



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

August 9, 2017

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

RE: Notice of Exempt Modification for Sprint/ Crown Site BU: 806376
Sprint Site ID: CT03XC251
1455 Forbes Street, East Hartford, CT 06118
Latitude: 41° 43' 53.3" / Longitude: -72° 36' 28.0"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 97-foot level of the existing 131-foot monopole at 1455 Forbes Street, East Hartford, CT. The tower is owned by Crown Castle. The property is owned by Robert Handel. Sprint intends to install (3) antennas and (3) RRUs with (1) hybrid cable.

This facility was approved by the Connecticut Siting Council Petition No. 535 on May 21, 2002. This approval was given without conditions.

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

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

The Foundation for a Wireless World.
CrownCastle.com

Melanie A. Bachman

August 9, 2017

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

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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

Tab 2: Exhibit-2: Structural Modification Report

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

cc: The Honorable Marcia A. Leclerc, Mayor, Town of East Hartford
740 Main Street
East Hartford, CT 06108

Jeffrey Cormier, Town Planner
740 Main Street
East Hartford, CT 06108

Robert Handel
1473 Forbes Street
East Hartford, CT 06118

DOCKET NO. 139 - An application of
Metro Mobile CTS of Hartford, Inc., : Connecticut
for a Certificate of Environmental :
Compatibility and Public Need for : Siting
the construction, maintenance, and :
operation of cellular facilities in : Council
the Towns of Enfield, East Hartford,
and Wethersfield, Connecticut. September 18, 1991

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications towers and equipment buildings at the proposed Enfield, Connecticut, alternate site and the proposed East Hartford, Connecticut, prime site including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need as provided by section 16-50k of the Connecticut General Statutes (CGS), be issued to Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed alternate site in Enfield, Connecticut, and the proposed prime site in East Hartford, Connecticut.

The facilities shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter and subject to the following conditions:

1. The self-supporting monopole towers shall be no taller than necessary to provide the proposed communication service and in no event shall the towers exceed a total height of 163 feet above ground level (AGL) at the proposed Enfield alternate site and 123 feet AGL at the proposed East Hartford prime site, with antennas and appurtenances.
2. The Certificate holder shall prepare a Development and Management (D&M) Plan, for approval by the Council, for these sites in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. This D&M plan

- shall include detailed plans of the towers, tower foundations, soil boring reports, equipment buildings, access roads, security fences, landscaping plans, detailed erosion and sedimentation control plans, and a final schedule. In addition, the D&M plan shall include for Council consideration, detailed plans and itemized costs for the placement of service utilities underground in order to further mitigate the visual effect of the facilities.
3. The Certificate holder shall comply with any existing and future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted herein shall be brought into compliance with such standards.
 4. The Certificate holder shall provide the Council with a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
 5. The Certificate holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
 6. If the facility does not initially provide or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council as soon as practicable before any such new use is made.
 7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of this issuance shall be published in the Hartford Courant and the Journal Inquirer.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with section 16-50j-17 of the Regulations of State Agencies.

The parties to this proceeding are:

PARTIES	ITS REPRESENTATIVE
Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive P.O. Box 5029 Wallingford, CT 06492 Attn: Gary Schulman	Robinson and Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Earl Phillips, Jr. (203) 275-8200
The Town of East Hartford	G. Barry Goodberg Assistant Corporation Counsel Town of East Hartford 740 Main Street East Hartford, CT 06108 (203) 289-2781
The Town of Enfield	Christopher W. Bromson Enfield Town Attorney 47 No. Main Street Enfield, CT 06082 (203) 745-0371 Ext. 290

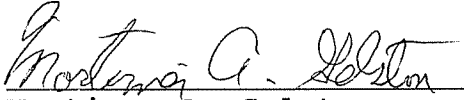
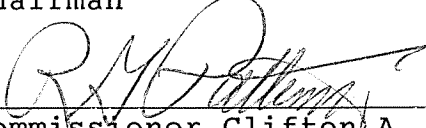
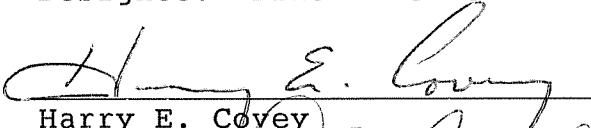
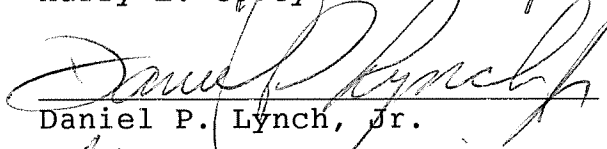
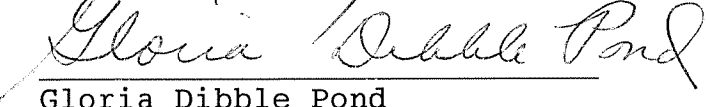
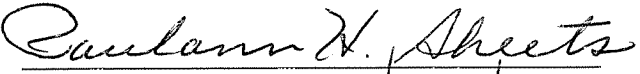
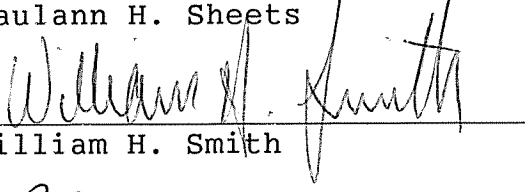
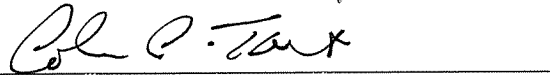
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CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in DOCKET NO. 139 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Enfield, East Hartford, and Wethersfield, Connecticut, or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 18th day of September, 1991.

<u>Council Members</u>	<u>Vote Cast</u>
 Mortimer A. Gelston Chairman	YES
 Commissioner Clifton A. Leonhardt Designee: Commissioner Richard G. Patterson	ABSTAIN
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	ABSENT
 Harry E. Covey	NO
 Daniel P. Lynch, Jr.	NO
 Gloria Dibble Pond	YES
 Paulann H. Sheets	YES
 William H. Smith	YES
 Colin C. Tait	YES

PETITION NO. 535 - AT&T Wireless PCS, LLC and Crown Atlantic Company LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for proposed modification of an existing telecommunications tower located at 1455 Forbes Street, East Hartford, Connecticut.	} Connecticut } Siting } Council } May 21, 2002
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Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the extension of an existing telecommunications tower and installation of associated equipment at an existing facility located at 1455 Forbes Street in East Hartford, Connecticut, are not significant, are not disproportionate either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny this petition.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower extension shall be compatible with and installed on the existing monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless PCS, LLC (AT&T) and XM Satellite Radio, but such extension shall not exceed a height of 133 feet above ground level, including antennas and appurtenances.
2. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
4. The Certificate Holder shall permit public or private entities to share space on the tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
5. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
6. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.
7. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not completed within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

8. All other applicable provisions of the Council's September 18, 1991 Decision and Order in Docket No. 139 remain in effect.

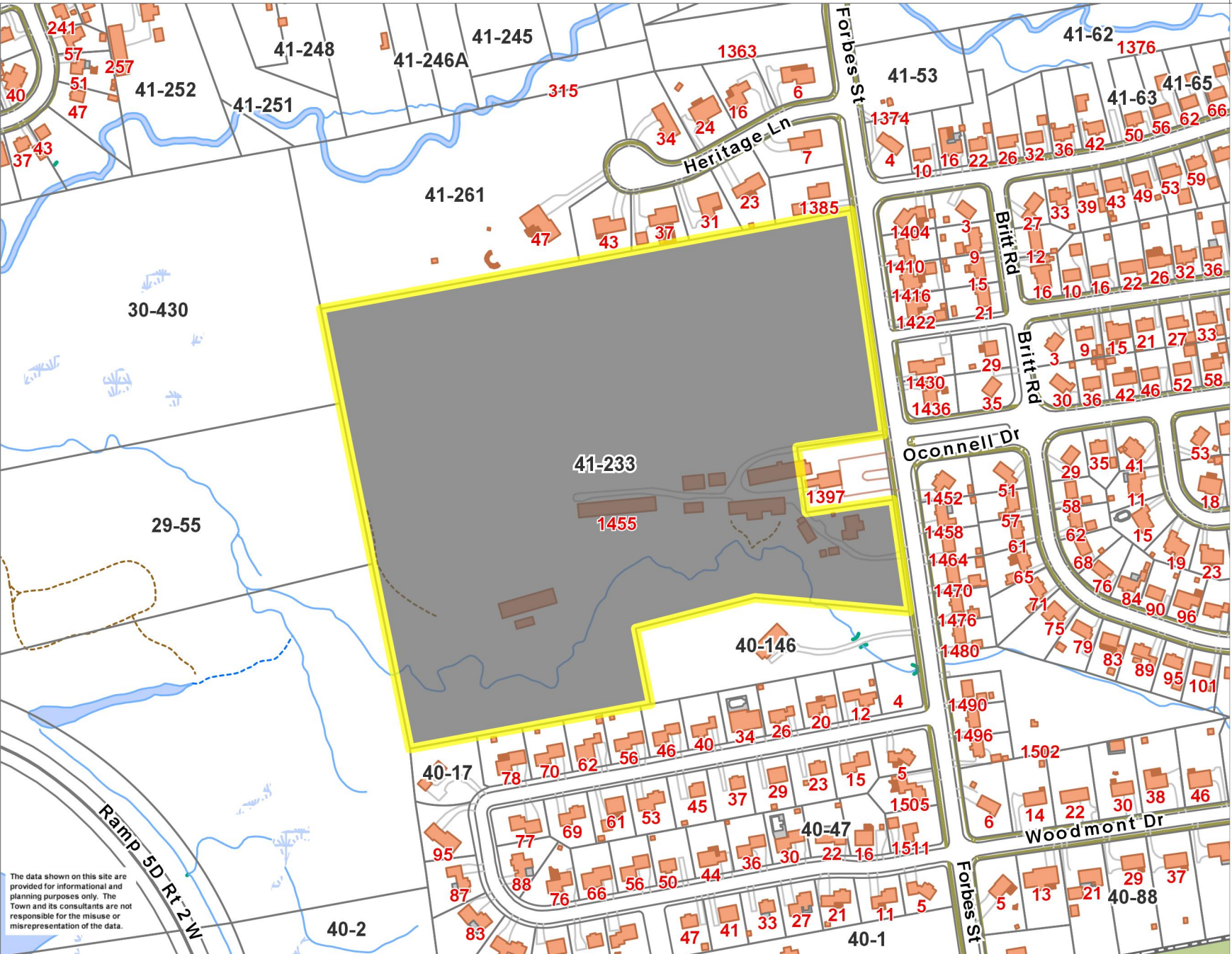
Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and The East Hartford Gazette.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Crown Atlantic Company LLC and
AT&T Wireless PCS, LLC

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597



The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.

0 400 800 ft

Printed on 08/07/2017 at 01:42 PM

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		



OWNER OF RECORD
HANDEL ROBERT D
1473 FORBES ST
EAST HARTFORD, CT 06118



LIVING AREA:	720	ZONING:	R2	ACREAGE:	25.74
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SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HANDEL ROBERT D	3582/ 113	25-Jan-2016	\$0.00
HANDEL JESSIE K EST OF C/O ROBERT D HANDEL EXECUTOR	3534/ 329	21-May-2015	\$0.00
HANDEL JESSIE K	1874/ 345	03-Jan-2000	\$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	0/ 0	01-Jan-2000	\$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	1693/ 161	05-Aug-1997	\$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	\$332,880.00	IMPROVEMENTS:	\$291,500.00	LAND:	\$41,380.00
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ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2016	\$332,880.00	\$291,500.00	\$41,380.00
2015	\$346,650.00	\$302,420.00	\$44,230.00
2014	\$346,650.00	\$302,420.00	\$44,230.00
2013	\$346,650.00	\$302,420.00	\$44,230.00
2012	\$346,650.00	\$302,420.00	\$44,230.00

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 1

YEAR BUILT	1865	EXT WALL 1	Vinyl Siding
STYLE	Colonial	INT WALLS 1	Plaster
MODEL	Residential	HEAT FUEL	Gas
STORIES	2.0	HEAT TYPE	Hot Water
OCCUPANCY	One Family	AC TYPE	None
ROOF	Gable	BEDROOMS	4
ROOF COVER	Asphalt	FULL BATHS	1
FLOOR COVER 1	Hardwood	HALF BATHS	1
% BSMT	100	TOTAL ROOMS	9
% FIN BSMT	0	% REC RM	60
% SEMI FIN BSMT	0	% ATTIC FINISH	0
BSMT GARAGE		FIREPLACES	0



OUTBUILDINGS

DESCRIPTION	CODE	UNITS
1 Story Barn	BRN1	1x5112 (5112 SF)
Shed	SHD1	1x64 (64 S.F.)
1 Story Barn	BRN1	1x3072 (3072 SF)
Shed	SHD1	1x300 (300 S.F.)
Shed	SHD1	1x561 (561 S.F.)
1 Story Barn	BRN1	1x4928 (4928 SF)
Shed	SHD1	1x600 (600 S.F.)

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 2

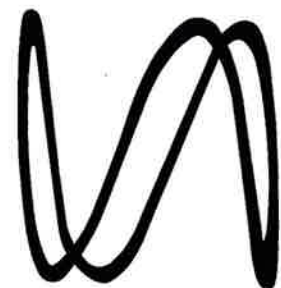
YEAR BUILT	1934	EXT WALL 1	Vinyl Siding
STYLE	Single Family	INT WALLS 1	Plaster
MODEL	Residential	HEAT FUEL	Other
STORIES	1.0	HEAT TYPE	Other
OCCUPANCY	One Family	AC TYPE	None
ROOF	Gable	BEDROOMS	1
ROOF COVER	Asphalt	FULL BATHS	1
FLOOR COVER 1	Hardwood	HALF BATHS	0
% BSMT	0	TOTAL ROOMS	4
% FIN BSMT	0	% REC RM	0
% SEMI FIN BSMT	0	% ATTIC FINISH	0
BSMT GARAGE		FIREPLACES	0



OUTBUILDINGS

DESCRIPTION	CODE	UNITS
FR/SHED		30 SF
Shed	SHD1	1x105 (105 S.F.)
1 Story Barn	BRN1	1x840 (840 SF)
Shed	SHD1	1x144 (144 S.F.)
1 Story Barn	BRN1	1x3840 (3840 SF)
Shed	SHD1	1x308 (308 S.F.)

Sprint



CROWN CASTLE

PROJECT: 2.5 EQUIPMENT DEPLOYMENT
 SITE NAME: EAST HARTFORD
 SITE CASCADE: CT03XC251
 SITE NUMBER: 806376
 SITE ADDRESS: 1455 FORBES STREET
 EAST HARTFORD, CT 06118
 SITE TYPE: MONOPOLE
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:

ENGINEERING LICENSE:

DRAWING NOTICE:
 THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	J.M	0

SITE NAME:
EAST HARTFORD

SITE CASCADE:
CT03XC251

SITE ADDRESS:
 1455 FORBES STREET
 EAST HARTFORD, CT 06118

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

SITE INFORMATION

TOWER OWNER:
 CROWN ATLANTIC COMPANY LLC
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 (704) 405-6555

LATITUDE (NAD83):
 41° 43' 53.3" N
 41.731472°

LONGITUDE (NAD83):
 -72° 36' 28.0" W
 -72.607778°

COUNTY:
 HARTFORD

ZONING JURISDICTION:
 CONNECTICUT SITING COUNCIL
 EAST HARTFORD

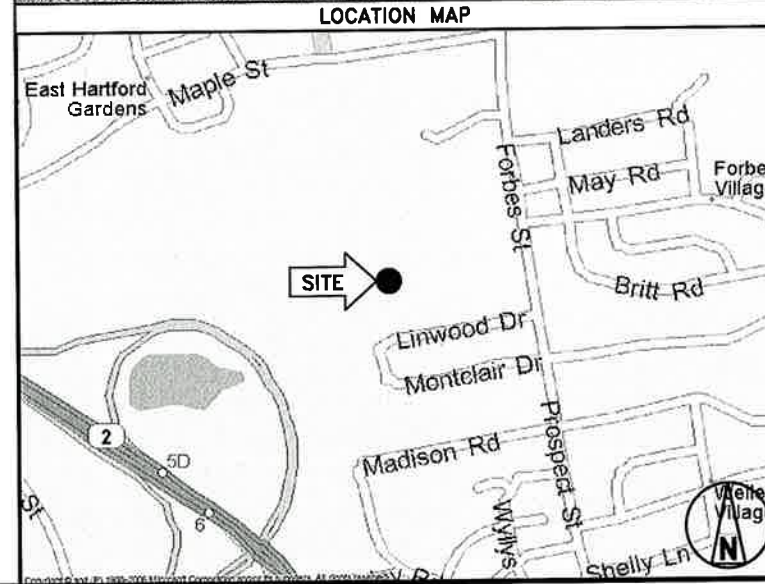
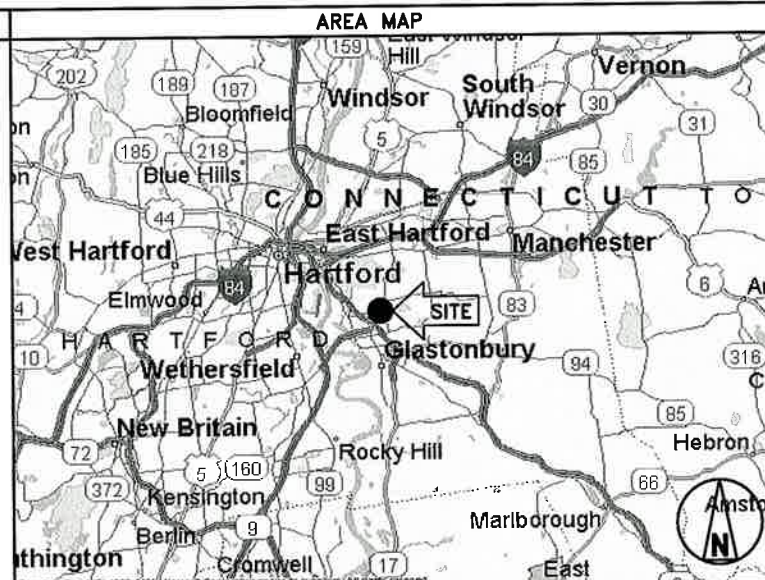
ZONING DISTRICT:
 TBD

POWER COMPANY:
 CL&P
 (860) 947-2000

SPRINT PM:
 PETER GIARD
 (508) 801-0074
 peter.giard@sprint.com

SPRINT CM:
 PETER CULBERT
 (603) 203-6446
 (603) 969-0686
 peter.culbert@sprint.com

CROWN CASTLE CM:
 JASON D'AMICO
 (860) 209-0104
 JASON.D'AMICO@CROWNCastle.COM



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) FIBER CABLE
- INSTALL (4) BATTERIES IN EXISTING BBU CABINET

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- INTERNATIONAL BUILDING CODE (2012 IBC)
- TIA-EIA-222-F OR LATEST EDITION
- NFPA 780 - LIGHTNING PROTECTION CODE
- 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
- ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
- CT BUILDING CODE
- LOCAL BUILDING CODE
- CITY/COUNTY ORDINANCES

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION & CABLE PLAN	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	COLOR CODING & NOTES	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING PLAN	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

APPROVED
 By Jason D'Amico at 1:20 pm, Jun 29, 2017

APPROVED
 By Jeff Barbadora at 3:42 pm, May 25, 2014



THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT 'STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES' ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
 - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 - 1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 - 5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - 3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
 - 4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
 - 5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
 - 6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
 - 7. AMERICAN CONCRETE INSTITUTE (ACI)
 - 8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
 - 9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
 - 10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - 11. PORTLAND CEMENT ASSOCIATION (PCA)
 - 12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
 - 13. BRICK INDUSTRY ASSOCIATION (BIA)
 - 14. AMERICAN WELDING SOCIETY (AWS)
 - 15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
 - 16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
 - 17. DOOR AND HARDWARE INSTITUTE (DHI)
 - 18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - 19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

- A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
- B. COMPANY: SPRINT 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.
- F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
- G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

- 1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.
- 1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
- 1.8 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.
- 1.9 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 RED 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.
 - B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
 - C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.
- 1.10 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.
- 1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED.
- 1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
- 1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193
- 1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 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.
- 3.2 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.
- 3.3 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.
- 3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER 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.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT 'STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES' ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT:
 - A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.
 - B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
 - 1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 - 2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 - 3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 - 4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 - 5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 - 6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 DELIVERABLES:
 - A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
 - B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.
 - C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT 'STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES' ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 NOTICE TO PROCEED
 - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.
 - B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

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.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION


- 3.1 FUNCTIONAL REQUIREMENTS:
 - A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
 - B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
 - C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
 - D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:



6580 Sprint Parkway
Overland Park, Kansas 66251


PLANS PREPARED BY:



1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

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1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

- A. 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.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 1. 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.
 2. 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.
- D. 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
- E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
 1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 2. PROJECT PROGRESS REPORTS.
 3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 SUBMITTALS:
 - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
 - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN
 - D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
 2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD

5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. 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.
2. 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.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JJM	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

- 7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
 - 8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
 - 9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
 - 10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 - 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
 - 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.
- 3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.
- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
- 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
 - 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
 - 3. SITE RESISTANCE TO EARTH TEST.
 - 4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
 - 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
 - 6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;
- 1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
 - 2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
 - 3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
 - 4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 - 5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
 - 6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
 - 7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
 - 8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
 - 9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 WEEKLY REPORTS:
 - A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
 - B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
- 3.2 PROJECT CONFERENCE CALLS:
 - A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
 - A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.
- 3.4 ADDITIONAL REPORTING:
 - A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.
- 3.5 PROJECT PHOTOGRAPHS:
 - A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
 - 1. SHELTER AND TOWER OVERVIEW.
 - 2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
 - 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
 - 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
 - 5. PHOTOS OF TOWER SECTION STACKING.
 - 6. CONCRETE TESTING / SAMPLES.
 - 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 - 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
 - 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
 - 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
 - 11. COAX CABLE ENTRY INTO SHELTER.
 - 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 - 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
 - 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
 - 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 - 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
 - 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
 - 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
 - 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 - 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
 - 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 - 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 - 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).

- 24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 - 25. ALL BTS GROUND CONNECTIONS.
 - 26. ALL GROUND TEST WELLS.
 - 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
 - 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
 - 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
 - 30. GPS ANTENNAS.
 - 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
 - 32. DOGHOUSE/CABLE EXIT FROM ROOF.
 - 33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
 - 34. MASTER BUS BAR.
 - 35. TELCO BOARD AND NIU.
 - 36. ELECTRICAL DISTRIBUTION WALL.
 - 37. CABLE ENTRY WITH SURGE SUPPRESSION.
 - 38. ENTRANCE TO EQUIPMENT ROOM.
 - 39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
 - 40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.
 - 41. ANTENNA AND MAST GROUNDING.
 - 42. LANDSCAPING - WHERE APPLICABLE.
- 3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION		5/22/14	J.M	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

**1455 FORBES STREET
EAST HARTFORD, CT 06118**

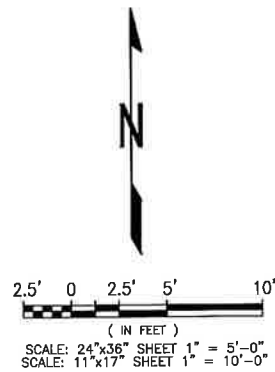
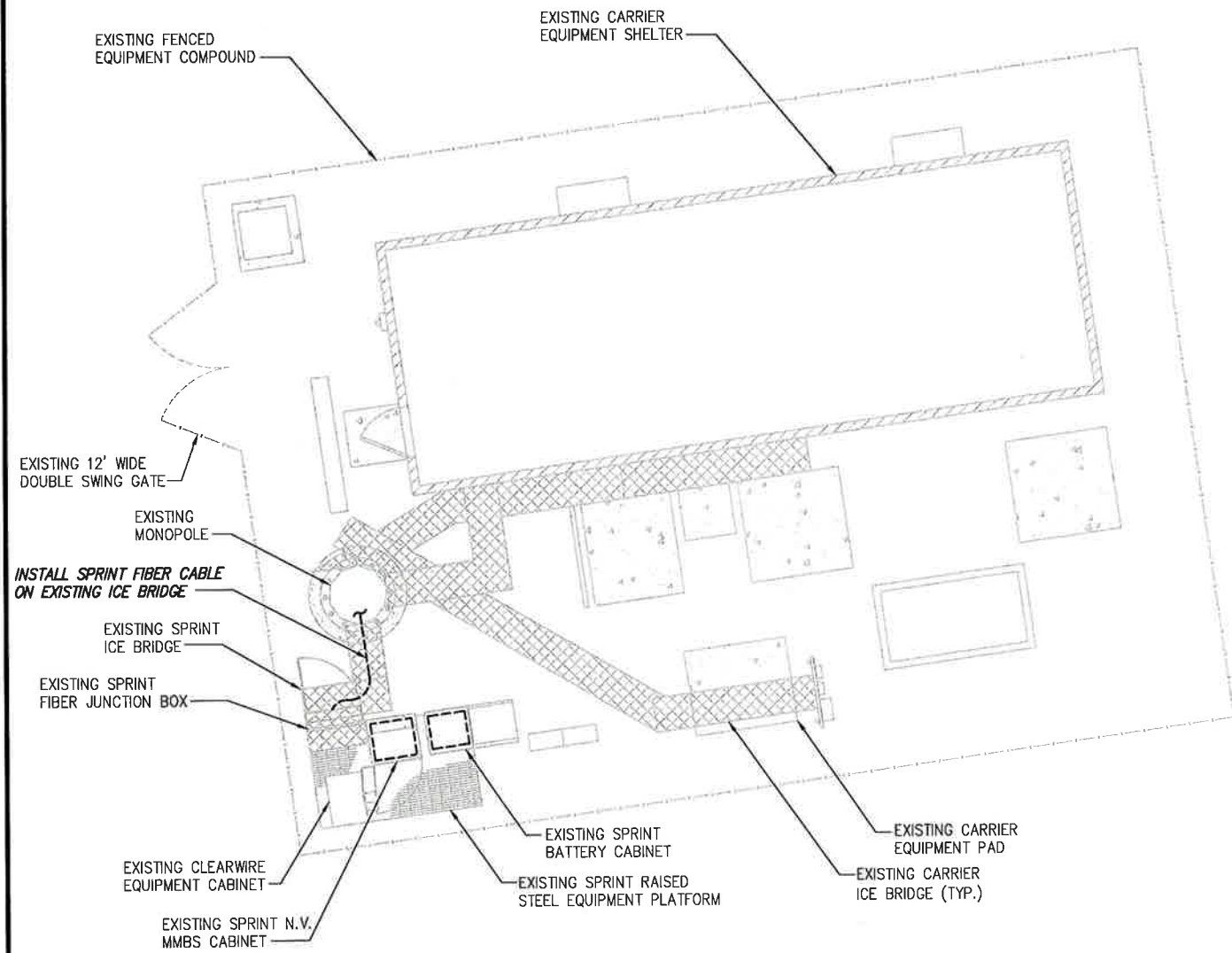
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SPRINT SPECIFICATIONS

SHEET NUMBER:

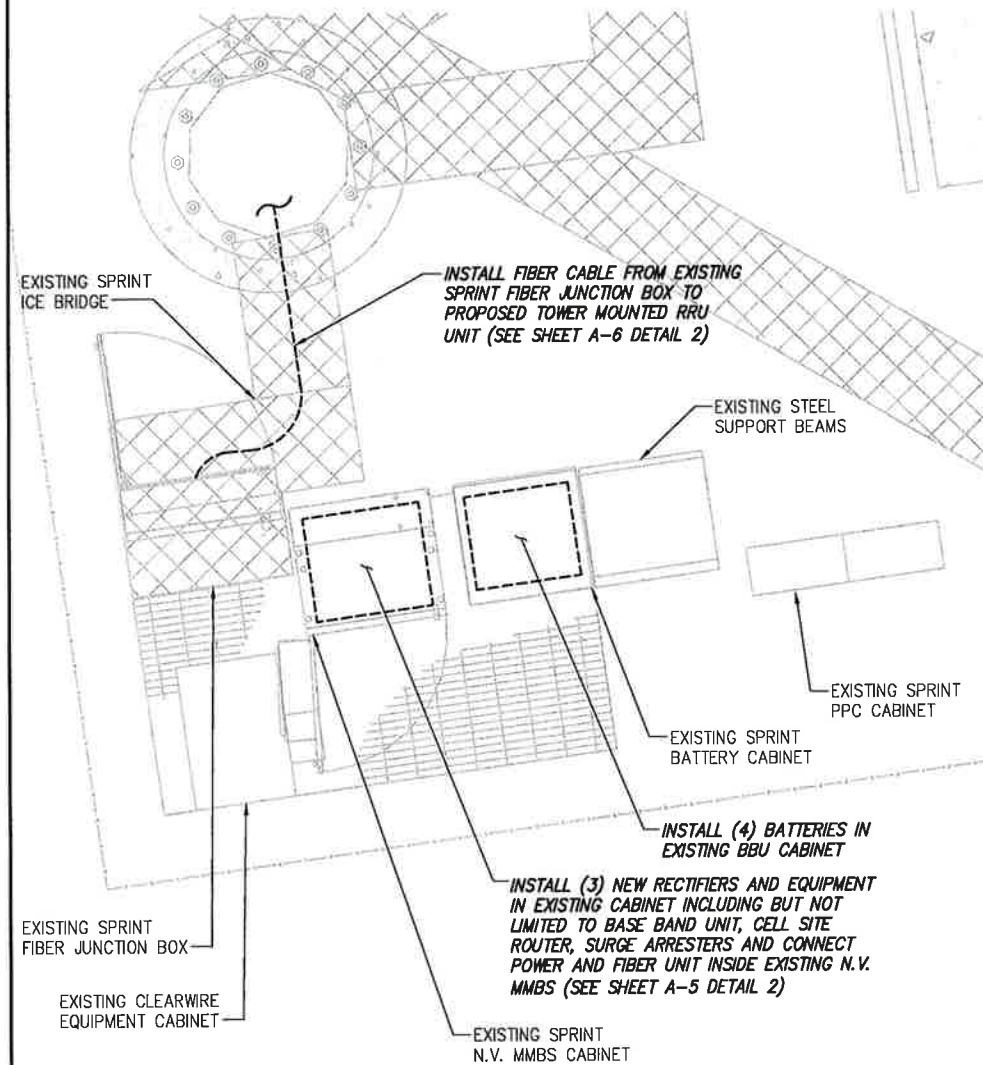
SP-3

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.



OVERALL SITE PLAN

SCALE: AS NOTED 1



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

PLANS PREPARED FOR:

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:

ENGINEERING LICENSE:

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ISSUED FOR CONSTRUCTION	5/22/14	JJM	0

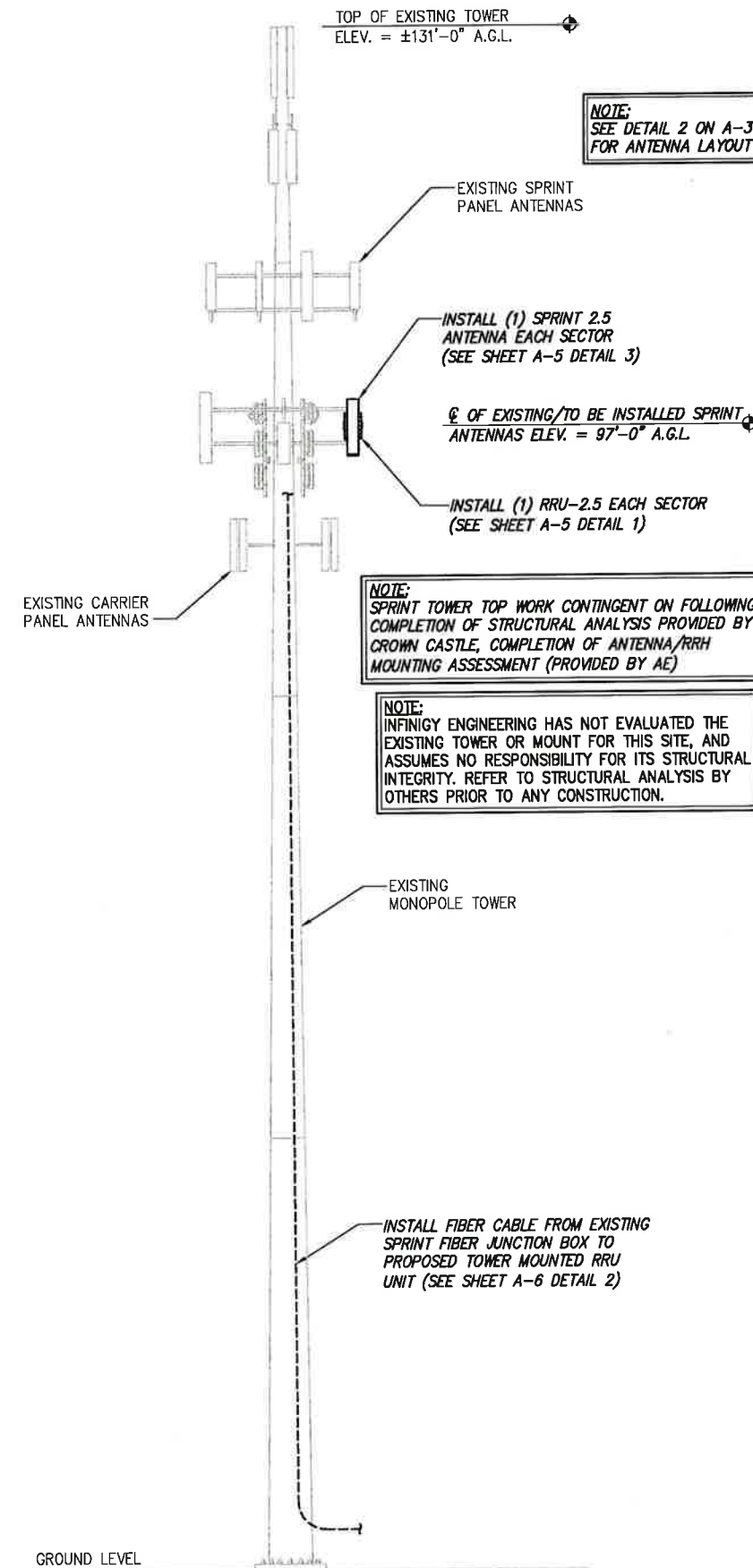
SITE NAME:
EAST HARTFORD

SITE CASCADE:
CT03XC251

SITE ADDRESS:
**1455 FORBES STREET
EAST HARTFORD, CT 06118**

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1



NOTE:
SEE DETAIL 2 ON A-3
FOR ANTENNA LAYOUT

NOTE:
SPRINT TOWER TOP WORK CONTINGENT ON FOLLOWING:
COMPLETION OF STRUCTURAL ANALYSIS PROVIDED BY
CROWN CASTLE, COMPLETION OF ANTENNA/RRH
MOUNTING ASSESSMENT (PROVIDED BY AE)

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE
EXISTING TOWER OR MOUNT FOR THIS SITE, AND
ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL
INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY
OTHERS PRIOR TO ANY CONSTRUCTION.

DETAIL NOT USED NO SCALE 2

DETAIL NOT USED NO SCALE 3

DETAIL NOT USED NO SCALE 4

PLANS PREPARED FOR:

6590 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

Design.
Build.
Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

ENGINEERING LICENSE:

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DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:

TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-2

TOWER ELEVATION NO SCALE 1



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ISSUED FOR CONSTRUCTION		5/22/14	J.M	0

SITE NAME: EAST HARTFORD

SITE CASCADE: CT03XC251

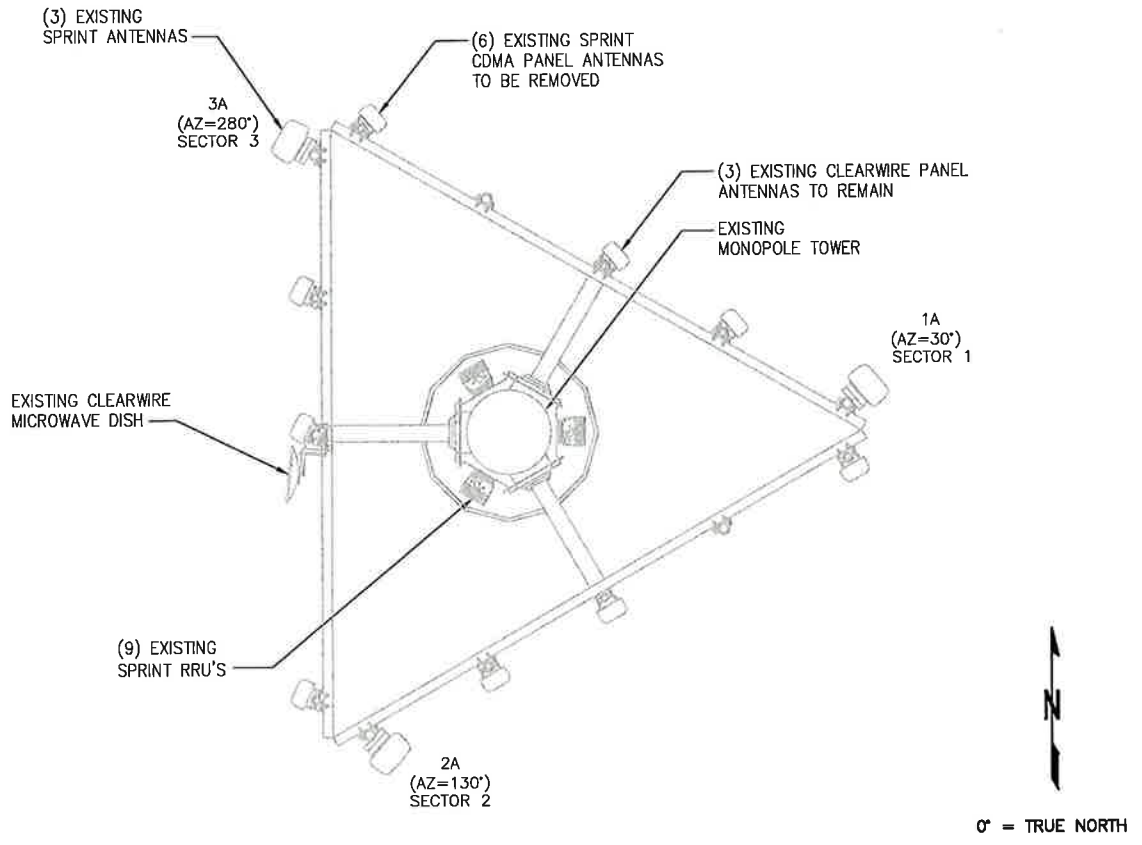
SITE ADDRESS: 1455 FORBES STREET, EAST HARTFORD, CT 06118

SHEET DESCRIPTION: ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER: A-3

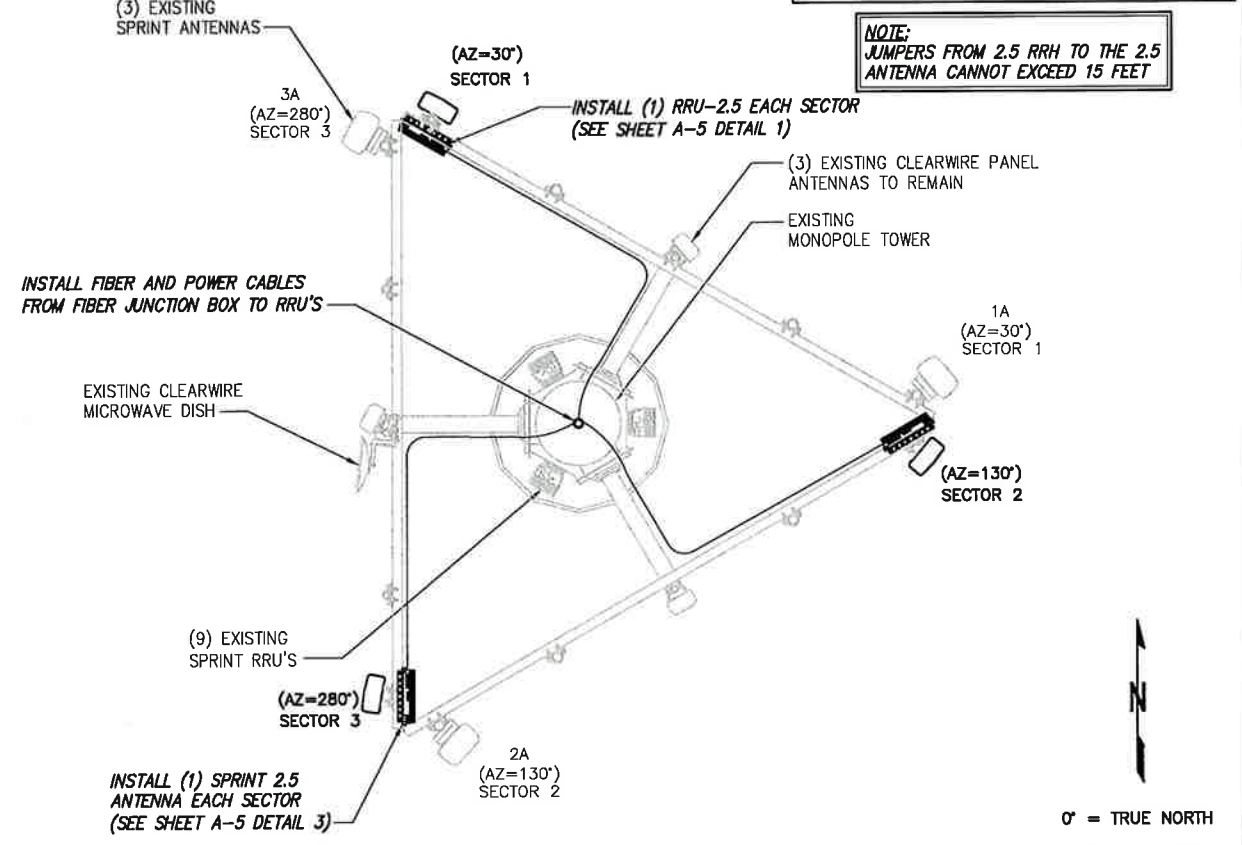
THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

NOTE: JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET



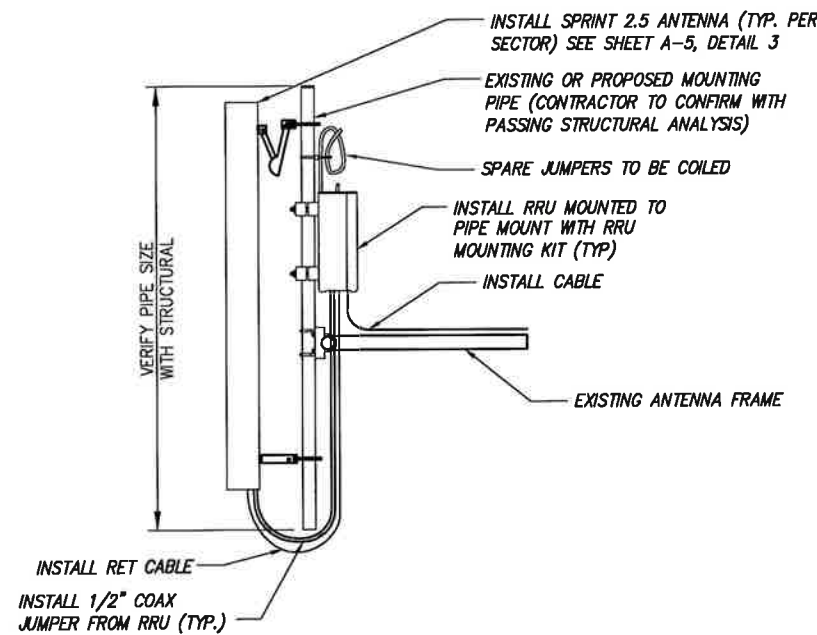
EXISTING ANTENNA & RRU LAYOUT

NO SCALE 1



FINAL ANTENNA LAYOUT

NO SCALE 2



- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
 - COIL FIBER CABLE AND SECURE AT SIDE OF RRU.
 - DO NOT EXCEED BEND RADIUS.

NOTE: CONTRACTOR TO POSITION RRU ON MOUNT BEHIND ANTENNA SUCH THAT THE RRU DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: SPARE DC CABLES ARE COILED UP ON NV RRHS AT SPRINT ARRAY. THESE ARE TO BE USED TO POWER UP THE 2.5 RRHS AND TIED INTO EXISTING DC BREAKERS INSIDE THE FIBER JUNCTION BOX LOCATED AT EQUIPMENT.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRU MOUNTING DETAILS.

DETAIL NOT USED

NO SCALE 3

TYPICAL ANTENNA & RRU MOUNTING DETAILS

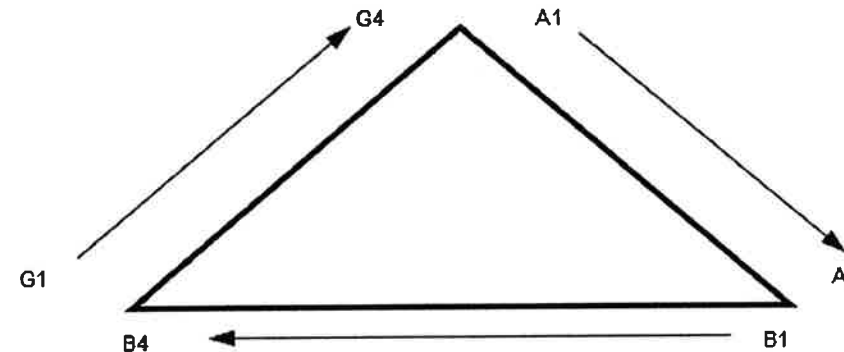
NO SCALE 4

NV CABLES				
BAND	INDICATOR	PORT	COLOR	
800-1	YEL GRN	NV-1	GRN	
1900-1	YEL RED	NV-2	BLU	
1900-2	YEL BRN	NV-3	BRN	
1900-3	YEL BLU	NV-4	WHT	
1900-4	YEL SLT	NV-5	RED	
800-2	YEL ORG	NV-6	SLT	
SPARE	YEL WHT	NV-7	PPL	
2500	YEL PPL	NV-8	ORG	

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1		COLOR
YEL	WHT	GRN
YEL	WHT	BLU
YEL	WHT	BRN
YEL	WHT	WHT
YEL	WHT	RED
YEL	WHT	SLT
YEL	WHT	PPL
YEL	WHT	ORG

Figure 1: Antenna Orientation



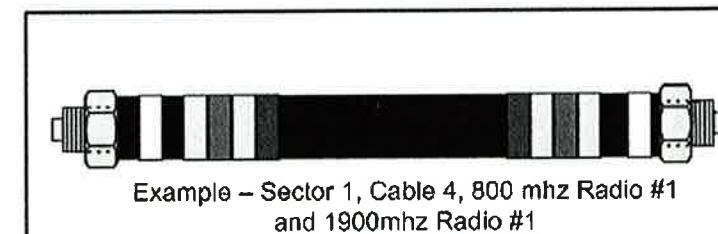
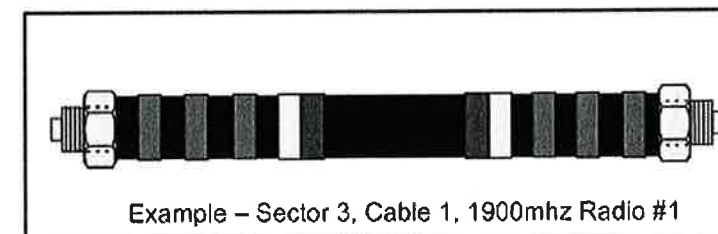
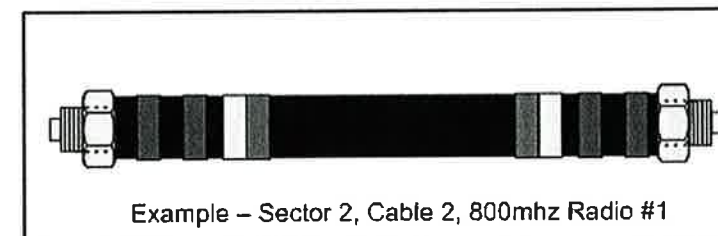
NOTES:

- ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.
- A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
- SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.
- HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
- HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
- INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
	2	No Tape	No Tape	No Tape
	3	Brown	No Tape	No Tape
	4	White	No Tape	No Tape
	5	Red	No Tape	No Tape
	6	Grey	No Tape	No Tape
	7	Purple	No Tape	No Tape
	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
	2	No Tape	No Tape	No Tape
	3	Brown	Brown	No Tape
	4	White	White	No Tape
	5	Red	Red	No Tape
	6	Grey	Grey	No Tape
	7	Purple	Purple	No Tape
	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
	2	No Tape	No Tape	No Tape
	3	Brown	Brown	Brown
	4	White	White	White
	5	Red	Red	Red
	6	Grey	Grey	Grey
	7	Purple	Purple	Purple
	8	Orange	Orange	Orange

NV FREQUENCY	INDICATOR	ID
800-1	YEL GRN	
1900-1	YEL RED	
1900-2	YEL BRN	
1900-3	YEL BLU	
1900-4	YEL SLT	
800-1	YEL ORG	
RESERVED	YEL WHT	
RESERVED	YEL PPL	

2.5 FREQUENCY	INDICATOR	ID
2500 -1	YEL WHT GRN	
2500 -2	YEL WHT RED	
2500 -3	YEL WHT BRN	
2500 -4	YEL WHT BLU	
2500 -5	YEL WHT SLT	
2500 -6	YEL WHT ORG	
2500 -7	YEL WHT WHT	
2500 -8	YEL WHT PPL	



PLANS PREPARED FOR:

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:

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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION		5/22/14	JLM	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:

COLOR CODING AND NOTES

SHEET NUMBER:

A-4

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:



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EAST HARTFORD

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CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:

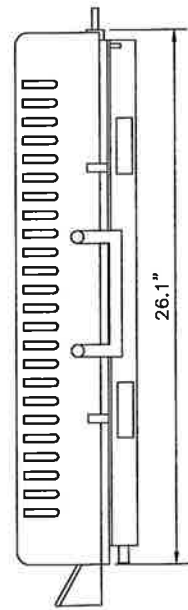
EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

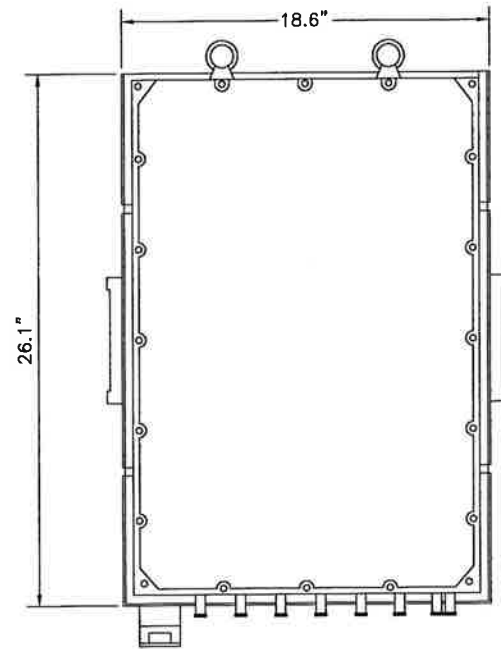
A-5

RRU: ALCATEL LUCENT TD-RRH8X20

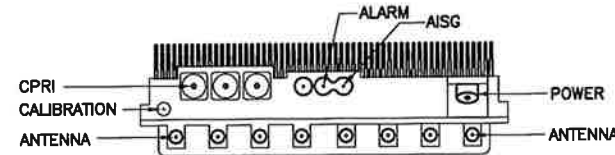
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



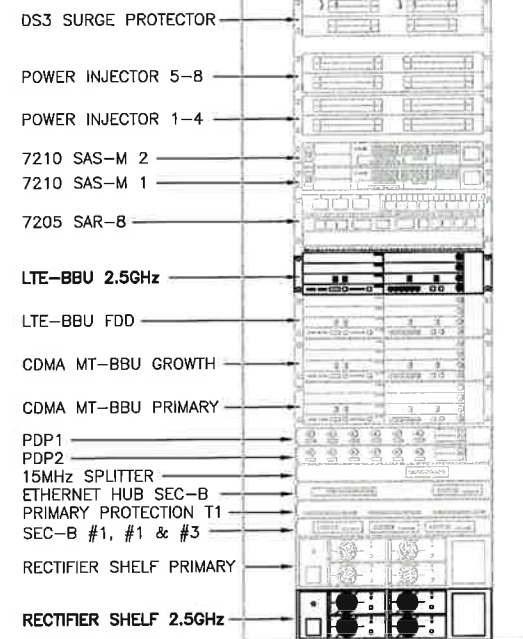
FRONT VIEW



PLAN VIEW

NOTES

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRU'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRU PACKAGES IN THE RAIN



