



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

October 10, 2018

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

RE: Notice of Exempt Modification for T-Mobile Crown Site BU: 806376
T-Mobile Site ID: CT11186A
1455 Forbes Street, East Hartford, CT, 06118
Latitude: 41.73145100 / Longitude: -72.60774900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) existing antennas at the 87' level of the existing 131' monopole at 1441 Forbes Street in East Hartford, CT (also known as 1455 Forbes Street). The tower is owned by Crown Castle. The property is owned by Mr. Robert D. Handel. T-Mobile now intends to replace three (3) of its existing antennas with three (3) antennas. These antennas would be installed at the same 87' level of the tower. T-Mobile also intends to replace (3) RRUs and swap out (1) coax for (1) new hybrid fiber 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, Eileen Buckheit, Development Director, as well as the property owner, and Crown Castle as the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments:

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

cc:

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

Eileen Buckheit
Development Director
740 Main Street
East Hartford, CT 06108

Robert Handel
1473 Forbes Street
East Hartford, CT 06118

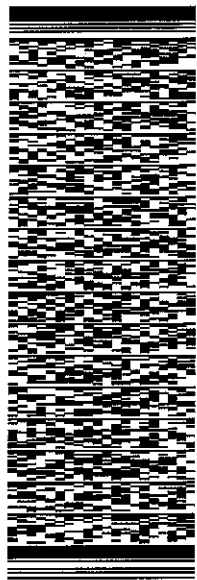
ORIGIN ID: GFLA (518) 373-3523
ALLISON J. SQUIRES
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 10OCT18
ACTWGT: 2.00 LB
CAD: 104824194/NET4040
BILL SENDER

TO MAYOR MARCIA LECLERC
TOWN OF EAST HARTFORD
740 MAIN ST

EAST HARTFORD CT 06108
REF: 1734/7880
DEPT:

552J1188FB/DCA5

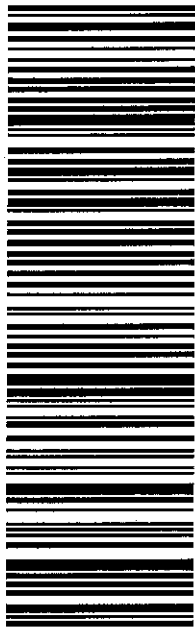


TRK# 7734 4093 6163
0201

THU - 11 OCT 10:30A
PRIORITY OVERNIGHT
DSR

EB QCWA

06108
CT:US BDL



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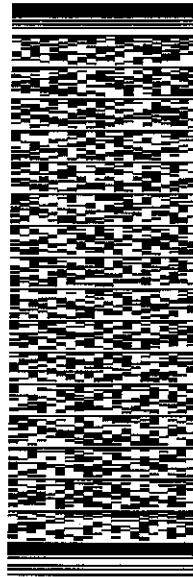
ORIGIN ID:GEA (518) 373-3523
ALLISON J. SOJRES
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 10OCT18
ACTWGT: 2.00 LB
CAD: 108924194/NET14040
BILL SENDER

TO EILEEN BUCKHEIT - DEV DIRECTOR
TOWN OF EAST HARTFORD
740 MAIN ST

EAST HARTFORD CT 06108
(518) 373-3543 REF: 1734.7830
NY
PO DEPT:

552.J189FB/DCA5

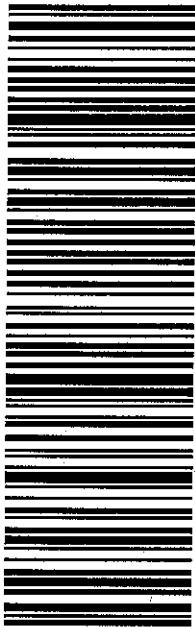


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ORIGIN ID: GFLA (518) 373-3523
ALLISON J. SOLIFRES
3 COLEMAN CASTLE
3 COLEMAN CASTLE PARK DRIVE
SUITE 101
CLIFTON PARK NY 12065
UNITED STATES US

SHIP DATE: 10OCT18
ACT WT: 2.00 LB
CAD: 104924794/NET 40.40
BILL SENDER

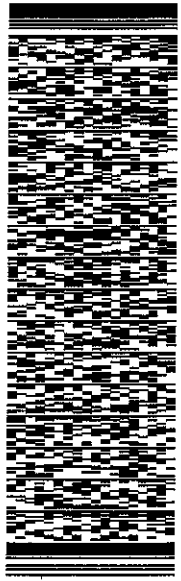
TO **RBERT HANDEL**

1473 FORBES ST

EAST HARTFORD CT 06118

(518) 373-3543 REF: 17347830
NY DEPT:
PO:

552J1/89FB/DCA5

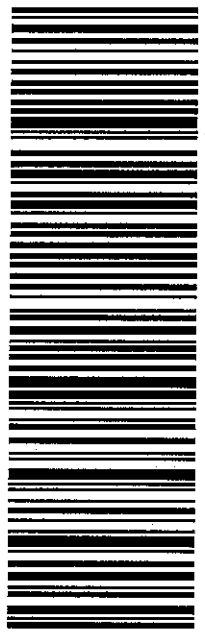


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EB QCWA

06118
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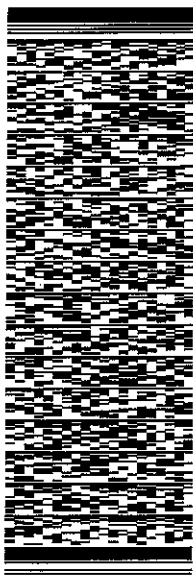
ORIGIN/D:GFLA (518) 373-3523
ALLISON J. SQUIRES
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 10OCT18
ACTWGT: 3.00 LB
CAD: 104924194#NET4040
BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051

(860) 827-2951 REF: 17660680
PO. DEPT.



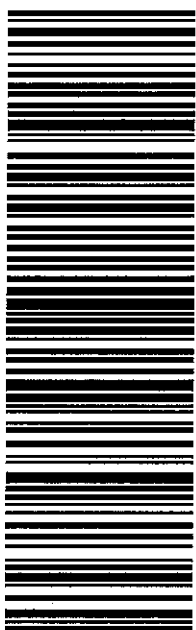
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06051
CT-US BDL



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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

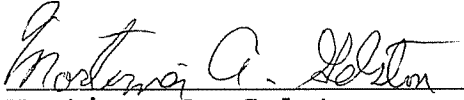
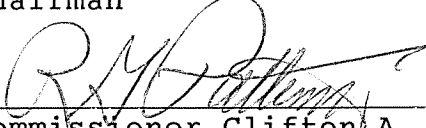
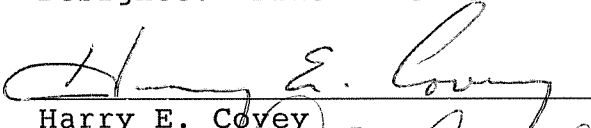
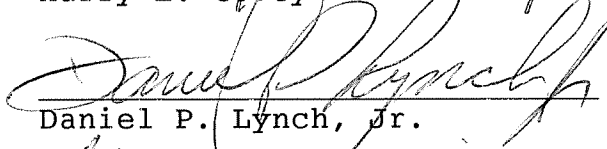
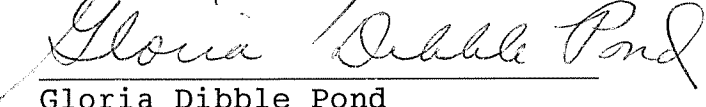
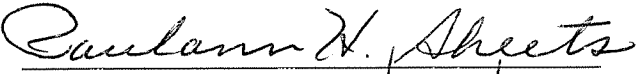
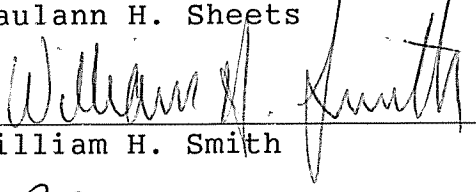
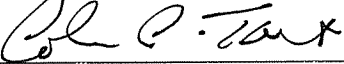
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CERTIFICATION

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.

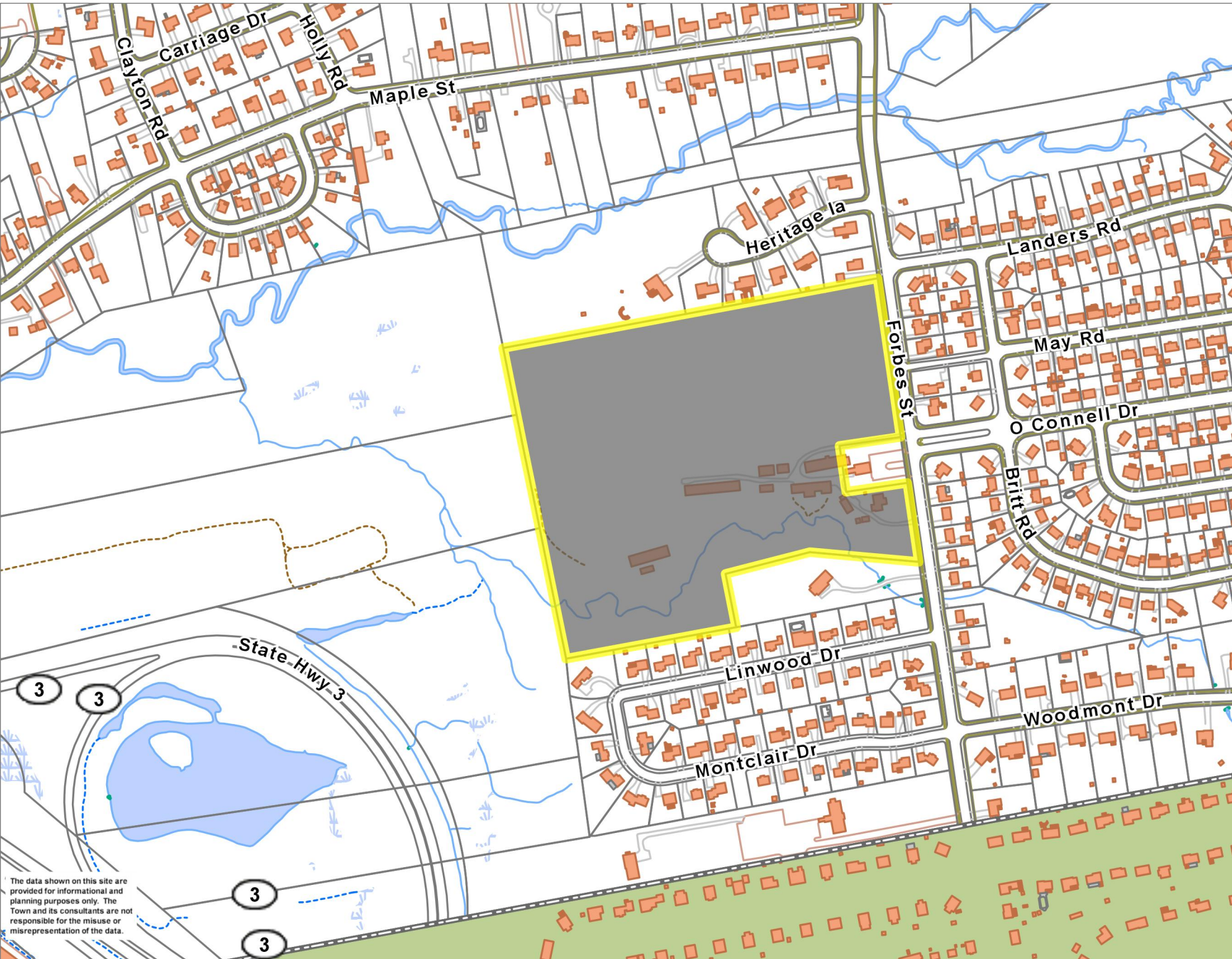
Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and The East Hartford Gazette.

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:

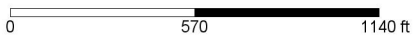
Crown Atlantic Company LLC and
AT&T Wireless PCS, LLC

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



- Town Boundary
- Schools
- Buildings
- Building
- Cement
- Deck
- Foundation
- Greenhouse
- Tank
- Parcels
- Paved Features
- Driveway
- Road Edge
- Parking Lot
- Sidewalk
- Trail
- Tunnel
- Unpaved
- Water Features Arc
- Perennial Stream
- Draining Ditch
- Culvert
- Spillway
- Headwall
- Dam
- Directional Flow Arrow
- Water Features Poly
- Open Water
- Swamp
- Pier
- CT Highways
- Interstate
- US Highway
- State Highway
- Abutting Town Labels
- Az
- Abutting Towns
- Streets

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.



Printed on 06/20/2016 at 10:16 AM

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:	\$330,170.00	IMPROVEMENTS:	\$285,940.00	LAND:	\$44,230.00
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ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
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
2011	\$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

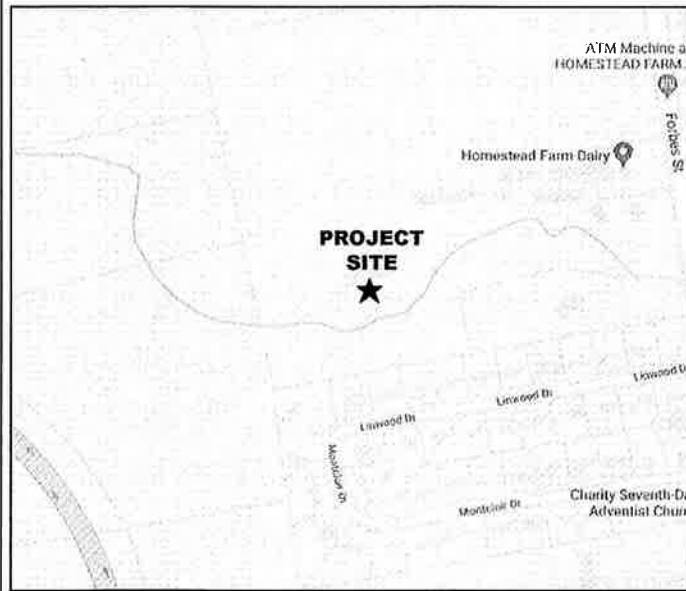
DESCRIPTION	CODE	UNITS
Shed	SHD1	1x105 (105 S.F.)
1 Story Barn	BRN1	1x840 (840 SF)
Shed	SHD1	1x144 (144 S.F.)
1 Story Barn	BRN1	1x3840 (3840 SF)
Shed	SHD1	1x308 (308 S.F.)
FR/SHED		30 SF

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

TOWER OWNER NOTIFICATION

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

LOCATION MAP



CBU
806376
SITE ID
CT11186A
SITE NAME
EAST HARTFORD/ HILLS_1
SITE ADDRESS
1455 FORBES STREET
EAST HARTFORD, CT 06118
CONFIGURATION
67D92DB_2XAIR+1OP

GENERAL NOTES

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

CODE COMPLIANCE

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

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

PROJECT SITE INFORMATION

SITE ID: CT11186A
SITE NAME: EAST HARTFORD/ HILLS_1
SITE ADDRESS: 1455 FORBES STREET
 EAST HARTFORD, CT 06118
PERMITTING JURISDICTION: TOWN OF EAST HARTFORD
COUNTY: HARTFORD
ZONING: R-2
SITE COORDINATES:
LATITUDE: 41° 43' 53.2" N (41.731451°) (NAD 83)
LONGITUDE: -72° 36' 27.9" W (-72.607749°) (NAD 83)
APPLICANT: T-MOBILE NORTHEAST LLC
 103 MONARCH DRIVE
 LIVERPOOL, NY 13088

STRUCTURAL ANALYSIS INFORMATION

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

ANTENNA MOUNTS
 INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING **MOUNTS** FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO PASSING MOUNT ANALYSIS PRIOR TO ANY CONSTRUCTION.

PROJECT TEAM INFORMATION

CLIENT REPRESENTATIVE: CROWN CASTLE
 3 CORPORATE PARK DRIVE SUITE 101
 CLIFTON PARK, NY 12065

CLIENT REP. CONTACT: WILL STONE
 (518) 373-3543

ENGINEER: INFINIGY
 6865 DEERPATH ROAD SUITE 152
 ELK RIDGE, MD 21075

ENGINEER CONTACT: MATTHEW LIVERETTE
 (518) 690-0790

SCOPE OF WORK

SCOPE OF WORK:
 L700 4X2 67D92DB OUTDOOR CONFIG: REPLACE (3) ANTENNAS AND (3) RRU'S.
 REPLACE (1) COAX FOR (1) HYBRID. FINAL CONFIG: (9) ANTENNAS, (11) COAX, (3) HYBRIDS, (3) TMA'S, AND (3) RRU'S.

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

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 6865 DEERPATH ROAD SUITE 152
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ISSUED FOR CONSTRUCTION		SL	09/11/18
A	ISSUED FOR REVIEW	SL	08/21/18
No	Submittal / Revision	App'd	Date

Drawn: RCD
 Designed: MR
 Checked: AD

Project Number: 600-007

Project Title:
CT11186A
EAST HARTFORD/
HILLS 1
1455 FORBES STREET
EAST HARTFORD, CT 06118

Prepared For:

Drawing Title
TITLE PAGE
 Drawing Number
T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

- 1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 - A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 - B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
 - D. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
 - E. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).
- 1.2 DEFINITIONS:
 - A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
 - B: COMPANY: T-MOBILE CORPORATION
 - C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
 - D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
 - E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- 1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.
- 1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
 - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
- 1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.7 NOTICE TO PROCEED:
 - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
 - B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE T-MOBILE WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

- 2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

- 2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
 - A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY T-MOBILE TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.
- 2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.
- 2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

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

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

- 4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- 4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- 4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 - A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 - B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- 4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.
- 4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

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

- F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

- 6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.
 - A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.
 - B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.
 - C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
 - D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.
 - E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.
 - F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOIL SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HERINAFTER SPECIFIED.
 - G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBING, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

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

ABBREVIATIONS

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



T-Mobile

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
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0	ISSUED FOR CONSTRUCTION	SL	09/11/18
A	ISSUED FOR REVIEW	SL	08/21/18
No	Submittal / Revision	App'd	Date

Drawn: RBD
Designed: NRL
Checked: ADD

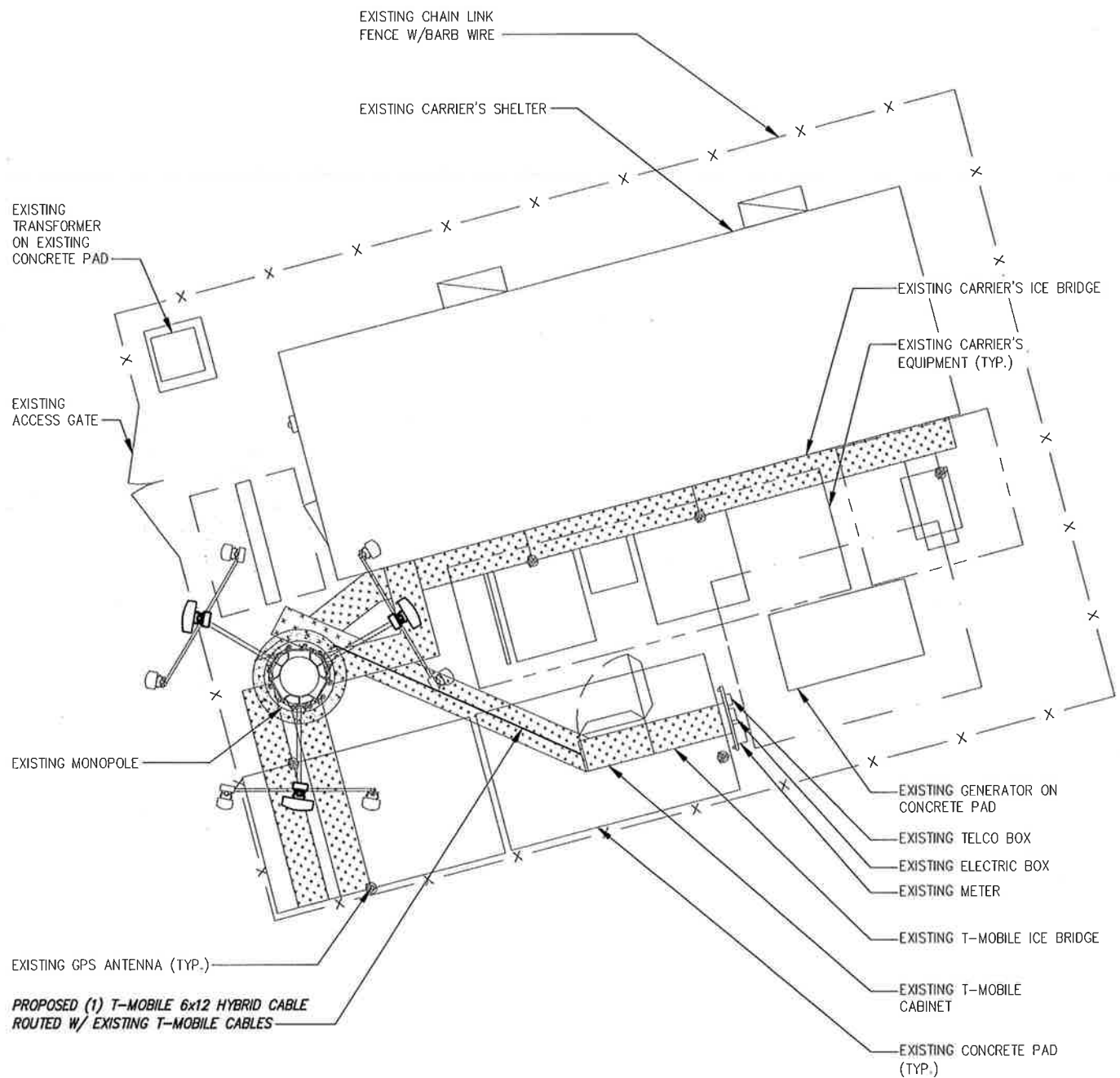
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Project Title: **CT11186A**
EAST HARTFORD/
HILLS 1
1455 FORBES STREET
EAST HARTFORD, CT 06118

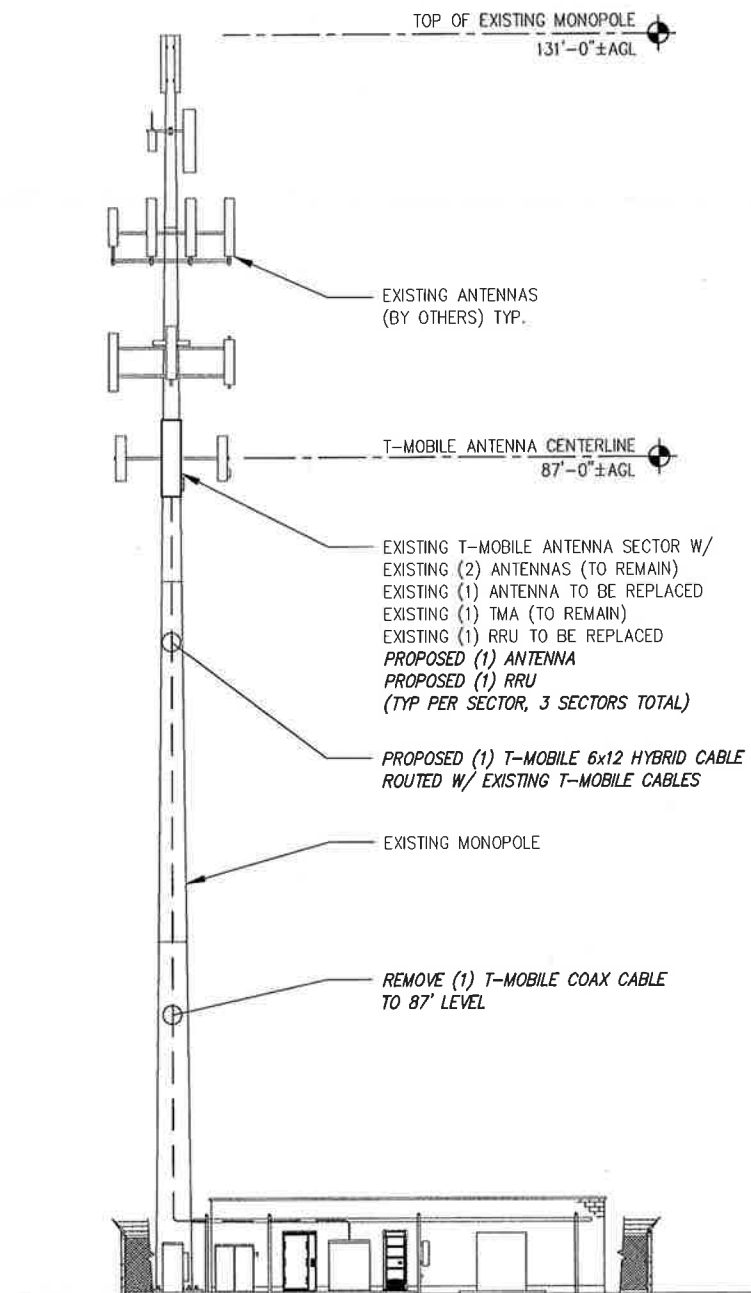
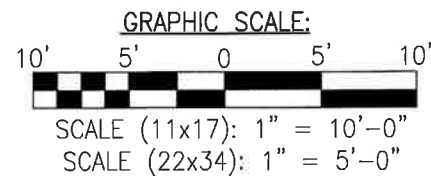
Prepared For: **CROWN CASTLE**

NOTES

Drawing Number: **N1**



1 PLAN VIEW
C1 SCALE: AS NOTED



2 ELEVATION
C1 SCALE: NOT TO SCALE

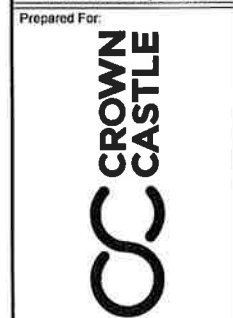


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Drawing Title:
PLAN AND ELEVATION

Drawing Number:
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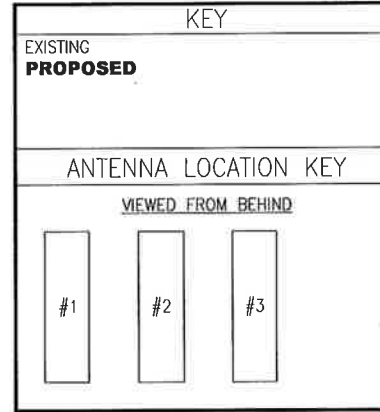
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TEL (443) 592-3143

SECTOR	ANTENNA POSITION	ANTENNA MODEL #	VENDOR	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA/RRU MODEL #	CABLE LENGTH	CABLE TYPE AND QUANTITY
ALPHA	A-1	AIR32 B66A/B2A	ERICSSON	60°	0	-	87'-0"	-	137'±	(1) 6x12 HCS (SHARED)
	A-2	APXVAARR24_43-U-NA20	RFS	60°	0	-	87'-0"	4449 B71+B1	137'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	A-3	AIR21 B2A/B4P	ERICSSON	60°	0	-	87'-0"	TWIN STYLE 1B-AWS	137'±	(1) 6x12 HCS (SHARED) (2) 1-1/4" COAX
BETA	B-1	AIR32 B66A/B2A	ERICSSON	190°	0	-	87'-0"	-	137'±	(1) 6x12 HCS (SHARED)
	B-2	APXVAARR24_43-U-NA20	RFS	190°	0	-	87'-0"	4449 B71+B1	137'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	B-3	AIR21 B2A/B4P	ERICSSON	190°	0	-	87'-0"	TWIN STYLE 1B-AWS	137'±	(1) 6x12 HCS (SHARED) (2) 1-1/4" COAX
GAMMA	C-1	AIR32 B66A/B2A	ERICSSON	280°	0	-	87'-0"	-	137'±	(1) 6x12 HCS (SHARED)
	C-2	APXVAARR24_43-U-NA20	RFS	280°	0	-	87'-0"	4449 B71+B1	137'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	C-3	AIR21 B2A/B4P	ERICSSON	280°	0	-	87'-0"	TWIN STYLE 1B-AWS	137'±	(1) 6x12 HCS (SHARED) (2) 1-1/4" COAX

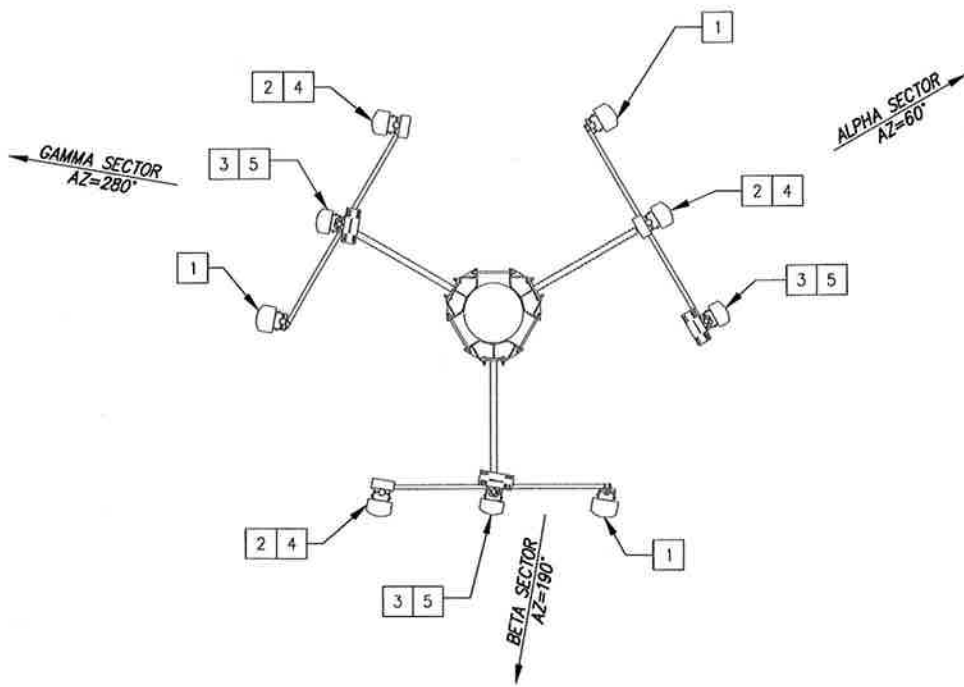


- GENERAL NOTES:
- CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT AT TIME OF CONSTRUCTION.
 - CONTRACTOR TO CONFIRM CABLE LENGTHS FOR ANY PROPOSED CABLES/JUMPERS PRIOR TO CONSTRUCTION.

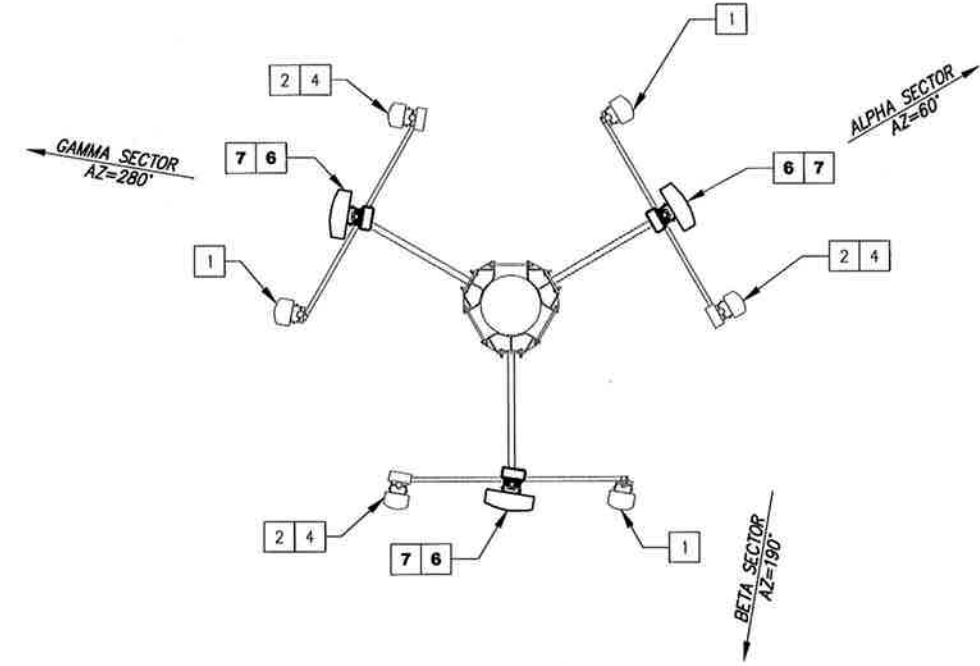
ORIENTATION PLAN KEY

KEY	DESCRIPTION	TYPE	QTY	STATUS
1	AIR32 B66A/B2A	ANTENNA	3	REMAIN
2	AIR21 B2A/B4P	ANTENNA	3	REMAIN
3	LNK-6515DS-A1M	ANTENNA	3	REMOVED
4	TWIN STYLE 1B TMA	TMA	3	REMAIN
5	RRUS11 B12	RRU	3	REMOVED
6	APXVAARR24_43-U-NA20	ANTENNA	3	PROPOSED
7	4449 B17+B12	RRU	3	PROPOSED

1 RF SYSTEM CHART
C2 SCALE: NOT TO SCALE



2 EXISTING ANTENNA ORIENTATION
C2 SCALE: NOT TO SCALE



3 PROPOSED ANTENNA ORIENTATION
C2 SCALE: NOT TO SCALE

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103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY

6865 DEERPATH ROAD SUITE 152
ELK RIDGE, MD 21075
TEL: (443) 592-3143



No.	Submital / Revision	App'd	Date
0	ISSUED FOR CONSTRUCTION	SL	09/11/18
A	ISSUED FOR REVIEW	SL	06/21/18

Drawn: RCD
Designed: MRS
Checked: A.D.

Project Number: 600-007

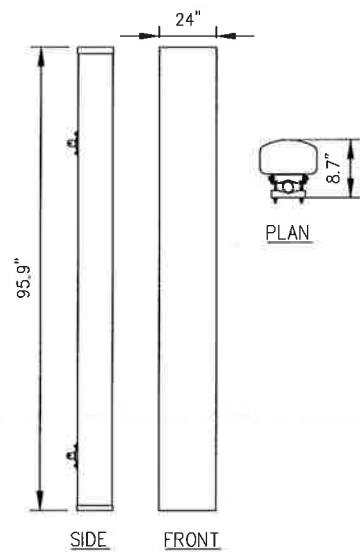
Project Title: **CT11186A**
EAST HARTFORD/
HILLS 1
1455 FORBES STREET
EAST HARTFORD, CT 06118

Prepared For:

CROWN CASTLE

Drawing Title: **RF CHART**

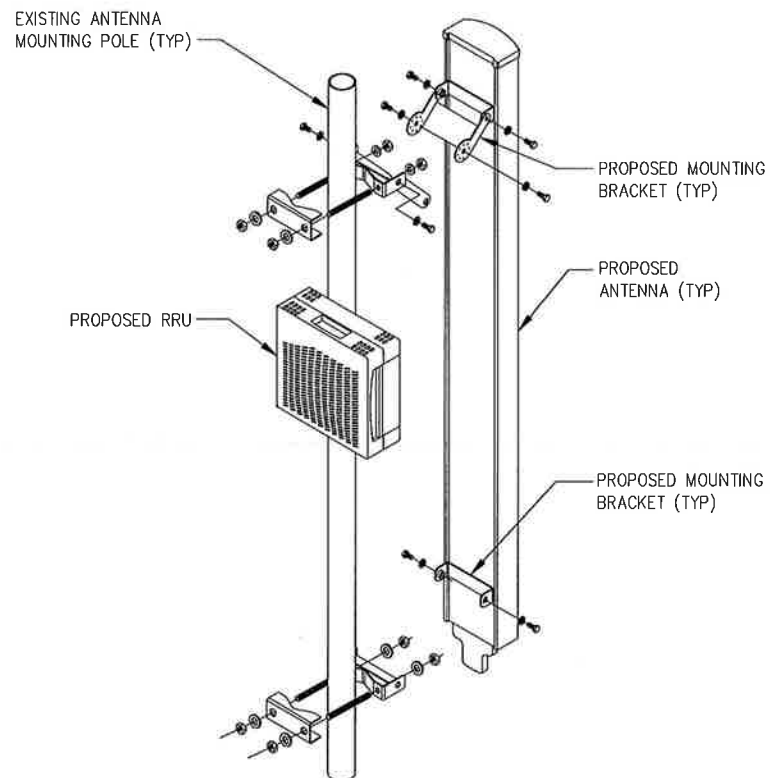
Drawing Number: **C2**



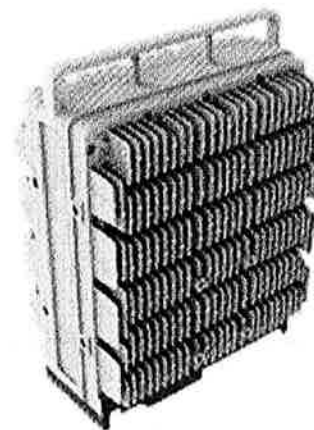
RFS MODEL NO.: APXVAARR24_43-U-NA20

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD:	95.9"x24"x8.7"
WEIGHT, W/O MOUNTING KIT:	128 LBS

1 APX
ANTENNA DETAIL
D1 SCALE: NOT TO SCALE



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



ERICSSON 4449 B71+B12 SPECIFICATIONS

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

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



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ISSUED FOR CONSTRUCTION SL 09/11/18

ISSUED FOR REVIEW SL 08/21/18

No.	Submittal / Revision	App'd	Date

Drawn: RCD
Designed: MRL
Checked: AJD

Project Number:
600-007

Project Title:
CT11186A
EAST HARTFORD/
HILLS 1
1455 FORBES STREET
EAST HARTFORD, CT 06118

Prepared For:



Drawing Title

**EQUIPMENT
DETAILS**

Drawing Number

D1

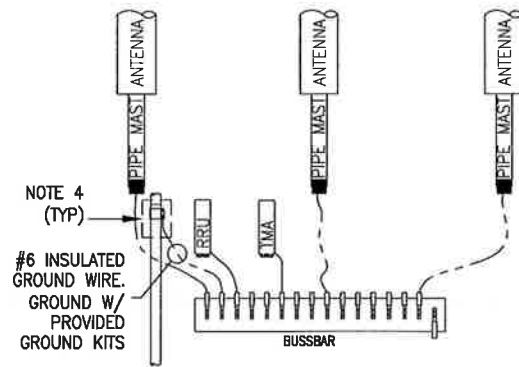
T-Mobile

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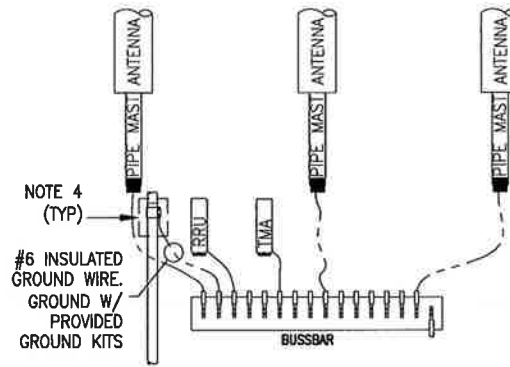
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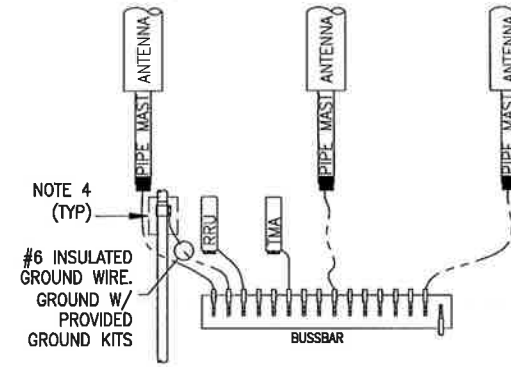
ALPHA SECTOR
(LAYOUT SHOWN GENERICALLY.
SEE ANTENNA ORIENTATION)



BETA SECTOR
(LAYOUT SHOWN GENERICALLY.
SEE ANTENNA ORIENTATION)



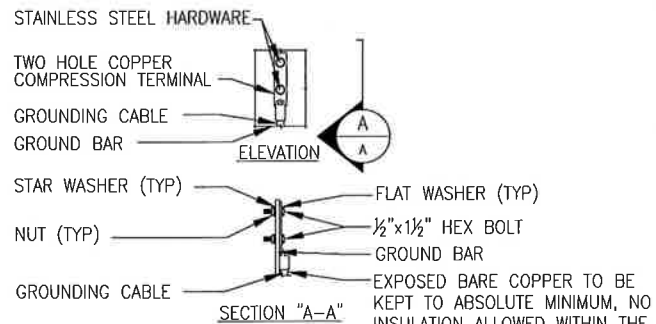
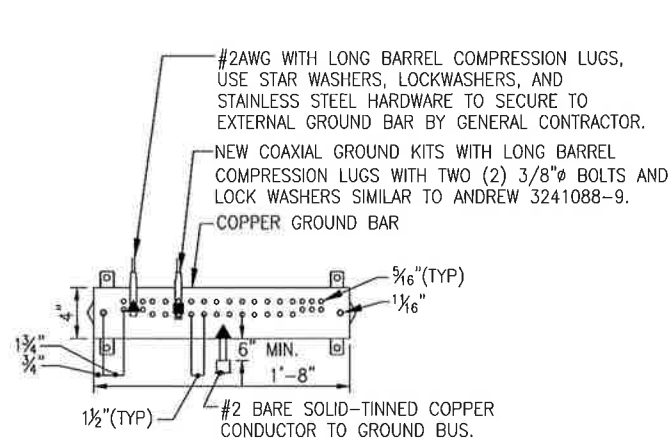
GAMMA SECTOR
(LAYOUT SHOWN GENERICALLY.
SEE ANTENNA ORIENTATION)



NOTES:

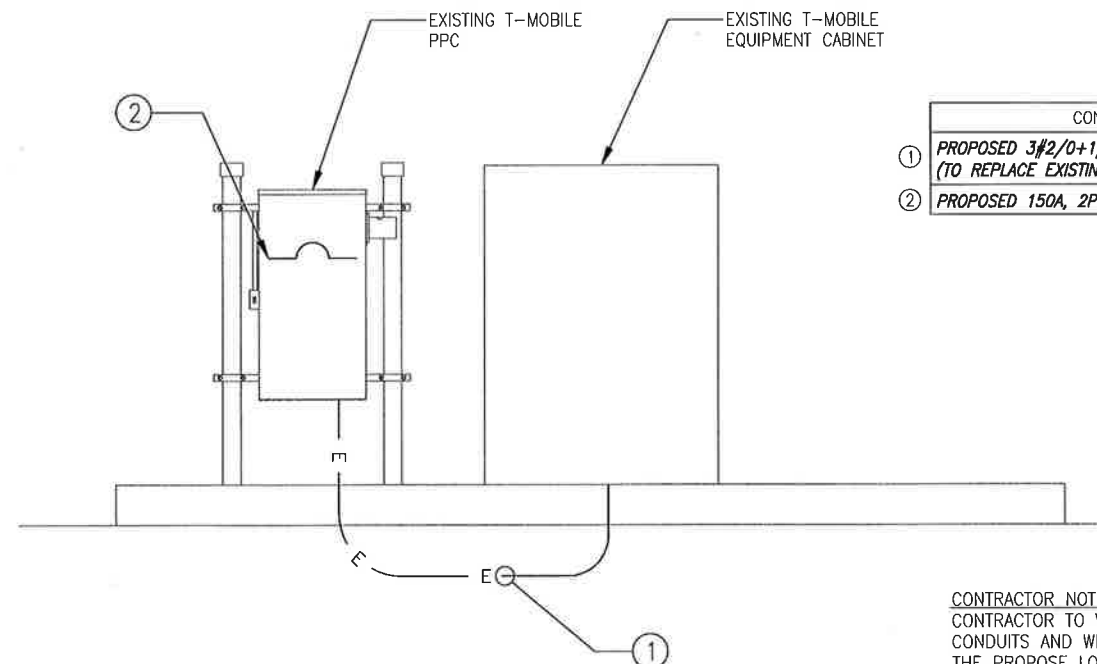
1. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
3. PROVIDE SOLID TINNED BARE COPPER WIRE (BCW) GROUNDING CONDUCTOR.
4. PROVIDE STANDARD COAX OR HYBRID CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. TOTAL LENGTH OF GROUNDING CONDUCTOR SHALL NOT EXCEED 10'-0".
5. PROVIDE GROUNDING ELECTRODES QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
6. LEAVE GROUND WIRE COILED UP ABOVE GRADE. CAP END OF CONDUIT.
7. ADD COAX OR HYBRID CABLE GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF CABLE TRAY (FROM TOWER OR MONOPOLE TO EQUIPMENT) IS GREATER THAN 20'-0".
8. ADD #2/0 GREEN INSULATED CONDUCTOR BETWEEN CABLE TRAY AND GRIPSTRUT/COVER.
9. BUSSBARS ARE TO BE TINNED COPPER BARS (1/4"x2"x12") MOUNTED ON INSULATORS, U.O.N.
10. GROUND ALL PROPOSED ANTENNAS, DIPLEXERS, TMAS, AND RRU'S PER MANU. SPECS.

1 GROUNDING DIAGRAM
E1 SCALE: NOT TO SCALE



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

2 GROUND BAR CONNECTION DETAIL
E1 SCALE: NOT TO SCALE



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

3 ONE LINE DIAGRAM
E1 SCALE: NOT TO SCALE

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



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D	ISSUED FOR CONSTRUCTION	SL	09/11/18
A	ISSUED FOR REVIEW	SL	08/21/18
No.	Submittal / Revision	App'd	Date

Drawn: RCD
Designed: MBL
Checked: ASD

Project Number: 600-007

Project Title:
CT11186A
EAST HARTFORD/
HILLS 1
1455 FORBES STREET
EAST HARTFORD, CT 06118

Prepared For:



Drawing Title:
GROUNDING & ELECTRICAL DETAILS

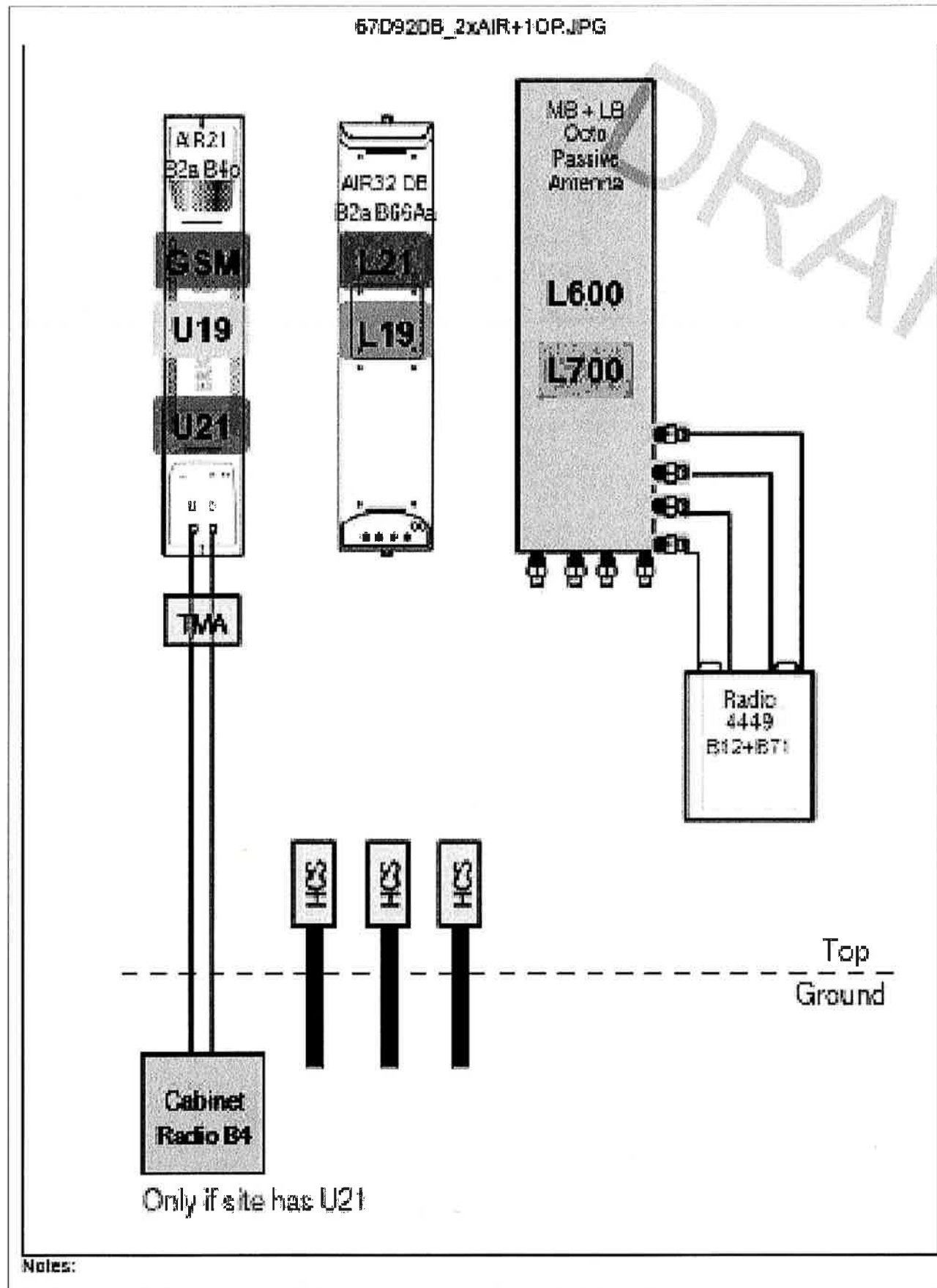
Drawing Number

E1

INFINIGY & T-Mobile

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

6865 DEERPATH ROAD SUITE 152
ELK RIDGE, MD 21075
TEL (443) 582-3143



1 RF PLUMBING DIAGRAM
E2 SCALE: AS NOTED



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No. Submittal / Revision Appl. Date

Drawn: RCO

Designed: MS

Checked: AD

Project Number:

600-007

Project Title:

CT11186A

EAST HARTFORD/

HILLS 1

1455 FORBES STREET

EAST HARTFORD, CT 06118

Prepared For:



Drawing Title

RF PLUMBING

DIAGRAM

Drawing Number

E2

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T-Mobile

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

Date: **October 1, 2018**

Charles Trask
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Modification Analysis Report

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11186A
Carrier Site Name: N/A

Crown Castle Designation: **Crown Castle BU Number:** 806376
Crown Castle Site Name: HRT 100 943239
Crown Castle JDE Job Number: 513141
Crown Castle Work Order Number: 1637549
Crown Castle Order Number: 446236 Rev. 0

Engineering Firm Designation: **TEP Project Number:** 25677.185485

Site Data: **1455 Forbes Street, East Hartford, Hartford County, CT 06118**
Latitude 41° 43' 53.30", Longitude -72° 36' 28.00"
130 Foot - Monopole Tower

Dear Charles Trask,

Tower Engineering Professionals is pleased to submit this **“Structural Modification Analysis Report”** to determine the structural integrity of the above mentioned tower.

