.979

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	4.10	20.72	4.91
2	135 - 130	4.59	47.30	5.40
3	130 - 125	6.74	88.69	8.91
4	125 - 120	7.12	134.15	9.28
5	120 - 115	7.51	181.46	9.65
6	115 - 110	7.94	230.67	10.04
7	110 - 105	10.89	297.44	14.54
8	105 - 102.333	11.21	336.52	14.78
9	102.333 - 102.083	11.26	340.21	14.79
10	102.083 - 97.083	14.45	426.02	19.00
11	97.083 - 95	14.77	465.91	19.33
12	95 - 90.75	15.94	549.61	20.07
13	90.75 - 85.75	17.16	652.69	21.06
14	85.75 - 85.333	17.25	661.48	21.12
15	85.333 - 85.083	17.31	666.76	21.16
16	85.083 - 82.5	17.90	721.96	21.60
17	82.5 - 82.25	17.96	727.36	21.63
18	82.25 - 77.15	19.23	839.75	22.47
19	77.15 - 76.9167	19.30	845.00	22.50
20	76.9167 - 71.9167	20.80	960.38	23.43
21	71.9167 - 66.9167	22.27	1079.63	24.35
22	66.9167 - 66.667	22.35	1085.72	24.38
23	66.667 - 66.417	22.41	1091.81	24.42
24	66.417 - 61.417	23.62	1215.88	25.23
25	61.417 - 60	23.97	1251.77	25.46
26	60 - 59.75	24.05	1258.14	25.48
27	59.75 - 54.75	25.43	1387.47	26.28
28	54.75 - 51	26.48	1487.01	26.84
29	51 - 45.5	29.14	1637.57	27.82
30	45.5 - 44.25	29.50	1672.44	28.01
31	44.25 - 44	29.60	1679.44	28.03
32	44 - 39	31.29	1821.41	28.78
33	39 - 34	33.02	1967.04	29.50
34	34 - 29	34.79	2116.19	30.19
35	29 - 27.75	35.23	2154.01	30.36
36	27.75 - 27.5	35.33	2161.60	30.38
37	27.5 - 24.083	36.55	2266.18	30.86
38	24.083 - 23.833	36.64	2273.89	30.88
39	23.833 - 18.833	38.24	2429.87	31.54
40	18.833 - 18.083	38.49	2453.55	31.63
41	18.083 - 17.833	38.59	2461.46	31.66
42	17.833 - 12.833	40.48	2621.43	32.35
43	12.833 - 7.833	42.64	2785.65	33.12
44	7.833 - 2.833	44.56	2952.88	33.81
45	2.833 - 0	45.63	3049.15	34.21