FRONT VIEW

2.5 RRU

NO SCALE

1

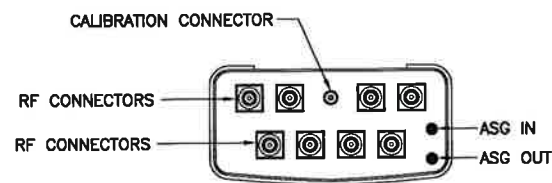
NEW EQUIPMENT IN EXISTING CABINET

NO SCALE

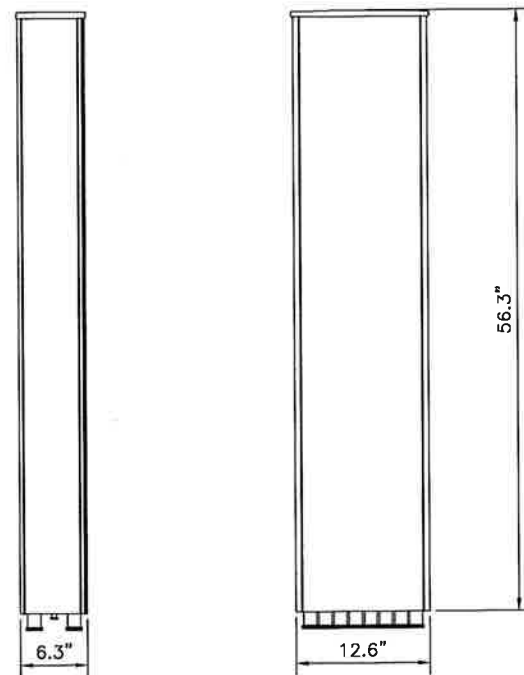
2

ANTENNA: RFS APXVTM14-C-I20

RADOME MATERIAL: ASA
 RADOME COLOR: LIGHT GRAY
 DIMENSIONS, HxWxD.in(mim): 56.3"x12.6"x6.3" (1430x320x160mm)
 WEIGHT: 52.9 lbs
 CONNECTORS: (8) 4.1/9.5 DIN FEMALE
 (1) NF - CALIBRATION CONNECTOR



PLAN VIEW



2.5 ANTENNA

NO SCALE

3

DETAIL NOT USED

NO SCALE

4

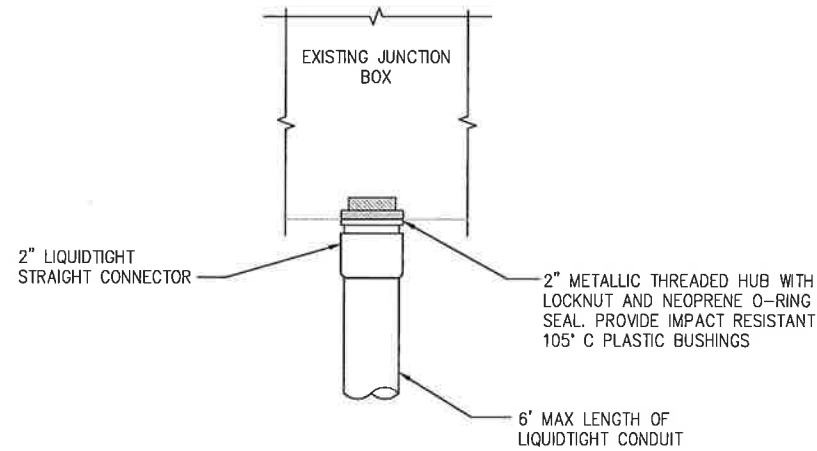
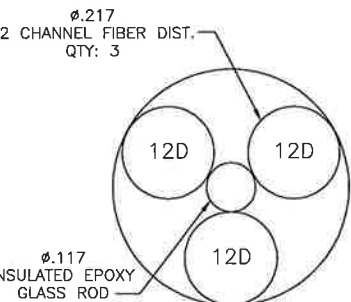
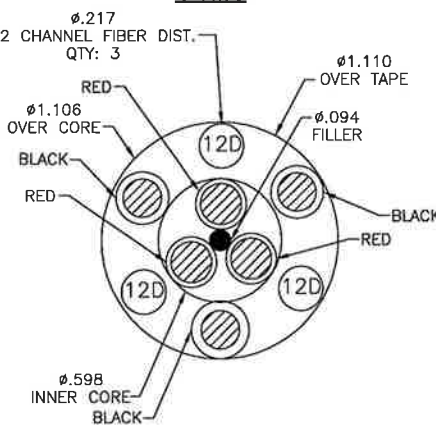
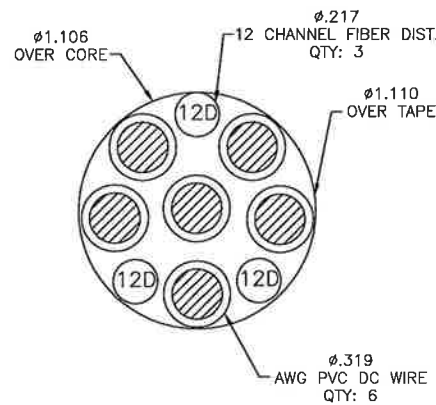
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
6 AWG Power	Hybrid cable MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
4 AWG Power	Hybrid cable MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



FIBER JUNCTION BOX PENETRATION

NO SCALE

2

2.5 CABLE CROSS SECTION DATA

NO SCALE

1

DETAIL NOT USED

NO SCALE

3

PLANS PREPARED FOR:

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-100X

MLA PARTNER:

ENGINEERING LICENSE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

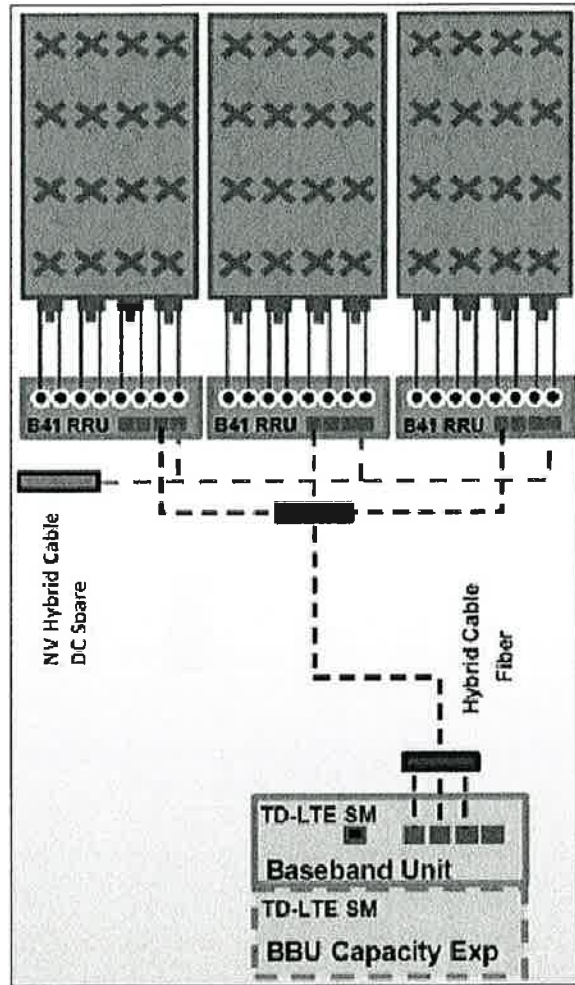
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EAST HARTFORD

SITE CASCADE:
CT03XC251

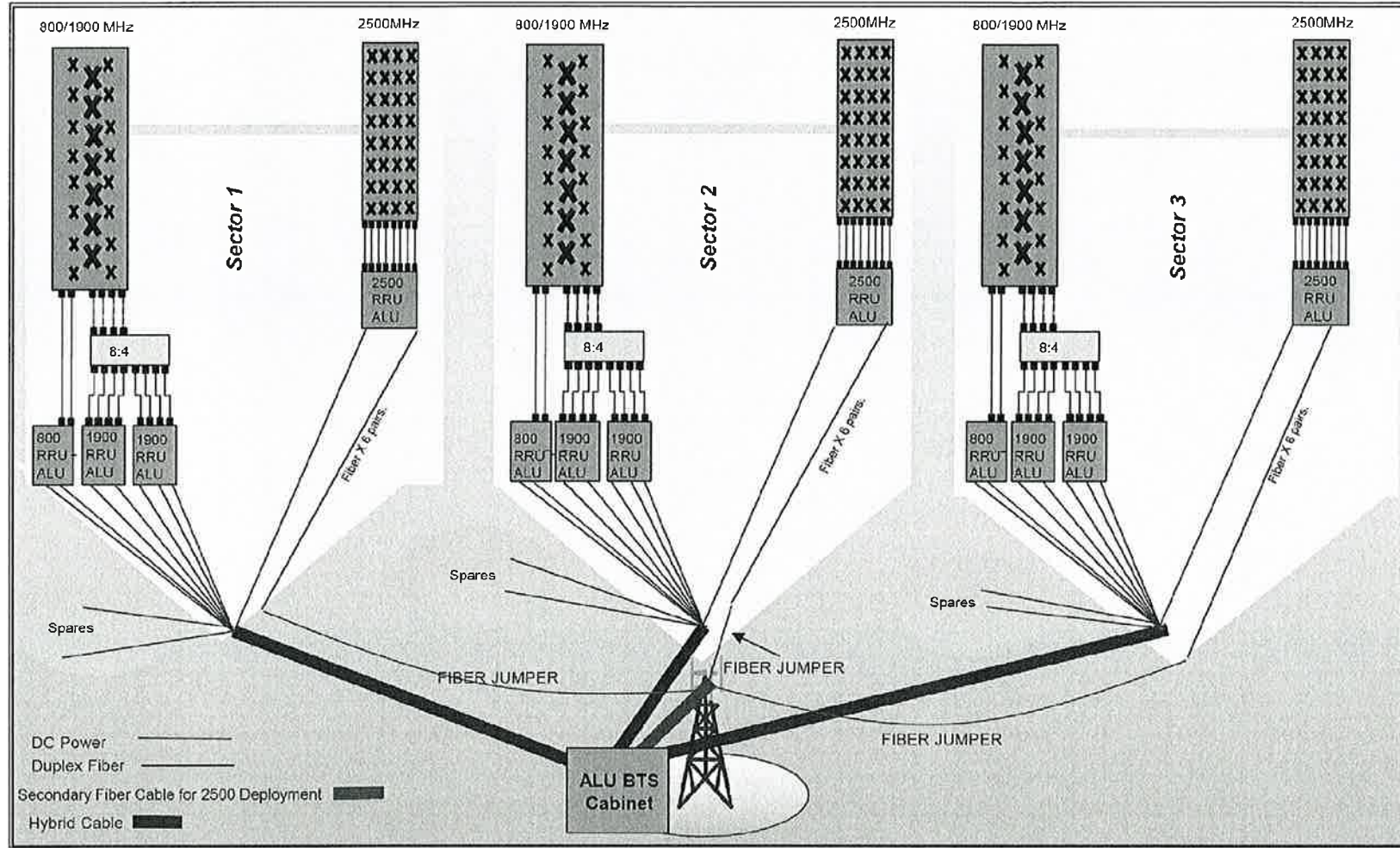
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1455 FORBES STREET
EAST HARTFORD, CT 06118

SHEET DESCRIPTION:
CIVIL DETAILS

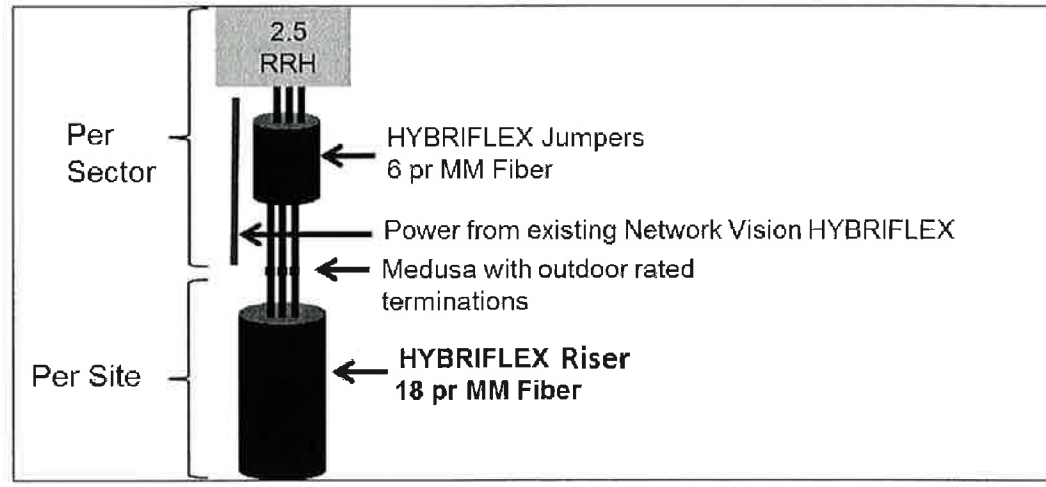
SHEET NUMBER:
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

NO SCALE 1

PLANS PREPARED FOR:
Sprint
 6580 Sprint Parkway
 Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
 1033 Watervliet Shaker Rd
 Albany, NY 12205
 Office # (518) 690-0790
 Fax # (518) 690-0793
 JOB NUMBER 353-100X

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:

 JOHN S. STEVENS
 No. 24705
 LICENSED PROFESSIONAL ENGINEER

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DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:
EAST HARTFORD

SITE CASCADE:
CT03XC251

SITE ADDRESS:
 1455 FORBES STREET
 EAST HARTFORD, CT 06118

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-7

PLANS PREPARED FOR:



PLANS PREPARED BY:



MLA PARTNER:



ENGINEERING LICENSE:

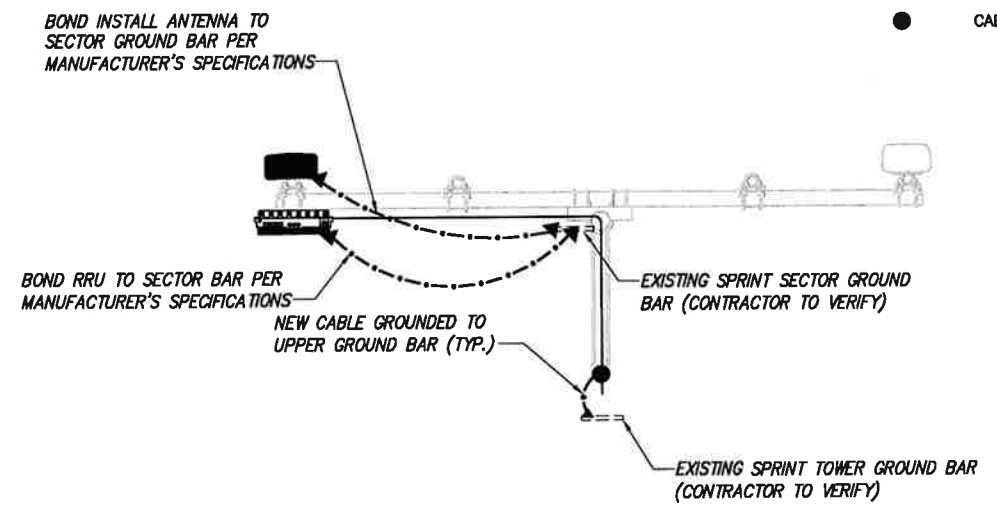


PLAN NOT USED

NO SCALE

1

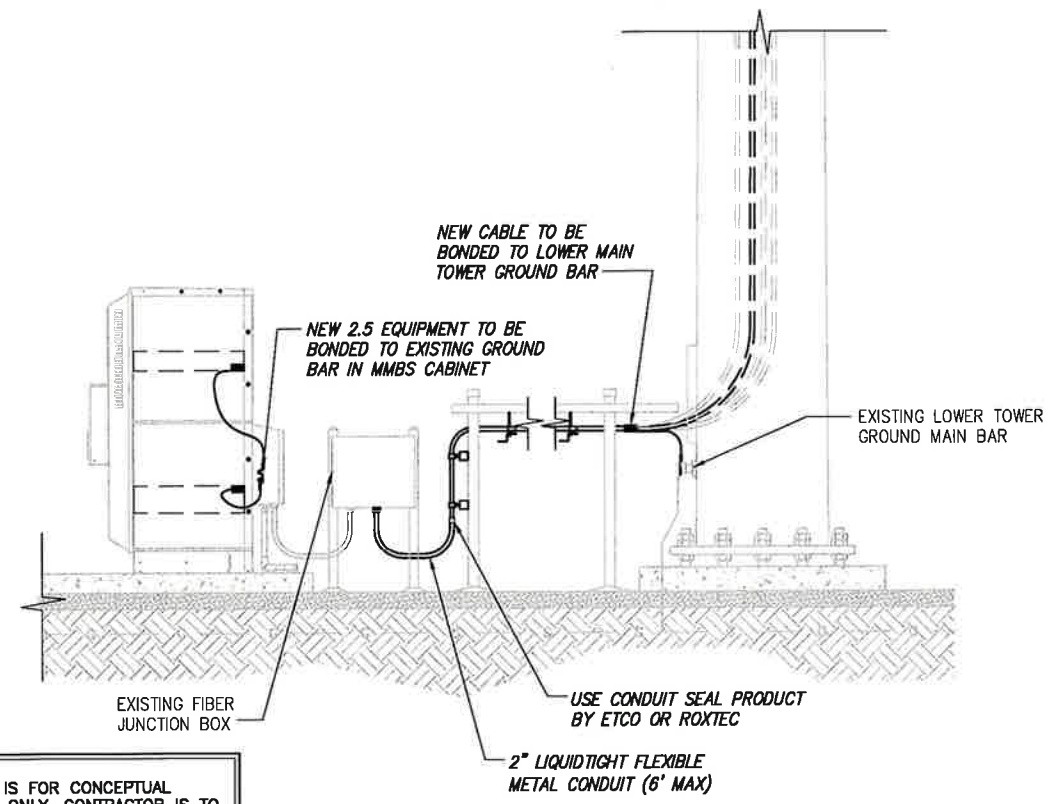
- LEGEND:**
- G — EXISTING GROUND RING
 - CADWELD CONNECTION (EXOTHERMIC WELD)
 - ▲ MECHANICAL CONNECTION
 - ⊗ GROUND ROD
 - CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2



NOTE: DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE

3

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JLM	0

SITE NAME:

EAST HARTFORD

SITE CASCADE:

CT03XC251

SITE ADDRESS:

1455 FORBES STREET
EAST HARTFORD, CT 06118

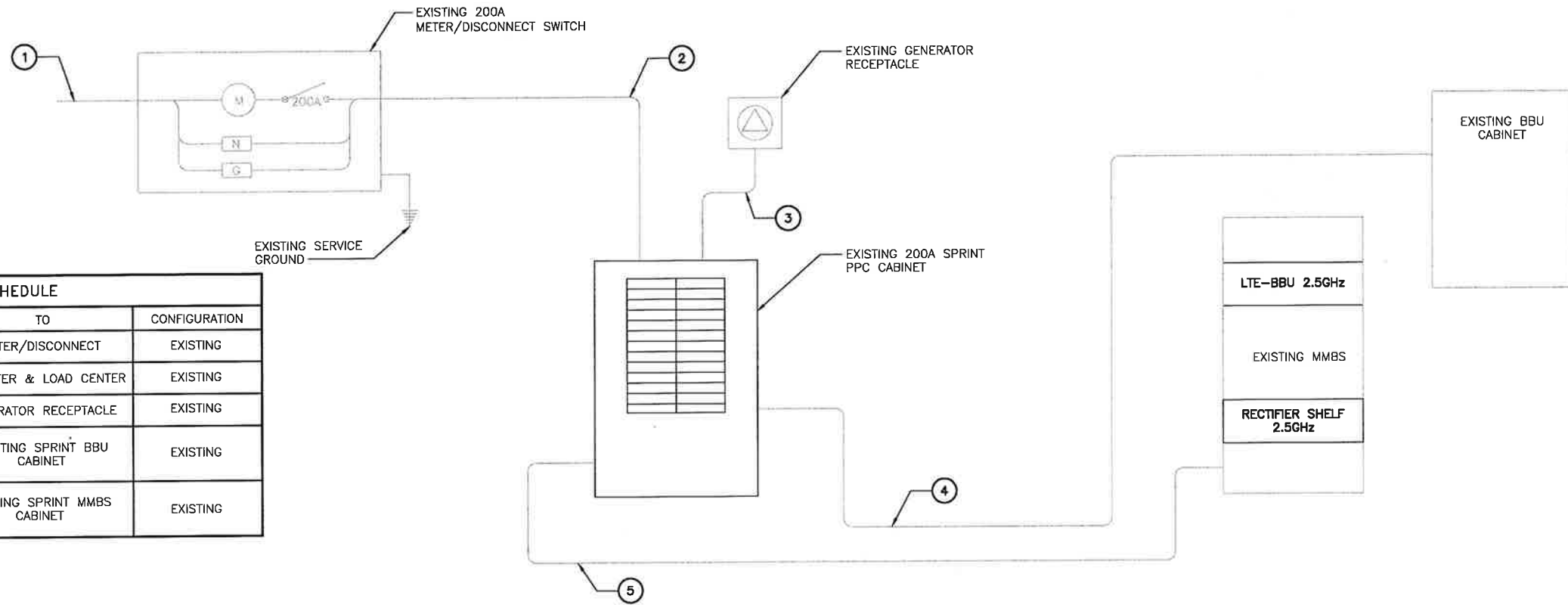
SHEET DESCRIPTION:

ELECTRICAL &
GROUNDING PLAN

SHEET NUMBER:

E-1

NOTES
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.

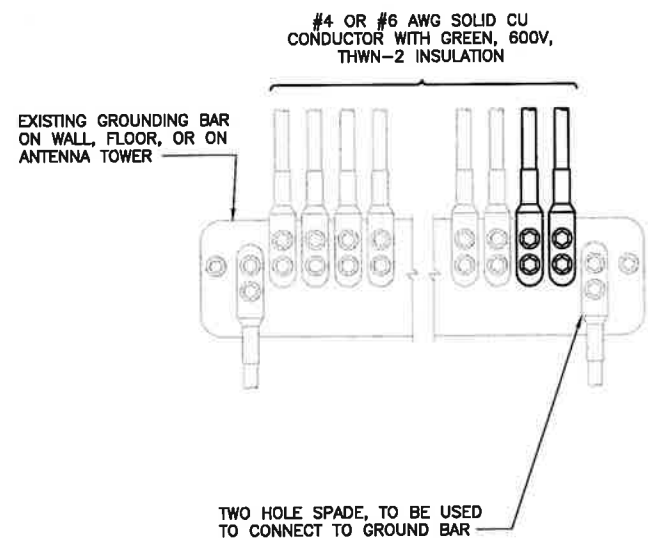


CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	EXISTING
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
③	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
④	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
⑤	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

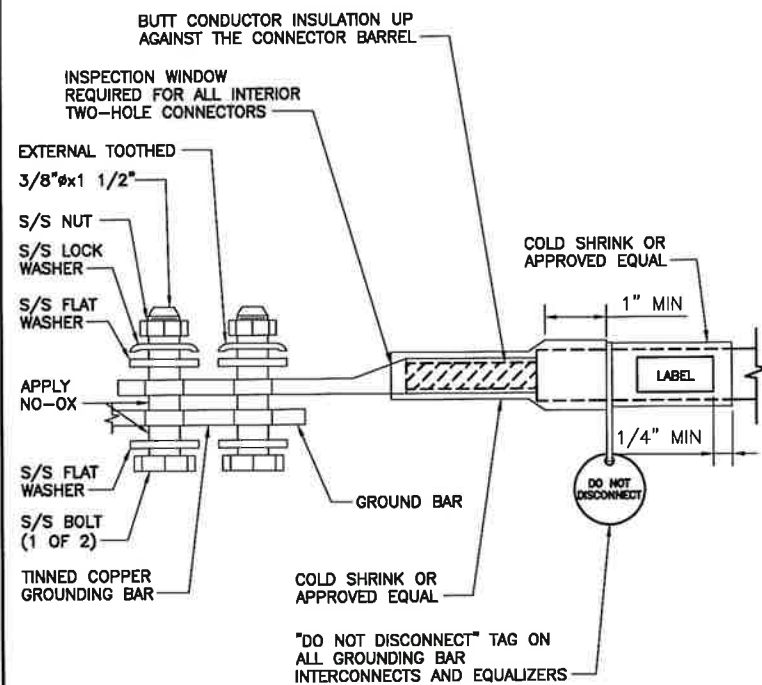
ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

1



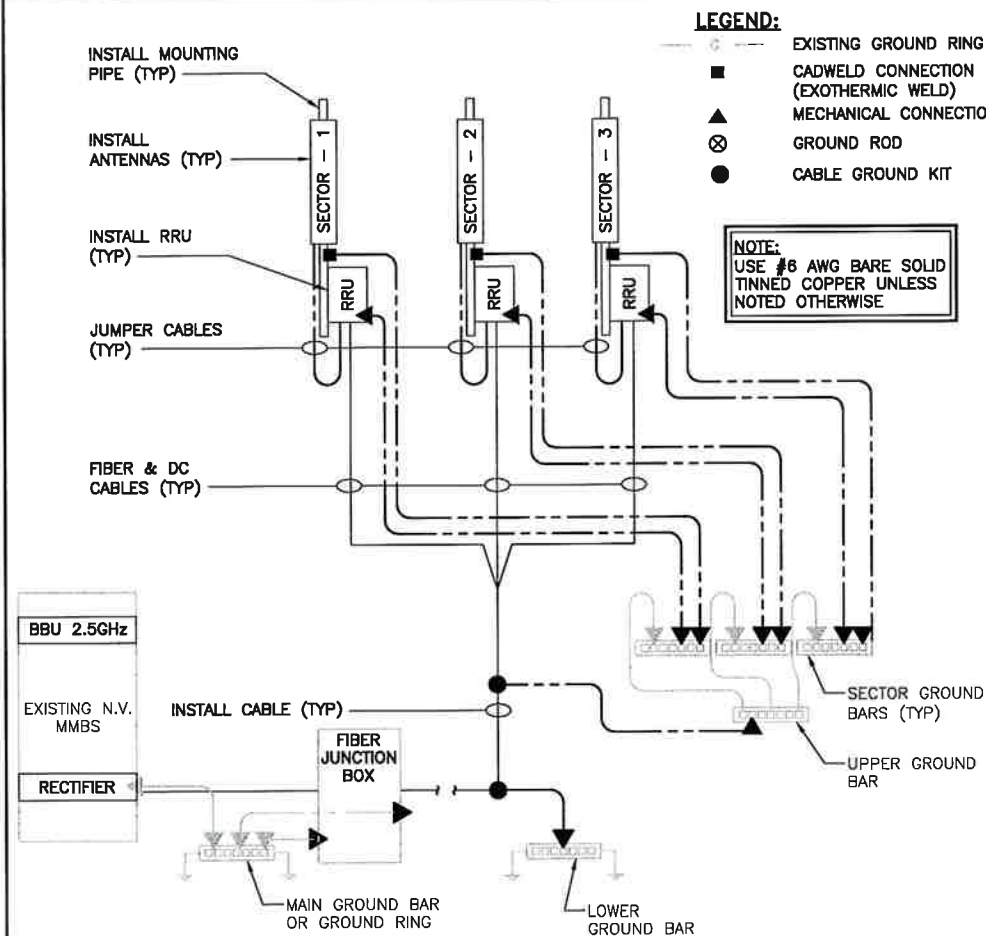
NOTES
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.



TWO HOLE LUG

NO SCALE

3



GROUNDING RISER DIAGRAM

NO SCALE

4

PLANS PREPARED FOR:

6580 Sprint Parkway
 Overland Park, Kansas 66251

PLANS PREPARED BY:

Design. Build. Deliver.
 1033 Watervliet Shaker Rd
 Albany, NY 12205
 Office # (518) 690-0790
 Fax # (518) 690-0793
 JOB NUMBER 353-XXX

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	5/22/14	JJM	0

SITE NAME:
EAST HARTFORD

SITE CASCADE:
CT03XC251

SITE ADDRESS:
 1455 FORBES STREET
 EAST HARTFORD, CT 06118

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:
E-2

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE

2



ENGINEERING INNOVATION

Velocitel, Inc. d.b.a. FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, NC 27616
919-755-1012

Date: **June 19, 2017**

Rebecca Klein
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Subject: Structural Analysis Report

Carrier Designation:	Sprint Co-Locate	
	Carrier Site Number:	CT03XC251
	Carrier Site Name:	CT03XC251
Crown Castle Designation:	Crown Castle BU Number:	806376
	Crown Castle Site Name:	HRT 100 943239
	Crown Castle JDE Job Number:	441854
	Crown Castle Work Order Number:	1417742
	Crown Castle Application Number:	393435 Rev. 0
Engineering Firm Designation:	FDH Velocitel Project Number:	17QGOK1400
Site Data:	1455 FORBES STREET, EAST HARTFORD, Hartford County, CT	
	Latitude 41° 43' 53.3", Longitude -72° 36' 28"	
	131 Foot - Monopole Tower	

Dear Rebecca Klein,

FDH Velocitel 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 1046930, in accordance with application 393435, 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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment	Sufficient Capacity
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.	

This analysis has been performed in accordance with the 2012 International Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a topographic category 1 and Risk Category II were used in this analysis.

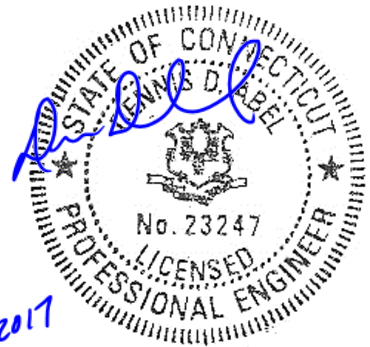
We at FDH Velocitel appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Patrick E. Roach, EI
Project Engineer

Reviewed by:

Dennis D. Abel, PE
Director, New Product Development
CT PE License No. 23247



06-19-2017

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1) INTRODUCTION

This tower is a 131 ft Monopole tower designed by VALMONT in January of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This tower has been modified multiple times in the past. These modifications have been considered in this analysis. The modifications by GPD Group dated October 21, 2016 have been considered 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 C 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
97.0	97.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	-
		3	rfs celwave	APXVTM14-ALU-I20			

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	
121.0	121.0	1	crown mounts	T-Arm Mount [TA 702-3]	6 2 1 1 2 1	1-1/4 3/4 3/8 Conduit 3/4 3/8	1	
		3	kathrein	800 10121 w/ Mount Pipe				
	3	ericsson	RRUS-11					
	6	powerwave technologies	LGP21401					
	120.0	1	raycap	DC6-48-60-18-8F				
		3	ericsson	RRUS 32				
		3	ericsson	RRUS 32 B2				
		3	kathrein	80010798 w/ Mount Pipe				
1		raycap	DC6-48-60-18-8F					
107.0	111.0	6	andrew	SBNHH-1D65B	13	1-5/8	1	
		3	antel	BXA-70063/6CFx4				
		3	antel	BXA-80063/4CF				
		2	rfs celwave	DB-T1-6Z-8AB-0Z				
		3	alcatel lucent	B25 RRH4X30				
	107.0	107.0	3	alcatel lucent	B66A RRH4X45	1	1-5/8	2
			3	alcatel lucent	B13 RRH 4X30			
			1	crown mounts	Platform Mount (LP 101-1)			
		6	rfs celwave	FD9R6004/2C-3L				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
	99.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz w/Mount Pipe			
		1	crown mounts	Side Arm Mount [SO 101-3]			
	98.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz w/Mount Pipe			
97.0	101.0	2	andrew	VHLP2.5-11	3 3 3 2	5/16 1/2 1-1/4 Conduits	1
		2	dragonwave	HORIZON COMPACT			
	97.0	1	crown mounts	Platform Mount (LP 101-1)			
		3	kathrein	840 10054			
		1	motorola	TIMING 2000			
		3	rfs celwave	APXVSP18-C-A20			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		3	samsung telecommunications	WIMAX DAP HEAD			
87.0	87.0	3	commscope	LNx-6515DS-VTM w/ Mount Pipe	12 1 1	1-1/4 1-5/8 7/8	1
		1	crown mounts	T-Arm Mount [TA 602-3]			
		3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment To Be Removed

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)
Unknown						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Welts, 11/11/91	262381	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont, 10613-91 & 10614-91, 11/30/91	262389	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 1/22/91	262386	CCISITES
4-TOWER MANUFACTURER DRAWINGS	TEP, 10/04/16	6484331	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 127151, 2/26/2013	3675451	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25676, 6/4/2014	5099148	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 150936, 10/2/15	5921968	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2016777.806376.03, 10/21/06	6515906	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	PJF, 37517-1009.002.7805, 3/25/17	6789312	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) 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) Monopole was reinforced in conformance with the referenced modification drawings.
- 5) Monopole will be modified in conformance with the referenced proposed modification drawings.
- 6) The modifications by GPD Group dated October 21, 2016 have been considered in this analysis.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
131 - 126	Pole	TP11.715x10.525x0.1875	Pole	0.6%	Pass
126 - 121	Pole	TP12.906x11.715x0.1875	Pole	1.9%	Pass
121 - 116	Pole	TP14.096x12.906x0.1875	Pole	12.3%	Pass
116 - 111	Pole	TP15.287x14.096x0.1875	Pole	22.0%	Pass
111 - 110	Pole	TP15.525x15.287x0.1875	Pole	23.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP16.776x15.525x0.25	Pole	32.1%	Pass
105 - 100	Pole	TP18.027x16.776x0.25	Pole	43.8%	Pass
100 - 95	Pole	TP19.277x18.027x0.25	Pole	57.3%	Pass
95 - 89.9	Pole + Reinf.	TP20.553x19.277x0.5	Reinf. 14 Tension Rupture	63.3%	Pass
89.9 - 89.67	Pole + Reinf.	TP20.611x20.553x0.5	Reinf. 14 Tension Rupture	63.8%	Pass
89.67 - 84.57	Pole + Reinf.	TP21.887x20.611x0.6375	Reinf. 14 Tension Rupture	59.3%	Pass
84.57 - 84.33	Pole + Reinf.	TP21.946x21.887x0.6375	Reinf. 14 Tension Rupture	59.8%	Pass
84.33 - 82.92	Pole + Reinf.	TP22.3x21.946x0.625	Reinf. 14 Tension Rupture	62.9%	Pass
82.92 - 82.67	Pole + Reinf.	TP22.362x22.3x0.3938	Reinf. 12 Tension Rupture	74.0%	Pass
82.67 - 80.98	Pole + Reinf.	TP22.785x22.362x0.3875	Reinf. 12 Tension Rupture	77.6%	Pass
80.98 - 80.73	Pole + Reinf.	TP22.847x22.785x0.3875	Reinf. 12 Tension Rupture	78.1%	Pass
80.73 - 75.73	Pole + Reinf.	TP24.098x22.847x0.3813	Reinf. 12 Tension Rupture	87.7%	Pass
75.73 - 74	Pole + Reinf.	TP25.531x24.098x0.3813	Reinf. 12 Tension Rupture	90.6%	Pass
74 - 69	Pole + Reinf.	TP25.281x24.03x0.4375	Reinf. 12 Tension Rupture	87.4%	Pass
69 - 66.98	Pole + Reinf.	TP25.785x25.281x0.4375	Reinf. 10 Tension Rupture	89.7%	Pass
66.98 - 66.73	Pole + Reinf.	TP25.848x25.785x0.4375	Reinf. 10 Tension Rupture	90.0%	Pass
66.73 - 64.08	Pole + Reinf.	TP26.511x25.848x0.4313	Reinf. 10 Tension Rupture	92.8%	Pass
64.08 - 63.83	Pole + Reinf.	TP26.573x26.511x0.575	Reinf. 11 Tension Rupture	88.0%	Pass
63.83 - 62.42	Pole + Reinf.	TP26.928x26.573x0.5625	Reinf. 11 Tension Rupture	89.6%	Pass
62.42 - 62.17	Pole + Reinf.	TP26.99x26.928x0.6125	Reinf. 9 Tension Rupture	89.0%	Pass
62.17 - 59.46	Pole + Reinf.	TP27.668x26.99x0.6125	Reinf. 9 Tension Rupture	91.9%	Pass
59.46 - 59.21	Pole + Reinf.	TP27.73x27.668x0.725	Reinf. 8 Compression	82.6%	Pass
59.21 - 56	Pole + Reinf.	TP28.532x27.73x0.7125	Reinf. 8 Compression	85.7%	Pass
56 - 55.75	Pole + Reinf.	TP28.595x28.532x0.7375	Reinf. 8 Compression	84.4%	Pass
55.75 - 50.75	Pole + Reinf.	TP29.846x28.595x0.7125	Reinf. 8 Compression	88.7%	Pass
50.75 - 45.75	Pole + Reinf.	TP31.096x29.846x0.7	Reinf. 8 Compression	92.6%	Pass
45.75 - 44.48	Pole + Reinf.	TP31.413x31.096x0.6875	Reinf. 8 Compression	93.6%	Pass
44.48 - 44.23	Pole + Reinf.	TP31.476x31.413x0.6125	Reinf. 4 Tension Rupture	88.0%	Pass
44.23 - 44.08	Pole + Reinf.	TP31.513x31.476x0.6125	Reinf. 4 Tension Rupture	88.1%	Pass
44.08 - 39.08	Pole + Reinf.	TP32.764x31.513x0.6	Reinf. 4 Tension Rupture	91.2%	Pass
39.08 - 39	Pole + Reinf.	TP34.015x32.764x0.6	Reinf. 4 Tension Rupture	91.2%	Pass
39 - 34	Pole + Reinf.	TP33.408x32.159x0.6313	Reinf. 4 Tension Rupture	91.9%	Pass
34 - 31.46	Pole + Reinf.	TP34.043x33.408x0.6188	Reinf. 4 Tension Rupture	93.1%	Pass
31.46 - 31.21	Pole + Reinf.	TP34.105x34.043x0.6188	Reinf. 4 Tension Rupture	93.2%	Pass
31.21 - 29.46	Pole + Reinf.	TP34.543x34.105x0.6188	Reinf. 4 Tension Rupture	93.9%	Pass
29.46 - 29.21	Pole + Reinf.	TP34.605x34.543x0.6188	Reinf. 4 Tension Rupture	94.0%	Pass
29.21 - 26.83	Pole + Reinf.	TP35.198x34.605x0.6188	Reinf. 4 Tension Rupture	95.0%	Pass
26.83 - 26.58	Pole + Reinf.	TP35.261x35.198x0.8438	Reinf. 2 Compression	85.1%	Pass
26.58 - 21.58	Pole + Reinf.	TP36.509x35.261x0.8188	Reinf. 2 Compression	87.3%	Pass
21.58 - 20.75	Pole + Reinf.	TP36.718x36.509x0.8188	Reinf. 2 Compression	87.6%	Pass
20.75 - 20.5	Pole + Reinf.	TP36.78x36.718x0.8188	Reinf. 2 Compression	87.1%	Pass
20.5 - 18	Pole + Reinf.	TP37.404x36.78x0.8063	Reinf. 2 Compression	88.1%	Pass
18 - 17.75	Pole + Reinf.	TP37.467x37.404x0.8188	Reinf. 4 Tension Rupture	72.6%	Pass
17.75 - 17.08	Pole + Reinf.	TP37.633x37.467x0.8188	Reinf. 4 Tension Rupture	72.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
17.08 - 16.83	Pole + Reinf.	TP37.696x37.633x0.7313	Reinf. 4 Tension Rupture	80.9%	Pass
16.83 - 13	Pole + Reinf.	TP38.653x37.696x0.7188	Reinf. 4 Tension Rupture	82.1%	Pass
13 - 12.75	Pole + Reinf.	TP38.716x38.653x0.8938	Reinf. 1 Tension Rupture	67.9%	Pass
12.75 - 11.83	Pole + Reinf.	TP38.945x38.716x0.8938	Reinf. 1 Tension Rupture	68.1%	Pass
11.83 - 11.58	Pole + Reinf.	TP39.007x38.945x0.6688	Reinf. 1 Tension Rupture	90.9%	Pass
11.58 - 6.48	Pole + Reinf.	TP40.281x39.007x0.7563	Reinf. 1 Tension Rupture	87.2%	Pass
6.48 - 6.25	Pole + Reinf.	TP40.339x40.281x0.7563	Reinf. 1 Tension Rupture	87.3%	Pass
6.25 - 1.25	Pole + Reinf.	TP41.588x40.339x0.7438	Reinf. 1 Tension Rupture	88.5%	Pass
1.25 - 0	Pole + Reinf.	TP41.9x41.588x0.7313	Reinf. 1 Tension Rupture	88.8%	Pass
				Summary	
			Pole	70.4%	Pass
			Reinforcement	95.0%	Pass
			Overall	95.0%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	98.7	Pass
1	Base Plate	0	66.6	Pass
1	Transfer Stiffeners	0	61.5	Pass
1	Base Foundation	0	57.0	Pass
1	Base Foundation Soil Interaction	0	66.3	Pass
1	Flange Bolts	110	22.2	Pass
1	Flange Plate	110	11.8	Pass

Structure Rating (max from all components) =	98.7%
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Notes:

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

4.1) Recommendations

The monopole and its foundation will have the sufficient capacity to carry the proposed loading configuration. No further modifications are needed at this time.

APPENDIX A
TNXTOWER OUTPUT

131.0 ft

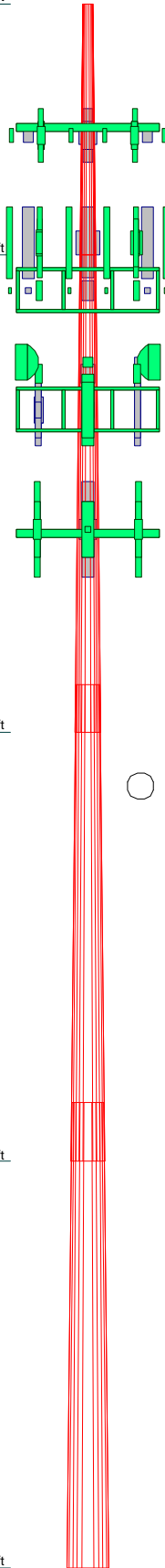
Section	1	2	3	4
Length (ft)	21.0000	40.0000	39.9200	39.0000
Number of Sides	12	12	12	12
Thickness (in)	0.1875	0.2500	0.3125	0.3438
Socket Length (ft)		4.0000	4.9200	
Top Dia (in)	10.5250	15.5250	24.0304	32.1594
Bot Dia (in)	15.5250	25.5310	34.0150	41.9000
Grade		A572-65		
Weight (K)	0.6	2.2	3.9	5.4

110.0 ft

70.0 ft

34.1 ft

0.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	Side Arm Mount [SO 101-3]	99
(2) LGP21401	121	TIMING 2000	97
(2) LGP21401	121	840 10054	97
(2) LGP21401	121	840 10054	97
DC6-48-60-18-8F	121	840 10054	97
T-Arm Mount [TA 702-3]	121	WIMAX DAP HEAD	97
80010798 w/ Mount Pipe	121	WIMAX DAP HEAD	97
80010798 w/ Mount Pipe	121	WIMAX DAP HEAD	97
80010798 w/ Mount Pipe	121	HORIZON COMPACT	97
RRUS 32	121	HORIZON COMPACT	97
RRUS 32	121	APXVSP18-C-A20	97
RRUS 32	121	APXVSP18-C-A20	97
RRUS 32 B2	121	APXVSP18-C-A20	97
RRUS 32 B2	121	IBC1900HG-2A	97
RRUS 32 B2	121	IBC1900HG-2A	97
DC6-48-60-18-8F	121	IBC1900HG-2A	97
BXA-80063/4CF	107	IBC1900BB-1	97
BXA-80063/4CF	107	IBC1900BB-1	97
BXA-80063/4CF	107	IBC1900BB-1	97
BXA-70063/6CFx4	107	Platform Mount (LP 101-1)	97
BXA-70063/6CFx4	107	APXVTM14-ALU-120	97
BXA-70063/6CFx4	107	APXVTM14-ALU-120	97
(2) SBNHH-1D65B	107	APXVTM14-ALU-120	97
(2) SBNHH-1D65B	107	TD-RRH8x20-25	97
(2) SBNHH-1D65B	107	TD-RRH8x20-25	97
(2) FD9R6004/2C-3L	107	TD-RRH8x20-25	97
(2) FD9R6004/2C-3L	107	VHLP2.5-11	97
(2) FD9R6004/2C-3L	107	VHLP2.5-11	97
DB-T1-6Z-8AB-0Z	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
DB-T1-6Z-8AB-0Z	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
Platform Mount (LP 101-1)	107	LNx-6515DS-VTM w/ Mount Pipe	87
B66A RRH4X45	107	LNx-6515DS-VTM w/ Mount Pipe	87
B66A RRH4X45	107	LNx-6515DS-VTM w/ Mount Pipe	87
B66A RRH4X45	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B13 RRH 4X30	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B13 RRH 4X30	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B13 RRH 4X30	107	KRY 112 144/1	87
B25 RRH4X30	107	KRY 112 144/1	87
B25 RRH4X30	107	KRY 112 144/1	87
B25 RRH4X30	107	KRY 112 144/1	87
B25 RRH4X30	107	RRUS 11 B12	87
800MHz 2X50W RRH W/FILTER	99	RRUS 11 B12	87
800MHz 2X50W RRH W/FILTER	99	RRUS 11 B12	87
800MHz 2X50W RRH W/FILTER	99	T-Arm Mount [TA 602-3]	87
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 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 0.0000 ft



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 Saint Louis, MO 63105
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 FAX: 3147734001

Tower Analysis

Job: **HRT 100 943239, 806376**

Project: **17QGOK1400**

Client: **Crown Castle International**

Drawn by: **PROach**

App'd:

Code: **TIA-222-G**

Date: **06/19/17**

Scale: **NTS**

Path:

Dwg No. **E-1**

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tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job	HRT 100 943239, 806376	Page	1 of 76
	Project	17QGOK1400	Date	15:00:45 06/19/17
	Client	Crown Castle International	Designed by	PRoach

Tower Input Data

There is a pole section.