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: Modified Structure with Existing/Reserved + Proposed Equipment **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3.1 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

Structural analysis prepared by: Jarred Wallace, P.E. / RKE

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

10/01/2018

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

8) APPENDIX D

Structural Design Drawings

1) INTRODUCTION

This tower is a 130-ft monopole tower designed by Valmont. The tower has been modified multiple times in the past to accommodate additional loading. The tower was previously extended 20-ft, bringing the overall tower height to 130-ft. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

Building Code:	2012 IBC
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	97 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.00 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
87.0	87.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	11	1-1/4 1-5/8 1-3/8 7/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	AIR -32 B2A/B66AA w/ Mount Pipe		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
		1	Tower Mounts	Side Arm Mount [SO 102-3]		
		1	Tower Mounts	T-Arm Mount [TA 602-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
121.0	121.0	1	Tower Mounts	Side Arm Mount [SO 102-3]	6 6 3	1-1/4 3/4 3/8
		1	Tower Mounts	T-Arm Mount [TA 602-3]		
	120.0	3	Kathrein	80010798 w/ Mount Pipe		
		3	CCI Antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	Kathrein	800 10121 w/ Mount Pipe		
		3	Ericsson	RRUS-11		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 12		
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 32 B66		
		6	Powerwave Technologies	LGP21401		
		6	Kathrein	860 10025		
	3	Raycap	DC6-48-60-18-8F			
	109.0	111.0	6	Andrew		
3			Antel	BXA-70063/6CFx4		
3			Antel	BXA-80063/4CF		
3			Alcatel Lucent	B66A RRH4X45		
3			Alcatel Lucent	B25 RRH4X30		
2			RFS Celwave	DB-T1-6Z-8AB-0Z		
109.0		1	Tower Mounts	Platform Mount [LP 101-1]		
107.0		3	Alcatel Lucent	B13 RRH 4X30		
	6	RFS Celwave	FD9R6004/2C-3L			
99.0	100.0	3	Alcatel Lucent	800MHz 2X50W RRH w/ Filter	-	-
	99.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz w/ Mount Pipe		
		1	Tower Mounts	Side Arm Mount [SO 101-3]		
	98.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHZ		
97.0	101.0	2	Dragonwave	Horizon Compact	4 3 3	1-1/4 1/2 5/16
		2	Andrew	VHLP2.5-11		
	97.0	3	Alcatel Lucent	TD-RRH8x20-25		
		3	Kathrein	840 10054 w/ Mount Pipe		
		1	Motorola	TIMING 2000		
		3	RFS Celwave	APXVSP18-C-A20 w/ Mount Pipe		
		3	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		3	RFS Celwave	IBC1900BB-1		
		3	RFS Celwave	IBC1900HG-2A		
		3	Samsung Telecom	WIMAX DAP HEAD		
		1	Tower Mounts	Platform Mount [LP 713-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	Dr. Clarence Welti	262381	CCISites
Tower Foundation Drawings	SAC Engineering	262389	CCISites
Tower Manufacturer Drawings	Valmont	262386	CCISites
Tower Design Calculations	Valmont	645113	CCISites
Tower Reinforcement Drawings	Paul J. Ford	3249954	CCISites
Post Modification Inspection	Tower Engineering Professionals	3675451	CCISites
Tower Reinforcement Drawings	Paul J. Ford	3842355	CCISites
Post Modification Inspection	Tower Engineering Professionals	5099148	CCISites
Tower Reinforcement Drawings	Paul J. Ford	5681337	CCISites
Post Modification Inspection	ETS	5921968	CCISites
Tower Reinforcement Drawings	GPD	6515906	CCISites
Post Modification Inspection	Tower Engineering Professionals	7030743	CCISites
Tower Structural Analysis Reports	FDH Velocitel	7724562	CCISites

3.1) Analysis Method

tnxTower (version 8.0.4.0), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
- 3) All tower components are in sufficient condition to carry their full design capacity.
- 4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 5) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
- 6) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically and must be replaced if damaged or cracked. Refer to Crown document ENG-STD-10323, Base Plate Grout for more information.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)¹

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
130 - 125	Pole	TP11.775x10.525x0.1875	Pole	0.6%	Pass
125 - 120	Pole	TP13.025x11.775x0.1875	Pole	3.5%	Pass
120 - 115	Pole	TP14.275x13.025x0.1875	Pole	21.4%	Pass
115 - 110	Pole	TP15.525x14.275x0.1875	Pole	34.9%	Pass
110 - 105	Pole	TP16.776x15.525x0.25	Pole	44.0%	Pass
105 - 100	Pole	TP18.027x16.776x0.25	Pole	56.8%	Pass
100 - 95	Pole	TP19.277x18.027x0.25	Pole	70.7%	Pass
95 - 90	Pole	TP20.528x19.277x0.25	Pole	84.2%	Pass
90 - 89.75	Pole + Reinf.	TP20.591x20.528x0.5	Reinf. 12 Tension Rupture	75.8%	Pass
89.75 - 84.75	Pole + Reinf.	TP21.841x20.591x0.4813	Reinf. 12 Tension Rupture	89.4%	Pass
84.75 - 84.58	Pole + Reinf.	TP21.884x21.841x0.475	Reinf. 12 Tension Rupture	89.9%	Pass
84.58 - 84.33	Pole + Reinf.	TP21.946x21.884x0.6375	Reinf. 12 Tension Rupture	69.7%	Pass
84.33 - 83.42	Pole + Reinf.	TP22.174x21.946x0.625	Reinf. 12 Tension Rupture	71.7%	Pass
83.42 - 83.17	Pole + Reinf.	TP22.237x22.174x0.95	Reinf. 17 Tension Rupture	50.4%	Pass
83.17 - 83	Pole + Reinf.	TP22.279x22.237x0.95	Reinf. 17 Tension Rupture	50.7%	Pass
83 - 82.75	Pole + Reinf.	TP22.342x22.279x0.7	Reinf. 17 Tension Rupture	67.4%	Pass
82.75 - 77.75	Pole + Reinf.	TP23.592x22.342x0.6625	Reinf. 17 Tension Rupture	77.1%	Pass
77.75 - 74	Pole + Reinf.	TP25.531x23.592x0.65	Reinf. 17 Tension Rupture	83.6%	Pass
74 - 69	Pole + Reinf.	TP25.276x24.025x0.7	Reinf. 17 Tension Rupture	85.4%	Pass
69 - 67.08	Pole + Reinf.	TP25.757x25.276x0.6875	Reinf. 17 Tension Rupture	87.9%	Pass
67.08 - 66.83	Pole + Reinf.	TP25.819x25.757x0.6875	Reinf. 17 Tension Rupture	88.2%	Pass
66.83 - 64.08	Pole + Reinf.	TP26.507x25.819x0.675	Reinf. 17 Tension Rupture	91.5%	Pass
64.08 - 63.83	Pole + Reinf.	TP26.57x26.507x0.7375	Reinf. 17 Tension Rupture	87.8%	Pass
63.83 - 62.5	Pole + Reinf.	TP26.903x26.57x0.7375	Reinf. 17 Tension Rupture	89.3%	Pass
62.5 - 62.25	Pole + Reinf.	TP26.965x26.903x0.8625	Reinf. 17 Tension Rupture	73.9%	Pass
62.25 - 57.25	Pole + Reinf.	TP28.217x26.965x0.8375	Reinf. 17 Tension Rupture	78.4%	Pass
57.25 - 53.5	Pole + Reinf.	TP29.155x28.217x0.8125	Reinf. 17 Tension Rupture	81.6%	Pass
53.5 - 53.25	Pole + Reinf.	TP29.218x29.155x0.8375	Reinf. 10 Tension Rupture	80.9%	Pass
53.25 - 52.58	Pole + Reinf.	TP29.385x29.218x0.825	Reinf. 10 Tension Rupture	81.4%	Pass
52.58 - 52.33	Pole + Reinf.	TP29.448x29.385x0.8375	Reinf. 10 Tension Rupture	80.5%	Pass
52.33 - 47.33	Pole + Reinf.	TP30.699x29.448x0.8125	Reinf. 10 Tension Rupture	84.2%	Pass
47.33 - 44.58	Pole + Reinf.	TP31.387x30.699x0.8	Reinf. 10 Tension Rupture	86.1%	Pass
44.58 - 44.33	Pole + Reinf.	TP31.45x31.387x0.8	Reinf. 10 Tension Rupture	86.2%	Pass
44.33 - 41.92	Pole + Reinf.	TP32.053x31.45x0.7875	Reinf. 10 Tension Rupture	87.8%	Pass
41.92 - 41.67	Pole + Reinf.	TP32.116x32.053x0.8125	Reinf. 16 Tension Rupture	75.6%	Pass
41.67 - 39	Pole + Reinf.	TP34.015x32.116x0.8125	Reinf. 16 Tension Rupture	77.1%	Pass
39 - 34	Pole + Reinf.	TP33.4x32.15x0.8313	Reinf. 16 Tension Rupture	78.7%	Pass
34 - 29	Pole + Reinf.	TP34.65x33.4x0.8063	Reinf. 16 Tension Rupture	81.0%	Pass
29 - 26.92	Pole + Reinf.	TP35.17x34.65x0.7938	Reinf. 16 Tension Rupture	81.8%	Pass
26.92 - 26.67	Pole + Reinf.	TP35.233x35.17x0.8688	Reinf. 7 Tension Rupture	78.8%	Pass
26.67 - 21.67	Pole + Reinf.	TP36.483x35.233x0.8563	Reinf. 7 Tension Rupture	80.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
21.67 - 18	Pole + Reinf.	TP37.4x36.483x0.8438	Reinf. 7 Tension Rupture	82.1%	Pass
18 - 17.75	Pole + Reinf.	TP37.463x37.4x0.9938	Reinf. 16 Tension Rupture	67.7%	Pass
17.75 - 17.5	Pole + Reinf.	TP37.525x37.463x0.9938	Reinf. 16 Tension Rupture	67.8%	Pass
17.5 - 17.25	Pole + Reinf.	TP37.588x37.525x0.9938	Reinf. 15 Tension Rupture	67.9%	Pass
17.25 - 17.08	Pole + Reinf.	TP37.63x37.588x0.9938	Reinf. 15 Tension Rupture	67.9%	Pass
17.08 - 16.83	Pole + Reinf.	TP37.693x37.63x0.8938	Reinf. 15 Tension Rupture	74.2%	Pass
16.83 - 13	Pole + Reinf.	TP38.65x37.693x0.8813	Reinf. 15 Tension Rupture	75.4%	Pass
13 - 12.75	Pole + Reinf.	TP38.713x38.65x1.0438	Reinf. 15 Tension Rupture	63.8%	Pass
12.75 - 11.92	Pole + Reinf.	TP38.92x38.713x1.0438	Reinf. 15 Tension Rupture	64.0%	Pass
11.92 - 11.67	Pole + Reinf.	TP38.983x38.92x0.8188	Reinf. 15 Tension Rupture	82.4%	Pass
11.67 - 6.67	Pole + Reinf.	TP40.233x38.983x0.7938	Reinf. 15 Tension Rupture	83.9%	Pass
6.67 - 6.5	Pole + Reinf.	TP40.275x40.233x0.7938	Reinf. 15 Tension Rupture	83.9%	Pass
6.5 - 6.25	Pole + Reinf.	TP40.338x40.275x0.9188	Reinf. 15 Tension Rupture	78.0%	Pass
6.25 - 3.75	Pole + Reinf.	TP40.963x40.338x0.9188	Reinf. 15 Tension Rupture	78.6%	Pass
3.75 - 3.5	Pole + Reinf.	TP41.025x40.963x1.0188	Reinf. 14 Tension Rupture	69.4%	Pass
3.5 - 3	Pole + Reinf.	TP41.15x41.025x1.0188	Reinf. 14 Tension Rupture	69.5%	Pass
3 - 2.75	Pole + Reinf.	TP41.213x41.15x0.9438	Reinf. 14 Tension Rupture	72.4%	Pass
2.75 - 0	Pole + Reinf.	TP41.9x41.213x1.0438	Reinf. 4 Weldment	87.4%	Pass
				Summary	
			Pole	84.2%	Pass
			Reinforcement	91.5%	Pass
			Overall	91.5%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	110.0	32.5	Pass
1	Anchor Rods	-	95.4	Pass
1	Base Plate	-	88.4	Pass
1	Base Foundation Soil Interaction	-	68.2	Pass
1	Base Foundation Structural	-	62.5	Pass

Structure Rating (max from all components) =	95.4%
---	--------------

Notes:

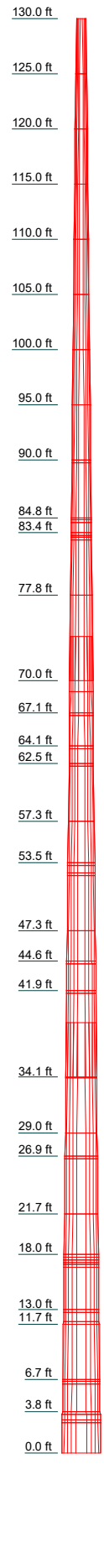
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

4.1) Recommendations

- 1) If the load differs from that described in Tables 1 and 2 of this report, the referenced drawings, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically and must be replaced if damaged or cracked. Refer to Crown Castle document ENG-STD-10323, Base Plate Grout.
- 3) The modifications depicted in "Appendix D – Structural Design Drawings" shall be installed and, upon completion, inspected. The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed.

APPENDIX A
TNXTOWER OUTPUT

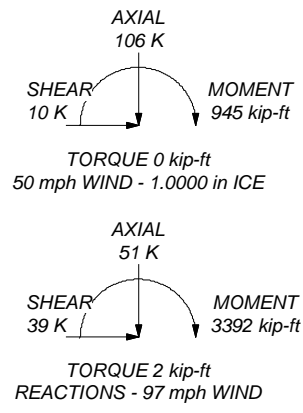
Section	1	2	3	4	5	6	7	8	9	10	17	18	26	27	31	32	36	37	41	42	48	52	54	55	56	57	58	59	
Length (ft)	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0669000	5.0669000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Thickness (in)	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.6620	0.8370	0.8370	0.8502	0.8502	0.8502	0.8502	0.8502	0.8502	0.8502	0.8502	0.8502	0.8502	
Socket Length (ft)	4.0000																												
Top Dia (in)	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422	22.3422
Bot Dia (in)	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922	23.5922
Grade	A572-65																												
Weight (K)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
80010798 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
80010798 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
80010798 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
HPA-65R-BUU-H6 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
HPA-65R-BUU-H6 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
HPA-65R-BUU-H6 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
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	Side Arm Mount [SO 101-3]	99
RRUS-11	121	APXVTM14-ALU-I20 w/ Mount Pipe	97
RRUS-11	121	APXVTM14-ALU-I20 w/ Mount Pipe	97
RRUS 32 B2	121	APXVTM14-ALU-I20 w/ Mount Pipe	97
RRUS 32 B2	121	840 10054 w/ Mount Pipe	97
RRUS 32 B2	121	840 10054 w/ Mount Pipe	97
(2) DC6-48-60-18-8F	121	840 10054 w/ Mount Pipe	97
(2) LGP21401	121	APXVSP18-C-A20 w/ Mount Pipe	97
(2) LGP21401	121	APXVSP18-C-A20 w/ Mount Pipe	97
(2) LGP21401	121	APXVSP18-C-A20 w/ Mount Pipe	97
DC6-48-60-18-8F	121	TIMING 2000	97
(2) 860 10025	121	WIMAX DAP HEAD	97
(2) 860 10025	121	WIMAX DAP HEAD	97
(2) 860 10025	121	WIMAX DAP HEAD	97
RRUS 12	121	HORIZON COMPACT	97
RRUS 12	121	HORIZON COMPACT	97
RRUS 12	121	IBC1900HG-2A	97
RRUS 32	121	IBC1900HG-2A	97
RRUS 32	121	IBC1900HG-2A	97
RRUS 32 B66	121	IBC1900BB-1	97
RRUS 32 B66	121	IBC1900BB-1	97
RRUS 32 B66	121	IBC1900BB-1	97
T-Arm Mount [TA 602-3]	121	TD-RRHx20-25	97
Side Arm Mount [SO 102-3]	121	TD-RRHx20-25	97
(2) SBNHH-1D65B	109	Platform Mount [LP 713-1]	97
(2) SBNHH-1D65B	109	VHLP2.5-11	97
(2) SBNHH-1D65B	109	VHLP2.5-11	97
BXA-70063/6CFx4	109	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
BXA-70063/6CFx4	109	APXVAARR24_43-U-NA20 w/ Mount Pipe	87
BXA-70063/6CFx4	109	APXVAARR24_43-U-NA20 w/ Mount Pipe	87
BXA-80063/4CF	109	APXVAARR24_43-U-NA20 w/ Mount Pipe	87
BXA-80063/4CF	109	APXVAARR24_43-U-NA20 w/ Mount Pipe	87
BXA-80063/4CF	109	APXVAARR24_43-U-NA20 w/ Mount Pipe	87
B66A RRH4X45	109	AIR -32 B2A/B66AA w/ Mount Pipe	87
B66A RRH4X45	109	AIR -32 B2A/B66AA w/ Mount Pipe	87
B66A RRH4X45	109	AIR -32 B2A/B66AA w/ Mount Pipe	87
B13 RRH 4X30	109	KRY 112 144/1	87
B13 RRH 4X30	109	KRY 112 144/1	87
B13 RRH 4X30	109	KRY 112 144/1	87
DB-T1-6Z-8AB-0Z	109	RADIO 4449 B12/B71	87
DB-T1-6Z-8AB-0Z	109	RADIO 4449 B12/B71	87
B25 RRH4X30	109	RADIO 4449 B12/B71	87
B25 RRH4X30	109	T-Arm Mount [TA 602-3]	87
(2) FD9R6004/2C-3L	109	Side Arm Mount [SO 102-3]	87
(2) FD9R6004/2C-3L	109	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
(2) FD9R6004/2C-3L	109	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
Platform Mount [LP 101-1]	109	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
800MHz 2X50W RRH W/FILTER	99		
800MHz 2X50W RRH W/FILTER	99		
800MHz 2X50W RRH W/FILTER	99		

ALL REACTIONS ARE FACTORED




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

 <p>Tower Engineering Professionals</p>	<p>Tower Engineering Professionals</p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>		<p>Job: HRT 100 943239 (BU 806376)</p>	
	<p>Project: TEP No. 25677.185485</p>		<p>Client: Crown Castle</p>	
	<p>Code: TIA-222-G</p>		<p>Drawn by: jwallace</p>	
	<p>Path: <small>C:\Users\jwallace\Desktop\994.HRT 100 943239_806376_25677.185485\mxc\806376_LC4.ed</small></p>		<p>Date: 09/27/18</p>	
		<p>App'd: _____</p>		<p>Scale: NTS</p>
				<p>Dwg No. E-1</p>

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 1 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Basic wind speed of 97 mph.
- Structure Class II.
- Exposure Category 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 Retention Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | <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 Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|---|

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	130.0000-125.0	5.0000	0.00	12	10.5250	11.7750	0.1875	0.7500	A572-65

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	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
L2	125.0000-120.0000	5.0000	0.00	12	11.7750	13.0250	0.1875	0.7500	(65 ksi) A572-65
L3	120.0000-115.0000	5.0000	0.00	12	13.0250	14.2750	0.1875	0.7500	(65 ksi) A572-65
L4	115.0000-110.0000	5.0000	0.00	12	14.2750	15.5250	0.1875	0.7500	(65 ksi) A572-65
L5	110.0000-105.0000	5.0000	0.00	12	15.5250	16.7757	0.2500	1.0000	(65 ksi) A572-65
L6	105.0000-100.0000	5.0000	0.00	12	16.7757	18.0265	0.2500	1.0000	(65 ksi) A572-65
L7	100.0000-95.0000	5.0000	0.00	12	18.0265	19.2772	0.2500	1.0000	(65 ksi) A572-65
L8	95.0000-90.0000	5.0000	0.00	12	19.2772	20.5280	0.2500	1.0000	(65 ksi) A572-65
L9	90.0000-89.7500	0.2500	0.00	12	20.5280	20.5905	0.5000	2.0000	(65 ksi) A572-65
L10	89.7500-84.7500	5.0000	0.00	12	20.5905	21.8413	0.4813	1.9250	(65 ksi) A572-65
L11	84.7500-84.5800	0.1700	0.00	12	21.8413	21.8838	0.4750	1.9000	(65 ksi) A572-65
L12	84.5800-84.3300	0.2500	0.00	12	21.8838	21.9464	0.6375	2.5500	(65 ksi) A572-65
L13	84.3300-83.4200	0.9100	0.00	12	21.9464	22.1740	0.6250	2.5000	(65 ksi) A572-65
L14	83.4200-83.1700	0.2500	0.00	12	22.1740	22.2365	0.9500	3.8000	(65 ksi) A572-65
L15	83.1700-83.0000	0.1700	0.00	12	22.2365	22.2791	0.9500	3.8000	(65 ksi) A572-65
L16	83.0000-82.7500	0.2500	0.00	12	22.2791	22.3416	0.7000	2.8000	(65 ksi) A572-65
L17	82.7500-77.7500	5.0000	0.00	12	22.3416	23.5923	0.6625	2.6500	(65 ksi) A572-65
L18	77.7500-70.0000	7.7500	4.00	12	23.5923	25.5310	0.6500	2.6000	(65 ksi) A572-65
L19	70.0000-69.0000	5.0000	0.00	12	24.0250	25.2763	0.7000	2.8000	(65 ksi) A572-65
L20	69.0000-67.0800	1.9200	0.00	12	25.2763	25.7567	0.6875	2.7500	(65 ksi) A572-65
L21	67.0800-66.8300	0.2500	0.00	12	25.7567	25.8193	0.6875	2.7500	(65 ksi) A572-65
L22	66.8300-64.0800	2.7500	0.00	12	25.8193	26.5075	0.6750	2.7000	(65 ksi) A572-65
L23	64.0800-63.8300	0.2500	0.00	12	26.5075	26.5700	0.7375	2.9500	(65 ksi) A572-65
L24	63.8300-62.5000	1.3300	0.00	12	26.5700	26.9029	0.7375	2.9500	(65 ksi) A572-65
L25	62.5000-62.2500	0.2500	0.00	12	26.9029	26.9654	0.8625	3.4500	(65 ksi) A572-65
L26	62.2500-57.2500	5.0000	0.00	12	26.9654	28.2167	0.8375	3.3500	(65 ksi) A572-65
L27	57.2500-53.5000	3.7500	0.00	12	28.2167	29.1551	0.8125	3.2500	(65 ksi) A572-65
L28	53.5000-53.2500	0.2500	0.00	12	29.1551	29.2177	0.8375	3.3500	(65 ksi) A572-65
L29	53.2500-52.5800	0.6700	0.00	12	29.2177	29.3854	0.8250	3.3000	(65 ksi) A572-65
L30	52.5800-52.3300	0.2500	0.00	12	29.3854	29.4479	0.8375	3.3500	(65 ksi) A572-65
L31	52.3300-47.3300	5.0000	0.00	12	29.4479	30.6992	0.8125	3.2500	(65 ksi) A572-65

tnxTower

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Job	HRT 100 943239 (BU 806376)	Page	3 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

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
L32	47.3300-44.5800	2.7500	0.00	12	30.6992	31.3874	0.8000	3.2000	A572-65 (65 ksi)
L33	44.5800-44.3300	0.2500	0.00	12	31.3874	31.4499	0.8000	3.2000	A572-65 (65 ksi)
L34	44.3300-41.9200	2.4100	0.00	12	31.4499	32.0530	0.7875	3.1500	A572-65 (65 ksi)
L35	41.9200-41.6700	0.2500	0.00	12	32.0530	32.1156	0.8125	3.2500	A572-65 (65 ksi)
L36	41.6700-34.0800	7.5900	4.92	12	32.1156	34.0150	0.8125	3.2500	A572-65 (65 ksi)
L37	34.0800-34.0000	5.0000	0.00	12	32.1500	33.4000	0.8313	3.3250	A572-65 (65 ksi)
L38	34.0000-29.0000	5.0000	0.00	12	33.4000	34.6500	0.8063	3.2250	A572-65 (65 ksi)
L39	29.0000-26.9200	2.0800	0.00	12	34.6500	35.1700	0.7937	3.1750	A572-65 (65 ksi)
L40	26.9200-26.6700	0.2500	0.00	12	35.1700	35.2325	0.8688	3.4750	A572-65 (65 ksi)
L41	26.6700-21.6700	5.0000	0.00	12	35.2325	36.4825	0.8562	3.4250	A572-65 (65 ksi)
L42	21.6700-18.0000	3.6700	0.00	12	36.4825	37.4000	0.8438	3.3750	A572-65 (65 ksi)
L43	18.0000-17.7500	0.2500	0.00	12	37.4000	37.4625	0.9938	3.9750	A572-65 (65 ksi)
L44	17.7500-17.5000	0.2500	0.00	12	37.4625	37.5250	0.9938	3.9750	A572-65 (65 ksi)
L45	17.5000-17.2500	0.2500	0.00	12	37.5250	37.5875	0.9938	3.9750	A572-65 (65 ksi)
L46	17.2500-17.0800	0.1700	0.00	12	37.5875	37.6300	0.9938	3.9750	A572-65 (65 ksi)
L47	17.0800-16.8300	0.2500	0.00	12	37.6300	37.6925	0.8938	3.5750	A572-65 (65 ksi)
L48	16.8300-13.0000	3.8300	0.00	12	37.6925	38.6500	0.8812	3.5250	A572-65 (65 ksi)
L49	13.0000-12.7500	0.2500	0.00	12	38.6500	38.7125	1.0438	4.1750	A572-65 (65 ksi)
L50	12.7500-11.9200	0.8300	0.00	12	38.7125	38.9200	1.0438	4.1750	A572-65 (65 ksi)
L51	11.9200-11.6700	0.2500	0.00	12	38.9200	38.9825	0.8187	3.2750	A572-65 (65 ksi)
L52	11.6700-6.6700	5.0000	0.00	12	38.9825	40.2325	0.7937	3.1750	A572-65 (65 ksi)
L53	6.6700-6.5000	0.1700	0.00	12	40.2325	40.2750	0.7937	3.1750	A572-65 (65 ksi)
L54	6.5000-6.2500	0.2500	0.00	12	40.2750	40.3375	0.9187	3.6750	A572-65 (65 ksi)
L55	6.2500-3.7500	2.5000	0.00	12	40.3375	40.9625	0.9187	3.6750	A572-65 (65 ksi)
L56	3.7500-3.5000	0.2500	0.00	12	40.9625	41.0250	1.0188	4.0750	A572-65 (65 ksi)
L57	3.5000-3.0000	0.5000	0.00	12	41.0250	41.1500	1.0188	4.0750	A572-65 (65 ksi)
L58	3.0000-2.7500	0.2500	0.00	12	41.1500	41.2125	0.9437	3.7750	A572-65 (65 ksi)
L59	2.7500-0.0000	2.7500		12	41.2125	41.9000	1.0438	4.1750	A572-65 (65 ksi)

<p>tnxTower</p> <p>Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p>Job</p> <p>HRT 100 943239 (BU 806376)</p>	<p>Page</p> <p>4 of 64</p>
	<p>Project</p> <p>TEP No. 25677.185485</p>	<p>Date</p> <p>16:12:43 09/27/18</p>
	<p>Client</p> <p>Crown Castle</p>	<p>Designed by</p> <p>jwallace</p>

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	Iv/Q in ²	w in	w/t
L1	10.8301	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	12.1242	6.9960	119.8981	4.1483	6.0995	19.6572	242.9461	3.4432	2.6532	14.15
L2	12.1242	6.9960	119.8981	4.1483	6.0995	19.6572	242.9461	3.4432	2.6532	14.15
	13.4183	7.7506	163.0364	4.5958	6.7470	24.1645	330.3559	3.8146	2.9882	15.937
L3	13.4183	7.7506	163.0364	4.5958	6.7470	24.1645	330.3559	3.8146	2.9882	15.937
	14.7124	8.5053	215.4492	5.0433	7.3945	29.1366	436.5585	4.1861	3.3232	17.724
L4	14.7124	8.5053	215.4492	5.0433	7.3945	29.1366	436.5585	4.1861	3.3232	17.724
	16.0065	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L5	15.9845	12.2964	366.2060	5.4684	8.0419	45.5370	742.0327	6.0519	3.4907	13.963
	17.2793	13.3032	463.7302	5.9162	8.6898	53.3646	939.6431	6.5474	3.8259	15.304
L6	17.2793	13.3032	463.7302	5.9162	8.6898	53.3646	939.6431	6.5474	3.8259	15.304
	18.5742	14.3101	577.1924	6.3640	9.3377	61.8129	1169.5483	7.0430	4.1611	16.644
L7	18.5742	14.3101	577.1924	6.3640	9.3377	61.8129	1169.5483	7.0430	4.1611	16.644
	19.8691	15.3169	707.7989	6.8118	9.9856	70.8819	1434.1925	7.5385	4.4963	17.985
L8	19.8691	15.3169	707.7989	6.8118	9.9856	70.8819	1434.1925	7.5385	4.4963	17.985
	21.1640	16.3238	856.7561	7.2595	10.6335	80.5714	1736.0201	8.0341	4.8315	19.326
L9	21.0758	32.2451	1650.9145	7.1700	10.6335	155.2559	3345.2003	15.8700	4.1615	8.323
	21.1405	32.3458	1666.4278	7.1924	10.6659	156.2389	3376.6345	15.9196	4.1783	8.357
L10	21.1471	31.1619	1608.4317	7.1991	10.6659	150.8013	3259.1186	15.3369	4.2285	8.787
	22.4420	33.1000	1927.6075	7.6469	11.3138	170.3769	3905.8553	16.2908	4.5637	9.483
L11	22.4442	32.6797	1904.2442	7.6491	11.3138	168.3118	3858.5150	16.0840	4.5805	9.643
	22.4882	32.7448	1915.6369	7.6644	11.3358	168.9898	3881.5997	16.1160	4.5919	9.667
L12	22.4309	43.6134	2512.8857	7.6062	11.3358	221.6767	5091.7877	21.4652	4.1564	6.52
	22.4956	43.7417	2535.1408	7.6286	11.3682	223.0026	5136.8825	21.5284	4.1731	6.546
L13	22.5001	42.9092	2489.8086	7.6330	11.3682	219.0150	5045.0273	21.1186	4.2066	6.731
	22.7357	43.3673	2570.4101	7.7145	11.4861	223.7839	5208.3477	21.3441	4.2676	6.828
L14	22.6211	64.9242	3732.8999	7.5982	11.4861	324.9921	7563.8672	31.9537	3.3966	3.575
	22.6858	65.1155	3765.9947	7.6206	11.5185	326.9513	7630.9263	32.0479	3.4134	3.593
L15	22.6858	65.1155	3765.9947	7.6206	11.5185	326.9513	7630.9263	32.0479	3.4134	3.593
	22.7298	65.2456	3788.6105	7.6358	11.5405	328.2869	7676.7521	32.1119	3.4248	3.605
L16	22.8180	48.6392	2890.9250	7.7253	11.5405	250.5015	5857.7978	23.9387	4.0948	5.85
	22.8828	48.7801	2916.1322	7.7477	11.5729	251.9785	5908.8744	24.0081	4.1115	5.874
L17	22.8960	46.2469	2774.2826	7.7611	11.5729	239.7215	5621.4487	22.7613	4.2120	6.358
	24.1909	48.9151	3282.6958	8.2089	12.2208	268.6148	6651.6316	24.0745	4.5472	6.864
L18	24.1953	48.0183	3226.0283	8.2134	12.2208	263.9778	6536.8079	23.6332	4.5807	7.047
	26.2023	52.0759	4114.8942	8.9074	13.2251	311.1438	8337.8912	25.6302	5.1003	7.847
L19	25.6619	52.5746	3650.9410	8.3504	12.4450	293.3673	7397.7964	25.8756	4.5627	6.518
	25.9210	55.3949	4270.5798	8.7983	13.0931	326.1703	8653.3525	27.2637	4.8980	6.997
L20	25.9254	54.4334	4200.7227	8.8028	13.0931	320.8349	8511.8030	26.7904	4.9315	7.173
	26.4228	55.4970	4451.8210	8.9748	13.3420	333.6700	9020.5962	27.3139	5.0603	7.36
L21	26.4228	55.4970	4451.8210	8.9748	13.3420	333.6700	9020.5962	27.3139	5.0603	7.36
	26.4876	55.6355	4485.2340	8.9972	13.3744	335.3598	9088.3001	27.3821	5.0771	7.385
L22	26.4920	54.6511	4410.2585	9.0017	13.3744	329.7539	8936.3793	26.8976	5.1106	7.571
	27.2045	56.1469	4782.3808	9.2480	13.7309	348.2939	9690.4000	27.6338	5.2950	7.844
L23	27.1824	61.1973	5187.3594	9.2257	13.7309	377.7879	10510.9966	30.1194	5.1275	6.953
	27.2472	61.3458	5225.2318	9.2481	13.7633	379.6501	10587.7363	30.1926	5.1443	6.975
L24	27.2472	61.3458	5225.2318	9.2481	13.7633	379.6501	10587.7363	30.1926	5.1443	6.975
	27.5917	62.1362	5429.8149	9.3672	13.9357	389.6337	11002.2770	30.5816	5.2335	7.096
L25	27.5477	72.3206	6259.5472	9.3225	13.9357	449.1738	12683.5396	35.5940	4.8985	5.679
	27.6124	72.4944	6304.7718	9.3449	13.9681	451.3693	12775.1769	35.6795	4.9152	5.699
L26	27.6212	70.4605	6139.6317	9.3538	13.9681	439.5467	12440.5583	34.6785	4.9822	5.949
	28.9166	73.8348	7064.6183	9.8018	14.6162	483.3401	14314.8321	36.3393	5.3176	6.349
L27	28.9255	71.6962	6872.5258	9.8107	14.6162	470.1977	13925.6006	35.2867	5.3846	6.627
	29.8970	74.1514	7603.0155	10.1467	15.1024	503.4323	15405.7707	36.4951	5.6361	6.937
L28	29.8882	76.3656	7816.2347	10.1377	15.1024	517.5505	15837.8105	37.5848	5.5691	6.65
	29.9529	76.5343	7868.1548	10.1601	15.1348	519.8729	15943.0148	37.6679	5.5858	6.67
L29	29.9574	75.4252	7760.9655	10.1646	15.1348	512.7905	15725.8203	37.1220	5.6193	6.811
	30.1309	75.8706	7899.2719	10.2246	15.2216	518.9508	16006.0665	37.3412	5.6643	6.866
L30	30.1265	76.9865	8008.4335	10.2201	15.2216	526.1223	16227.2575	37.8904	5.6308	6.723

Job	HRT 100 943239 (BU 806376)	Page	5 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

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
L31	30.1913	77.1552	8061.2004	10.2425	15.2540	528.4638	16334.1775	37.9734	5.6475	6.743
	30.2001	74.9174	7841.0865	10.2515	15.2540	514.0339	15888.1670	36.8721	5.7145	7.033
	31.4955	78.1910	8914.5259	10.6994	15.9022	560.5853	18063.2463	38.4832	6.0499	7.446
L32	31.4999	77.0203	8788.3973	10.7039	15.9022	552.6538	17807.6755	37.9070	6.0834	7.604
	32.2124	78.7931	9409.3193	10.9503	16.2587	578.7267	19065.8319	38.7795	6.2678	7.835
L33	32.2124	78.7931	9409.3193	10.9503	16.2587	578.7267	19065.8319	38.7795	6.2678	7.835
	32.2772	78.9542	9467.1742	10.9727	16.2911	581.1268	19183.0617	38.8589	6.2846	7.856
L34	32.2816	77.7523	9330.6563	10.9772	16.2911	572.7469	18906.4394	38.2673	6.3181	8.023
	32.9059	79.2816	9892.1347	11.1931	16.6035	595.7871	20044.1468	39.0200	6.4797	8.228
L35	32.8971	81.7331	10181.7077	11.1841	16.6035	613.2276	20630.9002	40.2265	6.4127	7.893
	32.9619	81.8967	10243.0002	11.2065	16.6359	615.7174	20755.0955	40.3071	6.4295	7.913
L36	32.9619	81.8967	10243.0002	11.2065	16.6359	615.7174	20755.0955	40.3071	6.4295	7.913
	34.9283	86.8660	12222.9926	11.8865	17.6198	693.7090	24767.0968	42.7528	6.9385	8.54
L37	34.2643	83.8285	10495.1039	11.2121	16.6537	630.1965	21265.9258	41.2579	6.3884	7.685
	34.2850	87.1743	11802.5745	11.6596	17.3012	682.1824	23915.2158	42.9046	6.7235	8.088
L38	34.2938	84.6174	11473.9919	11.6686	17.3012	663.1905	23249.4184	41.6461	6.7904	8.422
	35.5879	87.8626	12845.3808	12.1161	17.9487	715.6719	26028.2241	43.2433	7.1254	8.838
L39	35.5923	86.5323	12660.2453	12.1205	17.9487	705.3572	25653.0893	42.5886	7.1589	9.019
	36.1307	87.8614	13252.5990	12.3067	18.2181	727.4429	26853.3585	43.2427	7.2983	9.195
L40	36.1042	95.9535	14410.0829	12.2798	18.2181	790.9779	29198.7348	47.2254	7.0973	8.17
	36.1689	96.1283	14488.9960	12.3022	18.2504	793.8987	29358.6340	47.3114	7.1141	8.189
L41	36.1733	94.7796	14296.1107	12.3067	18.2504	783.3299	28967.7962	46.6476	7.1476	8.348
	37.4674	98.2260	15913.0248	12.7542	18.8979	842.0510	32244.1025	48.3439	7.4826	8.739
L42	37.4718	96.8260	15697.2291	12.7587	18.8979	830.6320	31806.8419	47.6548	7.5161	8.908
	38.4217	99.3188	16941.0578	13.0871	19.3732	874.4584	34327.1760	48.8817	7.7620	9.199
L43	38.3688	116.4954	19708.1929	13.0334	19.3732	1017.2916	39934.1420	57.3355	7.3600	7.406
	38.4335	116.6954	19809.8687	13.0558	19.4056	1020.8339	40140.1647	57.4339	7.3767	7.423
L44	38.4335	116.6954	19809.8687	13.0558	19.4056	1020.8339	40140.1647	57.4339	7.3767	7.423
	38.4982	116.8954	19911.8936	13.0782	19.4380	1024.3824	40346.8947	57.5324	7.3934	7.44
L45	38.4982	116.8954	19911.8936	13.0782	19.4380	1024.3824	40346.8947	57.5324	7.3934	7.44
	38.5629	117.0954	20014.2681	13.1006	19.4703	1027.9370	40554.3334	57.6308	7.4102	7.457
L46	38.5629	117.0954	20014.2681	13.1006	19.4703	1027.9370	40554.3334	57.6308	7.4102	7.457
	38.6069	117.2314	20084.0829	13.1158	19.4923	1030.3577	40695.7970	57.6977	7.4216	7.468
L47	38.6422	105.7223	18211.3584	13.1516	19.4923	934.2828	36901.1495	52.0333	7.6896	8.604
	38.7069	105.9022	18304.4665	13.1740	19.5247	937.5024	37089.8118	52.1218	7.7063	8.622
L48	38.7113	104.4565	18066.8587	13.1784	19.5247	925.3328	36608.3538	51.4103	7.7398	8.783
	39.7026	107.1735	19513.6624	13.5212	20.0207	974.6743	39539.9704	52.7476	7.9965	9.074
L49	39.6452	126.3899	22814.8909	13.4630	20.0207	1139.5651	46229.1544	62.2053	7.5610	7.244
	39.7099	126.6000	22928.8322	13.4854	20.0531	1143.4073	46460.0304	62.3086	7.5777	7.26
L50	39.7099	126.6000	22928.8322	13.4854	20.0531	1143.4073	46460.0304	62.3086	7.5777	7.26
	39.9248	127.2973	23309.8368	13.5597	20.1606	1156.2098	47232.0491	62.6519	7.6333	7.313
L51	40.0041	100.4492	18612.7613	13.6402	20.1606	923.2264	37714.5005	49.4380	8.2363	10.06
	40.0688	100.6140	18704.5068	13.6626	20.1929	926.2897	37900.4019	49.5191	8.2531	10.08
L52	40.0776	97.6057	18169.0362	13.6716	20.1929	899.7719	36815.3932	48.0385	8.3201	10.482
	41.3717	100.8005	20012.2069	14.1191	20.8404	960.2586	40550.1568	49.6109	8.6551	10.904
L53	41.3717	100.8005	20012.2069	14.1191	20.8404	960.2586	40550.1568	49.6109	8.6551	10.904
	41.4157	100.9091	20076.9734	14.1343	20.8624	962.3497	40681.3912	49.6644	8.6664	10.918
L54	41.3716	116.4305	23018.6742	14.0895	20.8624	1103.3543	46642.0746	57.3036	8.3315	9.068
	41.4364	116.6154	23128.5134	14.1119	20.8948	1106.9015	46864.6386	57.3946	8.3482	9.086
L55	41.4364	116.6154	23128.5134	14.1119	20.8948	1106.9015	46864.6386	57.3946	8.3482	9.086
	42.0834	118.4644	24246.1841	14.3357	21.2186	1142.6867	49129.3424	58.3046	8.5157	9.269
L56	42.0481	131.0305	26684.3082	14.2999	21.2186	1257.5919	54069.6429	64.4892	8.2477	8.096
	42.1128	131.2355	26809.7632	14.3222	21.2510	1261.5795	54323.8486	64.5901	8.2645	8.112
L57	42.1128	131.2355	26809.7632	14.3222	21.2510	1261.5795	54323.8486	64.5901	8.2645	8.112
	42.2422	131.6455	27061.8514	14.3670	21.3157	1269.5737	54834.6478	64.7919	8.2980	8.145
L58	42.2687	122.1818	25210.3859	14.3938	21.3157	1182.7144	51083.0766	60.1341	8.4990	9.006
	42.3334	122.3717	25328.1362	14.4162	21.3481	1186.4365	51321.6707	60.2276	8.5157	9.023
L59	42.2981	135.0021	27803.7428	14.3804	21.3481	1302.4005	56337.9208	66.4440	8.2477	7.902
	43.0099	137.3127	29255.9239	14.6265	21.7042	1347.9384	59280.4334	67.5812	8.4320	8.079

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 7 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

<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>							
00									
L21				1	1	0.927075			
67.0800-66.8300									
L22				1	1	0.930965			
66.8300-64.0800									
L23				1	1	1.00001			
64.0800-63.8300									
L24				1	1	0.992683			
63.8300-62.5000									
L25				1	1	0.913877			
62.5000-62.2500									
L26				1	1	0.914339			
62.2500-57.2500									
L27				1	1	0.92317			
57.2500-53.5000									
L28				1	1	0.934504			
53.5000-53.2500									
L29				1	1	0.944902			
53.2500-52.5800									
L30				1	1	0.944588			
52.5800-52.3300									
L31				1	1	0.948177			
52.3300-47.3300									
L32				1	1	0.949721			
47.3300-44.5800									
L33				1	1	0.94858			
44.5800-44.3300									
L34				1	1	0.952318			
44.3300-41.9200									
L35				1	1	0.941019			
41.9200-41.6700									
L36				1	1	0.929391			
41.6700-34.0800									
L37				1	1	0.936671			
34.0800-34.0000									
L38				1	1	0.945081			
34.0000-29.0000									
L39				1	1	0.951645			
29.0000-26.9200									
L40				1	1	0.995536			

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	8 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

<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</i>	<i>Double Angle Stitch Bolt Spacing Horizontals</i>	<i>Double Angle Stitch Bolt Spacing Redundants</i>
<i>ft</i>	<i>ft²</i>	<i>in</i>					<i>in</i>	<i>in</i>	<i>in</i>
26.9200-26.6700									
L41				1	1	0.988361			
26.6700-21.6700									
L42				1	1	0.987712			
21.6700-18.0000									
L43				1	1	0.947426			
18.0000-17.7500									
L44				1	1	0.946397			
17.7500-17.5000									
L45				1	1	0.945371			
17.5000-17.2500									
L46				1	1	0.944676			
17.2500-17.0800									
L47				1	1	0.961283			
17.0800-16.8300									
L48				1	1	0.959768			
16.8300-13.0000									
L49				1	1	0.955425			
13.0000-12.7500									
L50				1	1	0.951995			
12.7500-11.9200									
L51				1	1	1.026			
11.9200-11.6700									
L52				1	1	1.03783			
11.6700-6.6700									
L53				1	1	1.03718			
6.6700-6.5000									
L54				1	1	0.96785			
6.5000-6.2500									
L55				1	1	0.958584			
6.2500-3.7500									
L56				1	1	0.985059			
3.7500-3.5000									
L57				1	1	0.983041			
3.5000-3.0000									
L58				1	1	0.959903			
3.0000-2.7500									
L59				1	1	0.860998			
2.7500-0.0000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	9 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Surface Ar (CaAa)	130.0000 - 0.0000	1	1	0.000 0.000	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/30" step ***	C	No	Surface Ar (CaAa)	130.0000 - 0.0000	1	1	0.000 0.000	0.3500		0.49
LDF6-50A(1-1/4)	B	No	Surface Ar (CaAa)	121.0000 - 0.0000	6	3	0.250 0.250	1.5500		0.60
2" Flexible Conduit ***	A	No	Surface Ar (CaAa)	97.0000 - 0.0000	2	2	-0.250 -0.250	2.0000		0.34
LCF114-50J(1-1/4") *** ** **	A	No	Surface Ar (CaAa)	87.0000 - 0.0000	11	5	0.500 0.500	1.5800		0.70
PL 0.75x4	A	No	Surface Ar (CaAa)	85.8300 - 66.0800	1	1	0.500 0.500	0.0000		0.00
(Area) CCI-65FP-060100 *	C	No	Surface Ar (CaAa)	15.5000 - 0.0000	1	1	0.000 0.000	1.0000		0.00
(Area) CCI-65FP-060100	B	No	Surface Ar (CaAa)	44.4200 - 20.7500	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-060100 **	C	No	Surface Ar (CaAa)	29.4200 - 15.5000	1	1	0.000 0.000	1.0000		0.00
(Area) CCI-65FP-060100	A	No	Surface Ar (CaAa)	56.0000 - 20.7500	1	1	0.500 0.500	1.0000		0.00
(Area) CCI-65FP-060100 **	B	No	Surface Ar (CaAa)	56.0000 - 44.4200	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-060100	A	No	Surface Ar (CaAa)	66.0800 - 56.0000	1	1	0.500 0.500	1.0000		0.00
(Area) CCI-65FP-060100 **	B	No	Surface Ar (CaAa)	66.0800 - 56.0000	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-060100	A	No	Surface Ar (CaAa)	91.5000 - 85.8300	1	1	0.500 0.500	1.0000		0.00
(Area) CCI-65FP-060100 **	B	No	Surface Ar (CaAa)	91.5000 - 81.5000	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-065125	A	No	Surface Ar (CaAa)	20.7500 - 0.0000	1	1	0.500 0.500	1.2500		0.00
(Area) CCI-65FP-065125	B	No	Surface Ar (CaAa)	20.7500 - 0.0000	1	1	0.250 0.250	1.2500		0.00
(Area) CCI-65FP-065125 ***PROPOSED MODS*** **	A	No	Surface Ar (CaAa)	20.7500 - 0.0000	1	1	-0.250 -0.250	1.2500		0.00
(Area) CCI-65FP-060100	A	No	Surface Ar (CaAa)	55.0800 - 20.7500	1	1	-0.250 -0.250	1.0000		0.00
(Area) CCI-65FP-060100 **	C	No	Surface Ar (CaAa)	55.0800 - 20.7500	1	1	0.000 0.000	1.0000		0.00
(Area) CCI-65FP-045125	A	No	Surface Ar (CaAa)	85.1700 - 55.0800	1	1	-0.250 -0.250	1.2500		0.00
(Area) CCI-65FP-045125	C	No	Surface Ar (CaAa)	85.1700 - 55.0800	1	1	0.000 0.000	1.2500		0.00

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 11 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R	A_F	C_{AA} In Face	C_{AA} Out Face	Weight K
			ft^2	ft^2	ft^2	ft^2	
L1	130.0000-125.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.362	0.000	0.00
L2	125.0000-120.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.465	0.000	0.02
		C	0.000	0.000	0.362	0.000	0.00
L3	120.0000-115.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.325	0.000	0.08
		C	0.000	0.000	0.362	0.000	0.00
L4	115.0000-110.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.325	0.000	0.08
		C	0.000	0.000	0.362	0.000	0.00
L5	110.0000-105.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.325	0.000	0.14
		C	0.000	0.000	0.362	0.000	0.00
L6	105.0000-100.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.325	0.000	0.15
		C	0.000	0.000	0.362	0.000	0.00
L7	100.0000-95.0000	A	0.000	0.000	0.800	0.000	0.00
		B	0.000	0.000	2.325	0.000	0.15
		C	0.000	0.000	0.362	0.000	0.01
L8	95.0000-90.0000	A	0.000	0.000	2.150	0.000	0.01
		B	0.000	0.000	2.475	0.000	0.15
		C	0.000	0.000	0.362	0.000	0.03
L9	90.0000-89.7500	A	0.000	0.000	0.125	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.018	0.000	0.00
L10	89.7500-84.7500	A	0.000	0.000	4.222	0.000	0.03
		B	0.000	0.000	2.825	0.000	0.15
		C	0.000	0.000	0.415	0.000	0.03
L11	84.7500-84.5800	A	0.000	0.000	0.224	0.000	0.00
		B	0.000	0.000	0.096	0.000	0.01
		C	0.000	0.000	0.034	0.000	0.00
L12	84.5800-84.3300	A	0.000	0.000	0.329	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L13	84.3300-83.4200	A	0.000	0.000	1.197	0.000	0.01
		B	0.000	0.000	0.514	0.000	0.03
		C	0.000	0.000	0.180	0.000	0.00
L14	83.4200-83.1700	A	0.000	0.000	0.329	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L15	83.1700-83.0000	A	0.000	0.000	0.224	0.000	0.00
		B	0.000	0.000	0.096	0.000	0.01
		C	0.000	0.000	0.034	0.000	0.00
L16	83.0000-82.7500	A	0.000	0.000	0.329	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L17	82.7500-77.7500	A	0.000	0.000	6.575	0.000	0.07
		B	0.000	0.000	2.450	0.000	0.15
		C	0.000	0.000	0.987	0.000	0.03
L18	77.7500-70.0000	A	0.000	0.000	10.191	0.000	0.11
		B	0.000	0.000	3.604	0.000	0.24
		C	0.000	0.000	1.531	0.000	0.04
L19	70.0000-69.0000	A	0.000	0.000	1.315	0.000	0.01
		B	0.000	0.000	0.465	0.000	0.03
		C	0.000	0.000	0.198	0.000	0.01
L20	69.0000-67.0800	A	0.000	0.000	2.525	0.000	0.03

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	12 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
		B	0.000	0.000	0.893	0.000	0.06
		C	0.000	0.000	0.379	0.000	0.01
L21	67.0800-66.8300	A	0.000	0.000	0.329	0.000	0.00
		B	0.000	0.000	0.116	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L22	66.8300-64.0800	A	0.000	0.000	3.816	0.000	0.04
		B	0.000	0.000	1.479	0.000	0.08
		C	0.000	0.000	0.543	0.000	0.01
L23	64.0800-63.8300	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L24	63.8300-62.5000	A	0.000	0.000	1.882	0.000	0.02
		B	0.000	0.000	0.751	0.000	0.04
		C	0.000	0.000	0.263	0.000	0.01
L25	62.5000-62.2500	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.049	0.000	0.00
L26	62.2500-57.2500	A	0.000	0.000	7.075	0.000	0.07
		B	0.000	0.000	2.825	0.000	0.15
		C	0.000	0.000	0.987	0.000	0.03
L27	57.2500-53.5000	A	0.000	0.000	5.267	0.000	0.05
		B	0.000	0.000	2.119	0.000	0.12
		C	0.000	0.000	0.701	0.000	0.02
L28	53.5000-53.2500	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.043	0.000	0.00
L29	53.2500-52.5800	A	0.000	0.000	0.931	0.000	0.01
		B	0.000	0.000	0.379	0.000	0.02
		C	0.000	0.000	0.116	0.000	0.00
L30	52.5800-52.3300	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.043	0.000	0.00
L31	52.3300-47.3300	A	0.000	0.000	6.950	0.000	0.07
		B	0.000	0.000	2.825	0.000	0.15
		C	0.000	0.000	0.863	0.000	0.03
L32	47.3300-44.5800	A	0.000	0.000	3.823	0.000	0.04
		B	0.000	0.000	1.554	0.000	0.08
		C	0.000	0.000	0.474	0.000	0.01
L33	44.5800-44.3300	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.043	0.000	0.00
L34	44.3300-41.9200	A	0.000	0.000	3.350	0.000	0.03
		B	0.000	0.000	1.362	0.000	0.07
		C	0.000	0.000	0.416	0.000	0.01
L35	41.9200-41.6700	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01
		C	0.000	0.000	0.043	0.000	0.00
L36	41.6700-34.0800	A	0.000	0.000	10.550	0.000	0.10
		B	0.000	0.000	4.288	0.000	0.23
		C	0.000	0.000	1.309	0.000	0.04
L37	34.0800-34.0000	A	0.000	0.000	0.111	0.000	0.00
		B	0.000	0.000	0.045	0.000	0.00
		C	0.000	0.000	0.014	0.000	0.00
L38	34.0000-29.0000	A	0.000	0.000	6.950	0.000	0.07
		B	0.000	0.000	2.825	0.000	0.15
		C	0.000	0.000	0.905	0.000	0.03
L39	29.0000-26.9200	A	0.000	0.000	2.891	0.000	0.03
		B	0.000	0.000	1.175	0.000	0.06
		C	0.000	0.000	0.567	0.000	0.01
L40	26.9200-26.6700	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.141	0.000	0.01