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP17.025x16x0.25	Pole	7.1%	Pass
135 - 130	Pole	TP18.05x17.025x0.25	Pole	13.9%	Pass
130 - 125	Pole	TP19.075x18.05x0.25	Pole	23.2%	Pass
125 - 120	Pole	TP20.099x19.075x0.25	Pole	31.2%	Pass
120 - 115	Pole	TP21.124x20.099x0.25	Pole	38.1%	Pass
115 - 110	Pole	TP22.149x21.124x0.25	Pole	43.8%	Pass
110 - 105	Pole	TP23.174x22.149x0.25	Pole	51.9%	Pass
105 - 102.33	Pole	TP23.721x23.174x0.25	Pole	56.4%	Pass
102.33 - 102.08	Pole + Reinf.	TP23.772x23.721x0.3875	Reinf. 7 Tension Rupture	51.3%	Pass
102.08 - 97.08	Pole + Reinf.	TP24.797x23.772x0.375	Reinf. 7 Tension Rupture	59.9%	Pass
97.08 - 95	Pole + Reinf.	TP25.89x24.797x0.375	Reinf. 7 Tension Rupture	63.5%	Pass
95 - 90.75	Pole + Reinf.	TP25.595x24.724x0.3563	Pole	55.5%	Pass
90.75 - 85.75	Pole + Reinf.	TP26.62x25.595x0.3563	Pole	60.9%	Pass
85.75 - 85.33	Pole + Reinf.	TP26.706x26.62x0.3563	Pole	61.4%	Pass
85.33 - 85.08	Pole + Reinf.	TP26.757x26.706x0.5625	Reinf. 6 Tension Rupture	55.7%	Pass
85.08 - 82.5	Pole + Reinf.	TP27.287x26.757x0.5625	Reinf. 6 Tension Rupture	58.4%	Pass
82.5 - 82.25	Pole + Reinf.	TP27.338x27.287x0.3563	Pole	64.4%	Pass
82.25 - 77.15	Pole + Reinf.	TP28.383x27.337x0.55	Reinf. 5 Tension Rupture	63.4%	Pass
77.15 - 76.92	Pole + Reinf.	TP28.431x28.383x0.55	Reinf. 5 Tension Rupture	63.6%	Pass
76.92 - 71.92	Pole + Reinf.	TP29.457x28.431x0.5375	Reinf. 5 Tension Rupture	68.1%	Pass
71.92 - 66.92	Pole + Reinf.	TP30.482x29.457x0.525	Reinf. 5 Tension Rupture	72.2%	Pass
66.92 - 66.67	Pole + Reinf.	TP30.534x30.482x0.525	Reinf. 5 Tension Rupture	72.4%	Pass
66.67 - 66.42	Pole + Reinf.	TP30.585x30.534x0.5125	Reinf. 4 Tension Rupture	71.2%	Pass
66.42 - 61.42	Pole + Reinf.	TP31.61x30.585x0.5125	Reinf. 4 Tension Rupture	75.1%	Pass
61.42 - 60	Pole + Reinf.	TP31.901x31.61x0.5063	Reinf. 4 Tension Rupture	76.2%	Pass
60 - 59.75	Pole + Reinf.	TP31.952x31.901x0.5125	Reinf. 4 Tension Rupture	70.4%	Pass
59.75 - 54.75	Pole + Reinf.	TP32.978x31.952x0.5125	Reinf. 4 Tension Rupture	73.7%	Pass
54.75 - 51	Pole + Reinf.	TP34.67x32.978x0.5063	Reinf. 4 Tension Rupture	76.1%	Pass
51 - 45.5	Pole + Reinf.	TP34.25x33.122x0.55	Reinf. 4 Tension Rupture	78.6%	Pass
45.5 - 44.25	Pole + Reinf.	TP34.506x34.25x0.55	Reinf. 4 Tension Rupture	79.3%	Pass
44.25 - 44	Pole + Reinf.	TP34.557x34.506x0.675	Reinf. 3 Tension Rupture	67.6%	Pass
44 - 39	Pole + Reinf.	TP35.583x34.557x0.6625	Reinf. 3 Tension Rupture	69.9%	Pass
39 - 34	Pole + Reinf.	TP36.608x35.583x0.65	Reinf. 3 Tension Rupture	72.0%	Pass
34 - 29	Pole + Reinf.	TP37.633x36.608x0.6375	Reinf. 3 Tension Rupture	74.0%	Pass
29 - 27.75	Pole + Reinf.	TP37.89x37.633x0.6375	Reinf. 3 Tension Rupture	74.5%	Pass
27.75 - 27.5	Pole + Reinf.	TP37.941x37.89x0.6375	Reinf. 3 Tension Rupture	74.6%	Pass
27.5 - 24.08	Pole + Reinf.	TP38.642x37.941x0.6375	Reinf. 3 Tension Rupture	75.9%	Pass
24.08 - 23.83	Pole + Reinf.	TP38.693x38.642x0.525	Reinf. 2 Tension Rupture	88.3%	Pass
23.83 - 18.83	Pole + Reinf.	TP39.718x38.693x0.525	Reinf. 2 Tension Rupture	90.2%	Pass
18.83 - 18.08	Pole + Reinf.	TP39.872x39.718x0.525	Reinf. 2 Tension Rupture	90.4%	Pass
18.08 - 17.83	Pole + Reinf.	TP39.923x39.872x0.6375	Reinf. 1 Tension Rupture	81.8%	Pass
17.83 - 12.83	Pole + Reinf.	TP40.948x39.923x0.625	Reinf. 1 Tension Rupture	83.5%	Pass
12.83 - 7.83	Pole + Reinf.	TP41.974x40.948x0.625	Reinf. 1 Tension Rupture	85.0%	Pass
7.83 - 2.83	Pole + Reinf.	TP42.999x41.974x0.6125	Reinf. 1 Tension Rupture	86.5%	Pass
2.83 - 0	Pole + Reinf.	TP43.58x42.999x0.6125	Reinf. 1 Tension Rupture	87.3%	Pass
				Summary	
			Pole	69.0%	Pass
			Reinforcement	90.9%	Pass
			Overall	90.9%	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	R6	R7	R8	R9	R10	R11	R12
140 - 135	486	n/a	486	13.48	n/a	13.48	7.1%												
135 - 130	580	n/a	580	14.31	n/a	14.31	13.9%												
130 - 125	686	n/a	686	15.13	n/a	15.13	23.2%												
125 - 120	805	n/a	805	15.96	n/a	15.96	31.2%												
120 - 115	936	n/a	936	16.78	n/a	16.78	38.1%												
115 - 110	1081	n/a	1081	17.60	n/a	17.60	43.8%												
110 - 105	1240	n/a	1240	18.43	n/a	18.43	51.9%												
105 - 102.33	1330	n/a	1330	18.87	n/a	18.87	56.4%												
102.33 - 102.08	1339	684	2024	18.91	8.76	27.67	36.4%							51.3%					
102.08 - 97.08	1522	742	2263	19.73	8.76	28.49	43.2%							59.9%					
97.08 - 95	1603	766	2369	20.08	8.76	28.84	46.1%							63.5%					
95 - 90.75	2193	282	2475	25.40	12.00	37.40	55.5%												51.9%
90.75 - 85.75	2464	309	2772	26.43	12.00	38.43	60.9%												57.8%
85.75 - 85.33	2487	311	2798	26.52	12.00	38.52	61.4%												58.3%
85.33 - 85.08	2427	1798	4225	26.57	20.76	47.33	39.5%						55.7%						48.1%
85.08 - 82.5	2574	1868	4442	27.10	20.76	47.86	41.4%						58.4%						50.5%
82.5 - 82.25	2666	328	2994	27.16	12.00	39.16	64.4%											61.6%	
82.25 - 77.15	2943	1986	4929	28.21	23.68	51.89	46.4%					63.4%						53.8%	
77.15 - 76.92	2958	1993	4951	28.25	23.68	51.93	46.5%					63.6%						54.0%	
76.92 - 71.92	3289	2136	5425	29.28	23.68	52.96	50.5%					68.1%						58.1%	
71.92 - 66.92	3644	2284	5928	30.31	23.68	53.99	54.3%					72.2%						62.0%	
66.92 - 66.67	3662	2292	5954	30.37	23.68	54.05	54.4%					72.4%						62.2%	
66.67 - 66.42	3568	2203	5771	30.42	16.95	47.37	49.6%				71.2%								
66.42 - 61.42	3943	2345	6288	31.45	16.95	48.40	53.0%				75.1%								
61.42 - 60	4054	2386	6440	31.74	16.95	48.69	53.9%				76.2%								
60 - 59.75	4081	2500	6581	31.79	22.95	54.74	56.4%				70.4%						59.6%		
59.75 - 54.75	4496	2725	7221	32.82	22.95	55.77	59.5%				73.7%						62.8%		
54.75 - 51	4820	2847	7667	33.60	22.95	56.55	62.0%				76.1%						65.0%		
51 - 45.5	5999	2731	8730	40.85	16.95	57.80	53.7%				78.6%								
45.5 - 44.25	6136	2770	8906	41.15	16.95	58.10	54.3%				79.3%								
44.25 - 44	6212	4564	10776	41.22	28.95	70.17	49.5%			67.6%						64.9%			
44 - 39	6786	4828	11614	42.45	28.95	71.40	51.7%			69.9%						67.3%			
39 - 34	7394	5100	12494	43.69	28.95	72.64	53.9%			72.0%						69.5%			
34 - 29	8038	5380	13417	44.92	28.95	73.87	56.0%			74.0%						71.7%			
29 - 27.75	8204	5451	13655	45.23	28.95	74.18	56.5%			74.5%						72.2%			
27.75 - 27.5	8238	5465	13703	45.30	28.95	74.25	56.6%			69.7%						72.3%			
27.5 - 24.08	8706	5662	14368	46.14	28.95	75.09	58.0%			70.9%						73.7%			
24.08 - 23.83	8683	3447	12130	46.20	16.95	63.15	63.3%		88.9%										
23.83 - 18.83	9399	3624	13023	47.44	16.95	64.39	65.4%		90.7%										
18.83 - 18.08	9509	3651	13161	47.62	16.95	64.57	65.7%		90.9%										
18.08 - 17.83	9807	6225	16031	47.69	30.73	78.41	62.1%	81.8%							65.1%				
17.83 - 12.83	10580	6544	17124	48.92	30.73	79.65	64.1%	83.5%							66.7%				
12.83 - 7.83	11393	6871	18265	50.16	30.73	80.88	66.0%	85.0%							68.3%				
7.83 - 2.83	12247	7207	19454	51.39	30.73	82.12	68.0%	86.5%							69.8%				
2.83 - 0	12749	7401	20150	52.10	30.73	82.82	69.0%	87.3%							70.6%				