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

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 97 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.0000 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56.00 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	131.0000-126.000	5.0000	0.00	12	10.5250	11.7155	0.1875	0.7500	A572-65 (65 ksi)
L2	126.0000-121.0	5.0000	0.00	12	11.7155	12.9060	0.1875	0.7500	A572-65

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Client	Crown Castle International	Designed by	PRoach

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	121.0000-116.000	5.0000	0.00	12	12.9060	14.0964	0.1875	0.7500	(65 ksi) A572-65
L4	116.0000-111.000	5.0000	0.00	12	14.0964	15.2869	0.1875	0.7500	(65 ksi) A572-65
L5	111.0000-110.000	1.0000	0.00	12	15.2869	15.5250	0.1875	0.7500	(65 ksi) A572-65
L6	110.0000-105.000	5.0000	0.00	12	15.5250	16.7757	0.2500	1.0000	(65 ksi) A572-65
L7	105.0000-100.000	5.0000	0.00	12	16.7757	18.0265	0.2500	1.0000	(65 ksi) A572-65
L8	100.0000-95.000	5.0000	0.00	12	18.0265	19.2772	0.2500	1.0000	(65 ksi) A572-65
L9	95.0000-89.900	5.1000	0.00	12	19.2772	20.5530	0.5000	2.0000	(65 ksi) A572-65
L10	89.9000-89.6667	0.2333	0.00	12	20.5530	20.6114	0.5000	2.0000	(65 ksi) A572-65
L11	89.6667-84.5667	5.1000	0.00	12	20.6114	21.8871	0.6375	2.5500	(65 ksi) A572-65
L12	84.5667-84.3333	0.2334	0.00	12	21.8871	21.9455	0.6375	2.5500	(65 ksi) A572-65
L13	84.3333-82.9167	1.4166	0.00	12	21.9455	22.2999	0.6250	2.5000	(65 ksi) A572-65
L14	82.9167-82.6667	0.2500	0.00	12	22.2999	22.3624	0.3937	1.5750	(65 ksi) A572-65
L15	82.6667-80.9792	1.6875	0.00	12	22.3624	22.7846	0.3875	1.5500	(65 ksi) A572-65
L16	80.9792-80.7292	0.2500	0.00	12	22.7846	22.8471	0.3875	1.5500	(65 ksi) A572-65
L17	80.7292-75.7292	5.0000	0.00	12	22.8471	24.0978	0.3812	1.5250	(65 ksi) A572-65
L18	75.7292-70.0000	5.7292	4.00	12	24.0978	25.5310	0.3812	1.5250	(65 ksi) A572-65
L19	70.0000-69.0000	5.0000	0.00	12	24.0304	25.2810	0.4375	1.7500	(65 ksi) A572-65
L20	69.0000-66.9833	2.0167	0.00	12	25.2810	25.7854	0.4375	1.7500	(65 ksi) A572-65
L21	66.9833-66.7333	0.2500	0.00	12	25.7854	25.8479	0.4375	1.7500	(65 ksi) A572-65
L22	66.7333-64.0833	2.6500	0.00	12	25.8479	26.5107	0.4313	1.7250	(65 ksi) A572-65
L23	64.0833-63.8333	0.2500	0.00	12	26.5107	26.5732	0.5750	2.3000	(65 ksi) A572-65
L24	63.8333-62.4167	1.4166	0.00	12	26.5732	26.9276	0.5625	2.2500	(65 ksi) A572-65
L25	62.4167-62.1667	0.2500	0.00	12	26.9276	26.9901	0.6125	2.4500	(65 ksi) A572-65
L26	62.1667-59.4583	2.7084	0.00	12	26.9901	27.6675	0.6125	2.4500	(65 ksi) A572-65
L27	59.4583-59.2083	0.2500	0.00	12	27.6675	27.7300	0.7250	2.9000	(65 ksi) A572-65
L28	59.2083-56.0000	3.2083	0.00	12	27.7300	28.5325	0.7125	2.8500	(65 ksi) A572-65
L29	56.0000-55.7500	0.2500	0.00	12	28.5325	28.5950	0.7375	2.9500	(65 ksi) A572-65
L30	55.7500-50.7500	5.0000	0.00	12	28.5950	29.8456	0.7125	2.8500	(65 ksi) A572-65
L31	50.7500-45.7500	5.0000	0.00	12	29.8456	31.0962	0.7000	2.8000	(65 ksi) A572-65
L32	45.7500-44.4833	1.2667	0.00	12	31.0962	31.4130	0.6875	2.7500	(65 ksi) A572-65

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Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L33	44.4833-44.2333	0.2500	0.00	12	31.4130	31.4755	0.6125	2.4500	A572-65 (65 ksi)
L34	44.2333-44.0833	0.1500	0.00	12	31.4755	31.5130	0.6125	2.4500	A572-65 (65 ksi)
L35	44.0833-39.0833	5.0000	0.00	12	31.5130	32.7636	0.6000	2.4000	A572-65 (65 ksi)
L36	39.0833-34.0800	5.0033	4.92	12	32.7636	34.0150	0.6000	2.4000	A572-65 (65 ksi)
L37	34.0800-34.0000	5.0000	0.00	12	32.1594	33.4082	0.6313	2.5252	A572-65 (65 ksi)
L38	34.0000-31.4583	2.5417	0.00	12	33.4082	34.0430	0.6188	2.4752	A572-65 (65 ksi)
L39	31.4583-31.2083	0.2500	0.00	12	34.0430	34.1055	0.6188	2.4752	A572-65 (65 ksi)
L40	31.2083-29.4583	1.7500	0.00	12	34.1055	34.5426	0.6188	2.4752	A572-65 (65 ksi)
L41	29.4583-29.2083	0.2500	0.00	12	34.5426	34.6050	0.6188	2.4752	A572-65 (65 ksi)
L42	29.2083-26.8333	2.3750	0.00	12	34.6050	35.1982	0.6188	2.4752	A572-65 (65 ksi)
L43	26.8333-26.5833	0.2500	0.00	12	35.1982	35.2606	0.8438	3.3752	A572-65 (65 ksi)
L44	26.5833-21.5833	5.0000	0.00	12	35.2606	36.5094	0.8188	3.2752	A572-65 (65 ksi)
L45	21.5833-20.7500	0.8333	0.00	12	36.5094	36.7175	0.8188	3.2752	A572-65 (65 ksi)
L46	20.7500-20.5000	0.2500	0.00	12	36.7175	36.7800	0.8188	3.2752	A572-65 (65 ksi)
L47	20.5000-18.0000	2.5000	0.00	12	36.7800	37.4044	0.8063	3.2252	A572-65 (65 ksi)
L48	18.0000-17.7500	0.2500	0.00	12	37.4044	37.4668	0.8188	3.2752	A572-65 (65 ksi)
L49	17.7500-17.0833	0.6667	0.00	12	37.4668	37.6333	0.8188	3.2752	A572-65 (65 ksi)
L50	17.0833-16.8333	0.2500	0.00	12	37.6333	37.6957	0.7313	2.9252	A572-65 (65 ksi)
L51	16.8333-13.0000	3.8333	0.00	12	37.6957	38.6531	0.7188	2.8752	A572-65 (65 ksi)
L52	13.0000-12.7500	0.2500	0.00	12	38.6531	38.7156	0.8938	3.5752	A572-65 (65 ksi)
L53	12.7500-11.8333	0.9167	0.00	12	38.7156	38.9445	0.8938	3.5752	A572-65 (65 ksi)
L54	11.8333-11.5833	0.2500	0.00	12	38.9445	39.0070	0.6688	2.6752	A572-65 (65 ksi)
L55	11.5833-6.4833	5.1000	0.00	12	39.0070	40.2807	0.7563	3.0252	A572-65 (65 ksi)
L56	6.4833-6.2500	0.2333	0.00	12	40.2807	40.3390	0.7563	3.0252	A572-65 (65 ksi)
L57	6.2500-1.2500	5.0000	0.00	12	40.3390	41.5878	0.7438	2.9752	A572-65 (65 ksi)
L58	1.2500-0.0000	1.2500		12	41.5878	41.9000	0.7313	2.9252	A572-65 (65 ksi)

Tapered Pole Properties

tnxTower

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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PROach

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	10.8963	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	12.1288	6.9600	118.0599	4.1270	6.0686	19.4542	239.2213	3.4255	2.6372	14.065
L2	12.1288	6.9600	118.0599	4.1270	6.0686	19.4542	239.2213	3.4255	2.6372	14.065
	13.3612	7.6788	158.5426	4.5532	6.6853	23.7152	321.2502	3.7793	2.9563	15.767
L3	13.3612	7.6788	158.5426	4.5532	6.6853	23.7152	321.2502	3.7793	2.9563	15.767
	14.5937	8.3975	207.3596	4.9794	7.3019	28.3978	420.1667	4.1330	3.2753	17.468
L4	14.5937	8.3975	207.3596	4.9794	7.3019	28.3978	420.1667	4.1330	3.2753	17.468
	15.8262	9.1163	265.2910	5.4056	7.9186	33.5022	537.5516	4.4867	3.5944	19.17
L5	15.8262	9.1163	265.2910	5.4056	7.9186	33.5022	537.5516	4.4867	3.5944	19.17
	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L6	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
	17.3675	10.2000	336.2060	5.9162	8.6898	38.5370	642.0327	5.0519	4.0197	21.364
L7	17.3675	10.2000	336.2060	5.9162	8.6898	38.5370	642.0327	5.0519	4.0197	21.364
	18.6624	11.1600	414.3101	6.3640	9.3377	43.8129	756.5483	5.6430	4.4611	23.164
L8	18.6624	11.1600	414.3101	6.3640	9.3377	43.8129	756.5483	5.6430	4.4611	23.164
	19.9573	12.1500	510.7989	6.8118	9.9856	50.8819	898.1925	6.2385	4.9663	25.164
L9	19.9573	12.1500	510.7989	6.8118	9.9856	50.8819	898.1925	6.2385	4.9663	25.164
	21.2780	13.1700	627.1082	7.1790	10.6465	58.6487	1098.7504	6.9399	5.4682	27.336
L10	21.2780	13.1700	627.1082	7.1790	10.6465	58.6487	1098.7504	6.9399	5.4682	27.336
	21.3385	13.2000	638.6183	7.1999	10.6767	59.5671	1119.1519	7.0361	5.5388	27.568
L11	21.3385	13.2000	638.6183	7.1999	10.6767	59.5671	1119.1519	7.0361	5.5388	27.568
	22.6592	14.2500	781.0664	7.6074	11.3375	67.7471	1344.1801	7.7685	6.0173	30.521
L12	22.6592	14.2500	781.0664	7.6074	11.3375	67.7471	1344.1801	7.7685	6.0173	30.521
	22.7197	14.3000	796.8461	7.6283	11.3678	68.5851	1366.2855	7.8275	6.0729	30.646
L13	22.7197	14.3000	796.8461	7.6283	11.3678	68.5851	1366.2855	7.8275	6.0729	30.646
	23.0865	14.4000	831.7269	7.7596	11.5513	71.4436	1416.1718	8.0188	6.1604	30.882
L14	23.0865	14.4000	831.7269	7.7596	11.5513	71.4436	1416.1718	8.0188	6.1604	30.882
	23.1513	14.4500	846.8289	7.8648	11.5837	72.4240	1437.7346	8.1187	6.2079	31.041
L15	23.1513	14.4500	846.8289	7.8648	11.5837	72.4240	1437.7346	8.1187	6.2079	31.041
	23.5883	14.5500	883.3124	8.0181	11.8024	75.6058	1496.6320	8.4351	6.3678	31.708
L16	23.5883	14.5500	883.3124	8.0181	11.8024	75.6058	1496.6320	8.4351	6.3678	31.708
	23.6530	14.6000	900.3427	8.0405	11.8348	76.4609	1518.0876	8.4825	6.3945	31.812
L17	23.6530	14.6000	900.3427	8.0405	11.8348	76.4609	1518.0876	8.4825	6.3945	31.812
	24.9479	15.6500	1090.2992	8.4905	12.4827	86.4559	1843.5128	9.3296	6.8326	34.26
L18	24.9479	15.6500	1090.2992	8.4905	12.4827	86.4559	1843.5128	9.3296	6.8326	34.26
	26.4316	16.7000	1320.6006	9.0036	13.2251	98.4756	2150.6845	10.1955	7.3206	36.267
L19	26.4316	16.7000	1320.6006	9.0036	13.2251	98.4756	2150.6845	10.1955	7.3206	36.267
	26.1728	16.6000	1275.1283	8.8940	13.0955	95.5394	2098.6893	9.9625	7.1628	35.806
L20	26.1728	16.6000	1275.1283	8.8940	13.0955	95.5394	2098.6893	9.9625	7.1628	35.806
	26.6950	16.8000	1328.4984	9.0745	13.3568	100.2510	2219.9317	10.3748	7.5380	36.615
L21	26.6950	16.8000	1328.4984	9.0745	13.3568	100.2510	2219.9317	10.3748	7.5380	36.615
	26.7597	16.8500	1344.2242	9.0969	13.3892	101.3433	2243.9540	10.4182	7.5747	36.754
L22	26.7597	16.8500	1344.2242	9.0969	13.3892	101.3433	2243.9540	10.4182	7.5747	36.754
	27.4459	17.9000	1614.8882	9.3364	13.7326	112.9369	2637.3699	11.2377	8.0949	38.795
L23	27.4459	17.9000	1614.8882	9.3364	13.7326	112.9369	2637.3699	11.2377	8.0949	38.795
	27.5106	17.9500	1631.8079	9.3074	13.7649	113.6945	2661.7146	11.2610	8.1166	38.906
L24	27.5106	17.9500	1631.8079	9.3074	13.7649	113.6945	2661.7146	11.2610	8.1166	38.906
	27.8775	18.1000	1683.9236	9.4387	13.9485	115.7553	2735.1558	11.4029	8.2091	39.149
L25	27.8775	18.1000	1683.9236	9.4387	13.9485	115.7553	2735.1558	11.4029	8.2091	39.149
	27.9422	18.1500	1699.1192	9.4432	13.9809	116.4602	2756.6142	11.4342	8.2318	39.264
L26	27.9422	18.1500	1699.1192	9.4432	13.9809	116.4602	2756.6142	11.4342	8.2318	39.264
	28.6435	19.2000	2015.2915	9.6857	14.3318	128.8491	3101.5522	12.2618	8.7734	42.426
L27	28.6435	19.2000	2015.2915	9.6857	14.3318	128.8491	3101.5522	12.2618	8.7734	42.426
	28.7082	19.2500	2031.3201	9.6678	14.3642	129.5392	3128.8075	12.2980	8.8028	42.571
L28	28.7082	19.2500	2031.3201	9.6678	14.3642	129.5392	3128.8075	12.2980	8.8028	42.571
	29.5390	20.3000	2415.1708	9.9596	14.7798	142.6067	3575.9855	13.1432	9.2732	45.052
L29	29.5390	20.3000	2415.1708	9.9596	14.7798	142.6067	3575.9855	13.1432	9.2732	45.052
	29.6037	20.3500	2431.8526	9.9730	14.8122	143.3953	3600.8560	13.1793	9.3079	45.171
L30	29.6037	20.3500	2431.8526	9.9730	14.8122	143.3953	3600.8560	13.1793	9.3079	45.171
	30.8984	21.4000	2847.7814	9.9819	14.8122	143.5505	3762.3261	13.4838	9.7540	48.076
L31	30.8984	21.4000	2847.7814	9.9819	14.8122	143.5505	3762.3261	13.4838	9.7540	48.076
	30.8984	21.4500	2863.7884	10.4296	15.4600	163.3560	4167.8003	15.1959	10.891	53.546
L31	30.8984	21.4500	2863.7884	10.4296	15.4600	163.3560	4167.8003	15.1959	10.891	53.546
	32.1931	22.5000	3312.9177	10.4341	16.1078	181.7318	4832.9625	17.3327	12.226	60.747
L31	32.1931	22.5000	3312.9177	10.4341	16.1078	181.7318	4832.9625	17.3327	12.226	60.747

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Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L32	32.1931	67.3172	7945.2244	10.8863	16.1078	493.2530	16099.1788	33.1315	6.4913	9.442
	32.5211	68.0185	8196.1593	10.9997	16.2719	503.6995	16607.6409	33.4766	6.5762	9.565
L33	32.5211	60.7462	7355.6357	11.0266	16.2719	452.0447	14904.5120	29.8975	6.7772	11.065
	32.5858	60.8696	7400.5252	11.0490	16.3043	453.8999	14995.4705	29.9581	6.7939	11.092
L34	32.5858	60.8696	7400.5252	11.0490	16.3043	453.8999	14995.4705	29.9581	6.7939	11.092
	32.6247	60.9436	7427.5464	11.0624	16.3237	455.0148	15050.2228	29.9946	6.8040	11.109
L35	32.6247	59.7240	7284.7973	11.0669	16.3237	446.2700	14760.9744	29.3943	6.8375	11.396
	33.9194	62.1401	8205.1584	11.5146	16.9715	483.4656	16625.8754	30.5835	7.1726	11.954
L36	33.9194	62.1401	8205.1584	11.5146	16.9715	483.4656	16625.8754	30.5835	7.1726	11.954
	35.2149	64.5578	9200.6279	11.9626	17.6198	522.1764	18642.9666	31.7734	7.5080	12.513
L37	34.5661	64.0899	8131.5320	11.2871	16.6586	488.1286	16476.6884	31.5431	6.9268	10.972
	34.5867	66.6285	9136.5489	11.7341	17.3055	527.9576	18513.1251	32.7925	7.2615	11.502
L38	34.5867	65.3341	8965.8915	11.7386	17.3055	518.0961	18167.3269	32.1555	7.2950	11.789
	35.2439	66.5990	9496.7830	11.9659	17.6343	538.5407	19243.0570	32.7780	7.4651	12.064
L39	35.2439	66.5990	9496.7830	11.9659	17.6343	538.5407	19243.0570	32.7780	7.4651	12.064
	35.3086	66.7234	9550.1050	11.9882	17.6666	540.5729	19351.1020	32.8392	7.4819	12.091
L40	35.3086	66.7234	9550.1050	11.9882	17.6666	540.5729	19351.1020	32.8392	7.4819	12.091
	35.7611	67.5943	9928.9585	12.1447	17.8930	554.9062	20118.7618	33.2679	7.5990	12.28
L41	35.7611	67.5943	9928.9585	12.1447	17.8930	554.9062	20118.7618	33.2679	7.5990	12.28
	35.8257	67.7187	9983.8847	12.1671	17.9254	556.9691	20230.0573	33.3291	7.6158	12.307
L42	35.8257	67.7187	9983.8847	12.1671	17.9254	556.9691	20230.0573	33.3291	7.6158	12.307
	36.4398	68.9006	10515.8208	12.3794	18.2326	576.7577	21307.9040	33.9108	7.7747	12.564
L43	36.4398	93.3420	14061.3536	12.2989	18.2326	771.2183	28492.1146	45.9401	7.1717	8.499
	36.5045	93.5117	14138.1631	12.3212	18.2650	774.0579	28647.7516	46.0236	7.1885	8.519
L44	36.5045	90.8071	13749.1978	12.3302	18.2650	752.7623	27859.6023	44.6925	7.2555	8.861
	37.7973	94.0995	15299.6338	12.7772	18.9119	808.9965	31001.2060	46.3129	7.5901	9.27
L45	37.7973	94.0995	15299.6338	12.7772	18.9119	808.9965	31001.2060	46.3129	7.5901	9.27
	38.0128	94.6483	15568.8490	12.8517	19.0197	818.5655	31546.7090	46.5830	7.6459	9.338
L46	38.0128	94.6483	15568.8490	12.8517	19.0197	818.5655	31546.7090	46.5830	7.6459	9.338
	38.0774	94.8129	15650.2282	12.8741	19.0520	821.4473	31711.6054	46.6640	7.6626	9.358
L47	38.0774	93.3979	15427.3844	12.8786	19.0520	809.7507	31260.0634	45.9676	7.6961	9.545
	38.7238	95.0190	16244.7283	13.1021	19.3755	838.4179	32916.2237	46.7655	7.8635	9.753
L48	38.7238	96.4591	16479.6716	13.0976	19.3755	850.5437	33392.2825	47.4742	7.8300	9.563
	38.7885	96.6238	16564.1919	13.1200	19.4078	853.4812	33563.5435	47.5553	7.8467	9.583
L49	38.7885	96.6238	16564.1919	13.1200	19.4078	853.4812	33563.5435	47.5553	7.8467	9.583
	38.9609	97.0628	16790.9921	13.1796	19.4940	861.3394	34023.1023	47.7713	7.8913	9.638
L50	38.9609	86.8963	15103.8301	13.2109	19.4940	774.7918	30604.4546	42.7677	8.1258	11.112
	39.0255	87.0433	15180.6286	13.2333	19.5264	777.4415	30760.0692	42.8401	8.1426	11.134
L51	39.0255	85.5845	14936.2909	13.2377	19.5264	764.9283	30264.9747	42.1221	8.1761	11.375
	40.0167	87.8004	16126.7791	13.5805	20.0223	805.4397	32677.2266	43.2127	8.4327	11.732
L52	40.0167	108.6728	19776.7765	13.5178	20.0223	987.7361	40073.1110	53.4854	7.9637	8.91
	40.0813	108.8525	19875.0486	13.5402	20.0547	991.0433	40272.2368	53.5739	7.9804	8.929
L53	40.0813	108.8525	19875.0486	13.5402	20.0547	991.0433	40272.2368	53.5739	7.9804	8.929
	40.3184	109.5114	20238.1773	13.6222	20.1733	1003.2175	41008.0341	53.8982	8.0418	8.997
L54	40.3184	82.4282	15413.7666	13.7027	20.1733	764.0688	31232.4699	40.5686	8.6448	12.926
	40.3830	82.5626	15489.3235	13.7251	20.2056	766.5851	31385.5688	40.6348	8.6615	12.951
L55	40.3830	93.1513	17396.1559	13.6937	20.2056	860.9566	35249.3281	45.8463	8.4270	11.142
	41.7017	96.2533	19192.5730	14.1498	20.8654	919.8266	38889.3563	47.3730	8.7684	11.594
L56	41.7017	96.2533	19192.5730	14.1498	20.8654	919.8266	38889.3563	47.3730	8.7684	11.594
	41.7620	96.3952	19277.5817	14.1706	20.8956	922.5662	39061.6069	47.4428	8.7840	11.614
L57	41.7620	94.8320	18976.9321	14.1751	20.8956	908.1780	38452.4094	46.6734	8.8175	11.855
	43.0549	97.8229	20829.6932	14.6222	21.5425	966.9124	42206.6056	48.1454	9.1521	12.305
L58	43.0549	96.2083	20498.4465	14.6266	21.5425	951.5360	41535.4101	47.3508	9.1856	12.561
	43.3781	96.9435	20971.9520	14.7384	21.7042	966.2624	42494.8606	47.7126	9.2693	12.675

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _J	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1				1	1	1			

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job	HRT 100 943239, 806376	Page	8 of 76
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	Client	Crown Castle International	Designed by	PRoach

<i>Tower Elevation</i>	<i>Gusset Area (per face)</i>	<i>Gusset Thickness</i>	<i>Gusset Grade</i>	<i>Adjust. Factor A_f</i>	<i>Adjust. Factor A_r</i>	<i>Weight Mult.</i>	<i>Double Angle Stitch Bolt Spacing Diagonals in</i>	<i>Double Angle Stitch Bolt Spacing Horizontals in</i>	<i>Double Angle Stitch Bolt Spacing Redundants in</i>
<i>ft</i>	<i>ft²</i>	<i>in</i>							
83									
L41				1	1	0.959367			
29.4583-29.20									
83									
L42				1	1	0.95244			
29.2083-26.83									
33									
L43				1	1	0.927402			
26.8333-26.58									
33									
L44				1	1	0.9363			
26.5833-21.58									
33									
L45				1	1	0.933306			
21.5833-20.75									
00									
L46				1	1	0.977304			
20.7500-20.50									
00									
L47				1	1	0.982459			
20.5000-18.00									
00									
L48				1	1	0.957789			
18.0000-17.75									
00									
L49				1	1	0.955356			
17.7500-17.08									
33									
L50				1	1	0.962574			
17.0833-16.83									
33									
L51				1	1	0.966346			
16.8333-13.00									
00									
L52				1	1	0.945688			
13.0000-12.75									
00									
L53				1	1	0.942313			
12.7500-11.83									
33									
L54				1	1	1.0324			
11.8333-11.58									
33									
L55				1	1	0.984735			
11.5833-6.483									
3									
L56				1	1	0.983955			
6.4833-6.2500									
L57				1	1	0.983727			
6.2500-1.2500									
L58				1	1	0.996216			
1.2500-0.0000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

tnxTower

FDH Velocitel
 222 S. Central Ave., Suite 1110
 Saint Louis, MO 63105
 Phone: 3147734000
 FAX: 3147734001

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Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	Surface Ar (CaAa)	131.0000 - 0.0000	1	1	0.250 0.250	0.3750		0.22

LDF6-50A(1-1/4")	C	Surface Ar (CaAa)	121.0000 - 0.0000	6	3	-0.300 -0.300	1.5500		0.66
2" (Nominal) Conduit	C	Surface Ar (CaAa)	121.0000 - 0.0000	1	1	-0.242 -0.242	0.0000		0.72
FB-L98B-002-75000(3/8")	C	Surface Ar (CaAa)	121.0000 - 0.0000	1	1	-0.200 -0.200	0.0000		0.06
WR-VG86ST-BRD(3/4")	C	Surface Ar (CaAa)	121.0000 - 0.0000	2	2	-0.200 -0.200	0.0000		0.58

FSJ4-50B(1/2")	C	Surface Ar (CaAa)	97.0000 - 0.0000	1	1	-0.500 -0.500	0.5200		0.14
2" (Nominal) Conduit	C	Surface Ar (CaAa)	97.0000 - 0.0000	1	1	-0.480 -0.480	0.0000		0.72
2" (Nominal) Conduit	C	Surface Ar (CaAa)	97.0000 - 0.0000	1	1	-0.460 -0.460	0.0000		0.72
HB114-1-08U4-M5J(1 1/4")	B	Surface Ar (CaAa)	97.0000 - 0.0000	1	1	-0.066 -0.066	0.0000		1.08

LCF114-50J(1-1/4")	C	Surface Ar (CaAa)	87.0000 - 0.0000	12	6	0.094 0.094	0.0000		0.70
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	Surface Ar (CaAa)	87.0000 - 0.0000	1	1	-0.010 -0.010	0.0000		1.07
MLC Hybrid 6/6(7/8")	C	Surface Ar (CaAa)	87.0000 - 0.0000	1	1	-0.010 -0.010	0.0000		1.82

6" x 1" Flat Plate (G)	C	Surface Af (CaAa)	15.5000 - 0.5000	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	Surface Af (CaAa)	15.5000 - 0.5000	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	A	Surface Af (CaAa)	15.5000 - 0.5000	1	1	0.000 0.000	6.0000	14.0000	0.00

4" x .75" Flat Plate (G)	C	Surface Af (CaAa)	30.4583 - 0.5000	1	1	-0.250 -0.250	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	B	Surface Af (CaAa)	30.4583 - 0.5000	1	1	-0.250 -0.250	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	A	Surface Af (CaAa)	30.4583 - 0.5000	1	1	-0.250 -0.250	4.0000	9.5000	0.00

6" x 1" Flat Plate (G)	C	Surface Af (CaAa)	44.3333 - 9.3333	1	1	-0.500 -0.500	6.0000	14.0000	0.00

6" x 1" Flat Plate (G)	A	Surface Af (CaAa)	29.3333 - 9.3333	1	1	0.250 0.250	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	Surface Af (CaAa)	29.3333 - 9.3333	1	1	0.250 0.250	6.0000	14.0000	0.00

4" x .75" Flat Plate (G)	C	Surface Af (CaAa)	45.8333 - 15.8333	1	1	0.000 0.000	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	B	Surface Af (CaAa)	45.8333 - 15.8333	1	1	0.000 0.000	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	A	Surface Af (CaAa)	45.8333 - 15.8333	1	1	0.000 0.000	4.0000	9.5000	0.00

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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
*** ***								
FB-L98B-002-75000(3/8")	C	No	Inside Pole	121.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	121.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.58 0.58 0.58
*** ***								
HJ7-50A(1-5/8")	C	No	Inside Pole	107.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.04 1.04 1.04
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	107.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.30 1.30 1.30
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	107.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.30 1.30 1.30
*** ***								
ATCB-B01-005(5/16)	C	No	Inside Pole	97.0000 - 0.0000	3	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.07 0.07 0.07
FSJ4-50B(1/2")	C	No	Inside Pole	97.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.14 0.14 0.14
HB114-1-08U4-M5J(1 1/4")	B	No	Inside Pole	97.0000 - 0.0000	3	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.08 1.08 1.08
*** *** ***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	131.0000-126.000 0	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	126.0000-121.000 0	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	121.0000-116.000 0	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.325	0.000	0.04
L4	116.0000-111.000 0	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.325	0.000	0.04
L5	111.0000-110.000	A	0.000	0.000	0.037	0.000	0.00

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
	0	B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.465	0.000	0.01
L6	110.0000-105.000	A	0.000	0.000	0.188	0.000	0.00
	0	B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.325	0.000	0.07
L7	105.0000-100.000	A	0.000	0.000	0.188	0.000	0.00
	0	B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.325	0.000	0.11
L8	100.0000-95.0000	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	2.429	0.000	0.12
L9	95.0000-89.9000	A	0.000	0.000	1.202	0.000	0.00
		B	0.000	0.000	1.011	0.000	0.02
		C	0.000	0.000	3.648	0.000	0.12
L10	89.9000-89.6667	A	0.000	0.000	0.164	0.000	0.00
		B	0.000	0.000	0.156	0.000	0.00
		C	0.000	0.000	0.276	0.000	0.01
L11	89.6667-84.5667	A	0.000	0.000	4.436	0.000	0.00
		B	0.000	0.000	4.244	0.000	0.02
		C	0.000	0.000	6.881	0.000	0.15
L12	84.5667-84.3333	A	0.000	0.000	0.320	0.000	0.00
		B	0.000	0.000	0.311	0.000	0.00
		C	0.000	0.000	0.432	0.000	0.01
L13	84.3333-82.9167	A	0.000	0.000	1.942	0.000	0.00
		B	0.000	0.000	1.889	0.000	0.01
		C	0.000	0.000	2.621	0.000	0.05
L14	82.9167-82.6667	A	0.000	0.000	0.343	0.000	0.00
		B	0.000	0.000	0.333	0.000	0.00
		C	0.000	0.000	0.463	0.000	0.01
L15	82.6667-80.9792	A	0.000	0.000	2.688	0.000	0.00
		B	0.000	0.000	2.625	0.000	0.01
		C	0.000	0.000	3.497	0.000	0.06
L16	80.9792-80.7292	A	0.000	0.000	0.343	0.000	0.00
		B	0.000	0.000	0.333	0.000	0.00
		C	0.000	0.000	0.463	0.000	0.01
L17	80.7292-75.7292	A	0.000	0.000	6.854	0.000	0.00
		B	0.000	0.000	6.667	0.000	0.02
		C	0.000	0.000	9.252	0.000	0.18
L18	75.7292-70.0000	A	0.000	0.000	6.534	0.000	0.00
		B	0.000	0.000	6.319	0.000	0.02
		C	0.000	0.000	9.281	0.000	0.20
L19	70.0000-69.0000	A	0.000	0.000	0.704	0.000	0.00
		B	0.000	0.000	0.667	0.000	0.00
		C	0.000	0.000	1.184	0.000	0.04
L20	69.0000-66.9833	A	0.000	0.000	2.265	0.000	0.00
		B	0.000	0.000	2.189	0.000	0.01
		C	0.000	0.000	3.232	0.000	0.07
L21	66.9833-66.7333	A	0.000	0.000	0.343	0.000	0.00
		B	0.000	0.000	0.333	0.000	0.00
		C	0.000	0.000	0.463	0.000	0.01
L22	66.7333-64.0833	A	0.000	0.000	3.966	0.000	0.00
		B	0.000	0.000	3.867	0.000	0.01
		C	0.000	0.000	3.987	0.000	0.09
L23	64.0833-63.8333	A	0.000	0.000	0.364	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.483	0.000	0.01
L24	63.8333-62.4167	A	0.000	0.000	2.060	0.000	0.00
		B	0.000	0.000	2.007	0.000	0.01
		C	0.000	0.000	2.739	0.000	0.05
L25	62.4167-62.1667	A	0.000	0.000	0.364	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L26	62.1667-59.4583	C	0.000	0.000	0.483	0.000	0.01
		A	0.000	0.000	4.605	0.000	0.00
		B	0.000	0.000	4.504	0.000	0.01
L27	59.4583-59.2083	C	0.000	0.000	5.904	0.000	0.10
		A	0.000	0.000	0.530	0.000	0.00
		B	0.000	0.000	0.521	0.000	0.00
L28	59.2083-56.0000	C	0.000	0.000	0.650	0.000	0.01
		A	0.000	0.000	6.742	0.000	0.00
		B	0.000	0.000	6.621	0.000	0.01
L29	56.0000-55.7500	C	0.000	0.000	8.343	0.000	0.11
		A	0.000	0.000	0.593	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
L30	55.7500-50.7500	C	0.000	0.000	0.650	0.000	0.01
		A	0.000	0.000	11.854	0.000	0.00
		B	0.000	0.000	11.667	0.000	0.02
L31	50.7500-45.7500	C	0.000	0.000	13.002	0.000	0.18
		A	0.000	0.000	11.910	0.000	0.00
		B	0.000	0.000	11.722	0.000	0.02
L32	45.7500-44.4833	C	0.000	0.000	13.057	0.000	0.18
		A	0.000	0.000	3.848	0.000	0.00
		B	0.000	0.000	3.800	0.000	0.01
L33	44.4833-44.2333	C	0.000	0.000	4.126	0.000	0.05
		A	0.000	0.000	0.759	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.00
L34	44.2333-44.0833	C	0.000	0.000	0.729	0.000	0.01
		A	0.000	0.000	0.456	0.000	0.00
		B	0.000	0.000	0.450	0.000	0.00
L35	44.0833-39.0833	C	0.000	0.000	0.528	0.000	0.01
		A	0.000	0.000	12.410	0.000	0.00
		B	0.000	0.000	12.222	0.000	0.02
L36	39.0833-34.0800	C	0.000	0.000	14.807	0.000	0.18
		A	0.000	0.000	11.862	0.000	0.00
		B	0.000	0.000	11.674	0.000	0.02
L37	34.0800-34.0000	C	0.000	0.000	14.261	0.000	0.18
		A	0.000	0.000	0.190	0.000	0.00
		B	0.000	0.000	0.187	0.000	0.00
L38	34.0000-31.4583	C	0.000	0.000	0.228	0.000	0.00
		A	0.000	0.000	6.026	0.000	0.00
		B	0.000	0.000	5.931	0.000	0.01
L39	31.4583-31.2083	C	0.000	0.000	7.245	0.000	0.09
		A	0.000	0.000	0.593	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
L40	31.2083-29.4583	C	0.000	0.000	0.713	0.000	0.01
		A	0.000	0.000	4.149	0.000	0.00
		B	0.000	0.000	4.083	0.000	0.01
L41	29.4583-29.2083	C	0.000	0.000	4.988	0.000	0.06
		A	0.000	0.000	0.718	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
L42	29.2083-26.8333	C	0.000	0.000	0.838	0.000	0.01
		A	0.000	0.000	8.006	0.000	0.00
		B	0.000	0.000	5.542	0.000	0.01
L43	26.8333-26.5833	C	0.000	0.000	9.145	0.000	0.08
		A	0.000	0.000	0.843	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
L44	26.5833-21.5833	C	0.000	0.000	0.963	0.000	0.01
		A	0.000	0.000	16.854	0.000	0.00
		B	0.000	0.000	11.667	0.000	0.02
L45	21.5833-20.7500	C	0.000	0.000	19.252	0.000	0.18
		A	0.000	0.000	2.559	0.000	0.00
		B	0.000	0.000	1.694	0.000	0.00
		C	0.000	0.000	3.208	0.000	0.03

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L46	20.7500-20.5000	A	0.000	0.000	0.864	0.000	0.00
		B	0.000	0.000	0.875	0.000	0.00
		C	0.000	0.000	0.963	0.000	0.01
L47	20.5000-18.0000	A	0.000	0.000	8.635	0.000	0.00
		B	0.000	0.000	8.750	0.000	0.01
		C	0.000	0.000	9.626	0.000	0.09
L48	18.0000-17.7500	A	0.000	0.000	0.864	0.000	0.00
		B	0.000	0.000	0.875	0.000	0.00
		C	0.000	0.000	0.963	0.000	0.01
L49	17.7500-17.0833	A	0.000	0.000	2.303	0.000	0.00
		B	0.000	0.000	2.333	0.000	0.00
		C	0.000	0.000	2.567	0.000	0.02
L50	17.0833-16.8333	A	0.000	0.000	0.864	0.000	0.00
		B	0.000	0.000	0.875	0.000	0.00
		C	0.000	0.000	0.963	0.000	0.01
L51	16.8333-13.0000	A	0.000	0.000	13.852	0.000	0.00
		B	0.000	0.000	14.028	0.000	0.02
		C	0.000	0.000	15.371	0.000	0.14
L52	13.0000-12.7500	A	0.000	0.000	0.947	0.000	0.00
		B	0.000	0.000	0.958	0.000	0.00
		C	0.000	0.000	1.046	0.000	0.01
L53	12.7500-11.8333	A	0.000	0.000	3.472	0.000	0.00
		B	0.000	0.000	3.514	0.000	0.00
		C	0.000	0.000	3.835	0.000	0.03
L54	11.8333-11.5833	A	0.000	0.000	0.947	0.000	0.00
		B	0.000	0.000	0.958	0.000	0.00
		C	0.000	0.000	1.046	0.000	0.01
L55	11.5833-6.4833	A	0.000	0.000	19.464	0.000	0.00
		B	0.000	0.000	19.550	0.000	0.02
		C	0.000	0.000	15.637	0.000	0.18
L56	6.4833-6.2500	A	0.000	0.000	0.903	0.000	0.00
		B	0.000	0.000	0.894	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.01
L57	6.2500-1.2500	A	0.000	0.000	19.354	0.000	0.00
		B	0.000	0.000	19.167	0.000	0.02
		C	0.000	0.000	10.918	0.000	0.18
L58	1.2500-0.0000	A	0.000	0.000	4.005	0.000	0.00
		B	0.000	0.000	3.958	0.000	0.01
		C	0.000	0.000	1.896	0.000	0.04

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	131.0000-126.0000 0	A	2.291	0.000	0.000	2.479	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	126.0000-121.0000 0	A	2.282	0.000	0.000	2.470	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	121.0000-116.0000 0	A	2.273	0.000	0.000	2.460	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.133	0.000	0.26
L4	116.0000-111.0000 0	A	2.263	0.000	0.000	2.450	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.089	0.000	0.26
L5	111.0000-110.0000	A	2.257	0.000	0.000	0.489	0.00	0.01

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
	0	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.612	0.000	0.05
L6	110.0000-105.0000	A	2.251	0.000	0.000	2.438	0.000	0.04
	0	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.034	0.000	0.28
L7	105.0000-100.0000	A	2.240	0.000	0.000	2.427	0.000	0.04
	0	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	12.986	0.000	0.33
L8	100.0000-95.0000	A	2.229	0.000	0.000	2.416	0.000	0.04
		B		0.000	0.000	0.892	0.000	0.02
		C		0.000	0.000	15.714	0.000	0.37
L9	95.0000-89.9000	A	2.217	0.000	0.000	3.885	0.000	0.06
		B		0.000	0.000	3.694	0.000	0.08
		C		0.000	0.000	21.622	0.000	0.46
L10	89.9000-89.6667	A	2.211	0.000	0.000	0.332	0.000	0.01
		B		0.000	0.000	0.323	0.000	0.01
		C		0.000	0.000	1.142	0.000	0.02
L11	89.6667-84.5667	A	2.204	0.000	0.000	8.652	0.000	0.14
		B		0.000	0.000	8.461	0.000	0.15
		C		0.000	0.000	29.788	0.000	0.61
L12	84.5667-84.3333	A	2.197	0.000	0.000	0.589	0.000	0.01
		B		0.000	0.000	0.581	0.000	0.01
		C		0.000	0.000	1.728	0.000	0.03
L13	84.3333-82.9167	A	2.195	0.000	0.000	3.576	0.000	0.05
		B		0.000	0.000	3.523	0.000	0.06
		C		0.000	0.000	10.483	0.000	0.21
L14	82.9167-82.6667	A	2.193	0.000	0.000	0.631	0.000	0.01
		B		0.000	0.000	0.621	0.000	0.01
		C		0.000	0.000	1.849	0.000	0.04
L15	82.6667-80.9792	A	2.190	0.000	0.000	4.786	0.000	0.07
		B		0.000	0.000	4.723	0.000	0.08
		C		0.000	0.000	12.998	0.000	0.25
L16	80.9792-80.7292	A	2.188	0.000	0.000	0.630	0.000	0.01
		B		0.000	0.000	0.621	0.000	0.01
		C		0.000	0.000	1.846	0.000	0.04
L17	80.7292-75.7292	A	2.180	0.000	0.000	12.586	0.000	0.19
		B		0.000	0.000	12.398	0.000	0.20
		C		0.000	0.000	36.822	0.000	0.72
L18	75.7292-70.0000	A	2.165	0.000	0.000	12.518	0.000	0.18
		B		0.000	0.000	12.303	0.000	0.20
		C		0.000	0.000	40.116	0.000	0.79
L19	70.0000-69.0000	A	2.155	0.000	0.000	1.570	0.000	0.02
		B		0.000	0.000	1.533	0.000	0.02
		C		0.000	0.000	6.387	0.000	0.13
L20	69.0000-66.9833	A	2.150	0.000	0.000	4.544	0.000	0.06
		B		0.000	0.000	4.468	0.000	0.07
		C		0.000	0.000	14.200	0.000	0.27
L21	66.9833-66.7333	A	2.146	0.000	0.000	0.665	0.000	0.01
		B		0.000	0.000	0.655	0.000	0.01
		C		0.000	0.000	1.860	0.000	0.04
L22	66.7333-64.0833	A	2.142	0.000	0.000	7.099	0.000	0.10
		B		0.000	0.000	6.999	0.000	0.11
		C		0.000	0.000	18.160	0.000	0.35
L23	64.0833-63.8333	A	2.137	0.000	0.000	0.637	0.000	0.01
		B		0.000	0.000	0.627	0.000	0.01
		C		0.000	0.000	1.875	0.000	0.04
L24	63.8333-62.4167	A	2.134	0.000	0.000	3.606	0.000	0.05
		B		0.000	0.000	3.553	0.000	0.06
		C		0.000	0.000	10.613	0.000	0.20
L25	62.4167-62.1667	A	2.131	0.000	0.000	0.636	0.000	0.01
		B		0.000	0.000	0.627	0.000	0.01

<p>tnxTower</p> <p>FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001</p>	Job	HRT 100 943239, 806376	Page	16 of 76
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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L26	62.1667-59.4583	C		0.000	0.000	1.871	0.000	0.04
		A	2.126	0.000	0.000	7.975	0.000	0.11
		B		0.000	0.000	7.874	0.000	0.12
		C		0.000	0.000	21.327	0.000	0.40
L27	59.4583-59.2083	A	2.121	0.000	0.000	0.907	0.000	0.01
		B		0.000	0.000	0.898	0.000	0.01
		C		0.000	0.000	2.137	0.000	0.04
L28	59.2083-56.0000	A	2.115	0.000	0.000	11.549	0.000	0.16
		B		0.000	0.000	11.429	0.000	0.17
		C		0.000	0.000	27.372	0.000	0.49
L29	56.0000-55.7500	A	2.108	0.000	0.000	1.014	0.000	0.01
		B		0.000	0.000	1.005	0.000	0.01
		C		0.000	0.000	2.128	0.000	0.04
L30	55.7500-50.7500	A	2.098	0.000	0.000	20.246	0.000	0.26
		B		0.000	0.000	20.058	0.000	0.28
		C		0.000	0.000	42.430	0.000	0.76
L31	50.7500-45.7500	A	2.077	0.000	0.000	20.254	0.000	0.26
		B		0.000	0.000	20.066	0.000	0.28
		C		0.000	0.000	42.237	0.000	0.75
L32	45.7500-44.4833	A	2.064	0.000	0.000	6.461	0.000	0.08
		B		0.000	0.000	6.414	0.000	0.09
		C		0.000	0.000	11.977	0.000	0.21
L33	44.4833-44.2333	A	2.060	0.000	0.000	1.274	0.000	0.02
		B		0.000	0.000	1.265	0.000	0.02
		C		0.000	0.000	2.216	0.000	0.04
L34	44.2333-44.0833	A	2.059	0.000	0.000	0.764	0.000	0.01
		B		0.000	0.000	0.759	0.000	0.01
		C		0.000	0.000	1.456	0.000	0.02
L35	44.0833-39.0833	A	2.047	0.000	0.000	20.938	0.000	0.27
		B		0.000	0.000	20.750	0.000	0.28
		C		0.000	0.000	43.872	0.000	0.76
L36	39.0833-34.0800	A	2.021	0.000	0.000	19.950	0.000	0.25
		B		0.000	0.000	19.762	0.000	0.27
		C		0.000	0.000	42.645	0.000	0.74
L37	34.0800-34.0000	A	2.006	0.000	0.000	0.319	0.000	0.00
		B		0.000	0.000	0.316	0.000	0.00
		C		0.000	0.000	0.682	0.000	0.01
L38	34.0000-31.4583	A	1.998	0.000	0.000	10.089	0.000	0.13
		B		0.000	0.000	9.994	0.000	0.13
		C		0.000	0.000	21.508	0.000	0.37
L39	31.4583-31.2083	A	1.990	0.000	0.000	0.991	0.000	0.01
		B		0.000	0.000	0.981	0.000	0.01
		C		0.000	0.000	2.110	0.000	0.04
L40	31.2083-29.4583	A	1.983	0.000	0.000	6.925	0.000	0.09
		B		0.000	0.000	6.860	0.000	0.09
		C		0.000	0.000	14.736	0.000	0.25
L41	29.4583-29.2083	A	1.977	0.000	0.000	1.162	0.000	0.01
		B		0.000	0.000	0.979	0.000	0.01
		C		0.000	0.000	2.275	0.000	0.04
L42	29.2083-26.8333	A	1.968	0.000	0.000	12.671	0.000	0.15
		B		0.000	0.000	9.280	0.000	0.12
		C		0.000	0.000	23.198	0.000	0.38
L43	26.8333-26.5833	A	1.958	0.000	0.000	1.332	0.000	0.02
		B		0.000	0.000	0.975	0.000	0.01
		C		0.000	0.000	2.435	0.000	0.04
L44	26.5833-21.5833	A	1.938	0.000	0.000	26.533	0.000	0.32
		B		0.000	0.000	19.418	0.000	0.25
		C		0.000	0.000	48.405	0.000	0.79
L45	21.5833-20.7500	A	1.913	0.000	0.000	4.056	0.000	0.05
		B		0.000	0.000	2.874	0.000	0.04
		C		0.000	0.000	8.007	0.000	0.13

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job	HRT 100 943239, 806376	Page	17 of 76
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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L46	20.7500-20.5000	A	1.908	0.000	0.000	1.339	0.000	0.02
		B		0.000	0.000	1.350	0.000	0.02
		C		0.000	0.000	2.399	0.000	0.04
L47	20.5000-18.0000	A	1.895	0.000	0.000	13.364	0.000	0.16
		B		0.000	0.000	13.472	0.000	0.17
		C		0.000	0.000	23.891	0.000	0.38
L48	18.0000-17.7500	A	1.881	0.000	0.000	1.333	0.000	0.02
		B		0.000	0.000	1.344	0.000	0.02
		C		0.000	0.000	2.379	0.000	0.04
L49	17.7500-17.0833	A	1.876	0.000	0.000	3.552	0.000	0.04
		B		0.000	0.000	3.581	0.000	0.04
		C		0.000	0.000	6.334	0.000	0.10
L50	17.0833-16.8333	A	1.871	0.000	0.000	1.331	0.000	0.02
		B		0.000	0.000	1.342	0.000	0.02
		C		0.000	0.000	2.372	0.000	0.04
L51	16.8333-13.0000	A	1.847	0.000	0.000	20.558	0.000	0.23
		B		0.000	0.000	20.728	0.000	0.25
		C		0.000	0.000	36.336	0.000	0.57
L52	13.0000-12.7500	A	1.820	0.000	0.000	1.378	0.000	0.02
		B		0.000	0.000	1.389	0.000	0.02
		C		0.000	0.000	2.393	0.000	0.04
L53	12.7500-11.8333	A	1.812	0.000	0.000	5.045	0.000	0.06
		B		0.000	0.000	5.087	0.000	0.06
		C		0.000	0.000	8.754	0.000	0.14
L54	11.8333-11.5833	A	1.803	0.000	0.000	1.374	0.000	0.02
		B		0.000	0.000	1.386	0.000	0.02
		C		0.000	0.000	2.381	0.000	0.04
L55	11.5833-6.4833	A	1.757	0.000	0.000	27.084	0.000	0.30
		B		0.000	0.000	28.053	0.000	0.32
		C		0.000	0.000	40.200	0.000	0.65
L56	6.4833-6.2500	A	1.697	0.000	0.000	1.209	0.000	0.01
		B		0.000	0.000	1.271	0.000	0.01
		C		0.000	0.000	1.526	0.000	0.03
L57	6.2500-1.2500	A	1.609	0.000	0.000	25.555	0.000	0.27
		B		0.000	0.000	26.837	0.000	0.28
		C		0.000	0.000	31.636	0.000	0.53
L58	1.2500-0.0000	A	1.345	0.000	0.000	5.046	0.000	0.04
		B		0.000	0.000	5.335	0.000	0.05
		C		0.000	0.000	6.024	0.000	0.10

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	131.0000-126.0000	-0.0270	-0.0468	-0.1939	-0.3358
L2	126.0000-121.0000	-0.0270	-0.0468	-0.2022	-0.3503
L3	121.0000-116.0000	0.3524	0.4781	0.3716	0.6211
L4	116.0000-111.0000	0.3534	0.4793	0.3913	0.6553
L5	111.0000-110.0000	0.3539	0.4799	0.4028	0.6752
L6	110.0000-105.0000	0.3544	0.4805	0.4146	0.6954
L7	105.0000-100.0000	0.3552	0.4815	0.4337	0.7284
L8	100.0000-95.0000	0.3731	0.4895	0.6114	0.7452
L9	95.0000-89.9000	0.3162	0.3973	0.7498	0.6884
L10	89.9000-89.6667	0.2152	0.2702	0.6309	0.5786
L11	89.6667-84.5667	0.1959	0.2459	0.5491	0.6605
L12	84.5667-84.3333	0.1523	0.1911	0.4348	0.6597

<p>tnxTower</p> <p>FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001</p>	Job	HRT 100 943239, 806376	Page	18 of 76
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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L13	84.3333-82.9167	0.1531	0.1920	0.4381	0.6645
L14	82.9167-82.6667	0.1539	0.1930	0.4413	0.6694
L15	82.6667-80.9792	0.1404	0.1761	0.4212	0.6387
L16	80.9792-80.7292	0.1557	0.1952	0.4489	0.6806
L17	80.7292-75.7292	0.1581	0.1981	0.4591	0.6957
L18	75.7292-70.0000	0.1816	0.2274	0.5094	0.7712
L19	70.0000-69.0000	0.2335	0.2924	0.5836	0.8835
L20	69.0000-66.9833	0.1858	0.2326	0.5130	0.7762
L21	66.9833-66.7333	0.1663	0.2082	0.4804	0.7267
L22	66.7333-64.0833	-0.1520	0.2925	0.3359	0.7989
L23	64.0833-63.8333	0.1628	0.2037	0.5462	0.7350
L24	63.8333-62.4167	0.1635	0.2046	0.5495	0.7393
L25	62.4167-62.1667	0.1642	0.2054	0.5527	0.7436
L26	62.1667-59.4583	0.1499	0.1876	0.5214	0.7013
L27	59.4583-59.2083	0.1303	0.1630	0.4732	0.6364
L28	59.2083-56.0000	0.1427	0.1626	0.4864	0.6439
L29	56.0000-55.7500	-0.0016	0.1894	0.3619	0.6501
L30	55.7500-50.7500	-0.0020	0.1921	0.3680	0.6613
L31	50.7500-45.7500	-0.0026	0.1967	0.3783	0.6806
L32	45.7500-44.4833	-0.0070	0.1684	0.3317	0.6043
L33	44.4833-44.2333	-0.1668	0.2140	0.2075	0.6554
L34	44.2333-44.0833	0.1092	0.1364	0.3889	0.5863
L35	44.0833-39.0833	0.1280	0.1599	0.4432	0.6679
L36	39.0833-34.0800	0.1353	0.1688	0.4669	0.7031
L37	34.0800-34.0000	0.1353	0.1689	0.4670	0.7032
L38	34.0000-31.4583	0.1361	0.1699	0.4690	0.7060
L39	31.4583-31.2083	0.1369	0.1709	0.4723	0.7108
L40	31.2083-29.4583	0.1375	0.1717	0.4746	0.7142
L41	29.4583-29.2083	-0.0666	0.0638	0.3109	0.6070
L42	29.2083-26.8333	-0.2403	-0.0278	0.1646	0.5120
L43	26.8333-26.5833	-0.2421	-0.0282	0.1648	0.5145
L44	26.5833-21.5833	-0.2455	-0.0289	0.1650	0.5193
L45	21.5833-20.7500	-0.1038	-0.0712	0.2855	0.5138
L46	20.7500-20.5000	0.1004	0.1593	0.4053	0.6274
L47	20.5000-18.0000	0.1010	0.1603	0.4072	0.6306
L48	18.0000-17.7500	0.1016	0.1614	0.4090	0.6335
L49	17.7500-17.0833	0.1018	0.1617	0.4095	0.6344
L50	17.0833-16.8333	0.1020	0.1620	0.4101	0.6354
L51	16.8333-13.0000	0.0995	0.1582	0.4094	0.6345
L52	13.0000-12.7500	0.0970	0.1541	0.4031	0.6249
L53	12.7500-11.8333	0.0972	0.1545	0.4035	0.6256
L54	11.8333-11.5833	0.0974	0.1549	0.4039	0.6263
L55	11.5833-6.4833	0.0174	0.1000	0.3653	0.6600
L56	6.4833-6.2500	-0.0565	0.0364	0.3266	0.6772
L57	6.2500-1.2500	-0.0573	0.0368	0.3193	0.6680
L58	1.2500-0.0000	-0.0684	0.0438	0.3266	0.7068