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	13 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
L41	26.6700-21.6700	C	0.000	0.000	0.068	0.000	0.00
		A	0.000	0.000	6.950	0.000	0.07
		B	0.000	0.000	2.825	0.000	0.15
L42	21.6700-18.0000	C	0.000	0.000	1.363	0.000	0.03
		A	0.000	0.000	5.239	0.000	0.05
		B	0.000	0.000	2.142	0.000	0.11
L43	18.0000-17.7500	C	0.000	0.000	0.725	0.000	0.02
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L44	17.7500-17.5000	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L45	17.5000-17.2500	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L46	17.2500-17.0800	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	0.245	0.000	0.00
		B	0.000	0.000	0.100	0.000	0.01
L47	17.0800-16.8300	C	0.000	0.000	0.029	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L48	16.8300-13.0000	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	5.515	0.000	0.05
		B	0.000	0.000	2.260	0.000	0.12
L49	13.0000-12.7500	C	0.000	0.000	0.661	0.000	0.02
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L50	12.7500-11.9200	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	1.195	0.000	0.01
		B	0.000	0.000	0.490	0.000	0.03
L51	11.9200-11.6700	C	0.000	0.000	0.143	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L52	11.6700-6.6700	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	7.200	0.000	0.07
		B	0.000	0.000	2.950	0.000	0.15
L53	6.6700-6.5000	C	0.000	0.000	0.863	0.000	0.03
		A	0.000	0.000	0.245	0.000	0.00
		B	0.000	0.000	0.100	0.000	0.01
L54	6.5000-6.2500	C	0.000	0.000	0.029	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L55	6.2500-3.7500	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	3.600	0.000	0.03
		B	0.000	0.000	1.475	0.000	0.08
L56	3.7500-3.5000	C	0.000	0.000	0.431	0.000	0.01
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L57	3.5000-3.0000	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	0.720	0.000	0.01
		B	0.000	0.000	0.295	0.000	0.02
L58	3.0000-2.7500	C	0.000	0.000	0.086	0.000	0.00
		A	0.000	0.000	0.360	0.000	0.00
		B	0.000	0.000	0.147	0.000	0.01
L59	2.7500-0.0000	C	0.000	0.000	0.043	0.000	0.00
		A	0.000	0.000	3.960	0.000	0.04
		B	0.000	0.000	1.623	0.000	0.08
		C	0.000	0.000	0.474	0.000	0.01

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 14 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

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	130.0000-125.0000	A	2.289	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.941	0.000	0.08
L2	125.0000-120.0000	A	2.280	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	1.151	0.000	0.07
		C		0.000	0.000	4.923	0.000	0.08
L3	120.0000-115.0000	A	2.271	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	5.745	0.000	0.36
		C		0.000	0.000	4.904	0.000	0.08
L4	115.0000-110.0000	A	2.261	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	5.732	0.000	0.36
		C		0.000	0.000	4.884	0.000	0.08
L5	110.0000-105.0000	A	2.251	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	5.720	0.000	0.42
		C		0.000	0.000	4.864	0.000	0.08
L6	105.0000-100.0000	A	2.240	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	5.706	0.000	0.43
		C		0.000	0.000	4.842	0.000	0.07
L7	100.0000-95.0000	A	2.229	0.000	0.000	2.114	0.000	0.05
		B		0.000	0.000	5.692	0.000	0.43
		C		0.000	0.000	4.820	0.000	0.08
L8	95.0000-90.0000	A	2.217	0.000	0.000	5.910	0.000	0.14
		B		0.000	0.000	6.461	0.000	0.44
		C		0.000	0.000	4.797	0.000	0.10
L9	90.0000-89.7500	A	2.211	0.000	0.000	0.370	0.000	0.01
		B		0.000	0.000	0.414	0.000	0.02
		C		0.000	0.000	0.239	0.000	0.00
L10	89.7500-84.7500	A	2.204	0.000	0.000	11.095	0.000	0.32
		B		0.000	0.000	8.266	0.000	0.47
		C		0.000	0.000	5.008	0.000	0.10
L11	84.7500-84.5800	A	2.198	0.000	0.000	0.610	0.000	0.02
		B		0.000	0.000	0.281	0.000	0.02
		C		0.000	0.000	0.258	0.000	0.00
L12	84.5800-84.3300	A	2.197	0.000	0.000	0.897	0.000	0.03
		B		0.000	0.000	0.413	0.000	0.02
		C		0.000	0.000	0.379	0.000	0.01
L13	84.3300-83.4200	A	2.196	0.000	0.000	3.266	0.000	0.10
		B		0.000	0.000	1.502	0.000	0.08
		C		0.000	0.000	1.378	0.000	0.03
L14	83.4200-83.1700	A	2.194	0.000	0.000	0.897	0.000	0.03
		B		0.000	0.000	0.412	0.000	0.02
		C		0.000	0.000	0.378	0.000	0.01
L15	83.1700-83.0000	A	2.193	0.000	0.000	0.610	0.000	0.02
		B		0.000	0.000	0.280	0.000	0.02
		C		0.000	0.000	0.257	0.000	0.00
L16	83.0000-82.7500	A	2.193	0.000	0.000	0.897	0.000	0.03
		B		0.000	0.000	0.412	0.000	0.02
		C		0.000	0.000	0.378	0.000	0.01
L17	82.7500-77.7500	A	2.186	0.000	0.000	17.899	0.000	0.54
		B		0.000	0.000	6.287	0.000	0.43
		C		0.000	0.000	7.545	0.000	0.14
L18	77.7500-70.0000	A	2.168	0.000	0.000	27.617	0.000	0.83
		B		0.000	0.000	8.705	0.000	0.65
		C		0.000	0.000	11.610	0.000	0.21
L19	70.0000-69.0000	A	2.155	0.000	0.000	3.563	0.000	0.11
		B		0.000	0.000	1.123	0.000	0.08
		C		0.000	0.000	1.498	0.000	0.03
L20	69.0000-67.0800	A	2.150	0.000	0.000	6.811	0.000	0.20

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	15 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
		B		0.000	0.000	2.148	0.000	0.16
		C		0.000	0.000	2.856	0.000	0.05
L21	67.0800-66.8300	A	2.147	0.000	0.000	0.886	0.000	0.03
		B		0.000	0.000	0.279	0.000	0.02
		C		0.000	0.000	0.371	0.000	0.01
L22	66.8300-64.0800	A	2.142	0.000	0.000	9.910	0.000	0.29
		B		0.000	0.000	4.102	0.000	0.24
		C		0.000	0.000	4.077	0.000	0.07
L23	64.0800-63.8300	A	2.137	0.000	0.000	0.906	0.000	0.03
		B		0.000	0.000	0.408	0.000	0.02
		C		0.000	0.000	0.370	0.000	0.01
L24	63.8300-62.5000	A	2.134	0.000	0.000	4.816	0.000	0.14
		B		0.000	0.000	2.167	0.000	0.12
		C		0.000	0.000	1.966	0.000	0.04
L25	62.5000-62.2500	A	2.131	0.000	0.000	0.905	0.000	0.03
		B		0.000	0.000	0.407	0.000	0.02
		C		0.000	0.000	0.369	0.000	0.01
L26	62.2500-57.2500	A	2.122	0.000	0.000	18.058	0.000	0.53
		B		0.000	0.000	8.127	0.000	0.45
		C		0.000	0.000	7.354	0.000	0.13
L27	57.2500-53.5000	A	2.106	0.000	0.000	13.479	0.000	0.39
		B		0.000	0.000	6.097	0.000	0.33
		C		0.000	0.000	5.440	0.000	0.10
L28	53.5000-53.2500	A	2.099	0.000	0.000	0.894	0.000	0.03
		B		0.000	0.000	0.406	0.000	0.02
		C		0.000	0.000	0.358	0.000	0.01
L29	53.2500-52.5800	A	2.097	0.000	0.000	2.395	0.000	0.07
		B		0.000	0.000	1.089	0.000	0.06
		C		0.000	0.000	0.958	0.000	0.02
L30	52.5800-52.3300	A	2.095	0.000	0.000	0.893	0.000	0.03
		B		0.000	0.000	0.406	0.000	0.02
		C		0.000	0.000	0.357	0.000	0.01
L31	52.3300-47.3300	A	2.084	0.000	0.000	17.816	0.000	0.52
		B		0.000	0.000	8.095	0.000	0.44
		C		0.000	0.000	7.115	0.000	0.13
L32	47.3300-44.5800	A	2.067	0.000	0.000	9.757	0.000	0.28
		B		0.000	0.000	4.432	0.000	0.24
		C		0.000	0.000	3.885	0.000	0.07
L33	44.5800-44.3300	A	2.060	0.000	0.000	0.885	0.000	0.03
		B		0.000	0.000	0.402	0.000	0.02
		C		0.000	0.000	0.352	0.000	0.01
L34	44.3300-41.9200	A	2.054	0.000	0.000	8.522	0.000	0.24
		B		0.000	0.000	3.870	0.000	0.21
		C		0.000	0.000	3.386	0.000	0.06
L35	41.9200-41.6700	A	2.048	0.000	0.000	0.883	0.000	0.03
		B		0.000	0.000	0.401	0.000	0.02
		C		0.000	0.000	0.350	0.000	0.01
L36	41.6700-34.0800	A	2.028	0.000	0.000	26.658	0.000	0.75
		B		0.000	0.000	12.096	0.000	0.65
		C		0.000	0.000	10.543	0.000	0.18
L37	34.0800-34.0000	A	2.006	0.000	0.000	0.281	0.000	0.01
		B		0.000	0.000	0.127	0.000	0.01
		C		0.000	0.000	0.111	0.000	0.00
L38	34.0000-29.0000	A	1.991	0.000	0.000	17.395	0.000	0.48
		B		0.000	0.000	7.885	0.000	0.42
		C		0.000	0.000	7.044	0.000	0.12
L39	29.0000-26.9200	A	1.967	0.000	0.000	7.192	0.000	0.20
		B		0.000	0.000	3.258	0.000	0.17
		C		0.000	0.000	3.840	0.000	0.06
L40	26.9200-26.6700	A	1.959	0.000	0.000	0.863	0.000	0.02
		B		0.000	0.000	0.391	0.000	0.02

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	16 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
L41	26.6700-21.6700	C		0.000	0.000	0.460	0.000	0.01
		A	1.939	0.000	0.000	17.161	0.000	0.47
		B		0.000	0.000	7.768	0.000	0.41
		C		0.000	0.000	9.117	0.000	0.15
L42	21.6700-18.0000	A	1.901	0.000	0.000	12.609	0.000	0.34
		B		0.000	0.000	5.708	0.000	0.30
		C		0.000	0.000	5.260	0.000	0.09
L43	18.0000-17.7500	A	1.881	0.000	0.000	0.858	0.000	0.02
		B		0.000	0.000	0.388	0.000	0.02
		C		0.000	0.000	0.325	0.000	0.01
L44	17.7500-17.5000	A	1.878	0.000	0.000	0.857	0.000	0.02
		B		0.000	0.000	0.388	0.000	0.02
		C		0.000	0.000	0.325	0.000	0.01
L45	17.5000-17.2500	A	1.876	0.000	0.000	0.856	0.000	0.02
		B		0.000	0.000	0.388	0.000	0.02
		C		0.000	0.000	0.324	0.000	0.01
L46	17.2500-17.0800	A	1.873	0.000	0.000	0.582	0.000	0.02
		B		0.000	0.000	0.263	0.000	0.01
		C		0.000	0.000	0.220	0.000	0.00
L47	17.0800-16.8300	A	1.871	0.000	0.000	0.855	0.000	0.02
		B		0.000	0.000	0.387	0.000	0.02
		C		0.000	0.000	0.324	0.000	0.01
L48	16.8300-13.0000	A	1.847	0.000	0.000	13.022	0.000	0.35
		B		0.000	0.000	5.889	0.000	0.30
		C		0.000	0.000	4.906	0.000	0.08
L49	13.0000-12.7500	A	1.820	0.000	0.000	0.844	0.000	0.02
		B		0.000	0.000	0.381	0.000	0.02
		C		0.000	0.000	0.316	0.000	0.01
L50	12.7500-11.9200	A	1.813	0.000	0.000	2.796	0.000	0.07
		B		0.000	0.000	1.263	0.000	0.07
		C		0.000	0.000	1.046	0.000	0.02
L51	11.9200-11.6700	A	1.804	0.000	0.000	0.840	0.000	0.02
		B		0.000	0.000	0.380	0.000	0.02
		C		0.000	0.000	0.314	0.000	0.01
L52	11.6700-6.6700	A	1.759	0.000	0.000	16.605	0.000	0.43
		B		0.000	0.000	7.490	0.000	0.38
		C		0.000	0.000	6.141	0.000	0.10
L53	6.6700-6.5000	A	1.702	0.000	0.000	0.556	0.000	0.01
		B		0.000	0.000	0.250	0.000	0.01
		C		0.000	0.000	0.203	0.000	0.00
L54	6.5000-6.2500	A	1.697	0.000	0.000	0.816	0.000	0.02
		B		0.000	0.000	0.367	0.000	0.02
		C		0.000	0.000	0.298	0.000	0.00
L55	6.2500-3.7500	A	1.656	0.000	0.000	8.070	0.000	0.20
		B		0.000	0.000	3.629	0.000	0.18
		C		0.000	0.000	2.915	0.000	0.05
L56	3.7500-3.5000	A	1.604	0.000	0.000	0.795	0.000	0.02
		B		0.000	0.000	0.357	0.000	0.02
		C		0.000	0.000	0.284	0.000	0.00
L57	3.5000-3.0000	A	1.586	0.000	0.000	1.583	0.000	0.04
		B		0.000	0.000	0.710	0.000	0.04
		C		0.000	0.000	0.562	0.000	0.01
L58	3.0000-2.7500	A	1.567	0.000	0.000	0.787	0.000	0.02
		B		0.000	0.000	0.353	0.000	0.02
		C		0.000	0.000	0.278	0.000	0.00
L59	2.7500-0.0000	A	1.455	0.000	0.000	8.379	0.000	0.19
		B		0.000	0.000	3.743	0.000	0.18
		C		0.000	0.000	2.875	0.000	0.04

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 17 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	130.0000-125.0000	0.0000	0.4056	0.0000	2.1931
L2	125.0000-120.0000	0.6050	0.3762	0.5941	2.0262
L3	120.0000-115.0000	2.0032	0.2613	2.0250	1.4461
L4	115.0000-110.0000	2.0184	0.2668	2.1186	1.5306
L5	110.0000-105.0000	2.0338	0.2720	2.2081	1.6107
L6	105.0000-100.0000	2.0456	0.2764	2.2919	1.6853
L7	100.0000-95.0000	1.2884	0.2631	1.3299	1.5359
L8	95.0000-90.0000	0.4223	0.1359	0.4259	1.1171
L9	90.0000-89.7500	0.6363	-0.0984	0.8743	0.6621
L10	89.7500-84.7500	0.5447	-1.2629	0.7256	-0.3168
L11	84.7500-84.5800	0.1688	-1.9097	0.0863	-0.6946
L12	84.5800-84.3300	0.1690	-1.9134	0.0865	-0.6958
L13	84.3300-83.4200	0.1691	-1.9165	0.0867	-0.6981
L14	83.4200-83.1700	0.1696	-1.9249	0.0871	-0.7012
L15	83.1700-83.0000	0.1697	-1.9260	0.0872	-0.7020
L16	83.0000-82.7500	0.1694	-1.9233	0.0872	-0.7024
L17	82.7500-77.7500	-0.0350	-1.9705	-0.3195	-0.7374
L18	77.7500-70.0000	-0.1099	-2.0139	-0.4833	-0.7728
L19	70.0000-69.0000	-0.1123	-2.0261	-0.4930	-0.7808
L20	69.0000-67.0800	-0.1138	-2.0327	-0.4971	-0.7912
L21	67.0800-66.8300	-0.1149	-2.0378	-0.5012	-0.7958
L22	66.8300-64.0800	0.0934	-2.1888	-0.0599	-0.8584
L23	64.0800-63.8300	0.1681	-2.2495	0.0982	-0.8861
L24	63.8300-62.5000	0.1682	-2.2540	0.0987	-0.8903
L25	62.5000-62.2500	0.1684	-2.2606	0.0993	-0.8948
L26	62.2500-57.2500	0.1687	-2.2749	0.1010	-0.9088
L27	57.2500-53.5000	0.2022	-2.3399	0.1270	-0.9560
L28	53.5000-53.2500	0.2479	-2.4084	0.1529	-0.9933
L29	53.2500-52.5800	0.2481	-2.4106	0.1532	-0.9958
L30	52.5800-52.3300	0.2482	-2.4133	0.1535	-0.9983
L31	52.3300-47.3300	0.2491	-2.4266	0.1551	-1.0128
L32	47.3300-44.5800	0.2503	-2.4460	0.1574	-1.0346
L33	44.5800-44.3300	0.2507	-2.4534	0.1583	-1.0432
L34	44.3300-41.9200	0.2511	-2.4597	0.1591	-1.0509
L35	41.9200-41.6700	0.2515	-2.4665	0.1600	-1.0587
L36	41.6700-34.0800	0.2527	-2.4848	0.1624	-1.0822
L37	34.0800-34.0000	0.2531	-2.4911	0.1630	-1.0873
L38	34.0000-29.0000	0.2534	-2.4718	0.1647	-1.0491
L39	29.0000-26.9200	0.2503	-2.1652	0.1612	-0.4096
L40	26.9200-26.6700	0.2508	-2.1704	0.1620	-0.4147
L41	26.6700-21.6700	0.2515	-2.1796	0.1637	-0.4269
L42	21.6700-18.0000	0.2534	-2.5000	0.1708	-1.0336
L43	18.0000-17.7500	0.2544	-2.6121	0.1737	-1.2501
L44	17.7500-17.5000	0.2545	-2.6131	0.1739	-1.2524
L45	17.5000-17.2500	0.2545	-2.6141	0.1741	-1.2546
L46	17.2500-17.0800	0.2546	-2.6150	0.1742	-1.2565
L47	17.0800-16.8300	0.2545	-2.6144	0.1743	-1.2581
L48	16.8300-13.0000	0.2550	-2.6225	0.1760	-1.2776
L49	13.0000-12.7500	0.2557	-2.6332	0.1778	-1.2993
L50	12.7500-11.9200	0.2559	-2.6354	0.1782	-1.3053
L51	11.9200-11.6700	0.2557	-2.6341	0.1786	-1.3106
L52	11.6700-6.6700	0.2563	-2.6441	0.1811	-1.3436
L53	6.6700-6.5000	0.2569	-2.6540	0.1841	-1.3835
L54	6.5000-6.2500	0.2571	-2.6567	0.1844	-1.3877
L55	6.2500-3.7500	0.2574	-2.6619	0.1863	-1.4151
L56	3.7500-3.5000	0.2579	-2.6684	0.1887	-1.4498

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 18 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L57	3.5000-3.0000	0.2579	-2.6698	0.1895	-1.4611
L58	3.0000-2.7500	0.2579	-2.6701	0.1903	-1.4732
L59	2.7500-0.0000	0.2584	-2.6771	0.1950	-1.5452

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L1	2	Step Pegs (5/8" SR) 7-in. w/30" step	125.00 - 130.00	1.0000	1.0000
L2	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L2	2	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 - 125.00	1.0000	1.0000
L2	4	LDF6-50A(1-1/4)	120.00 - 121.00	1.0000	1.0000
L3	1	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L3	2	Step Pegs (5/8" SR) 7-in. w/30" step	115.00 - 120.00	1.0000	1.0000
L3	4	LDF6-50A(1-1/4)	115.00 - 120.00	1.0000	1.0000
L4	1	Safety Line 3/8	110.00 - 115.00	1.0000	1.0000
L4	2	Step Pegs (5/8" SR) 7-in. w/30" step	110.00 - 115.00	1.0000	1.0000
L4	4	LDF6-50A(1-1/4)	110.00 - 115.00	1.0000	1.0000
L5	1	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L5	2	Step Pegs (5/8" SR) 7-in. w/30" step	105.00 - 110.00	1.0000	1.0000
L5	4	LDF6-50A(1-1/4)	105.00 - 110.00	1.0000	1.0000
L6	1	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L6	2	Step Pegs (5/8" SR) 7-in. w/30" step	100.00 - 105.00	1.0000	1.0000
L6	4	LDF6-50A(1-1/4)	100.00 - 105.00	1.0000	1.0000
L7	1	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L7	2	Step Pegs (5/8" SR) 7-in. w/30" step	95.00 - 100.00	1.0000	1.0000
L7	4	LDF6-50A(1-1/4)	95.00 - 100.00	1.0000	1.0000
L7	17	2" Flexible Conduit	95.00 - 97.00	1.0000	1.0000
L8	1	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L8	2	Step Pegs (5/8" SR) 7-in. w/30" step	90.00 - 95.00	1.0000	1.0000
L8	4	LDF6-50A(1-1/4)	90.00 - 95.00	1.0000	1.0000
L8	17	2" Flexible Conduit	90.00 - 95.00	1.0000	1.0000

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HRT 100 943239 (BU 806376)

Page

19 of 64

Project

TEP No. 25677.185485

Date

16:12:43 09/27/18

Client

Crown Castle

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jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L8	71	(Area) CCI-65FP-060100	90.00 - 91.50	1.0000	1.0000
L8	72	(Area) CCI-65FP-060100	90.00 - 91.50	1.0000	1.0000
L9	1	Safety Line 3/8	89.75 - 90.00	1.0000	1.0000
L9	2	Step Pegs (5/8" SR) 7-in. w/30" step	89.75 - 90.00	1.0000	1.0000
L9	4	LDF6-50A(1-1/4)	89.75 - 90.00	1.0000	1.0000
L9	17	2" Flexible Conduit	89.75 - 90.00	1.0000	1.0000
L9	71	(Area) CCI-65FP-060100	89.75 - 90.00	1.0000	1.0000
L9	72	(Area) CCI-65FP-060100	89.75 - 90.00	1.0000	1.0000
L10	1	Safety Line 3/8	84.75 - 89.75	1.0000	1.0000
L10	2	Step Pegs (5/8" SR) 7-in. w/30" step	84.75 - 89.75	1.0000	1.0000
L10	4	LDF6-50A(1-1/4)	84.75 - 89.75	1.0000	1.0000
L10	17	2" Flexible Conduit	84.75 - 89.75	1.0000	1.0000
L10	20	LCF114-50J(1-1/4")	84.75 - 87.00	1.0000	1.0000
L10	52	PL 0.75x4	84.75 - 85.83	1.0000	1.0000
L10	71	(Area) CCI-65FP-060100	85.83 - 89.75	1.0000	1.0000
L10	72	(Area) CCI-65FP-060100	84.75 - 89.75	1.0000	1.0000
L10	86	(Area) CCI-65FP-045125	84.75 - 85.17	1.0000	1.0000
L10	87	(Area) CCI-65FP-045125	84.75 - 85.17	1.0000	1.0000
L11	1	Safety Line 3/8	84.58 - 84.75	1.0000	1.0000
L11	2	Step Pegs (5/8" SR) 7-in. w/30" step	84.58 - 84.75	1.0000	1.0000
L11	4	LDF6-50A(1-1/4)	84.58 - 84.75	1.0000	1.0000
L11	17	2" Flexible Conduit	84.58 - 84.75	1.0000	1.0000
L11	20	LCF114-50J(1-1/4")	84.58 - 84.75	1.0000	1.0000
L11	52	PL 0.75x4	84.58 - 84.75	1.0000	1.0000
L11	72	(Area) CCI-65FP-060100	84.58 - 84.75	1.0000	1.0000
L11	86	(Area) CCI-65FP-045125	84.58 - 84.75	1.0000	1.0000
L11	87	(Area) CCI-65FP-045125	84.58 - 84.75	1.0000	1.0000
L12	1	Safety Line 3/8	84.33 - 84.58	1.0000	1.0000
L12	2	Step Pegs (5/8" SR) 7-in. w/30" step	84.33 - 84.58	1.0000	1.0000
L12	4	LDF6-50A(1-1/4)	84.33 - 84.58	1.0000	1.0000
L12	17	2" Flexible Conduit	84.33 - 84.58	1.0000	1.0000
L12	20	LCF114-50J(1-1/4")	84.33 - 84.58	1.0000	1.0000
L12	52	PL 0.75x4	84.33 - 84.58	1.0000	1.0000
L12	72	(Area) CCI-65FP-060100	84.33 - 84.58	1.0000	1.0000
L12	86	(Area) CCI-65FP-045125	84.33 - 84.58	1.0000	1.0000
L12	87	(Area) CCI-65FP-045125	84.33 - 84.58	1.0000	1.0000
L13	1	Safety Line 3/8	83.42 - 84.33	1.0000	1.0000
L13	2	Step Pegs (5/8" SR) 7-in. w/30" step	83.42 - 84.33	1.0000	1.0000
L13	4	LDF6-50A(1-1/4)	83.42 - 84.33	1.0000	1.0000
L13	17	2" Flexible Conduit	83.42 - 84.33	1.0000	1.0000
L13	20	LCF114-50J(1-1/4")	83.42 - 84.33	1.0000	1.0000
L13	52	PL 0.75x4	83.42 - 84.33	1.0000	1.0000
L13	72	(Area) CCI-65FP-060100	83.42 - 84.33	1.0000	1.0000
L13	86	(Area) CCI-65FP-045125	83.42 - 84.33	1.0000	1.0000
L13	87	(Area) CCI-65FP-045125	83.42 - 84.33	1.0000	1.0000
L14	1	Safety Line 3/8	83.17 - 83.42	1.0000	1.0000
L14	2	Step Pegs (5/8" SR) 7-in. w/30" step	83.17 - 83.42	1.0000	1.0000
L14	4	LDF6-50A(1-1/4)	83.17 - 83.42	1.0000	1.0000
L14	17	2" Flexible Conduit	83.17 - 83.42	1.0000	1.0000
L14	20	LCF114-50J(1-1/4")	83.17 - 83.42	1.0000	1.0000
L14	52	PL 0.75x4	83.17 - 83.42	1.0000	1.0000
L14	72	(Area) CCI-65FP-060100	83.17 - 83.42	1.0000	1.0000
L14	86	(Area) CCI-65FP-045125	83.17 - 83.42	1.0000	1.0000
L14	87	(Area) CCI-65FP-045125	83.17 - 83.42	1.0000	1.0000
L15	1	Safety Line 3/8	83.00 - 83.17	1.0000	1.0000
L15	2	Step Pegs (5/8" SR) 7-in.	83.00 - 83.17	1.0000	1.0000

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	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L15	4	w/30" step LDF6-50A(1-1/4)	83.00 - 83.17	1.0000	1.0000
L15	17	2" Flexible Conduit	83.00 - 83.17	1.0000	1.0000
L15	20	LCF114-50J(1-1/4")	83.00 - 83.17	1.0000	1.0000
L15	52	PL 0.75x4	83.00 - 83.17	1.0000	1.0000
L15	72	(Area) CCI-65FP-060100	83.00 - 83.17	1.0000	1.0000
L15	86	(Area) CCI-65FP-045125	83.00 - 83.17	1.0000	1.0000
L15	87	(Area) CCI-65FP-045125	83.00 - 83.17	1.0000	1.0000
L16	1	Safety Line 3/8	82.75 - 83.00	1.0000	1.0000
L16	2	Step Pegs (5/8" SR) 7-in.	82.75 - 83.00	1.0000	1.0000
L16	4	w/30" step LDF6-50A(1-1/4)	82.75 - 83.00	1.0000	1.0000
L16	17	2" Flexible Conduit	82.75 - 83.00	1.0000	1.0000
L16	20	LCF114-50J(1-1/4")	82.75 - 83.00	1.0000	1.0000
L16	52	PL 0.75x4	82.75 - 83.00	1.0000	1.0000
L16	72	(Area) CCI-65FP-060100	82.75 - 83.00	1.0000	1.0000
L16	86	(Area) CCI-65FP-045125	82.75 - 83.00	1.0000	1.0000
L16	87	(Area) CCI-65FP-045125	82.75 - 83.00	1.0000	1.0000
L17	1	Safety Line 3/8	77.75 - 82.75	1.0000	1.0000
L17	2	Step Pegs (5/8" SR) 7-in.	77.75 - 82.75	1.0000	1.0000
L17	4	w/30" step LDF6-50A(1-1/4)	77.75 - 82.75	1.0000	1.0000
L17	17	2" Flexible Conduit	77.75 - 82.75	1.0000	1.0000
L17	20	LCF114-50J(1-1/4")	77.75 - 82.75	1.0000	1.0000
L17	52	PL 0.75x4	77.75 - 82.75	1.0000	1.0000
L17	72	(Area) CCI-65FP-060100	81.50 - 82.75	1.0000	1.0000
L17	86	(Area) CCI-65FP-045125	77.75 - 82.75	1.0000	1.0000
L17	87	(Area) CCI-65FP-045125	77.75 - 82.75	1.0000	1.0000
L18	1	Safety Line 3/8	70.00 - 77.75	1.0000	1.0000
L18	2	Step Pegs (5/8" SR) 7-in.	70.00 - 77.75	1.0000	1.0000
L18	4	w/30" step LDF6-50A(1-1/4)	70.00 - 77.75	1.0000	1.0000
L18	17	2" Flexible Conduit	70.00 - 77.75	1.0000	1.0000
L18	20	LCF114-50J(1-1/4")	70.00 - 77.75	1.0000	1.0000
L18	52	PL 0.75x4	70.00 - 77.75	1.0000	1.0000
L18	86	(Area) CCI-65FP-045125	70.00 - 77.75	1.0000	1.0000
L18	87	(Area) CCI-65FP-045125	70.00 - 77.75	1.0000	1.0000
L20	1	Safety Line 3/8	67.08 - 69.00	1.0000	1.0000
L20	2	Step Pegs (5/8" SR) 7-in.	67.08 - 69.00	1.0000	1.0000
L20	4	w/30" step LDF6-50A(1-1/4)	67.08 - 69.00	1.0000	1.0000
L20	17	2" Flexible Conduit	67.08 - 69.00	1.0000	1.0000
L20	20	LCF114-50J(1-1/4")	67.08 - 69.00	1.0000	1.0000
L20	52	PL 0.75x4	67.08 - 69.00	1.0000	1.0000
L20	86	(Area) CCI-65FP-045125	67.08 - 69.00	1.0000	1.0000
L20	87	(Area) CCI-65FP-045125	67.08 - 69.00	1.0000	1.0000
L21	1	Safety Line 3/8	66.83 - 67.08	1.0000	1.0000
L21	2	Step Pegs (5/8" SR) 7-in.	66.83 - 67.08	1.0000	1.0000
L21	4	w/30" step LDF6-50A(1-1/4)	66.83 - 67.08	1.0000	1.0000
L21	17	2" Flexible Conduit	66.83 - 67.08	1.0000	1.0000
L21	20	LCF114-50J(1-1/4")	66.83 - 67.08	1.0000	1.0000
L21	52	PL 0.75x4	66.83 - 67.08	1.0000	1.0000
L21	86	(Area) CCI-65FP-045125	66.83 - 67.08	1.0000	1.0000
L21	87	(Area) CCI-65FP-045125	66.83 - 67.08	1.0000	1.0000
L22	1	Safety Line 3/8	64.08 - 66.83	1.0000	1.0000
L22	2	Step Pegs (5/8" SR) 7-in.	64.08 - 66.83	1.0000	1.0000
L22	4	w/30" step LDF6-50A(1-1/4)	64.08 - 66.83	1.0000	1.0000
L22	17	2" Flexible Conduit	64.08 - 66.83	1.0000	1.0000
L22	20	LCF114-50J(1-1/4")	64.08 - 66.83	1.0000	1.0000
L22	52	PL 0.75x4	66.08 - 66.83	1.0000	1.0000

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
L22	67	(Area) CCI-65FP-060100	64.08 - 66.08	1.0000	1.0000
L22	68	(Area) CCI-65FP-060100	64.08 - 66.08	1.0000	1.0000
L22	86	(Area) CCI-65FP-045125	64.08 - 66.83	1.0000	1.0000
L22	87	(Area) CCI-65FP-045125	64.08 - 66.83	1.0000	1.0000
L23	1	Safety Line 3/8	63.83 - 64.08	1.0000	1.0000
L23	2	Step Pegs (5/8" SR) 7-in. w/30" step	63.83 - 64.08	1.0000	1.0000
L23	4	LDF6-50A(1-1/4)	63.83 - 64.08	1.0000	1.0000
L23	17	2" Flexible Conduit	63.83 - 64.08	1.0000	1.0000
L23	20	LCF114-50J(1-1/4")	63.83 - 64.08	1.0000	1.0000
L23	67	(Area) CCI-65FP-060100	63.83 - 64.08	1.0000	1.0000
L23	68	(Area) CCI-65FP-060100	63.83 - 64.08	1.0000	1.0000
L23	86	(Area) CCI-65FP-045125	63.83 - 64.08	1.0000	1.0000
L23	87	(Area) CCI-65FP-045125	63.83 - 64.08	1.0000	1.0000
L24	1	Safety Line 3/8	62.50 - 63.83	1.0000	1.0000
L24	2	Step Pegs (5/8" SR) 7-in. w/30" step	62.50 - 63.83	1.0000	1.0000
L24	4	LDF6-50A(1-1/4)	62.50 - 63.83	1.0000	1.0000
L24	17	2" Flexible Conduit	62.50 - 63.83	1.0000	1.0000
L24	20	LCF114-50J(1-1/4")	62.50 - 63.83	1.0000	1.0000
L24	67	(Area) CCI-65FP-060100	62.50 - 63.83	1.0000	1.0000
L24	68	(Area) CCI-65FP-060100	62.50 - 63.83	1.0000	1.0000
L24	86	(Area) CCI-65FP-045125	62.50 - 63.83	1.0000	1.0000
L24	87	(Area) CCI-65FP-045125	62.50 - 63.83	1.0000	1.0000
L25	1	Safety Line 3/8	62.25 - 62.50	1.0000	1.0000
L25	2	Step Pegs (5/8" SR) 7-in. w/30" step	62.25 - 62.50	1.0000	1.0000
L25	4	LDF6-50A(1-1/4)	62.25 - 62.50	1.0000	1.0000
L25	17	2" Flexible Conduit	62.25 - 62.50	1.0000	1.0000
L25	20	LCF114-50J(1-1/4")	62.25 - 62.50	1.0000	1.0000
L25	67	(Area) CCI-65FP-060100	62.25 - 62.50	1.0000	1.0000
L25	68	(Area) CCI-65FP-060100	62.25 - 62.50	1.0000	1.0000
L25	86	(Area) CCI-65FP-045125	62.25 - 62.50	1.0000	1.0000
L25	87	(Area) CCI-65FP-045125	62.25 - 62.50	1.0000	1.0000
L26	1	Safety Line 3/8	57.25 - 62.25	1.0000	1.0000
L26	2	Step Pegs (5/8" SR) 7-in. w/30" step	57.25 - 62.25	1.0000	1.0000
L26	4	LDF6-50A(1-1/4)	57.25 - 62.25	1.0000	1.0000
L26	17	2" Flexible Conduit	57.25 - 62.25	1.0000	1.0000
L26	20	LCF114-50J(1-1/4")	57.25 - 62.25	1.0000	1.0000
L26	67	(Area) CCI-65FP-060100	57.25 - 62.25	1.0000	1.0000
L26	68	(Area) CCI-65FP-060100	57.25 - 62.25	1.0000	1.0000
L26	86	(Area) CCI-65FP-045125	57.25 - 62.25	1.0000	1.0000
L26	87	(Area) CCI-65FP-045125	57.25 - 62.25	1.0000	1.0000
L27	1	Safety Line 3/8	53.50 - 57.25	1.0000	1.0000
L27	2	Step Pegs (5/8" SR) 7-in. w/30" step	53.50 - 57.25	1.0000	1.0000
L27	4	LDF6-50A(1-1/4)	53.50 - 57.25	1.0000	1.0000
L27	17	2" Flexible Conduit	53.50 - 57.25	1.0000	1.0000
L27	20	LCF114-50J(1-1/4")	53.50 - 57.25	1.0000	1.0000
L27	64	(Area) CCI-65FP-060100	53.50 - 56.00	1.0000	1.0000
L27	65	(Area) CCI-65FP-060100	53.50 - 56.00	1.0000	1.0000
L27	67	(Area) CCI-65FP-060100	56.00 - 57.25	1.0000	1.0000
L27	68	(Area) CCI-65FP-060100	56.00 - 57.25	1.0000	1.0000
L27	83	(Area) CCI-65FP-060100	53.50 - 55.08	1.0000	1.0000
L27	84	(Area) CCI-65FP-060100	53.50 - 55.08	1.0000	1.0000
L27	86	(Area) CCI-65FP-045125	55.08 - 57.25	1.0000	1.0000
L27	87	(Area) CCI-65FP-045125	55.08 - 57.25	1.0000	1.0000
L28	1	Safety Line 3/8	53.25 - 53.50	1.0000	1.0000
L28	2	Step Pegs (5/8" SR) 7-in. w/30" step	53.25 - 53.50	1.0000	1.0000
L28	4	LDF6-50A(1-1/4)	53.25 - 53.50	1.0000	1.0000

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Page

22 of 64

Project

TEP No. 25677.185485

Date

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Client

Crown Castle

Designed by

jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	17	2" Flexible Conduit	53.25 - 53.50	1.0000	1.0000
L28	20	LCF114-50J(1-1/4")	53.25 - 53.50	1.0000	1.0000
L28	64	(Area) CCI-65FP-060100	53.25 - 53.50	1.0000	1.0000
L28	65	(Area) CCI-65FP-060100	53.25 - 53.50	1.0000	1.0000
L28	83	(Area) CCI-65FP-060100	53.25 - 53.50	1.0000	1.0000
L28	84	(Area) CCI-65FP-060100	53.25 - 53.50	1.0000	1.0000
L29	1	Safety Line 3/8	52.58 - 53.25	1.0000	1.0000
L29	2	Step Pegs (5/8" SR) 7-in. w/30" step	52.58 - 53.25	1.0000	1.0000
L29	4	LDF6-50A(1-1/4)	52.58 - 53.25	1.0000	1.0000
L29	17	2" Flexible Conduit	52.58 - 53.25	1.0000	1.0000
L29	20	LCF114-50J(1-1/4")	52.58 - 53.25	1.0000	1.0000
L29	64	(Area) CCI-65FP-060100	52.58 - 53.25	1.0000	1.0000
L29	65	(Area) CCI-65FP-060100	52.58 - 53.25	1.0000	1.0000
L29	83	(Area) CCI-65FP-060100	52.58 - 53.25	1.0000	1.0000
L29	84	(Area) CCI-65FP-060100	52.58 - 53.25	1.0000	1.0000
L30	1	Safety Line 3/8	52.33 - 52.58	1.0000	1.0000
L30	2	Step Pegs (5/8" SR) 7-in. w/30" step	52.33 - 52.58	1.0000	1.0000
L30	4	LDF6-50A(1-1/4)	52.33 - 52.58	1.0000	1.0000
L30	17	2" Flexible Conduit	52.33 - 52.58	1.0000	1.0000
L30	20	LCF114-50J(1-1/4")	52.33 - 52.58	1.0000	1.0000
L30	64	(Area) CCI-65FP-060100	52.33 - 52.58	1.0000	1.0000
L30	65	(Area) CCI-65FP-060100	52.33 - 52.58	1.0000	1.0000
L30	83	(Area) CCI-65FP-060100	52.33 - 52.58	1.0000	1.0000
L30	84	(Area) CCI-65FP-060100	52.33 - 52.58	1.0000	1.0000
L31	1	Safety Line 3/8	47.33 - 52.33	1.0000	1.0000
L31	2	Step Pegs (5/8" SR) 7-in. w/30" step	47.33 - 52.33	1.0000	1.0000
L31	4	LDF6-50A(1-1/4)	47.33 - 52.33	1.0000	1.0000
L31	17	2" Flexible Conduit	47.33 - 52.33	1.0000	1.0000
L31	20	LCF114-50J(1-1/4")	47.33 - 52.33	1.0000	1.0000
L31	64	(Area) CCI-65FP-060100	47.33 - 52.33	1.0000	1.0000
L31	65	(Area) CCI-65FP-060100	47.33 - 52.33	1.0000	1.0000
L31	83	(Area) CCI-65FP-060100	47.33 - 52.33	1.0000	1.0000
L31	84	(Area) CCI-65FP-060100	47.33 - 52.33	1.0000	1.0000
L32	1	Safety Line 3/8	44.58 - 47.33	1.0000	1.0000
L32	2	Step Pegs (5/8" SR) 7-in. w/30" step	44.58 - 47.33	1.0000	1.0000
L32	4	LDF6-50A(1-1/4)	44.58 - 47.33	1.0000	1.0000
L32	17	2" Flexible Conduit	44.58 - 47.33	1.0000	1.0000
L32	20	LCF114-50J(1-1/4")	44.58 - 47.33	1.0000	1.0000
L32	64	(Area) CCI-65FP-060100	44.58 - 47.33	1.0000	1.0000
L32	65	(Area) CCI-65FP-060100	44.58 - 47.33	1.0000	1.0000
L32	83	(Area) CCI-65FP-060100	44.58 - 47.33	1.0000	1.0000
L32	84	(Area) CCI-65FP-060100	44.58 - 47.33	1.0000	1.0000
L33	1	Safety Line 3/8	44.33 - 44.58	1.0000	1.0000
L33	2	Step Pegs (5/8" SR) 7-in. w/30" step	44.33 - 44.58	1.0000	1.0000
L33	4	LDF6-50A(1-1/4)	44.33 - 44.58	1.0000	1.0000
L33	17	2" Flexible Conduit	44.33 - 44.58	1.0000	1.0000
L33	20	LCF114-50J(1-1/4")	44.33 - 44.58	1.0000	1.0000
L33	61	(Area) CCI-65FP-060100	44.33 - 44.42	1.0000	1.0000
L33	64	(Area) CCI-65FP-060100	44.33 - 44.58	1.0000	1.0000
L33	65	(Area) CCI-65FP-060100	44.42 - 44.58	1.0000	1.0000
L33	83	(Area) CCI-65FP-060100	44.33 - 44.58	1.0000	1.0000
L33	84	(Area) CCI-65FP-060100	44.33 - 44.58	1.0000	1.0000
L34	1	Safety Line 3/8	41.92 - 44.33	1.0000	1.0000
L34	2	Step Pegs (5/8" SR) 7-in. w/30" step	41.92 - 44.33	1.0000	1.0000
L34	4	LDF6-50A(1-1/4)	41.92 - 44.33	1.0000	1.0000
L34	17	2" Flexible Conduit	41.92 - 44.33	1.0000	1.0000

Job	HRT 100 943239 (BU 806376)	Page	23 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L34	20	LCF114-50J(1-1/4")	41.92 - 44.33	1.0000	1.0000
L34	61	(Area) CCI-65FP-060100	41.92 - 44.33	1.0000	1.0000
L34	64	(Area) CCI-65FP-060100	41.92 - 44.33	1.0000	1.0000
L34	83	(Area) CCI-65FP-060100	41.92 - 44.33	1.0000	1.0000
L34	84	(Area) CCI-65FP-060100	41.92 - 44.33	1.0000	1.0000
L35	1	Safety Line 3/8	41.67 - 41.92	1.0000	1.0000
L35	2	Step Pegs (5/8" SR) 7-in. w/30" step	41.67 - 41.92	1.0000	1.0000
L35	4	LDF6-50A(1-1/4)	41.67 - 41.92	1.0000	1.0000
L35	17	2" Flexible Conduit	41.67 - 41.92	1.0000	1.0000
L35	20	LCF114-50J(1-1/4")	41.67 - 41.92	1.0000	1.0000
L35	61	(Area) CCI-65FP-060100	41.67 - 41.92	1.0000	1.0000
L35	64	(Area) CCI-65FP-060100	41.67 - 41.92	1.0000	1.0000
L35	83	(Area) CCI-65FP-060100	41.67 - 41.92	1.0000	1.0000
L35	84	(Area) CCI-65FP-060100	41.67 - 41.92	1.0000	1.0000
L36	1	Safety Line 3/8	34.08 - 41.67	1.0000	1.0000
L36	2	Step Pegs (5/8" SR) 7-in. w/30" step	34.08 - 41.67	1.0000	1.0000
L36	4	LDF6-50A(1-1/4)	34.08 - 41.67	1.0000	1.0000
L36	17	2" Flexible Conduit	34.08 - 41.67	1.0000	1.0000
L36	20	LCF114-50J(1-1/4")	34.08 - 41.67	1.0000	1.0000
L36	61	(Area) CCI-65FP-060100	34.08 - 41.67	1.0000	1.0000
L36	64	(Area) CCI-65FP-060100	34.08 - 41.67	1.0000	1.0000
L36	83	(Area) CCI-65FP-060100	34.08 - 41.67	1.0000	1.0000
L36	84	(Area) CCI-65FP-060100	34.08 - 41.67	1.0000	1.0000
L38	1	Safety Line 3/8	29.00 - 34.00	1.0000	1.0000
L38	2	Step Pegs (5/8" SR) 7-in. w/30" step	29.00 - 34.00	1.0000	1.0000
L38	4	LDF6-50A(1-1/4)	29.00 - 34.00	1.0000	1.0000
L38	17	2" Flexible Conduit	29.00 - 34.00	1.0000	1.0000
L38	20	LCF114-50J(1-1/4")	29.00 - 34.00	1.0000	1.0000
L38	61	(Area) CCI-65FP-060100	29.00 - 34.00	1.0000	1.0000
L38	62	(Area) CCI-65FP-060100	29.00 - 29.42	1.0000	1.0000
L38	64	(Area) CCI-65FP-060100	29.00 - 34.00	1.0000	1.0000
L38	83	(Area) CCI-65FP-060100	29.00 - 34.00	1.0000	1.0000
L38	84	(Area) CCI-65FP-060100	29.00 - 34.00	1.0000	1.0000
L39	1	Safety Line 3/8	26.92 - 29.00	1.0000	1.0000
L39	2	Step Pegs (5/8" SR) 7-in. w/30" step	26.92 - 29.00	1.0000	1.0000
L39	4	LDF6-50A(1-1/4)	26.92 - 29.00	1.0000	1.0000
L39	17	2" Flexible Conduit	26.92 - 29.00	1.0000	1.0000
L39	20	LCF114-50J(1-1/4")	26.92 - 29.00	1.0000	1.0000
L39	61	(Area) CCI-65FP-060100	26.92 - 29.00	1.0000	1.0000
L39	62	(Area) CCI-65FP-060100	26.92 - 29.00	1.0000	1.0000
L39	64	(Area) CCI-65FP-060100	26.92 - 29.00	1.0000	1.0000
L39	83	(Area) CCI-65FP-060100	26.92 - 29.00	1.0000	1.0000
L39	84	(Area) CCI-65FP-060100	26.92 - 29.00	1.0000	1.0000
L40	1	Safety Line 3/8	26.67 - 26.92	1.0000	1.0000
L40	2	Step Pegs (5/8" SR) 7-in. w/30" step	26.67 - 26.92	1.0000	1.0000
L40	4	LDF6-50A(1-1/4)	26.67 - 26.92	1.0000	1.0000
L40	17	2" Flexible Conduit	26.67 - 26.92	1.0000	1.0000
L40	20	LCF114-50J(1-1/4")	26.67 - 26.92	1.0000	1.0000
L40	61	(Area) CCI-65FP-060100	26.67 - 26.92	1.0000	1.0000
L40	62	(Area) CCI-65FP-060100	26.67 - 26.92	1.0000	1.0000
L40	64	(Area) CCI-65FP-060100	26.67 - 26.92	1.0000	1.0000
L40	83	(Area) CCI-65FP-060100	26.67 - 26.92	1.0000	1.0000
L40	84	(Area) CCI-65FP-060100	26.67 - 26.92	1.0000	1.0000
L41	1	Safety Line 3/8	21.67 - 26.67	1.0000	1.0000
L41	2	Step Pegs (5/8" SR) 7-in. w/30" step	21.67 - 26.67	1.0000	1.0000
L41	4	LDF6-50A(1-1/4)	21.67 - 26.67	1.0000	1.0000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 24 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L41	17	2" Flexible Conduit	21.67 - 26.67	1.0000	1.0000
L41	20	LCF114-50J(1-1/4")	21.67 - 26.67	1.0000	1.0000
L41	61	(Area) CCI-65FP-060100	21.67 - 26.67	1.0000	1.0000
L41	62	(Area) CCI-65FP-060100	21.67 - 26.67	1.0000	1.0000
L41	64	(Area) CCI-65FP-060100	21.67 - 26.67	1.0000	1.0000
L41	83	(Area) CCI-65FP-060100	21.67 - 26.67	1.0000	1.0000
L41	84	(Area) CCI-65FP-060100	21.67 - 26.67	1.0000	1.0000
L42	1	Safety Line 3/8	18.00 - 21.67	1.0000	1.0000
L42	2	Step Pegs (5/8" SR) 7-in. w/30" step	18.00 - 21.67	1.0000	1.0000
L42	4	LDF6-50A(1-1/4)	18.00 - 21.67	1.0000	1.0000
L42	17	2" Flexible Conduit	18.00 - 21.67	1.0000	1.0000
L42	20	LCF114-50J(1-1/4")	18.00 - 21.67	1.0000	1.0000
L42	61	(Area) CCI-65FP-060100	20.75 - 21.67	1.0000	1.0000
L42	62	(Area) CCI-65FP-060100	18.00 - 21.67	1.0000	1.0000
L42	64	(Area) CCI-65FP-060100	20.75 - 21.67	1.0000	1.0000
L42	75	(Area) CCI-65FP-065125	18.00 - 20.75	1.0000	1.0000
L42	76	(Area) CCI-65FP-065125	18.00 - 20.75	1.0000	1.0000
L42	78	(Area) CCI-65FP-065125	18.00 - 20.75	1.0000	1.0000
L42	83	(Area) CCI-65FP-060100	20.75 - 21.67	1.0000	1.0000
L42	84	(Area) CCI-65FP-060100	20.75 - 21.67	1.0000	1.0000
L43	1	Safety Line 3/8	17.75 - 18.00	1.0000	1.0000
L43	2	Step Pegs (5/8" SR) 7-in. w/30" step	17.75 - 18.00	1.0000	1.0000
L43	4	LDF6-50A(1-1/4)	17.75 - 18.00	1.0000	1.0000
L43	17	2" Flexible Conduit	17.75 - 18.00	1.0000	1.0000
L43	20	LCF114-50J(1-1/4")	17.75 - 18.00	1.0000	1.0000
L43	62	(Area) CCI-65FP-060100	17.75 - 18.00	1.0000	1.0000
L43	75	(Area) CCI-65FP-065125	17.75 - 18.00	1.0000	1.0000
L43	76	(Area) CCI-65FP-065125	17.75 - 18.00	1.0000	1.0000
L43	78	(Area) CCI-65FP-065125	17.75 - 18.00	1.0000	1.0000
L44	1	Safety Line 3/8	17.50 - 17.75	1.0000	1.0000
L44	2	Step Pegs (5/8" SR) 7-in. w/30" step	17.50 - 17.75	1.0000	1.0000
L44	4	LDF6-50A(1-1/4)	17.50 - 17.75	1.0000	1.0000
L44	17	2" Flexible Conduit	17.50 - 17.75	1.0000	1.0000
L44	20	LCF114-50J(1-1/4")	17.50 - 17.75	1.0000	1.0000
L44	62	(Area) CCI-65FP-060100	17.50 - 17.75	1.0000	1.0000
L44	75	(Area) CCI-65FP-065125	17.50 - 17.75	1.0000	1.0000
L44	76	(Area) CCI-65FP-065125	17.50 - 17.75	1.0000	1.0000
L44	78	(Area) CCI-65FP-065125	17.50 - 17.75	1.0000	1.0000
L45	1	Safety Line 3/8	17.25 - 17.50	1.0000	1.0000
L45	2	Step Pegs (5/8" SR) 7-in. w/30" step	17.25 - 17.50	1.0000	1.0000
L45	4	LDF6-50A(1-1/4)	17.25 - 17.50	1.0000	1.0000
L45	17	2" Flexible Conduit	17.25 - 17.50	1.0000	1.0000
L45	20	LCF114-50J(1-1/4")	17.25 - 17.50	1.0000	1.0000
L45	62	(Area) CCI-65FP-060100	17.25 - 17.50	1.0000	1.0000
L45	75	(Area) CCI-65FP-065125	17.25 - 17.50	1.0000	1.0000
L45	76	(Area) CCI-65FP-065125	17.25 - 17.50	1.0000	1.0000
L45	78	(Area) CCI-65FP-065125	17.25 - 17.50	1.0000	1.0000
L46	1	Safety Line 3/8	17.08 - 17.25	1.0000	1.0000
L46	2	Step Pegs (5/8" SR) 7-in. w/30" step	17.08 - 17.25	1.0000	1.0000
L46	4	LDF6-50A(1-1/4)	17.08 - 17.25	1.0000	1.0000
L46	17	2" Flexible Conduit	17.08 - 17.25	1.0000	1.0000
L46	20	LCF114-50J(1-1/4")	17.08 - 17.25	1.0000	1.0000
L46	62	(Area) CCI-65FP-060100	17.08 - 17.25	1.0000	1.0000
L46	75	(Area) CCI-65FP-065125	17.08 - 17.25	1.0000	1.0000
L46	76	(Area) CCI-65FP-065125	17.08 - 17.25	1.0000	1.0000
L46	78	(Area) CCI-65FP-065125	17.08 - 17.25	1.0000	1.0000
L47	1	Safety Line 3/8	16.83 - 17.08	1.0000	1.0000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 25 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L47	2	Step Pegs (5/8" SR) 7-in. w/30" step	16.83 - 17.08	1.0000	1.0000
L47	4	LDF6-50A(1-1/4)	16.83 - 17.08	1.0000	1.0000
L47	17	2" Flexible Conduit	16.83 - 17.08	1.0000	1.0000
L47	20	LCF114-50J(1-1/4")	16.83 - 17.08	1.0000	1.0000
L47	62	(Area) CCI-65FP-060100	16.83 - 17.08	1.0000	1.0000
L47	75	(Area) CCI-65FP-065125	16.83 - 17.08	1.0000	1.0000
L47	76	(Area) CCI-65FP-065125	16.83 - 17.08	1.0000	1.0000
L47	78	(Area) CCI-65FP-065125	16.83 - 17.08	1.0000	1.0000
L48	1	Safety Line 3/8	13.00 - 16.83	1.0000	1.0000
L48	2	Step Pegs (5/8" SR) 7-in. w/30" step	13.00 - 16.83	1.0000	1.0000
L48	4	LDF6-50A(1-1/4)	13.00 - 16.83	1.0000	1.0000
L48	17	2" Flexible Conduit	13.00 - 16.83	1.0000	1.0000
L48	20	LCF114-50J(1-1/4")	13.00 - 16.83	1.0000	1.0000
L48	58	(Area) CCI-65FP-060100	13.00 - 15.50	1.0000	1.0000
L48	62	(Area) CCI-65FP-060100	15.50 - 16.83	1.0000	1.0000
L48	75	(Area) CCI-65FP-065125	13.00 - 16.83	1.0000	1.0000
L48	76	(Area) CCI-65FP-065125	13.00 - 16.83	1.0000	1.0000
L48	78	(Area) CCI-65FP-065125	13.00 - 16.83	1.0000	1.0000
L49	1	Safety Line 3/8	12.75 - 13.00	1.0000	1.0000
L49	2	Step Pegs (5/8" SR) 7-in. w/30" step	12.75 - 13.00	1.0000	1.0000
L49	4	LDF6-50A(1-1/4)	12.75 - 13.00	1.0000	1.0000
L49	17	2" Flexible Conduit	12.75 - 13.00	1.0000	1.0000
L49	20	LCF114-50J(1-1/4")	12.75 - 13.00	1.0000	1.0000
L49	58	(Area) CCI-65FP-060100	12.75 - 13.00	1.0000	1.0000
L49	75	(Area) CCI-65FP-065125	12.75 - 13.00	1.0000	1.0000
L49	76	(Area) CCI-65FP-065125	12.75 - 13.00	1.0000	1.0000
L49	78	(Area) CCI-65FP-065125	12.75 - 13.00	1.0000	1.0000
L50	1	Safety Line 3/8	11.92 - 12.75	1.0000	1.0000
L50	2	Step Pegs (5/8" SR) 7-in. w/30" step	11.92 - 12.75	1.0000	1.0000
L50	4	LDF6-50A(1-1/4)	11.92 - 12.75	1.0000	1.0000
L50	17	2" Flexible Conduit	11.92 - 12.75	1.0000	1.0000
L50	20	LCF114-50J(1-1/4")	11.92 - 12.75	1.0000	1.0000
L50	58	(Area) CCI-65FP-060100	11.92 - 12.75	1.0000	1.0000
L50	75	(Area) CCI-65FP-065125	11.92 - 12.75	1.0000	1.0000
L50	76	(Area) CCI-65FP-065125	11.92 - 12.75	1.0000	1.0000
L50	78	(Area) CCI-65FP-065125	11.92 - 12.75	1.0000	1.0000
L51	1	Safety Line 3/8	11.67 - 11.92	1.0000	1.0000
L51	2	Step Pegs (5/8" SR) 7-in. w/30" step	11.67 - 11.92	1.0000	1.0000
L51	4	LDF6-50A(1-1/4)	11.67 - 11.92	1.0000	1.0000
L51	17	2" Flexible Conduit	11.67 - 11.92	1.0000	1.0000
L51	20	LCF114-50J(1-1/4")	11.67 - 11.92	1.0000	1.0000
L51	58	(Area) CCI-65FP-060100	11.67 - 11.92	1.0000	1.0000
L51	75	(Area) CCI-65FP-065125	11.67 - 11.92	1.0000	1.0000
L51	76	(Area) CCI-65FP-065125	11.67 - 11.92	1.0000	1.0000
L51	78	(Area) CCI-65FP-065125	11.67 - 11.92	1.0000	1.0000
L52	1	Safety Line 3/8	6.67 - 11.67	1.0000	1.0000
L52	2	Step Pegs (5/8" SR) 7-in. w/30" step	6.67 - 11.67	1.0000	1.0000
L52	4	LDF6-50A(1-1/4)	6.67 - 11.67	1.0000	1.0000
L52	17	2" Flexible Conduit	6.67 - 11.67	1.0000	1.0000
L52	20	LCF114-50J(1-1/4")	6.67 - 11.67	1.0000	1.0000
L52	58	(Area) CCI-65FP-060100	6.67 - 11.67	1.0000	1.0000
L52	75	(Area) CCI-65FP-065125	6.67 - 11.67	1.0000	1.0000
L52	76	(Area) CCI-65FP-065125	6.67 - 11.67	1.0000	1.0000
L52	78	(Area) CCI-65FP-065125	6.67 - 11.67	1.0000	1.0000
L53	1	Safety Line 3/8	6.50 - 6.67	1.0000	1.0000
L53	2	Step Pegs (5/8" SR) 7-in.	6.50 - 6.67	1.0000	1.0000