Note: Section capacity checked in 5 degree increments.

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

Site Information	
ID:	876335
Name:	EAST FARMINGTON
App. #:	446035, Rev 0

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	3049	ft-kip
Axial:	46	kip
Shear:	34	kip
Base Plate Type:	Square	

Design Information	
TIA Code:	G
ASIF:	1.000
Failure:	105%
eta Factor:	0.50

Original Anchor Rod Data

Quantity:	12	
Diameter:	2.25	in
Material:	A615 GR 75	
Bolt Circle:	51.0	in
Bolt Spacing:	6	in
Bolt Group Area:	47.71	in^2
Bolt Group MOIx:	15607	in^4

Reactions Seen by Original AR Group

Moment:	2303.6	kip-ft
Axial:	46.0	kip
Shear:	34.0	kip

Original AR Capacity Check

Combined Load:	199.0	kip
Allowable load:	259.8	kip
AR Capacity:	76.6%	Pass

First Added Anchor Rod Data

Quantity:	6	
Diameter:	1.75	in
Material:	A193 B7	
Bolt Circle:	54.1	in
Bolt Group Area:	14.43	in^2
Bolt Group MOIx:	5050	in^4

Reactions Seen by First Added AR Group

Moment:	745.4	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check

Combined Load:	118.3	kip
Allowable load:	189.9	kip
AR Capacity:	62.3%	Pass

Second Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Combined Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Combined Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

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#: *876335*
Site Name: *EAST FARMINGTON*
App #: *446035, Rev 0*

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	2303.6	ft-kips
Factored Axial, Pu:	46	kips
Factored Shear, Vu:	34	kips

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	51	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	49.5	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	43.58	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Plate Results Flexural Check

Base Plate Stress:	29.7 ksi	
PL Design Bending Strength, Φ*Fy:	45.0 ksi	
Base Plate Stress Ratio:	65.9%	**Pass**

Pass

PL Ref. Data	
Yield Line (in):	26.42
Max PL Length:	26.42

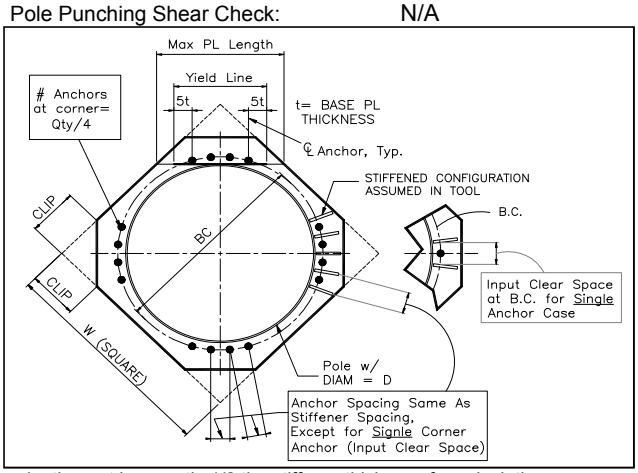
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^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

Proj. Number	77969.014.01
Proj. Name	EAST FARMINGTON, CT
Code	Rev. G

Previously Added Anchor Rods

Diameter	1.75	in
Grade	A193 Gr B7	
Quantity	6	
Bolt Circle	54.1	in

Existing Mfg Anchor Rods

Diameter	2.25	in
Quantity	12	
Bolt Circle	51	in

Summary Output

- Anchor Rod Bracket Checks

Tube Stress:	**46.4%**
Max. Weld Stress:	**85.3%**

Analysis Criteria

Load for Calcs?	**Current Load**	
Current Load	118.3	kips
Capacity	190	kips

Foundation Properties

Type	Pier	
Pier Diameter	8	ft
f'_c	3000	psi
Clear Cover	3	inch
Pad Width	20	ft
Vert.Rebar Size	11	
Vert. Quantity	24	
Tie Size	5	
$f_{y\ rebar}$	60	ksi

Tower Properties

Fy_{pole} =	65	ksi
Fu_{pole} =	80	ksi
Fy_{base} =	60	ksi
Fu_{base} =	75	ksi

Anchor Rod Bracket Properties

Gusset Properties

Thickness	1.25	inch
Pole to Tube CL	5.25	inch
Height	36	inch
Width at Tube	1.75	inch
Fy_{plate} =	65	ksi
Fu_{plate} =	80	ksi
Gap =	0	inch
Notch =	0.75	inch

Pipe /Tube Properties

Size	4 XXS Pipe	
L_{pipe} =	10.5	inch
Length Above Gusset	0	inch
F_{ypipe} =	35	ksi
D_{pipe} =	4.5	inch
t_{pipe} =	0.674	inch
A_{pipe} =	8.101300374	$inch^2$
I_{pipe} =	15.28366215	$inch^4$
r_{pipe} =	1.373524299	inch

Weld Properties

F_{EXX} =	70	ksi	Weld Material Grade
Load Angle	60	degrees	

- Bracket to Tube Weld

Weld Type	Double Bevel+Fillet		
Fillet Size	6		Vertical fillet weld size in sixteenths
Bevel Depth	0.375	inch	Bevel Depth in inches
$I_{vweldpipe}$ =	10.5	inch	Length of Vertical Weld to Pipe