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Safety Line 3/8	126.00 - 131.00	1.0000	1.0000
L2	1	Safety Line 3/8	121.00 - 126.00	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L3	1	Safety Line 3/8	116.00 - 121.00	1.0000	1.0000
L3	5	LDF6-50A(1-1/4")	116.00 - 121.00	1.0000	1.0000
L3	8	2" (Nominal) Conduit	116.00 - 121.00	1.0000	1.0000
L3	9	FB-L98B-002-75000(3/8")	116.00 - 121.00	1.0000	1.0000
L3	10	WR-VG86ST-BRD(3/4")	116.00 - 121.00	1.0000	1.0000
L4	1	Safety Line 3/8	111.00 - 116.00	1.0000	1.0000
L4	5	LDF6-50A(1-1/4")	111.00 - 116.00	1.0000	1.0000
L4	8	2" (Nominal) Conduit	111.00 - 116.00	1.0000	1.0000
L4	9	FB-L98B-002-75000(3/8")	111.00 - 116.00	1.0000	1.0000
L4	10	WR-VG86ST-BRD(3/4")	111.00 - 116.00	1.0000	1.0000
L5	1	Safety Line 3/8	110.00 - 111.00	1.0000	1.0000
L5	5	LDF6-50A(1-1/4")	110.00 - 111.00	1.0000	1.0000
L5	8	2" (Nominal) Conduit	110.00 - 111.00	1.0000	1.0000
L5	9	FB-L98B-002-75000(3/8")	110.00 - 111.00	1.0000	1.0000
L5	10	WR-VG86ST-BRD(3/4")	110.00 - 111.00	1.0000	1.0000
L6	1	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L6	5	LDF6-50A(1-1/4")	105.00 - 110.00	1.0000	1.0000
L6	8	2" (Nominal) Conduit	105.00 - 110.00	1.0000	1.0000
L6	9	FB-L98B-002-75000(3/8")	105.00 - 110.00	1.0000	1.0000
L6	10	WR-VG86ST-BRD(3/4")	105.00 - 110.00	1.0000	1.0000
L7	1	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L7	5	LDF6-50A(1-1/4")	100.00 - 105.00	1.0000	1.0000
L7	8	2" (Nominal) Conduit	100.00 - 105.00	1.0000	1.0000
L7	9	FB-L98B-002-75000(3/8")	100.00 - 105.00	1.0000	1.0000
L7	10	WR-VG86ST-BRD(3/4")	100.00 - 105.00	1.0000	1.0000
L8	1	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L8	5	LDF6-50A(1-1/4")	95.00 - 100.00	1.0000	1.0000
L8	8	2" (Nominal) Conduit	95.00 - 100.00	1.0000	1.0000
L8	9	FB-L98B-002-75000(3/8")	95.00 - 100.00	1.0000	1.0000
L8	10	WR-VG86ST-BRD(3/4")	95.00 - 100.00	1.0000	1.0000
L8	20	FSJ4-50B(1/2")	95.00 - 97.00	1.0000	1.0000
L8	22	2" (Nominal) Conduit	95.00 - 97.00	1.0000	1.0000
L8	23	2" (Nominal) Conduit	95.00 - 97.00	1.0000	1.0000
L8	24	HB114-1-08U4-M5J(1 1/4")	95.00 - 97.00	1.0000	1.0000
L9	1	Safety Line 3/8	89.90 - 95.00	1.0000	1.0000
L9	5	LDF6-50A(1-1/4")	89.90 - 95.00	1.0000	1.0000
L9	8	2" (Nominal) Conduit	89.90 - 95.00	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	9	FB-L98B-002-75000(3/8")	89.90 - 95.00	1.0000	1.0000
L9	10	WR-VG86ST-BRD(3/4")	89.90 - 95.00	1.0000	1.0000
L9	20	FSJ4-50B(1/2")	89.90 - 95.00	1.0000	1.0000
L9	22	2" (Nominal) Conduit	89.90 - 95.00	1.0000	1.0000
L9	23	2" (Nominal) Conduit	89.90 - 95.00	1.0000	1.0000
L9	24	HB114-1-08U4-M5J(1 1/4")	89.90 - 95.00	1.0000	1.0000
L9	77	4" x 1" Flat Plate (G)	89.90 - 91.42	1.0000	1.0000
L9	78	4" x 1" Flat Plate (G)	89.90 - 91.42	1.0000	1.0000
L9	79	4" x 1" Flat Plate (G)	89.90 - 91.42	1.0000	1.0000
L10	1	Safety Line 3/8	89.67 - 89.90	1.0000	1.0000
L10	5	LDF6-50A(1-1/4")	89.67 - 89.90	1.0000	1.0000
L10	8	2" (Nominal) Conduit	89.67 - 89.90	1.0000	1.0000
L10	9	FB-L98B-002-75000(3/8")	89.67 - 89.90	1.0000	1.0000
L10	10	WR-VG86ST-BRD(3/4")	89.67 - 89.90	1.0000	1.0000
L10	20	FSJ4-50B(1/2")	89.67 - 89.90	1.0000	1.0000
L10	22	2" (Nominal) Conduit	89.67 - 89.90	1.0000	1.0000
L10	23	2" (Nominal) Conduit	89.67 - 89.90	1.0000	1.0000
L10	24	HB114-1-08U4-M5J(1 1/4")	89.67 - 89.90	1.0000	1.0000
L10	77	4" x 1" Flat Plate (G)	89.67 - 89.90	1.0000	1.0000
L10	78	4" x 1" Flat Plate (G)	89.67 - 89.90	1.0000	1.0000
L10	79	4" x 1" Flat Plate (G)	89.67 - 89.90	1.0000	1.0000
L11	1	Safety Line 3/8	84.57 - 89.67	1.0000	1.0000
L11	5	LDF6-50A(1-1/4")	84.57 - 89.67	1.0000	1.0000
L11	8	2" (Nominal) Conduit	84.57 - 89.67	1.0000	1.0000
L11	9	FB-L98B-002-75000(3/8")	84.57 - 89.67	1.0000	1.0000
L11	10	WR-VG86ST-BRD(3/4")	84.57 - 89.67	1.0000	1.0000
L11	20	FSJ4-50B(1/2")	84.57 - 89.67	1.0000	1.0000
L11	22	2" (Nominal) Conduit	84.57 - 89.67	1.0000	1.0000
L11	23	2" (Nominal) Conduit	84.57 - 89.67	1.0000	1.0000
L11	24	HB114-1-08U4-M5J(1 1/4")	84.57 - 89.67	1.0000	1.0000
L11	27	LCF114-50J(1-1/4")	84.57 - 87.00	1.0000	1.0000
L11	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	84.57 - 87.00	1.0000	1.0000
L11	29	MLC Hybrid 6/6(7/8")	84.57 - 87.00	1.0000	1.0000
L11	69	4" x .75" Flat Plate (G)	84.57 - 85.83	1.0000	1.0000
L11	70	4" x .75" Flat Plate (G)	84.57 - 85.83	1.0000	1.0000
L11	71	4" x .75" Flat Plate (G)	84.57 - 85.83	1.0000	1.0000
L11	77	4" x 1" Flat Plate (G)	84.57 - 89.67	1.0000	1.0000
L11	78	4" x 1" Flat Plate (G)	84.57 - 89.67	1.0000	1.0000
L11	79	4" x 1" Flat Plate (G)	84.57 - 89.67	1.0000	1.0000
L12	1	Safety Line 3/8	84.33 - 84.57	1.0000	1.0000
L12	5	LDF6-50A(1-1/4")	84.33 - 84.57	1.0000	1.0000
L12	8	2" (Nominal) Conduit	84.33 - 84.57	1.0000	1.0000
L12	9	FB-L98B-002-75000(3/8")	84.33 - 84.57	1.0000	1.0000
L12	10	WR-VG86ST-BRD(3/4")	84.33 - 84.57	1.0000	1.0000
L12	20	FSJ4-50B(1/2")	84.33 - 84.57	1.0000	1.0000
L12	22	2" (Nominal) Conduit	84.33 - 84.57	1.0000	1.0000
L12	23	2" (Nominal) Conduit	84.33 - 84.57	1.0000	1.0000
L12	24	HB114-1-08U4-M5J(1 1/4")	84.33 - 84.57	1.0000	1.0000
L12	27	LCF114-50J(1-1/4")	84.33 - 84.57	1.0000	1.0000
L12	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	84.33 - 84.57	1.0000	1.0000
L12	29	MLC Hybrid 6/6(7/8")	84.33 - 84.57	1.0000	1.0000
L12	69	4" x .75" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L12	70	4" x .75" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L12	71	4" x .75" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L12	77	4" x 1" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L12	78	4" x 1" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L12	79	4" x 1" Flat Plate (G)	84.33 - 84.57	1.0000	1.0000
L13	1	Safety Line 3/8	82.92 - 84.33	1.0000	1.0000
L13	5	LDF6-50A(1-1/4")	82.92 - 84.33	1.0000	1.0000
L13	8	2" (Nominal) Conduit	82.92 - 84.33	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L13	9	FB-L98B-002-75000(3/8")	82.92 - 84.33	1.0000	1.0000
L13	10	WR-VG86ST-BRD(3/4")	82.92 - 84.33	1.0000	1.0000
L13	20	FSJ4-50B(1/2")	82.92 - 84.33	1.0000	1.0000
L13	22	2" (Nominal) Conduit	82.92 - 84.33	1.0000	1.0000
L13	23	2" (Nominal) Conduit	82.92 - 84.33	1.0000	1.0000
L13	24	HB114-1-08U4-M5J(1 1/4")	82.92 - 84.33	1.0000	1.0000
L13	27	LCF114-50J(1-1/4")	82.92 - 84.33	1.0000	1.0000
L13	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	82.92 - 84.33	1.0000	1.0000
L13	29	MLC Hybrid 6/6(7/8")	82.92 - 84.33	1.0000	1.0000
L13	69	4" x .75" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L13	70	4" x .75" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L13	71	4" x .75" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L13	77	4" x 1" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L13	78	4" x 1" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L13	79	4" x 1" Flat Plate (G)	82.92 - 84.33	1.0000	1.0000
L14	1	Safety Line 3/8	82.67 - 82.92	1.0000	1.0000
L14	5	LDF6-50A(1-1/4")	82.67 - 82.92	1.0000	1.0000
L14	8	2" (Nominal) Conduit	82.67 - 82.92	1.0000	1.0000
L14	9	FB-L98B-002-75000(3/8")	82.67 - 82.92	1.0000	1.0000
L14	10	WR-VG86ST-BRD(3/4")	82.67 - 82.92	1.0000	1.0000
L14	20	FSJ4-50B(1/2")	82.67 - 82.92	1.0000	1.0000
L14	22	2" (Nominal) Conduit	82.67 - 82.92	1.0000	1.0000
L14	23	2" (Nominal) Conduit	82.67 - 82.92	1.0000	1.0000
L14	24	HB114-1-08U4-M5J(1 1/4")	82.67 - 82.92	1.0000	1.0000
L14	27	LCF114-50J(1-1/4")	82.67 - 82.92	1.0000	1.0000
L14	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	82.67 - 82.92	1.0000	1.0000
L14	29	MLC Hybrid 6/6(7/8")	82.67 - 82.92	1.0000	1.0000
L14	69	4" x .75" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L14	70	4" x .75" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L14	71	4" x .75" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L14	77	4" x 1" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L14	78	4" x 1" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L14	79	4" x 1" Flat Plate (G)	82.67 - 82.92	1.0000	1.0000
L15	1	Safety Line 3/8	80.98 - 82.67	1.0000	1.0000
L15	5	LDF6-50A(1-1/4")	80.98 - 82.67	1.0000	1.0000
L15	8	2" (Nominal) Conduit	80.98 - 82.67	1.0000	1.0000
L15	9	FB-L98B-002-75000(3/8")	80.98 - 82.67	1.0000	1.0000
L15	10	WR-VG86ST-BRD(3/4")	80.98 - 82.67	1.0000	1.0000
L15	20	FSJ4-50B(1/2")	80.98 - 82.67	1.0000	1.0000
L15	22	2" (Nominal) Conduit	80.98 - 82.67	1.0000	1.0000
L15	23	2" (Nominal) Conduit	80.98 - 82.67	1.0000	1.0000
L15	24	HB114-1-08U4-M5J(1 1/4")	80.98 - 82.67	1.0000	1.0000
L15	27	LCF114-50J(1-1/4")	80.98 - 82.67	1.0000	1.0000
L15	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	80.98 - 82.67	1.0000	1.0000
L15	29	MLC Hybrid 6/6(7/8")	80.98 - 82.67	1.0000	1.0000
L15	69	4" x .75" Flat Plate (G)	80.98 - 82.67	1.0000	1.0000
L15	70	4" x .75" Flat Plate (G)	80.98 - 82.67	1.0000	1.0000
L15	71	4" x .75" Flat Plate (G)	80.98 - 82.67	1.0000	1.0000
L15	73	4" x .75" Flat Plate (G)	80.98 - 81.98	1.0000	1.0000
L15	74	4" x .75" Flat Plate (G)	80.98 - 81.98	1.0000	1.0000
L15	75	4" x .75" Flat Plate (G)	80.98 - 81.98	1.0000	1.0000
L15	77	4" x 1" Flat Plate (G)	81.42 - 82.67	1.0000	1.0000
L15	78	4" x 1" Flat Plate (G)	81.42 - 82.67	1.0000	1.0000
L15	79	4" x 1" Flat Plate (G)	81.42 - 82.67	1.0000	1.0000
L16	1	Safety Line 3/8	80.73 - 80.98	1.0000	1.0000
L16	5	LDF6-50A(1-1/4")	80.73 - 80.98	1.0000	1.0000
L16	8	2" (Nominal) Conduit	80.73 - 80.98	1.0000	1.0000
L16	9	FB-L98B-002-75000(3/8")	80.73 - 80.98	1.0000	1.0000
L16	10	WR-VG86ST-BRD(3/4")	80.73 - 80.98	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L16	20	FSJ4-50B(1/2")	80.73 - 80.98	1.0000	1.0000
L16	22	2" (Nominal) Conduit	80.73 - 80.98	1.0000	1.0000
L16	23	2" (Nominal) Conduit	80.73 - 80.98	1.0000	1.0000
L16	24	HB114-1-08U4-M5J(1 1/4")	80.73 - 80.98	1.0000	1.0000
L16	27	LCF114-50J(1-1/4")	80.73 - 80.98	1.0000	1.0000
L16	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	80.73 - 80.98	1.0000	1.0000
L16	29	MLC Hybrid 6/6(7/8")	80.73 - 80.98	1.0000	1.0000
L16	69	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L16	70	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L16	71	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L16	73	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L16	74	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L16	75	4" x .75" Flat Plate (G)	80.73 - 80.98	1.0000	1.0000
L17	1	Safety Line 3/8	75.73 - 80.73	1.0000	1.0000
L17	5	LDF6-50A(1-1/4")	75.73 - 80.73	1.0000	1.0000
L17	8	2" (Nominal) Conduit	75.73 - 80.73	1.0000	1.0000
L17	9	FB-L98B-002-75000(3/8")	75.73 - 80.73	1.0000	1.0000
L17	10	WR-VG86ST-BRD(3/4")	75.73 - 80.73	1.0000	1.0000
L17	20	FSJ4-50B(1/2")	75.73 - 80.73	1.0000	1.0000
L17	22	2" (Nominal) Conduit	75.73 - 80.73	1.0000	1.0000
L17	23	2" (Nominal) Conduit	75.73 - 80.73	1.0000	1.0000
L17	24	HB114-1-08U4-M5J(1 1/4")	75.73 - 80.73	1.0000	1.0000
L17	27	LCF114-50J(1-1/4")	75.73 - 80.73	1.0000	1.0000
L17	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	75.73 - 80.73	1.0000	1.0000
L17	29	MLC Hybrid 6/6(7/8")	75.73 - 80.73	1.0000	1.0000
L17	69	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L17	70	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L17	71	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L17	73	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L17	74	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L17	75	4" x .75" Flat Plate (G)	75.73 - 80.73	1.0000	1.0000
L18	1	Safety Line 3/8	70.00 - 75.73	1.0000	1.0000
L18	5	LDF6-50A(1-1/4")	70.00 - 75.73	1.0000	1.0000
L18	8	2" (Nominal) Conduit	70.00 - 75.73	1.0000	1.0000
L18	9	FB-L98B-002-75000(3/8")	70.00 - 75.73	1.0000	1.0000
L18	10	WR-VG86ST-BRD(3/4")	70.00 - 75.73	1.0000	1.0000
L18	20	FSJ4-50B(1/2")	70.00 - 75.73	1.0000	1.0000
L18	22	2" (Nominal) Conduit	70.00 - 75.73	1.0000	1.0000
L18	23	2" (Nominal) Conduit	70.00 - 75.73	1.0000	1.0000
L18	24	HB114-1-08U4-M5J(1 1/4")	70.00 - 75.73	1.0000	1.0000
L18	27	LCF114-50J(1-1/4")	70.00 - 75.73	1.0000	1.0000
L18	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	70.00 - 75.73	1.0000	1.0000
L18	29	MLC Hybrid 6/6(7/8")	70.00 - 75.73	1.0000	1.0000
L18	69	4" x .75" Flat Plate (G)	70.00 - 75.73	1.0000	1.0000
L18	70	4" x .75" Flat Plate (G)	70.00 - 75.73	1.0000	1.0000
L18	71	4" x .75" Flat Plate (G)	70.00 - 75.73	1.0000	1.0000
L18	73	4" x .75" Flat Plate (G)	71.98 - 75.73	1.0000	1.0000
L18	74	4" x .75" Flat Plate (G)	71.98 - 75.73	1.0000	1.0000
L18	75	4" x .75" Flat Plate (G)	71.98 - 75.73	1.0000	1.0000
L20	1	Safety Line 3/8	66.98 - 69.00	1.0000	1.0000
L20	5	LDF6-50A(1-1/4")	66.98 - 69.00	1.0000	1.0000
L20	8	2" (Nominal) Conduit	66.98 - 69.00	1.0000	1.0000
L20	9	FB-L98B-002-75000(3/8")	66.98 - 69.00	1.0000	1.0000
L20	10	WR-VG86ST-BRD(3/4")	66.98 - 69.00	1.0000	1.0000
L20	20	FSJ4-50B(1/2")	66.98 - 69.00	1.0000	1.0000
L20	22	2" (Nominal) Conduit	66.98 - 69.00	1.0000	1.0000
L20	23	2" (Nominal) Conduit	66.98 - 69.00	1.0000	1.0000
L20	24	HB114-1-08U4-M5J(1 1/4")	66.98 - 69.00	1.0000	1.0000
L20	27	LCF114-50J(1-1/4")	66.98 - 69.00	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L20	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	66.98 - 69.00	1.0000	1.0000
L20	29	MLC Hybrid 6/6(7/8")	66.98 - 69.00	1.0000	1.0000
L20	62	4" x .75" Flat Plate (G)	66.98 - 68.25	1.0000	1.0000
L20	63	4" x .75" Flat Plate (G)	66.98 - 68.25	1.0000	1.0000
L20	64	4" x .75" Flat Plate (G)	66.98 - 68.25	1.0000	1.0000
L20	69	4" x .75" Flat Plate (G)	66.98 - 69.00	1.0000	1.0000
L20	70	4" x .75" Flat Plate (G)	66.98 - 69.00	1.0000	1.0000
L20	71	4" x .75" Flat Plate (G)	66.98 - 69.00	1.0000	1.0000
L21	1	Safety Line 3/8	66.73 - 66.98	1.0000	1.0000
L21	5	LDF6-50A(1-1/4")	66.73 - 66.98	1.0000	1.0000
L21	8	2" (Nominal) Conduit	66.73 - 66.98	1.0000	1.0000
L21	9	FB-L98B-002-75000(3/8")	66.73 - 66.98	1.0000	1.0000
L21	10	WR-VG86ST-BRD(3/4")	66.73 - 66.98	1.0000	1.0000
L21	20	FSJ4-50B(1/2")	66.73 - 66.98	1.0000	1.0000
L21	22	2" (Nominal) Conduit	66.73 - 66.98	1.0000	1.0000
L21	23	2" (Nominal) Conduit	66.73 - 66.98	1.0000	1.0000
L21	24	HB114-1-08U4-M5J(1 1/4")	66.73 - 66.98	1.0000	1.0000
L21	27	LCF114-50J(1-1/4")	66.73 - 66.98	1.0000	1.0000
L21	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	66.73 - 66.98	1.0000	1.0000
L21	29	MLC Hybrid 6/6(7/8")	66.73 - 66.98	1.0000	1.0000
L21	62	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L21	63	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L21	64	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L21	69	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L21	70	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L21	71	4" x .75" Flat Plate (G)	66.73 - 66.98	1.0000	1.0000
L22	1	Safety Line 3/8	64.08 - 66.73	1.0000	1.0000
L22	5	LDF6-50A(1-1/4")	64.08 - 66.73	1.0000	1.0000
L22	8	2" (Nominal) Conduit	64.08 - 66.73	1.0000	1.0000
L22	9	FB-L98B-002-75000(3/8")	64.08 - 66.73	1.0000	1.0000
L22	10	WR-VG86ST-BRD(3/4")	64.08 - 66.73	1.0000	1.0000
L22	20	FSJ4-50B(1/2")	64.08 - 66.73	1.0000	1.0000
L22	22	2" (Nominal) Conduit	64.08 - 66.73	1.0000	1.0000
L22	23	2" (Nominal) Conduit	64.08 - 66.73	1.0000	1.0000
L22	24	HB114-1-08U4-M5J(1 1/4")	64.08 - 66.73	1.0000	1.0000
L22	27	LCF114-50J(1-1/4")	64.08 - 66.73	1.0000	1.0000
L22	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	64.08 - 66.73	1.0000	1.0000
L22	29	MLC Hybrid 6/6(7/8")	64.08 - 66.73	1.0000	1.0000
L22	60	4.5" x 1" Flat Plate (G)	64.08 - 64.42	1.0000	1.0000
L22	62	4" x .75" Flat Plate (G)	64.08 - 66.73	1.0000	1.0000
L22	63	4" x .75" Flat Plate (G)	64.08 - 66.73	1.0000	1.0000
L22	64	4" x .75" Flat Plate (G)	64.08 - 66.73	1.0000	1.0000
L22	66	4.5" x 1" Flat Plate (G)	64.08 - 66.08	1.0000	1.0000
L22	67	4.5" x 1" Flat Plate (G)	64.08 - 66.08	1.0000	1.0000
L22	69	4" x .75" Flat Plate (G)	65.83 - 66.73	1.0000	1.0000
L22	70	4" x .75" Flat Plate (G)	65.83 - 66.73	1.0000	1.0000
L22	71	4" x .75" Flat Plate (G)	65.83 - 66.73	1.0000	1.0000
L23	1	Safety Line 3/8	63.83 - 64.08	1.0000	1.0000
L23	5	LDF6-50A(1-1/4")	63.83 - 64.08	1.0000	1.0000
L23	8	2" (Nominal) Conduit	63.83 - 64.08	1.0000	1.0000
L23	9	FB-L98B-002-75000(3/8")	63.83 - 64.08	1.0000	1.0000
L23	10	WR-VG86ST-BRD(3/4")	63.83 - 64.08	1.0000	1.0000
L23	20	FSJ4-50B(1/2")	63.83 - 64.08	1.0000	1.0000
L23	22	2" (Nominal) Conduit	63.83 - 64.08	1.0000	1.0000
L23	23	2" (Nominal) Conduit	63.83 - 64.08	1.0000	1.0000
L23	24	HB114-1-08U4-M5J(1 1/4")	63.83 - 64.08	1.0000	1.0000
L23	27	LCF114-50J(1-1/4")	63.83 - 64.08	1.0000	1.0000
L23	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	63.83 - 64.08	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L23	29	MLC Hybrid 6/6(7/8")	63.83 - 64.08	1.0000	1.0000
L23	60	4.5" x 1" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L23	62	4" x .75" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L23	63	4" x .75" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L23	64	4" x .75" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L23	66	4.5" x 1" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L23	67	4.5" x 1" Flat Plate (G)	63.83 - 64.08	1.0000	1.0000
L24	1	Safety Line 3/8	62.42 - 63.83	1.0000	1.0000
L24	5	LDF6-50A(1-1/4")	62.42 - 63.83	1.0000	1.0000
L24	8	2" (Nominal) Conduit	62.42 - 63.83	1.0000	1.0000
L24	9	FB-L98B-002-75000(3/8")	62.42 - 63.83	1.0000	1.0000
L24	10	WR-VG86ST-BRD(3/4")	62.42 - 63.83	1.0000	1.0000
L24	20	FSJ4-50B(1/2")	62.42 - 63.83	1.0000	1.0000
L24	22	2" (Nominal) Conduit	62.42 - 63.83	1.0000	1.0000
L24	23	2" (Nominal) Conduit	62.42 - 63.83	1.0000	1.0000
L24	24	HB114-1-08U4-M5J(1 1/4")	62.42 - 63.83	1.0000	1.0000
L24	27	LCF114-50J(1-1/4")	62.42 - 63.83	1.0000	1.0000
L24	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	62.42 - 63.83	1.0000	1.0000
L24	29	MLC Hybrid 6/6(7/8")	62.42 - 63.83	1.0000	1.0000
L24	60	4.5" x 1" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L24	62	4" x .75" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L24	63	4" x .75" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L24	64	4" x .75" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L24	66	4.5" x 1" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L24	67	4.5" x 1" Flat Plate (G)	62.42 - 63.83	1.0000	1.0000
L25	1	Safety Line 3/8	62.17 - 62.42	1.0000	1.0000
L25	5	LDF6-50A(1-1/4")	62.17 - 62.42	1.0000	1.0000
L25	8	2" (Nominal) Conduit	62.17 - 62.42	1.0000	1.0000
L25	9	FB-L98B-002-75000(3/8")	62.17 - 62.42	1.0000	1.0000
L25	10	WR-VG86ST-BRD(3/4")	62.17 - 62.42	1.0000	1.0000
L25	20	FSJ4-50B(1/2")	62.17 - 62.42	1.0000	1.0000
L25	22	2" (Nominal) Conduit	62.17 - 62.42	1.0000	1.0000
L25	23	2" (Nominal) Conduit	62.17 - 62.42	1.0000	1.0000
L25	24	HB114-1-08U4-M5J(1 1/4")	62.17 - 62.42	1.0000	1.0000
L25	27	LCF114-50J(1-1/4")	62.17 - 62.42	1.0000	1.0000
L25	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	62.17 - 62.42	1.0000	1.0000
L25	29	MLC Hybrid 6/6(7/8")	62.17 - 62.42	1.0000	1.0000
L25	60	4.5" x 1" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L25	62	4" x .75" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L25	63	4" x .75" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L25	64	4" x .75" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L25	66	4.5" x 1" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L25	67	4.5" x 1" Flat Plate (G)	62.17 - 62.42	1.0000	1.0000
L26	1	Safety Line 3/8	59.46 - 62.17	1.0000	1.0000
L26	5	LDF6-50A(1-1/4")	59.46 - 62.17	1.0000	1.0000
L26	8	2" (Nominal) Conduit	59.46 - 62.17	1.0000	1.0000
L26	9	FB-L98B-002-75000(3/8")	59.46 - 62.17	1.0000	1.0000
L26	10	WR-VG86ST-BRD(3/4")	59.46 - 62.17	1.0000	1.0000
L26	20	FSJ4-50B(1/2")	59.46 - 62.17	1.0000	1.0000
L26	22	2" (Nominal) Conduit	59.46 - 62.17	1.0000	1.0000
L26	23	2" (Nominal) Conduit	59.46 - 62.17	1.0000	1.0000
L26	24	HB114-1-08U4-M5J(1 1/4")	59.46 - 62.17	1.0000	1.0000
L26	27	LCF114-50J(1-1/4")	59.46 - 62.17	1.0000	1.0000
L26	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	59.46 - 62.17	1.0000	1.0000
L26	29	MLC Hybrid 6/6(7/8")	59.46 - 62.17	1.0000	1.0000
L26	56	4" x .75" Flat Plate (G)	59.46 - 60.46	1.0000	1.0000
L26	57	4" x .75" Flat Plate (G)	59.46 - 60.46	1.0000	1.0000
L26	58	4" x .75" Flat Plate (G)	59.46 - 60.46	1.0000	1.0000
L26	60	4.5" x 1" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L26	62	4" x .75" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000
L26	63	4" x .75" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000
L26	64	4" x .75" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000
L26	66	4.5" x 1" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000
L26	67	4.5" x 1" Flat Plate (G)	59.46 - 62.17	1.0000	1.0000
L27	1	Safety Line 3/8	59.21 - 59.46	1.0000	1.0000
L27	5	LDF6-50A(1-1/4")	59.21 - 59.46	1.0000	1.0000
L27	8	2" (Nominal) Conduit	59.21 - 59.46	1.0000	1.0000
L27	9	FB-L98B-002-75000(3/8")	59.21 - 59.46	1.0000	1.0000
L27	10	WR-VG86ST-BRD(3/4")	59.21 - 59.46	1.0000	1.0000
L27	20	FSJ4-50B(1/2")	59.21 - 59.46	1.0000	1.0000
L27	22	2" (Nominal) Conduit	59.21 - 59.46	1.0000	1.0000
L27	23	2" (Nominal) Conduit	59.21 - 59.46	1.0000	1.0000
L27	24	HB114-1-08U4-M5J(1 1/4")	59.21 - 59.46	1.0000	1.0000
L27	27	LCF114-50J(1-1/4")	59.21 - 59.46	1.0000	1.0000
L27	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	59.21 - 59.46	1.0000	1.0000
L27	29	MLC Hybrid 6/6(7/8")	59.21 - 59.46	1.0000	1.0000
L27	56	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	57	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	58	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	60	4.5" x 1" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	62	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	63	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	64	4" x .75" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	66	4.5" x 1" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L27	67	4.5" x 1" Flat Plate (G)	59.21 - 59.46	1.0000	1.0000
L28	1	Safety Line 3/8	56.00 - 59.21	1.0000	1.0000
L28	5	LDF6-50A(1-1/4")	56.00 - 59.21	1.0000	1.0000
L28	8	2" (Nominal) Conduit	56.00 - 59.21	1.0000	1.0000
L28	9	FB-L98B-002-75000(3/8")	56.00 - 59.21	1.0000	1.0000
L28	10	WR-VG86ST-BRD(3/4")	56.00 - 59.21	1.0000	1.0000
L28	20	FSJ4-50B(1/2")	56.00 - 59.21	1.0000	1.0000
L28	22	2" (Nominal) Conduit	56.00 - 59.21	1.0000	1.0000
L28	23	2" (Nominal) Conduit	56.00 - 59.21	1.0000	1.0000
L28	24	HB114-1-08U4-M5J(1 1/4")	56.00 - 59.21	1.0000	1.0000
L28	27	LCF114-50J(1-1/4")	56.00 - 59.21	1.0000	1.0000
L28	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	56.00 - 59.21	1.0000	1.0000
L28	29	MLC Hybrid 6/6(7/8")	56.00 - 59.21	1.0000	1.0000
L28	56	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	57	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	58	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	60	4.5" x 1" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	62	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	63	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	64	4" x .75" Flat Plate (G)	56.00 - 59.21	1.0000	1.0000
L28	66	4.5" x 1" Flat Plate (G)	56.08 - 59.21	1.0000	1.0000
L28	67	4.5" x 1" Flat Plate (G)	56.08 - 59.21	1.0000	1.0000
L29	1	Safety Line 3/8	55.75 - 56.00	1.0000	1.0000
L29	5	LDF6-50A(1-1/4")	55.75 - 56.00	1.0000	1.0000
L29	8	2" (Nominal) Conduit	55.75 - 56.00	1.0000	1.0000
L29	9	FB-L98B-002-75000(3/8")	55.75 - 56.00	1.0000	1.0000
L29	10	WR-VG86ST-BRD(3/4")	55.75 - 56.00	1.0000	1.0000
L29	20	FSJ4-50B(1/2")	55.75 - 56.00	1.0000	1.0000
L29	22	2" (Nominal) Conduit	55.75 - 56.00	1.0000	1.0000
L29	23	2" (Nominal) Conduit	55.75 - 56.00	1.0000	1.0000
L29	24	HB114-1-08U4-M5J(1 1/4")	55.75 - 56.00	1.0000	1.0000
L29	27	LCF114-50J(1-1/4")	55.75 - 56.00	1.0000	1.0000
L29	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	55.75 - 56.00	1.0000	1.0000
L29	29	MLC Hybrid 6/6(7/8")	55.75 - 56.00	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L29	53	6" x 1" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	54	6" x 1" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	56	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	57	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	58	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	60	4.5" x 1" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	62	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	63	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L29	64	4" x .75" Flat Plate (G)	55.75 - 56.00	1.0000	1.0000
L30	1	Safety Line 3/8	50.75 - 55.75	1.0000	1.0000
L30	5	LDF6-50A(1-1/4")	50.75 - 55.75	1.0000	1.0000
L30	8	2" (Nominal) Conduit	50.75 - 55.75	1.0000	1.0000
L30	9	FB-L98B-002-75000(3/8")	50.75 - 55.75	1.0000	1.0000
L30	10	WR-VG86ST-BRD(3/4")	50.75 - 55.75	1.0000	1.0000
L30	20	FSJ4-50B(1/2")	50.75 - 55.75	1.0000	1.0000
L30	22	2" (Nominal) Conduit	50.75 - 55.75	1.0000	1.0000
L30	23	2" (Nominal) Conduit	50.75 - 55.75	1.0000	1.0000
L30	24	HB114-1-08U4-M5J(1 1/4")	50.75 - 55.75	1.0000	1.0000
L30	27	LCF114-50J(1-1/4")	50.75 - 55.75	1.0000	1.0000
L30	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	50.75 - 55.75	1.0000	1.0000
L30	29	MLC Hybrid 6/6(7/8")	50.75 - 55.75	1.0000	1.0000
L30	53	6" x 1" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	54	6" x 1" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	56	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	57	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	58	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	60	4.5" x 1" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	62	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	63	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L30	64	4" x .75" Flat Plate (G)	50.75 - 55.75	1.0000	1.0000
L31	1	Safety Line 3/8	45.75 - 50.75	1.0000	1.0000
L31	5	LDF6-50A(1-1/4")	45.75 - 50.75	1.0000	1.0000
L31	8	2" (Nominal) Conduit	45.75 - 50.75	1.0000	1.0000
L31	9	FB-L98B-002-75000(3/8")	45.75 - 50.75	1.0000	1.0000
L31	10	WR-VG86ST-BRD(3/4")	45.75 - 50.75	1.0000	1.0000
L31	20	FSJ4-50B(1/2")	45.75 - 50.75	1.0000	1.0000
L31	22	2" (Nominal) Conduit	45.75 - 50.75	1.0000	1.0000
L31	23	2" (Nominal) Conduit	45.75 - 50.75	1.0000	1.0000
L31	24	HB114-1-08U4-M5J(1 1/4")	45.75 - 50.75	1.0000	1.0000
L31	27	LCF114-50J(1-1/4")	45.75 - 50.75	1.0000	1.0000
L31	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	45.75 - 50.75	1.0000	1.0000
L31	29	MLC Hybrid 6/6(7/8")	45.75 - 50.75	1.0000	1.0000
L31	49	4" x .75" Flat Plate (G)	45.75 - 45.83	1.0000	1.0000
L31	50	4" x .75" Flat Plate (G)	45.75 - 45.83	1.0000	1.0000
L31	51	4" x .75" Flat Plate (G)	45.75 - 45.83	1.0000	1.0000
L31	53	6" x 1" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	54	6" x 1" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	56	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	57	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	58	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	60	4.5" x 1" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	62	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	63	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L31	64	4" x .75" Flat Plate (G)	45.75 - 50.75	1.0000	1.0000
L32	1	Safety Line 3/8	44.48 - 45.75	1.0000	1.0000
L32	5	LDF6-50A(1-1/4")	44.48 - 45.75	1.0000	1.0000
L32	8	2" (Nominal) Conduit	44.48 - 45.75	1.0000	1.0000
L32	9	FB-L98B-002-75000(3/8")	44.48 - 45.75	1.0000	1.0000
L32	10	WR-VG86ST-BRD(3/4")	44.48 - 45.75	1.0000	1.0000
L32	20	FSJ4-50B(1/2")	44.48 - 45.75	1.0000	1.0000

tnxTower

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L32	22	2" (Nominal) Conduit	44.48 - 45.75	1.0000	1.0000
L32	23	2" (Nominal) Conduit	44.48 - 45.75	1.0000	1.0000
L32	24	HB114-1-08U4-M5J(1 1/4")	44.48 - 45.75	1.0000	1.0000
L32	27	LCF114-50J(1-1/4")	44.48 - 45.75	1.0000	1.0000
L32	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	44.48 - 45.75	1.0000	1.0000
L32	29	MLC Hybrid 6/6(7/8")	44.48 - 45.75	1.0000	1.0000
L32	49	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	50	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	51	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	53	6" x 1" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	54	6" x 1" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	56	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	57	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	58	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	60	4.5" x 1" Flat Plate (G)	44.50 - 45.75	1.0000	1.0000
L32	62	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	63	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L32	64	4" x .75" Flat Plate (G)	44.48 - 45.75	1.0000	1.0000
L33	1	Safety Line 3/8	44.23 - 44.48	1.0000	1.0000
L33	5	LDF6-50A(1-1/4")	44.23 - 44.48	1.0000	1.0000
L33	8	2" (Nominal) Conduit	44.23 - 44.48	1.0000	1.0000
L33	9	FB-L98B-002-75000(3/8")	44.23 - 44.48	1.0000	1.0000
L33	10	WR-VG86ST-BRD(3/4")	44.23 - 44.48	1.0000	1.0000
L33	20	FSJ4-50B(1/2")	44.23 - 44.48	1.0000	1.0000
L33	22	2" (Nominal) Conduit	44.23 - 44.48	1.0000	1.0000
L33	23	2" (Nominal) Conduit	44.23 - 44.48	1.0000	1.0000
L33	24	HB114-1-08U4-M5J(1 1/4")	44.23 - 44.48	1.0000	1.0000
L33	27	LCF114-50J(1-1/4")	44.23 - 44.48	1.0000	1.0000
L33	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	44.23 - 44.48	1.0000	1.0000
L33	29	MLC Hybrid 6/6(7/8")	44.23 - 44.48	1.0000	1.0000
L33	44	6" x 1" Flat Plate (G)	44.23 - 44.33	1.0000	1.0000
L33	49	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	50	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	51	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	53	6" x 1" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	54	6" x 1" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	56	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	57	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	58	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	62	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	63	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L33	64	4" x .75" Flat Plate (G)	44.23 - 44.48	1.0000	1.0000
L34	1	Safety Line 3/8	44.08 - 44.23	1.0000	1.0000
L34	5	LDF6-50A(1-1/4")	44.08 - 44.23	1.0000	1.0000
L34	8	2" (Nominal) Conduit	44.08 - 44.23	1.0000	1.0000
L34	9	FB-L98B-002-75000(3/8")	44.08 - 44.23	1.0000	1.0000
L34	10	WR-VG86ST-BRD(3/4")	44.08 - 44.23	1.0000	1.0000
L34	20	FSJ4-50B(1/2")	44.08 - 44.23	1.0000	1.0000
L34	22	2" (Nominal) Conduit	44.08 - 44.23	1.0000	1.0000
L34	23	2" (Nominal) Conduit	44.08 - 44.23	1.0000	1.0000
L34	24	HB114-1-08U4-M5J(1 1/4")	44.08 - 44.23	1.0000	1.0000
L34	27	LCF114-50J(1-1/4")	44.08 - 44.23	1.0000	1.0000
L34	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	44.08 - 44.23	1.0000	1.0000
L34	29	MLC Hybrid 6/6(7/8")	44.08 - 44.23	1.0000	1.0000
L34	44	6" x 1" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	49	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	50	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	51	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	53	6" x 1" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000

tnxTower

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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L34	54	6" x 1" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	56	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	57	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	58	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	62	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	63	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L34	64	4" x .75" Flat Plate (G)	44.08 - 44.23	1.0000	1.0000
L35	1	Safety Line 3/8	39.08 - 44.08	1.0000	1.0000
L35	5	LDF6-50A(1-1/4")	39.08 - 44.08	1.0000	1.0000
L35	8	2" (Nominal) Conduit	39.08 - 44.08	1.0000	1.0000
L35	9	FB-L98B-002-75000(3/8")	39.08 - 44.08	1.0000	1.0000
L35	10	WR-VG86ST-BRD(3/4")	39.08 - 44.08	1.0000	1.0000
L35	20	FSJ4-50B(1/2")	39.08 - 44.08	1.0000	1.0000
L35	22	2" (Nominal) Conduit	39.08 - 44.08	1.0000	1.0000
L35	23	2" (Nominal) Conduit	39.08 - 44.08	1.0000	1.0000
L35	24	HB114-1-08U4-M5J(1 1/4")	39.08 - 44.08	1.0000	1.0000
L35	27	LCF114-50J(1-1/4")	39.08 - 44.08	1.0000	1.0000
L35	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	39.08 - 44.08	1.0000	1.0000
L35	29	MLC Hybrid 6/6(7/8")	39.08 - 44.08	1.0000	1.0000
L35	44	6" x 1" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	49	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	50	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	51	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	53	6" x 1" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	54	6" x 1" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	56	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	57	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	58	4" x .75" Flat Plate (G)	39.08 - 44.08	1.0000	1.0000
L35	62	4" x .75" Flat Plate (G)	43.25 - 44.08	1.0000	1.0000
L35	63	4" x .75" Flat Plate (G)	43.25 - 44.08	1.0000	1.0000
L35	64	4" x .75" Flat Plate (G)	43.25 - 44.08	1.0000	1.0000
L36	1	Safety Line 3/8	34.08 - 39.08	1.0000	1.0000
L36	5	LDF6-50A(1-1/4")	34.08 - 39.08	1.0000	1.0000
L36	8	2" (Nominal) Conduit	34.08 - 39.08	1.0000	1.0000
L36	9	FB-L98B-002-75000(3/8")	34.08 - 39.08	1.0000	1.0000
L36	10	WR-VG86ST-BRD(3/4")	34.08 - 39.08	1.0000	1.0000
L36	20	FSJ4-50B(1/2")	34.08 - 39.08	1.0000	1.0000
L36	22	2" (Nominal) Conduit	34.08 - 39.08	1.0000	1.0000
L36	23	2" (Nominal) Conduit	34.08 - 39.08	1.0000	1.0000
L36	24	HB114-1-08U4-M5J(1 1/4")	34.08 - 39.08	1.0000	1.0000
L36	27	LCF114-50J(1-1/4")	34.08 - 39.08	1.0000	1.0000
L36	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	34.08 - 39.08	1.0000	1.0000
L36	29	MLC Hybrid 6/6(7/8")	34.08 - 39.08	1.0000	1.0000
L36	44	6" x 1" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	49	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	50	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	51	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	53	6" x 1" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	54	6" x 1" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	56	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	57	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L36	58	4" x .75" Flat Plate (G)	34.08 - 39.08	1.0000	1.0000
L38	1	Safety Line 3/8	31.46 - 34.00	1.0000	1.0000
L38	5	LDF6-50A(1-1/4")	31.46 - 34.00	1.0000	1.0000
L38	8	2" (Nominal) Conduit	31.46 - 34.00	1.0000	1.0000
L38	9	FB-L98B-002-75000(3/8")	31.46 - 34.00	1.0000	1.0000
L38	10	WR-VG86ST-BRD(3/4")	31.46 - 34.00	1.0000	1.0000
L38	20	FSJ4-50B(1/2")	31.46 - 34.00	1.0000	1.0000
L38	22	2" (Nominal) Conduit	31.46 - 34.00	1.0000	1.0000
L38	23	2" (Nominal) Conduit	31.46 - 34.00	1.0000	1.0000

tnxTower

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Job	HRT 100 943239, 806376	Page	29 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L38	24	HB114-1-08U4-M5J(1 1/4")	31.46 - 34.00	1.0000	1.0000
L38	27	LCF114-50J(1-1/4")	31.46 - 34.00	1.0000	1.0000
L38	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	31.46 - 34.00	1.0000	1.0000
L38	29	MLC Hybrid 6/6(7/8")	31.46 - 34.00	1.0000	1.0000
L38	44	6" x 1" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	49	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	50	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	51	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	53	6" x 1" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	54	6" x 1" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	56	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	57	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L38	58	4" x .75" Flat Plate (G)	31.46 - 34.00	1.0000	1.0000
L39	1	Safety Line 3/8	31.21 - 31.46	1.0000	1.0000
L39	5	LDF6-50A(1-1/4")	31.21 - 31.46	1.0000	1.0000
L39	8	2" (Nominal) Conduit	31.21 - 31.46	1.0000	1.0000
L39	9	FB-L98B-002-75000(3/8")	31.21 - 31.46	1.0000	1.0000
L39	10	WR-VG86ST-BRD(3/4")	31.21 - 31.46	1.0000	1.0000
L39	20	FSJ4-50B(1/2")	31.21 - 31.46	1.0000	1.0000
L39	22	2" (Nominal) Conduit	31.21 - 31.46	1.0000	1.0000
L39	23	2" (Nominal) Conduit	31.21 - 31.46	1.0000	1.0000
L39	24	HB114-1-08U4-M5J(1 1/4")	31.21 - 31.46	1.0000	1.0000
L39	27	LCF114-50J(1-1/4")	31.21 - 31.46	1.0000	1.0000
L39	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	31.21 - 31.46	1.0000	1.0000
L39	29	MLC Hybrid 6/6(7/8")	31.21 - 31.46	1.0000	1.0000
L39	44	6" x 1" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	49	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	50	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	51	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	53	6" x 1" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	54	6" x 1" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	56	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	57	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L39	58	4" x .75" Flat Plate (G)	31.21 - 31.46	1.0000	1.0000
L40	1	Safety Line 3/8	29.46 - 31.21	1.0000	1.0000
L40	5	LDF6-50A(1-1/4")	29.46 - 31.21	1.0000	1.0000
L40	8	2" (Nominal) Conduit	29.46 - 31.21	1.0000	1.0000
L40	9	FB-L98B-002-75000(3/8")	29.46 - 31.21	1.0000	1.0000
L40	10	WR-VG86ST-BRD(3/4")	29.46 - 31.21	1.0000	1.0000
L40	20	FSJ4-50B(1/2")	29.46 - 31.21	1.0000	1.0000
L40	22	2" (Nominal) Conduit	29.46 - 31.21	1.0000	1.0000
L40	23	2" (Nominal) Conduit	29.46 - 31.21	1.0000	1.0000
L40	24	HB114-1-08U4-M5J(1 1/4")	29.46 - 31.21	1.0000	1.0000
L40	27	LCF114-50J(1-1/4")	29.46 - 31.21	1.0000	1.0000
L40	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	29.46 - 31.21	1.0000	1.0000
L40	29	MLC Hybrid 6/6(7/8")	29.46 - 31.21	1.0000	1.0000
L40	36	4" x .75" Flat Plate (G)	29.46 - 30.46	1.0000	1.0000
L40	37	4" x .75" Flat Plate (G)	29.46 - 30.46	1.0000	1.0000
L40	38	4" x .75" Flat Plate (G)	29.46 - 30.46	1.0000	1.0000
L40	44	6" x 1" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	49	4" x .75" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	50	4" x .75" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	51	4" x .75" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	53	6" x 1" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	54	6" x 1" Flat Plate (G)	29.46 - 31.21	1.0000	1.0000
L40	56	4" x .75" Flat Plate (G)	30.46 - 31.21	1.0000	1.0000
L40	57	4" x .75" Flat Plate (G)	30.46 - 31.21	1.0000	1.0000
L40	58	4" x .75" Flat Plate (G)	30.46 - 31.21	1.0000	1.0000
L41	1	Safety Line 3/8	29.21 - 29.46	1.0000	1.0000

tnxTower

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Job	HRT 100 943239, 806376	Page	30 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L41	5	LDF6-50A(1-1/4")	29.21 - 29.46	1.0000	1.0000
L41	8	2" (Nominal) Conduit	29.21 - 29.46	1.0000	1.0000
L41	9	FB-L98B-002-75000(3/8")	29.21 - 29.46	1.0000	1.0000
L41	10	WR-VG86ST-BRD(3/4")	29.21 - 29.46	1.0000	1.0000
L41	20	FSJ4-50B(1/2")	29.21 - 29.46	1.0000	1.0000
L41	22	2" (Nominal) Conduit	29.21 - 29.46	1.0000	1.0000
L41	23	2" (Nominal) Conduit	29.21 - 29.46	1.0000	1.0000
L41	24	HB114-1-08U4-M5J(1 1/4")	29.21 - 29.46	1.0000	1.0000
L41	27	LCF114-50J(1-1/4")	29.21 - 29.46	1.0000	1.0000
L41	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	29.21 - 29.46	1.0000	1.0000
L41	29	MLC Hybrid 6/6(7/8")	29.21 - 29.46	1.0000	1.0000
L41	36	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	37	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	38	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	44	6" x 1" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	46	6" x 1" Flat Plate (G)	29.21 - 29.33	1.0000	1.0000
L41	47	6" x 1" Flat Plate (G)	29.21 - 29.33	1.0000	1.0000
L41	49	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	50	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	51	4" x .75" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	53	6" x 1" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L41	54	6" x 1" Flat Plate (G)	29.21 - 29.46	1.0000	1.0000
L42	1	Safety Line 3/8	26.83 - 29.21	1.0000	1.0000
L42	5	LDF6-50A(1-1/4")	26.83 - 29.21	1.0000	1.0000
L42	8	2" (Nominal) Conduit	26.83 - 29.21	1.0000	1.0000
L42	9	FB-L98B-002-75000(3/8")	26.83 - 29.21	1.0000	1.0000
L42	10	WR-VG86ST-BRD(3/4")	26.83 - 29.21	1.0000	1.0000
L42	20	FSJ4-50B(1/2")	26.83 - 29.21	1.0000	1.0000
L42	22	2" (Nominal) Conduit	26.83 - 29.21	1.0000	1.0000
L42	23	2" (Nominal) Conduit	26.83 - 29.21	1.0000	1.0000
L42	24	HB114-1-08U4-M5J(1 1/4")	26.83 - 29.21	1.0000	1.0000
L42	27	LCF114-50J(1-1/4")	26.83 - 29.21	1.0000	1.0000
L42	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	26.83 - 29.21	1.0000	1.0000
L42	29	MLC Hybrid 6/6(7/8")	26.83 - 29.21	1.0000	1.0000
L42	36	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	37	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	38	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	44	6" x 1" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	46	6" x 1" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	47	6" x 1" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	49	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	50	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	51	4" x .75" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	53	6" x 1" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L42	54	6" x 1" Flat Plate (G)	26.83 - 29.21	1.0000	1.0000
L43	1	Safety Line 3/8	26.58 - 26.83	1.0000	1.0000
L43	5	LDF6-50A(1-1/4")	26.58 - 26.83	1.0000	1.0000
L43	8	2" (Nominal) Conduit	26.58 - 26.83	1.0000	1.0000
L43	9	FB-L98B-002-75000(3/8")	26.58 - 26.83	1.0000	1.0000
L43	10	WR-VG86ST-BRD(3/4")	26.58 - 26.83	1.0000	1.0000
L43	20	FSJ4-50B(1/2")	26.58 - 26.83	1.0000	1.0000
L43	22	2" (Nominal) Conduit	26.58 - 26.83	1.0000	1.0000
L43	23	2" (Nominal) Conduit	26.58 - 26.83	1.0000	1.0000
L43	24	HB114-1-08U4-M5J(1 1/4")	26.58 - 26.83	1.0000	1.0000
L43	27	LCF114-50J(1-1/4")	26.58 - 26.83	1.0000	1.0000
L43	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	26.58 - 26.83	1.0000	1.0000
L43	29	MLC Hybrid 6/6(7/8")	26.58 - 26.83	1.0000	1.0000
L43	36	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	37	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000

tnxTower

FDH Velocitel
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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L43	38	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	44	6" x 1" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	46	6" x 1" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	47	6" x 1" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	49	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	50	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	51	4" x .75" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	53	6" x 1" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L43	54	6" x 1" Flat Plate (G)	26.58 - 26.83	1.0000	1.0000
L44	1	Safety Line 3/8	21.58 - 26.58	1.0000	1.0000
L44	5	LDF6-50A(1-1/4")	21.58 - 26.58	1.0000	1.0000
L44	8	2" (Nominal) Conduit	21.58 - 26.58	1.0000	1.0000
L44	9	FB-L98B-002-75000(3/8")	21.58 - 26.58	1.0000	1.0000
L44	10	WR-VG86ST-BRD(3/4")	21.58 - 26.58	1.0000	1.0000
L44	20	FSJ4-50B(1/2")	21.58 - 26.58	1.0000	1.0000
L44	22	2" (Nominal) Conduit	21.58 - 26.58	1.0000	1.0000
L44	23	2" (Nominal) Conduit	21.58 - 26.58	1.0000	1.0000
L44	24	HB114-1-08U4-M5J(1 1/4")	21.58 - 26.58	1.0000	1.0000
L44	27	LCF114-50J(1-1/4")	21.58 - 26.58	1.0000	1.0000
L44	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	21.58 - 26.58	1.0000	1.0000
L44	29	MLC Hybrid 6/6(7/8")	21.58 - 26.58	1.0000	1.0000
L44	36	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	37	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	38	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	44	6" x 1" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	46	6" x 1" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	47	6" x 1" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	49	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	50	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	51	4" x .75" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	53	6" x 1" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L44	54	6" x 1" Flat Plate (G)	21.58 - 26.58	1.0000	1.0000
L45	1	Safety Line 3/8	20.75 - 21.58	1.0000	1.0000
L45	5	LDF6-50A(1-1/4")	20.75 - 21.58	1.0000	1.0000
L45	8	2" (Nominal) Conduit	20.75 - 21.58	1.0000	1.0000
L45	9	FB-L98B-002-75000(3/8")	20.75 - 21.58	1.0000	1.0000
L45	10	WR-VG86ST-BRD(3/4")	20.75 - 21.58	1.0000	1.0000
L45	20	FSJ4-50B(1/2")	20.75 - 21.58	1.0000	1.0000
L45	22	2" (Nominal) Conduit	20.75 - 21.58	1.0000	1.0000
L45	23	2" (Nominal) Conduit	20.75 - 21.58	1.0000	1.0000
L45	24	HB114-1-08U4-M5J(1 1/4")	20.75 - 21.58	1.0000	1.0000
L45	27	LCF114-50J(1-1/4")	20.75 - 21.58	1.0000	1.0000
L45	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	20.75 - 21.58	1.0000	1.0000
L45	29	MLC Hybrid 6/6(7/8")	20.75 - 21.58	1.0000	1.0000
L45	36	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	37	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	38	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	44	6" x 1" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	46	6" x 1" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	47	6" x 1" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	49	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	50	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	51	4" x .75" Flat Plate (G)	20.75 - 21.58	1.0000	1.0000
L45	53	6" x 1" Flat Plate (G)	21.00 - 21.58	1.0000	1.0000
L45	54	6" x 1" Flat Plate (G)	21.00 - 21.58	1.0000	1.0000
L46	1	Safety Line 3/8	20.50 - 20.75	1.0000	1.0000
L46	5	LDF6-50A(1-1/4")	20.50 - 20.75	1.0000	1.0000
L46	8	2" (Nominal) Conduit	20.50 - 20.75	1.0000	1.0000
L46	9	FB-L98B-002-75000(3/8")	20.50 - 20.75	1.0000	1.0000
L46	10	WR-VG86ST-BRD(3/4")	20.50 - 20.75	1.0000	1.0000

tnxTower

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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L46	20	FSJ4-50B(1/2")	20.50 - 20.75	1.0000	1.0000
L46	22	2" (Nominal) Conduit	20.50 - 20.75	1.0000	1.0000
L46	23	2" (Nominal) Conduit	20.50 - 20.75	1.0000	1.0000
L46	24	HB114-1-08U4-M5J(1 1/4")	20.50 - 20.75	1.0000	1.0000
L46	27	LCF114-50J(1-1/4")	20.50 - 20.75	1.0000	1.0000
L46	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	20.50 - 20.75	1.0000	1.0000
L46	29	MLC Hybrid 6/6(7/8")	20.50 - 20.75	1.0000	1.0000
L46	36	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	37	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	38	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	44	6" x 1" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	46	6" x 1" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	47	6" x 1" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	49	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	50	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	51	4" x .75" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	81	6.5" x 1.25" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	82	6.5" x 1.25" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L46	83	6.5" x 1.25" Flat Plate (G)	20.50 - 20.75	1.0000	1.0000
L47	1	Safety Line 3/8	18.00 - 20.50	1.0000	1.0000
L47	5	LDF6-50A(1-1/4")	18.00 - 20.50	1.0000	1.0000
L47	8	2" (Nominal) Conduit	18.00 - 20.50	1.0000	1.0000
L47	9	FB-L98B-002-75000(3/8")	18.00 - 20.50	1.0000	1.0000
L47	10	WR-VG86ST-BRD(3/4")	18.00 - 20.50	1.0000	1.0000
L47	20	FSJ4-50B(1/2")	18.00 - 20.50	1.0000	1.0000
L47	22	2" (Nominal) Conduit	18.00 - 20.50	1.0000	1.0000
L47	23	2" (Nominal) Conduit	18.00 - 20.50	1.0000	1.0000
L47	24	HB114-1-08U4-M5J(1 1/4")	18.00 - 20.50	1.0000	1.0000
L47	27	LCF114-50J(1-1/4")	18.00 - 20.50	1.0000	1.0000
L47	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	18.00 - 20.50	1.0000	1.0000
L47	29	MLC Hybrid 6/6(7/8")	18.00 - 20.50	1.0000	1.0000
L47	36	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	37	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	38	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	44	6" x 1" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	46	6" x 1" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	47	6" x 1" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	49	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	50	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	51	4" x .75" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	81	6.5" x 1.25" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	82	6.5" x 1.25" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L47	83	6.5" x 1.25" Flat Plate (G)	18.00 - 20.50	1.0000	1.0000
L48	1	Safety Line 3/8	17.75 - 18.00	1.0000	1.0000
L48	5	LDF6-50A(1-1/4")	17.75 - 18.00	1.0000	1.0000
L48	8	2" (Nominal) Conduit	17.75 - 18.00	1.0000	1.0000
L48	9	FB-L98B-002-75000(3/8")	17.75 - 18.00	1.0000	1.0000
L48	10	WR-VG86ST-BRD(3/4")	17.75 - 18.00	1.0000	1.0000
L48	20	FSJ4-50B(1/2")	17.75 - 18.00	1.0000	1.0000
L48	22	2" (Nominal) Conduit	17.75 - 18.00	1.0000	1.0000
L48	23	2" (Nominal) Conduit	17.75 - 18.00	1.0000	1.0000
L48	24	HB114-1-08U4-M5J(1 1/4")	17.75 - 18.00	1.0000	1.0000
L48	27	LCF114-50J(1-1/4")	17.75 - 18.00	1.0000	1.0000
L48	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	17.75 - 18.00	1.0000	1.0000
L48	29	MLC Hybrid 6/6(7/8")	17.75 - 18.00	1.0000	1.0000
L48	36	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	37	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	38	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	44	6" x 1" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000