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HRT 100 943239 (BU 806376)

Page

26 of 64

Project

TEP No. 25677.185485

Date

16:12:43 09/27/18

Client

Crown Castle

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		w/30" step			
L53	4	LDF6-50A(1-1/4)	6.50 - 6.67	1.0000	1.0000
L53	17	2" Flexible Conduit	6.50 - 6.67	1.0000	1.0000
L53	20	LCF114-50J(1-1/4")	6.50 - 6.67	1.0000	1.0000
L53	58	(Area) CCI-65FP-060100	6.50 - 6.67	1.0000	1.0000
L53	75	(Area) CCI-65FP-065125	6.50 - 6.67	1.0000	1.0000
L53	76	(Area) CCI-65FP-065125	6.50 - 6.67	1.0000	1.0000
L53	78	(Area) CCI-65FP-065125	6.50 - 6.67	1.0000	1.0000
L54	1	Safety Line 3/8	6.25 - 6.50	1.0000	1.0000
L54	2	Step Pegs (5/8" SR) 7-in.	6.25 - 6.50	1.0000	1.0000
		w/30" step			
L54	4	LDF6-50A(1-1/4)	6.25 - 6.50	1.0000	1.0000
L54	17	2" Flexible Conduit	6.25 - 6.50	1.0000	1.0000
L54	20	LCF114-50J(1-1/4")	6.25 - 6.50	1.0000	1.0000
L54	58	(Area) CCI-65FP-060100	6.25 - 6.50	1.0000	1.0000
L54	75	(Area) CCI-65FP-065125	6.25 - 6.50	1.0000	1.0000
L54	76	(Area) CCI-65FP-065125	6.25 - 6.50	1.0000	1.0000
L54	78	(Area) CCI-65FP-065125	6.25 - 6.50	1.0000	1.0000
L55	1	Safety Line 3/8	3.75 - 6.25	1.0000	1.0000
L55	2	Step Pegs (5/8" SR) 7-in.	3.75 - 6.25	1.0000	1.0000
		w/30" step			
L55	4	LDF6-50A(1-1/4)	3.75 - 6.25	1.0000	1.0000
L55	17	2" Flexible Conduit	3.75 - 6.25	1.0000	1.0000
L55	20	LCF114-50J(1-1/4")	3.75 - 6.25	1.0000	1.0000
L55	58	(Area) CCI-65FP-060100	3.75 - 6.25	1.0000	1.0000
L55	75	(Area) CCI-65FP-065125	3.75 - 6.25	1.0000	1.0000
L55	76	(Area) CCI-65FP-065125	3.75 - 6.25	1.0000	1.0000
L55	78	(Area) CCI-65FP-065125	3.75 - 6.25	1.0000	1.0000
L56	1	Safety Line 3/8	3.50 - 3.75	1.0000	1.0000
L56	2	Step Pegs (5/8" SR) 7-in.	3.50 - 3.75	1.0000	1.0000
		w/30" step			
L56	4	LDF6-50A(1-1/4)	3.50 - 3.75	1.0000	1.0000
L56	17	2" Flexible Conduit	3.50 - 3.75	1.0000	1.0000
L56	20	LCF114-50J(1-1/4")	3.50 - 3.75	1.0000	1.0000
L56	58	(Area) CCI-65FP-060100	3.50 - 3.75	1.0000	1.0000
L56	75	(Area) CCI-65FP-065125	3.50 - 3.75	1.0000	1.0000
L56	76	(Area) CCI-65FP-065125	3.50 - 3.75	1.0000	1.0000
L56	78	(Area) CCI-65FP-065125	3.50 - 3.75	1.0000	1.0000
L57	1	Safety Line 3/8	3.00 - 3.50	1.0000	1.0000
L57	2	Step Pegs (5/8" SR) 7-in.	3.00 - 3.50	1.0000	1.0000
		w/30" step			
L57	4	LDF6-50A(1-1/4)	3.00 - 3.50	1.0000	1.0000
L57	17	2" Flexible Conduit	3.00 - 3.50	1.0000	1.0000
L57	20	LCF114-50J(1-1/4")	3.00 - 3.50	1.0000	1.0000
L57	58	(Area) CCI-65FP-060100	3.00 - 3.50	1.0000	1.0000
L57	75	(Area) CCI-65FP-065125	3.00 - 3.50	1.0000	1.0000
L57	76	(Area) CCI-65FP-065125	3.00 - 3.50	1.0000	1.0000
L57	78	(Area) CCI-65FP-065125	3.00 - 3.50	1.0000	1.0000
L58	1	Safety Line 3/8	2.75 - 3.00	1.0000	1.0000
L58	2	Step Pegs (5/8" SR) 7-in.	2.75 - 3.00	1.0000	1.0000
		w/30" step			
L58	4	LDF6-50A(1-1/4)	2.75 - 3.00	1.0000	1.0000
L58	17	2" Flexible Conduit	2.75 - 3.00	1.0000	1.0000
L58	20	LCF114-50J(1-1/4")	2.75 - 3.00	1.0000	1.0000
L58	58	(Area) CCI-65FP-060100	2.75 - 3.00	1.0000	1.0000
L58	75	(Area) CCI-65FP-065125	2.75 - 3.00	1.0000	1.0000
L58	76	(Area) CCI-65FP-065125	2.75 - 3.00	1.0000	1.0000
L58	78	(Area) CCI-65FP-065125	2.75 - 3.00	1.0000	1.0000
L59	1	Safety Line 3/8	0.00 - 2.75	1.0000	1.0000
L59	2	Step Pegs (5/8" SR) 7-in.	0.00 - 2.75	1.0000	1.0000
		w/30" step			
L59	4	LDF6-50A(1-1/4)	0.00 - 2.75	1.0000	1.0000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	27 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L59	17	2" Flexible Conduit	0.00 - 2.75	1.0000	1.0000
L59	20	LCF114-50J(1-1/4")	0.00 - 2.75	1.0000	1.0000
L59	58	(Area) CCI-65FP-060100	0.00 - 2.75	1.0000	1.0000
L59	75	(Area) CCI-65FP-065125	0.00 - 2.75	1.0000	1.0000
L59	76	(Area) CCI-65FP-065125	0.00 - 2.75	1.0000	1.0000
L59	78	(Area) CCI-65FP-065125	0.00 - 2.75	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 Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K

80010798 w/ Mount Pipe	A	From Leg	3.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11
			-6.00			1/2" Ice	11.5345	8.7492	0.19
			-1.00			1" Ice	12.1217	9.8028	0.28
80010798 w/ Mount Pipe	B	From Leg	3.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11
			-6.00			1/2" Ice	11.5345	8.7492	0.19
			-1.00			1" Ice	12.1217	9.8028	0.28
80010798 w/ Mount Pipe	C	From Leg	3.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11
			-6.00			1/2" Ice	11.5345	8.7492	0.19
			-1.00			1" Ice	12.1217	9.8028	0.28
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	3.0000	0.00	121.0000	No Ice	9.8953	8.1125	0.08
			0.00			1/2" Ice	10.4700	9.3041	0.16
			-1.00			1" Ice	11.0098	10.2095	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	3.0000	0.00	121.0000	No Ice	9.8953	8.1125	0.08
			0.00			1/2" Ice	10.4700	9.3041	0.16
			-1.00			1" Ice	11.0098	10.2095	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	3.0000	0.00	121.0000	No Ice	9.8953	8.1125	0.08
			0.00			1/2" Ice	10.4700	9.3041	0.16
			-1.00			1" Ice	11.0098	10.2095	0.25
800 10121 w/ Mount Pipe	A	From Leg	3.0000	40.00	121.0000	No Ice	5.3879	4.5996	0.07
			6.00			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	3.0000	50.00	121.0000	No Ice	5.3879	4.5996	0.07
			6.00			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	3.0000	50.00	121.0000	No Ice	5.3879	4.5996	0.07
			6.00			1/2" Ice	5.8131	5.3507	0.11
			-1.00			1" Ice	6.2340	6.0464	0.17
RRUS-11	A	From Leg	3.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			-6.00			1/2" Ice	2.9984	1.3395	0.07
			-1.00			1" Ice	3.2134	1.4957	0.09
RRUS-11	B	From Leg	3.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			-6.00			1/2" Ice	2.9984	1.3395	0.07
			-1.00			1" Ice	3.2134	1.4957	0.09
RRUS-11	C	From Leg	3.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			-6.00			1/2" Ice	2.9984	1.3395	0.07
			-1.00			1" Ice	3.2134	1.4957	0.09
RRUS 32 B2	A	From Leg	3.0000	0.00	121.0000	No Ice	2.7313	1.6681	0.05
			-6.00			1/2" Ice	2.9531	1.8552	0.07

Job	HRT 100 943239 (BU 806376)	Page	28 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
RRUS 32 B2	B	From Leg	-1.00		0.00	121.0000	1" Ice	3.1823	2.0493	0.10
			3.0000				No Ice	2.7313	1.6681	0.05
			-6.00				1/2" Ice	2.9531	1.8552	0.07
RRUS 32 B2	C	From Leg	-1.00		0.00	121.0000	1" Ice	3.1823	2.0493	0.10
			3.0000				No Ice	2.7313	1.6681	0.05
			-6.00				1/2" Ice	2.9531	1.8552	0.07
(2) DC6-48-60-18-8F	A	From Leg	-1.00		0.00	121.0000	1" Ice	3.1823	2.0493	0.10
			3.0000				No Ice	1.2117	1.2117	0.03
			-6.00				1/2" Ice	1.8924	1.8924	0.05
(2) LGP21401	A	From Leg	-1.00		40.00	121.0000	1" Ice	2.1051	2.1051	0.08
			3.0000				No Ice	1.1040	0.2070	0.01
			6.00				1/2" Ice	1.2388	0.2738	0.02
(2) LGP21401	B	From Leg	-1.00		50.00	121.0000	1" Ice	1.3810	0.3475	0.03
			3.0000				No Ice	1.1040	0.2070	0.01
			6.00				1/2" Ice	1.2388	0.2738	0.02
(2) LGP21401	C	From Leg	-1.00		50.00	121.0000	1" Ice	1.3810	0.3475	0.03
			3.0000				No Ice	1.1040	0.2070	0.01
			6.00				1/2" Ice	1.2388	0.2738	0.02
DC6-48-60-18-8F	A	From Leg	-1.00		0.00	121.0000	1" Ice	1.3810	0.3475	0.03
			3.0000				No Ice	1.2117	1.2117	0.03
			0.00				1/2" Ice	1.8924	1.8924	0.05
(2) 860 10025	A	From Leg	-1.00		40.00	121.0000	1" Ice	2.1051	2.1051	0.08
			3.0000				No Ice	0.1369	0.1157	0.00
			6.00				1/2" Ice	0.1901	0.1669	0.00
(2) 860 10025	B	From Leg	-1.00		50.00	121.0000	1" Ice	0.2523	0.2252	0.01
			3.0000				No Ice	0.1369	0.1157	0.00
			6.00				1/2" Ice	0.1901	0.1669	0.00
(2) 860 10025	C	From Leg	-1.00		50.00	121.0000	1" Ice	0.2523	0.2252	0.01
			3.0000				No Ice	0.1369	0.1157	0.00
			6.00				1/2" Ice	0.1901	0.1669	0.00
RRUS 12	A	From Leg	-1.00		0.00	121.0000	1" Ice	0.2523	0.2252	0.01
			3.0000				No Ice	3.1450	1.2854	0.06
			-6.00				1/2" Ice	3.3648	1.4379	0.08
RRUS 12	B	From Leg	-1.00		0.00	121.0000	1" Ice	3.5920	1.5998	0.11
			3.0000				No Ice	3.1450	1.2854	0.06
			-6.00				1/2" Ice	3.3648	1.4379	0.08
RRUS 12	C	From Leg	-1.00		0.00	121.0000	1" Ice	3.5920	1.5998	0.11
			3.0000				No Ice	3.1450	1.2854	0.06
			-6.00				1/2" Ice	3.3648	1.4379	0.08
RRUS 32	A	From Leg	-1.00		0.00	121.0000	1" Ice	3.5920	1.5998	0.11
			3.0000				No Ice	2.8571	1.7766	0.06
			-6.00				1/2" Ice	3.0830	1.9677	0.08
RRUS 32	B	From Leg	-1.00		0.00	121.0000	1" Ice	3.3163	2.1658	0.10
			3.0000				No Ice	2.8571	1.7766	0.06
			-6.00				1/2" Ice	3.0830	1.9677	0.08
RRUS 32	C	From Leg	-1.00		0.00	121.0000	1" Ice	3.3163	2.1658	0.10
			3.0000				No Ice	2.8571	1.7766	0.06
			-6.00				1/2" Ice	3.0830	1.9677	0.08
RRUS 32 B66	A	From Leg	-1.00		0.00	121.0000	1" Ice	3.3163	2.1658	0.10
			3.0000				No Ice	2.7427	1.6681	0.05
			0.00				1/2" Ice	2.9647	1.8552	0.07
RRUS 32 B66	B	From Leg	-1.00		0.00	121.0000	1" Ice	3.1941	2.0493	0.10
			3.0000				No Ice	2.7427	1.6681	0.05
			0.00				1/2" Ice	2.9647	1.8552	0.07
RRUS 32 B66	C	From Leg	-1.00		0.00	121.0000	1" Ice	3.1941	2.0493	0.10
			3.0000				No Ice	2.7427	1.6681	0.05
			0.00				1/2" Ice	2.9647	1.8552	0.07

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 29 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Lateral Vert					
			ft	ft	°	ft	ft ²	ft ²	K
T-Arm Mount [TA 602-3]	C	None		-1.00	0.00	121.0000	1" Ice 3.1941 No Ice 11.5900	2.0493 11.5900	0.10 0.77
							1/2" Ice 15.4400	15.4400	0.99
							1" Ice 19.2900	19.2900	1.21
Side Arm Mount [SO 102-3]	C	None			0.00	121.0000	No Ice 3.0000	3.0000	0.08
							1/2" Ice 3.4800	3.4800	0.11
							1" Ice 3.9600	3.9600	0.14

(2) SBNHH-1D65B	A	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 8.0789 1/2" Ice 8.5350 1" Ice 8.9980	5.3417 5.7948 6.2554	0.04 0.09 0.15
(2) SBNHH-1D65B	B	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 8.0789 1/2" Ice 8.5350 1" Ice 8.9980	5.3417 5.7948 6.2554	0.04 0.09 0.15
(2) SBNHH-1D65B	C	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 8.0789 1/2" Ice 8.5350 1" Ice 8.9980	5.3417 5.7948 6.2554	0.04 0.09 0.15
BXA-70063/6CFx4	A	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 7.5690 1/2" Ice 8.0160 1" Ice 8.4701	3.7554 4.1889 4.6297	0.02 0.06 0.10
BXA-70063/6CFx4	B	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 7.5690 1/2" Ice 8.0160 1" Ice 8.4701	3.7554 4.1889 4.6297	0.02 0.06 0.10
BXA-70063/6CFx4	C	From Centroid-Le g	4.0000 -2.00 2.00		30.00	109.0000	No Ice 7.5690 1/2" Ice 8.0160 1" Ice 8.4701	3.7554 4.1889 4.6297	0.02 0.06 0.10
BXA-80063/4CF	A	From Centroid-Le g	4.0000 6.00 2.00		30.00	109.0000	No Ice 4.7078 1/2" Ice 5.0262 1" Ice 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
BXA-80063/4CF	B	From Centroid-Le g	4.0000 6.00 2.00		30.00	109.0000	No Ice 4.7078 1/2" Ice 5.0262 1" Ice 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
BXA-80063/4CF	C	From Centroid-Le g	4.0000 6.00 2.00		30.00	109.0000	No Ice 4.7078 1/2" Ice 5.0262 1" Ice 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
B66A RRH4X45	A	From Centroid-Le g	4.0000 -6.00 2.00		30.00	109.0000	No Ice 2.5370 1/2" Ice 2.7496 1" Ice 2.9696	1.6101 1.7906 1.9781	0.06 0.08 0.10
B66A RRH4X45	B	From Centroid-Le g	4.0000 -6.00 2.00		30.00	109.0000	No Ice 2.5370 1/2" Ice 2.7496 1" Ice 2.9696	1.6101 1.7906 1.9781	0.06 0.08 0.10
B66A RRH4X45	C	From Centroid-Le g	4.0000 -6.00 2.00		30.00	109.0000	No Ice 2.5370 1/2" Ice 2.7496 1" Ice 2.9696	1.6101 1.7906 1.9781	0.06 0.08 0.10
B13 RRH 4X30	A	From Centroid-Le g	4.0000 -2.00 -2.00		30.00	109.0000	No Ice 2.0552 1/2" Ice 2.2405 1" Ice 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	B	From Centroid-Le g	4.0000 -2.00 -2.00		30.00	109.0000	No Ice 2.0552 1/2" Ice 2.2405 1" Ice 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	C	From Centroid-Le g	4.0000 -2.00 -2.00		30.00	109.0000	No Ice 2.0552 1/2" Ice 2.2405 1" Ice 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
DB-T1-6Z-8AB-0Z	A	From Centroid-Le g	4.0000 2.00 2.00		30.00	109.0000	No Ice 4.8000 1/2" Ice 5.0704 1" Ice 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	30 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral Vert						°
DB-T1-6Z-8AB-0Z	B	From	4.0000	2.00	30.00	109.0000	No Ice	4.8000	2.0000	0.04
		Centroid-Le	2.00				1/2" Ice	5.0704	2.1926	0.08
		g	2.00				1" Ice	5.3481	2.3926	0.12
B25 RRH4X30	A	From	4.0000	2.00	30.00	109.0000	No Ice	2.1200	1.2929	0.05
		Centroid-Le	2.00				1/2" Ice	2.3081	1.4483	0.07
		g	2.00				1" Ice	2.5037	1.6107	0.09
B25 RRH4X30	B	From	4.0000	2.00	30.00	109.0000	No Ice	2.1200	1.2929	0.05
		Centroid-Le	2.00				1/2" Ice	2.3081	1.4483	0.07
		g	2.00				1" Ice	2.5037	1.6107	0.09
B25 RRH4X30	C	From	4.0000	2.00	30.00	109.0000	No Ice	2.1200	1.2929	0.05
		Centroid-Le	2.00				1/2" Ice	2.3081	1.4483	0.07
		g	2.00				1" Ice	2.5037	1.6107	0.09
(2) FD9R6004/2C-3L	A	From	4.0000	6.00	30.00	109.0000	No Ice	0.3142	0.0762	0.00
		Centroid-Le	6.00				1/2" Ice	0.3862	0.1189	0.01
		g	-2.00				1" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	B	From	4.0000	6.00	30.00	109.0000	No Ice	0.3142	0.0762	0.00
		Centroid-Le	6.00				1/2" Ice	0.3862	0.1189	0.01
		g	-2.00				1" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	C	From	4.0000	6.00	30.00	109.0000	No Ice	0.3142	0.0762	0.00
		Centroid-Le	6.00				1/2" Ice	0.3862	0.1189	0.01
		g	-2.00				1" Ice	0.4656	0.1685	0.01
Platform Mount [LP 101-1]	C	None			0.00	109.0000	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

800MHz 2X50W RRH W/FILTER	A	From Face	1.0000	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 Face	1.0000	-10.00	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 Face	1.0000	-50.00	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 4x45W-65MHz w/Mount Pipe	A	From Face	1.0000	0.00	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00				1/2" Ice	3.0564	3.5513	0.11
			0.00				1" Ice	3.3899	4.0155	0.15
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	B	From Face	1.0000	-10.00	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00				1/2" Ice	3.0564	3.5513	0.11
			0.00				1" Ice	3.3899	4.0155	0.15
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	C	From Face	1.0000	-50.00	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00				1/2" Ice	3.0564	3.5513	0.11
			0.00				1" Ice	3.3899	4.0155	0.15
PCS 1900MHz 4x45W-65MHZ	A	From Face	1.0000	0.00	-1.00	99.0000	No Ice	2.3218	2.2381	0.06
			0.00				1/2" Ice	2.5266	2.4407	0.08
			-1.00				1" Ice	2.7388	2.6507	0.11
PCS 1900MHz 4x45W-65MHZ	B	From Face	1.0000	-10.00	-1.00	99.0000	No Ice	2.3218	2.2381	0.06
			0.00				1/2" Ice	2.5266	2.4407	0.08
			-1.00				1" Ice	2.7388	2.6507	0.11
PCS 1900MHz 4x45W-65MHZ	C	From Face	1.0000	-50.00	-1.00	99.0000	No Ice	2.3218	2.2381	0.06
			0.00				1/2" Ice	2.5266	2.4407	0.08
			-1.00				1" Ice	2.7388	2.6507	0.11
Side Arm Mount [SO 101-3]	C	None			0.00	99.0000	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

APXVTM14-ALU-I20 w/	A	From	4.0000		0.00	97.0000	No Ice	6.5799	4.9591	0.08

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	31 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CA _{AA} Front	CA _{AA} Side	Weight
			Horz	Lateral Vert					
			ft	ft	°	ft	ft ²	ft ²	K
Mount Pipe		Centroid-Fa	-6.00			1/2" Ice	7.0306	5.7544	0.13
		ce	0.00			1" Ice	7.4733	6.4723	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From	4.0000		-10.00	No Ice	6.5799	4.9591	0.08
		Centroid-Fa	-6.00			1/2" Ice	7.0306	5.7544	0.13
		ce	0.00			1" Ice	7.4733	6.4723	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From	4.0000		-50.00	No Ice	6.5799	4.9591	0.08
		Centroid-Fa	-6.00			1/2" Ice	7.0306	5.7544	0.13
		ce	0.00			1" Ice	7.4733	6.4723	0.19
840 10054 w/ Mount Pipe	A	From	4.0000		-20.00	No Ice	4.8054	2.3851	0.05
		Centroid-Fa	0.00			1/2" Ice	5.1627	2.9173	0.08
		ce	0.00			1" Ice	5.5291	3.4662	0.12
840 10054 w/ Mount Pipe	B	From	4.0000		-30.00	No Ice	4.8054	2.3851	0.05
		Centroid-Fa	0.00			1/2" Ice	5.1627	2.9173	0.08
		ce	0.00			1" Ice	5.5291	3.4662	0.12
840 10054 w/ Mount Pipe	C	From	4.0000		-50.00	No Ice	4.8054	2.3851	0.05
		Centroid-Fa	0.00			1/2" Ice	5.1627	2.9173	0.08
		ce	0.00			1" Ice	5.5291	3.4662	0.12
APXVSPP18-C-A20 w/ Mount Pipe	A	From	4.0000		0.00	No Ice	8.2619	6.9458	0.08
		Centroid-Fa	6.00			1/2" Ice	8.8215	8.1266	0.15
		ce	0.00			1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From	4.0000		-10.00	No Ice	8.2619	6.9458	0.08
		Centroid-Fa	6.00			1/2" Ice	8.8215	8.1266	0.15
		ce	0.00			1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From	4.0000		-50.00	No Ice	8.2619	6.9458	0.08
		Centroid-Fa	6.00			1/2" Ice	8.8215	8.1266	0.15
		ce	0.00			1" Ice	9.3462	9.0212	0.23
TIMING 2000	B	From	4.0000		-30.00	No Ice	0.1347	0.1079	0.00
		Centroid-Fa	0.00			1/2" Ice	0.1830	0.1518	0.00
		ce	0.00			1" Ice	0.2388	0.2031	0.01
WIMAX DAP HEAD	A	From	4.0000		0.00	No Ice	1.5467	0.6840	0.03
		Centroid-Fa	0.00			1/2" Ice	1.7037	0.7999	0.04
		ce	0.00			1" Ice	1.8681	0.9228	0.06
WIMAX DAP HEAD	B	From	4.0000		0.00	No Ice	1.5467	0.6840	0.03
		Centroid-Fa	0.00			1/2" Ice	1.7037	0.7999	0.04
		ce	0.00			1" Ice	1.8681	0.9228	0.06
WIMAX DAP HEAD	C	From	4.0000		0.00	No Ice	1.5467	0.6840	0.03
		Centroid-Fa	0.00			1/2" Ice	1.7037	0.7999	0.04
		ce	0.00			1" Ice	1.8681	0.9228	0.06
HORIZON COMPACT	A	From	4.0000		43.00	No Ice	0.0000	0.3681	0.01
		Centroid-Fa	0.00			1/2" Ice	0.0000	0.4499	0.02
		ce	4.00			1" Ice	0.0000	0.5391	0.03
HORIZON COMPACT	C	From	4.0000		-90.00	No Ice	0.0000	0.3681	0.01
		Centroid-Fa	0.00			1/2" Ice	0.0000	0.4499	0.02
		ce	4.00			1" Ice	0.0000	0.5391	0.03
IBC1900HG-2A	A	From	4.0000		0.00	No Ice	0.9660	0.4635	0.02
		Centroid-Fa	6.00			1/2" Ice	1.0908	0.5576	0.03
		ce	0.00			1" Ice	1.2230	0.6599	0.04
IBC1900HG-2A	B	From	4.0000		-10.00	No Ice	0.9660	0.4635	0.02
		Centroid-Fa	6.00			1/2" Ice	1.0908	0.5576	0.03
		ce	0.00			1" Ice	1.2230	0.6599	0.04
IBC1900HG-2A	C	From	4.0000		-50.00	No Ice	0.9660	0.4635	0.02
		Centroid-Fa	6.00			1/2" Ice	1.0908	0.5576	0.03
		ce	0.00			1" Ice	1.2230	0.6599	0.04
IBC1900BB-1	A	From	4.0000		0.00	No Ice	0.9660	0.4635	0.02
		Centroid-Fa	6.00			1/2" Ice	1.0908	0.5576	0.03
		ce	0.00			1" Ice	1.2230	0.6599	0.04
IBC1900BB-1	B	From	4.0000		-10.00	No Ice	0.9660	0.4635	0.02

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	32 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
IBC1900BB-1	C	Centroid-Face	6.00			1/2" Ice	1.0908	0.5576	0.03	
			0.00			1" Ice	1.2230	0.6599	0.04	
		From	4.0000		-50.00	97.0000	No Ice	0.9660	0.4635	0.02
TD-RRH8x20-25	A	Centroid-Face	6.00			1/2" Ice	1.0908	0.5576	0.03	
			0.00			1" Ice	1.2230	0.6599	0.04	
		From	4.0000		0.00	97.0000	No Ice	3.7042	1.2939	0.07
TD-RRH8x20-25	B	Centroid-Face	-6.00			1/2" Ice	3.9462	1.4646	0.09	
			0.00			1" Ice	4.1956	1.6424	0.12	
		From	4.0000		-10.00	97.0000	No Ice	3.7042	1.2939	0.07
TD-RRH8x20-25	C	Centroid-Face	-6.00			1/2" Ice	3.9462	1.4646	0.09	
			0.00			1" Ice	4.1956	1.6424	0.12	
		From	4.0000		-50.00	97.0000	No Ice	3.7042	1.2939	0.07
Platform Mount [LP 713-1]	C	Centroid-Face	-6.00			1/2" Ice	3.9462	1.4646	0.09	
			0.00			1" Ice	4.1956	1.6424	0.12	
		None			0.00	97.0000	No Ice	31.2700	31.2700	1.51

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.0000		-20.00	87.0000	No Ice	6.3292	5.6424	0.11
			-6.00				1/2" Ice	6.7751	6.4259	0.17
			0.00				1" Ice	7.2137	7.1313	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.0000		0.00	87.0000	No Ice	6.3292	5.6424	0.11
			-6.00				1/2" Ice	6.7751	6.4259	0.17
			0.00				1" Ice	7.2137	7.1313	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.0000		10.00	87.0000	No Ice	6.3292	5.6424	0.11
			-6.00				1/2" Ice	6.7751	6.4259	0.17
			0.00				1" Ice	7.2137	7.1313	0.23
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.0000		-20.00	87.0000	No Ice	20.4801	11.0240	0.16
			0.00				1/2" Ice	21.2306	12.5496	0.30
			0.00				1" Ice	21.9900	14.0992	0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.0000		0.00	87.0000	No Ice	20.4801	11.0240	0.16
			0.00				1/2" Ice	21.2306	12.5496	0.30
			0.00				1" Ice	21.9900	14.0992	0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.0000		10.00	87.0000	No Ice	20.4801	11.0240	0.16
			0.00				1/2" Ice	21.2306	12.5496	0.30
			0.00				1" Ice	21.9900	14.0992	0.44
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Face	4.0000		-20.00	87.0000	No Ice	6.7474	6.0700	0.15
			6.00				1/2" Ice	7.2017	6.8671	0.21
			0.00				1" Ice	7.6475	7.5828	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Face	4.0000		0.00	87.0000	No Ice	6.7474	6.0700	0.15
			6.00				1/2" Ice	7.2017	6.8671	0.21
			0.00				1" Ice	7.6475	7.5828	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Face	4.0000		10.00	87.0000	No Ice	6.7474	6.0700	0.15
			6.00				1/2" Ice	7.2017	6.8671	0.21
			0.00				1" Ice	7.6475	7.5828	0.28
KRY 112 144/1	A	From Face	4.0000		-20.00	87.0000	No Ice	0.3523	0.1617	0.01
			-6.00				1/2" Ice	0.4284	0.2195	0.01
			0.00				1" Ice	0.5119	0.2846	0.02
KRY 112 144/1	B	From Face	4.0000		0.00	87.0000	No Ice	0.3523	0.1617	0.01
			-6.00				1/2" Ice	0.4284	0.2195	0.01
			0.00				1" Ice	0.5119	0.2846	0.02
KRY 112 144/1	C	From Face	4.0000		10.00	87.0000	No Ice	0.3523	0.1617	0.01
			-6.00				1/2" Ice	0.4284	0.2195	0.01
			0.00				1" Ice	0.5119	0.2846	0.02
RADIO 4449 B12/B71	A	From Face	4.0000		-20.00	87.0000	No Ice	1.6500	1.1625	0.07
			0.00				1/2" Ice	1.8104	1.3012	0.09
			0.00				1" Ice	1.9781	1.4473	0.11

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	34 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²			ft ²
0000					C	0.000	6.400		100.00	0.362	0.000
L5	107.4677	1.285	29.40	6.930	A	0.000	6.930	6.930	100.00	0.000	0.000
110.0000-105.0000			3		B	0.000	6.930		100.00	2.325	0.000
					C	0.000	6.930		100.00	0.362	0.000
L6	102.4701	1.272	29.11	7.469	A	0.000	7.469	7.469	100.00	0.000	0.000
105.0000-100.0000			0		B	0.000	7.469		100.00	2.325	0.000
					C	0.000	7.469		100.00	0.362	0.000
L7	97.4721	1.259	28.80	8.009	A	0.000	8.009	8.009	100.00	0.800	0.000
100.0000-95.0000			5		B	0.000	8.009		100.00	2.325	0.000
					C	0.000	8.009		100.00	0.362	0.000
L8	92.4738	1.245	28.48	8.549	A	0.000	8.549	8.549	100.00	2.150	0.000
95.0000-90.0000			8		B	0.000	8.549		100.00	2.475	0.000
					C	0.000	8.549		100.00	0.362	0.000
L9	89.8749	1.237	28.31	0.440	A	0.000	0.440	0.440	100.00	0.125	0.000
90.0000-89.7500			7		B	0.000	0.440		100.00	0.141	0.000
					C	0.000	0.440		100.00	0.018	0.000
L10	87.2254	1.23	28.13	9.081	A	0.000	9.081	9.081	100.00	4.222	0.000
89.7500-84.7500			9		B	0.000	9.081		100.00	2.825	0.000
					C	0.000	9.081		100.00	0.415	0.000
L11	84.6650	1.222	27.96	0.318	A	0.000	0.318	0.318	100.00	0.224	0.000
84.7500-84.5800			3		B	0.000	0.318		100.00	0.096	0.000
					C	0.000	0.318		100.00	0.034	0.000
L12	84.4549	1.221	27.94	0.468	A	0.000	0.468	0.468	100.00	0.329	0.000
84.5800-84.3300			9		B	0.000	0.468		100.00	0.141	0.000
					C	0.000	0.468		100.00	0.049	0.000
L13	83.8742	1.22	27.90	1.715	A	0.000	1.715	1.715	100.00	1.197	0.000
84.3300-83.4200			8		B	0.000	1.715		100.00	0.514	0.000
					C	0.000	1.715		100.00	0.180	0.000
L14	83.2949	1.218	27.86	0.472	A	0.000	0.472	0.472	100.00	0.329	0.000
83.4200-83.1700			8		B	0.000	0.472		100.00	0.141	0.000
					C	0.000	0.472		100.00	0.049	0.000
L15	83.0850	1.217	27.85	0.322	A	0.000	0.322	0.322	100.00	0.224	0.000
83.1700-83.0000			3		B	0.000	0.322		100.00	0.096	0.000
					C	0.000	0.322		100.00	0.034	0.000
L16	82.8749	1.217	27.83	0.476	A	0.000	0.476	0.476	100.00	0.329	0.000
83.0000-82.7500			8		B	0.000	0.476		100.00	0.141	0.000
					C	0.000	0.476		100.00	0.049	0.000
L17	80.2273	1.208	27.64	9.810	A	0.000	9.810	9.810	100.00	6.575	0.000
82.7500-77.7500			8		B	0.000	9.810		100.00	2.450	0.000
					C	0.000	9.810		100.00	0.987	0.000
L18	73.8240	1.187	27.16	16.274	A	0.000	16.274	16.274	100.00	10.191	0.000
77.7500-70.0000			8		B	0.000	16.274		100.00	3.604	0.000
					C	0.000	16.274		100.00	1.531	0.000
L19	69.4992	1.172	26.82	2.149	A	0.000	2.149	2.149	100.00	1.315	0.000
70.0000-69.0000			5		B	0.000	2.149		100.00	0.465	0.000
					C	0.000	2.149		100.00	0.198	0.000
L20	68.0370	1.167	26.70	4.188	A	0.000	4.188	4.188	100.00	2.525	0.000
69.0000-67.0800			5		B	0.000	4.188		100.00	0.893	0.000
					C	0.000	4.188		100.00	0.379	0.000
L21	66.9549	1.163	26.61	0.551	A	0.000	0.551	0.551	100.00	0.329	0.000
67.0800-66.8300			5		B	0.000	0.551		100.00	0.116	0.000
					C	0.000	0.551		100.00	0.049	0.000
L22	65.4490	1.158	26.48	6.153	A	0.000	6.153	6.153	100.00	3.816	0.000
66.8300-64.0800			8		B	0.000	6.153		100.00	1.479	0.000
					C	0.000	6.153		100.00	0.543	0.000
L23	63.9550	1.152	26.36	0.567	A	0.000	0.567	0.567	100.00	0.354	0.000
64.0800-63.8300			0		B	0.000	0.567		100.00	0.141	0.000
					C	0.000	0.567		100.00	0.049	0.000
L24	63.1636	1.149	26.29	3.039	A	0.000	3.039	3.039	100.00	1.882	0.000
63.8300-62.5000			1		B	0.000	3.039		100.00	0.751	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 35 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
00					C	0.000	3.039		100.00	0.263	0.000
L25	62.3750	1.146	26.22	0.575	A	0.000	0.575	0.575	100.00	0.354	0.000
62.5000-62.25			1		B	0.000	0.575		100.00	0.141	0.000
00					C	0.000	0.575		100.00	0.049	0.000
L26	59.7311	1.136	25.98	11.779	A	0.000	11.779	11.779	100.00	7.075	0.000
62.2500-57.25			3		B	0.000	11.779		100.00	2.825	0.000
00					C	0.000	11.779		100.00	0.987	0.000
L27	55.3648	1.117	25.57	9.191	A	0.000	9.191	9.191	100.00	5.267	0.000
57.2500-53.50			1		B	0.000	9.191		100.00	2.119	0.000
00					C	0.000	9.191		100.00	0.701	0.000
L28	53.3750	1.109	25.37	0.623	A	0.000	0.623	0.623	100.00	0.347	0.000
53.5000-53.25			5		B	0.000	0.623		100.00	0.141	0.000
00					C	0.000	0.623		100.00	0.043	0.000
L29	52.9147	1.107	25.32	1.677	A	0.000	1.677	1.677	100.00	0.931	0.000
53.2500-52.58			9		B	0.000	1.677		100.00	0.379	0.000
00					C	0.000	1.677		100.00	0.116	0.000
L30	52.4550	1.105	25.28	0.628	A	0.000	0.628	0.628	100.00	0.347	0.000
52.5800-52.33			2		B	0.000	0.628		100.00	0.141	0.000
00					C	0.000	0.628		100.00	0.043	0.000
L31	49.8127	1.093	25.00	12.853	A	0.000	12.853	12.853	100.00	6.950	0.000
52.3300-47.33			9		B	0.000	12.853		100.00	2.825	0.000
00					C	0.000	12.853		100.00	0.863	0.000
L32	45.9499	1.074	24.58	7.300	A	0.000	7.300	7.300	100.00	3.823	0.000
47.3300-44.58			7		B	0.000	7.300		100.00	1.554	0.000
00					C	0.000	7.300		100.00	0.474	0.000
L33	44.4550	1.067	24.41	0.672	A	0.000	0.672	0.672	100.00	0.347	0.000
44.5800-44.33			7		B	0.000	0.672		100.00	0.141	0.000
00					C	0.000	0.672		100.00	0.043	0.000
L34	43.1212	1.06	24.26	6.546	A	0.000	6.546	6.546	100.00	3.350	0.000
44.3300-41.92			1		B	0.000	6.546		100.00	1.362	0.000
00					C	0.000	6.546		100.00	0.416	0.000
L35	41.7950	1.053	24.10	0.686	A	0.000	0.686	0.686	100.00	0.347	0.000
41.9200-41.67			2		B	0.000	0.686		100.00	0.141	0.000
00					C	0.000	0.686		100.00	0.043	0.000
L36	37.8387	1.031	23.60	21.470	A	0.000	21.470	21.470	100.00	10.550	0.000
41.6700-34.08			2		B	0.000	21.470		100.00	4.288	0.000
00					C	0.000	21.470		100.00	1.309	0.000
L37	34.0400	1.009	23.08	0.228	A	0.000	0.228	0.228	100.00	0.111	0.000
34.0800-34.00			2		B	0.000	0.228		100.00	0.045	0.000
00					C	0.000	0.228		100.00	0.014	0.000
L38	31.4847	0.992	22.70	14.559	A	0.000	14.559	14.559	100.00	6.950	0.000
34.0000-29.00			6		B	0.000	14.559		100.00	2.825	0.000
00					C	0.000	14.559		100.00	0.905	0.000
L39	27.9574	0.968	22.14	6.216	A	0.000	6.216	6.216	100.00	2.891	0.000
29.0000-26.92			5		B	0.000	6.216		100.00	1.175	0.000
00					C	0.000	6.216		100.00	0.567	0.000
L40	26.7950	0.959	21.94	0.753	A	0.000	0.753	0.753	100.00	0.347	0.000
26.9200-26.67			8		B	0.000	0.753		100.00	0.141	0.000
00					C	0.000	0.753		100.00	0.068	0.000
L41	24.1555	0.938	21.47	15.342	A	0.000	15.342	15.342	100.00	6.950	0.000
26.6700-21.67			4		B	0.000	15.342		100.00	2.825	0.000
00					C	0.000	15.342		100.00	1.363	0.000
L42	19.8274	0.9	20.60	11.605	A	0.000	11.605	11.605	100.00	5.239	0.000
21.6700-18.00			0		B	0.000	11.605		100.00	2.142	0.000
00					C	0.000	11.605		100.00	0.725	0.000
L43	17.8750	0.881	20.15	0.800	A	0.000	0.800	0.800	100.00	0.360	0.000
18.0000-17.75			5		B	0.000	0.800		100.00	0.147	0.000
00					C	0.000	0.800		100.00	0.043	0.000
L44	17.6250	0.878	20.09	0.801	A	0.000	0.801	0.801	100.00	0.360	0.000
17.7500-17.50			6		B	0.000	0.801		100.00	0.147	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 36 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

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
00					C	0.000	0.801		100.00	0.043	0.000
L45	17.3750	0.876	20.03	0.803	A	0.000	0.803	0.803	100.00	0.360	0.000
17.5000-17.2500			5		B	0.000	0.803		100.00	0.147	0.000
00					C	0.000	0.803		100.00	0.043	0.000
L46	17.1650	0.873	19.98	0.547	A	0.000	0.547	0.547	100.00	0.245	0.000
17.2500-17.0800			4		B	0.000	0.547		100.00	0.100	0.000
00					C	0.000	0.547		100.00	0.029	0.000
L47	16.9550	0.871	19.93	0.806	A	0.000	0.806	0.806	100.00	0.360	0.000
17.0800-16.8300			2		B	0.000	0.806		100.00	0.147	0.000
00					C	0.000	0.806		100.00	0.043	0.000
L48	14.9070	0.85	19.45	12.514	A	0.000	12.514	12.514	100.00	5.515	0.000
16.8300-13.0000			0		B	0.000	12.514		100.00	2.260	0.000
00					C	0.000	12.514		100.00	0.661	0.000
L49	12.8750	0.85	19.45	0.827	A	0.000	0.827	0.827	100.00	0.360	0.000
13.0000-12.7500			0		B	0.000	0.827		100.00	0.147	0.000
00					C	0.000	0.827		100.00	0.043	0.000
L50	12.3346	0.85	19.45	2.754	A	0.000	2.754	2.754	100.00	1.195	0.000
12.7500-11.9200			0		B	0.000	2.754		100.00	0.490	0.000
00					C	0.000	2.754		100.00	0.143	0.000
L51	11.7950	0.85	19.45	0.834	A	0.000	0.834	0.834	100.00	0.360	0.000
11.9200-11.6700			0		B	0.000	0.834		100.00	0.147	0.000
00					C	0.000	0.834		100.00	0.043	0.000
L52	9.1569	0.85	19.45	16.969	A	0.000	16.969	16.969	100.00	7.200	0.000
11.6700-6.6700			0		B	0.000	16.969		100.00	2.950	0.000
0					C	0.000	16.969		100.00	0.863	0.000
L53	6.5850	0.85	19.45	0.586	A	0.000	0.586	0.586	100.00	0.245	0.000
6.6700-6.5000			0		B	0.000	0.586		100.00	0.100	0.000
0					C	0.000	0.586		100.00	0.029	0.000
L54	6.3750	0.85	19.45	0.863	A	0.000	0.863	0.863	100.00	0.360	0.000
6.5000-6.2500			0		B	0.000	0.863		100.00	0.147	0.000
0					C	0.000	0.863		100.00	0.043	0.000
L55	4.9968	0.85	19.45	8.700	A	0.000	8.700	8.700	100.00	3.600	0.000
6.2500-3.7500			0		B	0.000	8.700		100.00	1.475	0.000
0					C	0.000	8.700		100.00	0.431	0.000
L56	3.6250	0.85	19.45	0.877	A	0.000	0.877	0.877	100.00	0.360	0.000
3.7500-3.5000			0		B	0.000	0.877		100.00	0.147	0.000
0					C	0.000	0.877		100.00	0.043	0.000
L57	3.2499	0.85	19.45	1.757	A	0.000	1.757	1.757	100.00	0.720	0.000
3.5000-3.0000			0		B	0.000	1.757		100.00	0.295	0.000
0					C	0.000	1.757		100.00	0.086	0.000
L58	2.8750	0.85	19.45	0.881	A	0.000	0.881	0.881	100.00	0.360	0.000
3.0000-2.7500			0		B	0.000	0.881		100.00	0.147	0.000
0					C	0.000	0.881		100.00	0.043	0.000
L59	1.3712	0.85	19.45	9.775	A	0.000	9.775	9.775	100.00	3.960	0.000
2.7500-0.0000			0		B	0.000	9.775		100.00	1.623	0.000
0					C	0.000	9.775		100.00	0.474	0.000

Tower Pressure - With Ice

$G_H = 1.100$

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
L1	127.4533	1.332	8.098	2.2894	6.690	A	0.000	6.690	6.690	100.00	0.000	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 37 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section Elevation ft	z ft	Kz	qz psf	tz in	AG ft ²	F a c e	AF ft ²	AR ft ²	Aleg ft ²	Leg %	CAAA In Face ft ²	CAAA Out Face ft ²
130.0000-125.0000						B	0.000	6.690		100.00	0.000	0.000
00						C	0.000	6.690		100.00	4.941	0.000
L2	122.4580	1.321	8.030	2.2802	7.222	A	0.000	7.222	7.222	100.00	0.000	0.000
125.0000-120.0000						B	0.000	7.222		100.00	1.151	0.000
00						C	0.000	7.222		100.00	4.923	0.000
L3	117.4618	1.309	7.960	2.2707	7.753	A	0.000	7.753	7.753	100.00	0.000	0.000
120.0000-115.0000						B	0.000	7.753		100.00	5.745	0.000
00						C	0.000	7.753		100.00	4.904	0.000
L4	112.4650	1.297	7.888	2.2609	8.284	A	0.000	8.284	8.284	100.00	0.000	0.000
115.0000-110.0000						B	0.000	8.284		100.00	5.732	0.000
00						C	0.000	8.284		100.00	4.884	0.000
L5	107.4677	1.285	7.813	2.2506	8.805	A	0.000	8.805	8.805	100.00	0.000	0.000
110.0000-105.0000						B	0.000	8.805		100.00	5.720	0.000
00						C	0.000	8.805		100.00	4.864	0.000
L6	102.4701	1.272	7.735	2.2399	9.336	A	0.000	9.336	9.336	100.00	0.000	0.000
105.0000-100.0000						B	0.000	9.336		100.00	5.706	0.000
00						C	0.000	9.336		100.00	4.842	0.000
L7	97.4721	1.259	7.654	2.2288	9.866	A	0.000	9.866	9.866	100.00	2.114	0.000
100.0000-95.0000						B	0.000	9.866		100.00	5.692	0.000
0						C	0.000	9.866		100.00	4.820	0.000
L8	92.4738	1.245	7.569	2.2171	10.396	A	0.000	10.396	10.396	100.00	5.910	0.000
95.0000-90.0000						B	0.000	10.396		100.00	6.461	0.000
0000						C	0.000	10.396		100.00	4.797	0.000
L9	89.8749	1.237	7.524	2.2108	0.532	A	0.000	0.532	0.532	100.00	0.370	0.000
90.0000-89.7500						B	0.000	0.532		100.00	0.414	0.000
0000						C	0.000	0.532		100.00	0.239	0.000
L10	87.2254	1.23	7.477	2.2042	10.918	A	0.000	10.918	10.918	100.00	11.095	0.000
89.7500-84.7500						B	0.000	10.918		100.00	8.266	0.000
0000						C	0.000	10.918		100.00	5.008	0.000
L11	84.6650	1.222	7.430	2.1976	0.381	A	0.000	0.381	0.381	100.00	0.610	0.000
84.7500-84.5800						B	0.000	0.381		100.00	0.281	0.000
0000						C	0.000	0.381		100.00	0.258	0.000
L12	84.4549	1.221	7.426	2.1971	0.560	A	0.000	0.560	0.560	100.00	0.897	0.000
84.5800-84.3300						B	0.000	0.560		100.00	0.413	0.000
0000						C	0.000	0.560		100.00	0.379	0.000
L13	83.8742	1.22	7.415	2.1955	2.048	A	0.000	2.048	2.048	100.00	3.266	0.000
84.3300-83.4200						B	0.000	2.048		100.00	1.502	0.000
0000						C	0.000	2.048		100.00	1.378	0.000
L14	83.2949	1.218	7.404	2.1940	0.563	A	0.000	0.563	0.563	100.00	0.897	0.000
83.4200-83.1700						B	0.000	0.563		100.00	0.412	0.000
0000						C	0.000	0.563		100.00	0.378	0.000
L15	83.0850	1.217	7.401	2.1935	0.384	A	0.000	0.384	0.384	100.00	0.610	0.000
83.1700-83.0000						B	0.000	0.384		100.00	0.280	0.000
0000						C	0.000	0.384		100.00	0.257	0.000
L16	82.8749	1.217	7.397	2.1929	0.567	A	0.000	0.567	0.567	100.00	0.897	0.000
83.0000-82.7500						B	0.000	0.567		100.00	0.412	0.000
0000						C	0.000	0.567		100.00	0.378	0.000
L17	80.2273	1.208	7.346	2.1858	11.631	A	0.000	11.631	11.631	100.00	17.899	0.000
82.7500-77.7500						B	0.000	11.631		100.00	6.287	0.000
0000						C	0.000	11.631		100.00	7.545	0.000
L18	73.8240	1.187	7.219	2.1677	19.074	A	0.000	19.074	19.074	100.00	27.617	0.000
77.7500-70.0000						B	0.000	19.074		100.00	8.705	0.000
0000						C	0.000	19.074		100.00	11.610	0.000
L19	69.4992	1.172	7.128	2.1546	2.511	A	0.000	2.511	2.511	100.00	3.563	0.000
70.0000-69.0000						B	0.000	2.511		100.00	1.123	0.000
0000						C	0.000	2.511		100.00	1.498	0.000
L20	68.0370	1.167	7.096	2.1501	4.876	A	0.000	4.876	4.876	100.00	6.811	0.000
69.0000-67.0800						B	0.000	4.876		100.00	2.148	0.000
0000						C	0.000	4.876		100.00	2.856	0.000
L21	66.9549	1.163	7.072	2.1466	0.641	A	0.000	0.641	0.641	100.00	0.886	0.000