- Bracket to Pole Weld

Weld Type	Double Fillet		
D_{vpole} =	6		Vertical fillet weld size *in sixteenths*
H =	36	inch	Height of vertical weld from base plate

- Gusset to Base Plate Weld

Weld Type	Double Bevel+Fillet		
Bevel Depth	8	inch	Bevel depth in inches
Fillet Size	0.5		Fillet weld size in sixteenths

Additional Variables

C_1 =	1.00	Electrode Strength Coefficient
k_{rt} =	0	Transverse Reinforcement Index :
ψ_t =	1	Rebar Location Factor :

Pier and Pad Foundation

BU # :	876335
Site Name:	EAST FARMINGT(
App. Number:	446035 Rev # 0

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	46	kips
Base Shear, Vu_comp:	34	kips
Moment, M_u:	2387.5	ft-kips
Tower Height, **H**:	140	ft
BP Dist. Above Fdn, bp_{dist}:	4.5	in

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	350.56	34.00	**9.7%**	**Pass**
Bearing Pressure (ksf)	23.28	2.96	**12.7%**	**Pass**
*Overturning (kip*ft)*	5412.58	2723.25	**50.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	6912.95	2574.50	**37.2%**	**Pass**
Pier Compression (kip)	30551.04	109.36	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	5101.11	757.59	**14.9%**	**Pass**
Pad Shear - 1-way (kips)	853.95	112.36	**13.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.015	**9.1%**	**Pass**

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	8	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	24	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Soil Rating:	**50.3%**
Structural Rating:	**37.2%**

Pad Properties

Depth, **D**:	9	ft
Pad Width, **W**:	20	ft
Pad Thickness, **T**:	4	ft
Pad Rebar Size, **Sp**:	9	
Pad Rebar Quantity, **mp**:	27	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties

Total Soil Unit Weight, **γ**:	123	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	38	degrees
SPT Blow Count, N_{blows}:	100	
Base Friction, **μ**:	0.35	
Neglected Depth, **N**:	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	8	ft

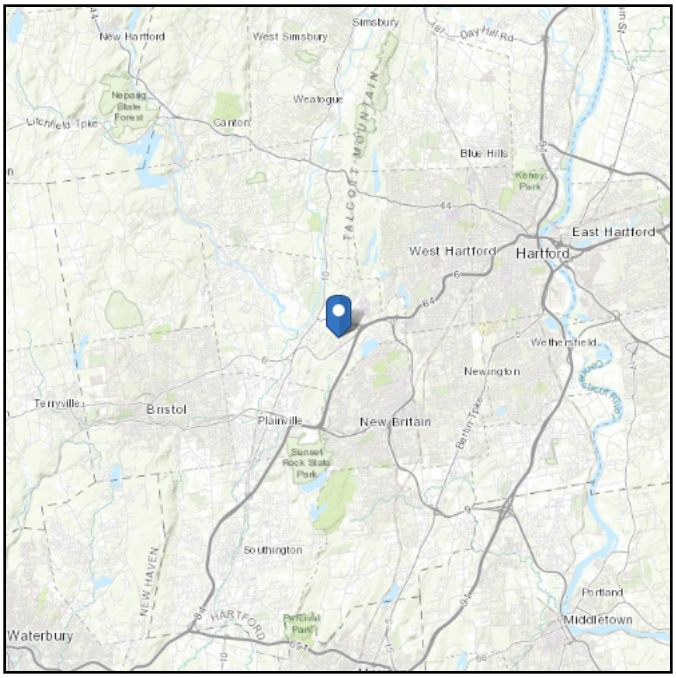
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 413.61 ft (NAVD 88)
Latitude: 41.715817
Longitude: -72.810394



Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Fri Jul 27 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

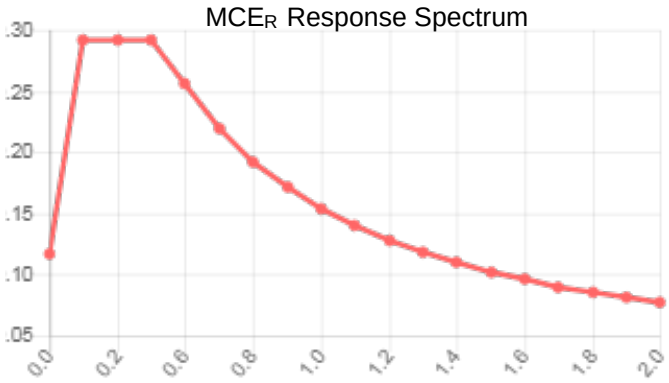
Seismic

Site Soil Class: D - Stiff Soil

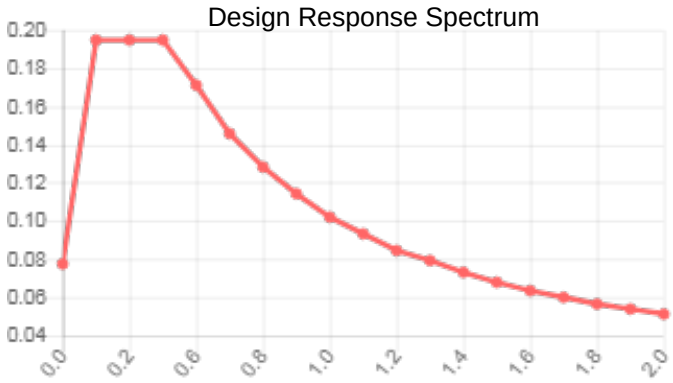
Results:

S_S :	0.182	S_{DS} :	0.195
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.092
S_{MS} :	0.292	PGA_M :	0.148
S_{M1} :	0.154	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B



S_a(g) vs T(s)



S_a(g) vs T(s)

Data Accessed: Fri Jul 27 2018

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Jul 27 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Date: **July 23, 2018**

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Infinigy Engineering, PLLC
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Albany, NY 12205
518-690-0790
structural@infinigy.com