tnxTower

FDH Velocitel
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Job	HRT 100 943239, 806376	Page	33 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	46	6" x 1" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	47	6" x 1" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	49	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	50	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	51	4" x .75" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	81	6.5" x 1.25" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	82	6.5" x 1.25" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L48	83	6.5" x 1.25" Flat Plate (G)	17.75 - 18.00	1.0000	1.0000
L49	1	Safety Line 3/8	17.08 - 17.75	1.0000	1.0000
L49	5	LDF6-50A(1-1/4")	17.08 - 17.75	1.0000	1.0000
L49	8	2" (Nominal) Conduit	17.08 - 17.75	1.0000	1.0000
L49	9	FB-L98B-002-75000(3/8")	17.08 - 17.75	1.0000	1.0000
L49	10	WR-VG86ST-BRD(3/4")	17.08 - 17.75	1.0000	1.0000
L49	20	FSJ4-50B(1/2")	17.08 - 17.75	1.0000	1.0000
L49	22	2" (Nominal) Conduit	17.08 - 17.75	1.0000	1.0000
L49	23	2" (Nominal) Conduit	17.08 - 17.75	1.0000	1.0000
L49	24	HB114-1-08U4-M5J(1 1/4")	17.08 - 17.75	1.0000	1.0000
L49	27	LCF114-50J(1-1/4")	17.08 - 17.75	1.0000	1.0000
L49	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	17.08 - 17.75	1.0000	1.0000
L49	29	MLC Hybrid 6/6(7/8")	17.08 - 17.75	1.0000	1.0000
L49	36	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	37	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	38	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	44	6" x 1" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	46	6" x 1" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	47	6" x 1" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	49	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	50	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	51	4" x .75" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	81	6.5" x 1.25" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	82	6.5" x 1.25" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L49	83	6.5" x 1.25" Flat Plate (G)	17.08 - 17.75	1.0000	1.0000
L50	1	Safety Line 3/8	16.83 - 17.08	1.0000	1.0000
L50	5	LDF6-50A(1-1/4")	16.83 - 17.08	1.0000	1.0000
L50	8	2" (Nominal) Conduit	16.83 - 17.08	1.0000	1.0000
L50	9	FB-L98B-002-75000(3/8")	16.83 - 17.08	1.0000	1.0000
L50	10	WR-VG86ST-BRD(3/4")	16.83 - 17.08	1.0000	1.0000
L50	20	FSJ4-50B(1/2")	16.83 - 17.08	1.0000	1.0000
L50	22	2" (Nominal) Conduit	16.83 - 17.08	1.0000	1.0000
L50	23	2" (Nominal) Conduit	16.83 - 17.08	1.0000	1.0000
L50	24	HB114-1-08U4-M5J(1 1/4")	16.83 - 17.08	1.0000	1.0000
L50	27	LCF114-50J(1-1/4")	16.83 - 17.08	1.0000	1.0000
L50	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	16.83 - 17.08	1.0000	1.0000
L50	29	MLC Hybrid 6/6(7/8")	16.83 - 17.08	1.0000	1.0000
L50	36	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	37	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	38	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	44	6" x 1" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	46	6" x 1" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	47	6" x 1" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	49	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	50	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	51	4" x .75" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	81	6.5" x 1.25" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	82	6.5" x 1.25" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L50	83	6.5" x 1.25" Flat Plate (G)	16.83 - 17.08	1.0000	1.0000
L51	1	Safety Line 3/8	13.00 - 16.83	1.0000	1.0000
L51	5	LDF6-50A(1-1/4")	13.00 - 16.83	1.0000	1.0000
L51	8	2" (Nominal) Conduit	13.00 - 16.83	1.0000	1.0000
L51	9	FB-L98B-002-75000(3/8")	13.00 - 16.83	1.0000	1.0000

tnxTower

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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L51	10	WR-VG86ST-BRD(3/4")	13.00 - 16.83	1.0000	1.0000
L51	20	FSJ4-50B(1/2")	13.00 - 16.83	1.0000	1.0000
L51	22	2" (Nominal) Conduit	13.00 - 16.83	1.0000	1.0000
L51	23	2" (Nominal) Conduit	13.00 - 16.83	1.0000	1.0000
L51	24	HB114-1-08U4-M5J(1 1/4")	13.00 - 16.83	1.0000	1.0000
L51	27	LCF114-50J(1-1/4")	13.00 - 16.83	1.0000	1.0000
L51	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	13.00 - 16.83	1.0000	1.0000
L51	29	MLC Hybrid 6/6(7/8")	13.00 - 16.83	1.0000	1.0000
L51	32	6" x 1" Flat Plate (G)	13.00 - 15.50	1.0000	1.0000
L51	33	6" x 1" Flat Plate (G)	13.00 - 15.50	1.0000	1.0000
L51	34	6" x 1" Flat Plate (G)	13.00 - 15.50	1.0000	1.0000
L51	36	4" x .75" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	37	4" x .75" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	38	4" x .75" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	44	6" x 1" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	46	6" x 1" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	47	6" x 1" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	49	4" x .75" Flat Plate (G)	15.83 - 16.83	1.0000	1.0000
L51	50	4" x .75" Flat Plate (G)	15.83 - 16.83	1.0000	1.0000
L51	51	4" x .75" Flat Plate (G)	15.83 - 16.83	1.0000	1.0000
L51	81	6.5" x 1.25" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	82	6.5" x 1.25" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L51	83	6.5" x 1.25" Flat Plate (G)	13.00 - 16.83	1.0000	1.0000
L52	1	Safety Line 3/8	12.75 - 13.00	1.0000	1.0000
L52	5	LDF6-50A(1-1/4")	12.75 - 13.00	1.0000	1.0000
L52	8	2" (Nominal) Conduit	12.75 - 13.00	1.0000	1.0000
L52	9	FB-L98B-002-75000(3/8")	12.75 - 13.00	1.0000	1.0000
L52	10	WR-VG86ST-BRD(3/4")	12.75 - 13.00	1.0000	1.0000
L52	20	FSJ4-50B(1/2")	12.75 - 13.00	1.0000	1.0000
L52	22	2" (Nominal) Conduit	12.75 - 13.00	1.0000	1.0000
L52	23	2" (Nominal) Conduit	12.75 - 13.00	1.0000	1.0000
L52	24	HB114-1-08U4-M5J(1 1/4")	12.75 - 13.00	1.0000	1.0000
L52	27	LCF114-50J(1-1/4")	12.75 - 13.00	1.0000	1.0000
L52	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	12.75 - 13.00	1.0000	1.0000
L52	29	MLC Hybrid 6/6(7/8")	12.75 - 13.00	1.0000	1.0000
L52	32	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	33	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	34	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	36	4" x .75" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	37	4" x .75" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	38	4" x .75" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	44	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	46	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	47	6" x 1" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	81	6.5" x 1.25" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	82	6.5" x 1.25" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L52	83	6.5" x 1.25" Flat Plate (G)	12.75 - 13.00	1.0000	1.0000
L53	1	Safety Line 3/8	11.83 - 12.75	1.0000	1.0000
L53	5	LDF6-50A(1-1/4")	11.83 - 12.75	1.0000	1.0000
L53	8	2" (Nominal) Conduit	11.83 - 12.75	1.0000	1.0000
L53	9	FB-L98B-002-75000(3/8")	11.83 - 12.75	1.0000	1.0000
L53	10	WR-VG86ST-BRD(3/4")	11.83 - 12.75	1.0000	1.0000
L53	20	FSJ4-50B(1/2")	11.83 - 12.75	1.0000	1.0000
L53	22	2" (Nominal) Conduit	11.83 - 12.75	1.0000	1.0000
L53	23	2" (Nominal) Conduit	11.83 - 12.75	1.0000	1.0000
L53	24	HB114-1-08U4-M5J(1 1/4")	11.83 - 12.75	1.0000	1.0000
L53	27	LCF114-50J(1-1/4")	11.83 - 12.75	1.0000	1.0000
L53	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	11.83 - 12.75	1.0000	1.0000
L53	29	MLC Hybrid 6/6(7/8")	11.83 - 12.75	1.0000	1.0000

tnxTower

FDH Velocitel
222 S. Central Ave., Suite 1110
Saint Louis, MO 63105
Phone: 3147734000
FAX: 3147734001

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Client	Crown Castle International	Designed by	PRoach

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L53	32	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	33	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	34	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	36	4" x .75" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	37	4" x .75" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	38	4" x .75" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	44	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	46	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	47	6" x 1" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	81	6.5" x 1.25" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	82	6.5" x 1.25" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L53	83	6.5" x 1.25" Flat Plate (G)	11.83 - 12.75	1.0000	1.0000
L54	1	Safety Line 3/8	11.58 - 11.83	1.0000	1.0000
L54	5	LDF6-50A(1-1/4")	11.58 - 11.83	1.0000	1.0000
L54	8	2" (Nominal) Conduit	11.58 - 11.83	1.0000	1.0000
L54	9	FB-L98B-002-75000(3/8")	11.58 - 11.83	1.0000	1.0000
L54	10	WR-VG86ST-BRD(3/4")	11.58 - 11.83	1.0000	1.0000
L54	20	FSJ4-50B(1/2")	11.58 - 11.83	1.0000	1.0000
L54	22	2" (Nominal) Conduit	11.58 - 11.83	1.0000	1.0000
L54	23	2" (Nominal) Conduit	11.58 - 11.83	1.0000	1.0000
L54	24	HB114-1-08U4-M5J(1 1/4")	11.58 - 11.83	1.0000	1.0000
L54	27	LCF114-50J(1-1/4")	11.58 - 11.83	1.0000	1.0000
L54	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	11.58 - 11.83	1.0000	1.0000
L54	29	MLC Hybrid 6/6(7/8")	11.58 - 11.83	1.0000	1.0000
L54	32	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	33	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	34	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	36	4" x .75" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	37	4" x .75" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	38	4" x .75" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	44	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	46	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	47	6" x 1" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	81	6.5" x 1.25" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	82	6.5" x 1.25" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L54	83	6.5" x 1.25" Flat Plate (G)	11.58 - 11.83	1.0000	1.0000
L55	1	Safety Line 3/8	6.48 - 11.58	1.0000	1.0000
L55	5	LDF6-50A(1-1/4")	6.48 - 11.58	1.0000	1.0000
L55	8	2" (Nominal) Conduit	6.48 - 11.58	1.0000	1.0000
L55	9	FB-L98B-002-75000(3/8")	6.48 - 11.58	1.0000	1.0000
L55	10	WR-VG86ST-BRD(3/4")	6.48 - 11.58	1.0000	1.0000
L55	20	FSJ4-50B(1/2")	6.48 - 11.58	1.0000	1.0000
L55	22	2" (Nominal) Conduit	6.48 - 11.58	1.0000	1.0000
L55	23	2" (Nominal) Conduit	6.48 - 11.58	1.0000	1.0000
L55	24	HB114-1-08U4-M5J(1 1/4")	6.48 - 11.58	1.0000	1.0000
L55	27	LCF114-50J(1-1/4")	6.48 - 11.58	1.0000	1.0000
L55	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	6.48 - 11.58	1.0000	1.0000
L55	29	MLC Hybrid 6/6(7/8")	6.48 - 11.58	1.0000	1.0000
L55	32	6" x 1" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	33	6" x 1" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	34	6" x 1" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	36	4" x .75" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	37	4" x .75" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	38	4" x .75" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	44	6" x 1" Flat Plate (G)	9.33 - 11.58	1.0000	1.0000
L55	46	6" x 1" Flat Plate (G)	9.33 - 11.58	1.0000	1.0000
L55	47	6" x 1" Flat Plate (G)	9.33 - 11.58	1.0000	1.0000
L55	81	6.5" x 1.25" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	82	6.5" x 1.25" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000
L55	83	6.5" x 1.25" Flat Plate (G)	6.48 - 11.58	1.0000	1.0000

tnxTower

FDH Velocitel
 222 S. Central Ave., Suite 1110
 Saint Louis, MO 63105
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L55	85	6.5" x 1.25" Flat Plate (G)	6.48 - 9.25	1.0000	1.0000
L56	1	Safety Line 3/8	6.25 - 6.48	1.0000	1.0000
L56	5	LDF6-50A(1-1/4")	6.25 - 6.48	1.0000	1.0000
L56	8	2" (Nominal) Conduit	6.25 - 6.48	1.0000	1.0000
L56	9	FB-L98B-002-75000(3/8")	6.25 - 6.48	1.0000	1.0000
L56	10	WR-VG86ST-BRD(3/4")	6.25 - 6.48	1.0000	1.0000
L56	20	FSJ4-50B(1/2")	6.25 - 6.48	1.0000	1.0000
L56	22	2" (Nominal) Conduit	6.25 - 6.48	1.0000	1.0000
L56	23	2" (Nominal) Conduit	6.25 - 6.48	1.0000	1.0000
L56	24	HB114-1-08U4-M5J(1 1/4")	6.25 - 6.48	1.0000	1.0000
L56	27	LCF114-50J(1-1/4")	6.25 - 6.48	1.0000	1.0000
L56	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	6.25 - 6.48	1.0000	1.0000
L56	29	MLC Hybrid 6/6(7/8")	6.25 - 6.48	1.0000	1.0000
L56	32	6" x 1" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	33	6" x 1" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	34	6" x 1" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	36	4" x .75" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	37	4" x .75" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	38	4" x .75" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	81	6.5" x 1.25" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	82	6.5" x 1.25" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	83	6.5" x 1.25" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L56	85	6.5" x 1.25" Flat Plate (G)	6.25 - 6.48	1.0000	1.0000
L57	1	Safety Line 3/8	1.25 - 6.25	1.0000	1.0000
L57	5	LDF6-50A(1-1/4")	1.25 - 6.25	1.0000	1.0000
L57	8	2" (Nominal) Conduit	1.25 - 6.25	1.0000	1.0000
L57	9	FB-L98B-002-75000(3/8")	1.25 - 6.25	1.0000	1.0000
L57	10	WR-VG86ST-BRD(3/4")	1.25 - 6.25	1.0000	1.0000
L57	20	FSJ4-50B(1/2")	1.25 - 6.25	1.0000	1.0000
L57	22	2" (Nominal) Conduit	1.25 - 6.25	1.0000	1.0000
L57	23	2" (Nominal) Conduit	1.25 - 6.25	1.0000	1.0000
L57	24	HB114-1-08U4-M5J(1 1/4")	1.25 - 6.25	1.0000	1.0000
L57	27	LCF114-50J(1-1/4")	1.25 - 6.25	1.0000	1.0000
L57	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	1.25 - 6.25	1.0000	1.0000
L57	29	MLC Hybrid 6/6(7/8")	1.25 - 6.25	1.0000	1.0000
L57	32	6" x 1" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	33	6" x 1" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	34	6" x 1" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	36	4" x .75" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	37	4" x .75" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	38	4" x .75" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	81	6.5" x 1.25" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	82	6.5" x 1.25" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	83	6.5" x 1.25" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L57	85	6.5" x 1.25" Flat Plate (G)	1.25 - 6.25	1.0000	1.0000
L58	1	Safety Line 3/8	0.00 - 1.25	1.0000	1.0000
L58	5	LDF6-50A(1-1/4")	0.00 - 1.25	1.0000	1.0000
L58	8	2" (Nominal) Conduit	0.00 - 1.25	1.0000	1.0000
L58	9	FB-L98B-002-75000(3/8")	0.00 - 1.25	1.0000	1.0000
L58	10	WR-VG86ST-BRD(3/4")	0.00 - 1.25	1.0000	1.0000
L58	20	FSJ4-50B(1/2")	0.00 - 1.25	1.0000	1.0000
L58	22	2" (Nominal) Conduit	0.00 - 1.25	1.0000	1.0000
L58	23	2" (Nominal) Conduit	0.00 - 1.25	1.0000	1.0000
L58	24	HB114-1-08U4-M5J(1 1/4")	0.00 - 1.25	1.0000	1.0000
L58	27	LCF114-50J(1-1/4")	0.00 - 1.25	1.0000	1.0000
L58	28	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	0.00 - 1.25	1.0000	1.0000
L58	29	MLC Hybrid 6/6(7/8")	0.00 - 1.25	1.0000	1.0000
L58	32	6" x 1" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000
L58	33	6" x 1" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job	HRT 100 943239, 806376	Page	37 of 76
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L58	34	6" x 1" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000
L58	36	4" x .75" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000
L58	37	4" x .75" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000
L58	38	4" x .75" Flat Plate (G)	0.50 - 1.25	1.0000	1.0000
L58	81	6.5" x 1.25" Flat Plate (G)	0.00 - 1.25	1.0000	1.0000
L58	82	6.5" x 1.25" Flat Plate (G)	0.00 - 1.25	1.0000	1.0000
L58	83	6.5" x 1.25" Flat Plate (G)	0.00 - 1.25	1.0000	1.0000
L58	85	6.5" x 1.25" Flat Plate (G)	0.00 - 1.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K

800 10121 w/ Mount Pipe	A	From Leg	4.0000	0.00	121.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2" Ice	5.8131	5.3507	0.11
			-1.00			1" Ice	6.2340	6.0464	0.17
800 10121 w/ Mount Pipe	B	From Leg	4.0000	0.00	121.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2" Ice	5.8131	5.3507	0.11
			-1.00			1" Ice	6.2340	6.0464	0.17
800 10121 w/ Mount Pipe	C	From Leg	4.0000	0.00	121.0000	No Ice	5.3879	4.5996	0.07
			0.00			1/2" Ice	5.8131	5.3507	0.11
			-1.00			1" Ice	6.2340	6.0464	0.17
RRUS-11	A	From Leg	4.0000	0.00	121.0000	No Ice	2.5217	1.0680	0.06
			0.00			1/2" Ice	2.7187	1.2106	0.07
			-1.00			1" Ice	2.9231	1.3606	0.10
RRUS-11	B	From Leg	4.0000	0.00	121.0000	No Ice	2.5217	1.0680	0.06
			0.00			1/2" Ice	2.7187	1.2106	0.07
			-1.00			1" Ice	2.9231	1.3606	0.10
RRUS-11	C	From Leg	4.0000	0.00	121.0000	No Ice	2.5217	1.0680	0.06
			0.00			1/2" Ice	2.7187	1.2106	0.07
			-1.00			1" Ice	2.9231	1.3606	0.10
(2) LGP21401	A	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2" Ice	1.2388	0.4422	0.02
			-1.00			1" Ice	1.3810	0.5444	0.03
(2) LGP21401	B	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2" Ice	1.2388	0.4422	0.02
			-1.00			1" Ice	1.3810	0.5444	0.03
(2) LGP21401	C	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2" Ice	1.2388	0.4422	0.02
			-1.00			1" Ice	1.3810	0.5444	0.03
DC6-48-60-18-8F	A	From Leg	4.0000	0.00	121.0000	No Ice	0.8594	0.8594	0.03
			0.00			1/2" Ice	1.3708	1.3708	0.05
			-1.00			1" Ice	1.5483	1.5483	0.07
T-Arm Mount [TA 702-3]	C	None		0.00	121.0000	No Ice	5.6400	5.6400	0.34
						1/2" Ice	6.5500	6.5500	0.43
						1" Ice	7.4600	7.4600	0.52
80010798 w/ Mount Pipe	A	From Leg	4.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11
			0.00			1/2" Ice	11.5345	8.7492	0.19

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	Client	Crown Castle International	Designed by	PRoach

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
80010798 w/ Mount Pipe	B	From Leg	-1.00		0.00	121.0000	1" Ice	9.8028	0.28
			4.0000				No Ice	7.4788	0.11
			0.00				1/2" Ice	8.7492	0.19
80010798 w/ Mount Pipe	C	From Leg	-1.00		0.00	121.0000	1" Ice	9.8028	0.28
			4.0000				No Ice	7.4788	0.11
			0.00				1/2" Ice	8.7492	0.19
RRUS 32	A	From Leg	-1.00		0.00	121.0000	1" Ice	9.8028	0.28
			4.0000				No Ice	1.7766	0.06
			0.00				1/2" Ice	1.9677	0.08
RRUS 32	B	From Leg	-1.00		0.00	121.0000	1" Ice	2.1658	0.10
			4.0000				No Ice	1.7766	0.06
			0.00				1/2" Ice	1.9677	0.08
RRUS 32	C	From Leg	-1.00		0.00	121.0000	1" Ice	2.1658	0.10
			4.0000				No Ice	1.7766	0.06
			0.00				1/2" Ice	1.9677	0.08
RRUS 32 B2	A	From Leg	-1.00		0.00	121.0000	1" Ice	2.1658	0.10
			4.0000				No Ice	1.6681	0.05
			0.00				1/2" Ice	1.8552	0.07
RRUS 32 B2	B	From Leg	-1.00		0.00	121.0000	1" Ice	2.0493	0.10
			4.0000				No Ice	1.6681	0.05
			0.00				1/2" Ice	1.8552	0.07
RRUS 32 B2	C	From Leg	-1.00		0.00	121.0000	1" Ice	2.0493	0.10
			4.0000				No Ice	1.6681	0.05
			0.00				1/2" Ice	1.8552	0.07
DC6-48-60-18-8F	A	From Leg	-1.00		0.00	121.0000	1" Ice	2.0493	0.10
			4.0000				No Ice	0.8594	0.03
			0.00				1/2" Ice	1.3708	0.05
***			-1.00				1" Ice	1.5483	0.07

BXA-80063/4CF	A	From Leg	4.0000		0.00	107.0000	No Ice	2.2482	0.01
			0.00				1/2" Ice	2.5469	0.04
			4.00				1" Ice	2.8529	0.07
BXA-80063/4CF	B	From Leg	4.0000		0.00	107.0000	No Ice	2.2482	0.01
			0.00				1/2" Ice	2.5469	0.04
			4.00				1" Ice	2.8529	0.07
BXA-80063/4CF	C	From Leg	4.0000		0.00	107.0000	No Ice	2.2482	0.01
			0.00				1/2" Ice	2.5469	0.04
			4.00				1" Ice	2.8529	0.07
BXA-70063/6CFx4	A	From Leg	4.0000		0.00	107.0000	No Ice	3.7554	0.02
			0.00				1/2" Ice	4.1889	0.06
			4.00				1" Ice	4.6297	0.10
BXA-70063/6CFx4	B	From Leg	4.0000		0.00	107.0000	No Ice	3.7554	0.02
			0.00				1/2" Ice	4.1889	0.06
			4.00				1" Ice	4.6297	0.10
BXA-70063/6CFx4	C	From Leg	4.0000		0.00	107.0000	No Ice	3.7554	0.02
			0.00				1/2" Ice	4.1889	0.06
			4.00				1" Ice	4.6297	0.10
(2) SBNHH-1D65B	A	From Leg	4.0000		0.00	107.0000	No Ice	5.3963	0.04
			0.00				1/2" Ice	5.8529	0.09
			4.00				1" Ice	6.3169	0.15
(2) SBNHH-1D65B	B	From Leg	4.0000		0.00	107.0000	No Ice	5.3963	0.04
			0.00				1/2" Ice	5.8529	0.09
			4.00				1" Ice	6.3169	0.15
(2) SBNHH-1D65B	C	From Leg	4.0000		0.00	107.0000	No Ice	5.3963	0.04
			0.00				1/2" Ice	5.8529	0.09
			4.00				1" Ice	6.3169	0.15

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	Client	Crown Castle International	Designed by	PRoach

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice 0.3142	0.0762	0.00
			0.00				1/2" Ice 0.3862	0.1189	0.01
			0.00				1" Ice 0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice 0.3142	0.0762	0.00
			0.00				1/2" Ice 0.3862	0.1189	0.01
			0.00				1" Ice 0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice 0.3142	0.0762	0.00
			0.00				1/2" Ice 0.3862	0.1189	0.01
			0.00				1" Ice 0.4656	0.1685	0.01
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice 4.8000	2.0000	0.04
			0.00				1/2" Ice 5.0704	2.1926	0.08
			4.00				1" Ice 5.3481	2.3926	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice 4.8000	2.0000	0.04
			0.00				1/2" Ice 5.0704	2.1926	0.08
			4.00				1" Ice 5.3481	2.3926	0.12
Platform Mount (LP 101-1)	C	None		0.00	0.00	107.0000	No Ice 36.2100	36.2100	1.50
							1/2" Ice 42.8200	42.8200	2.30
							1" Ice 49.4300	49.4300	3.10
B66A RRH4X45	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.5370	1.6101	0.06
			0.00				1/2" Ice 2.7496	1.7906	0.08
			4.00				1" Ice 2.9696	1.9781	0.10
B66A RRH4X45	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.5370	1.6101	0.06
			0.00				1/2" Ice 2.7496	1.7906	0.08
			4.00				1" Ice 2.9696	1.9781	0.10
B66A RRH4X45	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.5370	1.6101	0.06
			0.00				1/2" Ice 2.7496	1.7906	0.08
			4.00				1" Ice 2.9696	1.9781	0.10
B13 RRH 4X30	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.0552	1.3201	0.06
			0.00				1/2" Ice 2.2405	1.4754	0.07
			0.00				1" Ice 2.4333	1.6376	0.09
B13 RRH 4X30	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.0552	1.3201	0.06
			0.00				1/2" Ice 2.2405	1.4754	0.07
			0.00				1" Ice 2.4333	1.6376	0.09
B13 RRH 4X30	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.0552	1.3201	0.06
			0.00				1/2" Ice 2.2405	1.4754	0.07
			0.00				1" Ice 2.4333	1.6376	0.09
B25 RRH4X30	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.2000	1.7417	0.06
			0.00				1/2" Ice 2.3926	1.9204	0.08
			4.00				1" Ice 2.5926	2.1065	0.10
B25 RRH4X30	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.2000	1.7417	0.06
			0.00				1/2" Ice 2.3926	1.9204	0.08
			4.00				1" Ice 2.5926	2.1065	0.10
B25 RRH4X30	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice 2.2000	1.7417	0.06
			0.00				1/2" Ice 2.3926	1.9204	0.08
			4.00				1" Ice 2.5926	2.1065	0.10

800MHz 2X50W RRH W/FILTER	A	From Leg	4.0000	0.00	0.00	99.0000	No Ice 2.0583	1.9317	0.06
			0.00				1/2" Ice 2.2398	2.1087	0.09
			1.00				1" Ice 2.4287	2.2931	0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	4.0000	0.00	0.00	99.0000	No Ice 2.0583	1.9317	0.06
			0.00				1/2" Ice 2.2398	2.1087	0.09
			1.00				1" Ice 2.4287	2.2931	0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	4.0000	0.00	0.00	99.0000	No Ice 2.0583	1.9317	0.06
			0.00				1/2" Ice 2.2398	2.1087	0.09
			1.00				1" Ice 2.4287	2.2931	0.11
PCS 1900MHz	A	From Leg	4.0000	0.00	0.00	99.0000	No Ice 2.7348	3.1038	0.07

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
PCS 1900MHz	B	From Leg	4.0000	0.00	99.0000	1" Ice	3.3899	4.0155	0.15
4x45W-65MHz w/Mount Pipe			0.00	0.00		No Ice	2.7348	3.1038	0.07
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
PCS 1900MHz	C	From Leg	4.0000	0.00	99.0000	1" Ice	3.3899	4.0155	0.15
4x45W-65MHz w/Mount Pipe			0.00	0.00		No Ice	2.7348	3.1038	0.07
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
PCS 1900MHz	A	From Leg	4.0000	0.00	99.0000	1" Ice	3.3899	4.0155	0.15
4x45W-65MHz w/Mount Pipe			0.00	0.00		No Ice	2.7348	3.1038	0.07
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
PCS 1900MHz	B	From Leg	4.0000	0.00	99.0000	1" Ice	3.3899	4.0155	0.15
4x45W-65MHz w/Mount Pipe			0.00	0.00		No Ice	2.7348	3.1038	0.07
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
PCS 1900MHz	C	From Leg	4.0000	0.00	99.0000	1" Ice	3.3899	4.0155	0.15
4x45W-65MHz w/Mount Pipe			0.00	0.00		No Ice	2.7348	3.1038	0.07
4x45W-65MHz w/Mount Pipe			0.00	0.00		1/2" Ice	3.0564	3.5513	0.11
Side Arm Mount [SO 101-3]	C	None		0.00	99.0000	1" Ice	3.3899	4.0155	0.15
						No Ice	7.5000	7.5000	0.25
						1/2" Ice	8.9000	8.9000	0.33
						1" Ice	10.3000	10.3000	0.41

TIMING 2000	A	From Face	4.0000	0.00	97.0000	No Ice	0.1079	0.1079	0.00
			0.00	0.00		1/2" Ice	0.1518	0.1518	0.00
			0.00	0.00		1" Ice	0.2031	0.2031	0.01
840 10054	A	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.03
			0.00	0.00		1/2" Ice	4.8744	1.6198	0.05
			0.00	0.00		1" Ice	5.1779	1.8858	0.08
840 10054	B	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.03
			0.00	0.00		1/2" Ice	4.8744	1.6198	0.05
			0.00	0.00		1" Ice	5.1779	1.8858	0.08
840 10054	C	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.03
			0.00	0.00		1/2" Ice	4.8744	1.6198	0.05
			0.00	0.00		1" Ice	5.1779	1.8858	0.08
WIMAX DAP HEAD	A	From Face	4.0000	0.00	97.0000	No Ice	1.5467	0.6840	0.03
			0.00	0.00		1/2" Ice	1.7037	0.7999	0.04
			0.00	0.00		1" Ice	1.8681	0.9228	0.06
WIMAX DAP HEAD	B	From Face	4.0000	0.00	97.0000	No Ice	1.5467	0.6840	0.03
			0.00	0.00		1/2" Ice	1.7037	0.7999	0.04
			0.00	0.00		1" Ice	1.8681	0.9228	0.06
WIMAX DAP HEAD	C	From Face	4.0000	0.00	97.0000	No Ice	1.5467	0.6840	0.03
			0.00	0.00		1/2" Ice	1.7037	0.7999	0.04
			0.00	0.00		1" Ice	1.8681	0.9228	0.06
HORIZON COMPACT	B	From Face	4.0000	0.00	97.0000	No Ice	0.7208	0.3681	0.01
			0.00	0.00		1/2" Ice	0.8278	0.4499	0.02
			4.00	0.00		1" Ice	0.9422	0.5391	0.03
HORIZON COMPACT	C	From Face	4.0000	0.00	97.0000	No Ice	0.7208	0.3681	0.01
			0.00	0.00		1/2" Ice	0.8278	0.4499	0.02
			4.00	0.00		1" Ice	0.9422	0.5391	0.03
APXVSP18-C-A20	A	From Face	4.0000	0.00	97.0000	No Ice	8.0244	5.2833	0.06
			0.00	0.00		1/2" Ice	8.4800	5.7360	0.11
			0.00	0.00		1" Ice	8.9426	6.1960	0.16
APXVSP18-C-A20	B	From Face	4.0000	0.00	97.0000	No Ice	8.0244	5.2833	0.06
			0.00	0.00		1/2" Ice	8.4800	5.7360	0.11
			0.00	0.00		1" Ice	8.9426	6.1960	0.16
APXVSP18-C-A20	C	From Face	4.0000	0.00	97.0000	No Ice	8.0244	5.2833	0.06
			0.00	0.00		1/2" Ice	8.4800	5.7360	0.11

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						°
IBC1900HG-2A	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	8.9426	6.1960	0.16
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
IBC1900HG-2A	B	From Face	0.00	4.0000	0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
IBC1900HG-2A	C	From Face	0.00	4.0000	0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
IBC1900BB-1	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
IBC1900BB-1	B	From Face	0.00	4.0000	0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
IBC1900BB-1	C	From Face	0.00	4.0000	0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00	0.00			No Ice	0.9660	0.4635	0.02
			0.00	0.00			1/2" Ice	1.0908	0.5576	0.03
Platform Mount (LP 101-1)	C	None	0.00		0.00	97.0000	1" Ice	1.2230	0.6599	0.04
			0.00				No Ice	36.2100	36.2100	1.50
			0.00				1/2" Ice	42.8200	42.8200	2.30
APXVTM14-ALU-I20	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	49.4300	49.4300	3.10
			0.00	0.00			No Ice	6.3424	3.6074	0.06
			0.00	0.00			1/2" Ice	6.7164	3.9666	0.10
APXVTM14-ALU-I20	B	From Face	0.00	4.0000	0.00	97.0000	1" Ice	7.0974	4.3332	0.14
			0.00	0.00			No Ice	6.3424	3.6074	0.06
			0.00	0.00			1/2" Ice	6.7164	3.9666	0.10
APXVTM14-ALU-I20	C	From Face	0.00	4.0000	0.00	97.0000	1" Ice	7.0974	4.3332	0.14
			0.00	0.00			No Ice	6.3424	3.6074	0.06
			0.00	0.00			1/2" Ice	6.7164	3.9666	0.10
TD-RRH8x20-25	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	7.0974	4.3332	0.14
			0.00	0.00			No Ice	4.0455	1.5326	0.07
			0.00	0.00			1/2" Ice	4.2975	1.7122	0.10
TD-RRH8x20-25	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	4.5570	1.8987	0.13
			0.00	0.00			No Ice	4.0455	1.5326	0.07
			0.00	0.00			1/2" Ice	4.2975	1.7122	0.10
TD-RRH8x20-25	A	From Face	0.00	4.0000	0.00	97.0000	1" Ice	4.5570	1.8987	0.13
			0.00	0.00			No Ice	4.0455	1.5326	0.07
			0.00	0.00			1/2" Ice	4.2975	1.7122	0.10

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	0.00	4.0000	0.00	87.0000	1" Ice	7.2137	7.1313	0.23
			0.00	0.00			No Ice	6.3292	5.6424	0.11
			0.00	0.00			1/2" Ice	6.7751	6.4259	0.17
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	0.00	4.0000	0.00	87.0000	1" Ice	7.2137	7.1313	0.23
			0.00	0.00			No Ice	6.3292	5.6424	0.11
			0.00	0.00			1/2" Ice	6.7751	6.4259	0.17
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	0.00	4.0000	0.00	87.0000	1" Ice	7.2137	7.1313	0.23
			0.00	0.00			No Ice	6.3292	5.6424	0.11
			0.00	0.00			1/2" Ice	6.7751	6.4259	0.17
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	0.00	4.0000	0.00	87.0000	1" Ice	7.2137	7.1313	0.23
			0.00	0.00			No Ice	11.6828	9.8418	0.08
			0.00	0.00			1/2" Ice	12.4043	11.3657	0.17
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	0.00	4.0000	0.00	87.0000	1" Ice	13.1351	12.9138	0.27
			0.00	0.00			No Ice	11.6828	9.8418	0.08
			0.00	0.00			1/2" Ice	12.4043	11.3657	0.17
			0.00				1" Ice	13.1351	12.9138	0.27

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz Lateral	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	87.0000	No Ice	11.6828	9.8418	0.08
			0.00	0.00			1/2" Ice	12.4043	11.3657	0.17
			0.00	0.00			1" Ice	13.1351	12.9138	0.27
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	87.0000	No Ice	6.7474	6.0700	0.15
			0.00	0.00			1/2" Ice	7.2017	6.8671	0.21
			0.00	0.00			1" Ice	7.6475	7.5828	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	87.0000	No Ice	6.7474	6.0700	0.15
			0.00	0.00			1/2" Ice	7.2017	6.8671	0.21
			0.00	0.00			1" Ice	7.6475	7.5828	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	87.0000	No Ice	6.7474	6.0700	0.15
			0.00	0.00			1/2" Ice	7.2017	6.8671	0.21
			0.00	0.00			1" Ice	7.6475	7.5828	0.28
KRY 112 144/1	A	From Face	4.0000	0.00	0.00	87.0000	No Ice	0.3523	0.1617	0.01
			0.00	0.00			1/2" Ice	0.4284	0.2195	0.01
			0.00	0.00			1" Ice	0.5119	0.2846	0.02
KRY 112 144/1	B	From Face	4.0000	0.00	0.00	87.0000	No Ice	0.3523	0.1617	0.01
			0.00	0.00			1/2" Ice	0.4284	0.2195	0.01
			0.00	0.00			1" Ice	0.5119	0.2846	0.02
KRY 112 144/1	C	From Face	4.0000	0.00	0.00	87.0000	No Ice	0.3523	0.1617	0.01
			0.00	0.00			1/2" Ice	0.4284	0.2195	0.01
			0.00	0.00			1" Ice	0.5119	0.2846	0.02
RRUS 11 B12	A	From Leg	4.0000	0.00	0.00	87.0000	No Ice	2.8333	1.1821	0.05
			0.00	0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00	0.00			1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	B	From Leg	4.0000	0.00	0.00	87.0000	No Ice	2.8333	1.1821	0.05
			0.00	0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00	0.00			1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	C	From Leg	4.0000	0.00	0.00	87.0000	No Ice	2.8333	1.1821	0.05
			0.00	0.00			1/2" Ice	3.0426	1.3299	0.07
			0.00	0.00			1" Ice	3.2593	1.4848	0.10
T-Arm Mount [TA 602-3]	C	None			0.00	87.0000	No Ice	11.5900	11.5900	0.77
							1/2" Ice	15.4400	15.4400	0.99
							1" Ice	19.2900	19.2900	1.21

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral	Vert							
			ft	ft	°	°	ft	ft	ft ²	K		
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.0000	0.00	-33.00		97.0000	2.9167	No Ice	6.6800	0.05
				0.00	0.00					1/2" Ice	7.0700	0.08
				4.00	0.00					1" Ice	7.4600	0.12
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	4.0000	0.00	90.00		97.0000	2.9167	No Ice	6.6800	0.05
				0.00	0.00					1/2" Ice	7.0700	0.08
				4.00	0.00					1" Ice	7.4600	0.12

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job HRT 100 943239, 806376	Page 43 of 76
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	Client Crown Castle International	Designed by PRoach

Tower Pressures - No Ice

$$G_H = 1.100$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
L1	128.4554	1.334	30.52	4.797	A	0.000	4.797	4.797	100.00	0.188	0.000
131.0000-126.0000			8		B	0.000	4.797		100.00	0.000	0.000
					C	0.000	4.797		100.00	0.000	0.000
L2	123.4597	1.323	30.27	5.310	A	0.000	5.310	5.310	100.00	0.188	0.000
126.0000-121.0000			5		B	0.000	5.310		100.00	0.000	0.000
					C	0.000	5.310		100.00	0.000	0.000
L3	118.4633	1.312	30.01	5.824	A	0.000	5.824	5.824	100.00	0.188	0.000
121.0000-116.0000			2		B	0.000	5.824		100.00	0.000	0.000
					C	0.000	5.824		100.00	2.325	0.000
L4	113.4662	1.3	29.74	6.337	A	0.000	6.337	6.337	100.00	0.188	0.000
116.0000-111.0000			1		B	0.000	6.337		100.00	0.000	0.000
					C	0.000	6.337		100.00	2.325	0.000
L5	110.4987	1.293	29.57	1.329	A	0.000	1.329	1.329	100.00	0.037	0.000
111.0000-110.0000			6		B	0.000	1.329		100.00	0.000	0.000
					C	0.000	1.329		100.00	0.465	0.000
L6	107.4677	1.285	29.40	6.967	A	0.000	6.967	6.967	100.00	0.188	0.000
110.0000-105.0000			3		B	0.000	6.967		100.00	0.000	0.000
					C	0.000	6.967		100.00	2.325	0.000
L7	102.4701	1.272	29.11	7.506	A	0.000	7.506	7.506	100.00	0.188	0.000
105.0000-100.0000			0		B	0.000	7.506		100.00	0.000	0.000
					C	0.000	7.506		100.00	2.325	0.000
L8	97.4721	1.259	28.80	8.046	A	0.000	8.046	8.046	100.00	0.188	0.000
100.0000-95.0000			5		B	0.000	8.046		100.00	0.000	0.000
					C	0.000	8.046		100.00	2.429	0.000
L9	92.4228	1.245	28.48	8.763	A	0.000	8.763	8.763	100.00	1.202	0.000
95.0000-89.9000			4		B	0.000	8.763		100.00	1.011	0.000
					C	0.000	8.763		100.00	3.648	0.000
L10	89.7833	1.237	28.31	0.414	A	0.000	0.414	0.414	100.00	0.164	0.000
89.9000-89.6667			1		B	0.000	0.414		100.00	0.156	0.000
					C	0.000	0.414		100.00	0.276	0.000
L11	87.0912	1.229	28.13	9.350	A	0.000	9.350	9.350	100.00	4.436	0.000
89.6667-84.5667			0		B	0.000	9.350		100.00	4.244	0.000
					C	0.000	9.350		100.00	6.881	0.000
L12	84.4499	1.221	27.94	0.441	A	0.000	0.441	0.441	100.00	0.320	0.000
84.5667-84.3333			8		B	0.000	0.441		100.00	0.311	0.000
					C	0.000	0.441		100.00	0.432	0.000
L13	83.6231	1.219	27.89	2.704	A	0.000	2.704	2.704	100.00	1.942	0.000
84.3333-82.9167			1		B	0.000	2.704		100.00	1.889	0.000
					C	0.000	2.704		100.00	2.621	0.000
L14	82.7916	1.216	27.83	0.482	A	0.000	0.482	0.482	100.00	0.343	0.000
82.9167-82.6667			2		B	0.000	0.482		100.00	0.333	0.000
					C	0.000	0.482		100.00	0.463	0.000
L15	81.8203	1.213	27.76	3.286	A	0.000	3.286	3.286	100.00	2.688	0.000
82.6667-80.9792			3		B	0.000	3.286		100.00	2.625	0.000
					C	0.000	3.286		100.00	3.497	0.000
L16	80.8541	1.21	27.69	0.492	A	0.000	0.492	0.492	100.00	0.343	0.000
80.9792-80.7292			4		B	0.000	0.492		100.00	0.333	0.000
					C	0.000	0.492		100.00	0.463	0.000
L17	78.2070	1.202	27.50	10.125	A	0.000	10.125	10.125	100.00	6.854	0.000
80.7292-75.7292			0		B	0.000	10.125		100.00	6.667	0.000
					C	0.000	10.125		100.00	9.252	0.000
L18	72.8370	1.184	27.09	12.265	A	0.000	12.265	12.265	100.00	6.534	0.000
75.7292-70.0000			1		B	0.000	12.265		100.00	6.319	0.000

tnxTower

FDH Velocitel
 222 S. Central Ave., Suite 1110
 Saint Louis, MO 63105
 Phone: 3147734000
 FAX: 3147734001

Job	HRT 100 943239, 806376	Page	44 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
00					C	0.000	12.265		100.00	9.281	0.000
L19	69.4992	1.172	26.82	2.170	A	0.000	2.170	2.170	100.00	0.704	0.000
70.0000-69.00			5		B	0.000	2.170		100.00	0.667	0.000
00					C	0.000	2.170		100.00	1.184	0.000
L20	67.9883	1.167	26.70	4.442	A	0.000	4.442	4.442	100.00	2.265	0.000
69.0000-66.98			1		B	0.000	4.442		100.00	2.189	0.000
33					C	0.000	4.442		100.00	3.232	0.000
L21	66.8582	1.163	26.60	0.557	A	0.000	0.557	0.557	100.00	0.343	0.000
66.9833-66.73			7		B	0.000	0.557		100.00	0.333	0.000
33					C	0.000	0.557		100.00	0.463	0.000
L22	65.4027	1.157	26.48	5.985	A	0.000	5.985	5.985	100.00	3.966	0.000
66.7333-64.08			4		B	0.000	5.985		100.00	3.867	0.000
33					C	0.000	5.985		100.00	3.987	0.000
L23	63.9583	1.152	26.36	0.572	A	0.000	0.572	0.572	100.00	0.364	0.000
64.0833-63.83			0		B	0.000	0.572		100.00	0.354	0.000
33					C	0.000	0.572		100.00	0.483	0.000
L24	63.1234	1.149	26.28	3.269	A	0.000	3.269	3.269	100.00	2.060	0.000
63.8333-62.41			7		B	0.000	3.269		100.00	2.007	0.000
67					C	0.000	3.269		100.00	2.739	0.000
L25	62.2917	1.146	26.21	0.581	A	0.000	0.581	0.581	100.00	0.364	0.000
62.4167-62.16			4		B	0.000	0.581		100.00	0.354	0.000
67					C	0.000	0.581		100.00	0.483	0.000
L26	60.8069	1.14	26.08	6.386	A	0.000	6.386	6.386	100.00	4.605	0.000
62.1667-59.45			1		B	0.000	6.386		100.00	4.504	0.000
83					C	0.000	6.386		100.00	5.904	0.000
L27	59.3333	1.134	25.94	0.597	A	0.000	0.597	0.597	100.00	0.530	0.000
59.4583-59.20			7		B	0.000	0.597		100.00	0.521	0.000
83					C	0.000	0.597		100.00	0.650	0.000
L28	57.5965	1.127	25.78	7.786	A	0.000	7.786	7.786	100.00	6.742	0.000
59.2083-56.00			5		B	0.000	7.786		100.00	6.621	0.000
00					C	0.000	7.786		100.00	8.343	0.000
L29	55.8750	1.12	25.62	0.616	A	0.000	0.616	0.616	100.00	0.593	0.000
56.0000-55.75			1		B	0.000	0.616		100.00	0.583	0.000
00					C	0.000	0.616		100.00	0.650	0.000
L30	53.2322	1.108	25.36	12.605	A	0.000	12.605	12.605	100.00	11.854	0.000
55.7500-50.75			1		B	0.000	12.605		100.00	11.667	0.000
00					C	0.000	12.605		100.00	13.002	0.000
L31	48.2329	1.086	24.84	13.144	A	0.000	13.144	13.144	100.00	11.910	0.000
50.7500-45.75			0		B	0.000	13.144		100.00	11.722	0.000
00					C	0.000	13.144		100.00	13.057	0.000
L32	45.1156	1.07	24.49	3.416	A	0.000	3.416	3.416	100.00	3.848	0.000
45.7500-44.48			3		B	0.000	3.416		100.00	3.800	0.000
33					C	0.000	3.416		100.00	4.126	0.000
L33	44.3583	1.067	24.40	0.678	A	0.000	0.678	0.678	100.00	0.759	0.000
44.4833-44.23			6		B	0.000	0.678		100.00	0.750	0.000
33					C	0.000	0.678		100.00	0.729	0.000
L34	44.1583	1.066	24.38	0.408	A	0.000	0.408	0.408	100.00	0.456	0.000
44.2333-44.08			2		B	0.000	0.408		100.00	0.450	0.000
33					C	0.000	0.408		100.00	0.528	0.000
L35	41.5671	1.052	24.07	13.863	A	0.000	13.863	13.863	100.00	12.410	0.000
44.0833-39.08			4		B	0.000	13.863		100.00	12.222	0.000
33					C	0.000	13.863		100.00	14.807	0.000
L36	36.5660	1.024	23.43	14.412	A	0.000	14.412	14.412	100.00	11.862	0.000
39.0833-34.08			3		B	0.000	14.412		100.00	11.674	0.000
00					C	0.000	14.412		100.00	14.261	0.000
L37	34.0400	1.009	23.08	0.231	A	0.000	0.231	0.231	100.00	0.190	0.000
34.0800-34.00			2		B	0.000	0.231		100.00	0.187	0.000
00					C	0.000	0.231		100.00	0.228	0.000
L38	32.7252	1	22.89	7.395	A	0.000	7.395	7.395	100.00	6.026	0.000
34.0000-31.45			2		B	0.000	7.395		100.00	5.931	0.000

tnxTower

FDH Velocitel
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Job	HRT 100 943239, 806376	Page	45 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
83					C	0.000	7.395		100.00	7.245	0.000
L39	31.3333	0.991	22.68	0.735	A	0.000	0.735	0.735	100.00	0.593	0.000
31.4583-31.20			3		B	0.000	0.735		100.00	0.583	0.000
83					C	0.000	0.735		100.00	0.713	0.000
L40	30.3314	0.985	22.52	5.182	A	0.000	5.182	5.182	100.00	4.149	0.000
31.2083-29.45			9		B	0.000	5.182		100.00	4.083	0.000
83					C	0.000	5.182		100.00	4.988	0.000
L41	29.3333	0.978	22.37	0.746	A	0.000	0.746	0.746	100.00	0.718	0.000
29.4583-29.20			0		B	0.000	0.746		100.00	0.583	0.000
83					C	0.000	0.746		100.00	0.838	0.000
L42	28.0174	0.968	22.15	7.151	A	0.000	7.151	7.151	100.00	8.006	0.000
29.2083-26.83			5		B	0.000	7.151		100.00	5.542	0.000
33					C	0.000	7.151		100.00	9.145	0.000
L43	26.7083	0.959	21.93	0.760	A	0.000	0.760	0.760	100.00	0.843	0.000
26.8333-26.58			3		B	0.000	0.760		100.00	0.583	0.000
33					C	0.000	0.760		100.00	0.963	0.000
L44	24.0688	0.938	21.45	15.480	A	0.000	15.480	15.480	100.00	16.854	0.000
26.5833-21.58			8		B	0.000	15.480		100.00	11.667	0.000
33					C	0.000	15.480		100.00	19.252	0.000
L45	21.1663	0.913	20.88	2.632	A	0.000	2.632	2.632	100.00	2.559	0.000
21.5833-20.75			5		B	0.000	2.632		100.00	1.694	0.000
00					C	0.000	2.632		100.00	3.208	0.000
L46	20.6250	0.908	20.77	0.793	A	0.000	0.793	0.793	100.00	0.864	0.000
20.7500-20.50			2		B	0.000	0.793		100.00	0.875	0.000
00					C	0.000	0.793		100.00	0.963	0.000
L47	19.2465	0.895	20.47	8.000	A	0.000	8.000	8.000	100.00	8.635	0.000
20.5000-18.00			1		B	0.000	8.000		100.00	8.750	0.000
00					C	0.000	8.000		100.00	9.626	0.000
L48	17.8750	0.881	20.15	0.807	A	0.000	0.807	0.807	100.00	0.864	0.000
18.0000-17.75			5		B	0.000	0.807		100.00	0.875	0.000
00					C	0.000	0.807		100.00	0.963	0.000
L49	17.4164	0.876	20.04	2.160	A	0.000	2.160	2.160	100.00	2.303	0.000
17.7500-17.08			5		B	0.000	2.160		100.00	2.333	0.000
33					C	0.000	2.160		100.00	2.567	0.000
L50	16.9583	0.871	19.93	0.812	A	0.000	0.812	0.812	100.00	0.864	0.000
17.0833-16.83			3		B	0.000	0.812		100.00	0.875	0.000
33					C	0.000	0.812		100.00	0.963	0.000
L51	14.9087	0.85	19.45	12.625	A	0.000	12.625	12.625	100.00	13.852	0.000
16.8333-13.00			0		B	0.000	12.625		100.00	14.028	0.000
00					C	0.000	12.625		100.00	15.371	0.000
L52	12.8750	0.85	19.45	0.834	A	0.000	0.834	0.834	100.00	0.947	0.000
13.0000-12.75			0		B	0.000	0.834		100.00	0.958	0.000
00					C	0.000	0.834		100.00	1.046	0.000
L53	12.2912	0.85	19.45	3.071	A	0.000	3.071	3.071	100.00	3.472	0.000
12.7500-11.83			0		B	0.000	3.071		100.00	3.514	0.000
33					C	0.000	3.071		100.00	3.835	0.000
L54	11.7083	0.85	19.45	0.841	A	0.000	0.841	0.841	100.00	0.947	0.000
11.8333-11.58			0		B	0.000	0.841		100.00	0.958	0.000
33					C	0.000	0.841		100.00	1.046	0.000
L55	9.0196	0.85	19.45	17.443	A	0.000	17.443	17.443	100.00	19.464	0.000
11.5833-6.483			0		B	0.000	17.443		100.00	19.550	0.000
3					C	0.000	17.443		100.00	15.637	0.000
L56	6.3666	0.85	19.45	0.811	A	0.000	0.811	0.811	100.00	0.903	0.000
6.4833-6.2500			0		B	0.000	0.811		100.00	0.894	0.000
					C	0.000	0.811		100.00	0.509	0.000
L57	3.7373	0.85	19.45	17.670	A	0.000	17.670	17.670	100.00	19.354	0.000
6.2500-1.2500			0		B	0.000	17.670		100.00	19.167	0.000
					C	0.000	17.670		100.00	10.918	0.000
L58	0.6242	0.85	19.45	4.502	A	0.000	4.502	4.502	100.00	4.005	0.000
1.2500-0.0000			0		B	0.000	4.502		100.00	3.958	0.000

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job HRT 100 943239, 806376	Page 46 of 76
	Project 17QGOK1400	Date 15:00:45 06/19/17
	Client Crown Castle International	Designed by PRoach