Job	HRT 100 943239 (BU 806376)	Page	38 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

Section Elevation ft	z ft	Kz	qz psf	tz in	AG ft ²	F a c e	AF ft ²	AR ft ²	Aleg ft ²	Leg %	CAAA In Face ft ²	CAAA Out Face ft ²
67.0800-66.8300						B	0.000	0.641		100.00	0.279	0.000
						C	0.000	0.641		100.00	0.371	0.000
L22 66.8300-64.0800	65.4490	1.158	7.038	2.1418	7.134	A	0.000	7.134	7.134	100.00	9.910	0.000
						B	0.000	7.134		100.00	4.102	0.000
						C	0.000	7.134		100.00	4.077	0.000
L23 64.0800-63.8300	63.9550	1.152	7.004	2.1368	0.656	A	0.000	0.656	0.656	100.00	0.906	0.000
						B	0.000	0.656		100.00	0.408	0.000
						C	0.000	0.656		100.00	0.370	0.000
L24 63.8300-62.5000	63.1636	1.149	6.986	2.1342	3.512	A	0.000	3.512	3.512	100.00	4.816	0.000
						B	0.000	3.512		100.00	2.167	0.000
						C	0.000	3.512		100.00	1.966	0.000
L25 62.5000-62.2500	62.3750	1.146	6.967	2.1315	0.663	A	0.000	0.663	0.663	100.00	0.905	0.000
						B	0.000	0.663		100.00	0.407	0.000
						C	0.000	0.663		100.00	0.369	0.000
L26 62.2500-57.2500	59.7311	1.136	6.904	2.1223	13.547	A	0.000	13.547	13.547	100.00	18.058	0.000
						B	0.000	13.547		100.00	8.127	0.000
						C	0.000	13.547		100.00	7.354	0.000
L27 57.2500-53.5000	55.3648	1.117	6.794	2.1062	10.507	A	0.000	10.507	10.507	100.00	13.479	0.000
						B	0.000	10.507		100.00	6.097	0.000
						C	0.000	10.507		100.00	5.440	0.000
L28 53.5000-53.2500	53.3750	1.109	6.742	2.0985	0.711	A	0.000	0.711	0.711	100.00	0.894	0.000
						B	0.000	0.711		100.00	0.406	0.000
						C	0.000	0.711		100.00	0.358	0.000
L29 53.2500-52.5800	52.9147	1.107	6.730	2.0967	1.912	A	0.000	1.912	1.912	100.00	2.395	0.000
						B	0.000	1.912		100.00	1.089	0.000
						C	0.000	1.912		100.00	0.958	0.000
L30 52.5800-52.3300	52.4550	1.105	6.718	2.0949	0.716	A	0.000	0.716	0.716	100.00	0.893	0.000
						B	0.000	0.716		100.00	0.406	0.000
						C	0.000	0.716		100.00	0.357	0.000
L31 52.3300-47.3300	49.8127	1.093	6.645	2.0841	14.590	A	0.000	14.590	14.590	100.00	17.816	0.000
						B	0.000	14.590		100.00	8.095	0.000
						C	0.000	14.590		100.00	7.115	0.000
L32 47.3300-44.5800	45.9499	1.074	6.533	2.0673	8.248	A	0.000	8.248	8.248	100.00	9.757	0.000
						B	0.000	8.248		100.00	4.432	0.000
						C	0.000	8.248		100.00	3.885	0.000
L33 44.5800-44.3300	44.4550	1.067	6.488	2.0605	0.758	A	0.000	0.758	0.758	100.00	0.885	0.000
						B	0.000	0.758		100.00	0.402	0.000
						C	0.000	0.758		100.00	0.352	0.000
L34 44.3300-41.9200	43.1212	1.06	6.446	2.0542	7.371	A	0.000	7.371	7.371	100.00	8.522	0.000
						B	0.000	7.371		100.00	3.870	0.000
						C	0.000	7.371		100.00	3.386	0.000
L35 41.9200-41.6700	41.7950	1.053	6.404	2.0478	0.771	A	0.000	0.771	0.771	100.00	0.883	0.000
						B	0.000	0.771		100.00	0.401	0.000
						C	0.000	0.771		100.00	0.350	0.000
L36 41.6700-34.0800	37.8387	1.031	6.271	2.0276	24.035	A	0.000	24.035	24.035	100.00	26.658	0.000
						B	0.000	24.035		100.00	12.096	0.000
						C	0.000	24.035		100.00	10.543	0.000
L37 34.0800-34.0000	34.0400	1.009	6.133	2.0062	0.256	A	0.000	0.256	0.256	100.00	0.281	0.000
						B	0.000	0.256		100.00	0.127	0.000
						C	0.000	0.256		100.00	0.111	0.000
L38 34.0000-29.0000	31.4847	0.992	6.033	1.9906	16.218	A	0.000	16.218	16.218	100.00	17.395	0.000
						B	0.000	16.218		100.00	7.885	0.000
						C	0.000	16.218		100.00	7.044	0.000
L39 29.0000-26.9200	27.9574	0.968	5.884	1.9671	6.898	A	0.000	6.898	6.898	100.00	7.192	0.000
						B	0.000	6.898		100.00	3.258	0.000
						C	0.000	6.898		100.00	3.840	0.000
L40 26.9200-26.6700	26.7950	0.959	5.832	1.9588	0.834	A	0.000	0.834	0.834	100.00	0.863	0.000
						B	0.000	0.834		100.00	0.391	0.000
						C	0.000	0.834		100.00	0.460	0.000
L41	24.1555	0.938	5.706	1.9386	16.957	A	0.000	16.957	16.957	100.00	17.161	0.000

Job	HRT 100 943239 (BU 806376)	Page	39 of 64
Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
Client	Crown Castle	Designed by	jwallace

Section Elevation	z	Kz	qz	tz	AG	F a c e	AF	AR	Aleg	Leg %	CAAA In Face ft²	CAAA Out Face ft²
ft	ft		psf	in	ft²		ft²	ft²	ft²			
26.6700-21.6700						B	0.000	16.957		100.00	7.768	0.000
						C	0.000	16.957		100.00	9.117	0.000
L42	19.8274	0.9	5.473	1.9007	12.768	A	0.000	12.768	12.768	100.00	12.609	0.000
21.6700-18.0000						B	0.000	12.768		100.00	5.708	0.000
						C	0.000	12.768		100.00	5.260	0.000
L43	17.8750	0.881	5.355	1.8811	0.878	A	0.000	0.878	0.878	100.00	0.858	0.000
18.0000-17.7500						B	0.000	0.878		100.00	0.388	0.000
						C	0.000	0.878		100.00	0.325	0.000
L44	17.6250	0.878	5.339	1.8784	0.880	A	0.000	0.880	0.880	100.00	0.857	0.000
17.7500-17.5000						B	0.000	0.880		100.00	0.388	0.000
						C	0.000	0.880		100.00	0.325	0.000
L45	17.3750	0.876	5.323	1.8757	0.881	A	0.000	0.881	0.881	100.00	0.856	0.000
17.5000-17.2500						B	0.000	0.881		100.00	0.388	0.000
						C	0.000	0.881		100.00	0.324	0.000
L46	17.1650	0.873	5.310	1.8735	0.600	A	0.000	0.600	0.600	100.00	0.582	0.000
17.2500-17.0800						B	0.000	0.600		100.00	0.263	0.000
						C	0.000	0.600		100.00	0.220	0.000
L47	16.9550	0.871	5.296	1.8711	0.884	A	0.000	0.884	0.884	100.00	0.855	0.000
17.0800-16.8300						B	0.000	0.884		100.00	0.387	0.000
						C	0.000	0.884		100.00	0.324	0.000
L48	14.9070	0.85	5.168	1.8472	13.693	A	0.000	13.693	13.693	100.00	13.022	0.000
16.8300-13.0000						B	0.000	13.693		100.00	5.889	0.000
						C	0.000	13.693		100.00	4.906	0.000
L49	12.8750	0.85	5.168	1.8203	0.902	A	0.000	0.902	0.902	100.00	0.844	0.000
13.0000-12.7500						B	0.000	0.902		100.00	0.381	0.000
						C	0.000	0.902		100.00	0.316	0.000
L50	12.3346	0.85	5.168	1.8126	3.005	A	0.000	3.005	3.005	100.00	2.796	0.000
12.7500-11.9200						B	0.000	3.005		100.00	1.263	0.000
						C	0.000	3.005		100.00	1.046	0.000
L51	11.7950	0.85	5.168	1.8045	0.909	A	0.000	0.909	0.909	100.00	0.840	0.000
11.9200-11.6700						B	0.000	0.909		100.00	0.380	0.000
						C	0.000	0.909		100.00	0.314	0.000
L52	9.1569	0.85	5.168	1.7594	18.435	A	0.000	18.435	18.435	100.00	16.605	0.000
11.6700-6.6700						B	0.000	18.435		100.00	7.490	0.000
						C	0.000	18.435		100.00	6.141	0.000
L53	6.5850	0.85	5.168	1.7023	0.635	A	0.000	0.635	0.635	100.00	0.556	0.000
6.6700-6.5000						B	0.000	0.635		100.00	0.250	0.000
						C	0.000	0.635		100.00	0.203	0.000
L54	6.3750	0.85	5.168	1.6968	0.933	A	0.000	0.933	0.933	100.00	0.816	0.000
6.5000-6.2500						B	0.000	0.933		100.00	0.367	0.000
						C	0.000	0.933		100.00	0.298	0.000
L55	4.9968	0.85	5.168	1.6560	9.390	A	0.000	9.390	9.390	100.00	8.070	0.000
6.2500-3.7500						B	0.000	9.390		100.00	3.629	0.000
						C	0.000	9.390		100.00	2.915	0.000
L56	3.6250	0.85	5.168	1.6036	0.943	A	0.000	0.943	0.943	100.00	0.795	0.000
3.7500-3.5000						B	0.000	0.943		100.00	0.357	0.000
						C	0.000	0.943		100.00	0.284	0.000
L57	3.2499	0.85	5.168	1.5862	1.890	A	0.000	1.890	1.890	100.00	1.583	0.000
3.5000-3.0000						B	0.000	1.890		100.00	0.710	0.000
						C	0.000	1.890		100.00	0.562	0.000
L58	2.8750	0.85	5.168	1.5669	0.947	A	0.000	0.947	0.947	100.00	0.787	0.000
3.0000-2.7500						B	0.000	0.947		100.00	0.353	0.000
						C	0.000	0.947		100.00	0.278	0.000
L59	1.3712	0.85	5.168	1.4551	10.442	A	0.000	10.442	10.442	100.00	8.379	0.000
2.7500-0.0000						B	0.000	10.442		100.00	3.743	0.000
						C	0.000	10.442		100.00	2.875	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 40 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L1	127.4533	1.332	10.43	4.782	A	0.000	4.782	4.782	100.00	0.000	0.000
130.0000-125.0000			4		B	0.000	4.782		100.00	0.000	0.000
					C	0.000	4.782		100.00	0.362	0.000
L2	122.4580	1.321	10.34	5.321	A	0.000	5.321	5.321	100.00	0.000	0.000
125.0000-120.0000			6		B	0.000	5.321		100.00	0.465	0.000
					C	0.000	5.321		100.00	0.362	0.000
L3	117.4618	1.309	10.25	5.861	A	0.000	5.861	5.861	100.00	0.000	0.000
120.0000-115.0000			6		B	0.000	5.861		100.00	2.325	0.000
					C	0.000	5.861		100.00	0.362	0.000
L4	112.4650	1.297	10.16	6.400	A	0.000	6.400	6.400	100.00	0.000	0.000
115.0000-110.0000			3		B	0.000	6.400		100.00	2.325	0.000
					C	0.000	6.400		100.00	0.362	0.000
L5	107.4677	1.285	10.06	6.930	A	0.000	6.930	6.930	100.00	0.000	0.000
110.0000-105.0000			6		B	0.000	6.930		100.00	2.325	0.000
					C	0.000	6.930		100.00	0.362	0.000
L6	102.4701	1.272	9.965	7.469	A	0.000	7.469	7.469	100.00	0.000	0.000
105.0000-100.0000					B	0.000	7.469		100.00	2.325	0.000
					C	0.000	7.469		100.00	0.362	0.000
L7	97.4721	1.259	9.861	8.009	A	0.000	8.009	8.009	100.00	0.800	0.000
100.0000-95.0000					B	0.000	8.009		100.00	2.325	0.000
					C	0.000	8.009		100.00	0.362	0.000
L8	92.4738	1.245	9.752	8.549	A	0.000	8.549	8.549	100.00	2.150	0.000
95.0000-90.0000					B	0.000	8.549		100.00	2.475	0.000
					C	0.000	8.549		100.00	0.362	0.000
L9	89.8749	1.237	9.694	0.440	A	0.000	0.440	0.440	100.00	0.125	0.000
90.0000-89.7500					B	0.000	0.440		100.00	0.141	0.000
					C	0.000	0.440		100.00	0.018	0.000
L10	87.2254	1.23	9.633	9.081	A	0.000	9.081	9.081	100.00	4.222	0.000
89.7500-84.7500					B	0.000	9.081		100.00	2.825	0.000
					C	0.000	9.081		100.00	0.415	0.000
L11	84.6650	1.222	9.573	0.318	A	0.000	0.318	0.318	100.00	0.224	0.000
84.7500-84.5800					B	0.000	0.318		100.00	0.096	0.000
					C	0.000	0.318		100.00	0.034	0.000
L12	84.4549	1.221	9.568	0.468	A	0.000	0.468	0.468	100.00	0.329	0.000
84.5800-84.3300					B	0.000	0.468		100.00	0.141	0.000
					C	0.000	0.468		100.00	0.049	0.000
L13	83.8742	1.22	9.554	1.715	A	0.000	1.715	1.715	100.00	1.197	0.000
84.3300-83.4200					B	0.000	1.715		100.00	0.514	0.000
					C	0.000	1.715		100.00	0.180	0.000
L14	83.2949	1.218	9.540	0.472	A	0.000	0.472	0.472	100.00	0.329	0.000
83.4200-83.1700					B	0.000	0.472		100.00	0.141	0.000
					C	0.000	0.472		100.00	0.049	0.000
L15	83.0850	1.217	9.535	0.322	A	0.000	0.322	0.322	100.00	0.224	0.000
83.1700-83.0000					B	0.000	0.322		100.00	0.096	0.000
					C	0.000	0.322		100.00	0.034	0.000
L16	82.8749	1.217	9.530	0.476	A	0.000	0.476	0.476	100.00	0.329	0.000
83.0000-82.7500					B	0.000	0.476		100.00	0.141	0.000
					C	0.000	0.476		100.00	0.049	0.000
L17	80.2273	1.208	9.465	9.810	A	0.000	9.810	9.810	100.00	6.575	0.000
82.7500-77.7500					B	0.000	9.810		100.00	2.450	0.000
					C	0.000	9.810		100.00	0.987	0.000
L18	73.8240	1.187	9.301	16.274	A	0.000	16.274	16.274	100.00	10.191	0.000
77.7500-70.0000					B	0.000	16.274		100.00	3.604	0.000
					C	0.000	16.274		100.00	1.531	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 41 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

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
L19	69.4992	1.172	9.183	2.149	A	0.000	2.149	2.149	100.00	1.315	0.000
70.0000-69.00					B	0.000	2.149		100.00	0.465	0.000
00					C	0.000	2.149		100.00	0.198	0.000
L20	68.0370	1.167	9.142	4.188	A	0.000	4.188	4.188	100.00	2.525	0.000
69.0000-67.00					B	0.000	4.188		100.00	0.893	0.000
00					C	0.000	4.188		100.00	0.379	0.000
L21	66.9549	1.163	9.111	0.551	A	0.000	0.551	0.551	100.00	0.329	0.000
67.0800-66.83					B	0.000	0.551		100.00	0.116	0.000
00					C	0.000	0.551		100.00	0.049	0.000
L22	65.4490	1.158	9.068	6.153	A	0.000	6.153	6.153	100.00	3.816	0.000
66.8300-64.08					B	0.000	6.153		100.00	1.479	0.000
00					C	0.000	6.153		100.00	0.543	0.000
L23	63.9550	1.152	9.024	0.567	A	0.000	0.567	0.567	100.00	0.354	0.000
64.0800-63.83					B	0.000	0.567		100.00	0.141	0.000
00					C	0.000	0.567		100.00	0.049	0.000
L24	63.1636	1.149	9.000	3.039	A	0.000	3.039	3.039	100.00	1.882	0.000
63.8300-62.50					B	0.000	3.039		100.00	0.751	0.000
00					C	0.000	3.039		100.00	0.263	0.000
L25	62.3750	1.146	8.977	0.575	A	0.000	0.575	0.575	100.00	0.354	0.000
62.5000-62.25					B	0.000	0.575		100.00	0.141	0.000
00					C	0.000	0.575		100.00	0.049	0.000
L26	59.7311	1.136	8.895	11.779	A	0.000	11.779	11.779	100.00	7.075	0.000
62.2500-57.25					B	0.000	11.779		100.00	2.825	0.000
00					C	0.000	11.779		100.00	0.987	0.000
L27	55.3648	1.117	8.754	9.191	A	0.000	9.191	9.191	100.00	5.267	0.000
57.2500-53.50					B	0.000	9.191		100.00	2.119	0.000
00					C	0.000	9.191		100.00	0.701	0.000
L28	53.3750	1.109	8.687	0.623	A	0.000	0.623	0.623	100.00	0.347	0.000
53.5000-53.25					B	0.000	0.623		100.00	0.141	0.000
00					C	0.000	0.623		100.00	0.043	0.000
L29	52.9147	1.107	8.671	1.677	A	0.000	1.677	1.677	100.00	0.931	0.000
53.2500-52.58					B	0.000	1.677		100.00	0.379	0.000
00					C	0.000	1.677		100.00	0.116	0.000
L30	52.4550	1.105	8.655	0.628	A	0.000	0.628	0.628	100.00	0.347	0.000
52.5800-52.33					B	0.000	0.628		100.00	0.141	0.000
00					C	0.000	0.628		100.00	0.043	0.000
L31	49.8127	1.093	8.561	12.853	A	0.000	12.853	12.853	100.00	6.950	0.000
52.3300-47.33					B	0.000	12.853		100.00	2.825	0.000
00					C	0.000	12.853		100.00	0.863	0.000
L32	45.9499	1.074	8.417	7.300	A	0.000	7.300	7.300	100.00	3.823	0.000
47.3300-44.58					B	0.000	7.300		100.00	1.554	0.000
00					C	0.000	7.300		100.00	0.474	0.000
L33	44.4550	1.067	8.359	0.672	A	0.000	0.672	0.672	100.00	0.347	0.000
44.5800-44.33					B	0.000	0.672		100.00	0.141	0.000
00					C	0.000	0.672		100.00	0.043	0.000
L34	43.1212	1.06	8.305	6.546	A	0.000	6.546	6.546	100.00	3.350	0.000
44.3300-41.92					B	0.000	6.546		100.00	1.362	0.000
00					C	0.000	6.546		100.00	0.416	0.000
L35	41.7950	1.053	8.251	0.686	A	0.000	0.686	0.686	100.00	0.347	0.000
41.9200-41.67					B	0.000	0.686		100.00	0.141	0.000
00					C	0.000	0.686		100.00	0.043	0.000
L36	37.8387	1.031	8.080	21.470	A	0.000	21.470	21.470	100.00	10.550	0.000
41.6700-34.08					B	0.000	21.470		100.00	4.288	0.000
00					C	0.000	21.470		100.00	1.309	0.000
L37	34.0400	1.009	7.902	0.228	A	0.000	0.228	0.228	100.00	0.111	0.000
34.0800-34.00					B	0.000	0.228		100.00	0.045	0.000
00					C	0.000	0.228		100.00	0.014	0.000
L38	31.4847	0.992	7.773	14.559	A	0.000	14.559	14.559	100.00	6.950	0.000
34.0000-29.00					B	0.000	14.559		100.00	2.825	0.000
00					C	0.000	14.559		100.00	0.905	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 42 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

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
L39	27.9574	0.968	7.581	6.216	A	0.000	6.216	6.216	100.00	2.891	0.000
29.0000-26.9200					B	0.000	6.216		100.00	1.175	0.000
					C	0.000	6.216		100.00	0.567	0.000
L40	26.7950	0.959	7.514	0.753	A	0.000	0.753	0.753	100.00	0.347	0.000
26.9200-26.6700					B	0.000	0.753		100.00	0.141	0.000
					C	0.000	0.753		100.00	0.068	0.000
L41	24.1555	0.938	7.351	15.342	A	0.000	15.342	15.342	100.00	6.950	0.000
26.6700-21.6700					B	0.000	15.342		100.00	2.825	0.000
					C	0.000	15.342		100.00	1.363	0.000
L42	19.8274	0.9	7.052	11.605	A	0.000	11.605	11.605	100.00	5.239	0.000
21.6700-18.0000					B	0.000	11.605		100.00	2.142	0.000
					C	0.000	11.605		100.00	0.725	0.000
L43	17.8750	0.881	6.900	0.800	A	0.000	0.800	0.800	100.00	0.360	0.000
18.0000-17.7500					B	0.000	0.800		100.00	0.147	0.000
					C	0.000	0.800		100.00	0.043	0.000
L44	17.6250	0.878	6.879	0.801	A	0.000	0.801	0.801	100.00	0.360	0.000
17.7500-17.5000					B	0.000	0.801		100.00	0.147	0.000
					C	0.000	0.801		100.00	0.043	0.000
L45	17.3750	0.876	6.859	0.803	A	0.000	0.803	0.803	100.00	0.360	0.000
17.5000-17.2500					B	0.000	0.803		100.00	0.147	0.000
					C	0.000	0.803		100.00	0.043	0.000
L46	17.1650	0.873	6.841	0.547	A	0.000	0.547	0.547	100.00	0.245	0.000
17.2500-17.0800					B	0.000	0.547		100.00	0.100	0.000
					C	0.000	0.547		100.00	0.029	0.000
L47	16.9550	0.871	6.824	0.806	A	0.000	0.806	0.806	100.00	0.360	0.000
17.0800-16.8300					B	0.000	0.806		100.00	0.147	0.000
					C	0.000	0.806		100.00	0.043	0.000
L48	14.9070	0.85	6.659	12.514	A	0.000	12.514	12.514	100.00	5.515	0.000
16.8300-13.0000					B	0.000	12.514		100.00	2.260	0.000
					C	0.000	12.514		100.00	0.661	0.000
L49	12.8750	0.85	6.659	0.827	A	0.000	0.827	0.827	100.00	0.360	0.000
13.0000-12.7500					B	0.000	0.827		100.00	0.147	0.000
					C	0.000	0.827		100.00	0.043	0.000
L50	12.3346	0.85	6.659	2.754	A	0.000	2.754	2.754	100.00	1.195	0.000
12.7500-11.9200					B	0.000	2.754		100.00	0.490	0.000
					C	0.000	2.754		100.00	0.143	0.000
L51	11.7950	0.85	6.659	0.834	A	0.000	0.834	0.834	100.00	0.360	0.000
11.9200-11.6700					B	0.000	0.834		100.00	0.147	0.000
					C	0.000	0.834		100.00	0.043	0.000
L52	9.1569	0.85	6.659	16.969	A	0.000	16.969	16.969	100.00	7.200	0.000
11.6700-6.6700					B	0.000	16.969		100.00	2.950	0.000
					C	0.000	16.969		100.00	0.863	0.000
L53	6.5850	0.85	6.659	0.586	A	0.000	0.586	0.586	100.00	0.245	0.000
6.6700-6.5000					B	0.000	0.586		100.00	0.100	0.000
					C	0.000	0.586		100.00	0.029	0.000
L54	6.3750	0.85	6.659	0.863	A	0.000	0.863	0.863	100.00	0.360	0.000
6.5000-6.2500					B	0.000	0.863		100.00	0.147	0.000
					C	0.000	0.863		100.00	0.043	0.000
L55	4.9968	0.85	6.659	8.700	A	0.000	8.700	8.700	100.00	3.600	0.000
6.2500-3.7500					B	0.000	8.700		100.00	1.475	0.000
					C	0.000	8.700		100.00	0.431	0.000
L56	3.6250	0.85	6.659	0.877	A	0.000	0.877	0.877	100.00	0.360	0.000
3.7500-3.5000					B	0.000	0.877		100.00	0.147	0.000
					C	0.000	0.877		100.00	0.043	0.000
L57	3.2499	0.85	6.659	1.757	A	0.000	1.757	1.757	100.00	0.720	0.000
3.5000-3.0000					B	0.000	1.757		100.00	0.295	0.000
					C	0.000	1.757		100.00	0.086	0.000
L58	2.8750	0.85	6.659	0.881	A	0.000	0.881	0.881	100.00	0.360	0.000
3.0000-2.7500					B	0.000	0.881		100.00	0.147	0.000
					C	0.000	0.881		100.00	0.043	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 43 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} _{In} Face	C _{AA} _{Out} Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L59 2.7500-0.0000	1.3712	0.85	6.659	9.775	A	0.000	9.775	9.775	100.00	3.960	0.000
					B	0.000	9.775		100.00	1.623	0.000
					C	0.000	9.775		100.00	0.474	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
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

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	44 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Comb. No.	Description
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	130 - 125	Pole	Max Tension	26	0.00	-0.00	-0.00
			Max. Compression	26	-0.41	0.00	-0.04
			Max. Mx	20	-0.11	0.67	-0.00
			Max. My	14	-0.11	0.00	-0.67
			Max. Vy	20	-0.27	0.67	-0.00
			Max. Vx	2	-0.27	0.00	0.66
			Max. Torque	24			-0.00
L2	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.51	1.97	1.69
			Max. Mx	20	-2.69	4.30	0.32
			Max. My	2	-2.66	0.36	4.26
			Max. Vy	20	-6.36	4.30	0.32
			Max. Vx	2	-6.40	0.36	4.26
			Max. Torque	16			-0.74
L3	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.36	1.80	1.66
			Max. Mx	20	-2.93	36.86	0.31
			Max. My	2	-2.88	0.34	37.49
			Max. Vy	20	-6.69	36.86	0.31
			Max. Vx	14	6.90	0.34	-36.76
			Max. Torque	16			-0.74
L4	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.24	1.61	1.62
			Max. Mx	20	-3.21	71.11	0.31
			Max. My	2	-3.14	0.32	73.25
			Max. Vy	20	-7.04	71.11	0.31
			Max. Vx	14	7.42	0.31	-72.53
			Max. Torque	16			-0.74
L5	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.22	0.28	1.64
			Max. Mx	20	-5.95	137.26	0.30
			Max. My	2	-5.84	0.12	142.46
			Max. Vy	20	-13.36	137.26	0.30
			Max. Vx	14	13.93	0.11	-141.75
			Max. Torque	16			-0.74
L6	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.75	0.81	1.15
			Max. Mx	20	-6.54	205.79	0.42
			Max. My	2	-6.44	0.23	213.65
			Max. Vy	20	-14.40	205.79	0.42
			Max. Vx	14	15.03	0.03	-213.29
			Max. Torque	24			1.93
L7	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.41	0.74	1.04
			Max. Mx	20	-10.70	293.48	1.20
			Max. My	14	-10.59	-0.84	-304.20
			Max. Vy	20	-20.81	293.48	1.20
			Max. Vx	14	21.38	-0.84	-304.20
			Max. Torque	24			2.88
L8	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.75	0.55	1.06
			Max. Mx	20	-11.43	398.29	2.34

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	45 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	90 - 89.75	Pole	Max. My	14	-11.32	-2.09	-412.58
			Max. Vy	20	-21.16	398.29	2.34
			Max. Vx	14	21.99	-2.09	-412.58
			Max. Torque	24			2.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.83	0.54	1.06
			Max. Mx	20	-11.50	403.58	2.40
			Max. My	14	-11.38	-2.15	-418.08
			Max. Vy	20	-21.17	403.58	2.40
			Max. Vx	14	22.01	-2.15	-418.08
L10	89.75 - 84.75	Pole	Max. Torque	24			2.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.05	0.42	1.22
			Max. Mx	20	-14.96	520.98	3.07
			Max. My	14	-14.84	-2.90	-539.70
			Max. Vy	20	-26.27	520.98	3.07
			Max. Vx	14	27.08	-2.90	-539.70
			Max. Torque	24			2.87
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.13	0.42	1.23
L11	84.75 - 84.58	Pole	Max. Mx	20	-15.01	525.45	3.08
			Max. My	14	-14.90	-2.91	-544.30
			Max. Vy	20	-26.29	525.45	3.08
			Max. Vx	14	27.10	-2.91	-544.30
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.24	0.42	1.24
			Max. Mx	20	-15.07	532.03	3.09
			Max. My	14	-14.95	-2.92	-551.08
			Max. Vy	20	-26.33	532.03	3.09
L12	84.58 - 84.33	Pole	Max. Vx	14	27.14	-2.92	-551.08
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.67	0.42	1.29
			Max. Mx	20	-15.27	556.04	3.13
			Max. My	14	-15.16	-2.96	-575.83
			Max. Vy	20	-26.47	556.04	3.13
			Max. Vx	14	27.29	-2.96	-575.83
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
L13	84.33 - 83.42	Pole	Max. Compression	26	-51.81	0.42	1.31
			Max. Mx	20	-15.36	562.66	3.14
			Max. My	14	-15.25	-2.98	-582.65
			Max. Vy	20	-26.50	562.66	3.14
			Max. Vx	14	27.32	-2.98	-582.65
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.90	0.42	1.32
			Max. Mx	20	-15.41	567.17	3.14
			Max. My	14	-15.30	-2.98	-587.30
L14	83.42 - 83.17	Pole	Max. Vy	20	-26.53	567.17	3.14
			Max. Vx	14	27.35	-2.98	-587.30
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.02	0.41	1.33
			Max. Mx	20	-15.47	573.81	3.15
			Max. My	14	-15.36	-2.99	-594.14
			Max. Vy	20	-26.57	573.81	3.15
			Max. Vx	14	27.39	-2.99	-594.14
			Max. Torque	24			2.08
L15	83.17 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.02	0.41	1.33
L16	83 - 82.75	Pole	Max. Mx	20	-15.47	573.81	3.15
			Max. My	14	-15.36	-2.99	-594.14
			Max. Vy	20	-26.57	573.81	3.15
			Max. Vx	14	27.39	-2.99	-594.14
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.02	0.41	1.33
			Max. Mx	20	-15.47	573.81	3.15
			Max. My	14	-15.36	-2.99	-594.14
			Max. Vy	20	-26.57	573.81	3.15
L17	82.75 - 77.75	Pole	Max. Vx	14	27.39	-2.99	-594.14
			Max. Torque	24			2.08
L17	82.75 - 77.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.02	0.41	1.33

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	46 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	77.75 - 70	Pole	Max. Compression	26	-54.41	0.44	1.60
			Max. Mx	20	-16.73	708.55	3.36
			Max. My	14	-16.63	-3.23	-732.94
			Max. Vy	20	-27.35	708.55	3.36
			Max. Vx	14	28.16	-3.23	-732.94
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.22	0.46	1.81
			Max. Mx	20	-17.71	812.12	3.51
			Max. My	14	-17.61	-3.40	-839.54
L19	70 - 69	Pole	Max. Vy	20	-27.92	812.12	3.51
			Max. Vx	14	28.73	-3.40	-839.54
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.80	0.49	2.08
			Max. Mx	20	-19.83	953.89	3.72
			Max. My	14	-19.74	-3.63	-985.30
			Max. Vy	20	-28.79	953.89	3.72
			Max. Vx	14	29.59	-3.63	-985.30
			Max. Torque	24			2.08
L20	69 - 67.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.77	0.50	2.19
			Max. Mx	20	-20.37	1009.44	3.80
			Max. My	14	-20.28	-3.72	-1042.36
			Max. Vy	20	-29.10	1009.44	3.80
			Max. Vx	14	29.90	-3.72	-1042.36
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.90	0.50	2.21
			Max. Mx	20	-20.47	1016.71	3.81
L21	67.08 - 66.83	Pole	Max. My	14	-20.38	-3.74	-1049.83
			Max. Vy	20	-29.12	1016.71	3.81
			Max. Vx	14	29.92	-3.74	-1049.83
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.33	0.50	2.37
			Max. Mx	20	-21.26	1097.38	3.93
			Max. My	14	-21.18	-3.86	-1132.66
			Max. Vy	20	-29.57	1097.38	3.93
			Max. Vx	14	30.36	-3.86	-1132.66
L22	66.83 - 64.08	Pole	Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.47	0.50	2.39
			Max. Mx	20	-21.36	1104.77	3.94
			Max. My	14	-21.28	-3.88	-1140.24
			Max. Vy	20	-29.60	1104.77	3.94
			Max. Vx	14	30.39	-3.88	-1140.24
			Max. Torque	24			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.22	0.50	2.47
L23	64.08 - 63.83	Pole	Max. Mx	20	-21.78	1144.28	3.99
			Max. My	14	-21.70	-3.94	-1180.78
			Max. Vy	20	-29.83	1144.28	3.99
			Max. Vx	14	30.61	-3.94	-1180.78
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.36	0.50	2.49
			Max. Mx	20	-21.89	1151.74	4.00
			Max. My	14	-21.81	-3.95	-1188.44
			Max. Vy	20	-29.86	1151.74	4.00
L24	63.83 - 62.5	Pole	Max. Vx	14	30.64	-3.95	-1188.44
			Max. Vy	20	-29.86	1151.74	4.00
			Max. My	14	-21.81	-3.95	-1188.44
			Max. Mx	20	-21.89	1151.74	4.00
			Max. Compression	26	-63.36	0.50	2.49
L25	62.5 - 62.25	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.36	0.50	2.49
			Max. Mx	20	-21.89	1151.74	4.00
			Max. My	14	-21.81	-3.95	-1188.44

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	47 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L26	62.25 - 57.25	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.27	0.50	2.79
			Max. Mx	20	-23.62	1303.09	4.22
			Max. My	14	-23.55	-4.19	-1343.64
			Max. Vy	20	-30.71	1303.09	4.22
			Max. Vx	14	31.48	-4.19	-1343.64
L27	57.25 - 53.5	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.47	0.50	3.02
			Max. Mx	20	-24.95	1419.35	4.38
			Max. My	14	-24.88	-4.36	-1462.76
			Max. Vy	20	-31.33	1419.35	4.38
			Max. Vx	14	32.10	-4.36	-1462.76
L28	53.5 - 53.25	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.62	0.50	3.03
			Max. Mx	20	-25.05	1427.19	4.39
			Max. My	14	-24.99	-4.38	-1470.78
			Max. Vy	20	-31.36	1427.19	4.39
			Max. Vx	14	32.13	-4.38	-1470.78
L29	53.25 - 52.58	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.02	0.50	3.07
			Max. Mx	20	-25.30	1448.23	4.41
			Max. My	14	-25.23	-4.41	-1492.33
			Max. Vy	20	-31.48	1448.23	4.41
			Max. Vx	14	32.24	-4.41	-1492.33
L30	52.58 - 52.33	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.18	0.50	3.09
			Max. Mx	20	-25.40	1456.11	4.43
			Max. My	14	-25.33	-4.42	-1500.39
			Max. Vy	20	-31.52	1456.11	4.43
			Max. Vx	14	32.28	-4.42	-1500.39
L31	52.33 - 47.33	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.21	0.49	3.40
			Max. Mx	20	-27.28	1615.73	4.64
			Max. My	14	-27.22	-4.66	-1663.75
			Max. Vy	20	-32.36	1615.73	4.64
			Max. Vx	14	33.11	-4.66	-1663.75
L32	47.33 - 44.58	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.89	0.49	3.57
			Max. Mx	20	-28.33	1705.29	4.76
			Max. My	14	-28.28	-4.79	-1755.34
			Max. Vy	20	-32.82	1705.29	4.76
			Max. Vx	14	33.56	-4.79	-1755.34
L33	44.58 - 44.33	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.05	0.48	3.59
			Max. Mx	20	-28.44	1713.49	4.77
			Max. My	14	-28.39	-4.80	-1763.73
			Max. Vy	20	-32.84	1713.49	4.77
			Max. Vx	14	33.58	-4.80	-1763.73
L34	44.33 - 41.92	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.53	0.48	3.74
			Max. Mx	20	-29.36	1793.11	4.87
			Max. My	14	-29.32	-4.91	-1845.11

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 48 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L35	41.92 - 41.67	Pole	Max. Vy	20	-33.25	1793.11	4.87
			Max. Vx	14	33.99	-4.91	-1845.11
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.69	0.48	3.76
			Max. Mx	20	-29.48	1801.42	4.88
			Max. My	14	-29.43	-4.93	-1853.60
			Max. Vy	20	-33.28	1801.42	4.88
			Max. Vx	14	34.02	-4.93	-1853.60
			Max. Torque	24			2.07
L36	41.67 - 34.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.35	0.48	3.93
			Max. Mx	20	-30.52	1890.83	5.00
			Max. My	14	-30.48	-5.05	-1944.95
			Max. Vy	20	-33.73	1890.83	5.00
			Max. Vx	14	34.45	-5.05	-1944.95
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.55	0.47	4.27
			Max. Mx	20	-34.11	2061.68	5.22
L37	34.08 - 34	Pole	Max. My	14	-34.07	-5.29	-2119.38
			Max. Vy	20	-34.64	2061.68	5.22
			Max. Vx	14	35.36	-5.29	-2119.38
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.74	0.46	4.59
			Max. Mx	20	-36.19	2236.79	5.43
			Max. My	14	-36.16	-5.53	-2298.02
			Max. Vy	20	-35.43	2236.79	5.43
			Max. Vx	14	36.14	-5.53	-2298.02
L38	34 - 29	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.09	0.46	4.70
			Max. Mx	20	-37.08	2310.79	5.53
			Max. My	14	-37.05	-5.63	-2373.38
			Max. Vy	20	-35.76	2310.79	5.53
			Max. Vx	14	36.38	-5.63	-2373.38
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.26	0.46	4.72
L39	29 - 26.92	Pole	Max. Mx	20	-37.21	2319.73	5.54
			Max. My	14	-37.18	-5.64	-2382.47
			Max. Vy	20	-35.79	2319.73	5.54
			Max. Vx	14	36.39	-5.64	-2382.47
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.75	0.45	5.00
			Max. Mx	20	-39.57	2500.57	5.76
			Max. My	14	-39.55	-5.88	-2565.80
			Max. Vy	20	-36.58	2500.57	5.76
L40	26.92 - 26.67	Pole	Max. Vx	14	36.99	-5.88	-2565.80
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.30	0.44	5.24
			Max. Mx	20	-41.33	2635.74	5.92
			Max. My	14	-41.32	-6.06	-2702.19
			Max. Vy	20	-37.13	2635.74	5.92
			Max. Vx	14	37.40	-6.06	-2702.19
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
L41	26.67 - 21.67	Pole	Max. Compression	26	-93.49	0.44	5.26
			Max. Mx	20	-41.33	2635.74	5.92
			Max. My	14	-41.32	-6.06	-2702.19
			Max. Vy	20	-37.13	2635.74	5.92
			Max. Vx	14	37.40	-6.06	-2702.19
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.49	0.44	5.26
			Max. Mx	20	-41.33	2635.74	5.92
			Max. My	14	-41.32	-6.06	-2702.19
L42	21.67 - 18	Pole	Max. Vy	20	-37.13	2635.74	5.92
			Max. Vx	14	37.40	-6.06	-2702.19
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.49	0.44	5.26
			Max. Mx	20	-41.33	2635.74	5.92
			Max. My	14	-41.32	-6.06	-2702.19
			Max. Vy	20	-37.13	2635.74	5.92
			Max. Vx	14	37.40	-6.06	-2702.19
			Max. Torque	24			2.07
L43	18 - 17.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.49	0.44	5.26
			Max. Mx	20	-41.33	2635.74	5.92
			Max. My	14	-41.32	-6.06	-2702.19
			Max. Vy	20	-37.13	2635.74	5.92
			Max. Vx	14	37.40	-6.06	-2702.19
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.49	0.44	5.26
			Max. Mx	20	-41.33	2635.74	5.92

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	49 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L44	17.75 - 17.5	Pole	Max. Mx	20	-41.48	2645.02	5.93
			Max. My	14	-41.47	-6.07	-2711.54
			Max. Vy	20	-37.15	2645.02	5.93
			Max. Vx	14	37.41	-6.07	-2711.54
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.68	0.44	5.28
			Max. Mx	20	-41.61	2654.31	5.94
			Max. My	14	-41.60	-6.08	-2720.89
			Max. Vy	20	-37.19	2654.31	5.94
L45	17.5 - 17.25	Pole	Max. Vx	14	37.44	-6.08	-2720.89
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.87	0.44	5.29
			Max. Mx	20	-41.75	2663.61	5.95
			Max. My	14	-41.73	-6.09	-2730.25
			Max. Vy	20	-37.22	2663.61	5.95
			Max. Vx	14	37.47	-6.09	-2730.25
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
L46	17.25 - 17.08	Pole	Max. Compression	26	-93.99	0.44	5.31
			Max. Mx	20	-41.84	2669.94	5.96
			Max. My	14	-41.82	-6.10	-2736.62
			Max. Vy	20	-37.24	2669.94	5.96
			Max. Vx	14	37.49	-6.10	-2736.62
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.17	0.44	5.32
			Max. Mx	20	-41.96	2679.25	5.97
			Max. My	14	-41.95	-6.11	-2745.99
L47	17.08 - 16.83	Pole	Max. Vy	20	-37.27	2679.25	5.97
			Max. Vx	14	37.52	-6.11	-2745.99
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.88	0.43	5.59
			Max. Mx	20	-43.86	2822.75	6.14
			Max. My	14	-43.85	-6.30	-2890.39
			Max. Vy	20	-37.70	2822.75	6.14
			Max. Vx	14	37.94	-6.30	-2890.39
			Max. Torque	24			2.07
L48	16.83 - 13	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.08	0.43	5.61
			Max. Mx	20	-44.02	2832.18	6.15
			Max. My	14	-44.01	-6.31	-2899.88
			Max. Vy	20	-37.71	2832.18	6.15
			Max. Vx	14	37.95	-6.31	-2899.88
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.73	0.43	5.66
			Max. Mx	20	-44.49	2863.51	6.19
L49	13 - 12.75	Pole	Max. My	14	-44.48	-6.35	-2931.40
			Max. Vy	20	-37.81	2863.51	6.19
			Max. Vx	14	38.06	-6.35	-2931.40
			Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.91	0.43	5.68
			Max. Mx	20	-44.62	2872.96	6.20
			Max. My	14	-44.61	-6.36	-2940.91
			Max. Vy	20	-37.83	2872.96	6.20
			Max. Vx	14	38.08	-6.36	-2940.91
L50	12.75 - 11.92	Pole	Max. Torque	24			2.07
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.91	0.43	5.68
			Max. Mx	20	-44.62	2872.96	6.20
			Max. My	14	-44.61	-6.36	-2940.91
			Max. Vy	20	-37.83	2872.96	6.20
L51	11.92 - 11.67	Pole	Max. Vx	14	38.08	-6.36	-2940.91
			Max. Torque	24			2.07

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	50 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L52	11.67 - 6.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.42	0.42	6.03
			Max. Mx	20	-47.15	3063.42	6.42
			Max. My	14	-47.15	-6.60	-3132.53
			Max. Vy	20	-38.38	3063.42	6.42
			Max. Vx	14	38.62	-6.60	-3132.53
			Max. Torque	24			2.07
L53	6.67 - 6.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.54	0.42	6.04
			Max. Mx	20	-47.25	3069.94	6.43
			Max. My	14	-47.25	-6.61	-3139.09
			Max. Vy	20	-38.39	3069.94	6.43
			Max. Vx	14	38.62	-6.61	-3139.09
			Max. Torque	24			2.07
L54	6.5 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.73	0.42	6.06
			Max. Mx	20	-47.39	3079.54	6.44
			Max. My	14	-47.38	-6.62	-3148.75
			Max. Vy	20	-38.41	3079.54	6.44
			Max. Vx	14	38.65	-6.62	-3148.75
			Max. Torque	24			2.07
L55	6.25 - 3.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.55	0.42	6.22
			Max. Mx	20	-48.74	3175.91	6.55
			Max. My	14	-48.73	-6.74	-3245.69
			Max. Vy	20	-38.71	3175.91	6.55
			Max. Vx	14	38.95	-6.74	-3245.69
			Max. Torque	24			2.07
L56	3.75 - 3.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.75	0.42	6.24
			Max. Mx	20	-48.90	3185.58	6.56
			Max. My	14	-48.90	-6.75	-3255.42
			Max. Vy	20	-38.73	3185.58	6.56
			Max. Vx	14	38.96	-6.75	-3255.42
			Max. Torque	24			2.07
L57	3.5 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.14	0.41	6.27
			Max. Mx	20	-49.20	3204.95	6.58
			Max. My	14	-49.20	-6.78	-3274.91
			Max. Vy	20	-38.79	3204.95	6.58
			Max. Vx	14	39.02	-6.78	-3274.91
			Max. Torque	24			2.07
L58	3 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.33	0.41	6.29
			Max. Mx	20	-49.35	3214.65	6.59
			Max. My	14	-49.35	-6.79	-3284.66
			Max. Vy	20	-38.81	3214.65	6.59
			Max. Vx	14	39.05	-6.79	-3284.66
			Max. Torque	24			2.07
L59	2.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-106.30	0.41	6.45
			Max. Mx	20	-50.87	3321.81	6.72
			Max. My	14	-50.87	-6.92	-3392.44
			Max. Vy	20	-39.15	3321.81	6.72
			Max. Vx	14	39.39	-6.92	-3392.44
			Max. Torque	24			2.07

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	51 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	106.30	10.24	0.01
	Max. H _x	21	38.17	39.13	0.03
	Max. H _z	2	50.89	-0.05	39.28
	Max. M _x	2	3385.18	-0.05	39.28
	Max. M _z	8	3312.67	-39.04	-0.06
	Max. Torsion	24	2.07	17.29	29.36
	Min. Vert	25	38.17	17.29	29.36
	Min. H _x	9	38.17	-39.04	-0.06
	Min. H _z	14	50.89	-0.04	-39.37
	Min. M _x	14	-3392.44	-0.04	-39.37
	Min. M _z	20	-3321.81	39.13	0.03
	Min. Torsion	12	-1.97	-17.24	-29.47

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	42.41	0.00	0.00	-0.90	-0.14	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	50.89	0.05	-39.28	-3385.18	-3.40	-0.88
0.9 Dead+1.6 Wind 0 deg - No Ice	38.17	0.05	-39.28	-3358.74	-3.35	-0.86
1.2 Dead+1.6 Wind 30 deg - No Ice	50.89	17.20	-29.46	-2646.26	-1542.63	-0.67
0.9 Dead+1.6 Wind 30 deg - No Ice	38.17	17.20	-29.46	-2625.00	-1530.39	-0.65
1.2 Dead+1.6 Wind 60 deg - No Ice	50.89	29.77	-17.03	-1529.11	-2671.49	-0.32
0.9 Dead+1.6 Wind 60 deg - No Ice	38.17	29.77	-17.03	-1516.71	-2650.31	-0.30
1.2 Dead+1.6 Wind 90 deg - No Ice	50.89	39.04	0.06	7.38	-3312.67	-0.42
0.9 Dead+1.6 Wind 90 deg - No Ice	38.17	39.04	0.06	7.58	-3287.19	-0.42
1.2 Dead+1.6 Wind 120 deg - No Ice	50.89	29.75	17.06	1534.09	-2672.53	1.76
0.9 Dead+1.6 Wind 120 deg - No Ice	38.17	29.75	17.06	1522.19	-2651.33	1.77
1.2 Dead+1.6 Wind 150 deg - No Ice	50.89	17.24	29.47	2647.56	-1550.54	1.97
0.9 Dead+1.6 Wind 150 deg - No Ice	38.17	17.24	29.47	2626.83	-1538.21	1.96
1.2 Dead+1.6 Wind 180 deg - No Ice	50.89	0.04	39.37	3392.44	-6.92	1.37
0.9 Dead+1.6 Wind 180 deg - No Ice	38.17	0.04	39.37	3366.49	-6.81	1.36
1.2 Dead+1.6 Wind 210 deg - No Ice	50.89	-17.26	29.51	2649.29	1548.59	0.54
0.9 Dead+1.6 Wind 210 deg - No Ice	38.17	-17.26	29.51	2628.55	1536.39	0.52
1.2 Dead+1.6 Wind 240 deg - No Ice	50.89	-29.84	17.04	1528.33	2679.23	-0.03
0.9 Dead+1.6 Wind 240 deg - No Ice	38.17	-29.84	17.04	1516.49	2658.07	-0.04

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	52 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
No Ice						
1.2 Dead+1.6 Wind 270 deg - No Ice	50.89	-39.13	-0.03	-6.72	3321.81	0.27
0.9 Dead+1.6 Wind 270 deg - No Ice	38.17	-39.13	-0.03	-6.37	3296.33	0.26
1.2 Dead+1.6 Wind 300 deg - No Ice	50.89	-29.81	-17.01	-1531.16	2677.74	-1.91
0.9 Dead+1.6 Wind 300 deg - No Ice	38.17	-29.81	-17.01	-1518.72	2656.57	-1.91
1.2 Dead+1.6 Wind 330 deg - No Ice	50.89	-17.29	-29.36	-2638.26	1555.44	-2.07
0.9 Dead+1.6 Wind 330 deg - No Ice	38.17	-17.29	-29.36	-2617.04	1543.15	-2.06
1.2 Dead+1.0 Ice+1.0 Temp	106.30	-0.00	-0.00	-6.45	0.41	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	106.30	0.01	-9.97	-932.42	0.08	-0.38
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	106.30	4.36	-7.53	-744.72	-426.14	-0.37
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	106.30	7.63	-4.39	-435.57	-743.60	-0.30
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	106.30	10.23	0.02	-4.41	-942.09	-0.12
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	106.30	7.63	4.41	424.47	-744.21	0.30
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	106.30	4.38	7.54	732.51	-428.55	0.47
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	106.30	0.01	9.99	921.17	-1.45	0.48
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	106.30	-4.37	7.54	732.52	428.39	0.34
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	106.30	-7.64	4.40	422.53	746.26	0.23
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	106.30	-10.24	-0.01	-8.30	945.06	0.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	106.30	-7.64	-4.40	-436.68	746.30	-0.33
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	106.30	-4.39	-7.52	-743.31	430.57	-0.49
Dead+Wind 0 deg - Service	42.41	0.01	-8.40	-722.16	-0.83	-0.19
Dead+Wind 30 deg - Service	42.41	3.68	-6.30	-564.54	-328.80	-0.14
Dead+Wind 60 deg - Service	42.41	6.37	-3.64	-326.50	-569.34	-0.06
Dead+Wind 90 deg - Service	42.41	8.35	0.01	0.89	-706.09	-0.09
Dead+Wind 120 deg - Service	42.41	6.37	3.65	326.20	-569.56	0.38
Dead+Wind 150 deg - Service	42.41	3.69	6.31	563.45	-330.49	0.42
Dead+Wind 180 deg - Service	42.41	0.01	8.42	722.34	-1.58	0.30
Dead+Wind 210 deg - Service	42.41	-3.69	6.31	563.82	329.87	0.12
Dead+Wind 240 deg - Service	42.41	-6.39	3.65	324.97	570.78	-0.01
Dead+Wind 270 deg - Service	42.41	-8.37	-0.01	-2.11	707.83	0.06
Dead+Wind 300 deg - Service	42.41	-6.38	-3.64	-326.94	570.47	-0.41
Dead+Wind 330 deg - Service	42.41	-3.70	-6.28	-562.83	331.32	-0.45