Christine Trotta
Crown Castle
3 Corporate Dr., St 101
Clifton Park, NY 12065

Subject:	**Mount Structural Analysis**	
Carrier Designation:	**T-Mobile Change-Out**	
	Carrier Site Number:	CTHA233B
	Carrier Site Name:	CT233/Global Signal MP
Crown Castle Designation:	**Crown Castle BU Number:**	876335
	Crown Castle Site Name:	East Farmington
	Crown Castle JDE Job Number:	512465
	Crown Castle Application Number:	446035, Rev.0
Engineering Firm Designation:	**Infinigy Report Designation:**	600-005
Site Data:	**3 A Birdseye Road, Farmington, Hartford County, CT 06030**	
	Latitude 41° 42' 56.94" Longitude -72° 48' 37.42"	
Structure Information:	**Tower Height & Type:**	**139 Foot Monopole Tower**
	Mount Elevation:	**100 ft**
	Mount Type:	**12 ft Sector Frame**

Dear Christine Trotta,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural integrity of T-Mobile's antenna existing mounting system with the proposed appurtenance on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

Based upon our analysis, we have determined the adequacy of the antenna mounting system that will support the proposed loading to be:

T-Arm **Sufficient Capacity**

This analysis has been performed in accordance with the 2012 International Building Code and 2016 Connecticut State Building Code and the Infinigy Engineering, PLLC wind speed requirement of a 97 mph nominal 3-second gust wind speed as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1. Exposure Category B and Risk Category II were used in this analysis.

We at Infinigy Engineering, PLLC 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.

Mount structural analysis prepared by: Dmitriy Albul, P.E.

Respectfully Submitted by:

Joseph R. Johnston

Joe Johnston, P.E.
VP Structural Engineering / Principal

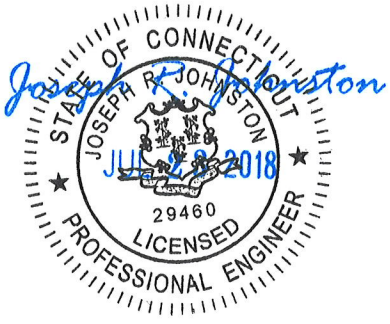


TABLE OF CONTENTS

1) INTRODUCTION

The existing mount installation will consist of a three (3) 12 ft wide T-Arm at the 100 ft elevation**.** The proposed antenna loading was obtained from the Application provided by CCI, Application Number 446035, Revision 0 and the Mount Photos, dated 10/18/2017.

2) ANALYSIS CRITERIA

The structural analysis was performed in accordance with the requirements of TIA 222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1.0 inch escalated ice thickness, Exposure Category B and Topographic Category 1. In addition, the T-Arm been analyzed for a load combination consisting of a 250-pound man live load using a 3-second wind gustwind speed of 30 mph.

Table 1 - Proposed Equipment Loading Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
100.0	100.0	3	Ericsson	AIR 32 B2A/B66AA	-	1
		3	RFS	APXVAARR24_43-U-NA20		
		3	Ericsson	RADIO 4449 B12/B71		

Notes:
1) Proposed equipment

Table 2 - Existing Antenna and Cable Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
100.0	100.0	3	Ericsson	AIR 21 B2A B4P	12' T-Arm	1
		3	Ericsson	KRY 112 144/1		
		3	CommScope	LNX-6515DS-VTM	-	2
		3	Ericsson	AIR 21 B4A B2P		
		3	Ericsson	RRUS-11 B12		

Notes:
1) Existing Equipment to Remain
2) Existing Equipment to be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	446035, Rev.0	CCI Sites
Mount Photos	Photos	876335	CCI Sites
Design Drawings	Mount Drawings	DWG # RMV12-396	Site Pro 1

3.1) Analysis Method

RISA-3D (Version 16.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool 3.0.2, a tool internally developed by Infinigy, was used to calculate member loading for various load cases. Selected output from the analysis is included in Appendix B.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 4 - Mount Component Stresses vs. Capacity (T-Arm)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1,2	Face Horizontal	100.0	76.8%	Pass
	Mount Pipe		81.4%	Pass
	Arm		50.3%	Pass
	Bolts		17.3%	Pass

Structure Rating (max from all components) =	81.4%

Notes:

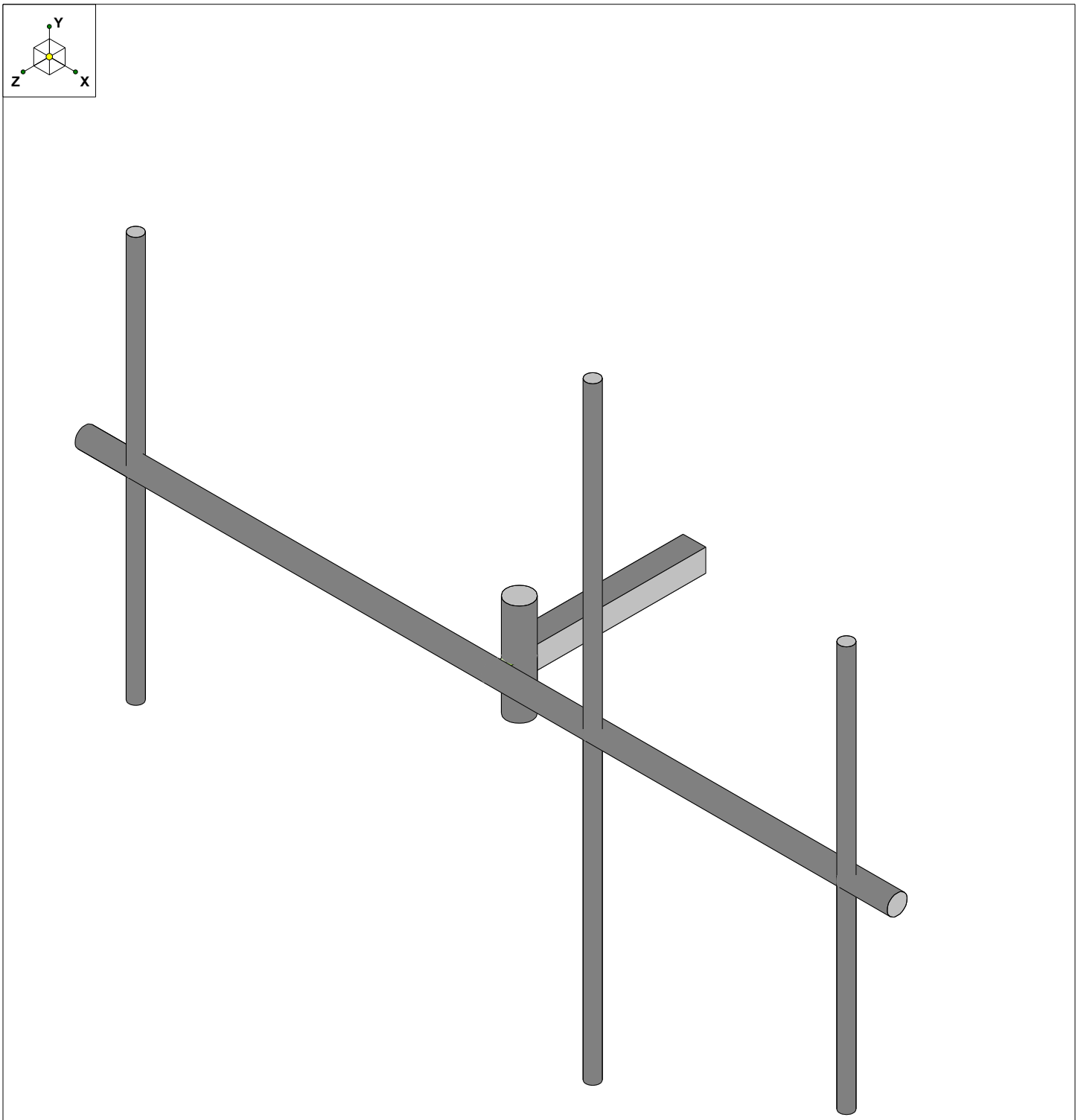
1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