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
					C	0.000	4.502		100.00	1.896	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	in	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1	128.4554	1.334	8.112	2.2912	6.706	A	0.000	6.706	6.706	100.00	2.479	0.000
131.0000-126.0000						B	0.000	6.706	100.00	0.000	0.000	0.000
						C	0.000	6.706	100.00	0.000	0.000	0.000
L2	123.4597	1.323	8.044	2.2821	7.212	A	0.000	7.212	7.212	100.00	2.470	0.000
126.0000-121.0000						B	0.000	7.212	100.00	0.000	0.000	0.000
						C	0.000	7.212	100.00	0.000	0.000	0.000
L3	118.4633	1.312	7.974	2.2727	7.718	A	0.000	7.718	7.718	100.00	2.460	0.000
121.0000-116.0000						B	0.000	7.718	100.00	0.000	0.000	0.000
						C	0.000	7.718	100.00	13.133	0.000	0.000
L4	113.4662	1.3	7.902	2.2629	8.223	A	0.000	8.223	8.223	100.00	2.450	0.000
116.0000-111.0000						B	0.000	8.223	100.00	0.000	0.000	0.000
						C	0.000	8.223	100.00	13.089	0.000	0.000
L5	110.4987	1.293	7.858	2.2569	1.705	A	0.000	1.705	1.705	100.00	0.489	0.000
111.0000-110.0000						B	0.000	1.705	100.00	0.000	0.000	0.000
						C	0.000	1.705	100.00	2.612	0.000	0.000
L6	107.4677	1.285	7.813	2.2506	8.842	A	0.000	8.842	8.842	100.00	2.438	0.000
110.0000-105.0000						B	0.000	8.842	100.00	0.000	0.000	0.000
						C	0.000	8.842	100.00	13.034	0.000	0.000
L7	102.4701	1.272	7.735	2.2399	9.373	A	0.000	9.373	9.373	100.00	2.427	0.000
105.0000-100.0000						B	0.000	9.373	100.00	0.000	0.000	0.000
						C	0.000	9.373	100.00	12.986	0.000	0.000
L8	97.4721	1.259	7.654	2.2288	9.903	A	0.000	9.903	9.903	100.00	2.416	0.000
100.0000-95.0000						B	0.000	9.903	100.00	0.892	0.000	0.000
						C	0.000	9.903	100.00	15.714	0.000	0.000
L9	92.4228	1.245	7.568	2.2170	10.647	A	0.000	10.647	10.647	100.00	3.885	0.000
95.0000-89.9000						B	0.000	10.647	100.00	3.694	0.000	0.000
						C	0.000	10.647	100.00	21.622	0.000	0.000
L10	89.7833	1.237	7.522	2.2105	0.500	A	0.000	0.500	0.500	100.00	0.332	0.000
89.9000-89.6667						B	0.000	0.500	100.00	0.323	0.000	0.000
						C	0.000	0.500	100.00	1.142	0.000	0.000
L11	87.0912	1.229	7.474	2.2038	11.223	A	0.000	11.223	11.223	100.00	8.652	0.000
89.6667-84.5667						B	0.000	11.223	100.00	8.461	0.000	0.000
						C	0.000	11.223	100.00	29.788	0.000	0.000
L12	84.4499	1.221	7.426	2.1970	0.527	A	0.000	0.527	0.527	100.00	0.589	0.000
84.5667-84.3333						B	0.000	0.527	100.00	0.581	0.000	0.000
						C	0.000	0.527	100.00	1.728	0.000	0.000
L13	83.6231	1.219	7.411	2.1949	3.222	A	0.000	3.222	3.222	100.00	3.576	0.000
84.3333-82.9167						B	0.000	3.222	100.00	3.523	0.000	0.000
						C	0.000	3.222	100.00	10.483	0.000	0.000
L14	82.7916	1.216	7.395	2.1927	0.573	A	0.000	0.573	0.573	100.00	0.631	0.000
82.9167-82.6667						B	0.000	0.573	100.00	0.621	0.000	0.000
						C	0.000	0.573	100.00	1.849	0.000	0.000
L15	81.8203	1.213	7.377	2.1901	3.902	A	0.000	3.902	3.902	100.00	4.786	0.000
82.6667-80.9792						B	0.000	3.902	100.00	4.723	0.000	0.000
						C	0.000	3.902	100.00	12.998	0.000	0.000
L16	80.8541	1.21	7.358	2.1875	0.583	A	0.000	0.583	0.583	100.00	0.630	0.000

tnxTower

FDH Velocitel
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Job	HRT 100 943239, 806376	Page	47 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
80.9792-80.7292						B	0.000	0.583		100.00	0.621	0.000
						C	0.000	0.583		100.00	1.846	0.000
L17	78.2070	1.202	7.307	2.1802	11.942	A	0.000	11.942	11.942	100.00	12.586	0.000
80.7292-75.7292						B	0.000	11.942		100.00	12.398	0.000
						C	0.000	11.942		100.00	36.822	0.000
L18	72.8370	1.184	7.198	2.1648	14.332	A	0.000	14.332	14.332	100.00	12.518	0.000
75.7292-70.0000						B	0.000	14.332		100.00	12.303	0.000
						C	0.000	14.332		100.00	40.116	0.000
L19	69.4992	1.172	7.128	2.1546	2.531	A	0.000	2.531	2.531	100.00	1.570	0.000
70.0000-69.0000						B	0.000	2.531		100.00	1.533	0.000
						C	0.000	2.531		100.00	6.387	0.000
L20	67.9883	1.167	7.095	2.1499	5.165	A	0.000	5.165	5.165	100.00	4.544	0.000
69.0000-66.9833						B	0.000	5.165		100.00	4.468	0.000
						C	0.000	5.165		100.00	14.200	0.000
L21	66.8582	1.163	7.070	2.1463	0.646	A	0.000	0.646	0.646	100.00	0.665	0.000
66.9833-66.7333						B	0.000	0.646		100.00	0.655	0.000
						C	0.000	0.646		100.00	1.860	0.000
L22	65.4027	1.157	7.037	2.1416	6.931	A	0.000	6.931	6.931	100.00	7.099	0.000
66.7333-64.0833						B	0.000	6.931		100.00	6.999	0.000
						C	0.000	6.931		100.00	18.160	0.000
L23	63.9583	1.152	7.004	2.1368	0.661	A	0.000	0.661	0.661	100.00	0.637	0.000
64.0833-63.8333						B	0.000	0.661		100.00	0.627	0.000
						C	0.000	0.661		100.00	1.875	0.000
L24	63.1234	1.149	6.985	2.1340	3.773	A	0.000	3.773	3.773	100.00	3.606	0.000
63.8333-62.4167						B	0.000	3.773		100.00	3.553	0.000
						C	0.000	3.773		100.00	10.613	0.000
L25	62.2917	1.146	6.965	2.1312	0.670	A	0.000	0.670	0.670	100.00	0.636	0.000
62.4167-62.1667						B	0.000	0.670		100.00	0.627	0.000
						C	0.000	0.670		100.00	1.871	0.000
L26	60.8069	1.14	6.930	2.1261	7.345	A	0.000	7.345	7.345	100.00	7.975	0.000
62.1667-59.4583						B	0.000	7.345		100.00	7.874	0.000
						C	0.000	7.345		100.00	21.327	0.000
L27	59.3333	1.134	6.894	2.1208	0.686	A	0.000	0.686	0.686	100.00	0.907	0.000
59.4583-59.2083						B	0.000	0.686		100.00	0.898	0.000
						C	0.000	0.686		100.00	2.137	0.000
L28	57.5965	1.127	6.851	2.1146	8.917	A	0.000	8.917	8.917	100.00	11.549	0.000
59.2083-56.0000						B	0.000	8.917		100.00	11.429	0.000
						C	0.000	8.917		100.00	27.372	0.000
L29	55.8750	1.12	6.808	2.1081	0.704	A	0.000	0.704	0.704	100.00	1.014	0.000
56.0000-55.7500						B	0.000	0.704		100.00	1.005	0.000
						C	0.000	0.704		100.00	2.128	0.000
L30	53.2322	1.108	6.738	2.0980	14.353	A	0.000	14.353	14.353	100.00	20.246	0.000
55.7500-50.7500						B	0.000	14.353		100.00	20.058	0.000
						C	0.000	14.353		100.00	42.430	0.000
L31	48.2329	1.086	6.600	2.0774	14.875	A	0.000	14.875	14.875	100.00	20.254	0.000
50.7500-45.7500						B	0.000	14.875		100.00	20.066	0.000
						C	0.000	14.875		100.00	42.237	0.000
L32	45.1156	1.07	6.508	2.0635	3.851	A	0.000	3.851	3.851	100.00	6.461	0.000
45.7500-44.4833						B	0.000	3.851		100.00	6.414	0.000
						C	0.000	3.851		100.00	11.977	0.000
L33	44.3583	1.067	6.485	2.0600	0.764	A	0.000	0.764	0.764	100.00	1.274	0.000
44.4833-44.2333						B	0.000	0.764		100.00	1.265	0.000
						C	0.000	0.764		100.00	2.216	0.000
L34	44.1583	1.066	6.478	2.0591	0.459	A	0.000	0.459	0.459	100.00	0.764	0.000
44.2333-44.0833						B	0.000	0.459		100.00	0.759	0.000
						C	0.000	0.459		100.00	1.456	0.000
L35	41.5671	1.052	6.397	2.0467	15.569	A	0.000	15.569	15.569	100.00	20.938	0.000
44.0833-39.0833						B	0.000	15.569		100.00	20.750	0.000
						C	0.000	15.569		100.00	43.872	0.000
L36	36.5660	1.024	6.226	2.0206	16.097	A	0.000	16.097	16.097	100.00	19.950	0.000

tnxTower

FDH Velocitel
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Job	HRT 100 943239, 806376	Page	48 of 76
Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
39.0833-34.0800						B	0.000	16.097		100.00	19.762	0.000
						C	0.000	16.097		100.00	42.645	0.000
L37	34.0400	1.009	6.133	2.0062	0.257	A	0.000	0.257	0.257	100.00	0.319	0.000
34.0800-34.0000						B	0.000	0.257		100.00	0.316	0.000
						C	0.000	0.257		100.00	0.682	0.000
L38	32.7252	1	6.082	1.9983	8.242	A	0.000	8.242	8.242	100.00	10.089	0.000
34.0000-31.4583						B	0.000	8.242		100.00	9.994	0.000
						C	0.000	8.242		100.00	21.508	0.000
L39	31.3333	0.991	6.027	1.9897	0.818	A	0.000	0.818	0.818	100.00	0.991	0.000
31.4583-31.2083						B	0.000	0.818		100.00	0.981	0.000
						C	0.000	0.818		100.00	2.110	0.000
L40	30.3314	0.985	5.986	1.9832	5.761	A	0.000	5.761	5.761	100.00	6.925	0.000
31.2083-29.4583						B	0.000	5.761		100.00	6.860	0.000
						C	0.000	5.761		100.00	14.736	0.000
L41	29.3333	0.978	5.944	1.9766	0.828	A	0.000	0.828	0.828	100.00	1.162	0.000
29.4583-29.2083						B	0.000	0.828		100.00	0.979	0.000
						C	0.000	0.828		100.00	2.275	0.000
L42	28.0174	0.968	5.887	1.9675	7.930	A	0.000	7.930	7.930	100.00	12.671	0.000
29.2083-26.8333						B	0.000	7.930		100.00	9.280	0.000
						C	0.000	7.930		100.00	23.198	0.000
L43	26.7083	0.959	5.828	1.9581	0.841	A	0.000	0.841	0.841	100.00	1.332	0.000
26.8333-26.5833						B	0.000	0.841		100.00	0.975	0.000
						C	0.000	0.841		100.00	2.435	0.000
L44	24.0688	0.938	5.701	1.9379	17.094	A	0.000	17.094	17.094	100.00	26.533	0.000
26.5833-21.5833						B	0.000	17.094		100.00	19.418	0.000
						C	0.000	17.094		100.00	48.405	0.000
L45	21.1663	0.913	5.549	1.9131	2.898	A	0.000	2.898	2.898	100.00	4.056	0.000
21.5833-20.7500						B	0.000	2.898		100.00	2.874	0.000
						C	0.000	2.898		100.00	8.007	0.000
L46	20.6250	0.908	5.519	1.9082	0.872	A	0.000	0.872	0.872	100.00	1.339	0.000
20.7500-20.5000						B	0.000	0.872		100.00	1.350	0.000
						C	0.000	0.872		100.00	2.399	0.000
L47	19.2465	0.895	5.439	1.8950	8.790	A	0.000	8.790	8.790	100.00	13.364	0.000
20.5000-18.0000						B	0.000	8.790		100.00	13.472	0.000
						C	0.000	8.790		100.00	23.891	0.000
L48	17.8750	0.881	5.355	1.8811	0.886	A	0.000	0.886	0.886	100.00	1.333	0.000
18.0000-17.7500						B	0.000	0.886		100.00	1.344	0.000
						C	0.000	0.886		100.00	2.379	0.000
L49	17.4164	0.876	5.326	1.8762	2.368	A	0.000	2.368	2.368	100.00	3.552	0.000
17.7500-17.0833						B	0.000	2.368		100.00	3.581	0.000
						C	0.000	2.368		100.00	6.334	0.000
L50	16.9583	0.871	5.296	1.8712	0.890	A	0.000	0.890	0.890	100.00	1.331	0.000
17.0833-16.8333						B	0.000	0.890		100.00	1.342	0.000
						C	0.000	0.890		100.00	2.372	0.000
L51	14.9087	0.85	5.168	1.8472	13.805	A	0.000	13.805	13.805	100.00	20.558	0.000
16.8333-13.0000						B	0.000	13.805		100.00	20.728	0.000
						C	0.000	13.805		100.00	36.336	0.000
L52	12.8750	0.85	5.168	1.8203	0.910	A	0.000	0.910	0.910	100.00	1.378	0.000
13.0000-12.7500						B	0.000	0.910		100.00	1.389	0.000
						C	0.000	0.910		100.00	2.393	0.000
L53	12.2912	0.85	5.168	1.8119	3.348	A	0.000	3.348	3.348	100.00	5.045	0.000
12.7500-11.8333						B	0.000	3.348		100.00	5.087	0.000
						C	0.000	3.348		100.00	8.754	0.000
L54	11.7083	0.85	5.168	1.8031	0.916	A	0.000	0.916	0.916	100.00	1.374	0.000
11.8333-11.5833						B	0.000	0.916		100.00	1.386	0.000
						C	0.000	0.916		100.00	2.381	0.000
L55	9.0196	0.85	5.168	1.7567	18.936	A	0.000	18.936	18.936	100.00	27.084	0.000
11.5833-6.4833						B	0.000	18.936		100.00	28.053	0.000
						C	0.000	18.936		100.00	40.200	0.000
L56	6.3666	0.85	5.168	1.6966	0.877	A	0.000	0.877	0.877	100.00	1.209	0.000

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job HRT 100 943239, 806376	Page 49 of 76
	Project 17QGOK1400	Date 15:00:45 06/19/17
	Client Crown Castle International	Designed by PRoach

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
6.4833-6.2500						B	0.000	0.877		100.00	1.271	0.000
						C	0.000	0.877		100.00	1.526	0.000
L57 6.2500-1.2500	3.7373	0.85	5.168	1.6085	19.011	A	0.000	19.011	19.011	100.00	25.555	0.000
						B	0.000	19.011		100.00	26.837	0.000
						C	0.000	19.011		100.00	31.636	0.000
L58 1.2500-0.0000	0.6242	0.85	5.168	1.3450	4.782	A	0.000	4.782	4.782	100.00	5.046	0.000
						B	0.000	4.782		100.00	5.335	0.000
						C	0.000	4.782		100.00	6.024	0.000

Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 131.0000-126.0000	128.4554	1.334	10.451	4.797	A	0.000	4.797	4.797	100.00	0.188	0.000
					B	0.000	4.797		100.00	0.000	0.000
					C	0.000	4.797		100.00	0.000	0.000
L2 126.0000-121.0000	123.4597	1.323	10.364	5.310	A	0.000	5.310	5.310	100.00	0.188	0.000
					B	0.000	5.310		100.00	0.000	0.000
					C	0.000	5.310		100.00	0.000	0.000
L3 121.0000-116.0000	118.4633	1.312	10.274	5.824	A	0.000	5.824	5.824	100.00	0.188	0.000
					B	0.000	5.824		100.00	0.000	0.000
					C	0.000	5.824		100.00	2.325	0.000
L4 116.0000-111.0000	113.4662	1.3	10.182	6.337	A	0.000	6.337	6.337	100.00	0.188	0.000
					B	0.000	6.337		100.00	0.000	0.000
					C	0.000	6.337		100.00	2.325	0.000
L5 111.0000-110.0000	110.4987	1.293	10.125	1.329	A	0.000	1.329	1.329	100.00	0.037	0.000
					B	0.000	1.329		100.00	0.000	0.000
					C	0.000	1.329		100.00	0.465	0.000
L6 110.0000-105.0000	107.4677	1.285	10.066	6.967	A	0.000	6.967	6.967	100.00	0.188	0.000
					B	0.000	6.967		100.00	0.000	0.000
					C	0.000	6.967		100.00	2.325	0.000
L7 105.0000-100.0000	102.4701	1.272	9.965	7.506	A	0.000	7.506	7.506	100.00	0.188	0.000
					B	0.000	7.506		100.00	0.000	0.000
					C	0.000	7.506		100.00	2.325	0.000
L8 100.0000-95.0000	97.4721	1.259	9.861	8.046	A	0.000	8.046	8.046	100.00	0.188	0.000
					B	0.000	8.046		100.00	0.000	0.000
					C	0.000	8.046		100.00	2.429	0.000
L9 95.0000-89.9000	92.4228	1.245	9.751	8.763	A	0.000	8.763	8.763	100.00	1.202	0.000
					B	0.000	8.763		100.00	1.011	0.000
					C	0.000	8.763		100.00	3.648	0.000
L10 89.9000-89.6667	89.7833	1.237	9.692	0.414	A	0.000	0.414	0.414	100.00	0.164	0.000
					B	0.000	0.414		100.00	0.156	0.000
					C	0.000	0.414		100.00	0.276	0.000
L11 89.6667-84.5667	87.0912	1.229	9.630	9.350	A	0.000	9.350	9.350	100.00	4.436	0.000
					B	0.000	9.350		100.00	4.244	0.000
					C	0.000	9.350		100.00	6.881	0.000
L12 84.5667-84.3333	84.4499	1.221	9.568	0.441	A	0.000	0.441	0.441	100.00	0.320	0.000
					B	0.000	0.441		100.00	0.311	0.000
					C	0.000	0.441		100.00	0.432	0.000
L13 84.3333-82.91	83.6231	1.219	9.548	2.704	A	0.000	2.704	2.704	100.00	1.942	0.000
					B	0.000	2.704		100.00	1.889	0.000

tnxTower

FDH Velocitel
 222 S. Central Ave., Suite 1110
 Saint Louis, MO 63105
 Phone: 3147734000
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Client	Crown Castle International	Designed by	PROach

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
67					C	0.000	2.704		100.00	2.621	0.000
L14	82.7916	1.216	9.528	0.482	A	0.000	0.482	0.482	100.00	0.343	0.000
82.9167-82.66					B	0.000	0.482		100.00	0.333	0.000
67					C	0.000	0.482		100.00	0.463	0.000
L15	81.8203	1.213	9.504	3.286	A	0.000	3.286	3.286	100.00	2.688	0.000
82.6667-80.97					B	0.000	3.286		100.00	2.625	0.000
92					C	0.000	3.286		100.00	3.497	0.000
L16	80.8541	1.21	9.481	0.492	A	0.000	0.492	0.492	100.00	0.343	0.000
80.9792-80.72					B	0.000	0.492		100.00	0.333	0.000
92					C	0.000	0.492		100.00	0.463	0.000
L17	78.2070	1.202	9.414	10.125	A	0.000	10.125	10.125	100.00	6.854	0.000
80.7292-75.72					B	0.000	10.125		100.00	6.667	0.000
92					C	0.000	10.125		100.00	9.252	0.000
L18	72.8370	1.184	9.274	12.265	A	0.000	12.265	12.265	100.00	6.534	0.000
75.7292-70.00					B	0.000	12.265		100.00	6.319	0.000
00					C	0.000	12.265		100.00	9.281	0.000
L19	69.4992	1.172	9.183	2.170	A	0.000	2.170	2.170	100.00	0.704	0.000
70.0000-69.00					B	0.000	2.170		100.00	0.667	0.000
00					C	0.000	2.170		100.00	1.184	0.000
L20	67.9883	1.167	9.141	4.442	A	0.000	4.442	4.442	100.00	2.265	0.000
69.0000-66.98					B	0.000	4.442		100.00	2.189	0.000
33					C	0.000	4.442		100.00	3.232	0.000
L21	66.8582	1.163	9.109	0.557	A	0.000	0.557	0.557	100.00	0.343	0.000
66.9833-66.73					B	0.000	0.557		100.00	0.333	0.000
33					C	0.000	0.557		100.00	0.463	0.000
L22	65.4027	1.157	9.067	5.985	A	0.000	5.985	5.985	100.00	3.966	0.000
66.7333-64.08					B	0.000	5.985		100.00	3.867	0.000
33					C	0.000	5.985		100.00	3.987	0.000
L23	63.9583	1.152	9.024	0.572	A	0.000	0.572	0.572	100.00	0.364	0.000
64.0833-63.83					B	0.000	0.572		100.00	0.354	0.000
33					C	0.000	0.572		100.00	0.483	0.000
L24	63.1234	1.149	8.999	3.269	A	0.000	3.269	3.269	100.00	2.060	0.000
63.8333-62.41					B	0.000	3.269		100.00	2.007	0.000
67					C	0.000	3.269		100.00	2.739	0.000
L25	62.2917	1.146	8.974	0.581	A	0.000	0.581	0.581	100.00	0.364	0.000
62.4167-62.16					B	0.000	0.581		100.00	0.354	0.000
67					C	0.000	0.581		100.00	0.483	0.000
L26	60.8069	1.14	8.929	6.386	A	0.000	6.386	6.386	100.00	4.605	0.000
62.1667-59.45					B	0.000	6.386		100.00	4.504	0.000
83					C	0.000	6.386		100.00	5.904	0.000
L27	59.3333	1.134	8.883	0.597	A	0.000	0.597	0.597	100.00	0.530	0.000
59.4583-59.20					B	0.000	0.597		100.00	0.521	0.000
83					C	0.000	0.597		100.00	0.650	0.000
L28	57.5965	1.127	8.827	7.786	A	0.000	7.786	7.786	100.00	6.742	0.000
59.2083-56.00					B	0.000	7.786		100.00	6.621	0.000
00					C	0.000	7.786		100.00	8.343	0.000
L29	55.8750	1.12	8.771	0.616	A	0.000	0.616	0.616	100.00	0.593	0.000
56.0000-55.75					B	0.000	0.616		100.00	0.583	0.000
00					C	0.000	0.616		100.00	0.650	0.000
L30	53.2322	1.108	8.682	12.605	A	0.000	12.605	12.605	100.00	11.854	0.000
55.7500-50.75					B	0.000	12.605		100.00	11.667	0.000
00					C	0.000	12.605		100.00	13.002	0.000
L31	48.2329	1.086	8.504	13.144	A	0.000	13.144	13.144	100.00	11.910	0.000
50.7500-45.75					B	0.000	13.144		100.00	11.722	0.000
00					C	0.000	13.144		100.00	13.057	0.000
L32	45.1156	1.07	8.385	3.416	A	0.000	3.416	3.416	100.00	3.848	0.000
45.7500-44.48					B	0.000	3.416		100.00	3.800	0.000
33					C	0.000	3.416		100.00	4.126	0.000
L33	44.3583	1.067	8.355	0.678	A	0.000	0.678	0.678	100.00	0.759	0.000
44.4833-44.23					B	0.000	0.678		100.00	0.750	0.000

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FDH Velocitel
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Client	Crown Castle International	Designed by	PROach

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
33					C	0.000	0.678		100.00	0.729	0.000
L34	44.1583	1.066	8.347	0.408	A	0.000	0.408	0.408	100.00	0.456	0.000
44.2333-44.08					B	0.000	0.408		100.00	0.450	0.000
33					C	0.000	0.408		100.00	0.528	0.000
L35	41.5671	1.052	8.241	13.863	A	0.000	13.863	13.863	100.00	12.410	0.000
44.0833-39.08					B	0.000	13.863		100.00	12.222	0.000
33					C	0.000	13.863		100.00	14.807	0.000
L36	36.5660	1.024	8.022	14.412	A	0.000	14.412	14.412	100.00	11.862	0.000
39.0833-34.08					B	0.000	14.412		100.00	11.674	0.000
00					C	0.000	14.412		100.00	14.261	0.000
L37	34.0400	1.009	7.902	0.231	A	0.000	0.231	0.231	100.00	0.190	0.000
34.0800-34.00					B	0.000	0.231		100.00	0.187	0.000
00					C	0.000	0.231		100.00	0.228	0.000
L38	32.7252	1	7.837	7.395	A	0.000	7.395	7.395	100.00	6.026	0.000
34.0000-31.45					B	0.000	7.395		100.00	5.931	0.000
83					C	0.000	7.395		100.00	7.245	0.000
L39	31.3333	0.991	7.765	0.735	A	0.000	0.735	0.735	100.00	0.593	0.000
31.4583-31.20					B	0.000	0.735		100.00	0.583	0.000
83					C	0.000	0.735		100.00	0.713	0.000
L40	30.3314	0.985	7.712	5.182	A	0.000	5.182	5.182	100.00	4.149	0.000
31.2083-29.45					B	0.000	5.182		100.00	4.083	0.000
83					C	0.000	5.182		100.00	4.988	0.000
L41	29.3333	0.978	7.658	0.746	A	0.000	0.746	0.746	100.00	0.718	0.000
29.4583-29.20					B	0.000	0.746		100.00	0.583	0.000
83					C	0.000	0.746		100.00	0.838	0.000
L42	28.0174	0.968	7.585	7.151	A	0.000	7.151	7.151	100.00	8.006	0.000
29.2083-26.83					B	0.000	7.151		100.00	5.542	0.000
33					C	0.000	7.151		100.00	9.145	0.000
L43	26.7083	0.959	7.509	0.760	A	0.000	0.760	0.760	100.00	0.843	0.000
26.8333-26.58					B	0.000	0.760		100.00	0.583	0.000
33					C	0.000	0.760		100.00	0.963	0.000
L44	24.0688	0.938	7.346	15.480	A	0.000	15.480	15.480	100.00	16.854	0.000
26.5833-21.58					B	0.000	15.480		100.00	11.667	0.000
33					C	0.000	15.480		100.00	19.252	0.000
L45	21.1663	0.913	7.150	2.632	A	0.000	2.632	2.632	100.00	2.559	0.000
21.5833-20.75					B	0.000	2.632		100.00	1.694	0.000
00					C	0.000	2.632		100.00	3.208	0.000
L46	20.6250	0.908	7.111	0.793	A	0.000	0.793	0.793	100.00	0.864	0.000
20.7500-20.50					B	0.000	0.793		100.00	0.875	0.000
00					C	0.000	0.793		100.00	0.963	0.000
L47	19.2465	0.895	7.008	8.000	A	0.000	8.000	8.000	100.00	8.635	0.000
20.5000-18.00					B	0.000	8.000		100.00	8.750	0.000
00					C	0.000	8.000		100.00	9.626	0.000
L48	17.8750	0.881	6.900	0.807	A	0.000	0.807	0.807	100.00	0.864	0.000
18.0000-17.75					B	0.000	0.807		100.00	0.875	0.000
00					C	0.000	0.807		100.00	0.963	0.000
L49	17.4164	0.876	6.862	2.160	A	0.000	2.160	2.160	100.00	2.303	0.000
17.7500-17.08					B	0.000	2.160		100.00	2.333	0.000
33					C	0.000	2.160		100.00	2.567	0.000
L50	16.9583	0.871	6.824	0.812	A	0.000	0.812	0.812	100.00	0.864	0.000
17.0833-16.83					B	0.000	0.812		100.00	0.875	0.000
33					C	0.000	0.812		100.00	0.963	0.000
L51	14.9087	0.85	6.659	12.625	A	0.000	12.625	12.625	100.00	13.852	0.000
16.8333-13.00					B	0.000	12.625		100.00	14.028	0.000
00					C	0.000	12.625		100.00	15.371	0.000
L52	12.8750	0.85	6.659	0.834	A	0.000	0.834	0.834	100.00	0.947	0.000
13.0000-12.75					B	0.000	0.834		100.00	0.958	0.000
00					C	0.000	0.834		100.00	1.046	0.000
L53	12.2912	0.85	6.659	3.071	A	0.000	3.071	3.071	100.00	3.472	0.000
12.7500-11.83					B	0.000	3.071		100.00	3.514	0.000

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	Client	Crown Castle International	Designed by	PRoach

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
33					C	0.000	3.071		100.00	3.835	0.000
L54	11.7083	0.85	6.659	0.841	A	0.000	0.841	0.841	100.00	0.947	0.000
11.8333-11.58					B	0.000	0.841		100.00	0.958	0.000
33					C	0.000	0.841		100.00	1.046	0.000
L55	9.0196	0.85	6.659	17.443	A	0.000	17.443	17.443	100.00	19.464	0.000
11.5833-6.483					B	0.000	17.443		100.00	19.550	0.000
3					C	0.000	17.443		100.00	15.637	0.000
L56	6.3666	0.85	6.659	0.811	A	0.000	0.811	0.811	100.00	0.903	0.000
6.4833-6.2500					B	0.000	0.811		100.00	0.894	0.000
					C	0.000	0.811		100.00	0.509	0.000
L57	3.7373	0.85	6.659	17.670	A	0.000	17.670	17.670	100.00	19.354	0.000
6.2500-1.2500					B	0.000	17.670		100.00	19.167	0.000
					C	0.000	17.670		100.00	10.918	0.000
L58	0.6242	0.85	6.659	4.502	A	0.000	4.502	4.502	100.00	4.005	0.000
1.2500-0.0000					B	0.000	4.502		100.00	3.958	0.000
					C	0.000	4.502		100.00	1.896	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 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
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

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	Client	Crown Castle International	Designed by	PRoach

<i>Comb. No.</i>	<i>Description</i>
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

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
L1	131 - 126	Pole	Max Tension	20	0.00	-0.00	-0.00
			Max. Compression	26	-0.37	0.01	0.02
			Max. Mx	20	-0.11	0.67	0.00
			Max. My	2	-0.11	0.00	0.67
			Max. Vy	8	0.27	-0.67	0.00
			Max. Vx	14	0.27	0.00	-0.66
			Max. Torque	20			0.00
L2	126 - 121	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-0.76	0.02	0.03
			Max. Mx	20	-0.23	2.75	0.00
			Max. My	2	-0.23	0.00	2.75
			Max. Vy	8	0.57	-2.75	-0.00
			Max. Vx	14	0.57	-0.00	-2.75
			Max. Torque	9			0.00
L3	121 - 116	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.56	-0.07	1.18
			Max. Mx	8	-1.86	-20.26	0.25
			Max. My	2	-1.86	0.00	20.55
			Max. Vy	20	-4.24	20.23	0.28
			Max. Vx	14	4.24	-0.02	-19.93
			Max. Torque	20			-0.37
L4	116 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.28	-0.16	1.05
			Max. Mx	8	-2.06	-42.31	0.21
			Max. My	2	-2.06	-0.00	42.56
			Max. Vy	20	-4.58	42.26	0.27
			Max. Vx	14	4.58	-0.04	-41.99
			Max. Torque	20			-0.37
L5	111 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.42	-0.18	1.02
			Max. Mx	8	-2.10	-46.93	0.20
			Max. My	2	-2.10	-0.00	47.18
			Max. Vy	20	-4.66	46.88	0.27
			Max. Vx	14	4.66	-0.05	-46.61
			Max. Torque	20			-0.37
L6	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.26	-1.30	1.47
			Max. Mx	8	-4.80	-97.75	-0.07
			Max. My	2	-4.80	0.15	98.22

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	Client	Crown Castle International	Designed by	PRoach

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	105 - 100	Pole	Max. Vy	20	-11.04	97.29	0.65
			Max. Vx	14	11.09	-0.54	-97.49
			Max. Torque	22			-0.69
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.64	-1.40	0.28
			Max. Mx	8	-5.31	-154.54	-0.66
			Max. My	2	-5.31	0.43	154.88
			Max. Vy	20	-12.12	154.11	0.94
L8	100 - 95	Pole	Max. Vx	14	12.10	-1.06	-154.84
			Max. Torque	11			-1.89
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.11	1.23	1.70
			Max. Mx	20	-9.18	231.67	2.58
			Max. My	2	-9.21	2.17	231.24
			Max. Vy	20	-18.56	231.67	2.58
			Max. Vx	14	18.40	-1.40	-230.50
L9	95 - 89.9	Pole	Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.66	1.02	1.50
			Max. Mx	20	-10.01	327.43	4.12
			Max. My	2	-10.05	3.41	325.74
			Max. Vy	20	-19.02	327.43	4.12
			Max. Vx	14	18.85	-3.11	-325.48
			Max. Torque	11			-1.88
L10	89.9 - 89.6667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.74	1.01	1.49
			Max. Mx	20	-10.06	331.87	4.19
			Max. My	2	-10.09	3.47	330.12
			Max. Vy	20	-19.04	331.87	4.19
			Max. Vx	14	18.87	-3.19	-329.88
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
L11	89.6667 - 84.5667	Pole	Max. Compression	26	-46.00	0.79	1.20
			Max. Mx	20	-13.19	439.38	5.71
			Max. My	14	-13.21	-4.92	-436.61
			Max. Vy	20	-23.31	439.38	5.71
			Max. Vx	14	23.14	-4.92	-436.61
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.11	0.78	1.18
L12	84.5667 - 84.3333	Pole	Max. Mx	20	-13.25	444.82	5.77
			Max. My	14	-13.27	-5.00	-442.01
			Max. Vy	20	-23.34	444.82	5.77
			Max. Vx	14	23.16	-5.00	-442.01
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.11	0.78	1.18
			Max. Mx	20	-13.25	444.82	5.77
L13	84.3333 - 82.9167	Pole	Max. My	14	-13.58	-5.48	-474.94
			Max. Vy	20	-23.49	477.97	6.19
			Max. Vx	14	23.30	-5.48	-474.94
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.76	0.72	1.08
			Max. Mx	20	-13.55	477.97	6.19
			Max. My	14	-13.58	-5.48	-474.94
L14	82.9167 - 82.6667	Pole	Max. Vy	20	-23.49	477.97	6.19
			Max. Vx	14	23.30	-5.48	-474.94
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.87	0.71	1.06
			Max. Mx	20	-13.61	483.85	6.26
			Max. My	14	-13.63	-5.56	-480.77
			Max. Vy	20	-23.51	483.85	6.26

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L15	82.6667 - 80.9792	Pole	Max. Vx	14	23.32	-5.56	-480.77
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.58	0.64	0.93
			Max. Mx	20	-13.89	523.63	6.75
			Max. My	14	-13.92	-6.13	-520.27
			Max. Vy	20	-23.68	523.63	6.75
L16	80.9792 - 80.7292	Pole	Max. Vx	14	23.48	-6.13	-520.27
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.68	0.62	0.91
			Max. Mx	20	-13.96	529.55	6.83
			Max. My	14	-13.99	-6.22	-526.15
			Max. Vy	20	-23.69	529.55	6.83
L17	80.7292 - 75.7292	Pole	Max. Vx	14	23.49	-6.22	-526.15
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.74	0.40	0.52
			Max. Mx	20	-14.90	649.01	8.28
			Max. My	14	-14.92	-7.91	-644.75
			Max. Vy	20	-24.13	649.01	8.28
L18	75.7292 - 70	Pole	Max. Vx	14	23.93	-7.91	-644.75
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.43	0.32	0.38
			Max. Mx	20	-15.22	690.83	8.78
			Max. My	14	-15.24	-8.50	-686.28
			Max. Vy	20	-24.29	690.83	8.78
L19	70 - 69	Pole	Max. Vx	14	24.09	-8.50	-686.28
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.28	0.08	-0.02
			Max. Mx	20	-16.71	813.49	10.22
			Max. My	14	-16.73	-10.20	-808.09
			Max. Vy	20	-24.80	813.49	10.22
L20	69 - 66.9833	Pole	Max. Vx	14	24.61	-10.20	-808.09
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.13	-0.01	-0.19
			Max. Mx	20	-17.15	863.66	10.81
			Max. My	14	-17.17	-10.88	-857.92
			Max. Vy	20	-24.99	863.66	10.81
L21	66.9833 - 66.7333	Pole	Max. Vx	14	24.79	-10.88	-857.92
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.24	-0.02	-0.21
			Max. Mx	20	-17.22	869.91	10.88
			Max. My	14	-17.23	-10.97	-864.13
			Max. Vy	20	-25.00	869.91	10.88
L22	66.7333 - 64.0833	Pole	Max. Vx	14	24.80	-10.97	-864.13
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.40	-0.11	-0.44
			Max. Mx	20	-17.78	936.44	11.64
			Max. My	14	-17.80	-11.87	-930.21
			Max. Vy	20	-25.25	936.44	11.64

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L23	64.0833 - 63.8333	Pole	Max. Vx	14	25.05	-11.87	-930.21
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.53	-0.12	-0.46
			Max. Mx	20	-17.87	942.75	11.71
			Max. My	14	-17.89	-11.95	-936.48
			Max. Vy	20	-25.26	942.75	11.71
			Max. Vx	14	25.06	-11.95	-936.48
L24	63.8333 - 62.4167	Pole	Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.21	-0.19	-0.58
			Max. Mx	20	-18.21	978.62	12.12
			Max. My	14	-18.23	-12.43	-972.11
			Max. Vy	20	-25.41	978.62	12.12
			Max. Vx	14	25.21	-12.43	-972.11
			Max. Torque	11			-1.88
L25	62.4167 - 62.1667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.34	-0.21	-0.60
			Max. Mx	20	-18.29	984.97	12.19
			Max. My	14	-18.31	-12.52	-978.42
			Max. Vy	20	-25.42	984.97	12.19
			Max. Vx	14	25.23	-12.52	-978.42
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
L26	62.1667 - 59.4583	Pole	Max. Compression	26	-57.75	-0.34	-0.84
			Max. Mx	20	-19.01	1054.17	12.97
			Max. My	14	-19.03	-13.44	-1047.17
			Max. Vy	20	-25.70	1054.17	12.97
			Max. Vx	14	25.51	-13.44	-1047.17
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.90	-0.35	-0.86
L27	59.4583 - 59.2083	Pole	Max. Mx	20	-19.11	1060.59	13.04
			Max. My	14	-19.12	-13.52	-1053.55
			Max. Vy	20	-25.72	1060.59	13.04
			Max. Vx	14	25.53	-13.52	-1053.55
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.79	-0.52	-1.14
			Max. Mx	20	-20.08	1143.62	13.95
L28	59.2083 - 56	Pole	Max. My	14	-20.10	-14.61	-1136.05
			Max. Vy	20	-26.06	1143.62	13.95
			Max. Vx	14	25.87	-14.61	-1136.05
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.94	-0.53	-1.16
			Max. Mx	20	-20.17	1150.14	14.02
			Max. My	14	-20.19	-14.70	-1142.52
L29	56 - 55.75	Pole	Max. Vy	20	-26.09	1150.14	14.02
			Max. Vx	14	25.89	-14.70	-1142.52
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.98	-0.77	-1.62
			Max. Mx	20	-21.78	1281.84	15.45
			Max. My	14	-21.80	-16.39	-1273.40
			Max. Vy	20	-26.62	1281.84	15.45
L30	55.75 - 50.75	Pole	Max. Mx	20	-21.78	1281.84	15.45
			Max. My	14	-21.80	-16.39	-1273.40
			Max. Vy	20	-26.62	1281.84	15.45
			Max. Vx	14	25.89	-14.70	-1142.52

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L31	50.75 - 45.75	Pole	Max. Vx	14	26.43	-16.39	-1273.40
			Max. Torque	11			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.05	-1.02	-2.09
			Max. Mx	20	-23.43	1416.19	16.86
			Max. My	14	-23.44	-18.09	-1406.93
			Max. Vy	20	-27.15	1416.19	16.86
L32	45.75 - 44.4833	Pole	Max. Vx	14	26.96	-18.09	-1406.93
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.88	-1.08	-2.21
			Max. Mx	20	-23.85	1450.64	17.22
			Max. My	14	-23.86	-18.51	-1441.18
			Max. Vy	20	-27.29	1450.64	17.22
L33	44.4833 - 44.2333	Pole	Max. Vx	14	27.10	-18.51	-1441.18
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.04	-1.09	-2.24
			Max. Mx	20	-23.94	1457.47	17.29
			Max. My	14	-23.95	-18.60	-1447.96
			Max. Vy	20	-27.31	1457.47	17.29
L34	44.2333 - 44.0833	Pole	Max. Vx	14	27.11	-18.60	-1447.96
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.13	-1.10	-2.25
			Max. Mx	20	-23.99	1461.56	17.33
			Max. My	14	-24.00	-18.65	-1452.03
			Max. Vy	20	-27.33	1461.56	17.33
L35	44.0833 - 39.0833	Pole	Max. Vx	14	27.13	-18.65	-1452.03
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.12	-1.37	-2.73
			Max. Mx	20	-25.53	1599.38	18.73
			Max. My	14	-25.54	-20.34	-1589.05
			Max. Vy	20	-27.84	1599.38	18.73
L36	39.0833 - 34.08	Pole	Max. Vx	14	27.64	-20.34	-1589.05
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.17	-1.38	-2.74
			Max. Mx	20	-25.57	1601.70	18.76
			Max. My	14	-25.58	-20.37	-1591.36
			Max. Vy	20	-27.86	1601.70	18.76
L37	34.08 - 34	Pole	Max. Vx	14	27.65	-20.37	-1591.36
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.85	-1.66	-3.23
			Max. Mx	20	-28.36	1742.35	20.15
			Max. My	14	-28.37	-22.06	-1731.20
			Max. Vy	20	-28.47	1742.35	20.15
L38	34 - 31.4583	Pole	Max. Vx	14	28.26	-22.06	-1731.20
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.39	-1.80	-3.48
			Max. Mx	20	-29.19	1814.91	20.86
			Max. My	14	-29.20	-22.92	-1803.37
			Max. Vy	20	-28.70	1814.91	20.86

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L39	31.4583 - 31.2083	Pole	Max. Vx	14	28.50	-22.92	-1803.37
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.54	-1.81	-3.50
			Max. Mx	20	-29.29	1822.09	20.93
			Max. My	14	-29.30	-23.01	-1810.50
			Max. Vy	20	-28.71	1822.09	20.93
			Max. Vx	14	28.52	-23.01	-1810.50
L40	31.2083 - 29.4583	Pole	Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.60	-1.91	-3.68
			Max. Mx	20	-29.85	1872.46	21.42
			Max. My	14	-29.86	-23.60	-1860.59
			Max. Vy	20	-28.90	1872.46	21.42
			Max. Vx	14	28.71	-23.60	-1860.59
			Max. Torque	11			-1.87
L41	29.4583 - 29.2083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.76	-1.92	-3.70
			Max. Mx	20	-29.96	1879.68	21.49
			Max. My	14	-29.97	-23.68	-1867.77
			Max. Vy	20	-28.91	1879.68	21.49
			Max. Vx	14	28.71	-23.68	-1867.77
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
L42	29.2083 - 26.8333	Pole	Max. Compression	26	-79.28	-2.00	-3.91
			Max. Mx	20	-30.75	1948.56	22.14
			Max. My	14	-30.76	-24.48	-1936.28
			Max. Vy	20	-29.14	1948.56	22.14
			Max. Vx	14	28.95	-24.48	-1936.28
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.46	-2.00	-3.93
L43	26.8333 - 26.5833	Pole	Max. Mx	20	-30.87	1955.85	22.21
			Max. My	14	-30.87	-24.57	-1943.53
			Max. Vy	20	-29.16	1955.85	22.21
			Max. Vx	14	28.96	-24.57	-1943.53
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.08	-2.16	-4.37
			Max. Mx	20	-32.96	2102.83	23.59
L44	26.5833 - 21.5833	Pole	Max. My	14	-32.97	-26.25	-2089.73
			Max. Vy	20	-29.67	2102.83	23.59
			Max. Vx	14	29.48	-26.25	-2089.73
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.68	-2.20	-4.44
			Max. Mx	20	-33.32	2127.57	23.82
			Max. My	14	-33.32	-26.53	-2114.34
L45	21.5833 - 20.75	Pole	Max. Vy	20	-29.75	2127.57	23.82
			Max. Vx	14	29.56	-26.53	-2114.34
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.87	-2.21	-4.47
			Max. Mx	20	-33.43	2135.00	23.88
			Max. My	14	-33.43	-26.53	-2114.34
			Max. Vy	20	-29.75	2127.57	23.82
L46	20.75 - 20.5	Pole	Max. Vx	14	29.56	-26.53	-2114.34
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.87	-2.21	-4.47

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L47	20.5 - 18	Pole	Max. My	14	-33.44	-26.61	-2121.74			
			Max. Vy	20	-29.77	2135.00	23.88			
			Max. Vx	14	29.58	-26.61	-2121.74			
			Max. Torque	11			-1.87			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-85.77	-2.35	-4.73			
			Max. Mx	20	-34.54	2209.70	24.57			
			Max. My	14	-34.54	-27.45	-2196.05			
			Max. Vy	20	-30.02	2209.70	24.57			
			Max. Vx	14	29.83	-27.45	-2196.05			
L48	18 - 17.75	Pole	Max. Torque	11			-1.87			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-85.96	-2.37	-4.75			
			Max. Mx	20	-34.66	2217.21	24.64			
			Max. My	14	-34.66	-27.54	-2203.52			
			Max. Vy	20	-30.04	2217.21	24.64			
			Max. Vx	14	29.85	-27.54	-2203.52			
			Max. Torque	11			-1.87			
			Max Tension	1	0.00	0.00	0.00			
			L49	17.75 - 17.0833	Pole	Max. Compression	26	-86.47	-2.40	-4.82
Max. Mx	20	-34.95				2237.25	24.82			
Max. My	14	-34.95				-27.76	-2223.45			
Max. Vy	20	-30.11				2237.25	24.82			
Max. Vx	14	29.91				-27.76	-2223.45			
Max. Torque	11						-1.87			
Max Tension	1	0.00				0.00	0.00			
L50	17.0833 - 16.8333	Pole				Max. Compression	26	-86.65	-2.42	-4.84
						Max. Mx	20	-35.06	2244.77	24.89
						Max. My	14	-35.06	-27.84	-2230.94
			Max. Vy	20	-30.13	2244.77	24.89			
			Max. Vx	14	29.93	-27.84	-2230.94			
			Max. Torque	11			-1.87			
			Max Tension	1	0.00	0.00	0.00			
			L51	16.8333 - 13	Pole	Max. Compression	26	-89.40	-2.63	-5.24
						Max. Mx	20	-36.62	2360.87	25.93
						Max. My	14	-36.63	-29.13	-2346.45
Max. Vy	20	-30.48				2360.87	25.93			
Max. Vx	14	30.29				-29.13	-2346.45			
Max. Torque	11						-1.87			
Max Tension	1	0.00				0.00	0.00			
L52	13 - 12.75	Pole				Max. Compression	26	-89.60	-2.65	-5.26
						Max. Mx	20	-36.76	2368.49	25.99
						Max. My	14	-36.76	-29.21	-2354.03
			Max. Vy	20	-30.50	2368.49	25.99			
			Max. Vx	14	30.30	-29.21	-2354.03			
			Max. Torque	11			-1.87			
			Max Tension	1	0.00	0.00	0.00			
			L53	12.75 - 11.8333	Pole	Max. Compression	26	-90.33	-2.69	-5.36
						Max. Mx	20	-37.19	2396.47	26.24
						Max. My	14	-37.20	-29.52	-2381.88
Max. Vy	20	-30.59				2396.47	26.24			
Max. Vx	14	30.40				-29.52	-2381.88			
Max. Torque	11						-1.87			
Max Tension	1	0.00				0.00	0.00			
L54	11.8333 - 11.5833	Pole				Max. Compression	26	-90.51	-2.71	-5.38
						Max. Mx	20	-37.30	2404.12	26.31
						Max. My	14	-37.31	-29.60	-2389.49

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L55	11.5833 - 6.4833	Pole	Max. Vy	20	-30.61	2404.12	26.31
			Max. Vx	14	30.42	-29.60	-2389.49
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.24	-2.95	-5.87
			Max. Mx	20	-39.59	2561.37	27.68
			Max. My	14	-39.59	-31.30	-2545.97
			Max. Vy	20	-31.09	2561.37	27.68
			Max. Vx	14	30.90	-31.30	-2545.97
			Max. Torque	11			-1.87
L56	6.4833 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.40	-2.96	-5.89
			Max. Mx	20	-39.70	2568.62	27.74
			Max. My	14	-39.70	-31.38	-2553.18
			Max. Vy	20	-31.11	2568.62	27.74
			Max. Vx	14	30.92	-31.38	-2553.18
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.88	-3.16	-6.33
			Max. Mx	20	-41.97	2725.27	29.08
L57	6.25 - 1.25	Pole	Max. My	14	-41.97	-33.04	-2709.10
			Max. Vy	20	-31.59	2725.27	29.08
			Max. Vx	14	31.40	-33.04	-2709.10
			Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.67	-3.20	-6.42
			Max. Mx	20	-42.55	2764.81	29.41
			Max. My	14	-42.55	-33.46	-2748.45
			Max. Vy	20	-31.72	2764.81	29.41
			Max. Vx	14	31.52	-33.46	-2748.45
L58	1.25 - 0	Pole	Max. Torque	11			-1.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.67	-3.20	-6.42
			Max. Mx	20	-42.55	2764.81	29.41
			Max. My	14	-42.55	-33.46	-2748.45

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	98.67	0.00	-0.00
	Max. H _x	21	31.92	31.70	0.30
	Max. H _z	3	31.92	0.24	31.43
	Max. M _x	2	2736.65	0.24	31.43
	Max. M _z	8	2757.64	-31.63	-0.39
	Max. Torsion	24	1.71	16.12	27.27
	Min. Vert	21	31.92	31.70	0.30
	Min. H _x	8	42.56	-31.63	-0.39
	Min. H _z	14	42.56	-0.32	-31.51
	Min. M _x	14	-2748.45	-0.32	-31.51
	Min. M _z	20	-2764.81	31.70	0.30
	Min. Torsion	11	-1.87	-27.53	-15.97

Tower Mast Reaction Summary

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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	35.46	0.00	0.00	1.45	0.10	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	42.56	-0.24	-31.43	-2736.65	24.87	-0.97
0.9 Dead+1.6 Wind 0 deg - No Ice	31.92	-0.24	-31.43	-2716.03	24.63	-0.95
1.2 Dead+1.6 Wind 30 deg - No Ice	42.56	16.79	-29.17	-2507.81	-1442.82	-0.70
0.9 Dead+1.6 Wind 30 deg - No Ice	31.92	16.79	-29.17	-2489.11	-1431.87	-0.68
1.2 Dead+1.6 Wind 60 deg - No Ice	42.56	31.44	-17.94	-1517.48	-2668.96	0.57
0.9 Dead+1.6 Wind 60 deg - No Ice	31.92	31.44	-17.94	-1506.44	-2648.85	0.59
1.2 Dead+1.6 Wind 90 deg - No Ice	42.56	31.63	0.39	41.82	-2757.64	1.35
0.9 Dead+1.6 Wind 90 deg - No Ice	31.92	31.63	0.39	41.06	-2736.47	1.37
1.2 Dead+1.6 Wind 120 deg - No Ice	42.56	27.53	15.97	1397.54	-2402.56	1.86
0.9 Dead+1.6 Wind 120 deg - No Ice	31.92	27.53	15.97	1386.35	-2384.11	1.87
1.2 Dead+1.6 Wind 150 deg - No Ice	42.56	16.10	27.37	2389.03	-1408.09	1.76
0.9 Dead+1.6 Wind 150 deg - No Ice	31.92	16.10	27.37	2370.22	-1397.29	1.76
1.2 Dead+1.6 Wind 180 deg - No Ice	42.56	0.32	31.51	2748.45	-33.46	1.42
0.9 Dead+1.6 Wind 180 deg - No Ice	31.92	0.32	31.51	2726.87	-33.23	1.40
1.2 Dead+1.6 Wind 210 deg - No Ice	42.56	-16.81	29.22	2515.86	1445.11	0.91
0.9 Dead+1.6 Wind 210 deg - No Ice	31.92	-16.81	29.22	2496.25	1434.05	0.89
1.2 Dead+1.6 Wind 240 deg - No Ice	42.56	-31.57	17.89	1516.45	2682.29	-1.13
0.9 Dead+1.6 Wind 240 deg - No Ice	31.92	-31.57	17.89	1504.58	2661.99	-1.15
1.2 Dead+1.6 Wind 270 deg - No Ice	42.56	-31.70	-0.30	-29.41	2764.81	-1.09
0.9 Dead+1.6 Wind 270 deg - No Ice	31.92	-31.70	-0.30	-29.60	2743.53	-1.11
1.2 Dead+1.6 Wind 300 deg - No Ice	42.56	-27.55	-15.92	-1388.82	2405.31	-1.56
0.9 Dead+1.6 Wind 300 deg - No Ice	31.92	-27.55	-15.92	-1378.56	2386.77	-1.57
1.2 Dead+1.6 Wind 330 deg - No Ice	42.56	-16.12	-27.27	-2375.28	1411.12	-1.71
0.9 Dead+1.6 Wind 330 deg - No Ice	31.92	-16.12	-27.27	-2357.43	1400.22	-1.71
1.2 Dead+1.0 Ice+1.0 Temp	98.67	-0.00	0.00	6.42	-3.20	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	98.67	-0.05	-7.84	-735.94	1.69	-0.25
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	98.67	4.64	-8.06	-713.66	-418.13	-0.23
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	98.67	8.81	-5.04	-438.84	-782.94	0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	98.67	9.45	0.08	15.24	-843.47	0.14
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	98.67	7.16	4.15	394.74	-672.38	0.29
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	98.67	4.11	7.02	666.34	-390.55	0.34