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	-42.41	0.00	0.00	42.41	0.00	0.000%
2	0.05	-50.89	-39.28	-0.05	50.89	39.28	0.000%

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	53 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
3	0.05	-38.17	-39.28	-0.05	38.17	39.28	0.000%
4	17.20	-50.89	-29.46	-17.20	50.89	29.46	0.000%
5	17.20	-38.17	-29.46	-17.20	38.17	29.46	0.000%
6	29.77	-50.89	-17.03	-29.77	50.89	17.03	0.000%
7	29.77	-38.17	-17.03	-29.77	38.17	17.03	0.000%
8	39.04	-50.89	0.06	-39.04	50.89	-0.06	0.000%
9	39.04	-38.17	0.06	-39.04	38.17	-0.06	0.000%
10	29.75	-50.89	17.06	-29.75	50.89	-17.06	0.000%
11	29.75	-38.17	17.06	-29.75	38.17	-17.06	0.000%
12	17.24	-50.89	29.47	-17.24	50.89	-29.47	0.000%
13	17.24	-38.17	29.47	-17.24	38.17	-29.47	0.000%
14	0.04	-50.89	39.37	-0.04	50.89	-39.37	0.000%
15	0.04	-38.17	39.37	-0.04	38.17	-39.37	0.000%
16	-17.26	-50.89	29.51	17.26	50.89	-29.51	0.000%
17	-17.26	-38.17	29.51	17.26	38.17	-29.51	0.000%
18	-29.84	-50.89	17.04	29.84	50.89	-17.04	0.000%
19	-29.84	-38.17	17.04	29.84	38.17	-17.04	0.000%
20	-39.13	-50.89	-0.03	39.13	50.89	0.03	0.000%
21	-39.13	-38.17	-0.03	39.13	38.17	0.03	0.000%
22	-29.81	-50.89	-17.01	29.81	50.89	17.01	0.000%
23	-29.81	-38.17	-17.01	29.81	38.17	17.01	0.000%
24	-17.29	-50.89	-29.36	17.29	50.89	29.36	0.000%
25	-17.29	-38.17	-29.36	17.29	38.17	29.36	0.000%
26	0.00	-106.30	0.00	0.00	106.30	0.00	0.000%
27	0.01	-106.30	-9.97	-0.01	106.30	9.97	0.000%
28	4.36	-106.30	-7.53	-4.36	106.30	7.53	0.000%
29	7.63	-106.30	-4.39	-7.63	106.30	4.39	0.000%
30	10.23	-106.30	0.02	-10.23	106.30	-0.02	0.000%
31	7.63	-106.30	4.41	-7.63	106.30	-4.41	0.000%
32	4.38	-106.30	7.54	-4.38	106.30	-7.54	0.000%
33	0.01	-106.30	9.99	-0.01	106.30	-9.99	0.000%
34	-4.37	-106.30	7.54	4.37	106.30	-7.54	0.000%
35	-7.64	-106.30	4.40	7.64	106.30	-4.40	0.000%
36	-10.24	-106.30	-0.01	10.24	106.30	0.01	0.000%
37	-7.64	-106.30	-4.40	7.64	106.30	4.40	0.000%
38	-4.39	-106.30	-7.52	4.39	106.30	7.52	0.000%
39	0.01	-42.41	-8.40	-0.01	42.41	8.40	0.000%
40	3.68	-42.41	-6.30	-3.68	42.41	6.30	0.000%
41	6.37	-42.41	-3.64	-6.37	42.41	3.64	0.000%
42	8.35	-42.41	0.01	-8.35	42.41	-0.01	0.000%
43	6.37	-42.41	3.65	-6.37	42.41	-3.65	0.000%
44	3.69	-42.41	6.31	-3.69	42.41	-6.31	0.000%
45	0.01	-42.41	8.42	-0.01	42.41	-8.42	0.000%
46	-3.69	-42.41	6.31	3.69	42.41	-6.31	0.000%
47	-6.39	-42.41	3.65	6.39	42.41	-3.65	0.000%
48	-8.37	-42.41	-0.01	8.37	42.41	0.01	0.000%
49	-6.38	-42.41	-3.64	6.38	42.41	3.64	0.000%
50	-3.70	-42.41	-6.28	3.70	42.41	6.28	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	6	0.00000001	0.00001160
3	Yes	6	0.00000001	0.00000336

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	54 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

4	Yes	7	0.00000001	0.00000992
5	Yes	6	0.00000001	0.00008153
6	Yes	7	0.00000001	0.00001018
7	Yes	6	0.00000001	0.00008365
8	Yes	6	0.00000001	0.00000841
9	Yes	5	0.00000001	0.00008478
10	Yes	7	0.00000001	0.00001064
11	Yes	6	0.00000001	0.00008755
12	Yes	7	0.00000001	0.00000964
13	Yes	6	0.00000001	0.00007916
14	Yes	6	0.00000001	0.00001512
15	Yes	6	0.00000001	0.00000453
16	Yes	7	0.00000001	0.00001028
17	Yes	6	0.00000001	0.00008454
18	Yes	7	0.00000001	0.00001011
19	Yes	6	0.00000001	0.00008318
20	Yes	6	0.00000001	0.00000725
21	Yes	5	0.00000001	0.00006905
22	Yes	7	0.00000001	0.00000963
23	Yes	6	0.00000001	0.00007906
24	Yes	7	0.00000001	0.00001075
25	Yes	6	0.00000001	0.00008851
26	Yes	5	0.00000001	0.00006180
27	Yes	8	0.00000001	0.00005297
28	Yes	8	0.00000001	0.00005468
29	Yes	8	0.00000001	0.00005485
30	Yes	8	0.00000001	0.00005304
31	Yes	8	0.00000001	0.00005426
32	Yes	8	0.00000001	0.00005390
33	Yes	8	0.00000001	0.00005211
34	Yes	8	0.00000001	0.00005420
35	Yes	8	0.00000001	0.00005438
36	Yes	8	0.00000001	0.00005348
37	Yes	8	0.00000001	0.00005520
38	Yes	8	0.00000001	0.00005522
39	Yes	5	0.00000001	0.00004057
40	Yes	6	0.00000001	0.00000399
41	Yes	6	0.00000001	0.00000420
42	Yes	5	0.00000001	0.00003695
43	Yes	6	0.00000001	0.00000466
44	Yes	6	0.00000001	0.00000385
45	Yes	5	0.00000001	0.00004410
46	Yes	6	0.00000001	0.00000427
47	Yes	6	0.00000001	0.00000414
48	Yes	5	0.00000001	0.00003720
49	Yes	6	0.00000001	0.00000387
50	Yes	6	0.00000001	0.00000477

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 125	19.74	39	1.53	0.01
L2	125 - 120	18.15	39	1.52	0.01
L3	120 - 115	16.55	39	1.52	0.01
L4	115 - 110	14.97	39	1.49	0.01
L5	110 - 105	13.45	39	1.42	0.00
L6	105 - 100	12.00	45	1.34	0.01
L7	100 - 95	10.65	45	1.24	0.00

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	55 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	95 - 90	9.42	45	1.12	0.00
L9	90 - 89.75	8.32	45	0.98	0.00
L10	89.75 - 84.75	8.27	45	0.97	0.00
L11	84.75 - 84.58	7.30	45	0.89	0.00
L12	84.58 - 84.33	7.26	45	0.89	0.00
L13	84.33 - 83.42	7.22	45	0.89	0.00
L14	83.42 - 83.17	7.05	45	0.87	0.00
L15	83.17 - 83	7.00	45	0.87	0.00
L16	83 - 82.75	6.97	45	0.87	0.00
L17	82.75 - 77.75	6.93	45	0.87	0.00
L18	77.75 - 70	6.05	45	0.80	0.00
L19	74 - 69	5.45	45	0.75	0.00
L20	69 - 67.08	4.68	45	0.71	0.00
L21	67.08 - 66.83	4.40	45	0.68	0.00
L22	66.83 - 64.08	4.37	45	0.68	0.00
L23	64.08 - 63.83	3.99	45	0.64	0.00
L24	63.83 - 62.5	3.96	45	0.63	0.00
L25	62.5 - 62.25	3.78	45	0.62	0.00
L26	62.25 - 57.25	3.75	45	0.61	0.00
L27	57.25 - 53.5	3.14	45	0.56	0.00
L28	53.5 - 53.25	2.72	45	0.51	0.00
L29	53.25 - 52.58	2.69	45	0.51	0.00
L30	52.58 - 52.33	2.62	45	0.50	0.00
L31	52.33 - 47.33	2.60	45	0.50	0.00
L32	47.33 - 44.58	2.10	45	0.44	0.00
L33	44.58 - 44.33	1.86	45	0.41	0.00
L34	44.33 - 41.92	1.84	45	0.41	0.00
L35	41.92 - 41.67	1.64	45	0.38	0.00
L36	41.67 - 34.08	1.62	45	0.38	0.00
L37	39 - 34	1.42	45	0.35	0.00
L38	34 - 29	1.07	45	0.32	0.00
L39	29 - 26.92	0.76	45	0.27	0.00
L40	26.92 - 26.67	0.65	45	0.24	0.00
L41	26.67 - 21.67	0.64	45	0.24	0.00
L42	21.67 - 18	0.41	45	0.19	0.00
L43	18 - 17.75	0.28	45	0.15	0.00
L44	17.75 - 17.5	0.27	45	0.15	0.00
L45	17.5 - 17.25	0.26	45	0.15	0.00
L46	17.25 - 17.08	0.26	45	0.15	0.00
L47	17.08 - 16.83	0.25	45	0.15	0.00
L48	16.83 - 13	0.24	45	0.14	0.00
L49	13 - 12.75	0.14	45	0.11	0.00
L50	12.75 - 11.92	0.14	45	0.11	0.00
L51	11.92 - 11.67	0.12	45	0.10	0.00
L52	11.67 - 6.67	0.11	45	0.10	0.00
L53	6.67 - 6.5	0.03	45	0.05	0.00
L54	6.5 - 6.25	0.03	45	0.05	0.00
L55	6.25 - 3.75	0.03	45	0.05	0.00
L56	3.75 - 3.5	0.01	45	0.03	0.00
L57	3.5 - 3	0.01	45	0.03	0.00
L58	3 - 2.75	0.01	45	0.02	0.00
L59	2.75 - 0	0.01	45	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	56 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	°	°	ft
121.0000	80010798 w/ Mount Pipe	39	16.87	1.52	0.01	26672
109.0000	(2) SBNHH-1D65B	39	13.15	1.40	0.01	3745
101.0000	VHLP2.5-11	45	10.91	1.26	0.01	2641
99.0000	800MHz 2X50W RRH W/FILTER	45	10.40	1.21	0.01	2468
97.0000	APXVTM14-ALU-I20 w/ Mount Pipe	45	9.90	1.17	0.00	2324
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	45	7.72	0.93	0.00	3406

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	°	°
L1	130 - 125	92.54	14	7.13	0.03
L2	125 - 120	85.09	14	7.13	0.03
L3	120 - 115	77.66	14	7.12	0.03
L4	115 - 110	70.28	14	6.97	0.02
L5	110 - 105	63.15	14	6.66	0.02
L6	105 - 100	56.37	14	6.29	0.02
L7	100 - 95	50.04	14	5.81	0.02
L8	95 - 90	44.26	14	5.24	0.02
L9	90 - 89.75	39.11	14	4.59	0.01
L10	89.75 - 84.75	38.87	14	4.57	0.01
L11	84.75 - 84.58	34.28	14	4.19	0.01
L12	84.58 - 84.33	34.13	14	4.18	0.01
L13	84.33 - 83.42	33.91	14	4.16	0.01
L14	83.42 - 83.17	33.12	14	4.11	0.01
L15	83.17 - 83	32.91	14	4.09	0.01
L16	83 - 82.75	32.76	14	4.09	0.01
L17	82.75 - 77.75	32.55	14	4.07	0.01
L18	77.75 - 70	28.45	14	3.76	0.01
L19	74 - 69	25.59	14	3.52	0.01
L20	69 - 67.08	22.00	14	3.32	0.00
L21	67.08 - 66.83	20.69	14	3.20	0.00
L22	66.83 - 64.08	20.53	14	3.18	0.00
L23	64.08 - 63.83	18.75	14	2.99	0.00
L24	63.83 - 62.5	18.59	14	2.98	0.00
L25	62.5 - 62.25	17.77	14	2.90	0.00
L26	62.25 - 57.25	17.62	14	2.88	0.00
L27	57.25 - 53.5	14.75	14	2.61	0.00
L28	53.5 - 53.25	12.78	14	2.40	0.00
L29	53.25 - 52.58	12.66	14	2.39	0.00
L30	52.58 - 52.33	12.32	14	2.35	0.00
L31	52.33 - 47.33	12.20	14	2.34	0.00
L32	47.33 - 44.58	9.89	14	2.07	0.00
L33	44.58 - 44.33	8.74	14	1.92	0.00
L34	44.33 - 41.92	8.64	14	1.91	0.00
L35	41.92 - 41.67	7.71	14	1.78	0.00
L36	41.67 - 34.08	7.61	14	1.77	0.00
L37	39 - 34	6.66	14	1.63	0.00
L38	34 - 29	5.02	14	1.50	0.00
L39	29 - 26.92	3.58	14	1.25	0.00
L40	26.92 - 26.67	3.06	14	1.14	0.00
L41	26.67 - 21.67	3.00	14	1.13	0.00
L42	21.67 - 18	1.94	14	0.89	0.00

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 100 943239 (BU 806376)	Page 57 of 64
	Project TEP No. 25677.185485	Date 16:12:43 09/27/18
	Client Crown Castle	Designed by jwallace

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L43	18 - 17.75	1.32	14	0.73	0.00
L44	17.75 - 17.5	1.28	14	0.72	0.00
L45	17.5 - 17.25	1.24	14	0.71	0.00
L46	17.25 - 17.08	1.21	14	0.70	0.00
L47	17.08 - 16.83	1.18	14	0.69	0.00
L48	16.83 - 13	1.15	14	0.68	0.00
L49	13 - 12.75	0.67	14	0.52	0.00
L50	12.75 - 11.92	0.64	14	0.51	0.00
L51	11.92 - 11.67	0.55	14	0.48	0.00
L52	11.67 - 6.67	0.53	14	0.47	0.00
L53	6.67 - 6.5	0.16	14	0.24	0.00
L54	6.5 - 6.25	0.15	14	0.23	0.00
L55	6.25 - 3.75	0.14	14	0.22	0.00
L56	3.75 - 3.5	0.05	14	0.13	0.00
L57	3.5 - 3	0.04	14	0.12	0.00
L58	3 - 2.75	0.03	14	0.10	0.00
L59	2.75 - 0	0.03	14	0.09	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	80010798 w/ Mount Pipe	14	79.14	7.13	0.03	6839
109.0000	(2) SBNHH-1D65B	14	61.77	6.59	0.03	828
101.0000	VHLP2.5-11	14	51.27	5.91	0.03	577
99.0000	800MHz 2X50W RRH W/FILTER	14	48.84	5.71	0.02	537
97.0000	APXVTM14-ALU-I20 w/ Mount Pipe	14	46.50	5.49	0.02	505
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	14	36.29	4.37	0.01	733

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	130 - 125 (1)	TP11.775x10.525x0.1875	5.0000	0.0000	0.0	6.9960	-0.11	515.67	0.000
L2	125 - 120 (2)	TP13.025x11.775x0.1875	5.0000	0.0000	0.0	7.7506	-11.44	571.30	0.020
L3	120 - 115 (3)	TP14.275x13.025x0.1875	5.0000	0.0000	0.0	8.5053	-2.88	626.93	0.005
L4	115 - 110 (4)	TP15.525x14.275x0.1875	5.0000	0.0000	0.0	9.2600	-3.14	682.56	0.005
L5	110 - 105 (5)	TP16.775x15.525x0.25	5.0000	0.0000	0.0	13.3032	-5.84	980.58	0.006
L6	105 - 100 (6)	TP18.0265x16.775x0.25	5.0000	0.0000	0.0	14.3101	-6.44	1054.80	0.006
L7	100 - 95 (7)	TP19.2773x18.0265x0.25	5.0000	0.0000	0.0	15.3169	-10.59	1129.01	0.009
L8	95 - 90 (8)	TP20.528x19.2773x0.25	5.0000	0.0000	0.0	16.3238	-11.32	1203.23	0.009
L9	90 - 89.75 (9)	TP20.5905x20.528x0.5	0.2500	0.0000	0.0	32.3458	-11.38	2384.21	0.005
L10	89.75 - 84.75 (10)	TP21.8413x20.5905x0.4813	5.0000	0.0000	0.0	33.1000	-14.84	2439.80	0.006

<p>tnxTower</p> <p>Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p>Job</p> <p>HRT 100 943239 (BU 806376)</p>	<p>Page</p> <p>58 of 64</p>
	<p>Project</p> <p>TEP No. 25677.185485</p>	<p>Date</p> <p>16:12:43 09/27/18</p>
	<p>Client</p> <p>Crown Castle</p>	<p>Designed by</p> <p>jwallace</p>

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L11	84.75 - 84.58 (11)	TP21.8838x21.8413x0.475	0.1700	0.0000	0.0	32.7448	-14.90	2413.62	0.006
L12	84.58 - 84.33 (12)	TP21.9464x21.8838x0.6375	0.2500	0.0000	0.0	43.7417	-14.96	3224.20	0.005
L13	84.33 - 83.42 (13)	TP22.174x21.9464x0.625	0.9100	0.0000	0.0	43.3673	-15.16	3196.61	0.005
L14	83.42 - 83.17 (14)	TP22.2365x22.174x0.95	0.2500	0.0000	0.0	65.1155	-15.25	4799.66	0.003
L15	83.17 - 83 (15)	TP22.2791x22.2365x0.95	0.1700	0.0000	0.0	65.2456	-15.30	4809.25	0.003
L16	83 - 82.75 (16)	TP22.3416x22.2791x0.7	0.2500	0.0000	0.0	48.7801	-15.36	3595.58	0.004
L17	82.75 - 77.75 (17)	TP23.5923x22.3416x0.6625	5.0000	0.0000	0.0	48.9151	-16.63	3605.53	0.005
L18	77.75 - 70 (18)	TP25.531x23.5923x0.65	7.7500	0.0000	0.0	49.9817	-17.61	3684.15	0.005
L19	70 - 69 (19)	TP25.2763x24.025x0.7	5.0000	0.0000	0.0	55.3949	-19.74	4083.16	0.005
L20	69 - 67.08 (20)	TP25.7567x25.2763x0.6875	1.9200	0.0000	0.0	55.4970	-20.28	4090.69	0.005
L21	67.08 - 66.83 (21)	TP25.8193x25.7567x0.6875	0.2500	0.0000	0.0	55.6355	-20.38	4100.89	0.005
L22	66.83 - 64.08 (22)	TP26.5075x25.8193x0.675	2.7500	0.0000	0.0	56.1469	-21.18	4138.59	0.005
L23	64.08 - 63.83 (23)	TP26.57x26.5075x0.7375	0.2500	0.0000	0.0	61.3458	-21.28	4521.80	0.005
L24	63.83 - 62.5 (24)	TP26.9029x26.57x0.7375	1.3300	0.0000	0.0	62.1362	-21.70	4580.06	0.005
L25	62.5 - 62.25 (25)	TP26.9654x26.9029x0.8625	0.2500	0.0000	0.0	72.4944	-21.81	5343.56	0.004
L26	62.25 - 57.25 (26)	TP28.2167x26.9654x0.8375	5.0000	0.0000	0.0	73.8348	-23.55	5442.37	0.004
L27	57.25 - 53.5 (27)	TP29.1551x28.2167x0.8125	3.7500	0.0000	0.0	74.1514	-24.88	5465.70	0.005
L28	53.5 - 53.25 (28)	TP29.2177x29.1551x0.8375	0.2500	0.0000	0.0	76.5343	-24.99	5641.34	0.004
L29	53.25 - 52.58 (29)	TP29.3854x29.2177x0.825	0.6700	0.0000	0.0	75.8706	-25.23	5592.42	0.005
L30	52.58 - 52.33 (30)	TP29.4479x29.3854x0.8375	0.2500	0.0000	0.0	77.1552	-25.33	5687.11	0.004
L31	52.33 - 47.33 (31)	TP30.6992x29.4479x0.8125	5.0000	0.0000	0.0	78.1910	-27.22	5763.46	0.005
L32	47.33 - 44.58 (32)	TP31.3874x30.6992x0.8	2.7500	0.0000	0.0	78.7931	-28.28	5807.84	0.005
L33	44.58 - 44.33 (33)	TP31.4499x31.3874x0.8	0.2500	0.0000	0.0	78.9542	-28.39	5819.72	0.005
L34	44.33 - 41.92 (34)	TP32.053x31.4499x0.7875	2.4100	0.0000	0.0	79.2816	-29.32	5843.85	0.005
L35	41.92 - 41.67 (35)	TP32.1156x32.053x0.8125	0.2500	0.0000	0.0	81.8967	-29.43	6036.61	0.005
L36	41.67 - 34.08 (36)	TP34.015x32.1156x0.8125	7.5900	0.0000	0.0	83.6448	-30.48	6165.46	0.005
L37	34.08 - 34 (37)	TP33.4x32.15x0.8313	5.0000	0.0000	0.0	87.1743	-34.07	6425.62	0.005
L38	34 - 29 (38)	TP34.65x33.4x0.8063	5.0000	0.0000	0.0	87.8626	-36.16	6476.35	0.006
L39	29 - 26.92 (39)	TP35.17x34.65x0.7938	2.0800	0.0000	0.0	87.8614	-37.05	6476.26	0.006
L40	26.92 - 26.67 (40)	TP35.2325x35.17x0.8688	0.2500	0.0000	0.0	96.1283	-37.18	7085.62	0.005
L41	26.67 - 21.67 (41)	TP36.4825x35.2325x0.8563	5.0000	0.0000	0.0	98.2260	-39.55	7240.24	0.005
L42	21.67 - 18 (42)	TP37.4x36.4825x0.8438	3.6700	0.0000	0.0	99.3188	-41.32	7320.79	0.006
L43	18 - 17.75 (43)	TP37.4625x37.4x0.9938	0.2500	0.0000	0.0	116.495	-41.34	8586.88	0.005
L44	17.75 - 17.5 (44)	TP37.525x37.4625x0.9938	0.2500	0.0000	0.0	116.695	-41.47	8601.62	0.005
L45	17.5 - 17.25	TP37.5875x37.525x0.9938	0.2500	0.0000	0.0	116.895	-41.61	8616.36	0.005

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	59 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L46	17.25 - 17.08 (45)	TP37.63x37.5875x0.9938	0.1700	0.0000	0.0	117.095	-41.74	8631.10	0.005
L47	17.08 - 16.83 (46)	TP37.6925x37.63x0.8938	0.2500	0.0000	0.0	105.722	-41.83	7792.79	0.005
L48	16.83 - 13 (48)	TP38.65x37.6925x0.8813	3.8300	0.0000	0.0	104.457	-41.97	7699.49	0.005
L49	13 - 12.75 (49)	TP38.7125x38.65x1.0438	0.2500	0.0000	0.0	126.390	-43.87	9316.20	0.005
L50	12.75 - 11.92 (50)	TP38.92x38.7125x1.0438	0.8300	0.0000	0.0	126.600	-44.02	9331.68	0.005
L51	11.92 - 11.67 (51)	TP38.9825x38.92x0.8188	0.2500	0.0000	0.0	100.449	-44.49	7404.11	0.006
L52	11.67 - 6.67 (52)	TP40.2325x38.9825x0.7938	5.0000	0.0000	0.0	97.6057	-44.63	7194.51	0.006
L53	6.67 - 6.5 (53)	TP40.275x40.2325x0.7938	0.1700	0.0000	0.0	100.801	-47.17	7430.01	0.006
L54	6.5 - 6.25 (54)	TP40.3375x40.275x0.9188	0.2500	0.0000	0.0	116.431	-47.25	8582.10	0.006
L55	6.25 - 3.75 (55)	TP40.9625x40.3375x0.9188	2.5000	0.0000	0.0	116.615	-47.40	8595.72	0.006
L56	3.75 - 3.5 (56)	TP41.025x40.9625x1.0188	0.2500	0.0000	0.0	131.030	-48.75	9658.26	0.005
L57	3.5 - 3 (57)	TP41.15x41.025x1.0188	0.5000	0.0000	0.0	131.236	-48.91	9673.37	0.005
L58	3 - 2.75 (58)	TP41.2125x41.15x0.9438	0.2500	0.0000	0.0	122.182	-49.21	9006.02	0.005
L59	2.75 - 0 (59)	TP41.9x41.2125x1.0438	2.7500	0.0000	0.0	135.002	-49.36	9951.01	0.005

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	130 - 125 (1)	TP11.775x10.525x0.1875	0.67	120.74	0.006	0.00	120.74	0.000
L2	125 - 120 (2)	TP13.025x11.775x0.1875	4.19	148.43	0.028	0.00	148.43	0.000
L3	120 - 115 (3)	TP14.275x13.025x0.1875	37.50	178.97	0.210	0.00	178.97	0.000
L4	115 - 110 (4)	TP15.525x14.275x0.1875	73.25	212.37	0.345	0.00	212.37	0.000
L5	110 - 105 (5)	TP16.775x15.525x0.25	142.46	327.79	0.435	0.00	327.79	0.000
L6	105 - 100 (6)	TP18.0265x16.775x0.25	213.65	379.69	0.563	0.00	379.69	0.000
L7	100 - 95 (7)	TP19.2773x18.0265x0.25	304.20	435.39	0.699	0.00	435.39	0.000
L8	95 - 90 (8)	TP20.528x19.2773x0.25	412.58	494.91	0.834	0.00	494.91	0.000
L9	90 - 89.75 (9)	TP20.5905x20.528x0.5	418.08	959.70	0.436	0.00	959.70	0.000
L10	89.75 - 84.75 (10)	TP21.8413x20.5905x0.4813	539.70	1046.54	0.516	0.00	1046.54	0.000
L11	84.75 - 84.58 (11)	TP21.8838x21.8413x0.475	544.31	1038.02	0.524	0.00	1038.02	0.000
L12	84.58 - 84.33 (12)	TP21.9464x21.8838x0.6375	551.09	1369.79	0.402	0.00	1369.79	0.000
L13	84.33 - 83.42 (13)	TP22.174x21.9464x0.625	575.84	1374.59	0.419	0.00	1374.59	0.000
L14	83.42 - 83.17 (14)	TP22.2365x22.174x0.95	582.66	2008.30	0.290	0.00	2008.30	0.000
L15	83.17 - 83 (15)	TP22.2791x22.2365x0.95	587.31	2016.50	0.291	0.00	2016.50	0.000
L16	83 - 82.75 (16)	TP22.3416x22.2791x0.7	594.15	1547.78	0.384	0.00	1547.78	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	60 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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 $\frac{M_{uy}}{\phi M_{ry}}$
L17	82.75 - 77.75 (17)	TP23.5923x22.3416x0.6625	732.95	1649.97	0.444	0.00	1649.97	0.000
L18	77.75 - 70 (18)	TP25.531x23.5923x0.65	839.55	1758.70	0.477	0.00	1758.70	0.000
L19	70 - 69 (19)	TP25.2763x24.025x0.7	985.31	2003.50	0.492	0.00	2003.50	0.000
L20	69 - 67.08 (20)	TP25.7567x25.2763x0.6875	1042.37	2049.57	0.509	0.00	2049.57	0.000
L21	67.08 - 66.83 (21)	TP25.8193x25.7567x0.6875	1049.83	2059.95	0.510	0.00	2059.95	0.000
L22	66.83 - 64.08 (22)	TP26.5075x25.8193x0.675	1132.66	2139.39	0.529	0.00	2139.39	0.000
L23	64.08 - 63.83 (23)	TP26.57x26.5075x0.7375	1140.25	2332.00	0.489	0.00	2332.00	0.000
L24	63.83 - 62.5 (24)	TP26.9029x26.57x0.7375	1180.79	2393.32	0.493	0.00	2393.32	0.000
L25	62.5 - 62.25 (25)	TP26.9654x26.9029x0.8625	1188.44	2772.53	0.429	0.00	2772.53	0.000
L26	62.25 - 57.25 (26)	TP28.2167x26.9654x0.8375	1343.65	2968.92	0.453	0.00	2968.92	0.000
L27	57.25 - 53.5 (27)	TP29.1551x28.2167x0.8125	1462.76	3092.33	0.473	0.00	3092.33	0.000
L28	53.5 - 53.25 (28)	TP29.2177x29.1551x0.8375	1470.78	3193.32	0.461	0.00	3193.32	0.000
L29	53.25 - 52.58 (29)	TP29.3854x29.2177x0.825	1492.34	3187.66	0.468	0.00	3187.66	0.000
L30	52.58 - 52.33 (30)	TP29.4479x29.3854x0.8375	1500.40	3246.09	0.462	0.00	3246.09	0.000
L31	52.33 - 47.33 (31)	TP30.6992x29.4479x0.8125	1663.76	3443.39	0.483	0.00	3443.39	0.000
L32	47.33 - 44.58 (32)	TP31.3874x30.6992x0.8	1755.35	3554.82	0.494	0.00	3554.82	0.000
L33	44.58 - 44.33 (33)	TP31.4499x31.3874x0.8	1763.74	3569.57	0.494	0.00	3569.57	0.000
L34	44.33 - 41.92 (34)	TP32.053x31.4499x0.7875	1845.12	3659.63	0.504	0.00	3659.63	0.000
L35	41.92 - 41.67 (35)	TP32.1156x32.053x0.8125	1853.61	3782.04	0.490	0.00	3782.04	0.000
L36	41.67 - 34.08 (36)	TP34.015x32.1156x0.8125	1944.96	3947.31	0.493	0.00	3947.31	0.000
L37	34.08 - 34 (37)	TP33.4x32.15x0.8313	2119.39	4190.31	0.506	0.00	4190.31	0.000
L38	34 - 29 (38)	TP34.65x33.4x0.8063	2298.03	4396.02	0.523	0.00	4396.02	0.000
L39	29 - 26.92 (39)	TP35.17x34.65x0.7938	2373.38	4468.32	0.531	0.00	4468.32	0.000
L40	26.92 - 26.67 (40)	TP35.2325x35.17x0.8688	2382.47	4876.52	0.489	0.00	4876.52	0.000
L41	26.67 - 21.67 (41)	TP36.4825x35.2325x0.8563	2565.81	5172.30	0.496	0.00	5172.30	0.000
L42	21.67 - 18 (42)	TP37.4x36.4825x0.8438	2702.20	5371.36	0.503	0.00	5371.36	0.000
L43	18 - 17.75 (43)	TP37.4625x37.4x0.9938	2702.20	6248.72	0.432	0.00	6248.72	0.000
L44	17.75 - 17.5 (44)	TP37.525x37.4625x0.9938	2711.54	6270.47	0.432	0.00	6270.47	0.000
L45	17.5 - 17.25 (45)	TP37.5875x37.525x0.9938	2720.89	6292.27	0.432	0.00	6292.27	0.000
L46	17.25 - 17.08 (46)	TP37.63x37.5875x0.9938	2730.26	6314.10	0.432	0.00	6314.10	0.000
L47	17.08 - 16.83 (47)	TP37.6925x37.63x0.8938	2736.63	5738.83	0.477	0.00	5738.83	0.000
L48	16.83 - 13 (48)	TP38.65x37.6925x0.8813	2745.99	5683.86	0.483	0.00	5683.86	0.000
L49	13 - 12.75 (49)	TP38.7125x38.65x1.0438	2890.40	6999.77	0.413	0.00	6999.77	0.000
L50	12.75 - 11.92 (50)	TP38.92x38.7125x1.0438	2899.88	7023.38	0.413	0.00	7023.38	0.000
L51	11.92 - 11.67 (51)	TP38.9825x38.92x0.8188	2931.41	5670.92	0.517	0.00	5670.92	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	61 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L52	11.67 - 6.67 (52)	TP40.2325x38.9825x0.7938	2940.93	5526.85	0.532	0.00	5526.85	0.000
L53	6.67 - 6.5 (53)	TP40.275x40.2325x0.7938	3132.54	5898.39	0.531	0.00	5898.39	0.000
L54	6.5 - 6.25 (54)	TP40.3375x40.275x0.9188	3139.10	6777.35	0.463	0.00	6777.35	0.000
L55	6.25 - 3.75 (55)	TP40.9625x40.3375x0.9188	3148.76	6799.14	0.463	0.00	6799.14	0.000
L56	3.75 - 3.5 (56)	TP41.025x40.9625x1.0188	3245.69	7724.76	0.420	0.00	7724.76	0.000
L57	3.5 - 3 (57)	TP41.15x41.025x1.0188	3255.43	7749.25	0.420	0.00	7749.25	0.000
L58	3 - 2.75 (58)	TP41.2125x41.15x0.9438	3274.91	7264.82	0.451	0.00	7264.82	0.000
L59	2.75 - 0 (59)	TP41.9x41.2125x1.0438	3284.67	7999.99	0.411	0.00	7999.99	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	130 - 125 (1)	TP11.775x10.525x0.1875	0.27	257.84	0.001	0.00	246.17	0.000
L2	125 - 120 (2)	TP13.025x11.775x0.1875	2.10	285.65	0.007	0.26	302.45	0.001
L3	120 - 115 (3)	TP14.275x13.025x0.1875	6.90	313.46	0.022	0.50	364.53	0.001
L4	115 - 110 (4)	TP15.525x14.275x0.1875	7.42	341.28	0.022	0.44	432.40	0.001
L5	110 - 105 (5)	TP16.775x15.525x0.25	13.93	490.29	0.028	0.03	668.05	0.000
L6	105 - 100 (6)	TP18.0265x16.775x0.25	14.94	527.40	0.028	0.88	773.54	0.001
L7	100 - 95 (7)	TP19.2773x18.0265x0.25	21.39	564.51	0.038	2.02	886.76	0.002
L8	95 - 90 (8)	TP20.528x19.2773x0.25	21.99	601.61	0.037	1.99	1007.70	0.002
L9	90 - 89.75 (9)	TP20.5905x20.528x0.5	22.02	1192.10	0.018	1.99	1962.20	0.001
L10	89.75 - 84.75 (10)	TP21.8413x20.5905x0.4813	27.08	1219.90	0.022	1.44	2138.11	0.001
L11	84.75 - 84.58 (11)	TP21.8883x21.8413x0.475	27.10	1206.81	0.022	1.44	2120.47	0.001
L12	84.58 - 84.33 (12)	TP21.9464x21.8883x0.6375	27.14	1612.10	0.017	1.44	2805.28	0.001
L13	84.33 - 83.42 (13)	TP22.174x21.9464x0.625	27.29	1598.30	0.017	1.44	2814.28	0.001
L14	83.42 - 83.17 (14)	TP22.2365x22.174x0.95	27.32	2399.83	0.011	1.44	4132.36	0.000
L15	83.17 - 83 (15)	TP22.2791x22.2365x0.95	27.35	2404.63	0.011	1.44	4149.13	0.000
L16	83 - 82.75 (16)	TP22.3416x22.2791x0.7	27.39	1797.79	0.015	1.44	3172.28	0.000
L17	82.75 - 77.75 (17)	TP23.5923x22.3416x0.6625	28.16	1802.77	0.016	1.44	3377.94	0.000
L18	77.75 - 70 (18)	TP25.531x23.5923x0.65	28.73	1842.07	0.016	1.44	3598.57	0.000
L19	70 - 69 (19)	TP25.2763x24.025x0.7	29.59	2041.58	0.014	1.44	4101.18	0.000
L20	69 - 67.08 (20)	TP25.7567x25.2763x0.6875	29.90	2045.34	0.015	1.44	4194.02	0.000
L21	67.08 - 66.83 (21)	TP25.8193x25.7567x0.6875	29.92	2050.45	0.015	1.44	4215.18	0.000
L22	66.83 - 64.08 (22)	TP26.5075x25.8193x0.675	30.36	2069.29	0.015	1.44	4375.99	0.000
L23	64.08 - 63.83 (23)	TP26.57x26.5075x0.7375	30.39	2260.90	0.013	1.44	4773.72	0.000
L24	63.83 - 62.5 (24)	TP26.9029x26.57x0.7375	30.61	2290.03	0.013	1.44	4898.68	0.000
L25	62.5 - 62.25 (25)	TP26.9654x26.9029x0.8625	30.64	2671.78	0.011	1.44	5683.78	0.000
L26	62.25 - 57.25 (26)	TP28.2167x26.9654x0.8375	31.48	2721.18	0.012	1.43	6081.54	0.000
L27	57.25 - 53.5 (27)	TP29.1551x28.2167x0.8125	32.10	2732.85	0.012	1.43	6330.40	0.000
L28	53.5 - 53.25	TP29.2177x29.1551x0.8375	32.13	2820.67	0.011	1.42	6538.92	0.000

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 100 943239 (BU 806376)	Page	62 of 64
	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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 $\frac{T_u}{\phi T_n}$
L29	53.25 - 52.58	TP29.3854x29.2177x0.825	32.24	2796.21	0.012	1.42	6526.00	0.000
L30	52.58 - 52.33	TP29.4479x29.3854x0.8375	32.28	2843.55	0.011	1.42	6646.47	0.000
L31	52.33 - 47.33	TP30.6992x29.4479x0.8125	33.11	2881.73	0.011	1.41	7045.67	0.000
L32	47.33 - 44.58	TP31.3874x30.6992x0.8	33.56	2903.92	0.012	1.41	7271.23	0.000
L33	44.58 - 44.33	TP31.4499x31.3874x0.8	33.58	2909.86	0.012	1.41	7301.26	0.000
L34	44.33 - 41.92	TP32.053x31.4499x0.7875	33.99	2921.92	0.012	1.40	7483.22	0.000
L35	41.92 - 41.67	TP32.1156x32.053x0.8125	34.02	3018.30	0.011	1.40	7735.49	0.000
L36	41.67 - 34.08	TP34.015x32.1156x0.8125	34.45	3082.73	0.011	1.40	8072.08	0.000
L37	34.08 - 34 (37)	TP33.4x32.15x0.8313	35.36	3212.81	0.011	1.38	8569.33	0.000
L38	34 - 29 (38)	TP34.65x33.4x0.8063	36.14	3238.18	0.011	1.38	8985.00	0.000
L39	29 - 26.92 (39)	TP35.17x34.65x0.7938	36.38	3238.13	0.011	1.37	9130.58	0.000
L40	26.92 - 26.67	TP35.2325x35.17x0.8688	36.39	3542.81	0.010	1.37	9971.83	0.000
L41	26.67 - 21.67	TP36.4825x35.2325x0.8563	36.99	3620.12	0.010	1.37	10572.33	0.000
L42	21.67 - 18 (42)	TP37.4x36.4825x0.8438	37.40	3660.39	0.010	1.37	10975.83	0.000
L43	18 - 17.75 (43)	TP37.4625x37.4x0.9938	37.41	4300.81	0.009	1.37	12786.17	0.000
L44	17.75 - 17.5	TP37.525x37.4625x0.9938	37.44	4308.18	0.009	1.37	12830.50	0.000
L45	17.5 - 17.25	TP37.5875x37.525x0.9938	37.47	4315.55	0.009	1.37	12874.92	0.000
L46	17.25 - 17.08	TP37.63x37.5875x0.9938	37.49	4320.56	0.009	1.37	12919.42	0.000
L47	17.08 - 16.83	TP37.6925x37.63x0.8938	37.52	3903.03	0.010	1.37	11731.50	0.000
L48	16.83 - 13 (48)	TP38.65x37.6925x0.8813	37.67	3883.12	0.010	1.37	11617.67	0.000
L49	13 - 12.75 (49)	TP38.7125x38.65x1.0438	37.95	4665.84	0.008	1.37	14325.17	0.000
L50	12.75 - 11.92	TP38.92x38.7125x1.0438	38.06	4691.54	0.008	1.37	14373.25	0.000
L51	11.92 - 11.67	TP38.9825x38.92x0.8188	38.08	3708.13	0.010	1.37	11581.83	0.000
L52	11.67 - 6.67	TP40.2325x38.9825x0.7938	38.19	3620.81	0.011	1.37	11285.00	0.000
L53	6.67 - 6.5 (53)	TP40.275x40.2325x0.7938	38.62	3719.01	0.010	1.37	12041.00	0.000
L54	6.5 - 6.25 (54)	TP40.3375x40.275x0.9188	38.65	4297.86	0.009	1.37	13850.00	0.000
L55	6.25 - 3.75 (55)	TP40.9625x40.3375x0.9188	38.81	4331.93	0.009	1.37	13894.33	0.000
L56	3.75 - 3.5 (56)	TP41.025x40.9625x1.0188	38.96	4836.68	0.008	1.37	15797.25	0.000
L57	3.5 - 3 (57)	TP41.15x41.025x1.0188	39.02	4851.80	0.008	1.37	15847.17	0.000
L58	3 - 2.75 (58)	TP41.2125x41.15x0.9438	39.05	4510.01	0.009	1.37	14846.83	0.000
L59	2.75 - 0 (59)	TP41.9x41.2125x1.0438	39.23	5018.08	0.008	1.37	16362.67	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
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	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	130 - 125 (1)	0.000	0.006	0.000	0.001	0.000	0.006	1.000	4.8.2
L2	125 - 120 (2)	0.020	0.028	0.000	0.007	0.001	0.048	1.000	4.8.2
L3	120 - 115 (3)	0.005	0.210	0.000	0.022	0.001	0.215	1.000	4.8.2
L4	115 - 110 (4)	0.005	0.345	0.000	0.022	0.001	0.350	1.000	4.8.2
L5	110 - 105 (5)	0.006	0.435	0.000	0.028	0.000	0.441	1.000	4.8.2
L6	105 - 100 (6)	0.006	0.563	0.000	0.028	0.001	0.570	1.000	4.8.2
L7	100 - 95 (7)	0.009	0.699	0.000	0.038	0.002	0.710	1.000	4.8.2
L8	95 - 90 (8)	0.009	0.834	0.000	0.037	0.002	0.845	1.000	4.8.2
L9	90 - 89.75 (9)	0.005	0.436	0.000	0.018	0.001	0.441	1.000	4.8.2
L10	89.75 - 84.75 (10)	0.006	0.516	0.000	0.022	0.001	0.522	1.000	4.8.2
L11	84.75 - 84.58 (11)	0.006	0.524	0.000	0.022	0.001	0.531	1.000	4.8.2
L12	84.58 - 84.33 (12)	0.005	0.402	0.000	0.017	0.001	0.407	1.000	4.8.2
L13	84.33 - 83.42 (13)	0.005	0.419	0.000	0.017	0.001	0.424	1.000	4.8.2
L14	83.42 - 83.17 (14)	0.003	0.290	0.000	0.011	0.000	0.293	1.000	4.8.2
L15	83.17 - 83 (15)	0.003	0.291	0.000	0.011	0.000	0.295	1.000	4.8.2
L16	83 - 82.75 (16)	0.004	0.384	0.000	0.015	0.000	0.388	1.000	4.8.2
L17	82.75 - 77.75 (17)	0.005	0.444	0.000	0.016	0.000	0.449	1.000	4.8.2
L18	77.75 - 70 (18)	0.005	0.477	0.000	0.016	0.000	0.482	1.000	4.8.2
L19	70 - 69 (19)	0.005	0.492	0.000	0.014	0.000	0.497	1.000	4.8.2
L20	69 - 67.08 (20)	0.005	0.509	0.000	0.015	0.000	0.514	1.000	4.8.2
L21	67.08 - 66.83 (21)	0.005	0.510	0.000	0.015	0.000	0.515	1.000	4.8.2
L22	66.83 - 64.08 (22)	0.005	0.529	0.000	0.015	0.000	0.535	1.000	4.8.2
L23	64.08 - 63.83 (23)	0.005	0.489	0.000	0.013	0.000	0.494	1.000	4.8.2
L24	63.83 - 62.5 (24)	0.005	0.493	0.000	0.013	0.000	0.498	1.000	4.8.2
L25	62.5 - 62.25 (25)	0.004	0.429	0.000	0.011	0.000	0.433	1.000	4.8.2
L26	62.25 - 57.25 (26)	0.004	0.453	0.000	0.012	0.000	0.457	1.000	4.8.2
L27	57.25 - 53.5 (27)	0.005	0.473	0.000	0.012	0.000	0.478	1.000	4.8.2
L28	53.5 - 53.25 (28)	0.004	0.461	0.000	0.011	0.000	0.465	1.000	4.8.2
L29	53.25 - 52.58 (29)	0.005	0.468	0.000	0.012	0.000	0.473	1.000	4.8.2
L30	52.58 - 52.33 (30)	0.004	0.462	0.000	0.011	0.000	0.467	1.000	4.8.2
L31	52.33 - 47.33 (31)	0.005	0.483	0.000	0.011	0.000	0.488	1.000	4.8.2
L32	47.33 - 44.58 (32)	0.005	0.494	0.000	0.012	0.000	0.499	1.000	4.8.2
L33	44.58 - 44.33 (33)	0.005	0.494	0.000	0.012	0.000	0.499	1.000	4.8.2
L34	44.33 - 41.92 (34)	0.005	0.504	0.000	0.012	0.000	0.509	1.000	4.8.2
L35	41.92 - 41.67 (35)	0.005	0.490	0.000	0.011	0.000	0.495	1.000	4.8.2
L36	41.67 - 34.08 (36)	0.005	0.493	0.000	0.011	0.000	0.498	1.000	4.8.2
L37	34.08 - 34 (37)	0.005	0.506	0.000	0.011	0.000	0.511	1.000	4.8.2
L38	34 - 29 (38)	0.006	0.523	0.000	0.011	0.000	0.528	1.000	4.8.2

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	Project	TEP No. 25677.185485	Date	16:12:43 09/27/18
	Client	Crown Castle	Designed by	jwallace

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
L39	29 - 26.92 (39)	0.006	0.531	0.000	0.011	0.000	0.537	1.000	4.8.2
L40	26.92 - 26.67 (40)	0.005	0.489	0.000	0.010	0.000	0.494	1.000	4.8.2
L41	26.67 - 21.67 (41)	0.005	0.496	0.000	0.010	0.000	0.502	1.000	4.8.2
L42	21.67 - 18 (42)	0.006	0.503	0.000	0.010	0.000	0.509	1.000	4.8.2
L43	18 - 17.75 (43)	0.005	0.432	0.000	0.009	0.000	0.437	1.000	4.8.2
L44	17.75 - 17.5 (44)	0.005	0.432	0.000	0.009	0.000	0.437	1.000	4.8.2
L45	17.5 - 17.25 (45)	0.005	0.432	0.000	0.009	0.000	0.437	1.000	4.8.2
L46	17.25 - 17.08 (46)	0.005	0.432	0.000	0.009	0.000	0.437	1.000	4.8.2
L47	17.08 - 16.83 (47)	0.005	0.477	0.000	0.010	0.000	0.482	1.000	4.8.2
L48	16.83 - 13 (48)	0.005	0.483	0.000	0.010	0.000	0.489	1.000	4.8.2
L49	13 - 12.75 (49)	0.005	0.413	0.000	0.008	0.000	0.418	1.000	4.8.2
L50	12.75 - 11.92 (50)	0.005	0.413	0.000	0.008	0.000	0.418	1.000	4.8.2
L51	11.92 - 11.67 (51)	0.006	0.517	0.000	0.010	0.000	0.523	1.000	4.8.2
L52	11.67 - 6.67 (52)	0.006	0.532	0.000	0.011	0.000	0.538	1.000	4.8.2
L53	6.67 - 6.5 (53)	0.006	0.531	0.000	0.010	0.000	0.538	1.000	4.8.2
L54	6.5 - 6.25 (54)	0.006	0.463	0.000	0.009	0.000	0.469	1.000	4.8.2
L55	6.25 - 3.75 (55)	0.006	0.463	0.000	0.009	0.000	0.469	1.000	4.8.2
L56	3.75 - 3.5 (56)	0.005	0.420	0.000	0.008	0.000	0.425	1.000	4.8.2
L57	3.5 - 3 (57)	0.005	0.420	0.000	0.008	0.000	0.425	1.000	4.8.2
L58	3 - 2.75 (58)	0.005	0.451	0.000	0.009	0.000	0.456	1.000	4.8.2
L59	2.75 - 0 (59)	0.005	0.411	0.000	0.008	0.000	0.416	1.000	4.8.2

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)

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

(OTHER CONSIDERED EQUIPMENT)

- (14) 1-5/8" TO 109 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)

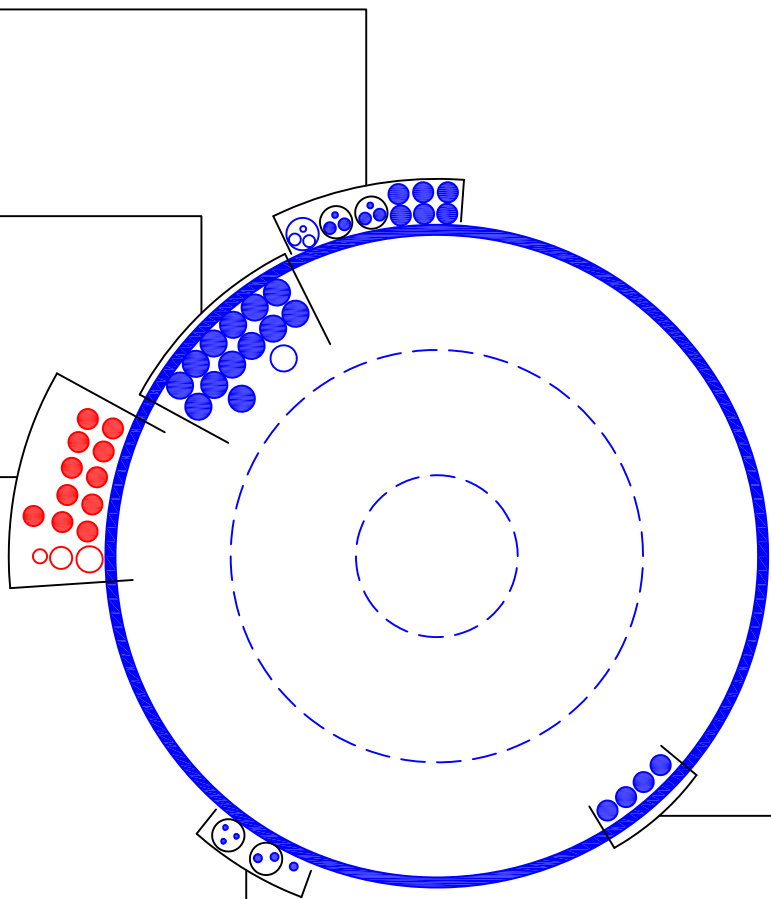
- (1) 7/8" TO 87 FT LEVEL
- (1) 1-3/8" TO 87 FT LEVEL
- (1) 1-5/8" TO 87 FT LEVEL
- (11) 1-1/4" TO 87 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)

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

(OTHER CONSIDERED EQUIPMENT)

- (4) 1-1/4" TO 97 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 806376
Work Order: 1637549