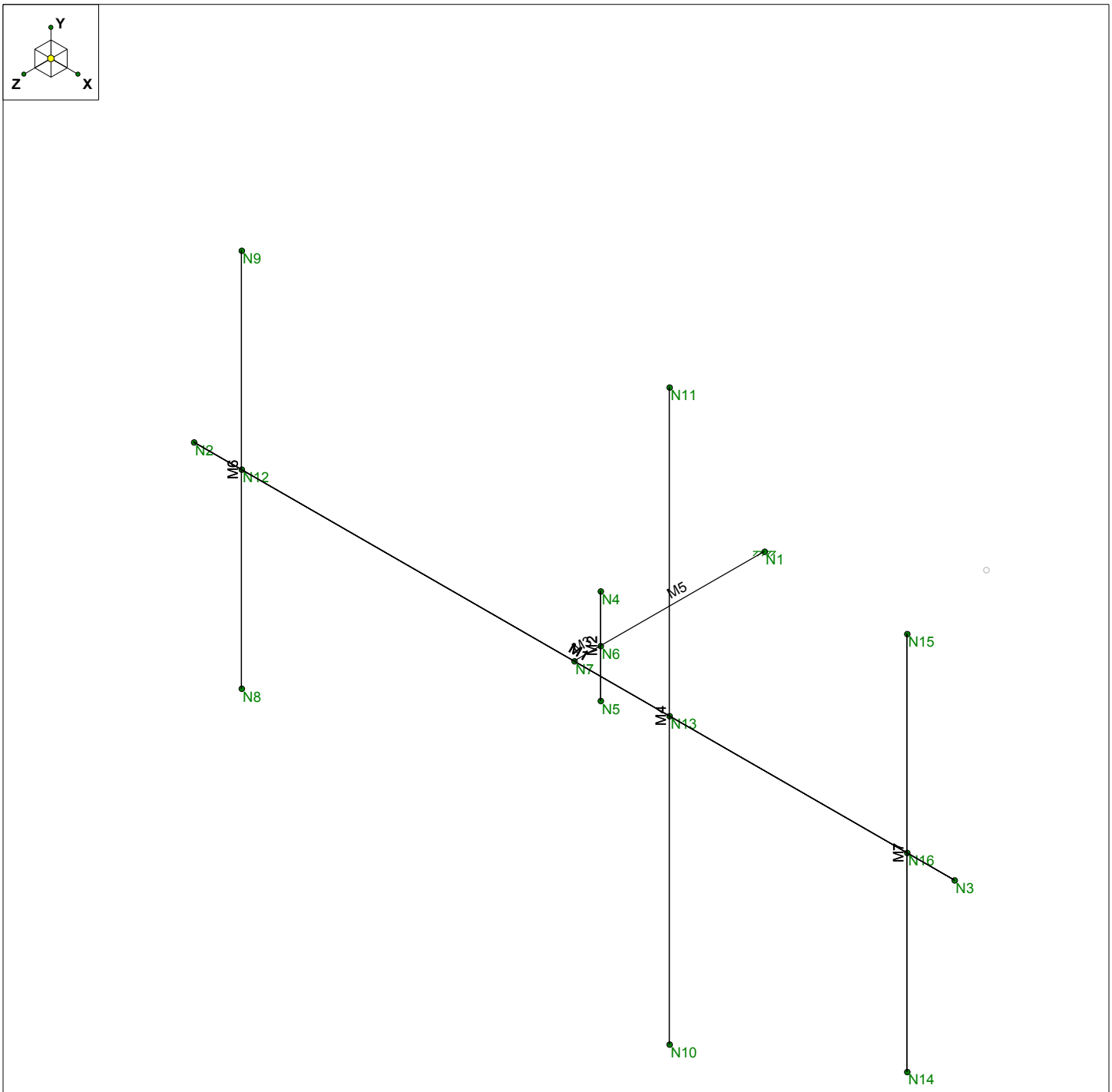
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC	East Farmington	Rendered Model
DVA		July 20, 2018 at 4:13 PM
600-005		876335.R3D



Envelope Only Solution

Infinigy Engineering, PLLC	East Farmington	Wire Frame Model
DVA		July 20, 2018 at 4:13 PM
600-005		876335.R3D

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Site Name:	East Farmington
Client:	Crown Castle
Carrier:	T-Mobile
Engineer:	DVA
Date:	7/20/2018