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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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	98.67	0.06	7.86	751.25	-10.46	0.35
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	98.67	-4.65	8.07	728.14	411.80	0.28
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	98.67	-8.84	5.04	451.29	779.08	-0.45
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	98.67	-9.46	-0.06	0.21	838.24	-0.08
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	98.67	-7.16	-4.14	-380.12	666.15	-0.23
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	98.67	-4.12	-7.00	-650.59	384.38	-0.34
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	35.46	-0.05	-6.72	-582.08	5.39	-0.20
Dead+Wind 30 deg - Service	35.46	3.59	-6.24	-533.40	-307.42	-0.18
Dead+Wind 60 deg - Service	35.46	6.73	-3.84	-322.39	-568.84	-0.05
Dead+Wind 90 deg - Service	35.46	6.77	0.08	10.00	-587.55	0.29
Dead+Wind 120 deg - Service	35.46	5.89	3.42	298.92	-511.92	0.40
Dead+Wind 150 deg - Service	35.46	3.44	5.86	510.20	-299.98	0.38
Dead+Wind 180 deg - Service	35.46	0.07	6.74	586.77	-7.04	0.31
Dead+Wind 210 deg - Service	35.46	-3.60	6.25	537.30	308.09	0.23
Dead+Wind 240 deg - Service	35.46	-6.75	3.83	324.35	571.87	-0.06
Dead+Wind 270 deg - Service	35.46	-6.78	-0.06	-5.18	589.27	-0.24
Dead+Wind 300 deg - Service	35.46	-5.89	-3.41	-294.88	512.68	-0.34
Dead+Wind 330 deg - Service	35.46	-3.45	-5.83	-505.11	300.81	-0.37

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.46	0.00	-0.00	35.46	-0.00	0.000%
2	-0.24	-42.56	-31.43	0.24	42.56	31.43	0.000%
3	-0.24	-31.92	-31.43	0.24	31.92	31.43	0.000%
4	16.79	-42.56	-29.17	-16.79	42.56	29.17	0.000%
5	16.79	-31.92	-29.17	-16.79	31.92	29.17	0.000%
6	31.44	-42.56	-17.94	-31.44	42.56	17.94	0.000%
7	31.44	-31.92	-17.94	-31.44	31.92	17.94	0.000%
8	31.63	-42.56	0.39	-31.63	42.56	-0.39	0.000%
9	31.63	-31.92	0.39	-31.63	31.92	-0.39	0.000%
10	27.53	-42.56	15.97	-27.53	42.56	-15.97	0.000%
11	27.53	-31.92	15.97	-27.53	31.92	-15.97	0.000%
12	16.10	-42.56	27.37	-16.10	42.56	-27.37	0.000%
13	16.10	-31.92	27.37	-16.10	31.92	-27.37	0.000%
14	0.32	-42.56	31.51	-0.32	42.56	-31.51	0.000%
15	0.32	-31.92	31.51	-0.32	31.92	-31.51	0.001%
16	-16.81	-42.56	29.22	16.81	42.56	-29.22	0.000%
17	-16.81	-31.92	29.22	16.81	31.92	-29.22	0.000%
18	-31.57	-42.56	17.89	31.57	42.56	-17.89	0.000%
19	-31.57	-31.92	17.89	31.57	31.92	-17.89	0.000%
20	-31.70	-42.56	-0.30	31.70	42.56	0.30	0.001%
21	-31.70	-31.92	-0.30	31.70	31.92	0.30	0.001%
22	-27.55	-42.56	-15.92	27.55	42.56	15.92	0.000%
23	-27.55	-31.92	-15.92	27.55	31.92	15.92	0.000%
24	-16.12	-42.56	-27.27	16.12	42.56	27.27	0.000%
25	-16.12	-31.92	-27.27	16.12	31.92	27.27	0.000%
26	0.00	-98.67	0.00	0.00	98.67	-0.00	0.000%
27	-0.05	-98.67	-7.84	0.05	98.67	7.84	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
28	4.64	-98.67	-8.06	-4.64	98.67	8.06	0.000%
29	8.81	-98.67	-5.04	-8.81	98.67	5.04	0.000%
30	9.45	-98.67	0.08	-9.45	98.67	-0.08	0.000%
31	7.16	-98.67	4.15	-7.16	98.67	-4.15	0.000%
32	4.11	-98.67	7.02	-4.11	98.67	-7.02	0.000%
33	0.06	-98.67	7.86	-0.06	98.67	-7.86	0.000%
34	-4.65	-98.67	8.07	4.65	98.67	-8.07	0.000%
35	-8.84	-98.67	5.04	8.84	98.67	-5.04	0.000%
36	-9.46	-98.67	-0.06	9.46	98.67	0.06	0.000%
37	-7.16	-98.67	-4.14	7.16	98.67	4.14	0.000%
38	-4.12	-98.67	-7.00	4.12	98.67	7.00	0.000%
39	-0.05	-35.46	-6.72	0.05	35.46	6.72	0.001%
40	3.59	-35.46	-6.24	-3.59	35.46	6.24	0.001%
41	6.73	-35.46	-3.84	-6.73	35.46	3.84	0.000%
42	6.77	-35.46	0.08	-6.77	35.46	-0.08	0.001%
43	5.89	-35.46	3.42	-5.89	35.46	-3.42	0.000%
44	3.44	-35.46	5.86	-3.44	35.46	-5.86	0.001%
45	0.07	-35.46	6.74	-0.07	35.46	-6.74	0.001%
46	-3.60	-35.46	6.25	3.60	35.46	-6.25	0.000%
47	-6.75	-35.46	3.83	6.75	35.46	-3.83	0.000%
48	-6.78	-35.46	-0.06	6.78	35.46	0.06	0.001%
49	-5.90	-35.46	-3.41	5.89	35.46	3.41	0.001%
50	-3.45	-35.46	-5.83	3.45	35.46	5.83	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	19	0.00000001	0.00013284
3	Yes	19	0.00000001	0.00009690
4	Yes	23	0.00000001	0.00010364
5	Yes	23	0.00000001	0.00007383
6	Yes	23	0.00000001	0.00011470
7	Yes	23	0.00000001	0.00008092
8	Yes	20	0.00000001	0.00009104
9	Yes	19	0.00000001	0.00014157
10	Yes	23	0.00000001	0.00010348
11	Yes	23	0.00000001	0.00007434
12	Yes	23	0.00000001	0.00009582
13	Yes	22	0.00000001	0.00014724
14	Yes	19	0.00000001	0.00008766
15	Yes	18	0.00000001	0.00012371
16	Yes	23	0.00000001	0.00010784
17	Yes	23	0.00000001	0.00007680
18	Yes	23	0.00000001	0.00011925
19	Yes	23	0.00000001	0.00008426
20	Yes	18	0.00000001	0.00014743
21	Yes	18	0.00000001	0.00009968
22	Yes	23	0.00000001	0.00009570
23	Yes	22	0.00000001	0.00014697
24	Yes	23	0.00000001	0.00010286
25	Yes	23	0.00000001	0.00007391
26	Yes	8	0.00000001	0.00002350
27	Yes	23	0.00000001	0.00010163
28	Yes	23	0.00000001	0.00011820

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29	Yes	23	0.00000001	0.00012816
30	Yes	23	0.00000001	0.00011103
31	Yes	23	0.00000001	0.00011245
32	Yes	23	0.00000001	0.00011156
33	Yes	23	0.00000001	0.00010239
34	Yes	23	0.00000001	0.00011871
35	Yes	23	0.00000001	0.00012882
36	Yes	23	0.00000001	0.00011075
37	Yes	23	0.00000001	0.00011127
38	Yes	23	0.00000001	0.00011053
39	Yes	16	0.00000001	0.00011874
40	Yes	17	0.00000001	0.00014979
41	Yes	18	0.00000001	0.00008825
42	Yes	16	0.00000001	0.00012767
43	Yes	18	0.00000001	0.00008202
44	Yes	17	0.00000001	0.00013762
45	Yes	16	0.00000001	0.00012268
46	Yes	18	0.00000001	0.00008379
47	Yes	18	0.00000001	0.00008960
48	Yes	16	0.00000001	0.00011918
49	Yes	17	0.00000001	0.00013741
50	Yes	18	0.00000001	0.00008095

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 126	20.61	47	1.44	0.00
L2	126 - 121	19.10	47	1.44	0.00
L3	121 - 116	17.60	47	1.44	0.00
L4	116 - 111	16.10	47	1.42	0.00
L5	111 - 110	14.63	47	1.38	0.00
L6	110 - 105	14.34	47	1.37	0.00
L7	105 - 100	12.93	47	1.32	0.00
L8	100 - 95	11.58	47	1.24	0.00
L9	95 - 89.9	10.33	47	1.15	0.00
L10	89.9 - 89.6667	9.13	47	1.09	0.00
L11	89.6667 - 84.5667	9.08	47	1.09	0.00
L12	84.5667 - 84.3333	7.95	47	1.03	0.00
L13	84.3333 - 82.9167	7.90	47	1.03	0.00
L14	82.9167 - 82.6667	7.59	47	1.01	0.00
L15	82.6667 - 80.9792	7.54	47	1.01	0.00
L16	80.9792 - 80.7292	7.19	47	0.98	0.00
L17	80.7292 - 75.7292	7.14	47	0.97	0.00
L18	75.7292 - 70	6.17	47	0.87	0.00
L19	74 - 69	5.86	47	0.84	0.00
L20	69 - 66.9833	5.01	47	0.78	0.00
L21	66.9833 - 66.7333	4.69	47	0.74	0.00
L22	66.7333 - 64.0833	4.65	47	0.74	0.00
L23	64.0833 - 63.8333	4.26	47	0.68	0.00
L24	63.8333 - 62.4167	4.22	47	0.68	0.00
L25	62.4167 - 62.1667	4.02	47	0.66	0.00
L26	62.1667 - 59.4583	3.99	47	0.66	0.00
L27	59.4583 - 59.2083	3.63	47	0.62	0.00
L28	59.2083 - 56	3.60	47	0.62	0.00
L29	56 - 55.75	3.20	47	0.58	0.00
L30	55.75 - 50.75	3.17	47	0.57	0.00
L31	50.75 - 45.75	2.59	47	0.52	0.00
L32	45.75 - 44.4833	2.09	47	0.46	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L33	44.4833 - 44.2333	1.97	47	0.44	0.00
L34	44.2333 - 44.0833	1.94	47	0.44	0.00
L35	44.0833 - 39.0833	1.93	47	0.44	0.00
L36	39.0833 - 34.08	1.51	47	0.37	0.00
L37	39 - 34	1.50	47	0.37	0.00
L38	34 - 31.4583	1.13	47	0.34	0.00
L39	31.4583 - 31.2083	0.96	47	0.31	0.00
L40	31.2083 - 29.4583	0.94	47	0.30	0.00
L41	29.4583 - 29.2083	0.83	47	0.28	0.00
L42	29.2083 - 26.8333	0.82	47	0.28	0.00
L43	26.8333 - 26.5833	0.69	47	0.25	0.00
L44	26.5833 - 21.5833	0.68	47	0.25	0.00
L45	21.5833 - 20.75	0.44	47	0.20	0.00
L46	20.75 - 20.5	0.41	47	0.19	0.00
L47	20.5 - 18	0.40	47	0.19	0.00
L48	18 - 17.75	0.31	47	0.17	0.00
L49	17.75 - 17.0833	0.30	47	0.16	0.00
L50	17.0833 - 16.8333	0.28	47	0.16	0.00
L51	16.8333 - 13	0.27	47	0.15	0.00
L52	13 - 12.75	0.16	47	0.12	0.00
L53	12.75 - 11.8333	0.15	47	0.11	0.00
L54	11.8333 - 11.5833	0.13	47	0.11	0.00
L55	11.5833 - 6.4833	0.13	47	0.10	0.00
L56	6.4833 - 6.25	0.04	47	0.06	0.00
L57	6.25 - 1.25	0.04	47	0.06	0.00
L58	1.25 - 0	0.00	47	0.01	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	47	17.60	1.44	0.00	33523
107.0000	BXA-80063/4CF	47	13.48	1.34	0.00	5055
101.0000	VHLP2.5-11	47	11.84	1.26	0.00	3389
99.0000	800MHz 2X50W RRH W/FILTER	47	11.32	1.22	0.00	3282
97.0000	TIMING 2000	47	10.82	1.18	0.00	3389
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	47	8.48	1.06	0.00	5202

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 126	96.49	18	6.77	0.01
L2	126 - 121	89.43	18	6.77	0.01
L3	121 - 116	82.37	18	6.76	0.01
L4	116 - 111	75.35	18	6.68	0.01
L5	111 - 110	68.48	18	6.49	0.02
L6	110 - 105	67.13	18	6.44	0.02
L7	105 - 100	60.52	18	6.20	0.02

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	100 - 95	54.24	18	5.83	0.02
L9	95 - 89.9	48.37	18	5.39	0.01
L10	89.9 - 89.6667	42.78	18	5.10	0.01
L11	89.6667 - 84.5667	42.53	18	5.09	0.01
L12	84.5667 - 84.3333	37.24	18	4.83	0.01
L13	84.3333 - 82.9167	37.00	18	4.82	0.01
L14	82.9167 - 82.6667	35.59	18	4.74	0.01
L15	82.6667 - 80.9792	35.34	18	4.72	0.01
L16	80.9792 - 80.7292	33.70	18	4.58	0.01
L17	80.7292 - 75.7292	33.46	18	4.56	0.01
L18	75.7292 - 70	28.94	18	4.09	0.01
L19	74 - 69	27.49	18	3.93	0.01
L20	69 - 66.9833	23.50	18	3.66	0.01
L21	66.9833 - 66.7333	21.99	18	3.47	0.01
L22	66.7333 - 64.0833	21.81	18	3.45	0.01
L23	64.0833 - 63.8333	19.97	18	3.21	0.00
L24	63.8333 - 62.4167	19.80	18	3.19	0.00
L25	62.4167 - 62.1667	18.87	18	3.09	0.00
L26	62.1667 - 59.4583	18.71	18	3.08	0.00
L27	59.4583 - 59.2083	17.01	18	2.90	0.00
L28	59.2083 - 56	16.86	18	2.89	0.00
L29	56 - 55.75	14.98	18	2.71	0.00
L30	55.75 - 50.75	14.84	18	2.69	0.00
L31	50.75 - 45.75	12.16	18	2.42	0.00
L32	45.75 - 44.4833	9.78	18	2.14	0.00
L33	44.4833 - 44.2333	9.22	18	2.07	0.00
L34	44.2333 - 44.0833	9.11	18	2.06	0.00
L35	44.0833 - 39.0833	9.05	18	2.05	0.00
L36	39.0833 - 34.08	7.06	18	1.74	0.00
L37	39 - 34	7.03	18	1.74	0.00
L38	34 - 31.4583	5.29	18	1.58	0.00
L39	31.4583 - 31.2083	4.49	18	1.43	0.00
L40	31.2083 - 29.4583	4.41	18	1.42	0.00
L41	29.4583 - 29.2083	3.91	18	1.31	0.00
L42	29.2083 - 26.8333	3.84	18	1.30	0.00
L43	26.8333 - 26.5833	3.23	18	1.16	0.00
L44	26.5833 - 21.5833	3.17	18	1.15	0.00
L45	21.5833 - 20.75	2.08	18	0.93	0.00
L46	20.75 - 20.5	1.92	18	0.90	0.00
L47	20.5 - 18	1.88	18	0.88	0.00
L48	18 - 17.75	1.44	18	0.78	0.00
L49	17.75 - 17.0833	1.40	18	0.77	0.00
L50	17.0833 - 16.8333	1.29	18	0.74	0.00
L51	16.8333 - 13	1.26	18	0.73	0.00
L52	13 - 12.75	0.75	18	0.55	0.00
L53	12.75 - 11.8333	0.72	18	0.54	0.00
L54	11.8333 - 11.5833	0.62	18	0.50	0.00
L55	11.5833 - 6.4833	0.59	18	0.49	0.00
L56	6.4833 - 6.25	0.18	18	0.27	0.00
L57	6.25 - 1.25	0.17	18	0.26	0.00
L58	1.25 - 0	0.01	18	0.05	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	18	82.37	6.76	0.01	8065
107.0000	BXA-80063/4CF	18	63.14	6.30	0.02	1118
101.0000	VHLP2.5-11	18	55.46	5.92	0.02	744
99.0000	800MHz 2X50W RRR W/FILTER	18	53.03	5.74	0.02	718
97.0000	TIMING 2000	18	50.67	5.55	0.02	738
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	18	39.73	4.95	0.01	1130

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 P _u / φP _n
L1	131 - 126 (1)	TP11.7155x10.525x0.1875	5.0000	0.0000	0.0	6.9600	-0.10	513.02	0.000
L2	126 - 121 (2)	TP12.906x11.7155x0.1875	5.0000	0.0000	0.0	7.6788	-0.22	566.00	0.000
L3	121 - 116 (3)	TP14.0964x12.906x0.1875	5.0000	0.0000	0.0	8.3975	-1.80	618.98	0.003
L4	116 - 111 (4)	TP15.2869x14.0964x0.1875	5.0000	0.0000	0.0	9.1163	-1.97	671.96	0.003
L5	111 - 110 (5)	TP15.525x15.2869x0.1875	1.0000	0.0000	0.0	9.2600	-2.01	682.56	0.003
L6	110 - 105 (6)	TP16.7758x15.525x0.25	5.0000	0.0000	0.0	13.3032	-4.64	980.58	0.005
L7	105 - 100 (7)	TP18.0265x16.7758x0.25	5.0000	0.0000	0.0	14.3101	-5.13	1054.80	0.005
L8	100 - 95 (8)	TP19.2773x18.0265x0.25	5.0000	0.0000	0.0	15.3169	-8.95	1129.01	0.008
L9	95 - 89.9 (9)	TP20.553x19.2773x0.5	5.1000	0.0000	0.0	32.2854	-9.77	2379.75	0.004
L10	89.9 - 89.6667 (10)	TP20.6114x20.553x0.5	0.2333	0.0000	0.0	32.3793	-9.81	2386.68	0.004
L11	89.6667 - 84.5667 (11)	TP21.8871x20.6114x0.6375	5.1000	0.0000	0.0	43.6202	-12.91	3215.24	0.004
L12	84.5667 - 84.3333 (12)	TP21.9455x21.8871x0.6375	0.2334	0.0000	0.0	43.7400	-12.97	3224.08	0.004
L13	84.3333 - 82.9167 (13)	TP22.2999x21.9455x0.625	1.4166	0.0000	0.0	43.6207	-13.27	3215.28	0.004
L14	82.9167 - 82.6667 (14)	TP22.3624x22.2999x0.3938	0.2500	0.0000	0.0	27.8535	-13.33	2053.08	0.006
L15	82.6667 - 80.9792 (15)	TP22.7846x22.3624x0.3875	1.6875	0.0000	0.0	27.9459	-13.61	2059.89	0.007
L16	80.9792 - 80.7292 (16)	TP22.8471x22.7846x0.3875	0.2500	0.0000	0.0	28.0240	-13.68	2065.65	0.007
L17	80.7292 - 75.7292 (17)	TP24.0978x22.8471x0.3813	5.0000	0.0000	0.0	29.1151	-14.61	2146.07	0.007
L18	75.7292 - 70 (18)	TP25.531x24.0978x0.3813	5.7292	0.0000	0.0	29.6461	-14.94	2185.21	0.007
L19	70 - 69 (19)	TP25.281x24.0304x0.4375	5.0000	0.0000	0.0	34.9982	-16.43	2579.72	0.006
L20	69 - 66.9833 (20)	TP25.7854x25.281x0.4375	2.0167	0.0000	0.0	35.7088	-16.87	2632.10	0.006
L21	66.9833 - 66.7333 (21)	TP25.8479x25.7854x0.4375	0.2500	0.0000	0.0	35.7969	-16.94	2638.59	0.006
L22	66.7333 - 64.0833 (22)	TP26.5107x25.8479x0.4313	2.6500	0.0000	0.0	36.2146	-17.52	2669.38	0.007
L23	64.0833 - 63.8333 (23)	TP26.5732x26.5107x0.575	0.2500	0.0000	0.0	48.1358	-17.60	3548.09	0.005
L24	63.8333 - 62.4167 (24)	TP26.9276x26.5732x0.5625	1.4166	0.0000	0.0	47.7537	-17.95	3519.93	0.005
L25	62.4167 -	TP26.9901x26.9276x0.6125	0.2500	0.0000	0.0	52.0232	-18.03	3834.63	0.005

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L26	62.1667 (25) 62.1667 - 59.4583 (26)	TP27.6675x26.9901x0.6125	2.7084	0.0000	0.0	53.3592	-18.76	3933.11	0.005
L27	59.4583 - 59.2083 (27)	TP27.73x27.6675x0.725	0.2500	0.0000	0.0	63.0432	-18.85	4646.92	0.004
L28	59.2083 - 56 (28)	TP28.5325x27.73x0.7125	3.2083	0.0000	0.0	63.8260	-19.83	4704.61	0.004
L29	56 - 55.75 (29)	TP28.595x28.5325x0.7375	0.2500	0.0000	0.0	66.1546	-19.92	4876.26	0.004
L30	55.75 - 50.75 (30)	TP29.8456x28.595x0.7125	5.0000	0.0000	0.0	66.8386	-21.54	4926.67	0.004
L31	50.75 - 45.75 (31)	TP31.0962x29.8456x0.7	5.0000	0.0000	0.0	68.5129	-23.20	5050.09	0.005
L32	45.75 - 44.4833 (32)	TP31.413x31.0962x0.6875	1.2667	0.0000	0.0	68.0185	-23.63	5013.65	0.005
L33	44.4833 - 44.2333 (33)	TP31.4755x31.413x0.6125	0.2500	0.0000	0.0	60.8696	-23.72	4486.70	0.005
L34	44.2333 - 44.0833 (34)	TP31.513x31.4755x0.6125	0.1500	0.0000	0.0	60.9436	-23.77	4492.15	0.005
L35	44.0833 - 39.0833 (35)	TP32.7636x31.513x0.6	5.0000	0.0000	0.0	62.1401	-25.33	4580.34	0.006
L36	39.0833 - 34.08 (36)	TP34.015x32.7636x0.6	5.0033	0.0000	0.0	62.1803	-25.38	4583.31	0.006
L37	34.08 - 34 (37)	TP33.4082x32.1594x0.6313	5.0000	0.0000	0.0	66.6285	-28.18	4911.18	0.006
L38	34 - 31.4583 (38)	TP34.043x33.4082x0.6188	2.5417	0.0000	0.0	66.5990	-29.02	4909.01	0.006
L39	31.4583 - 31.2083 (39)	TP34.1055x34.043x0.6188	0.2500	0.0000	0.0	66.7234	-29.12	4918.18	0.006
L40	31.2083 - 29.4583 (40)	TP34.5426x34.1055x0.6188	1.7500	0.0000	0.0	67.5943	-29.69	4982.38	0.006
L41	29.4583 - 29.2083 (41)	TP34.605x34.5426x0.6188	0.2500	0.0000	0.0	67.7187	-29.80	4991.55	0.006
L42	29.2083 - 26.8333 (42)	TP35.1982x34.605x0.6188	2.3750	0.0000	0.0	68.9006	-30.61	5078.67	0.006
L43	26.8333 - 26.5833 (43)	TP35.2606x35.1982x0.8438	0.2500	0.0000	0.0	93.5117	-30.73	6892.75	0.004
L44	26.5833 - 21.5833 (44)	TP36.5094x35.2606x0.8188	5.0000	0.0000	0.0	94.0995	-32.84	6936.08	0.005
L45	21.5833 - 20.75 (45)	TP36.7175x36.5094x0.8188	0.8333	0.0000	0.0	94.6483	-33.20	6976.52	0.005
L46	20.75 - 20.5 (46)	TP36.78x36.7175x0.8188	0.2500	0.0000	0.0	94.8129	-33.32	6988.66	0.005
L47	20.5 - 18 (47)	TP37.4044x36.78x0.8063	2.5000	0.0000	0.0	95.0190	-34.44	7003.85	0.005
L48	18 - 17.75 (48)	TP37.4668x37.4044x0.8188	0.2500	0.0000	0.0	96.6238	-34.56	7122.14	0.005
L49	17.75 - 17.0833 (49)	TP37.6333x37.4668x0.8188	0.6667	0.0000	0.0	97.0628	-34.86	7154.50	0.005
L50	17.0833 - 16.8333 (50)	TP37.6957x37.6333x0.7313	0.2500	0.0000	0.0	87.0433	-34.96	6415.97	0.005
L51	16.8333 - 13 (51)	TP38.6531x37.6957x0.7188	3.8333	0.0000	0.0	87.8004	-36.55	6471.77	0.006
L52	13 - 12.75 (52)	TP38.7156x38.6531x0.8938	0.2500	0.0000	0.0	108.673 0	-36.57	8010.27	0.005
L53	12.75 - 11.8333 (53)	TP38.9445x38.7156x0.8938	0.9167	0.0000	0.0	108.852 0	-36.70	8023.51	0.005
L54	11.8333 - 11.5833 (54)	TP39.007x38.9445x0.6688	0.2500	0.0000	0.0	82.5626	-37.24	6085.69	0.006
L55	11.5833 - 6.4833 (55)	TP40.2807x39.007x0.7563	5.1000	0.0000	0.0	93.1513	-37.26	6866.19	0.005
L56	6.4833 - 6.25 (56)	TP40.339x40.2807x0.7563	0.2333	0.0000	0.0	96.2533	-39.56	7094.83	0.006
L57	6.25 - 1.25 (57)	TP41.5878x40.339x0.7438	5.0000	0.0000	0.0	94.8320	-39.68	6990.06	0.006

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L58	1.25 - 0 (58)	TP41.9x41.5878x0.7313	1.2500	0.0000	0.0	96.2083	-41.99	7091.52	0.006

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	131 - 126 (1)	TP11.7155x10.525x0.1875	0.67	119.50	0.006	0.00	119.50	0.000
L2	126 - 121 (2)	TP12.906x11.7155x0.1875	2.76	145.67	0.019	0.00	145.67	0.000
L3	121 - 116 (3)	TP14.0964x12.906x0.1875	21.04	174.43	0.121	0.00	174.43	0.000
L4	116 - 111 (4)	TP15.2869x14.0964x0.1875	44.84	205.79	0.218	0.00	205.79	0.000
L5	111 - 110 (5)	TP15.525x15.2869x0.1875	49.95	212.37	0.235	0.00	212.37	0.000
L6	110 - 105 (6)	TP16.7758x15.525x0.25	103.78	327.79	0.317	0.00	327.79	0.000
L7	105 - 100 (7)	TP18.0265x16.7758x0.25	164.58	379.69	0.433	0.00	379.69	0.000
L8	100 - 95 (8)	TP19.2773x18.0265x0.25	246.28	435.39	0.566	0.00	435.39	0.000
L9	95 - 89.9 (9)	TP20.553x19.2773x0.5	347.93	956.08	0.364	0.00	956.08	0.000
L10	89.9 - 89.6667 (10)	TP20.6114x20.553x0.5	352.67	961.72	0.367	0.00	961.72	0.000
L11	89.6667 - 84.5667 (11)	TP21.8871x20.6114x0.6375	467.43	1362.08	0.343	0.00	1362.08	0.000
L12	84.5667 - 84.3333 (12)	TP21.9455x21.8871x0.6375	473.24	1369.68	0.346	0.00	1369.68	0.000
L13	84.3333 - 82.9167 (13)	TP22.2999x21.9455x0.625	508.65	1390.93	0.366	0.00	1390.93	0.000
L14	82.9167 - 82.6667 (14)	TP22.3624x22.2999x0.3938	514.93	909.85	0.566	0.00	909.85	0.000
L15	82.6667 - 80.9792 (15)	TP22.7846x22.3624x0.3875	557.54	931.24	0.599	0.00	931.24	0.000
L16	80.9792 - 80.7292 (16)	TP22.8471x22.7846x0.3875	563.89	936.49	0.602	0.00	936.49	0.000
L17	80.7292 - 75.7292 (17)	TP24.0978x22.8471x0.3813	692.67	1028.60	0.673	0.00	1028.60	0.000
L18	75.7292 - 70 (18)	TP25.531x24.0978x0.3813	738.03	1066.77	0.692	0.00	1066.77	0.000
L19	70 - 69 (19)	TP25.281x24.0304x0.4375	871.79	1293.24	0.674	0.00	1293.24	0.000
L20	69 - 66.9833 (20)	TP25.7854x25.281x0.4375	926.75	1346.75	0.688	0.00	1346.75	0.000
L21	66.9833 - 66.7333 (21)	TP25.8479x25.7854x0.4375	933.61	1353.46	0.690	0.00	1353.46	0.000
L22	66.7333 - 64.0833 (22)	TP26.5107x25.8479x0.4313	1006.80	1406.24	0.716	0.00	1406.24	0.000
L23	64.0833 - 63.8333 (23)	TP26.5732x26.5107x0.575	1013.76	1853.16	0.547	0.00	1853.16	0.000
L24	63.8333 - 62.4167 (24)	TP26.9276x26.5732x0.5625	1053.37	1865.82	0.565	0.00	1865.82	0.000
L25	62.4167 - 62.1667 (25)	TP26.9901x26.9276x0.6125	1060.38	2029.85	0.522	0.00	2029.85	0.000
L26	62.1667 - 59.4583 (26)	TP27.6675x26.9901x0.6125	1137.07	2136.67	0.532	0.00	2136.67	0.000
L27	59.4583 - 59.2083 (27)	TP27.73x27.6675x0.725	1144.21	2509.45	0.456	0.00	2509.45	0.000
L28	59.2083 - 56 (28)	TP28.5325x27.73x0.7125	1236.69	2620.43	0.472	0.00	2620.43	0.000
L29	56 - 55.75 (29)	TP28.595x28.5325x0.7375	1243.97	2717.42	0.458	0.00	2717.42	0.000
L30	55.75 - 50.75 (30)	TP29.8456x28.595x0.7125	1391.68	2876.88	0.484	0.00	2876.88	0.000

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Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L31	50.75 - 45.75 (31)	TP31.0962x29.8456x0.7	1543.49	3081.09	0.501	0.00	3081.09	0.000
L32	45.75 - 44.4833 (32)	TP31.413x31.0962x0.6875	1582.58	3093.97	0.512	0.00	3093.97	0.000
L33	44.4833 - 44.2333 (33)	TP31.4755x31.413x0.6125	1590.31	2788.08	0.570	0.00	2788.08	0.000
L34	44.2333 - 44.0833 (34)	TP31.513x31.4755x0.6125	1594.96	2794.93	0.571	0.00	2794.93	0.000
L35	44.0833 - 39.0833 (35)	TP32.7636x31.513x0.6	1751.43	2969.69	0.590	0.00	2969.69	0.000
L36	39.0833 - 34.08 (36)	TP34.015x32.7636x0.6	1754.07	2973.57	0.590	0.00	2973.57	0.000
L37	34.08 - 34 (37)	TP33.4082x32.1594x0.6313	1913.95	3242.98	0.590	0.00	3242.98	0.000
L38	34 - 31.4583 (38)	TP34.043x33.4082x0.6188	1996.51	3307.98	0.604	0.00	3307.98	0.000
L39	31.4583 - 31.2083 (39)	TP34.1055x34.043x0.6188	2004.68	3320.47	0.604	0.00	3320.47	0.000
L40	31.2083 - 29.4583 (40)	TP34.5426x34.1055x0.6188	2062.01	3408.51	0.605	0.00	3408.51	0.000
L41	29.4583 - 29.2083 (41)	TP34.605x34.5426x0.6188	2070.22	3421.18	0.605	0.00	3421.18	0.000
L42	29.2083 - 26.8333 (42)	TP35.1982x34.605x0.6188	2148.68	3542.73	0.607	0.00	3542.73	0.000
L43	26.8333 - 26.5833 (43)	TP35.2606x35.1982x0.8438	2156.97	4754.65	0.454	0.00	4754.65	0.000
L44	26.5833 - 21.5833 (44)	TP36.5094x35.2606x0.8188	2324.52	4969.26	0.468	0.00	4969.26	0.000
L45	21.5833 - 20.75 (45)	TP36.7175x36.5094x0.8188	2352.73	5028.04	0.468	0.00	5028.04	0.000
L46	20.75 - 20.5 (46)	TP36.78x36.7175x0.8188	2361.22	5045.74	0.468	0.00	5045.74	0.000
L47	20.5 - 18 (47)	TP37.4044x36.78x0.8063	2446.46	5149.98	0.475	0.00	5149.98	0.000
L48	18 - 17.75 (48)	TP37.4668x37.4044x0.8188	2455.03	5242.51	0.468	0.00	5242.51	0.000
L49	17.75 - 17.0833 (49)	TP37.6333x37.4668x0.8188	2477.91	5290.77	0.468	0.00	5290.77	0.000
L50	17.0833 - 16.8333 (50)	TP37.6957x37.6333x0.7313	2486.50	4775.43	0.521	0.00	4775.43	0.000
L51	16.8333 - 13 (51)	TP38.6531x37.6957x0.7188	2619.11	4947.42	0.529	0.00	4947.42	0.000
L52	13 - 12.75 (52)	TP38.7156x38.6531x0.8938	2619.11	6067.17	0.432	0.00	6067.17	0.000
L53	12.75 - 11.8333 (53)	TP38.9445x38.7156x0.8938	2627.81	6087.48	0.432	0.00	6087.48	0.000
L54	11.8333 - 11.5833 (54)	TP39.007x38.9445x0.6688	2668.53	4708.75	0.567	0.00	4708.75	0.000
L55	11.5833 - 6.4833 (55)	TP40.2807x39.007x0.7563	2668.53	5288.43	0.505	0.00	5288.43	0.000
L56	6.4833 - 6.25 (56)	TP40.339x40.2807x0.7563	2848.37	5650.03	0.504	0.00	5650.03	0.000
L57	6.25 - 1.25 (57)	TP41.5878x40.339x0.7438	2856.67	5578.48	0.512	0.00	5578.48	0.000
L58	1.25 - 0 (58)	TP41.9x41.5878x0.7313	3036.00	5844.81	0.519	0.00	5844.81	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 $\frac{T_u}{\phi T_n}$
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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	131 - 126 (1)	TP11.7155x10.525x0.1875	0.27	256.51	0.001	0.00	242.30	0.000
L2	126 - 121 (2)	TP12.906x11.7155x0.1875	0.57	283.00	0.002	0.00	295.37	0.000
L3	121 - 116 (3)	TP14.0964x12.906x0.1875	4.48	309.49	0.014	0.23	353.70	0.001
L4	116 - 111 (4)	TP15.2869x14.0964x0.1875	5.05	335.98	0.015	0.12	417.27	0.000
L5	111 - 110 (5)	TP15.525x15.2869x0.1875	5.17	341.28	0.015	0.10	430.62	0.000
L6	110 - 105 (6)	TP16.7758x15.525x0.25	11.77	490.29	0.024	0.03	664.66	0.000
L7	105 - 100 (7)	TP18.0265x16.7758x0.25	12.94	527.40	0.025	1.03	769.88	0.001
L8	100 - 95 (8)	TP19.2773x18.0265x0.25	19.59	564.51	0.035	0.90	882.84	0.001
L9	95 - 89.9 (9)	TP20.553x19.2773x0.5	20.30	1189.88	0.017	0.97	1938.62	0.000
L10	89.9 - 89.6667 (10)	TP20.6114x20.553x0.5	20.34	1193.34	0.017	0.97	1950.05	0.000
L11	89.6667 - 84.5667 (11)	TP21.8871x20.6114x0.6375	24.86	1607.62	0.015	1.00	2761.88	0.000
L12	84.5667 - 84.3333 (12)	TP21.9455x21.8871x0.6375	24.90	1612.04	0.015	1.00	2777.29	0.000
L13	84.3333 - 82.9167 (13)	TP22.2999x21.9455x0.625	25.11	1607.64	0.016	1.00	2820.38	0.000
L14	82.9167 - 82.6667 (14)	TP22.3624x22.2999x0.3938	25.14	1026.54	0.024	1.00	1844.89	0.001
L15	82.6667 - 80.9792 (15)	TP22.7846x22.3624x0.3875	25.38	1029.95	0.025	1.01	1888.26	0.001
L16	80.9792 - 80.7292 (16)	TP22.8471x22.7846x0.3875	25.41	1032.82	0.025	1.01	1898.91	0.001
L17	80.7292 - 75.7292 (17)	TP24.0978x22.8471x0.3813	26.12	1073.04	0.024	1.03	2085.68	0.000
L18	75.7292 - 70 (18)	TP25.531x24.0978x0.3813	26.37	1092.61	0.024	1.04	2163.07	0.000
L19	70 - 69 (19)	TP25.281x24.0304x0.4375	27.12	1289.86	0.021	1.05	2622.28	0.000
L20	69 - 66.9833 (20)	TP25.7854x25.281x0.4375	27.40	1316.05	0.021	1.06	2730.78	0.000
L21	66.9833 - 66.7333 (21)	TP25.8479x25.7854x0.4375	27.44	1319.30	0.021	1.06	2744.39	0.000
L22	66.7333 - 64.0833 (22)	TP26.5107x25.8479x0.4313	27.82	1334.69	0.021	1.07	2851.43	0.000
L23	64.0833 - 63.8333 (23)	TP26.5732x26.5107x0.575	27.85	1774.04	0.016	1.07	3757.63	0.000
L24	63.8333 - 62.4167 (24)	TP26.9276x26.5732x0.5625	28.07	1759.96	0.016	1.08	3783.29	0.000
L25	62.4167 - 62.1667 (25)	TP26.9901x26.9276x0.6125	28.10	1917.32	0.015	1.08	4115.91	0.000
L26	62.1667 - 59.4583 (26)	TP27.6675x26.9901x0.6125	28.53	1966.55	0.015	1.09	4332.48	0.000
L27	59.4583 - 59.2083 (27)	TP27.73x27.6675x0.725	28.57	2323.46	0.012	1.09	5088.38	0.000
L28	59.2083 - 56 (28)	TP28.5325x27.73x0.7125	29.10	2352.31	0.012	1.10	5313.42	0.000
L29	56 - 55.75 (29)	TP28.595x28.5325x0.7375	29.13	2438.13	0.012	1.10	5510.07	0.000
L30	55.75 - 50.75 (30)	TP29.8456x28.595x0.7125	29.96	2463.34	0.012	1.12	5833.41	0.000
L31	50.75 - 45.75 (31)	TP31.0962x29.8456x0.7	30.78	2525.04	0.012	1.13	6247.49	0.000
L32	45.75 - 44.4833 (32)	TP31.413x31.0962x0.6875	30.94	2506.82	0.012	1.13	6273.62	0.000
L33	44.4833 - 44.2333 (33)	TP31.4755x31.413x0.6125	30.97	2243.35	0.014	1.13	5653.36	0.000
L34	44.2333 - 44.0833 (34)	TP31.513x31.4755x0.6125	30.99	2246.07	0.014	1.13	5667.24	0.000
L35	44.0833 - 39.0833 (35)	TP32.7636x31.513x0.6	31.61	2290.17	0.014	1.13	6021.60	0.000
L36	39.0833 -	TP34.015x32.7636x0.6	31.63	2291.66	0.014	1.13	6029.47	0.000

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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 $\frac{T_u}{\phi T_n}$
L37	34.08 (36)	TP33.4082x32.1594x0.6313	32.34	2455.59	0.013	1.13	6575.75	0.000
L38	34 - 31.4583 (38)	TP34.043x33.4082x0.6188	32.64	2454.51	0.013	1.13	6707.57	0.000
L39	31.4583 - 31.2083 (39)	TP34.1055x34.043x0.6188	32.66	2459.09	0.013	1.13	6732.87	0.000
L40	31.2083 - 29.4583 (40)	TP34.5426x34.1055x0.6188	32.88	2491.19	0.013	1.13	6911.40	0.000
L41	29.4583 - 29.2083 (41)	TP34.605x34.5426x0.6188	32.89	2495.77	0.013	1.13	6937.09	0.000
L42	29.2083 - 26.8333 (42)	TP35.1982x34.605x0.6188	33.18	2539.33	0.013	1.13	7183.56	0.000
L43	26.8333 - 26.5833 (43)	TP35.2606x35.1982x0.8438	33.20	3446.37	0.010	1.13	9640.92	0.000
L44	26.5833 - 21.5833 (44)	TP36.5094x35.2606x0.8188	33.82	3468.04	0.010	1.13	10076.08	0.000
L45	21.5833 - 20.75 (45)	TP36.7175x36.5094x0.8188	33.92	3488.26	0.010	1.13	10195.33	0.000
L46	20.75 - 20.5 (46)	TP36.78x36.7175x0.8188	33.94	3494.33	0.010	1.13	10231.17	0.000
L47	20.5 - 18 (47)	TP37.4044x36.78x0.8063	34.25	3501.93	0.010	1.13	10442.58	0.000
L48	18 - 17.75 (48)	TP37.4668x37.4044x0.8188	34.27	3561.07	0.010	1.13	10630.17	0.000
L49	17.75 - 17.0833 (49)	TP37.6333x37.4668x0.8188	34.35	3577.25	0.010	1.13	10728.08	0.000
L50	17.0833 - 16.8333 (50)	TP37.6957x37.6333x0.7313	34.38	3207.98	0.011	1.13	9683.08	0.000
L51	16.8333 - 13 (51)	TP38.6531x37.6957x0.7188	34.82	3235.88	0.011	1.13	10031.83	0.000
L52	13 - 12.75 (52)	TP38.7156x38.6531x0.8938	34.83	4011.76	0.009	1.13	12302.33	0.000
L53	12.75 - 11.8333 (53)	TP38.9445x38.7156x0.8938	34.95	4036.04	0.009	1.13	12343.50	0.000
L54	11.8333 - 11.5833 (54)	TP39.007x38.9445x0.6688	34.97	3042.85	0.011	1.13	9547.83	0.000
L55	11.5833 - 6.4833 (55)	TP40.2807x39.007x0.7563	35.09	3455.96	0.010	1.13	10723.25	0.000
L56	6.4833 - 6.25 (56)	TP40.339x40.2807x0.7563	35.57	3552.65	0.010	1.13	11456.50	0.000
L57	6.25 - 1.25 (57)	TP41.5878x40.339x0.7438	35.70	3517.08	0.010	1.13	11311.42	0.000
L58	1.25 - 0 (58)	TP41.9x41.5878x0.7313	36.31	3572.85	0.010	1.13	11851.42	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	131 - 126 (1)	0.000	0.006	0.000	0.001	0.000	0.006	1.000	4.8.2 ✓
L2	126 - 121 (2)	0.000	0.019	0.000	0.002	0.000	0.019	1.000	4.8.2 ✓
L3	121 - 116 (3)	0.003	0.121	0.000	0.014	0.001	0.124	1.000	4.8.2 ✓
L4	116 - 111 (4)	0.003	0.218	0.000	0.015	0.000	0.221	1.000	4.8.2 ✓

tnxTower

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Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L5	111 - 110 (5)	0.003	0.235	0.000	0.015	0.000	0.238	1.000	4.8.2 ✓
L6	110 - 105 (6)	0.005	0.317	0.000	0.024	0.000	0.322	1.000	4.8.2 ✓
L7	105 - 100 (7)	0.005	0.433	0.000	0.025	0.001	0.439	1.000	4.8.2 ✓
L8	100 - 95 (8)	0.008	0.566	0.000	0.035	0.001	0.575	1.000	4.8.2 ✓
L9	95 - 89.9 (9)	0.004	0.364	0.000	0.017	0.000	0.368	1.000	4.8.2 ✓
L10	89.9 - 89.6667 (10)	0.004	0.367	0.000	0.017	0.000	0.371	1.000	4.8.2 ✓
L11	89.6667 - 84.5667 (11)	0.004	0.343	0.000	0.015	0.000	0.347	1.000	4.8.2 ✓
L12	84.5667 - 84.3333 (12)	0.004	0.346	0.000	0.015	0.000	0.350	1.000	4.8.2 ✓
L13	84.3333 - 82.9167 (13)	0.004	0.366	0.000	0.016	0.000	0.370	1.000	4.8.2 ✓
L14	82.9167 - 82.6667 (14)	0.006	0.566	0.000	0.024	0.001	0.573	1.000	4.8.2 ✓
L15	82.6667 - 80.9792 (15)	0.007	0.599	0.000	0.025	0.001	0.606	1.000	4.8.2 ✓
L16	80.9792 - 80.7292 (16)	0.007	0.602	0.000	0.025	0.001	0.609	1.000	4.8.2 ✓
L17	80.7292 - 75.7292 (17)	0.007	0.673	0.000	0.024	0.000	0.681	1.000	4.8.2 ✓
L18	75.7292 - 70 (18)	0.007	0.692	0.000	0.024	0.000	0.699	1.000	4.8.2 ✓
L19	70 - 69 (19)	0.006	0.674	0.000	0.021	0.000	0.681	1.000	4.8.2 ✓
L20	69 - 66.9833 (20)	0.006	0.688	0.000	0.021	0.000	0.695	1.000	4.8.2 ✓
L21	66.9833 - 66.7333 (21)	0.006	0.690	0.000	0.021	0.000	0.697	1.000	4.8.2 ✓
L22	66.7333 - 64.0833 (22)	0.007	0.716	0.000	0.021	0.000	0.723	1.000	4.8.2 ✓
L23	64.0833 - 63.8333 (23)	0.005	0.547	0.000	0.016	0.000	0.552	1.000	4.8.2 ✓
L24	63.8333 - 62.4167 (24)	0.005	0.565	0.000	0.016	0.000	0.570	1.000	4.8.2 ✓
L25	62.4167 - 62.1667 (25)	0.005	0.522	0.000	0.015	0.000	0.527	1.000	4.8.2 ✓
L26	62.1667 - 59.4583 (26)	0.005	0.532	0.000	0.015	0.000	0.537	1.000	4.8.2 ✓
L27	59.4583 - 59.2083 (27)	0.004	0.456	0.000	0.012	0.000	0.460	1.000	4.8.2 ✓
L28	59.2083 - 56 (28)	0.004	0.472	0.000	0.012	0.000	0.476	1.000	4.8.2 ✓
L29	56 - 55.75 (29)	0.004	0.458	0.000	0.012	0.000	0.462	1.000	4.8.2 ✓
L30	55.75 - 50.75 (30)	0.004	0.484	0.000	0.012	0.000	0.488	1.000	4.8.2 ✓

tnxTower

FDH Velocitel
 222 S. Central Ave., Suite 1110
 Saint Louis, MO 63105
 Phone: 3147734000
 FAX: 3147734001

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Project	17QGOK1400	Date	15:00:45 06/19/17
Client	Crown Castle International	Designed by	PRoach

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L31	50.75 - 45.75 (31)	0.005	0.501	0.000	0.012	0.000	0.506	1.000	4.8.2 ✓
L32	45.75 - 44.4833 (32)	0.005	0.512	0.000	0.012	0.000	0.516	1.000	4.8.2 ✓
L33	44.4833 - 44.2333 (33)	0.005	0.570	0.000	0.014	0.000	0.576	1.000	4.8.2 ✓
L34	44.2333 - 44.0833 (34)	0.005	0.571	0.000	0.014	0.000	0.576	1.000	4.8.2 ✓
L35	44.0833 - 39.0833 (35)	0.006	0.590	0.000	0.014	0.000	0.595	1.000	4.8.2 ✓
L36	39.0833 - 34.08 (36)	0.006	0.590	0.000	0.014	0.000	0.596	1.000	4.8.2 ✓
L37	34.08 - 34 (37)	0.006	0.590	0.000	0.013	0.000	0.596	1.000	4.8.2 ✓
L38	34 - 31.4583 (38)	0.006	0.604	0.000	0.013	0.000	0.610	1.000	4.8.2 ✓
L39	31.4583 - 31.2083 (39)	0.006	0.604	0.000	0.013	0.000	0.610	1.000	4.8.2 ✓
L40	31.2083 - 29.4583 (40)	0.006	0.605	0.000	0.013	0.000	0.611	1.000	4.8.2 ✓
L41	29.4583 - 29.2083 (41)	0.006	0.605	0.000	0.013	0.000	0.611	1.000	4.8.2 ✓
L42	29.2083 - 26.8333 (42)	0.006	0.607	0.000	0.013	0.000	0.613	1.000	4.8.2 ✓
L43	26.8333 - 26.5833 (43)	0.004	0.454	0.000	0.010	0.000	0.458	1.000	4.8.2 ✓
L44	26.5833 - 21.5833 (44)	0.005	0.468	0.000	0.010	0.000	0.473	1.000	4.8.2 ✓
L45	21.5833 - 20.75 (45)	0.005	0.468	0.000	0.010	0.000	0.473	1.000	4.8.2 ✓
L46	20.75 - 20.5 (46)	0.005	0.468	0.000	0.010	0.000	0.473	1.000	4.8.2 ✓
L47	20.5 - 18 (47)	0.005	0.475	0.000	0.010	0.000	0.480	1.000	4.8.2 ✓
L48	18 - 17.75 (48)	0.005	0.468	0.000	0.010	0.000	0.473	1.000	4.8.2 ✓
L49	17.75 - 17.0833 (49)	0.005	0.468	0.000	0.010	0.000	0.473	1.000	4.8.2 ✓
L50	17.0833 - 16.8333 (50)	0.005	0.521	0.000	0.011	0.000	0.526	1.000	4.8.2 ✓
L51	16.8333 - 13 (51)	0.006	0.529	0.000	0.011	0.000	0.535	1.000	4.8.2 ✓
L52	13 - 12.75 (52)	0.005	0.432	0.000	0.009	0.000	0.436	1.000	4.8.2 ✓
L53	12.75 - 11.8333 (53)	0.005	0.432	0.000	0.009	0.000	0.436	1.000	4.8.2 ✓
L54	11.8333 - 11.5833 (54)	0.006	0.567	0.000	0.011	0.000	0.573	1.000	4.8.2 ✓
L55	11.5833 - 6.4833 (55)	0.005	0.505	0.000	0.010	0.000	0.510	1.000	4.8.2 ✓
L56	6.4833 - 6.25 (56)	0.006	0.504	0.000	0.010	0.000	0.510	1.000	4.8.2 ✓

tnxTower FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001	Job	HRT 100 943239, 806376	Page	75 of 76
	Project	17QGOK1400	Date	15:00:45 06/19/17
	Client	Crown Castle International	Designed by	PRoach

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L57	6.25 - 1.25 (57)	0.006	0.512	0.000	0.010	0.000	0.518	1.000	4.8.2 ✓
L58	1.25 - 0 (58)	0.006	0.519	0.000	0.010	0.000	0.525 ✓ ✓	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	131 - 126	Pole	TP11.7155x10.525x0.1875	1	-0.10	513.02	0.6	Pass
L2	126 - 121	Pole	TP12.906x11.7155x0.1875	2	-0.22	566.00	1.9	Pass
L3	121 - 116	Pole	TP14.0964x12.906x0.1875	3	-1.80	618.98	12.4	Pass
L4	116 - 111	Pole	TP15.2869x14.0964x0.1875	4	-1.97	671.96	22.1	Pass
L5	111 - 110	Pole	TP15.525x15.2869x0.1875	5	-2.01	682.56	23.8	Pass
L6	110 - 105	Pole	TP16.7758x15.525x0.25	6	-4.64	980.58	32.2	Pass
L7	105 - 100	Pole	TP18.0265x16.7758x0.25	7	-5.13	1054.80	43.9	Pass
L8	100 - 95	Pole	TP19.2773x18.0265x0.25	8	-8.95	1129.01	57.5	Pass
L9	95 - 89.9	Pole	TP20.553x19.2773x0.5	9	-9.77	2379.75	36.8	Pass
L10	89.9 - 89.6667	Pole	TP20.6114x20.553x0.5	10	-9.81	2386.68	37.1	Pass
L11	89.6667 - 84.5667	Pole	TP21.8871x20.6114x0.6375	11	-12.91	3215.24	34.7	Pass
L12	84.5667 - 84.3333	Pole	TP21.9455x21.8871x0.6375	12	-12.97	3224.08	35.0	Pass
L13	84.3333 - 82.9167	Pole	TP22.2999x21.9455x0.625	13	-13.27	3215.28	37.0	Pass
L14	82.9167 - 82.6667	Pole	TP22.3624x22.2999x0.3938	14	-13.33	2053.08	57.3	Pass
L15	82.6667 - 80.9792	Pole	TP22.7846x22.3624x0.3875	15	-13.61	2059.89	60.6	Pass
L16	80.9792 - 80.7292	Pole	TP22.8471x22.7846x0.3875	16	-13.68	2065.65	60.9	Pass
L17	80.7292 - 75.7292	Pole	TP24.0978x22.8471x0.3813	17	-14.61	2146.07	68.1	Pass
L18	75.7292 - 70	Pole	TP25.531x24.0978x0.3813	18	-14.94	2185.21	69.9	Pass
L19	70 - 69	Pole	TP25.281x24.0304x0.4375	19	-16.43	2579.72	68.1	Pass
L20	69 - 66.9833	Pole	TP25.7854x25.281x0.4375	20	-16.87	2632.10	69.5	Pass
L21	66.9833 - 66.7333	Pole	TP25.8479x25.7854x0.4375	21	-16.94	2638.59	69.7	Pass
L22	66.7333 - 64.0833	Pole	TP26.5107x25.8479x0.4313	22	-17.52	2669.38	72.3	Pass
L23	64.0833 - 63.8333	Pole	TP26.5732x26.5107x0.575	23	-17.60	3548.09	55.2	Pass
L24	63.8333 - 62.4167	Pole	TP26.9276x26.5732x0.5625	24	-17.95	3519.93	57.0	Pass
L25	62.4167 - 62.1667	Pole	TP26.9901x26.9276x0.6125	25	-18.03	3834.63	52.7	Pass
L26	62.1667 - 59.4583	Pole	TP27.6675x26.9901x0.6125	26	-18.76	3933.11	53.7	Pass
L27	59.4583 - 59.2083	Pole	TP27.73x27.6675x0.725	27	-18.85	4646.92	46.0	Pass
L28	59.2083 - 56	Pole	TP28.5325x27.73x0.7125	28	-19.83	4704.61	47.6	Pass
L29	56 - 55.75	Pole	TP28.595x28.5325x0.7375	29	-19.92	4876.26	46.2	Pass
L30	55.75 - 50.75	Pole	TP29.8456x28.595x0.7125	30	-21.54	4926.67	48.8	Pass