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Pole Geometry

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	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	130	20	0	12	10.525	15.525	0.1875	Auto	A572-65
2	110	40	4	12	15.53	25.531	0.25	Auto	A572-65
3	74	39.92	4.92	12	24.03	34.015	0.3125	Auto	A572-65
4	39	39	0	12	32.15	41.9	0.34375	Auto	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	17.08	44.58	plate	PL 0.75x4.00 (100ksi)	3	x			x					x			
2	44.58	67.08	plate	PL 0.75x4.00 (100ksi)	3				x				x				x
3	67.08	84.58	plate	PL 0.75x4.00 (100ksi)	3	x				x				x			
4	0	3.75	plate	S) 1.25x7.00 (65ksi) P	2								c				c
5	3	13	plate	CCI-AFP-060100	2	x								x			
6	0	13	plate	CCI-AFP-060100	1					x							
7	11.92	41.92	plate	CCI-AFP-060100	1			x									
8	11.92	26.92	plate	CCI-AFP-060100	2								x				x
9	18	53.5	plate	CCI-AFP-060100	2							x					x
10	41.92	62.5	plate	CCI-AFP-045100	1			x									
11	53.5	64.08	plate	CCI-AFP-045100	2							x					x
12	83	90	plate	CCI-SFP-045100	3			x				x					x
13	0	6.5	plate	CCI-WCFP-065125	1								1.5				
14	0	18	plate	CCI-WCFP-065125	3				x			x					x
15	0	17.5	plate	CCI-WCFP-060100	3		x				x						x
16	17.5	52.58	plate	CCI-CFP-060100	3		x				x						x
17	52.58	83.42	plate	CCI-CFP-045125	3		x				x						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 _y (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
2	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
3	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A514-GR100
4	1.25	6.25	7.8125	3.875	n/a	n/a	0.750	7.813	0.0000	A572-65
5	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
6	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
7	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
8	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
9	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
10	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
11	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
13	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
14	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
15	6	1	6	0.5	n/a	30.000	16.000	4.750	1.1875	A572-65
16	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
17	4.5	1.25	5.625	0.625	21.000	21.000	24.000	4.063	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	130 - 125	5		12	10.525	11.775	0.1875	A572-65	1.000
2	125 - 120	5		12	11.775	13.025	0.1875	A572-65	1.000
3	120 - 115	5		12	13.025	14.275	0.1875	A572-65	1.000
4	115 - 110	5	0	12	14.275	15.525	0.1875	A572-65	1.000
5	110 - 105	5		12	15.525	16.776	0.25	A572-65	1.000
6	105 - 100	5		12	16.776	18.027	0.25	A572-65	1.000
7	100 - 95	5		12	18.027	19.277	0.25	A572-65	1.000
8	95 - 90	5		12	19.277	20.528	0.25	A572-65	1.000
9	90 - 89.75	0.25		12	20.528	20.591	0.5	A572-65	0.924
10	89.75 - 84.75	5		12	20.591	21.841	0.48125	A572-65	0.934
11	84.75 - 84.58	0.17		12	21.841	21.884	0.475	A572-65	0.945
12	84.58 - 84.33	0.25		12	21.884	21.946	0.6375	A572-65	0.914
13	84.33 - 83.42	0.91		12	21.946	22.174	0.625	A572-65	0.927
14	83.42 - 83.17	0.25		12	22.174	22.237	0.95	A572-65	0.877
15	83.17 - 83	0.17		12	22.237	22.279	0.95	A572-65	0.876
16	83 - 82.75	0.25		12	22.279	22.342	0.7	A572-65	0.896
17	82.75 - 77.75	5		12	22.342	23.592	0.6625	A572-65	0.914
18	77.75 - 74	7.75	4	12	23.592	25.531	0.65	A572-65	0.909
19	74 - 69	5		12	24.025	25.276	0.7	A572-65	0.921
20	69 - 67.08	1.92		12	25.276	25.757	0.6875	A572-65	0.928
21	67.08 - 66.83	0.25		12	25.757	25.819	0.6875	A572-65	0.927
22	66.83 - 64.08	2.75		12	25.819	26.507	0.675	A572-65	0.931
23	64.08 - 63.83	0.25		12	26.507	26.570	0.7375	A572-65	1.000
24	63.83 - 62.5	1.33		12	26.570	26.903	0.7375	A572-65	0.993
25	62.5 - 62.25	0.25		12	26.903	26.965	0.8625	A572-65	0.914
26	62.25 - 57.25	5		12	26.965	28.217	0.8375	A572-65	0.914
27	57.25 - 53.5	3.75		12	28.217	29.155	0.8125	A572-65	0.923
28	53.5 - 53.25	0.25		12	29.155	29.218	0.8375	A572-65	0.935
29	53.25 - 52.58	0.67		12	29.218	29.385	0.825	A572-65	0.945
30	52.58 - 52.33	0.25		12	29.385	29.448	0.8375	A572-65	0.945
31	52.33 - 47.33	5		12	29.448	30.699	0.8125	A572-65	0.948
32	47.33 - 44.58	2.75		12	30.699	31.387	0.8	A572-65	0.950
33	44.58 - 44.33	0.25		12	31.387	31.450	0.8	A572-65	0.949
34	44.33 - 41.92	2.41		12	31.450	32.053	0.7875	A572-65	0.952
35	41.92 - 41.67	0.25		12	32.053	32.116	0.8125	A572-65	0.941
36	41.67 - 39	7.59	4.92	12	32.116	34.015	0.8125	A572-65	0.929
37	39 - 34	5		12	32.150	33.400	0.83125	A572-65	0.937
38	34 - 29	5		12	33.400	34.650	0.80625	A572-65	0.945
39	29 - 26.92	2.08		12	34.650	35.170	0.79375	A572-65	0.952
40	26.92 - 26.67	0.25		12	35.170	35.233	0.86875	A572-65	0.996
41	26.67 - 21.67	5		12	35.233	36.483	0.85625	A572-65	0.988
42	21.67 - 18	3.67		12	36.483	37.400	0.84375	A572-65	0.988
43	18 - 17.75	0.25		12	37.400	37.463	0.99375	A572-65	0.947
44	17.75 - 17.5	0.25		12	37.463	37.525	0.99375	A572-65	0.946
45	17.5 - 17.25	0.25		12	37.525	37.588	0.99375	A572-65	0.945
46	17.25 - 17.08	0.17		12	37.588	37.630	0.99375	A572-65	0.945
47	17.08 - 16.83	0.25		12	37.630	37.693	0.89375	A572-65	0.961
48	16.83 - 13	3.83		12	37.693	38.650	0.88125	A572-65	0.960
49	13 - 12.75	0.25		12	38.650	38.713	1.04375	A572-65	0.955
50	12.75 - 11.92	0.83		12	38.713	38.920	1.04375	A572-65	0.952
51	11.92 - 11.67	0.25		12	38.920	38.983	0.81875	A572-65	1.026
52	11.67 - 6.67	5		12	38.983	40.233	0.79375	A572-65	1.038
53	6.67 - 6.5	0.17		12	40.233	40.275	0.79375	A572-65	1.037
54	6.5 - 6.25	0.25		12	40.275	40.338	0.91875	A572-65	0.968
55	6.25 - 3.75	2.5		12	40.338	40.963	0.91875	A572-65	0.959
56	3.75 - 3.5	0.25		12	40.963	41.025	1.01875	A572-65	0.985
57	3.5 - 3	0.5		12	41.025	41.150	1.01875	A572-65	0.983
58	3 - 2.75	0.25		12	41.150	41.213	0.94375	A572-65	0.960
59	2.75 - 0	2.75		12	41.213	41.900	1.04375	A572-65	0.861

TNX Section Forces

Increment (ft):		TNX Output			
5					
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)	
1	130 - 125	0.11	0.67	0.27	
2	125 - 120	2.70	4.42	6.36	
3	120 - 115	2.89	37.50	6.90	
4	115 - 110	3.15	73.25	7.41	
5	110 - 105	5.84	142.46	13.93	
6	105 - 100	6.47	213.65	14.93	
7	100 - 95	10.63	304.20	21.36	
8	95 - 90	11.35	412.58	21.98	
9	90 - 89.75	11.38	418.08	22.02	
10	89.75 - 84.75	14.84	539.70	27.08	
11	84.75 - 84.58	14.90	544.31	27.10	
12	84.58 - 84.33	14.95	551.08	27.14	
13	84.33 - 83.42	15.16	575.84	27.29	
14	83.42 - 83.17	15.25	582.66	27.32	
15	83.17 - 83	15.30	587.31	27.35	
16	83 - 82.75	15.36	594.15	27.39	
17	82.75 - 77.75	16.63	732.95	28.16	
18	77.75 - 74	17.61	839.55	28.73	
19	74 - 69	19.74	985.30	29.59	
20	69 - 67.08	20.28	1042.37	29.90	
21	67.08 - 66.83	20.38	1049.84	29.92	
22	66.83 - 64.08	21.18	1132.66	30.36	
23	64.08 - 63.83	21.28	1140.25	30.39	
24	63.83 - 62.5	21.70	1180.79	30.61	
25	62.5 - 62.25	21.81	1188.44	30.64	
26	62.25 - 57.25	23.55	1343.65	31.48	
27	57.25 - 53.5	24.88	1462.76	32.10	
28	53.5 - 53.25	24.99	1470.79	32.13	
29	53.25 - 52.58	25.23	1492.34	32.24	
30	52.58 - 52.33	25.33	1500.40	32.28	
31	52.33 - 47.33	27.22	1663.76	33.11	
32	47.33 - 44.58	28.28	1755.35	33.56	
33	44.58 - 44.33	28.39	1763.74	33.58	
34	44.33 - 41.92	29.32	1845.11	33.99	
35	41.92 - 41.67	29.43	1853.61	34.02	
36	41.67 - 39	30.48	1944.96	34.45	
37	39 - 34	34.07	2119.39	35.36	
38	34 - 29	36.16	2298.02	36.14	
39	29 - 26.92	37.05	2373.38	36.38	
40	26.92 - 26.67	37.18	2382.47	36.39	
41	26.67 - 21.67	39.55	2565.81	36.99	
42	21.67 - 18	41.32	2702.20	37.40	
43	18 - 17.75	41.47	2711.54	37.41	
44	17.75 - 17.5	41.60	2720.89	37.44	
45	17.5 - 17.25	41.73	2730.25	37.47	
46	17.25 - 17.08	41.82	2736.62	37.49	
47	17.08 - 16.83	41.95	2745.99	37.52	
48	16.83 - 13	43.85	2890.40	37.94	
49	13 - 12.75	44.01	2899.88	37.95	
50	12.75 - 11.92	44.48	2931.41	38.06	
51	11.92 - 11.67	44.61	2940.92	38.08	
52	11.67 - 6.67	47.15	3132.54	38.62	
53	6.67 - 6.5	47.25	3139.10	38.62	
54	6.5 - 6.25	47.38	3148.75	38.65	
55	6.25 - 3.75	48.73	3245.69	38.95	
56	3.75 - 3.5	48.90	3255.43	38.96	
57	3.5 - 3	49.20	3274.91	39.02	
58	3 - 2.75	49.35	3284.67	39.05	
59	2.75 - 0	50.87	3392.45	39.39	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
130 - 125	Pole	TP11.775x10.525x0.1875	Pole	0.6%	Pass
125 - 120	Pole	TP13.025x11.775x0.1875	Pole	3.5%	Pass
120 - 115	Pole	TP14.275x13.025x0.1875	Pole	21.4%	Pass
115 - 110	Pole	TP15.525x14.275x0.1875	Pole	34.9%	Pass
110 - 105	Pole	TP16.776x15.525x0.25	Pole	44.0%	Pass
105 - 100	Pole	TP18.027x16.776x0.25	Pole	56.8%	Pass
100 - 95	Pole	TP19.277x18.027x0.25	Pole	70.7%	Pass
95 - 90	Pole	TP20.528x19.277x0.25	Pole	84.2%	Pass
90 - 89.75	Pole + Reinf.	TP20.591x20.528x0.5	Reinf. 12 Tension Rupture	75.8%	Pass
89.75 - 84.75	Pole + Reinf.	TP21.841x20.591x0.4813	Reinf. 12 Tension Rupture	89.4%	Pass
84.75 - 84.58	Pole + Reinf.	TP21.884x21.841x0.475	Reinf. 12 Tension Rupture	89.9%	Pass
84.58 - 84.33	Pole + Reinf.	TP21.946x21.884x0.6375	Reinf. 12 Tension Rupture	69.7%	Pass
84.33 - 83.42	Pole + Reinf.	TP22.174x21.946x0.625	Reinf. 12 Tension Rupture	71.7%	Pass
83.42 - 83.17	Pole + Reinf.	TP22.237x22.174x0.95	Reinf. 17 Tension Rupture	50.4%	Pass
83.17 - 83	Pole + Reinf.	TP22.279x22.237x0.95	Reinf. 17 Tension Rupture	50.7%	Pass
83 - 82.75	Pole + Reinf.	TP22.342x22.279x0.7	Reinf. 17 Tension Rupture	67.4%	Pass
82.75 - 77.75	Pole + Reinf.	TP23.592x22.342x0.6625	Reinf. 17 Tension Rupture	77.1%	Pass
77.75 - 74	Pole + Reinf.	TP25.531x23.592x0.65	Reinf. 17 Tension Rupture	83.6%	Pass
74 - 69	Pole + Reinf.	TP25.276x24.025x0.7	Reinf. 17 Tension Rupture	85.4%	Pass
69 - 67.08	Pole + Reinf.	TP25.757x25.276x0.6875	Reinf. 17 Tension Rupture	87.9%	Pass
67.08 - 66.83	Pole + Reinf.	TP25.819x25.757x0.6875	Reinf. 17 Tension Rupture	88.2%	Pass
66.83 - 64.08	Pole + Reinf.	TP26.507x25.819x0.675	Reinf. 17 Tension Rupture	91.5%	Pass
64.08 - 63.83	Pole + Reinf.	TP26.57x26.507x0.7375	Reinf. 17 Tension Rupture	87.8%	Pass
63.83 - 62.5	Pole + Reinf.	TP26.903x26.57x0.7375	Reinf. 17 Tension Rupture	89.3%	Pass
62.5 - 62.25	Pole + Reinf.	TP26.965x26.903x0.8625	Reinf. 17 Tension Rupture	73.9%	Pass
62.25 - 57.25	Pole + Reinf.	TP28.217x26.965x0.8375	Reinf. 17 Tension Rupture	78.4%	Pass
57.25 - 53.5	Pole + Reinf.	TP29.155x28.217x0.8125	Reinf. 17 Tension Rupture	81.6%	Pass
53.5 - 53.25	Pole + Reinf.	TP29.218x29.155x0.8375	Reinf. 10 Tension Rupture	80.9%	Pass
53.25 - 52.58	Pole + Reinf.	TP29.385x29.218x0.825	Reinf. 10 Tension Rupture	81.4%	Pass
52.58 - 52.33	Pole + Reinf.	TP29.448x29.385x0.8375	Reinf. 10 Tension Rupture	80.5%	Pass
52.33 - 47.33	Pole + Reinf.	TP30.699x29.448x0.8125	Reinf. 10 Tension Rupture	84.2%	Pass
47.33 - 44.58	Pole + Reinf.	TP31.387x30.699x0.8	Reinf. 10 Tension Rupture	86.1%	Pass
44.58 - 44.33	Pole + Reinf.	TP31.45x31.387x0.8	Reinf. 10 Tension Rupture	86.2%	Pass
44.33 - 41.92	Pole + Reinf.	TP32.053x31.45x0.7875	Reinf. 10 Tension Rupture	87.8%	Pass
41.92 - 41.67	Pole + Reinf.	TP32.116x32.053x0.8125	Reinf. 16 Tension Rupture	75.6%	Pass
41.67 - 39	Pole + Reinf.	TP34.015x32.116x0.8125	Reinf. 16 Tension Rupture	77.1%	Pass
39 - 34	Pole + Reinf.	TP33.4x32.15x0.8313	Reinf. 16 Tension Rupture	78.7%	Pass
34 - 29	Pole + Reinf.	TP34.65x33.4x0.8063	Reinf. 16 Tension Rupture	81.0%	Pass
29 - 26.92	Pole + Reinf.	TP35.17x34.65x0.7938	Reinf. 16 Tension Rupture	81.8%	Pass
26.92 - 26.67	Pole + Reinf.	TP35.233x35.17x0.8688	Reinf. 7 Tension Rupture	78.8%	Pass
26.67 - 21.67	Pole + Reinf.	TP36.483x35.233x0.8563	Reinf. 7 Tension Rupture	80.8%	Pass
21.67 - 18	Pole + Reinf.	TP37.4x36.483x0.8438	Reinf. 7 Tension Rupture	82.1%	Pass
18 - 17.75	Pole + Reinf.	TP37.463x37.4x0.9938	Reinf. 16 Tension Rupture	67.7%	Pass
17.75 - 17.5	Pole + Reinf.	TP37.525x37.463x0.9938	Reinf. 16 Tension Rupture	67.8%	Pass
17.5 - 17.25	Pole + Reinf.	TP37.588x37.525x0.9938	Reinf. 15 Tension Rupture	67.9%	Pass
17.25 - 17.08	Pole + Reinf.	TP37.63x37.588x0.9938	Reinf. 15 Tension Rupture	67.9%	Pass
17.08 - 16.83	Pole + Reinf.	TP37.693x37.63x0.8938	Reinf. 15 Tension Rupture	74.2%	Pass
16.83 - 13	Pole + Reinf.	TP38.65x37.693x0.8813	Reinf. 15 Tension Rupture	75.4%	Pass
13 - 12.75	Pole + Reinf.	TP38.713x38.65x1.0438	Reinf. 15 Tension Rupture	63.8%	Pass
12.75 - 11.92	Pole + Reinf.	TP38.92x38.713x1.0438	Reinf. 15 Tension Rupture	64.0%	Pass
11.92 - 11.67	Pole + Reinf.	TP38.983x38.92x0.8188	Reinf. 15 Tension Rupture	82.4%	Pass
11.67 - 6.67	Pole + Reinf.	TP40.233x38.983x0.7938	Reinf. 15 Tension Rupture	83.9%	Pass
6.67 - 6.5	Pole + Reinf.	TP40.275x40.233x0.7938	Reinf. 15 Tension Rupture	83.9%	Pass
6.5 - 6.25	Pole + Reinf.	TP40.338x40.275x0.9188	Reinf. 15 Tension Rupture	78.0%	Pass
6.25 - 3.75	Pole + Reinf.	TP40.963x40.338x0.9188	Reinf. 15 Tension Rupture	78.6%	Pass
3.75 - 3.5	Pole + Reinf.	TP41.025x40.963x1.0188	Reinf. 14 Tension Rupture	69.4%	Pass
3.5 - 3	Pole + Reinf.	TP41.15x41.025x1.0188	Reinf. 14 Tension Rupture	69.5%	Pass
3 - 2.75	Pole + Reinf.	TP41.213x41.15x0.9438	Reinf. 14 Tension Rupture	72.4%	Pass
2.75 - 0	Pole + Reinf.	TP41.9x41.213x1.0438	Reinf. 4 Weldment	87.4%	Pass
				Summary	
			Pole	84.2%	Pass
			Reinforcement	91.5%	Pass
			Overall	91.5%	Pass

Monopole Flange Plate Connection

Elevation = 110 ft.

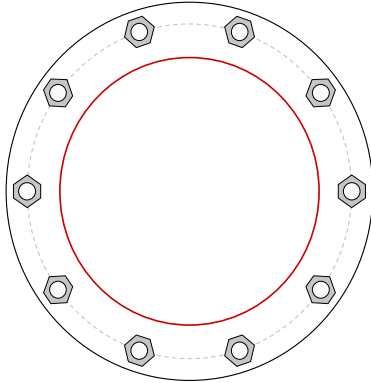


BU #	806376
Site Name	HRT 100 943239
Order #	446236 Rev. 0

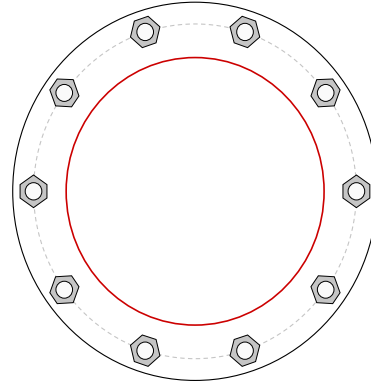
Applied Loads	
Moment (kip-ft)	73.25
Axial Force (kips)	3.15
Shear Force (kips)	7.41

TIA-222 Revision	G
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Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(10) 1" \emptyset bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19.45" BC

Top Plate Data

21.95" OD x 1.375" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Bottom Plate Data

21.95" OD x 1.375" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

15.525" x 0.1875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

15.525" x 0.25" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	17.74
Allowable (kips)	54.53
Stress Rating:	32.5% Pass

Top Plate Capacity

Max Stress (ksi):	9.39	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	17.4%	Pass
Tension Side Stress Rating:	9.3%	Pass

Bottom Plate Capacity

Max Stress (ksi):	9.39	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	17.4%	Pass
Tension Side Stress Rating:	9.3%	Pass

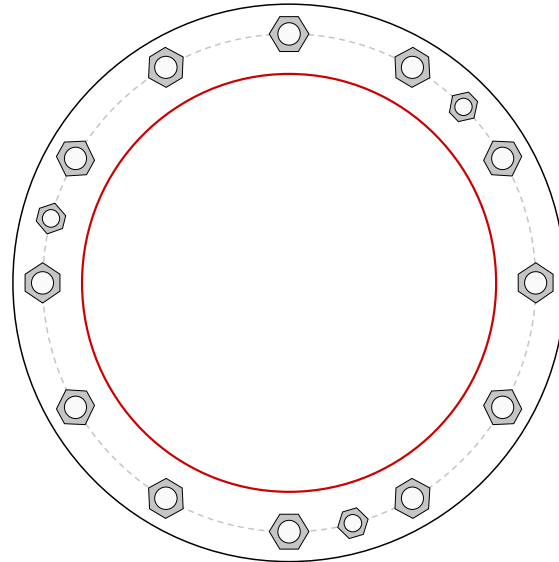
Monopole Base Plate Connection



Site Info	
BU #	806376
Site Name	HRT 100 943239
Order #	446236 Rev. 0

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	Yes
I_{ar} (in)	3.25
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	3392.45
Axial Force (kips)	50.87
Shear Force (kips)	39.39



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
GROUP 1: (12) 2-1/4" \emptyset bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 49.88" BC		GROUP 1:	
GROUP 2: (3) 1-3/4" \emptyset bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 49.88" BC		$Pu_c = 241.41$	$\phi Pn_t = 260$
Base Plate Data		$Vu = 3.28$	$\phi Vn = n/a$
55.88" OD x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)		$Mu = n/a$	$\phi Mn = n/a$
Stiffener Data		Stress Rating	
N/A		95.4%	
Pole Data		Pass	
41.9" x 0.34375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)		GROUP 2:	
		$Pu_c = 138.65$	$\phi Pn_t = 190$
		$Vu = 0$	$\phi Vn = n/a$
		$Mu = n/a$	$\phi Mn = n/a$
		Stress Rating	
		73.0%	
		Pass	
		Base Plate Summary	
		Max Stress (ksi):	47.74 (Flexural)
		Allowable Stress (ksi):	54
		Stress Rating:	88.4%
			Pass

Pier and Pad Foundation



BU #: 806376
Site Name: HRT 100 943239
App. Number: 446236 Rev. 0

TIA-222 Revision: G
Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp}:	51	kips
Base Shear, V_{u_comp}:	39	kips
Moment, M_u:	3392	ft-kips
Tower Height, H:	130	ft
BP Dist. Above Fdn, bp_{dist}:	5.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	288.37	39.00	13.5%	Pass
<i>Bearing Pressure (ksf)</i>	7.50	3.11	41.4%	Pass
<i>Overturning (kip*ft)</i>	5487.80	3741.38	68.2%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	5767.57	3606.50	62.5%	Pass
<i>Pier Compression (kip)</i>	13497.04	78.99	0.6%	Pass
<i>Pad Flexure (kip*ft)</i>	2927.56	1634.33	55.8%	Pass
<i>Pad Shear - 1-way (kips)</i>	674.44	274.29	40.7%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.045	27.3%	Pass

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, dpier:	6	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:	68.2%
Structural Rating:	62.5%

Pad Properties		
Depth, D:	8	ft
Pad Width, W:	22	ft
Pad Thickness, T:	3	ft
Pad Rebar Size, Sp:	10	
Pad Rebar Quantity, mp:	17	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	115	pcf
Ultimate Gross Bearing, Qult:	10.000	ksf
Cohesion, Cu:	0.000	ksf
Friction Angle, φ:	33	degrees
SPT Blow Count, N_{blows}:	33	
Base Friction, μ:		
Neglected Depth, N:	3.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw:	15	ft

<--Toggle between Gross and Net

APPENDIX D
STRUCTURAL DESIGN DRAWINGS

STRUCTURAL DESIGN DRAWINGS

SITE NAME:

HRT 100 943239

CROWN CASTLE BU NUMBER:

806376

SITE ADDRESS:

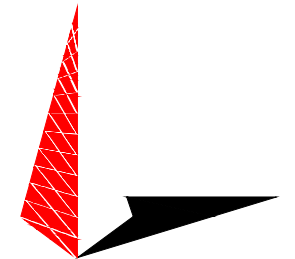
**1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)
N 41° 43' 53.30", W 72° 36' 28.00"**

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



Electronic Copy

October 1, 2018

MODIFICATION PROVISIONS

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL MODIFICATION ANALYSIS REPORT COMPLETED BY TEP, JOB NO.: 25677.185485 DATED OCTOBER 1, 2018 (REV 0).

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800-788-7011.

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM TEP TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, CONTACT TEP FOR QUOTE AT RIGGING@TEPGROUP.NET

INDEX OF SHEETS

NO.	SHEET TITLE	REV
T-1	TITLE SHEET	0
N-1	MI CHECKLIST AND NOTES	0
N-2	PROJECT NOTES I	0
N-3	PROJECT NOTES II	0
N-4	NEXGEN2 INSTALLATION DETAILS	0
N-5	AJAX ONESIDE INSTALLATION DETAILS	0
N-6	FORGBOLT INSTALLATION DETAILS	0
S-1	TOWER ELEVATION AND MODIFICATION SCHEDULE	0
S-2	BASE SECTION DETAILS	0
S-3	MONOPOLE REINFORCEMENT DETAILS	0
S-4	SHAFT REINFORCEMENT DETAILS	0
S-5	TYP. SHAFT REINFORCEMENT DETAILS I	0
S-6	TYP. SHAFT REINFORCEMENT DETAILS II	0
S-7	ANCHOR BOLT REINFORCEMENT DETAILS	0

PROJECT INFORMATION

TOWER HEIGHT: 130-FT
TOWER MANUFACTURER: VALMONT
CCI DOCUMENT: 645113

WORK ORDER NO.: 1637549
ORDER NO.: 446236 REV. 0

DESIGN BUILDING CODE: 2016 CONNECTICUT STATE BUILDING CODE
DESIGN STANDARD: ANSI/TIA-222-G-2-2009

PROJECT TEAM

CCI MODIFICATION PROJECT MANAGER:

NAME: CROWN CASTLE
CONTACT: DAN VADNEY
PHONE: (518) 373-3510
EMAIL: DAN.VADNEY@CROWNCastle.COM

CCI MODIFICATION CONSTRUCTION MANAGER:

NAME: CROWN CASTLE
CONTACT: JASON D'AMICO
PHONE: (860) 209-0104
EMAIL: JASON.DAMICO@CROWNCastle.COM

ENGINEERING FIRM PROJECT MANAGER:

NAME: TOWER ENGINEERING PROFESSIONALS, INC.
CONTACT: JARRED WALLACE, P.E.
PHONE: (919) 661-6351
EMAIL: CMRP@TEPGROUP.NET

SAFETY CLIMB: 'LOOK UP'



THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER REINFORCEMENTS AND EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS.

REV	DATE	ISSUED FOR:
0	10-01-18	MODIFICATION DRAWINGS

DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:	REVISION:
T-1	0
TEP#: 25677.185485	

MI CHECKLIST			
REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE-CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
CONSTRUCTION			
NA	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
X	POST INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 ENG-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DOCUMENTS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
POST-CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
X	POST INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT INSTALLATION AND VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF. AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (CROWN POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION / ERECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - FOUNDATION MODIFICATIONS
 - WELD PREPARATION
 - BOLT INSTALLATION
 - FINAL INSTALLED CONDITION
 - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
 - FINAL INFELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGTON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

HRT 100 943239
BU #: 806376


1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



Electronic Copy
October 1, 2018

0	10-01-18	MODIFICATION DRAWINGS
REV	DATE	ISSUED FOR:

DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE:

MI CHECKLIST AND NOTES

SHEET NUMBER: **N-1** REVISION: **0**

TEP#: 25677.185485

GENERAL NOTES:

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED CROWN CASTLE OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DESIGN DRAWINGS MUST BE COMPLETED BY THE GENERAL CONTRACTOR (GC) UNLESS NOTED OTHERWISE. THE GC MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE GC IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.
3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 2016 CONNECTICUT STATE BUILDING CODE.
4. UNLESS SHOWN OR NOTED OTHERWISE ON THE DESIGN DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
6. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE DESIGN DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD (EOR) PRIOR TO INSTALLATION. THE GC SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
7. THE GC SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE GC IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
8. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE GC SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
9. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE GC. THE GC WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
10. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY TO LOCAL CODES AND THE ACI 318-11, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
11. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE GC MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.
12. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
13. ALL DIMENSIONS SHALL BE VERIFIED WITH THE DESIGN DRAWINGS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE EOR IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED DESIGN DRAWINGS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.
14. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER AND EOR. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE EOR. IF THE GC FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GC SHALL CONTACT THE OWNER AND EOR TO DETERMINE A METHOD OF RESOLUTION.
15. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.
16. IF DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

ATTENTION

ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GC RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION), FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

BASE PLATE GROUT REMOVAL NOTES:

1. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
2. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
3. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 7.2.3 OF ENG-STD-10323 "BASE PLATE GROUT". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG-BUL-10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
4. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG-BUL-10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 7.2.3 OF ENG-STD-10323 "BASE PLATE GROUT".
5. CONSISTENT WITH SECTION 7.2.4 OF ENG-STD-10323 "BASE PLATE GROUT", HAND TOOL CLEAN TO SSPC-SP2 AND SOLVENT CLEAN TO SSPC-SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
6. APPLY BY BRUSH TWO COATS OF A CROWN-APPROVED COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN-APPROVED DIRECT APPLICATION COLD-GALVANIZING COMPOUNDS CAN BE FOUND IN ENG-STD-10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.
7. THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD-GALVANIZATION, AND ALSO AGAIN AFTER COLD-GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

HRT 100 943239
BU #: 806376


1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
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0	10-01-18	MODIFICATION DRAWINGS
REV	DATE	ISSUED FOR:

DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE:

PROJECT NOTES I

SHEET NUMBER: **N-2** REVISION: **0**

TEP#: 25677.185485

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC STEEL CONSTRUCTION MANUAL, LOAD AND RESISTANCE FACTOR DESIGN (LRFD), 14TH EDITION.
2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: STRUCTURAL STEEL:
 - ANGLE: ASTM A36
 - PIPE/TUBE: ASTM A500-46
 - PLATE: ASTM A36 (SELF SUPPORTING AND GUYED TOWERS)
 - PLATE: ASTM A572-65 (MONOPOLE)
 - A. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
 - B. ALL U-BOLTS, ASTM A193 GRADE B7
 - C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
 - D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, LRFD, 14TH EDITION.
4. HOLES SHALL NOT BE FLAME CUT THROUGH STEEL UNLESS APPROVED BY THE ENGINEER.
5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE. ADDITIONALLY, ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL. AFTER REPAIR, STEEL SHALL BE REPAINTED TO MATCH EXISTING FINISH (IF APPLICABLE).
7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
10. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2010 "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS. A LETTER AND REPORT SHALL BE ISSUED TO THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LETTER AND REPORT TO TOWER ENGINEERING PROFESSIONALS.
4. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.
5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0 DEGREES (FAHRENHEIT). THE MINIMUM PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SHALL COMPLY WITH SECTION 3.5.1 AND TABLE 3.2 OF THE AWS D1.1/D1.1M:2010.
6. DO NOT WELD ON WET OR FROST-COVERED SURFACES AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
7. FOR ALL WELDING, USE 80 KSI LOW HYDROGEN ELECTRODES. ELECTRODES SHALL BE APPROPRIATE FOR THE WELDING POSITION REQUIRED TO MAKE THE JOINT.
8. AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH. THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95% +/- PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.
9. PROVIDE WELDS ALL AROUND OR ADD SEAL WELDS WHERE STRUCTURAL WELDS ARE NOT SPECIFIED.

BOLT TIGHTENING PROCEDURE:

1. UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. ALL SNUG TIGHT BOLTS SHALL BE INSTALLED WITH A NUT-LOCKING DEVICE OR MECHANISM SUCH AS, BUT NOT LIMITED TO, LOCK NUTS, LOCK WASHERS, OR PALNUTS, TO PREVENT LOOSENING.
2. WHEN SPECIFIED IN THE DRAWINGS, CONNECTION BOLTS SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

8.2.1 TURN-OF-THE-NUT TIGHTENING

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED BELOW. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS.

3. PRE-TENSIONED BOLTS AS SPECIFIED ON THE DRAWINGS SHALL BE TIGHTENED IN ACCORDANCE WITH AISC - "TURN OF THE NUT" METHOD, USING THE CHART BELOW.

BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIA. BUT NOT EXCEEDING EIGHT DIA.

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

4. ALL ONE-SIDED BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

FIELD NDE MINIMUM REQUIREMENTS:

1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
2. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY ULTRASONIC TESTING (UT). ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MAGNETIC PARTICLE TESTING (MT).
3. FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY ULTRASONIC TESTING (UT). ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MAGNETIC PARTICLE TESTING (MT), BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
4. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: TOWER BASE PLATE NDE, AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASEPLATES TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

PLANS PREPARED FOR:

CROWN CASTLE

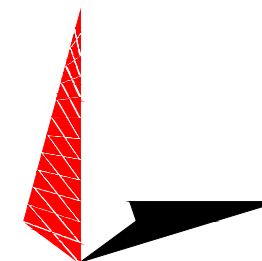
3530 TORINGTON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**HRT 100 943239
BU #: 806376**

1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS

326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



October 1, 2018

0	10-01-18	MODIFICATION DRAWINGS
REV	DATE	ISSUED FOR:

DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:

PROJECT NOTES II

SHEET NUMBER: N-3	REVISION: 0
TEP#: 25677.185485	

NOTES:

1. ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1 3/16".
2. THE NEXGEN2™ SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.
3. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
4. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. ADJACENT SHIM PLATE THICKNESSES MAY TAPER IN INCREMENTS OF 1/16" AND SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE. TIGHTENING THE BOLTS TO COLD BEND THE STEEL PLATES AROUND THE SHIMS IS STRICTLY PROHIBITED IN LIEU OF SHIMS AND WILL BE CAUSE FOR REJECTION.

INSPECTION NOTES AND PROCEDURES:

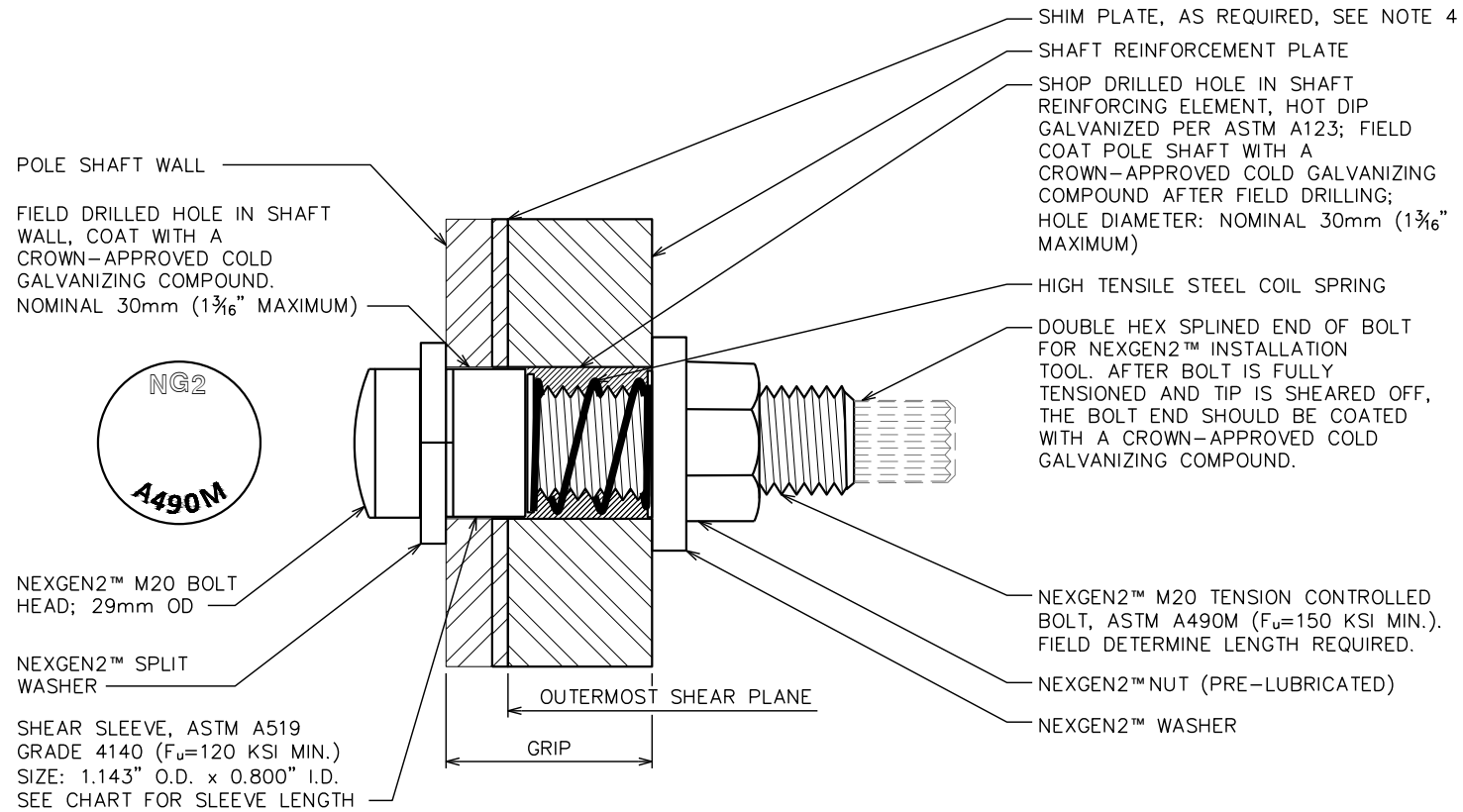
1. REVIEW STRUCTURAL DESIGN DRAWINGS.
2. VISUALLY INSPECT SHEARED BOLT ENDS TO ENSURE CORRECT TENSION WAS ACHIEVED.
3. VERIFY BOLT ENDS ARE SUFFICIENTLY COATED WITH A CROWN-APPROVED COLD GALVANIZING COMPOUND.

MANUFACTURER CONTACT:

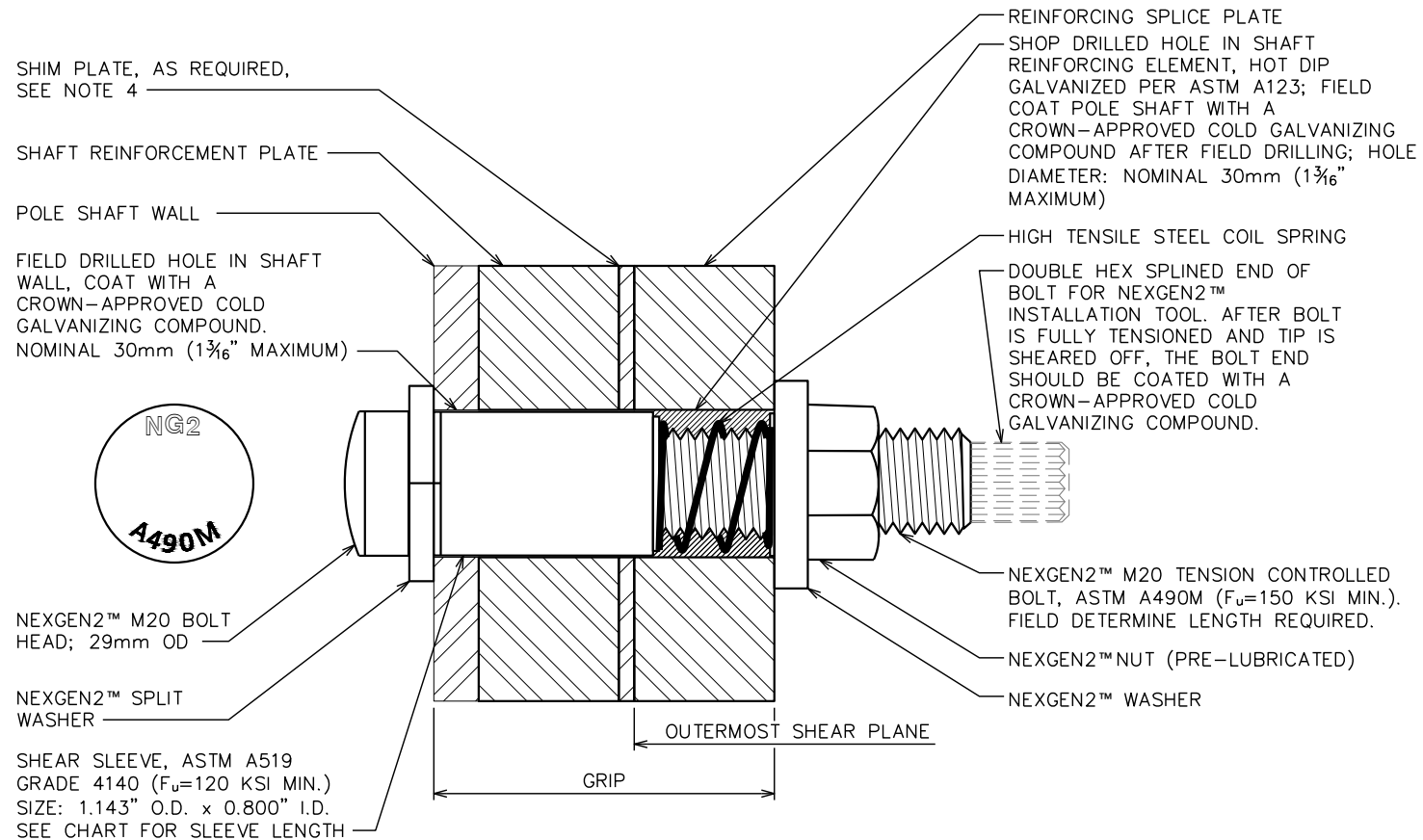
ALLFASTENERS
 -959 LAKE ROAD, MEDINA, OHIO, USA 44256
 -PHONE: 440-232-6060 | FAX: 440-232-6062
 -WEBSITE: WWW.ALLFASTENERS.COM | WWW.AFTOWER.COM

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT



NEXGEN2 BOLT DETAILS



NEXGEN2 BOLT DETAILS

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN. GRIP RANGE	MAX. GRIP RANGE
2NG2036	M20x95	1 1/16"	1 5/16"	1 7/16"
2NG2048	M20x95	1 3/16"	1 7/16"	1 7/8"
2NG2057	M20x95	1 5/8"	1 7/8"	2 1/4"
2NG2068	M20x135	2"	2 1/4"	2 11/16"
2NG2096	M20x135	2 7/16"	2 11/16"	3 3/4"
2NG2127	M20x175	3"	3 3/4"	5"
2NG2212	M20x250	4"	5"	8 5/16"

PLANS PREPARED FOR:

CROWN CASTLE

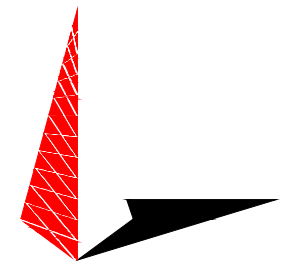
3530 TORINGDON WAY, SUITE 300
 CHARLOTTE, NC 28277

PROJECT INFORMATION:

**HRT 100 943239
 BU #: 806376**

1455 FORBES STREET
 EAST HARTFORD, CT 06118
 (HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS

326 TRYON ROAD
 RALEIGH, NC 27603
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SEAL:



Electronic Copy October 1, 2018

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REV	DATE	ISSUED FOR:

DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE:
**NEXGEN2
 INSTALLATION
 DETAILS**

SHEET NUMBER: **N-4** REVISION: **0**
 TEP#: 25677.185485

NOTES:

1. ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1 3/16".
2. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
3. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. ADJACENT SHIM PLATE THICKNESSES MAY TAPER IN INCREMENTS OF 1/16" AND SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE. TIGHTENING THE BOLTS TO COLD BEND THE STEEL PLATES AROUND THE SHIMS IS STRICTLY PROHIBITED IN LIEU OF SHIMS AND WILL BE CAUSE FOR REJECTION.

BOLT ASSEMBLY AND INSTALLATION:

1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

INSPECTION:

1. A MINIMUM OF 4 OUT OF 5 SQUIRTER@DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT CED-SOW-10007: MODIFICATION INSPECTION SOW.

MANUFACTURER CONTACT:

AJAX FASTENERS
-SALES+TECH: ONESIDE@AJAXFAST.COM.AU

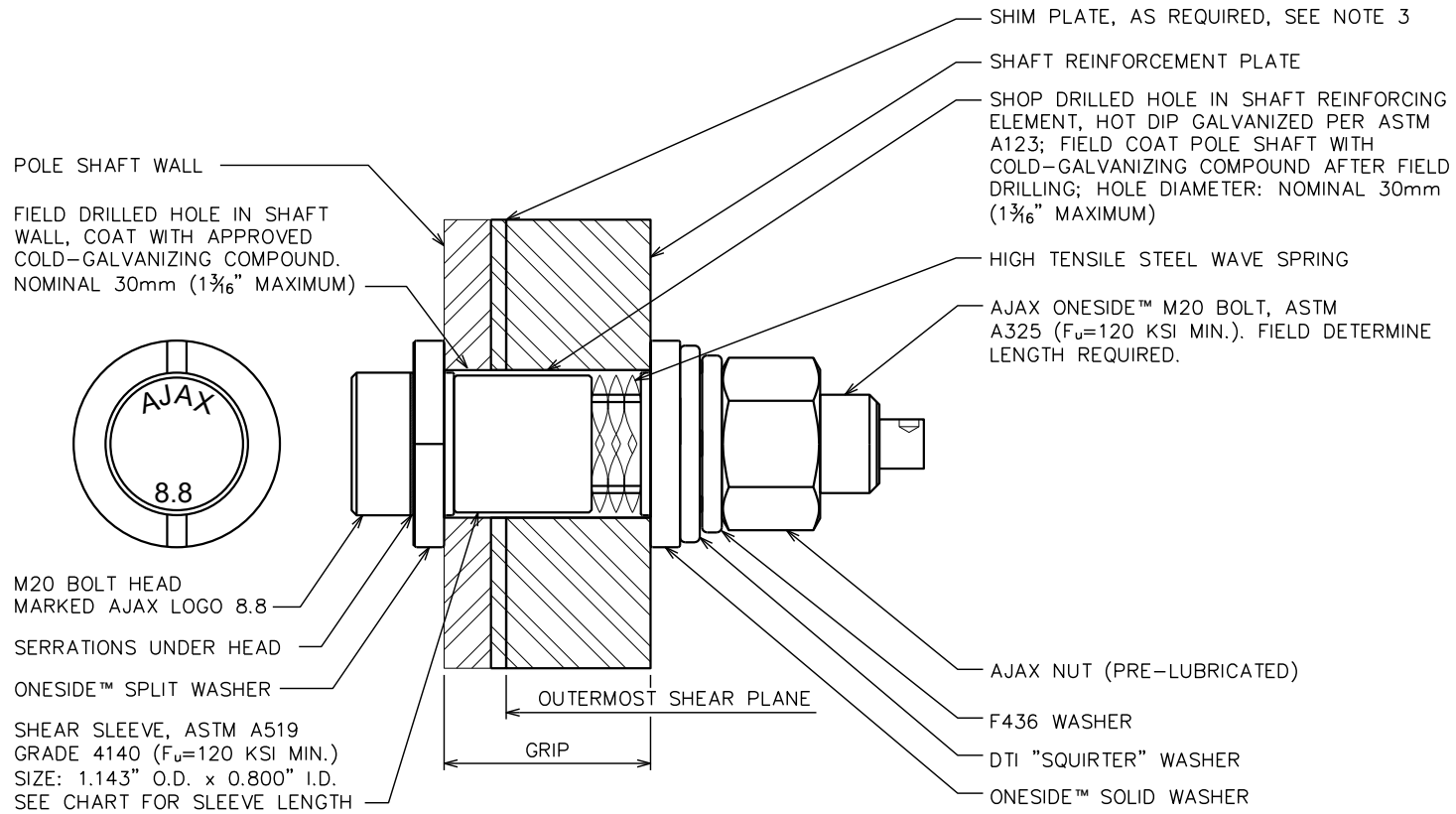
DISTRIBUTOR CONTACT:

IRA SVENSGAARD AND ASSOCIATES
-PETER SVENSGAARD: PETERS@RASVENS.COM
-JOHN KILLAM: JOHN@RASVENS.COM
-PHONE: 530-647-8225
-FAX: 530-647-8229

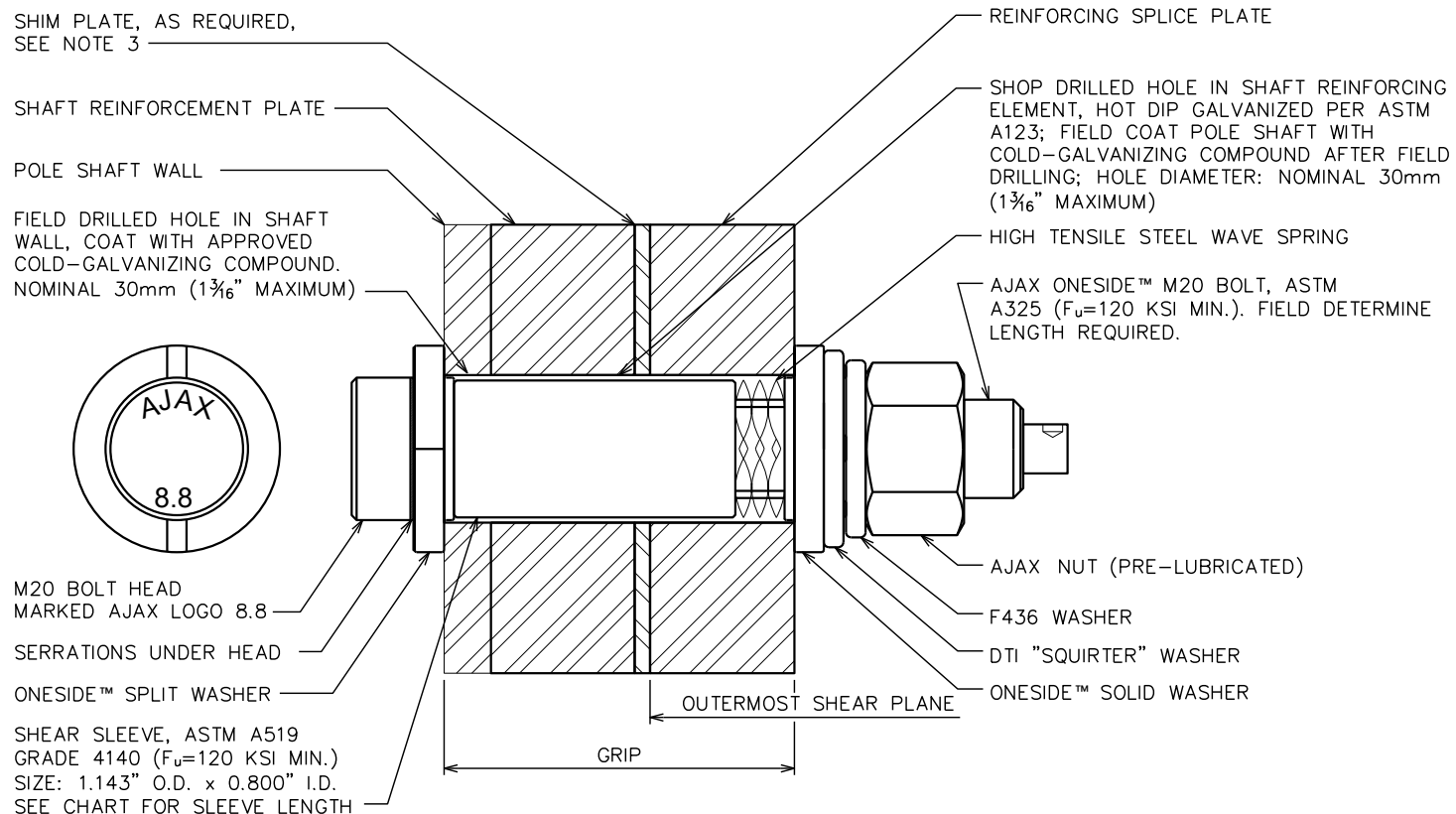
CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20x65	ORANGE	6.0 (0.236")	12.5/20.0	0.500"/0.787"
OSBA20.95-14	M20x95	BLACK	14.0 (0.551")	20.0/32.0	0.787"/1.259"
OSBA20.95-22	M20x95	GREEN	22.0 (0.866")	30.0/50.0	1.181"/1.968"
OSBA20.95-30	M20x95	YELLOW	30.0 (1.181")	40.5/50.0	1.595"/1.968"
OSBA20.135-39	M20x135	BLUE	39.0 (1.535")	49.0/77.0	1.929"/3.031"
OSBA20.135-48	M20x135	BROWN	48.0 (1.889")	60.5/77.0	2.375"/3.031"
OSBA20.135-57	M20x135	PURPLE	57.0 (2.244")	67.0/90.0	2.637"/3.543"
OSBA20.165-76	M20x165	RED	76.0 (3.000")	87.0/120.0	3.425"/4.724"
OSBA20.250	M20x250	SILVER	MTO	121.0/211.0	4.724"/8.310"

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT



AJAX ONESIDE BOLT DETAILS



AJAX ONESIDE BOLT DETAILS

PLANS PREPARED FOR:

CROWN CASTLE

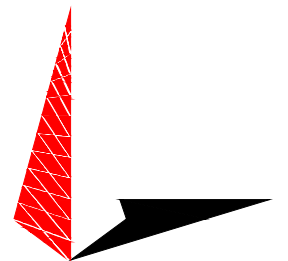
3530 TORINGDON WAY, SUITE 300
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PROJECT INFORMATION:

**HRT 100 943239
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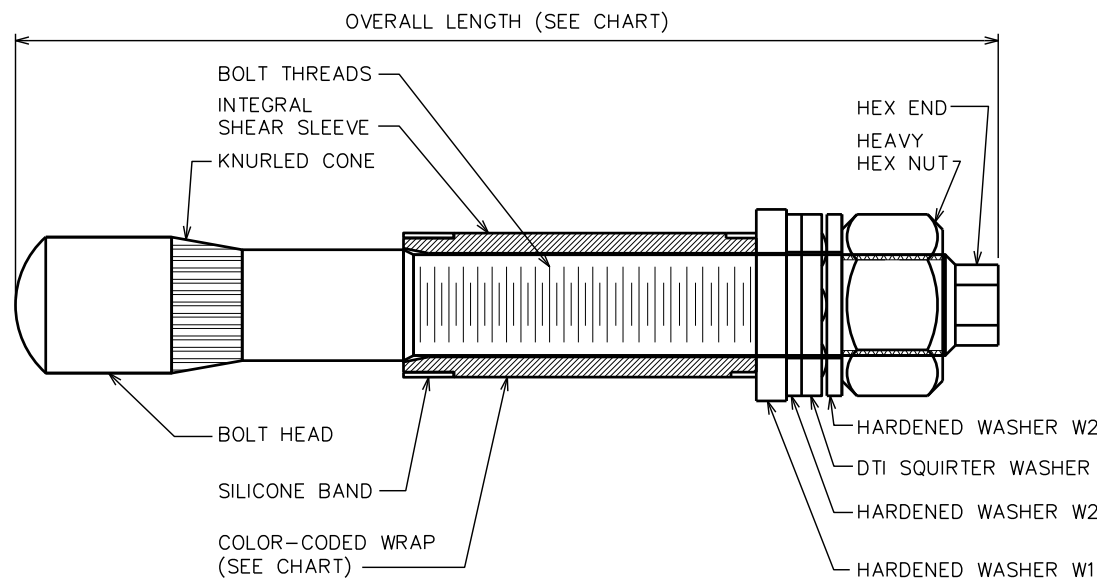
DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:
**AJAX ONESIDE
INSTALLATION
DETAILS**

SHEET NUMBER: **N-5** | REVISION: **0**
TEP#: 25677.185485

NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE RCSC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DECEMBER 31, 2009.
2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE RCSC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DECEMBER 31, 2009.