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INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2012 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount - T-Arm
Number of Sectors:	3
Structure Shape 1:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	97	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	100.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	B	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
22.61	1.00	**27.14**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
6.01	1.00	**17.28**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	1.00	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
RFS APXVAARR24_43-U-NA20	100.0	3	1.00	Flat	Flat	22.61	20.24	457.75	201.00	265.19	393.57
Ericsson AIR 32 B2A/B66AA	100.0	3	1.00	Flat	Flat	22.61	6.51	147.21	106.56	116.72	137.05
Ericsson AIR 21 B2A B4P	100.0	3	1.00	Flat	Flat	22.61	6.09	137.75	97.16	107.31	127.61
Ericsson RADIO 4449 B12/B71	100.0	3	1.00	Flat	Flat	22.61	1.64	37.16	26.06	28.83	34.38
Ericsson KRY 112 144/1	100.0	3	1.00	Flat	Flat	22.61	0.35	7.93	3.64	4.71	6.86

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N3			Frame Rail	Beam	Pipe	A53 Gr.B	Typical
2	M2	N4	N5			Pipe	Column	Pipe	A53 Gr.B	Typical
3	M3	N6	N7			RIGID	None	None	RIGID	Typical
4	M4	N10	N11			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
5	M5	N1	N6			Arm	Beam	Tube	A500 Gr.B...	Typical
6	M6	N8	N9			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
7	M7	N15	N14			Mount Pipe	Column	Pipe	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		1	5	0
3	Total General		1	5	0
4					
5	Hot Rolled Steel				
6	A500 Gr.B Rect	HSS4x4x4	1	31	0
7	A53 Gr.B	PIPE_2.0	3	252	0
8	A53 Gr.B	PIPE_3.0	1	144	0
9	A53 Gr.B	PIPE_4.0	1	18	0
10	Total HR Steel		6	445	.2

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL		-1			9			
2	Wind Load AZI 000	WLZ					9		1	
3	Wind Load AZI 090	WLX					9		1	
4	Ice Weight	OL1					9	7		
5	Wind + Ice Load AZI 000	OL2					9		1	
6	Wind + Ice Load AZI 090	OL3					9		1	
7	Service Live 1	LL				1				
8	BLC 2 Transient Area Loads	None						5		
9	BLC 3 Transient Area Loads	None						6		
10	BLC 5 Transient Area Loads	None						5		
11	BLC 6 Transient Area Loads	None						6		

Load Combinations

	Description	Solve	PDe...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		DL	1.4																		
2	1.2D + 1.6W AZI 000	Yes	Y		DL	1.2	W...	1.6																
3	1.2D + 1.6W AZI 030	Yes	Y		DL	1.2	W...	1.3...	W...	.8														
4	1.2D + 1.6W AZI 060	Yes	Y		DL	1.2	W...	.8	W...	1.3...														
5	1.2D + 1.6W AZI 090	Yes	Y		DL	1.2			W...	1.6														
6	1.2D + 1.6W AZI 120	Yes	Y		DL	1.2	W...	-.8	W...	1.3...														
7	1.2D + 1.6W AZI 150	Yes	Y		DL	1.2	W...	-1....	W...	.8														
8	1.2D + 1.6W AZI 180	Yes	Y		DL	1.2	W...	-1.6																
9	1.2D + 1.6W AZI 210	Yes	Y		DL	1.2	W...	-1....	W...	-.8														
10	1.2D + 1.6W AZI 240	Yes	Y		DL	1.2	W...	-.8	W...	-1....														
11	1.2D + 1.6W AZI 270	Yes	Y		DL	1.2			W...	-1.6														
12	1.2D + 1.6W AZI 300	Yes	Y		DL	1.2	W...	.8	W...	-1....														
13	1.2D + 1.6W AZI 330	Yes	Y		DL	1.2	W...	1.3...	W...	-.8														
14	0.9D + 1.6W AZI 000	Yes	Y		DL	.9	W...	1.6																

Load Combinations (Continued)

	Description	Solve	PDe...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
15	0.9D + 1.6W AZI 030	Yes	Y		DL	.9	W...	1.3...	W...	.8														
16	0.9D + 1.6W AZI 060	Yes	Y		DL	.9	W...	.8	W...	1.3...														
17	0.9D + 1.6W AZI 090	Yes	Y		DL	.9			W...	1.6														
18	0.9D + 1.6W AZI 120	Yes	Y		DL	.9	W...	-.8	W...	1.3...														
19	0.9D + 1.6W AZI 150	Yes	Y		DL	.9	W...	-1....	W...	.8														
20	0.9D + 1.6W AZI 180	Yes	Y		DL	.9	W...	-1.6																
21	0.9D + 1.6W AZI 210	Yes	Y		DL	.9	W...	-1....	W...	-.8														
22	0.9D + 1.6W AZI 240	Yes	Y		DL	.9	W...	-.8	W...	-1....														
23	0.9D + 1.6W AZI 270	Yes	Y		DL	.9			W...	-1.6														
24	0.9D + 1.6W AZI 300	Yes	Y		DL	.9	W...	.8	W...	-1....														
25	0.9D + 1.6W AZI 330	Yes	Y		DL	.9	W...	1.3...	W...	-.8														
26	1.2D + 1.0Di	Yes	Y		DL	1.2	O...	1																
27	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	1														
28	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	.866	O...	.5												
29	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	.5	O...	.866												
30	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1			O...	1												
31	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	-.5	O...	.866												
32	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	-.8...	O...	.5												
33	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	-1														
34	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	-.8...	O...	-.5												
35	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	-.5	O...	-.8...												
36	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1			O...	-1												
37	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	.5	O...	-.8...												
38	1.2D + 1.0Di + 1.0Wi ...	Yes	Y		DL	1.2	O...	1	O...	.866	O...	-.5												
39	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.096														
40	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.083	W...	.048												
41	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.048	W...	.083												
42	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	.096												
43	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.0...	W...	.083												
44	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.0...	W...	.048												
45	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.0...														
46	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.0...	W...	-.0...												
47	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.0...	W...	-.0...												
48	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	-.0...												
49	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.048	W...	-.0...												
50	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.083	W...	-.0...												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	937.751	5	2477.454	27	1617.799	2	-1.244	14	2.956	6	2.366	48
2		min	-937.751	11	580.573	20	-1617.799	20	-7.359	33	-2.948	24	-.139	17
3	Totals:	max	937.751	5	2477.454	27	1617.799	2						
4		min	-937.751	11	580.573	20	-1617.799	20						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[...	DirLC		phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M4	PIPE_2.0	.814	54	8	.048	54		8	12143....	32130	1.872	1.872	1...	H1-1b
2	M1	PIPE_3.0	.768	72	34	.152	72		8	30165....	65205	5.749	5.749	1...	H1-1b
3	M5	HSS4x4x4	.503	0	31	.203	0	y	48	135675...	139518	16.181	16.181	1...	H1-1b
4	M6	PIPE_2.0	.145	36	8	.016	36		8	20866....	32130	1.872	1.872	1...	H1-1b
5	M7	PIPE_2.0	.129	36	8	.014	36		8	20866....	32130	1.872	1.872	1...	H1-1b
6	M2	PIPE_4.0	.000	9	8	.000	9		9	92571....	93240	10.631	10.631	1	H1-1b