<p>tnxTower</p> <p>FDH Velocitel 222 S. Central Ave., Suite 1110 Saint Louis, MO 63105 Phone: 3147734000 FAX: 3147734001</p>	Job	HRT 100 943239, 806376	Page	76 of 76
	Project	17QGOK1400	Date	15:00:45 06/19/17
	Client	Crown Castle International	Designed by	PRoach

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L31	50.75 - 45.75	Pole	TP31.0962x29.8456x0.7	31	-23.20	5050.09	50.6	Pass	
L32	45.75 - 44.4833	Pole	TP31.413x31.0962x0.6875	32	-23.63	5013.65	51.6	Pass	
L33	44.4833 - 44.2333	Pole	TP31.4755x31.413x0.6125	33	-23.72	4486.70	57.6	Pass	
L34	44.2333 - 44.0833	Pole	TP31.513x31.4755x0.6125	34	-23.77	4492.15	57.6	Pass	
L35	44.0833 - 39.0833	Pole	TP32.7636x31.513x0.6	35	-25.33	4580.34	59.5	Pass	
L36	39.0833 - 34.08	Pole	TP34.015x32.7636x0.6	36	-25.38	4583.31	59.6	Pass	
L37	34.08 - 34	Pole	TP33.4082x32.1594x0.6313	37	-28.18	4911.18	59.6	Pass	
L38	34 - 31.4583	Pole	TP34.043x33.4082x0.6188	38	-29.02	4909.01	61.0	Pass	
L39	31.4583 - 31.2083	Pole	TP34.1055x34.043x0.6188	39	-29.12	4918.18	61.0	Pass	
L40	31.2083 - 29.4583	Pole	TP34.5426x34.1055x0.6188	40	-29.69	4982.38	61.1	Pass	
L41	29.4583 - 29.2083	Pole	TP34.605x34.5426x0.6188	41	-29.80	4991.55	61.1	Pass	
L42	29.2083 - 26.8333	Pole	TP35.1982x34.605x0.6188	42	-30.61	5078.67	61.3	Pass	
L43	26.8333 - 26.5833	Pole	TP35.2606x35.1982x0.8438	43	-30.73	6892.75	45.8	Pass	
L44	26.5833 - 21.5833	Pole	TP36.5094x35.2606x0.8188	44	-32.84	6936.08	47.3	Pass	
L45	21.5833 - 20.75	Pole	TP36.7175x36.5094x0.8188	45	-33.20	6976.52	47.3	Pass	
L46	20.75 - 20.5	Pole	TP36.78x36.7175x0.8188	46	-33.32	6988.66	47.3	Pass	
L47	20.5 - 18	Pole	TP37.4044x36.78x0.8063	47	-34.44	7003.85	48.0	Pass	
L48	18 - 17.75	Pole	TP37.4668x37.4044x0.8188	48	-34.56	7122.14	47.3	Pass	
L49	17.75 - 17.0833	Pole	TP37.6333x37.4668x0.8188	49	-34.86	7154.50	47.3	Pass	
L50	17.0833 - 16.8333	Pole	TP37.6957x37.6333x0.7313	50	-34.96	6415.97	52.6	Pass	
L51	16.8333 - 13	Pole	TP38.6531x37.6957x0.7188	51	-36.55	6471.77	53.5	Pass	
L52	13 - 12.75	Pole	TP38.7156x38.6531x0.8938	52	-36.57	8010.27	43.6	Pass	
L53	12.75 - 11.8333	Pole	TP38.9445x38.7156x0.8938	53	-36.70	8023.51	43.6	Pass	
L54	11.8333 - 11.5833	Pole	TP39.007x38.9445x0.6688	54	-37.24	6085.69	57.3	Pass	
L55	11.5833 - 6.4833	Pole	TP40.2807x39.007x0.7563	55	-37.26	6866.19	51.0	Pass	
L56	6.4833 - 6.25	Pole	TP40.339x40.2807x0.7563	56	-39.56	7094.83	51.0	Pass	
L57	6.25 - 1.25	Pole	TP41.5878x40.339x0.7438	57	-39.68	6990.06	51.8	Pass	
L58	1.25 - 0	Pole	TP41.9x41.5878x0.7313	58	-41.99	7091.52	52.5	Pass	
							Summary		
							Pole (L22)	72.3	Pass
							RATING =	72.3	Pass

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED)
 (1) 3/8" TO 121 FT LEVEL
 (2) 3/4" TO 121 FT LEVEL
 (INSTALLED-IN 2" CONDUIT)
 (1) 3/8" TO 121 FT LEVEL
 (2) 3/4" TO 121 FT LEVEL
 (INSTALLED)
 (6) 1-1/4" TO 121 FT LEVEL

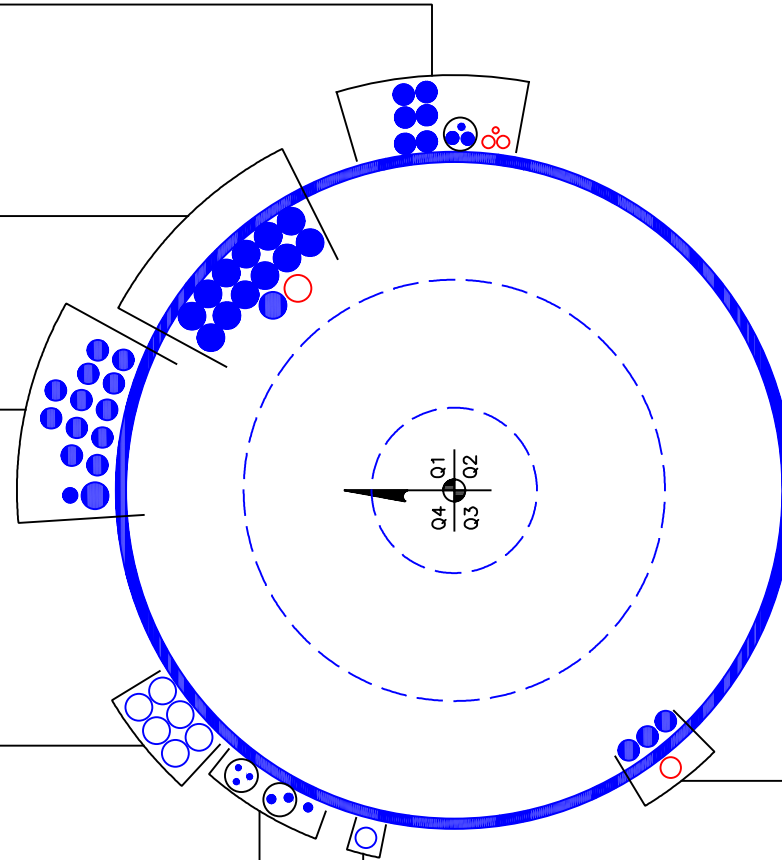
(NOT INSTALLED)
 (1) 1-5/8" TO 107 FT LEVEL
 (PROPOSED)
 (1) 1-5/8" TO 107 FT LEVEL
 (INSTALLED)
 (13) 1-5/8" TO 107 FT LEVEL

(INSTALLED)
 (1) 7/8" TO 87 FT LEVEL
 (12) 1-1/4" TO 87 FT LEVEL
 (1) 1-5/8" TO 87 FT LEVEL

(NOT INSTALLED)
 (6) 1-5/8" TO 128 FT LEVEL

(INSTALLED-IN CONDUIT)
 (3) 5/16" TO 97 FT LEVEL
 (2) 1/2" TO 97 FT LEVEL
 (INSTALLED)
 (1) 1/2" TO 97 FT LEVEL

(NOT INSTALLED)
 (1) 1-1/4" TO 97 FT LEVEL



(PROPOSED)
 (1) 1-1/4" TO 97 FT LEVEL
 (INSTALLED)
 (3) 1-1/4" TO 97 FT LEVEL

BUSINESS UNIT: 806376 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS
 USA

SLS	BNH	NJH	ARR	ALM	ADE	AT	DMB	AT
21/7/2015	29/7/2015	5/1/2016	10/05/16	05/07/16	22/08/16	02/12/16	13/02/17	12/06/17
UPDATED PER WORK ORDER 1092513	UPDATED PER WORK ORDER 1097098	UPDATED PER WORK ORDER 1153211 1170497	UPDATED PER WORK ORDER 1234862	UPDATED PER WORK ORDER 1242462	UPDATED PER WORK ORDER 1270649	UPDATED PER WORK ORDER 1310666	UPDATED PER WORK ORDER 1362449	UPDATED PER WORK ORDER 1408045

DRAWN BY: MM
 CHECKED BY: PLW
 DRAWING DATE: 17/05/07

SITE NUMBER:
 SITE NAME:

SITE NAME

HRT 100 943239

BUSINESS UNIT NUMBER

806376

SITE ADDRESS

1455 FORBES STREET
 EAST HARTFORD, CT 06118
 HARTFORD COUNTY
 USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

APPENDIX C
ADDITIONAL CALCULATIONS

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	131	21	0	12	10.525	15.525	0.1875	0.75	A572-65
2	110	40	4	12	15.53	25.531	0.25	1	A572-65
3	74	39.92	4.92	12	24.03	34.015	0.3125	1.25	A572-65
4	39	39	0	12	32.16	41.9	0.3438	1.3752	A572-65

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	13	plate	CCI-AFP-060100	3	X				X				X			
2	0	29.4583	plate	MS-400 (1.1875")	3		X				X				X		
3																	
4	11.8333	44.3333	plate	CCI-AFP-060100	1			X									
5	11.8333	26.8333	plate	CCI-AFP-060100	2								X				X
6	17.08333	44.5833	plate	4"x3/4" (5 Term, 15" l	3	X				X				X			
7	20.75	56	plate	CCI-AFP-060100	2							X					X
8	31.4583	59.4583	plate	MS-400 (1.1875")	3		X				X				X		
9	44.3333	62.4167	plate	CCI-AFP-045100	1			X									
10	44.5	67	plate	4"x3/4" (5 Term, 15" l	3				X				X				X
11	56	64.0833	plate	CCI-AFP-045100	2							X					X
12	67.0833	84.5833	plate	4"x3/4" (5 Term, 15" l	3	X				X				X			
13	72.9792	80.9792	plate	MS-400 (1.1875")	3		X				X				X		
14	82.9167	89.9167	plate	CCI-SFP-045100	3			X				X					X
15	0	18	plate	CCI-WSFP-065125	1				X								
16	0	20.75	plate	CCI-WSFP-065125	2							X					X
17	0	6.5	plate	CCI-WSFP-065125	1								X				
18																	

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	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
2	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
4	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
5	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
6	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
7	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
8	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
9	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
10	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
11	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
12	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
13	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
14	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
15	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
16	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
17	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	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	131 - 126	5		12	10.525	11.715	0.1875	A572-65	1.000
2	126 - 121	5		12	11.715	12.906	0.1875	A572-65	1.000
3	121 - 116	5		12	12.906	14.096	0.1875	A572-65	1.000
4	116 - 111	5		12	14.096	15.287	0.1875	A572-65	1.000
5	111 - 110	1	0	12	15.287	15.525	0.1875	A572-65	1.000
6	110 - 105	5		12	15.525	16.776	0.25	A572-65	1.000
7	105 - 100	5		12	16.776	18.027	0.25	A572-65	1.000
8	100 - 95	5		12	18.027	19.277	0.25	A572-65	1.000
9	95 - 89.9	5.1		12	19.277	20.553	0.5	A572-65	0.925
10	89.9 - 89.6667	0.2333		12	20.553	20.611	0.5	A572-65	0.924
11	89.6667 - 84.5667	5.1		12	20.611	21.887	0.6375	A572-65	0.916
12	84.5667 - 84.3333	0.2334		12	21.887	21.946	0.6375	A572-65	0.914
13	84.3333 - 82.9167	1.4166		12	21.946	22.300	0.625	A572-65	0.923
14	82.9167 - 82.6667	0.25		12	22.300	22.362	0.39375	A572-65	0.963
15	82.6667 - 80.9792	1.6875		12	22.362	22.785	0.3875	A572-65	0.972
16	80.9792 - 80.7292	0.25		12	22.785	22.847	0.3875	A572-65	0.971
17	80.7292 - 75.7292	5		12	22.847	24.098	0.38125	A572-65	0.969
18	75.7292 - 74	5.7292	4	12	24.098	25.531	0.38125	A572-65	0.963
19	74 - 69	5		12	24.030	25.281	0.4375	A572-65	0.975
20	69 - 66.9833	2.0167		12	25.281	25.785	0.4375	A572-65	0.970
21	66.9833 - 66.7333	0.25		12	25.785	25.848	0.4375	A572-65	0.970
22	66.7333 - 64.0833	2.65		12	25.848	26.511	0.43125	A572-65	0.977
23	64.0833 - 63.8333	0.25		12	26.511	26.573	0.575	A572-65	0.923
24	63.8333 - 62.4167	1.4166		12	26.573	26.928	0.5625	A572-65	0.938
25	62.4167 - 62.1667	0.25		12	26.928	26.990	0.6125	A572-65	0.949
26	62.1667 - 59.4583	2.7084		12	26.990	27.668	0.6125	A572-65	0.938
27	59.4583 - 59.2083	0.25		12	27.668	27.730	0.725	A572-65	0.938
28	59.2083 - 56	3.2083		12	27.730	28.532	0.7125	A572-65	0.939
29	56 - 55.75	0.25		12	28.532	28.595	0.7375	A572-65	0.952
30	55.75 - 50.75	5		12	28.595	29.846	0.7125	A572-65	0.962
31	50.75 - 45.75	5		12	29.846	31.096	0.7	A572-65	0.956
32	45.75 - 44.4833	1.2667		12	31.096	31.413	0.6875	A572-65	0.968
33	44.4833 - 44.2333	0.25		12	31.413	31.476	0.6125	A572-65	0.959
34	44.2333 - 44.0833	0.15		12	31.476	31.513	0.6125	A572-65	0.959
35	44.0833 - 39.0833	5		12	31.513	32.764	0.6	A572-65	0.961
36	39.0833 - 39	5.0033	4.92	12	32.764	34.015	0.6	A572-65	0.960
37	39 - 34	5		12	32.159	33.408	0.6313	A572-65	0.955
38	34 - 31.4583	2.5417		12	33.408	34.043	0.6188	A572-65	0.966
39	31.4583 - 31.2083	0.25		12	34.043	34.105	0.6188	A572-65	0.965
40	31.2083 - 29.4583	1.75		12	34.105	34.543	0.6188	A572-65	0.960
41	29.4583 - 29.2083	0.25		12	34.543	34.605	0.6188	A572-65	0.959
42	29.2083 - 26.8333	2.375		12	34.605	35.198	0.6188	A572-65	0.952
43	26.8333 - 26.5833	0.25		12	35.198	35.261	0.8438	A572-65	0.927
44	26.5833 - 21.5833	5		12	35.261	36.509	0.8188	A572-65	0.936
45	21.5833 - 20.75	0.8333		12	36.509	36.718	0.8188	A572-65	0.933
46	20.75 - 20.5	0.25		12	36.718	36.780	0.8188	A572-65	0.977
47	20.5 - 18	2.5		12	36.780	37.404	0.8063	A572-65	0.982
48	18 - 17.75	0.25		12	37.404	37.467	0.8188	A572-65	0.958
49	17.75 - 17.08333	0.66667		12	37.467	37.633	0.8188	A572-65	0.955
50	17.08333 - 16.83333	0.25		12	37.633	37.696	0.7313	A572-65	0.963
51	16.83333 - 13	3.83333		12	37.696	38.653	0.7188	A572-65	0.966
52	13 - 12.75	0.25		12	38.653	38.716	0.8938	A572-65	0.946
53	12.75 - 11.8333	0.9167		12	38.716	38.945	0.8938	A572-65	0.942
54	11.8333 - 11.5833	0.25		12	38.945	39.007	0.6688	A572-65	1.032
55	11.5833 - 6.4833	5.1		12	39.007	40.281	0.7563	A572-65	0.985
56	6.4833 - 6.25	0.2333		12	40.281	40.339	0.7563	A572-65	0.984
57	6.25 - 1.25	5		12	40.339	41.588	0.7438	A572-65	0.984
58	1.25 - 0	1.25		12	41.588	41.900	0.7313	A572-65	0.996

TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)	
1	131 - 126	0.1047	0.6679	0.2721	
2	126 - 121	0.2212	2.7626	0.5709	
3	121 - 116	1.7977	21.044	4.4753	
4	116 - 111	1.9705	44.837	5.0503	
5	111 - 110	2.0078	49.945	5.1682	
6	110 - 105	4.6368	103.78	11.771	
7	105 - 100	5.1262	164.58	12.942	
8	100 - 95	8.9499	246.28	19.593	
9	95 - 89.9	9.768	347.93	20.297	
10	89.9 - 89.6667	9.8148	352.67	20.336	
11	89.6667 - 84.5667	12.908	467.43	24.86	
12	84.5667 - 84.3333	12.968	473.24	24.903	
13	84.3333 - 82.9167	13.269	508.65	25.106	
14	82.9167 - 82.6667	13.326	514.93	25.141	
15	82.6667 - 80.9792	13.608	557.54	25.383	
16	80.9792 - 80.7292	13.682	563.89	25.411	
17	80.7292 - 75.7292	14.615	692.67	26.117	
18	75.7292 - 74	14.937	738.03	26.365	
19	74 - 69	16.426	871.79	27.12	
20	69 - 66.9833	16.871	926.75	27.405	
21	66.9833 - 66.7333	16.943	933.61	27.435	
22	66.7333 - 64.0833	17.516	1006.8	27.824	
23	64.0833 - 63.8333	17.605	1013.8	27.851	
24	63.8333 - 62.4167	17.945	1053.4	28.074	
25	62.4167 - 62.1667	18.033	1060.4	28.105	
26	62.1667 - 59.4583	18.756	1137.1	28.533	
27	59.4583 - 59.2083	18.851	1144.2	28.568	
28	59.2083 - 56	19.831	1236.7	29.095	
29	56 - 55.75	19.924	1244	29.134	
30	55.75 - 50.75	21.54	1391.7	29.958	
31	50.75 - 45.75	23.201	1543.5	30.777	
32	45.75 - 44.4833	23.627	1582.6	30.944	
33	44.4833 - 44.2333	23.72	1590.3	30.966	
34	44.2333 - 44.0833	23.769	1595	30.988	
35	44.0833 - 39.0833	25.334	1751.4	31.613	
36	39.0833 - 39	25.376	1754.1	31.627	
37	39 - 34	28.178	1914	32.342	
38	34 - 31.4583	29.019	1996.5	32.643	
39	31.4583 - 31.2083	29.1	2004.7	32.7	
40	31.2083 - 29.4583	29.7	2062.0	32.9	
41	29.4583 - 29.2083	29.8	2070.2	32.9	
42	29.2083 - 26.8333	30.6	2148.7	33.2	
43	26.8333 - 26.5833	30.7	2157.0	33.2	
44	26.5833 - 21.5833	32.8	2324.5	33.8	
45	21.5833 - 20.75	33.2	2352.7	33.9	
46	20.75 - 20.5	33.3	2361.2	33.9	
47	20.5 - 18	34.4	2446.5	34.3	
48	18 - 17.75	34.6	2455.0	34.3	
49	17.75 - 17.08333	34.9	2477.9	34.4	
50	17.08333 - 16.83333	35.0	2486.5	34.4	
51	16.83333 - 13	36.5	2619.1	34.8	
52	13 - 12.75	36.7	2627.8	34.8	
53	12.75 - 11.8333	37.1	2659.8	34.9	
54	11.8333 - 11.5833	37.2	2668.5	35.0	
55	11.5833 - 6.4833	39.5	2848.4	35.6	
56	6.4833 - 6.25	39.7	2856.7	35.6	
57	6.25 - 1.25	42.0	3036.0	36.2	
58	1.25 - 0	42.5	3081.3	36.3	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
131 - 126	Pole	TP11.715x10.525x0.1875	Pole	0.6%	Pass
126 - 121	Pole	TP12.906x11.715x0.1875	Pole	1.9%	Pass
121 - 116	Pole	TP14.096x12.906x0.1875	Pole	12.3%	Pass
116 - 111	Pole	TP15.287x14.096x0.1875	Pole	22.0%	Pass
111 - 110	Pole	TP15.525x15.287x0.1875	Pole	23.8%	Pass
110 - 105	Pole	TP16.776x15.525x0.25	Pole	32.1%	Pass
105 - 100	Pole	TP18.027x16.776x0.25	Pole	43.8%	Pass
100 - 95	Pole	TP19.277x18.027x0.25	Pole	57.3%	Pass
95 - 89.9	Pole + Reinf.	TP20.553x19.277x0.5	Reinf. 14 Tension Rupture	63.3%	Pass
89.9 - 89.67	Pole + Reinf.	TP20.611x20.553x0.5	Reinf. 14 Tension Rupture	63.8%	Pass
89.67 - 84.57	Pole + Reinf.	TP21.887x20.611x0.6375	Reinf. 14 Tension Rupture	59.3%	Pass
84.57 - 84.33	Pole + Reinf.	TP21.946x21.887x0.6375	Reinf. 14 Tension Rupture	59.8%	Pass
84.33 - 82.92	Pole + Reinf.	TP22.3x21.946x0.625	Reinf. 14 Tension Rupture	62.9%	Pass
82.92 - 82.67	Pole + Reinf.	TP22.362x22.3x0.3938	Reinf. 12 Tension Rupture	74.0%	Pass
82.67 - 80.98	Pole + Reinf.	TP22.785x22.362x0.3875	Reinf. 12 Tension Rupture	77.6%	Pass
80.98 - 80.73	Pole + Reinf.	TP22.847x22.785x0.3875	Reinf. 12 Tension Rupture	78.1%	Pass
80.73 - 75.73	Pole + Reinf.	TP24.098x22.847x0.3813	Reinf. 12 Tension Rupture	87.7%	Pass
75.73 - 74	Pole + Reinf.	TP25.531x24.098x0.3813	Reinf. 12 Tension Rupture	90.6%	Pass
74 - 69	Pole + Reinf.	TP25.281x24.03x0.4375	Reinf. 12 Tension Rupture	87.4%	Pass
69 - 66.98	Pole + Reinf.	TP25.785x25.281x0.4375	Reinf. 10 Tension Rupture	89.7%	Pass
66.98 - 66.73	Pole + Reinf.	TP25.848x25.785x0.4375	Reinf. 10 Tension Rupture	90.0%	Pass
66.73 - 64.08	Pole + Reinf.	TP26.511x25.848x0.4313	Reinf. 10 Tension Rupture	92.8%	Pass
64.08 - 63.83	Pole + Reinf.	TP26.573x26.511x0.575	Reinf. 11 Tension Rupture	88.0%	Pass
63.83 - 62.42	Pole + Reinf.	TP26.928x26.573x0.5625	Reinf. 11 Tension Rupture	89.6%	Pass
62.42 - 62.17	Pole + Reinf.	TP26.99x26.928x0.6125	Reinf. 9 Tension Rupture	89.0%	Pass
62.17 - 59.46	Pole + Reinf.	TP27.668x26.99x0.6125	Reinf. 9 Tension Rupture	91.9%	Pass
59.46 - 59.21	Pole + Reinf.	TP27.73x27.668x0.725	Reinf. 8 Compression	82.6%	Pass
59.21 - 56	Pole + Reinf.	TP28.532x27.73x0.7125	Reinf. 8 Compression	85.7%	Pass
56 - 55.75	Pole + Reinf.	TP28.595x28.532x0.7375	Reinf. 8 Compression	84.4%	Pass
55.75 - 50.75	Pole + Reinf.	TP29.846x28.595x0.7125	Reinf. 8 Compression	88.7%	Pass
50.75 - 45.75	Pole + Reinf.	TP31.096x29.846x0.7	Reinf. 8 Compression	92.6%	Pass
45.75 - 44.48	Pole + Reinf.	TP31.413x31.096x0.6875	Reinf. 8 Compression	93.6%	Pass
44.48 - 44.23	Pole + Reinf.	TP31.476x31.413x0.6125	Reinf. 4 Tension Rupture	88.0%	Pass
44.23 - 44.08	Pole + Reinf.	TP31.513x31.476x0.6125	Reinf. 4 Tension Rupture	88.1%	Pass
44.08 - 39.08	Pole + Reinf.	TP32.764x31.513x0.6	Reinf. 4 Tension Rupture	91.2%	Pass
39.08 - 39	Pole + Reinf.	TP34.015x32.764x0.6	Reinf. 4 Tension Rupture	91.2%	Pass
39 - 34	Pole + Reinf.	TP33.408x32.159x0.6313	Reinf. 4 Tension Rupture	91.9%	Pass
34 - 31.46	Pole + Reinf.	TP34.043x33.408x0.6188	Reinf. 4 Tension Rupture	93.1%	Pass
31.46 - 31.21	Pole + Reinf.	TP34.105x34.043x0.6188	Reinf. 4 Tension Rupture	93.2%	Pass
31.21 - 29.46	Pole + Reinf.	TP34.543x34.105x0.6188	Reinf. 4 Tension Rupture	93.9%	Pass
29.46 - 29.21	Pole + Reinf.	TP34.605x34.543x0.6188	Reinf. 4 Tension Rupture	94.0%	Pass
29.21 - 26.83	Pole + Reinf.	TP35.198x34.605x0.6188	Reinf. 4 Tension Rupture	95.0%	Pass
26.83 - 26.58	Pole + Reinf.	TP35.261x35.198x0.8438	Reinf. 2 Compression	85.1%	Pass
26.58 - 21.58	Pole + Reinf.	TP36.509x35.261x0.8188	Reinf. 2 Compression	87.3%	Pass
21.58 - 20.75	Pole + Reinf.	TP36.718x36.509x0.8188	Reinf. 2 Compression	87.6%	Pass
20.75 - 20.5	Pole + Reinf.	TP36.78x36.718x0.8188	Reinf. 2 Compression	87.1%	Pass
20.5 - 18	Pole + Reinf.	TP37.404x36.78x0.8063	Reinf. 2 Compression	88.1%	Pass
18 - 17.75	Pole + Reinf.	TP37.467x37.404x0.8188	Reinf. 4 Tension Rupture	72.6%	Pass
17.75 - 17.08	Pole + Reinf.	TP37.633x37.467x0.8188	Reinf. 4 Tension Rupture	72.8%	Pass
17.08 - 16.83	Pole + Reinf.	TP37.696x37.633x0.7313	Reinf. 4 Tension Rupture	80.9%	Pass
16.83 - 13	Pole + Reinf.	TP38.653x37.696x0.7188	Reinf. 4 Tension Rupture	82.1%	Pass
13 - 12.75	Pole + Reinf.	TP38.716x38.653x0.8938	Reinf. 1 Tension Rupture	67.9%	Pass
12.75 - 11.83	Pole + Reinf.	TP38.945x38.716x0.8938	Reinf. 1 Tension Rupture	68.1%	Pass
11.83 - 11.58	Pole + Reinf.	TP39.007x38.945x0.6688	Reinf. 1 Tension Rupture	90.9%	Pass
11.58 - 6.48	Pole + Reinf.	TP40.281x39.007x0.7563	Reinf. 1 Tension Rupture	87.2%	Pass
6.48 - 6.25	Pole + Reinf.	TP40.339x40.281x0.7563	Reinf. 1 Tension Rupture	87.3%	Pass
6.25 - 1.25	Pole + Reinf.	TP41.588x40.339x0.7438	Reinf. 1 Tension Rupture	88.5%	Pass
1.25 - 0	Pole + Reinf.	TP41.9x41.588x0.7313	Reinf. 1 Tension Rupture	88.8%	Pass
				Summary	
			Pole	70.4%	Pass
			Reinforcement	95.0%	Pass
			Overall	95.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity																	
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	
131 - 126	118	n/a	118	6.95	n/a	6.95	0.6%																	
126 - 121	159	n/a	159	7.67	n/a	7.67	1.9%																	
121 - 116	208	n/a	208	8.39	n/a	8.39	12.3%																	
116 - 111	266	n/a	266	9.10	n/a	9.10	22.0%																	
111 - 110	278	n/a	278	9.25	n/a	9.25	23.8%																	
110 - 105	464	n/a	464	13.28	n/a	13.28	32.1%																	
105 - 100	578	n/a	578	14.29	n/a	14.29	43.8%																	
100 - 95	709	n/a	709	15.30	n/a	15.30	57.3%																	
95 - 89.9	861	796	1657	16.32	13.50	29.82	35.7%																63.3%	
89.9 - 89.67	869	800	1669	16.37	13.50	29.87	36.0%																63.8%	
89.67 - 84.57	1042	1479	2521	17.39	22.50	39.89	33.6%												45.0%				59.3%	
84.57 - 84.33	1051	1486	2537	17.44	22.50	39.94	33.9%												45.4%				59.8%	
84.33 - 82.92	1103	1532	2635	17.72	22.50	40.22	35.8%												47.6%				62.9%	
82.92 - 82.67	1112	607	1720	17.78	9.00	26.78	55.6%												74.0%					
82.67 - 80.98	1177	629	1807	18.11	9.00	27.11	58.7%												77.6%					
80.98 - 80.73	1187	633	1820	18.16	9.00	27.16	59.1%												78.1%					
80.73 - 75.73	1395	701	2096	19.17	9.00	28.17	67.6%												87.7%					
75.73 - 74	1473	725	2198	19.52	9.00	28.52	70.4%												90.6%					
74 - 69	2002	769	2771	25.09	9.00	34.09	65.5%												87.4%					
69 - 66.98	2126	798	2924	25.60	9.00	34.60	67.3%										89.7%							
66.98 - 66.73	2141	802	2944	25.66	9.00	34.66	67.5%										90.0%							
66.73 - 64.08	2313	842	3155	26.32	9.00	35.32	69.6%												92.8%					
64.08 - 63.83	2346	1809	4155	26.39	18.00	44.39	57.6%												87.7%				88.0%	
63.83 - 62.42	2442	1856	4298	26.74	18.00	44.74	58.6%												89.1%				89.6%	
62.42 - 62.17	2442	2206	4648	26.81	22.50	49.31	50.7%										89.0%		67.6%				89.0%	
62.17 - 59.46	2633	2313	4946	27.49	22.50	49.99	52.5%											91.9%		69.7%			91.9%	
59.46 - 59.21	2651	3242	5893	27.55	31.50	59.05	44.5%										82.6%		77.8%				59.1%	77.8%
59.21 - 56	2890	3425	6316	28.36	31.50	59.86	46.6%										85.7%		80.6%				61.2%	80.6%
56 - 55.75	2913	3667	6580	28.42	34.50	62.92	47.0%										68.5%		84.4%				80.6%	60.3%
55.75 - 50.75	3316	3982	7298	29.68	34.50	64.18	50.1%											72.0%		88.7%			84.7%	63.4%
50.75 - 45.75	3755	4310	8065	30.93	34.50	65.43	53.2%											75.3%		92.6%			88.4%	66.2%
45.75 - 44.48	3872	4395	8267	31.25	34.50	65.75	53.9%											64.9%		76.1%			93.6%	89.3%
44.48 - 44.23	3892	3575	7467	31.31	27.00	58.31	57.8%												88.0%				68.6%	88.0%
44.23 - 44.08	3906	3583	7490	31.35	27.00	58.35	57.9%												88.1%				68.7%	88.1%
44.08 - 39.08	4395	3862	8258	32.61	27.00	59.61	60.9%												91.2%				71.2%	91.2%
39.08 - 39	4404	3867	8271	32.63	27.00	59.63	60.9%												91.2%				71.2%	91.2%
39 - 34	5115	4010	9125	36.55	27.00	63.55	59.7%												91.9%				72.6%	91.9%
34 - 31.46	5415	4159	9574	37.25	27.00	64.25	60.9%												93.1%				73.6%	93.1%
31.46 - 31.21	5445	4174	9619	37.32	27.00	64.32	61.0%												93.2%				77.6%	93.2%
31.21 - 29.46	5659	4278	9937	37.81	27.00	64.81	61.8%												93.9%				78.2%	93.9%
29.46 - 29.21	5690	4293	9983	37.87	27.00	64.87	61.9%												94.0%				73.2%	94.0%
29.21 - 26.83	5991	4436	10427	38.53	27.00	65.53	63.0%												95.0%				74.0%	95.0%
26.83 - 26.58	6049	7995	14044	38.60	48.00	86.60	50.7%												85.1%				80.0%	67.1%
26.58 - 21.58	6720	8554	15274	39.98	48.00	87.98	52.7%												87.3%				81.9%	68.8%
21.58 - 20.75	6837	8648	15485	40.21	48.00	88.21	53.0%												87.6%				82.2%	69.1%
20.75 - 20.5	6912	8825	15737	40.28	52.25	92.53	53.9%												87.1%				82.0%	65.7%
20.5 - 18	7272	9118	16390	40.97	52.25	93.22	54.9%												88.1%				82.8%	66.5%
18 - 17.75	7239	9355	16594	41.04	51.38	92.41	50.6%																75.9%	71.6%
17.75 - 17.08	7337	9436	16772	41.22	51.38	92.60	50.8%																76.1%	71.8%
17.08 - 16.83	7374	7797	15170	41.29	42.38	83.67	56.6%																85.0%	79.7%
16.83 - 13	7956	8182	16138	42.35	42.38	84.72	58.1%																86.2%	80.9%
13 - 12.75	7996	11841	19837	42.42	60.38	102.79	46.9%																71.0%	66.5%
12.75 - 11.83	8140	11976	20116	42.67	60.38	103.05	47.2%																71.3%	66.8%
11.83 - 11.58	8219	7251	15470	42.74	42.38	85.12	65.9%																84.6%	
11.58 - 6.48	9322	10062	19384	44.15	50.50	94.65	61.6%																83.4%	
6.48 - 6.25	9362	10091	19453	44.21	50.50	94.71	61.7%																83.5%	
6.25 - 1.25	10256	10710	20966	45.59	50.50	96.09	63.5%																84.7%	
1.25 - 0	10488	10868	21356	45.94	50.50	96.44	64.0%																85.0%	

Note: Section capacity checked in 5 degree increments.

Stiffened or Unstiffened, UngROUTED, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 806376
Site Name: HRT 100 943239
App #: 393435 Rev 0
Pole Manufacturer: Other

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	49.88	in

Plate Data

Diam:	55.88	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.23	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	41.9	in
Thick:	0.3438	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions

Mu:	3081	ft-kips
Axial, Pu:	43	kips
Shear, Vu:	36	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Results

Max Rod (Cu+ Vu/η): 256.7 Kips
 Allowable Axial, Φ*Fu*Anet: 260.0 Kips
 Anchor Rod Stress Ratio: 98.7% **Pass**

Rigid
AISC LRFD
φ*Tn

Base Plate Results

Base Plate Stress: 36.0 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 66.6% **Pass**

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
27.06

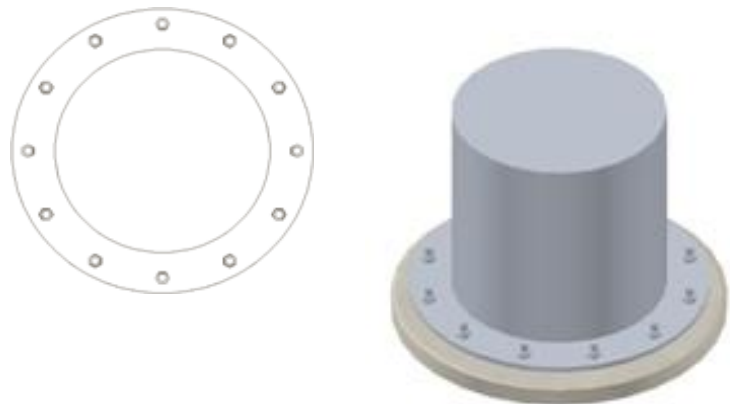
n/a

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



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data	
BU#:	806376
Site Name:	HRT 100 943239
App #:	393435 Rev 0

Reactions		
Mu	49.95	ft-kips
Axial, Pu:	2.01	kips
Shear, Vu:	5.17	kips
Elevation:	110	feet

Bolt Threads:
X-Excluded
$\phi V_n = \phi(0.55 A_b F_u)$
$\phi = 0.75, \phi V_n$ (kips):
38.88

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria: **TIA G** <-Only Applicable to Unstiffened Cases

Bolt Data			
Qty:	10		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	19.45		

Flange Bolt Results	
Bolt Tension Capacity, $\phi^*T_n, B1$:	54.54 kips
Adjusted ϕ^*T_n (due to $V_u = V_u/Q_t$), B :	54.54 kips
Max Bolt directly applied T_u :	12.13 Kips
Min. PL "tc" for B cap. w/o Pry :	1.057 in
Min PL "treq" for actual T w/ Pry :	0.373 in
Min PL "t1" for actual T w/o Pry :	0.498 in
T allowable w/o Prying:	54.54 kips
Prying Force, q:	0.00 kips
Total Bolt Tension= T_u+q :	12.13 kips
Non-Prying Bolt Stress Ratio, T_u/B :	22.2% Pass

Rigid
ϕ^*T_n
$\phi T_n [1 - (V_u / \phi V_n)^2]^{0.5}$

Plate Data		
Diam:	21.95	in
Thick, t:	1.375	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.99	in

Exterior Flange Plate Results	
Flexural Check	
Compression Side Plate Stress:	5.3 ksi
Allowable Plate Stress:	45.0 ksi
Compression Plate Stress Ratio:	11.8% Pass
No Prying	
Tension Side Stress Ratio, $(t_{req}/t)^2$:	7.4% Pass

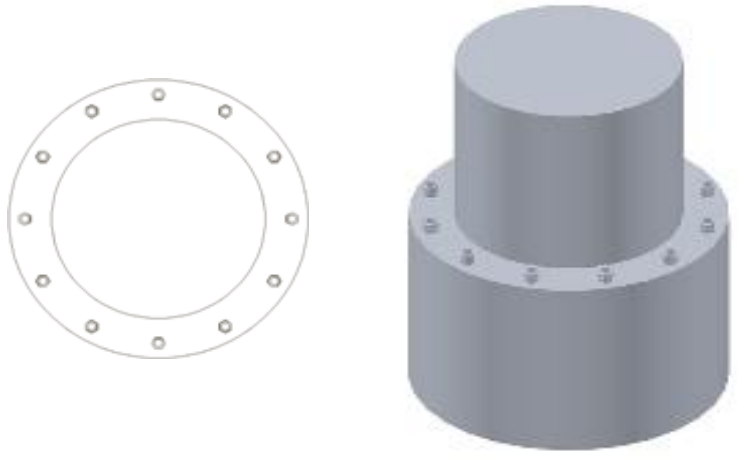
$\alpha' < 0$ case

Rigid
TIA G
ϕ^*F_y
Comp. Y.L. Length:
11.72

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Stiffener Results	
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$:	n/a
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$:	n/a
Plate Comp. (AISC Bracket):	n/a
Pole Results	
Pole Punching Shear Check:	n/a

Pole Data		
Diam:	15.525	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: 806376
 Site Name: HRT 100 943239
 App #: 393435 Rev 0

Reactions		
Mu	49.95	ft-kips
Axial, Pu:	2.01	kips
Shear, Vu:	5.17	kips
Elevation:	110	feet

Bolt Threads:
X-Excluded
$\phi V_n = \phi(0.55 \cdot A_b \cdot F_u)$
$\phi = 0.75, \phi \cdot V_n$ (kips):
38.88

Pole Manufacturer: Other

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	10	
Diameter (in.):	1	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	100	<-- Disregard
N/A:	75	<-- Disregard
Circle (in.):	19.45	

Flange Bolt Results

Bolt Tension Capacity, $\phi \cdot T_n, B1$: 54.54 kips
 Adjusted $\phi \cdot T_n$ (due to $V_u = V_u / Q_t$), **B**: 54.54 kips
 Max Bolt directly applied T_u : 12.13 Kips
 Min. PL "tc" for **B** cap. **w/o Pry**: 1.057 in
 Min PL "treq" for actual **T w/ Pry**: 0.373 in
 Min PL "t1" for actual **T w/o Pry**: 0.498 in
 T allowable w/o Prying: 54.54 kips
 Prying Force, q: 0.00 kips
 Total Bolt Tension= $T_u + q$: 12.13 kips
 Non-Prying Bolt Stress Ratio, T_u / B : 22.2% **Pass**

Rigid
$\phi \cdot T_n$
$\phi T_n [(1 - (V_u / \phi V_n)^2)^{0.5}]$

$\alpha' < 0$ case

Plate Data		
Diam:	21.95	in
Thick, t:	1.375	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.99	in

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 5.3 ksi
 Allowable Plate Stress: 45.0 ksi
 Compression Plate Stress Ratio: 11.8% **Pass**
No Prying
 Tension Side Stress Ratio, $(t_{req}/t)^2$: 7.4% **Pass**

Rigid
TIA G
$\phi \cdot F_y$
Comp. Y.L. Length:
11.72

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

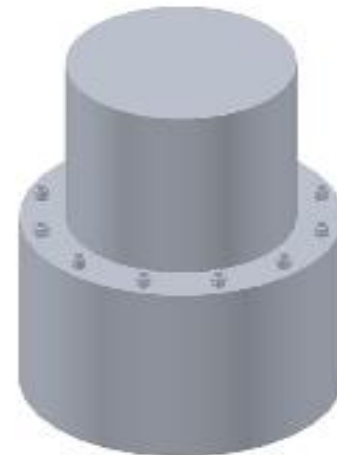
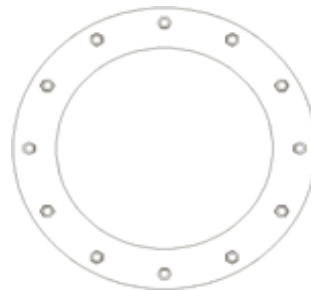
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	15.525	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

Base Transfer Stiffener

Project & Site Details	
Project No.	17QGOK1400
Project Name	HRT 100 943239
Site ID	806376
Date	June 19, 2017
Code	ANSI/TIA-222-G
Maximum Stress Ratio	105%

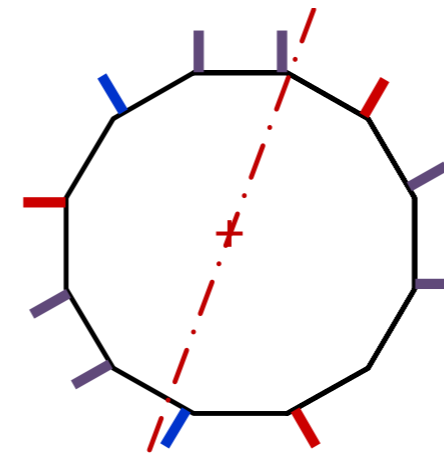
Tower Reactions		
Moment	3081	k-ft
Axial	43	kips
Shear	36	kips

Optional Inputs	
Axis Angle to 0° (°)	160
Additional Inertia (in ⁴)	

Pole Properties		
Pole Diameter	41.9	in
Pole Thickness	0.3438	in
Pole Grade	A572-65	
Number of Sides	12	Sided

Centroid		
x	-1.2901	in
y	1.2336	in

Stiffener Properties		
Stiffener Quantity	11	Stiffeners
Any Symmetric Plates?	N	(Y/N)



Moment of Inertia		
	I (in ⁴)	Angle (°)
Min.	29506.8	143
Max.	35602.5	53
Current	30030.5	160

Individual Stiffener Input					
Stiffener Name	Angle to 0° (°)	Axis Angle of Max (°)	Controlling Case	Percentage	Pass/Fail
1. PL 5.5x1.25	19	119	Stress	59.1%	Pass
1. PL 5.5x1.25	138	40	Stress	49.0%	Pass
1. PL 5.5x1.25	258	163	Stress	53.7%	Pass
4. PL 6x1.25	78	160	Stress	61.5%	Pass
4. PL 6x1.25	168	84	Stress	49.6%	Pass
4. PL 6x1.25	192	110	Stress	52.5%	Pass
4. PL 6x1.25	288	11	Stress	51.2%	Pass
4. PL 6x1.25	312	42	Stress	49.6%	Pass
4. PL 6x1.25	110	6	Stress	54.9%	Pass
3. PL 7x1.25	220	134	Stress	57.2%	Pass
3. PL 7x1.25	341	83	Stress	54.3%	Pass
Pole		143	Stress	43.1%	Pass

Overall 61.5% Pass

Stiffener Input													
Stiffener Name	Width (in)	Thickness (in)	Considering Plate Capacity (Y/N)	Height (in)	Notch (in)	Offset from Pole (in)	Grade	Weld Electrode (ksi)	Vertical Weld Size (in)	Horizontal Weld Type	Groove Angle (°)	Horizontal Groove Size (in)	Horizontal Fillet Size (in)
1. PL 5.5x1.25	5.5	1.25	Y	35.75	0.75	0	A572-65	80	3/8	Double Sided	45	0.625	0.625
2. PL 6x1.25	6	1.25	Y	40	0.75	0	A572-65	80	3/8	Double Sided	45	0.625	0.625
3. PL 7x1.25	7	1.25	Y	72.25	0.75	0	A572-65	80	3/8	Double Sided	45	0.625	0.625
4. PL 6x1.25	6	1.25	Y	42	0.75	0	A572-65	80	5/16	CJP			

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: 806376
 Site Name: HRT 100 943239
 App #: 393435 Rev 0

Loads Already Factored	
For M (WL):	1.00
For P (DL):	1.00

Pier Properties	
Concrete:	
Pier Diameter =	6.0 ft
Concrete Area =	4071.5 in ²
Reinforcement:	
Clear Cover to Tie=	3.00 in
Horiz. Tie Bar Size=	4
Vert. Cage Diameter =	5.31 ft
Vert. Cage Diameter =	63.73 in
Vertical Bar Size =	10
Bar Diameter =	1.27 in
Bar Area =	1.27 in ²
Number of Bars =	36
As Total=	45.72 in ²
A s/ Aconc, Rho:	0.0112 1.12%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
 Min As for Flexural, Tension Controlled, Shafts:
 $(3) * (\text{Sqrt}(f'c) / Fy) = 0.0027$
 $200 / Fy = 0.0033$

Minimum Rho Check:

Actual Req'd Min. Rho: 0.33% Flexural
 Provided Rho: 1.12% **OK**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = ($\phi=0.65$) Pn.		
Pn per ACI 318 (10-2)	6764.65	kips
at Mu=($\phi=0.65$)Mn=	3483.70	ft-kips
Max Tu, ($\phi=0.9$) Tn =	2468.88	kips
at Mu= $\phi=(0.90)$ Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces		
TIA Revision:	G	
Max. Factored Shaft Mu:	3279	ft-kips (* Note)
Max. Factored Shaft Pu:	43	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

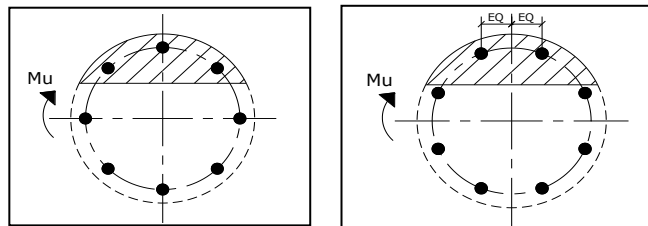
Load Factor	Shaft Factored Loads	
1.00	Mu:	3279 ft-kips
1.00	Pu:	43 kips

Material Properties		
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2005	

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: 1



Case 1

Case 2

Dist. From Edge to Neutral Axis: **15.77** in
 Extreme Steel Strain, ϵ_t : **0.0099**
 $\epsilon_t > 0.0050$, Tension Controlled
 Reduction Factor, ϕ : **0.900**

Output Note: Negative Pu=Tension
 For Axial Compression, ϕ Pn = Pu: 38.70 kips
 Drilled Shaft Moment Capacity, ϕ Mn: **5754.97** ft-kips
 Drilled Shaft Superimposed Mu: **3279.00** ft-kips

(Mu/ ϕ Mn, Drilled Shaft Flexure CSR: 57.0%

Pier and Pad Foundation



BU #: 806376
Site Name: HRT 100 943239
App. Number: 393435 Rev 0

TIA-222 Revision: G
Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	43	kips
Base Shear, V_{u_comp} :	36	kips
Moment, M_u :	3081	ft-kips
Tower Height, H :	131	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	286.55	36.00	12.6%	Pass
<i>Bearing Pressure (ksf)</i>	7.50	2.98	39.7%	Pass
<i>Overtuning (kip*ft)</i>	5123.39	3396.00	66.3%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	5754.97	3279.00	57.0%	Pass
<i>Pier Compression (kip)</i>	13497.04	70.99	0.5%	Pass
<i>Pad Flexure (kip*ft)</i>	2592.84	1353.79	52.2%	Pass
<i>Pad Shear - 1-way (kips)</i>	674.44	227.45	33.7%	Pass
<i>Pad Shear - 2-way (kips)</i>	1654.85	70.99	4.3%	Pass

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	6.0	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	10	
Pier Rebar Quantity, mc :	36	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	3	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Soil Rating: 66.3%
Structural Rating: 57.0%

Pad Properties		
Depth, D :	8.0	ft
Pad Width, W :	22.0	ft
Pad Thickness, T :	3.0	ft
Pad Rebar Size, Sp :	10	
Pad Rebar Quantity, mp :	15	
Pad Clear Cover, cc_{pad} :	3	in

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

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Gross Bearing, Q_{ult} :	10.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	33	degrees
SPT Blow Count, N_{blows} :	15.333	
Base Friction, μ :		
Neglected Depth, N :	3.0	ft
Groundwater Depth, gw :	12	ft

--Toggle between Gross and Net



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

SPRINT Existing Facility

Site ID: CT03XC251

East Hartford
1455 Forbes Street
East Hartford, CT 06118

July 25, 2017

EBI Project Number: 6217003223

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	25.75 %



July 25, 2017

SPRINT

Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT03XC251 – East Hartford**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1455 Forbes Street, East Hartford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **1455 Forbes Street, East Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) 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.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXVSP18-C-A20** and **RFS APXVTM14-C-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **97 feet** above ground level (AGL) for **Sector A**, **97 feet** above ground level (AGL) for **Sector B** and **97 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	97 feet	Height (AGL):	97 feet	Height (AGL):	97 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	3.71 %	Antenna B1 MPE%	3.71 %	Antenna C1 MPE%	3.71 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	97 feet	Height (AGL):	97 feet	Height (AGL):	97 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	2.70 %	Antenna B2 MPE%	2.70 %	Antenna C2 MPE%	2.70 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	6.41 %
Clearwire	0.22 %
AT&T	4.74 %
Verizon Wireless	4.41 %
T-Mobile	9.97 %
Site Total MPE %:	25.75 %

SPRINT Sector A Total:	6.41 %
SPRINT Sector B Total:	6.41 %
SPRINT Sector C Total:	6.41 %
Site Total:	25.75 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	97	1.90	850 MHz	567	0.34%
Sprint 850 MHz LTE	2	437.55	97	3.80	850 MHz	567	0.67%
Sprint 1900 MHz (PCS) CDMA	5	622.47	97	13.51	1900 MHz (PCS)	1000	1.35%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	97	13.51	1900 MHz (PCS)	1000	1.35%
Sprint 2500 MHz (BRS) LTE	8	778.09	97	27.02	2500 MHz (BRS)	1000	2.70%
						Total:	6.41%

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 SPRINT 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:

SPRINT Sector	Power Density Value (%)
Sector A:	6.41 %
Sector B:	6.41 %
Sector C:	6.41 %
SPRINT Maximum Total (per sector):	6.41 %
Site Total:	25.75 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **25.75 %** 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.