APPENDIX D

REFERENCE DOCUMENTS

A-PRIME
ENGINEERING

BOLT CALCULATIONS

Costich Engineering Site Name:	East Farmington	
A-Prime Engineering Job Number:	600-005	
Date:	7/20/2018	
Input Information:	**Existing Bolts**	
# Bolts, **N**	4	
Bolt Diameter, **d**	0.625	in
Threads per Inch, **n**	11	
Steel Grade	325 (1/2" to 1")	
Bolt Ultimate Tensile Stress, F_u	120	ksi
Load Case #1: Wt + Pull-Out		
Applied Vertical Force, **Pu**	0.774	kips
Applied Pull-Out Force, **Tu**	1.618	kips
Load Case #2: Wt + Side		
Applied Vertical Force, **Pu**	0.774	kips
Applied Side Force, **Tu**	1.401	kips
Distance between Bolts, **D**	6.0	in
Net Bolt Cross-Sectional Area, **Anet**	0.226	in^2 (each)
Bolt Group Moment of Innertia, **Ixx and Iyy**	36.0	in^2
Tensile Strength (per bolt), ϕR_{nt}	20.34	kips
Shear Strength (per bolt), ϕR_{nv}	9.15	kips
U-Bolt Friction Strength (per bolt), ϕR_n	4.46	kips
Load Case #1		
Applied Tensile Load per Bolt	0.775	kips
Applied Shear Load per Bolt	0.194	kips
Combined Shear and Tension Equation (4.9.6.4)	0.002	
Load Case #2		
Applied Tensile Load per Bolt	0.767	kips
Applied Shear Load per Bolt	0.400	kips
Combined Shear and Tension Equation (4.9.6.4)	0.003	
U-Bolt Capacity	0.173	
% Capacity	**17.3%**	

The Bolt Group is Adequate for Loading

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

T-Mobile Existing Facility

Site ID: CTHA233B

CT233/Global Signal MP
130 Birdseye Road
Farmington, CT 06032

August 15, 2018

EBI Project Number: 6218005609

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	17.15 %

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August 15, 2018

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTHA233B – CT233/Global Signal MP**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **130 Birdseye Road, Farmington, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **130 Birdseye Road, Farmington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 1 GSM channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 15 Watts per Channel.

2) 1 UMTS channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

6) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Ericsson AIR32 AIR32 KRD901146-1 B66A_B2A** & **Ericsson AIR21 KRC118023-1 B2A_B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channel and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **100 feet** above ground level (AGL).

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 KRD901146-1 B66A_B2A	Make / Model:	Ericsson AIR32 KRD901146-1 B66A_B2A	Make / Model:	Ericsson AIR32 KRD901146-1 B66A_B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	200	Total TX Power(W):	200	Total TX Power(W):	200
ERP (W):	7,780.90	ERP (W):	7,780.90	ERP (W):	7,780.90
Antenna A1 MPE%	**3.17**	Antenna B1 MPE%	**3.17**	Antenna C1 MPE%	**3.17**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 KRC118023-1 B2A_B4P	Make / Model:	Ericsson AIR21 KRC118023-1 B2A_B4P	Make / Model:	Ericsson AIR21 KRC118023-1 B2A_B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	55	Total TX Power(W):	55	Total TX Power(W):	55
ERP (W):	2,139.75	ERP (W):	2,139.75	ERP (W):	2,139.75
Antenna A2 MPE%	**0.87**	Antenna B2 MPE%	**0.87**	Antenna C2 MPE%	**0.87**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,443.03	ERP (W):	2,443.03	ERP (W):	2,443.03
Antenna A3 MPE%	**2.36**	Antenna B3 MPE%	**2.36**	Antenna C3 MPE%	**2.36**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**6.40 %**
Sprint	**0.72**
MetroPCS	**1.72**
Verizon Wireless	**5.96**
AT&T	**2.35**
Site Total MPE %:	**17.15 %**

T-Mobile Sector A Total:	6.40 %
T-Mobile Sector B Total:	6.40 %
T-Mobile Sector C Total:	6.40 %
Site Total:	17.15 %

T-Mobile Max Power Values (Per Sector)

T-Mobile _Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	100	12.66	PCS - 1900 MHz	1000.00	1.27%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	100	18.99	AWS - 2100 MHz	1000.00	1.90%
T-Mobile PCS - 1900 MHz GSM	1	583.57	100	2.37	PCS - 1900 MHz	1000.00	0.24%
T-Mobile AWS - 2100 MHz UMTS	1	1,556.18	100	6.33	AWS - 2100 MHz	1000.00	0.63%
T-Mobile 600 MHz LTE	2	788.97	100	6.42	600 MHz	400.00	1.61%
T-Mobile 700 MHz LTE	2	432.54	100	3.52	700 MHz	467.00	0.75%
						Total:	**6.40%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	6.40 %
Sector B:	6.40 %
Sector C:	6.40 %
T-Mobile Maximum MPE % (Per Sector):	6.40 %
Site Total:	17.15 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.15%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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