PRE-INSTALLED FORGBOLT ASSEMBLY DETAIL

INTERIOR OF POLE SHAFT

POLE SHAFT WALL
FIELD DRILLED HOLE IN SHAFT WALL, NOMINAL 30mm

BOLT HEAD
SHEAR SLEEVE FLARED END

EXTERIOR OF POLE SHAFT

SHIM PLATE (AS NECESSARY)
SHAFT REINFORCING PLATE
SHOP DRILL HOLE IN SHAFT REINFORCING ELEMENT, NOMINAL 30mm (1 3/16" MAXIMUM)

HEX END
HEAVY HEX NUT
BOLT THREADS
HARDENED WASHER W2
DTI SQUIRTER WASHER
HARDENED WASHER W2
HARDENED WASHER W1
INTEGRAL SHEAR SLEEVE

INSTALLED FORGBOLT ASSEMBLY DETAIL

BOLT HOLE NOTES

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER IS 1 3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER IS 30mm.

PRECISION TOWER PRODUCTS:
-PHONE: 888-926-4857
-EMAIL: INFO@PRECISIONTOWERPRODUCTS.COM
-WEB: WWW.PRECISIONTOWERPRODUCTS.COM

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

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FORGBOLT™

**AISC GROUP A MATERIAL: ASTM A325 AND PC8.8
(TENSILE STRESS, Fu = 120 ksi MINIMUM)**

GROUP A	FORGBOLT™ SIZE (mm)	OVERALL LENGTH (IN)	ESTIMATED WEIGHT EACH (LBS)	GRIP RANGE (IN)	COMMENT	COLOR CODE
FORGBOLT™ A325-PC8.8	135	5.31	1.3	3/8" TO 1"	-	RED
	160	6.30	1.6	3/4" TO 1 1/2"	-	GREEN
	195	7.68	1.9	1 1/4" TO 2 1/4"	-	BLUE
	260	10.24	2.6	2" TO 3 1/2"	SPLICE BOLT	YELLOW
	365	14.37	3.6	3 1/2" TO 5 1/2"	FLANGE JUMP BOLT	ORANGE
	440	17.32	4.3	5 1/2" TO 8 1/2"	FLANGE JUMP BOLT	BLACK

DTI NOTE EACH GROUP A (A325/PC8.8) FORGBOLT™ ASSEMBLY SHALL HAVE A 'SQUIRTER' DTI THAT IS COMPATIBLE WITH A M20-PC8.8 BOLT.

FORGBOLT™ INSTALLATION

FOLLOW ALL MANUFACTURER/DISTRIBUTER RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION.

1. FIELD DRILL HOLES 30mm DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING.

PLANS PREPARED FOR:

CROWN CASTLE

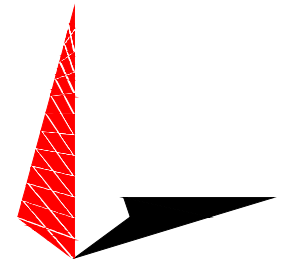
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**HRT 100 943239
BU #: 806376**

1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS

326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



0	10-01-18	MODIFICATION DRAWINGS
REV	DATE	ISSUED FOR:

DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:
**FORGBOLT
INSTALLATION
DETAILS**

SHEET NUMBER: **N-6** | REVISION: **0**
TEP#: 25677.185485

POLE SPECIFICATIONS									
SHAFT SECTION	SECTION LENGTH (FT.)	LAP SPLICE (FT.)	POLE SHAPE	OUTER DIAMETER (IN.)		SHAFT THICKNESS (IN.)	POLE GRADE	FLANGE/ BASE PLATE GRADE	BOLT GRADE
				TOP	BOTTOM				
1	20.00	-	12-SIDED	10.525	15.525	0.1875	ASTM A572-65	ASTM A572-60	ASTM A325
2	40.00	4.00	12-SIDED	15.525	25.531	0.2500	ASTM A572-65	-	-
3	39.92	4.92	12-SIDED	24.025	34.015	0.3125	ASTM A572-65	-	-
4	39.00	-	12-SIDED	32.150	41.900	0.3438	ASTM A572-65	ASTM A633-60	ASTM A615-75

MODIFICATION SCHEDULE			
NO.	MODIFICATION DESCRIPTION	ELEVATION (FT.)	SHEET
1	REMOVE EXISTING MONOPOLE SHAFT REINFORCEMENT AND TRANSITION STIFFENERS. (SEE CCI DOC ID #3249954)	0.00 - 60.50 72.00 - 82.00	S-2 AND S-3 S-2 THROUGH S-6
2	INSTALL PROPOSED MONOPOLE SHAFT REINFORCEMENT.	0.00 - 85.17	S-2 AND S-7
3	INSTALL PROPOSED ANCHOR BOLT REINFORCEMENT.	0.00	N-2
4	REMOVE EXISTING BASE PLATE GROUT. SEE BASE PLATE GROUT REMOVAL NOTES FOR DETAILS.	0.00	-
5	REINSTALL NEW BASE PLATE GROUT, AFTER ALL BASE PLATE WORK AND WELDING, PER ENG-STD-10323	-	-
6	REMOVE AND REPLACE STEP PEGS AS NECESSARY TO ACCOMMODATE PROPOSED REINFORCEMENT.	-	-
7	INSTALL ADDITIONAL SIGNAGE TO INDICATE POTENTIALLY OBSTRUCTED CLIMBING FACILITIES. CONTRACTOR TO ENSURE THAT THE FINAL CONFIGURATION IS IN ACCORDANCE WITH TIA-222-G, SECTION 12.	-	-
8	CROWN CASTLE WILL CONTRACT WITH A THIRD PARTY VENDOR TO PERFORM THE MODIFICATION INSPECTION. THE CONTRACTOR SHALL COORDINATE THE INSPECTION WITH THE MODIFICATION INSPECTOR AND CROWN CASTLE PROJECT MANAGER. SEE SHEET N-1 FOR DETAILS.	-	-

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

HRT 100 943239
BU #: 806376

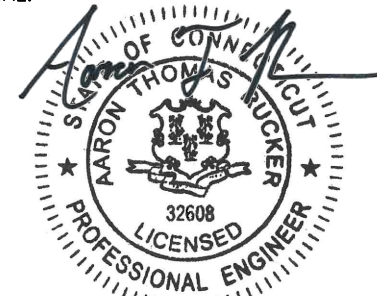
1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



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SEAL:



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October 1, 2018

REV	DATE	ISSUED FOR:
0	10-01-18	MODIFICATION DRAWINGS

DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:

TOWER ELEVATION AND MODIFICATION SCHEDULE

SHEET NUMBER: **S-1** | REVISION: **0**

TEP#: 25677.185485

NOTES:

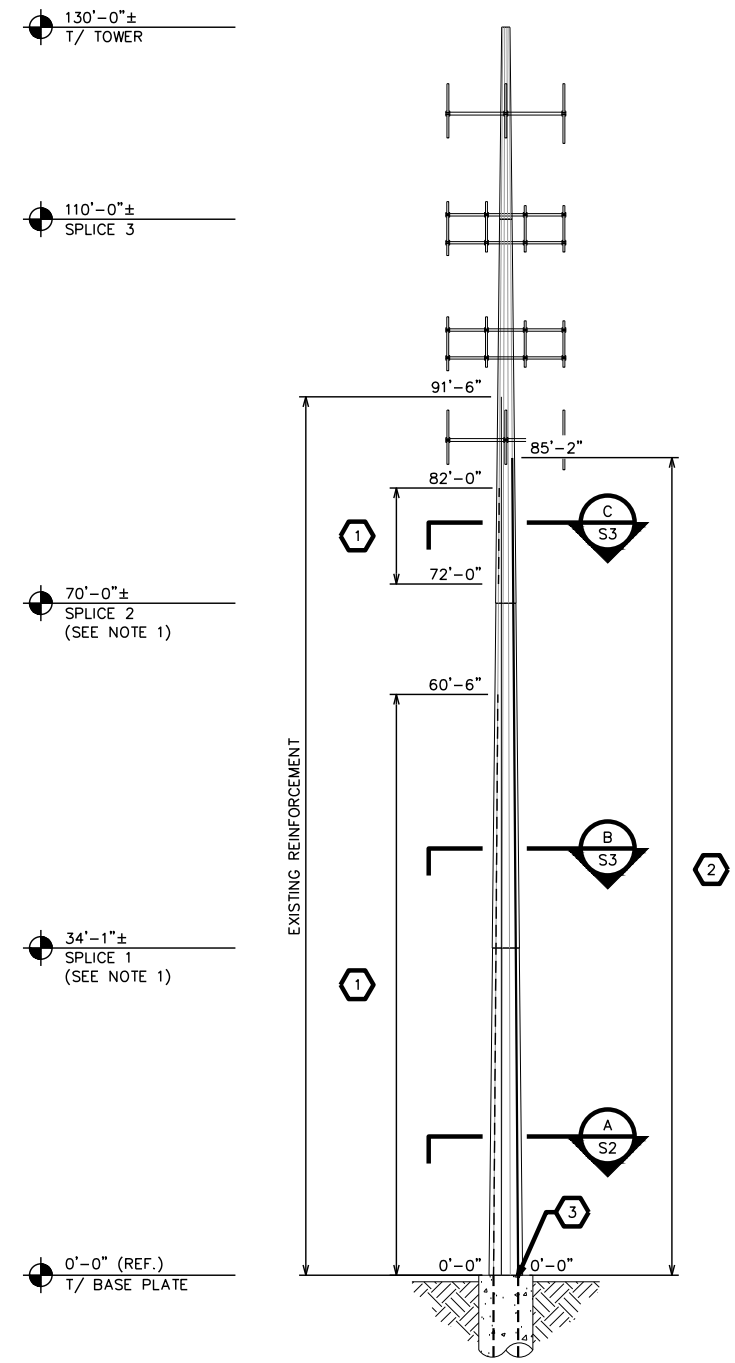
- CONTRACTOR SHALL FIELD VERIFY SPLICE ELEVATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD IF SPLICE ELEVATIONS DIFFER FROM WHAT IS SHOWN. SHAFT REINFORCEMENT ELEVATIONS ARE DEPENDENT ON SPLICE ELEVATIONS AND MAY NEED TO BE ADJUSTED TO ACCOMMODATE ACTUAL SPLICE ELEVATION.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE THE MODIFICATION INSPECTOR/ ENGINEER OF RECORD WITH A SEALED CERTIFIED WELD INSPECTION REPORT. THIS REPORT SHALL DOCUMENT THE ENTIRE WELDING PROCESS (PRE/DURING/POST) WITH PROPER PHOTOS. WELDING SHALL CONFORM TO AWS D1.1/D1.1M: 2010 "STRUCTURAL WELDING CODE-STEEL", FOR ADDITIONAL NOTES, SEE WELDING NOTES.
- ANTENNAS AND OTHER APPURTENANCES MAY NEED TO BE TEMPORARILY REMOVED OR MOVED DURING THE INSTALLATION OF THE MODIFICATIONS SHOWN ABOVE.
- DUE TO THE MODIFICATIONS REQUIRED, CONTINUOUS INSPECTIONS AND MATERIAL TESTING WILL NEED TO BE PERFORMED.
- CONTRACTOR SHALL ORDER AND INSTALL A NEW TOWER TAG IF THE EXISTING TOWER TAG IS MOVED OR DAMAGED DUE TO THE INSTALLATION OF THE MODIFICATION SHOWN ABOVE.
- PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.
- NO DETAILED INFORMATION REGARDING INTERFERENCES WAS PROVIDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS. REPORT ANY AND ALL DISCREPANCIES TO TOWER ENGINEERING PROFESSIONALS, INC. AND CROWN CASTLE CONSTRUCTION MANAGER IMMEDIATELY.

CROWN CASTLE 65KSI FLAT PLATE REINFORCEMENT SCHEDULE												
QTY.	PART NO.	FLAT/ ANGLE	ELEV (FT.)		PLATE LENGTH (FT.)	TERMINATION BOLTS		MAX. INTERMEDIATE BOLT SPACING (IN.)	TOTAL BOLT QTY.	TOTAL STEEL WEIGHT (LB.)	TERMINATION DETAIL	
			BOT.	TOP		BOT.	TOP				BOT.	TOP
3	CCI-WCFP-06010020	2, 6, 10	0.00	20.00	20.00	-	10	16.00	69	1225.0	1	4
3	CCI-CFP-06010035	2, 6, 10	20.08	55.08	35.00	10	10	16.00	126	2143.8	4	4
3	CCI-CFP-04512530	2, 6, 10	55.17	85.17	30.00	7	7	24.00	81	1722.7	4	3A
TOTALS:									276	5091.5		

CROWN CASTLE 65KSI REINFORCEMENT SPLICE PLATE SCHEDULE										
QTY.	PART NO.	FLAT/ ANGLE	ELEV (FT.)		QTY. OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QTY.	ADDITIONAL BOLT QTY. (SEE NOTE 6)	TOTAL STEEL WEIGHT (LB.)	TERMINATION DETAIL	
			BOT.	TOP						
3	CCI-SP-060100-10-10	2, 6, 10	17.25	22.83	20	60	-	341.8	4	
3	CCI-CSP-045125-7-10	2, 6, 10	52.33	57.17	17	51	-	277.3	4	
TOTALS:						111	-	619.1		

NOTES:

- SEE SHEETS N-4 THROUGH N-6 FOR BOLT INSTALLATION DETAILS. SEE SHEET S-3 AND S-4 FOR PLATE DETAILS. SEE SHEETS S-5 AND S-6 FOR TERMINATION DETAILS.
- FOR FLAT PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" +/- 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION +/- 3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN A 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.
- SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESSES SHALL BE NO LESS THAN 1/8". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKING OF SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT EOR APPROVAL.
- SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE. TIGHTENING THE BOLTS TO COLD BEND THE STEEL PLATES AROUND THE SHIMS IS STRICTLY PROHIBITED IN LIEU OF SHIMS AND WILL BE CAUSE FOR REJECTION.
- FLAT PLATE REINFORCEMENTS SHALL BE INSTALLED ON THE CENTER OF THE TOWER SHAFT FLATS UNLESS OTHERWISE NOTED.
- ADDITIONAL BOLT QUANTITY REFERS TO TOTAL NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATE.



TOWER ELEVATION
SCALE: 1" = 20'-0"



EXISTING MONOPOLE SHAFT

EXISTING MONOPOLE SHAFT REINFORCEMENT

EXISTING ANCHOR BOLTS

PROPOSED MONOPOLE SHAFT REINFORCEMENT. SEE SHEET S-1 FOR DETAILS

EXISTING PORT HOLES (VERIFY LOCATION)

EXISTING BASE PLATE

EXISTING TRANSITION STIFFENER

EXISTING REINFORCEMENT CAGE

EXISTING FOUNDATION

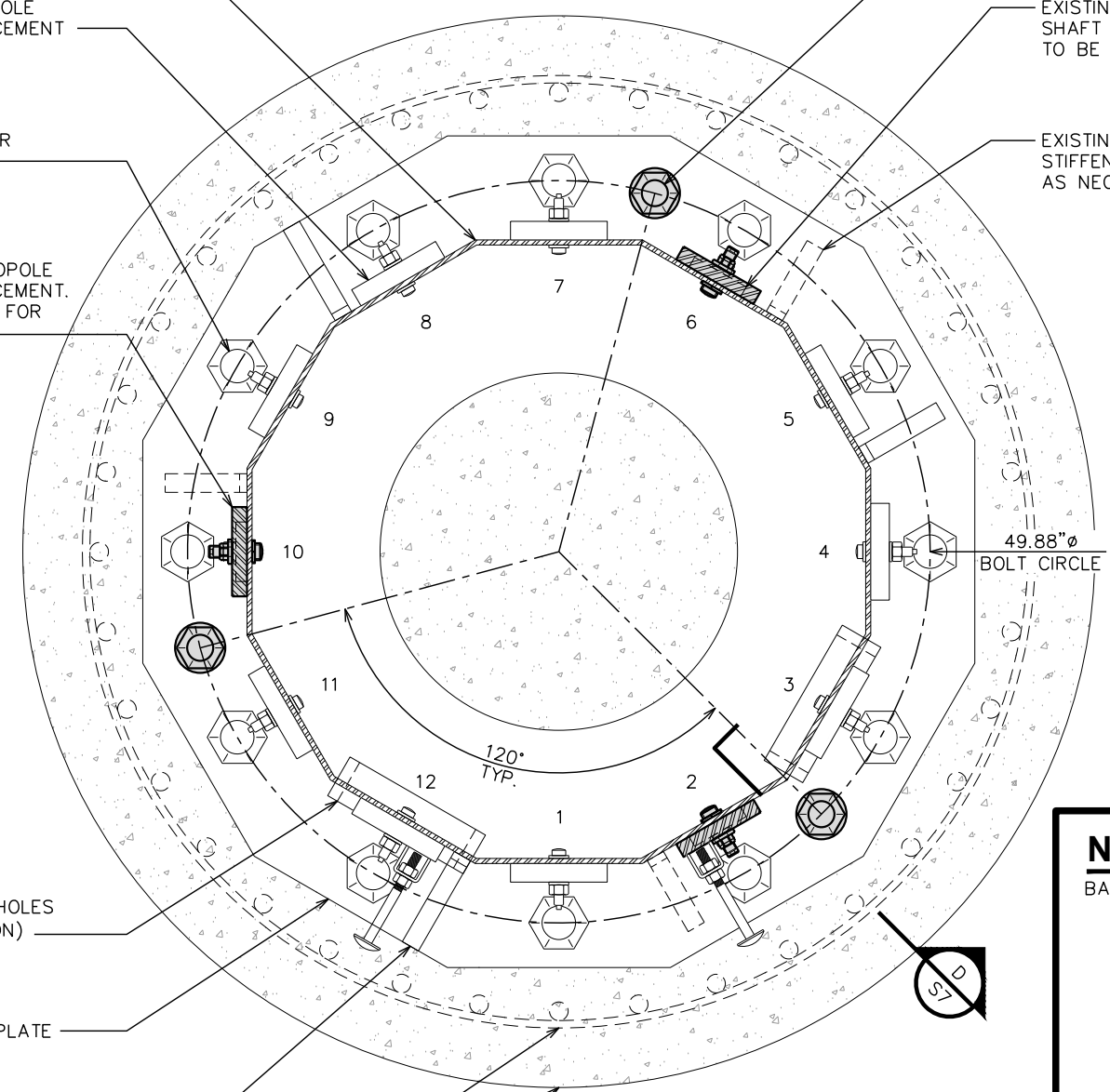
PROPOSED ANCHOR BOLT REINFORCEMENT. SEE SHEET S-7 FOR DETAILS

EXISTING MONOPOLE SHAFT REINFORCEMENT TO BE REMOVED

EXISTING TRANSITION STIFFENER TO BE REMOVED AS NECESSARY

ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM USING ONLY APPROVED OPTIONS FROM CROWN CASTLE APPROVED REINFORCEMENT CATALOG AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.



NOTE:

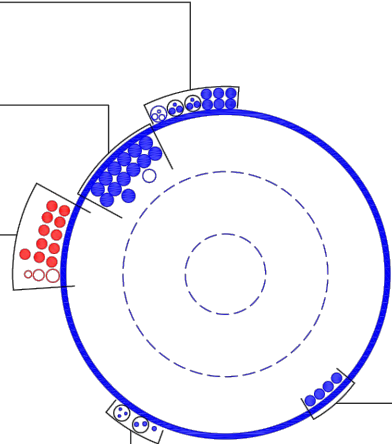
BASE LEVEL DRAWING PROVIDED BY CROWN CASTLE.

- (OTHER CONSIDERED EQUIPMENT)
- (6) 1-1/4" TO 121 FT LEVEL (IN 2" CONDUIT)
- (1) 3/8" TO 121 FT LEVEL
- (2) 3/4" TO 121 FT LEVEL
- (IN 2" CONDUIT)
- (2) 3/8" TO 121 FT LEVEL
- (4) 3/4" TO 121 FT LEVEL

- (OTHER CONSIDERED EQUIPMENT)
- (14) 1-5/8" TO 109 FT LEVEL

- (PROPOSED EQUIPMENT CONFIGURATION)
- (1) 7/8" TO 87 FT LEVEL
- (1) 1-3/8" TO 87 FT LEVEL
- (1) 1-3/4" TO 87 FT LEVEL
- (11) 1-1/4" TO 87 FT LEVEL

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



SECTION
SCALE: 1" = 1'-0" **A**




BASE LEVEL DRAWING
SCALE: N.T.S.

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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BU #: 806376
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0	10-01-18	MODIFICATION DRAWINGS
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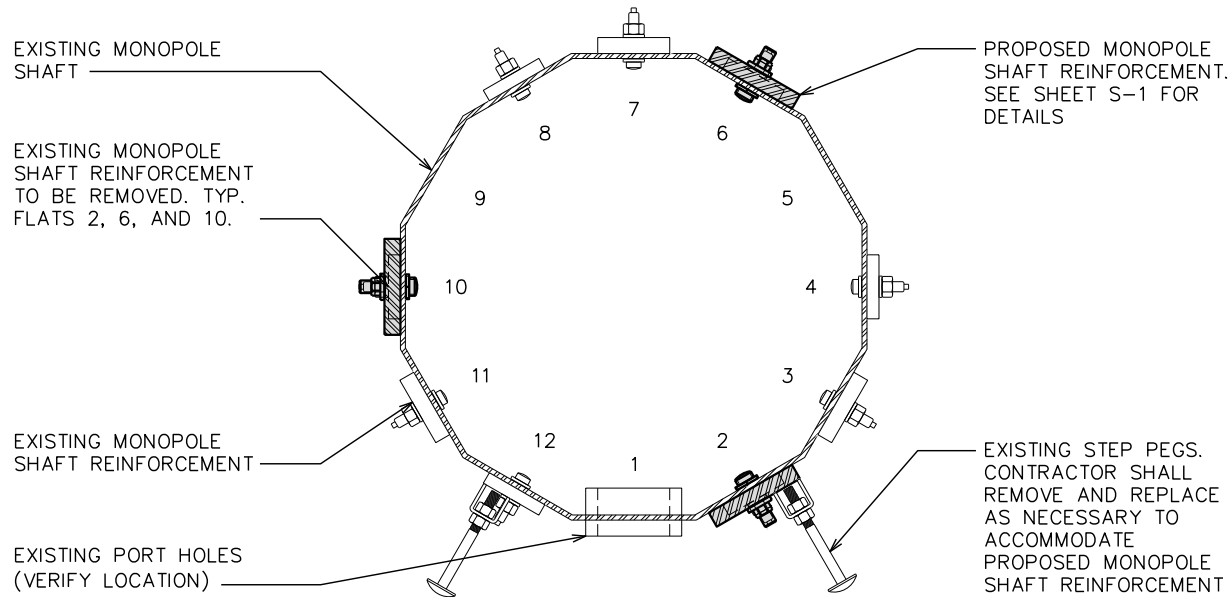
DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:
BASE SECTION DETAILS

SHEET NUMBER: **S-2** | REVISION: **0**
TEP#: 25677.185485

ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM USING ONLY APPROVED OPTIONS FROM CROWN CASTLE APPROVED REINFORCEMENT CATALOG AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.

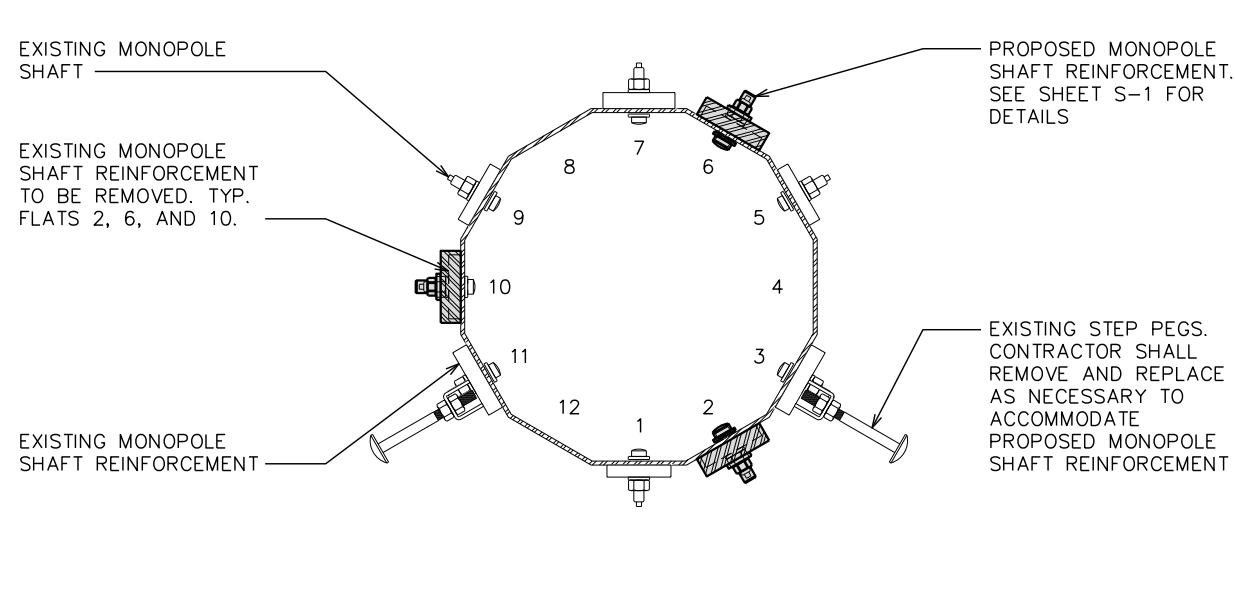


SECTION B
SCALE: 1" = 1'-0"



ATTENTION

THE TOWER SAFETY CLIMB WAS ASSUMED TO BE LOCATED OFF FLAT 1. FIELD VERIFY CLIMBING SYSTEM LOCATION PRIOR TO INSTALLATION. CONTACT TOWER OWNER AND ENGINEER OF RECORD SHOULD ANY DISCREPANCIES ARISE. CONTRACTOR TO REMOVE AND REPLACE CLIMBING SYSTEM USING ONLY APPROVED OPTIONS FROM CROWN CASTLE APPROVED REINFORCEMENT CATALOG AS NECESSARY TO INSTALL PROPOSED REINFORCEMENT. IF CLIMBING SYSTEM IS REQUIRED TO BE ATTACHED TO PROPOSED REINFORCEMENT, IT SHALL BE DONE PRIOR TO GALVANIZATION.

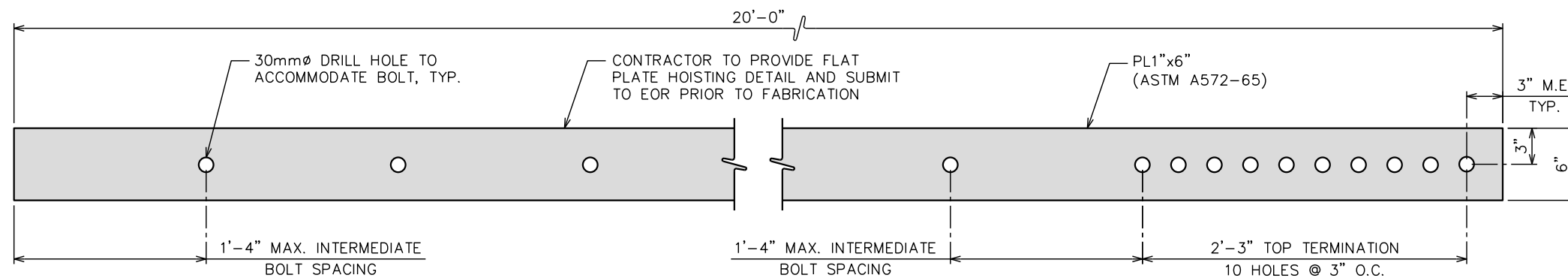


SECTION C
SCALE: 1" = 1'-0"



NOTES:

- BOLT SPACING MAY BE ADJUSTED TO ACCOMMODATE EXISTING HOLES IN THE TOWER SHAFT. HOWEVER, BOLT SPACING SHALL NOT EXCEED THE MAXIMUM INTERMEDIATE BOLT SPACING PER SCHEDULE. EXISTING TOWER SHAFT HOLE LOCATIONS MAY BE REAMED AND RE-USED. NEW TOWER SHAFT BOLT HOLES SHALL BE A MINIMUM OF 3" CENTER FROM EXISTING TOWER SHAFT BOLT HOLES. CONTRACTOR TO FIELD VERIFY EXISTING BOLT HOLES PRIOR TO FABRICATION. TERMINATION AND SPLICE LENGTHS MAY BE ADJUSTED ACCORDINGLY.
- PLATE LENGTH MAY BE ADJUSTED TO ACCOMMODATE VARYING TERMINATION BOLT HOLE SPACING. QUANTITY OF TOP AND BOTTOM OF TERMINATION BOLTS MAY NOT BE ADJUSTED.



CCI-WCFP-06010020
SCALE: 1" = 1'-0"

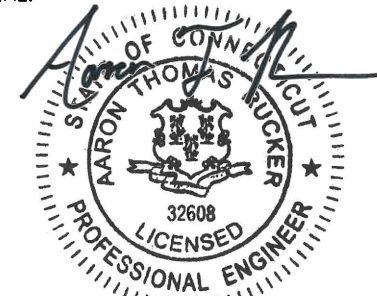


PLANS PREPARED FOR:
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3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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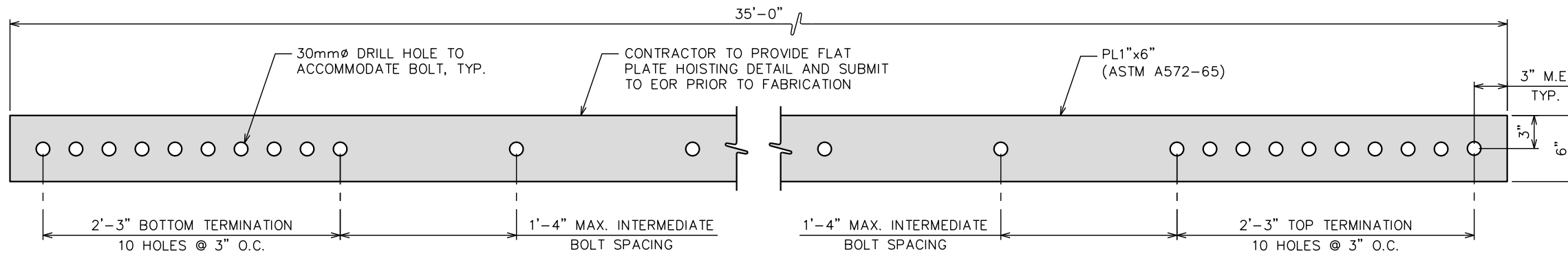
DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:
MONOPOLE REINFORCEMENT DETAILS

SHEET NUMBER: **S-3** | REVISION: **0**
TEP#: 25677.185485

NOTES:

1. BOLT SPACING MAY BE ADJUSTED TO ACCOMMODATE EXISTING HOLES IN THE TOWER SHAFT. HOWEVER, BOLT SPACING SHALL NOT EXCEED THE MAXIMUM INTERMEDIATE BOLT SPACING PER SCHEDULE. EXISTING TOWER SHAFT HOLE LOCATIONS MAY NOT BE RE-USED. NEW TOWER SHAFT BOLT HOLES SHALL BE A MINIMUM OF 3" CENTER FROM EXISTING TOWER SHAFT BOLT HOLES. CONTRACTOR TO FIELD VERIFY EXISTING BOLT HOLES PRIOR TO FABRICATION. TERMINATION AND SPLICE LENGTHS MAY BE ADJUSTED ACCORDINGLY.
2. PLATE LENGTH MAY BE ADJUSTED TO ACCOMMODATE VARYING TERMINATION BOLT HOLE SPACING. QUANTITY OF TOP AND BOTTOM OF TERMINATION BOLTS MAY NOT BE ADJUSTED.

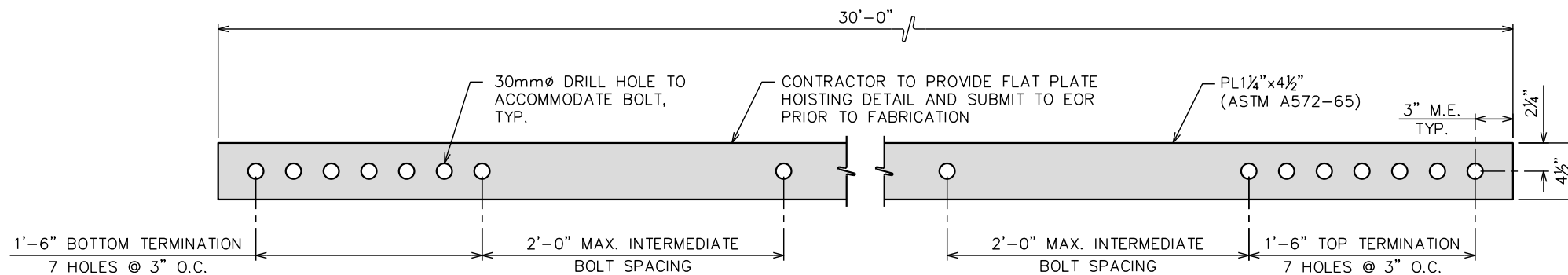


CCI-CFP-06010035

SCALE: 1" = 1'-0"

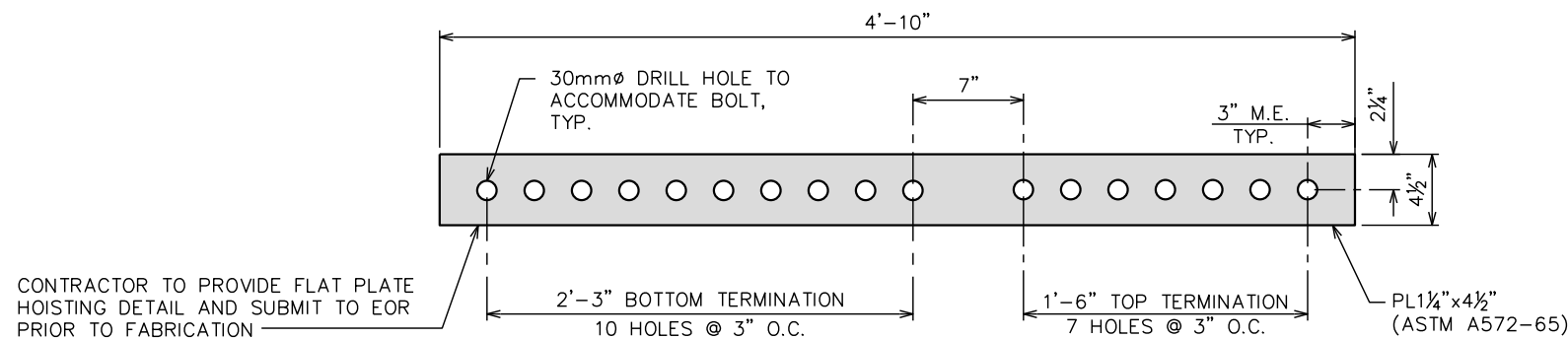
NOTES:

1. BOLT SPACING MAY BE ADJUSTED TO ACCOMMODATE EXISTING HOLES IN THE TOWER SHAFT. HOWEVER, BOLT SPACING SHALL NOT EXCEED THE MAXIMUM INTERMEDIATE BOLT SPACING PER SCHEDULE. EXISTING TOWER SHAFT HOLE LOCATIONS MAY NOT BE RE-USED. NEW TOWER SHAFT BOLT HOLES SHALL BE A MINIMUM OF 3" CENTER FROM EXISTING TOWER SHAFT BOLT HOLES. CONTRACTOR TO FIELD VERIFY EXISTING BOLT HOLES PRIOR TO FABRICATION. TERMINATION AND SPLICE LENGTHS MAY BE ADJUSTED ACCORDINGLY.
2. PLATE LENGTH MAY BE ADJUSTED TO ACCOMMODATE VARYING TERMINATION BOLT HOLE SPACING. QUANTITY OF TOP AND BOTTOM OF TERMINATION BOLTS MAY NOT BE ADJUSTED.



CCI-CFP-04512530

SCALE: 1" = 1'-0"



CCI-CSP-045125-7-10

SCALE: 1" = 1'-0"

PLANS PREPARED FOR:

CROWN CASTLE

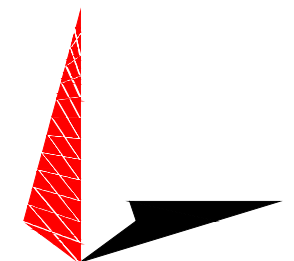
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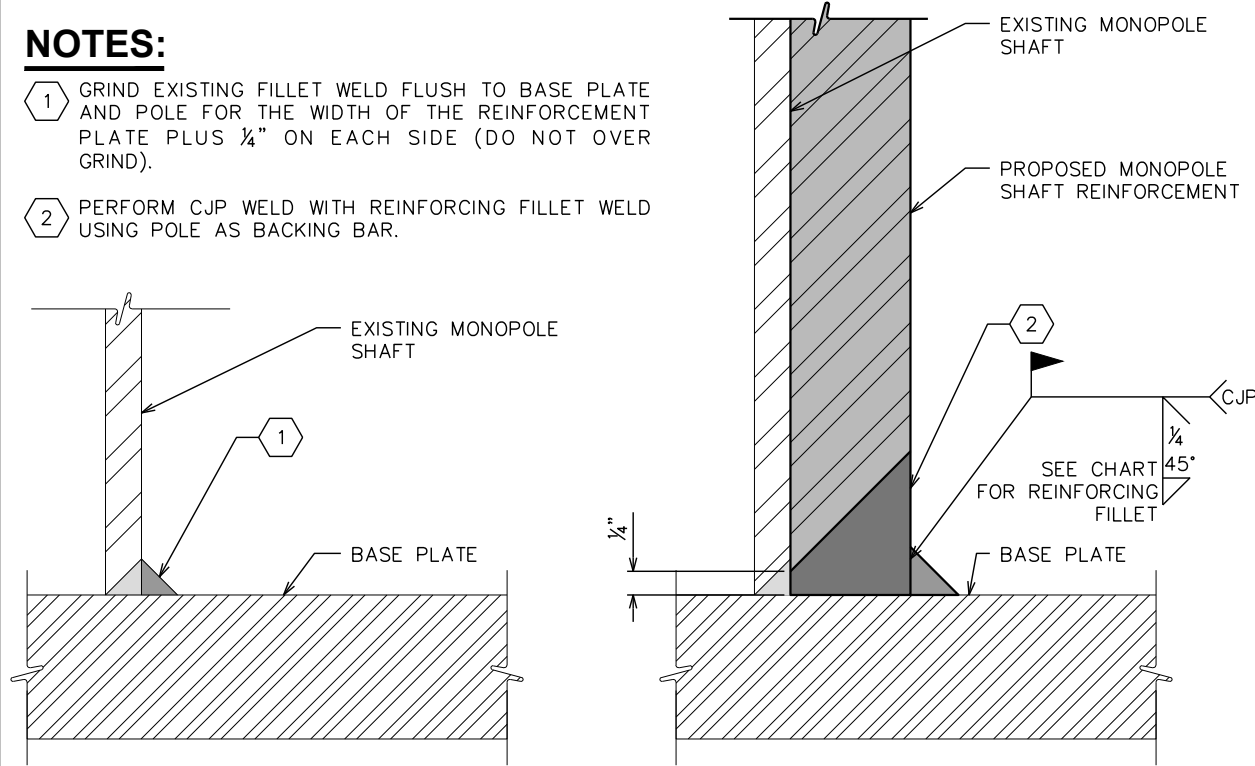
DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE:
**SHAFT
REINFORCEMENT
DETAILS**

SHEET NUMBER: **S-4** REVISION: **0**
TEP#: 25677.185485

NOTES:

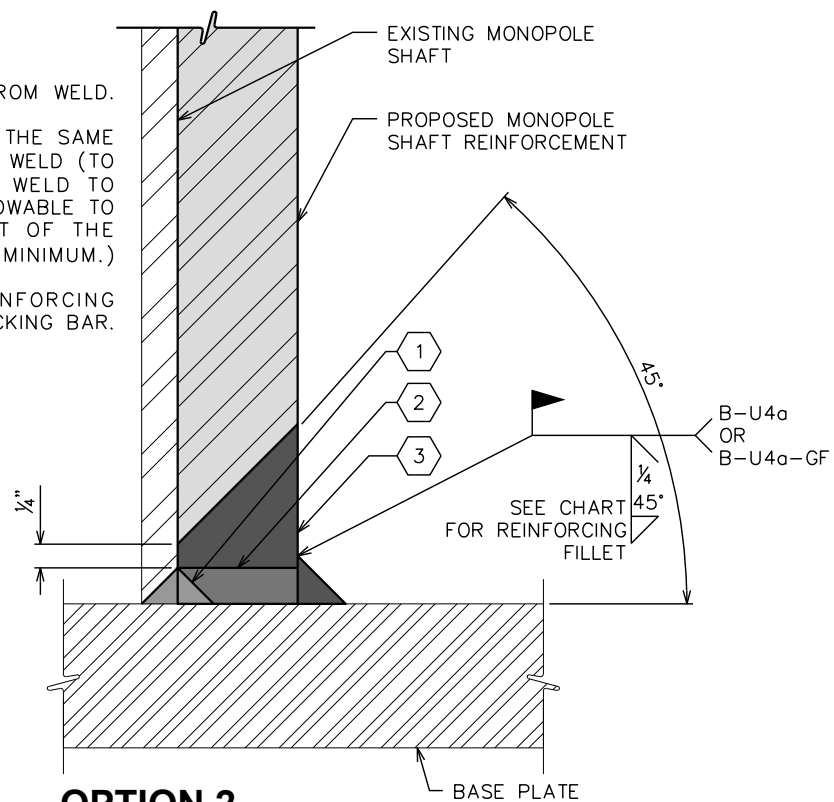
- ① GRIND EXISTING FILLET WELD FLUSH TO BASE PLATE AND POLE FOR THE WIDTH OF THE REINFORCEMENT PLATE PLUS ¼" ON EACH SIDE (DO NOT OVER GRIND).
- ② PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.



OPTION 1

NOTES:

- ① CLEAN EXISTING GALVANIZING FROM WELD.
- ② BUILD PLATFORM WITH WELD AT THE SAME HEIGHT OF THE EXISTING FILLET WELD (TO REDUCE THE AMOUNT OF THE WELD TO BUILD THE PLATFORM, IT IS ALLOWABLE TO PARTIALLY GRIND THE HEIGHT OF THE EXISTING FILET WELD TO A ¼" MINIMUM.)
- ③ PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.



OPTION 2

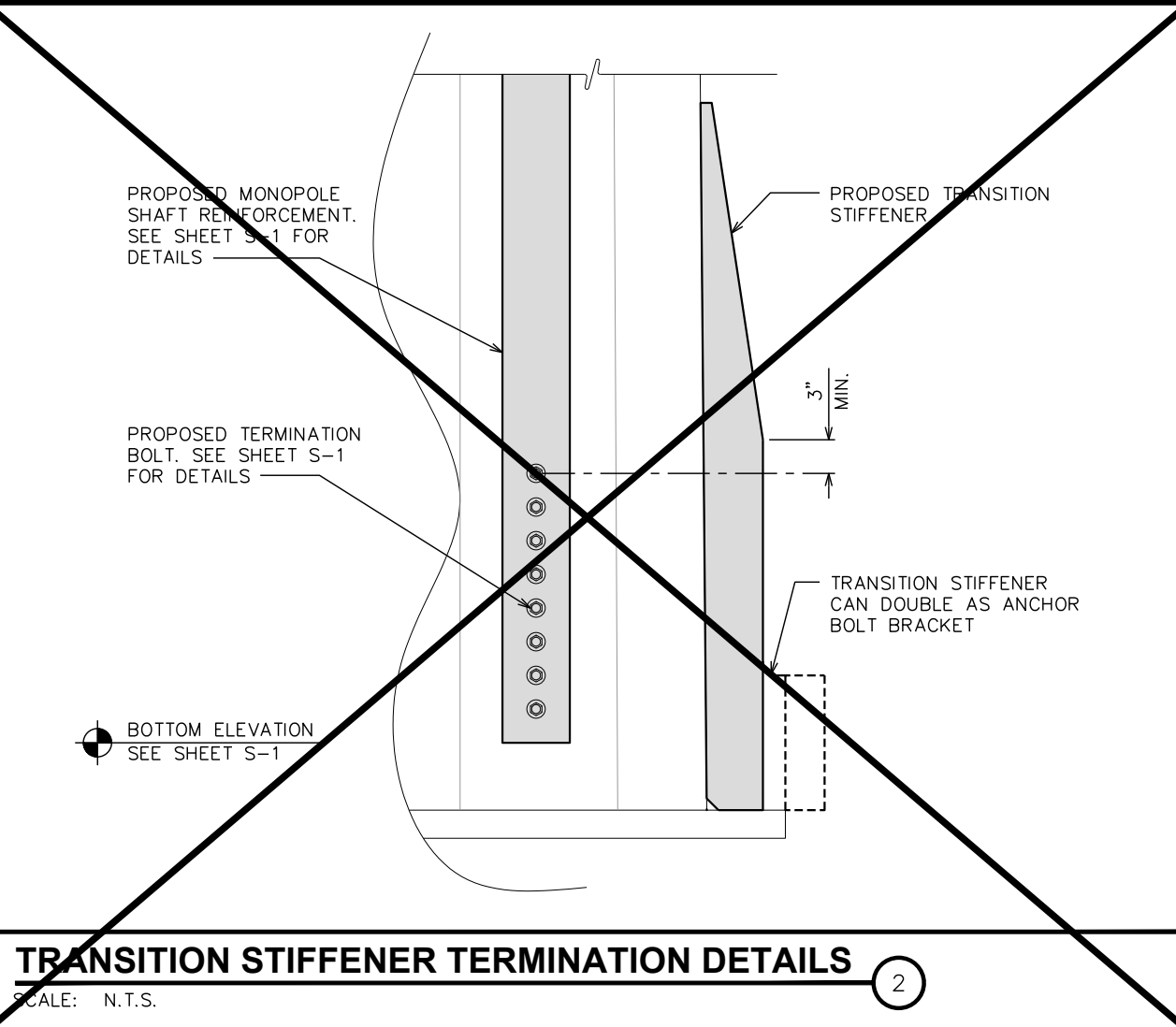
BASE WELD TERMINATION DETAILS

SCALE: N.T.S.

①

REINFORCING FILLET SIZE

PART NUMBER	PLATE SIZE	MINIMUM REINFORCING WELD
CCI-WSFP-040075 CCI-WAFP-040075 CCI-WCFP-040075	¾" x 4"	¼"
CCI-WSFP-045100 CCI-WAFP-045100 CCI-WCFP-045100	1" x 4½"	¼"
CCI-WSFP-060100 CCI-WAFP-060100 CCI-WCFP-060100	1" x 6"	⅜"
CCI-WSFP-065125 CCI-WAFP-065125 CCI-WCFP-065125	1¼" x 6½"	½"
CCI-WSFP-085125 CCI-WAFP-085125 CCI-WCFP-085125	1¼" x 8½"	⅝"



TRANSITION STIFFENER TERMINATION DETAILS

SCALE: N.T.S.

②

PLANS PREPARED FOR:

CROWN CASTLE

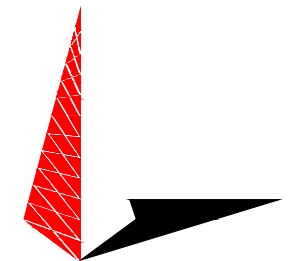
3530 TORINGDON WAY, SUITE 300
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BU #: 806376**

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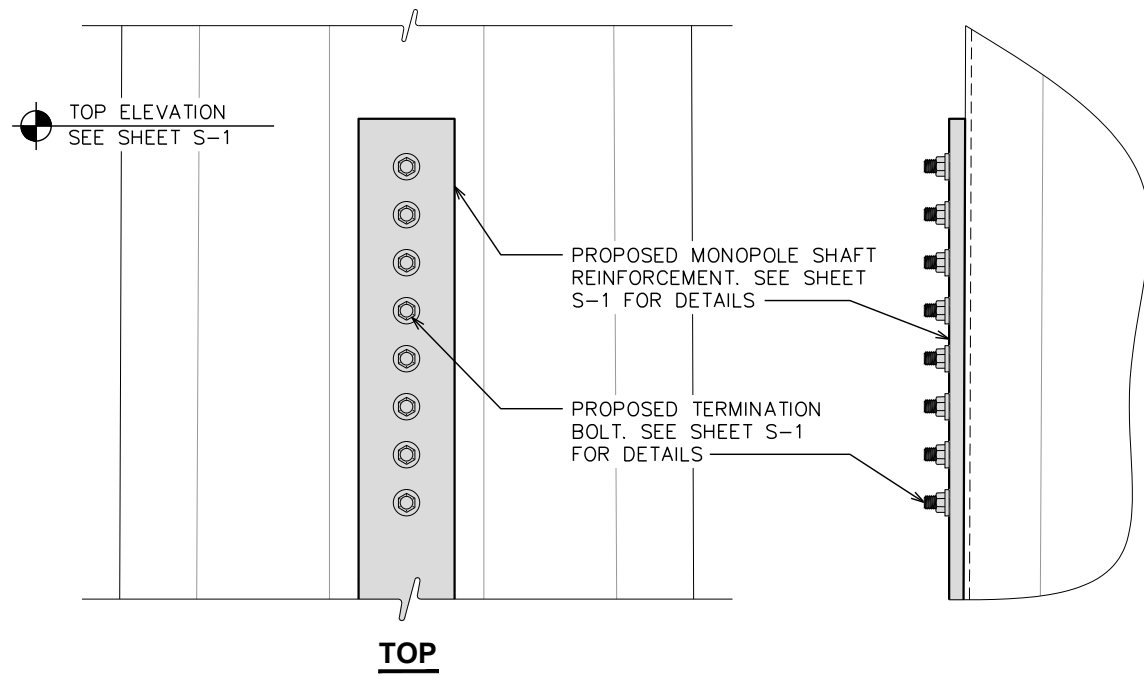
**TYP. SHAFT
REINFORCEMENT
DETAILS I**

SHEET NUMBER: REVISION:

S-5

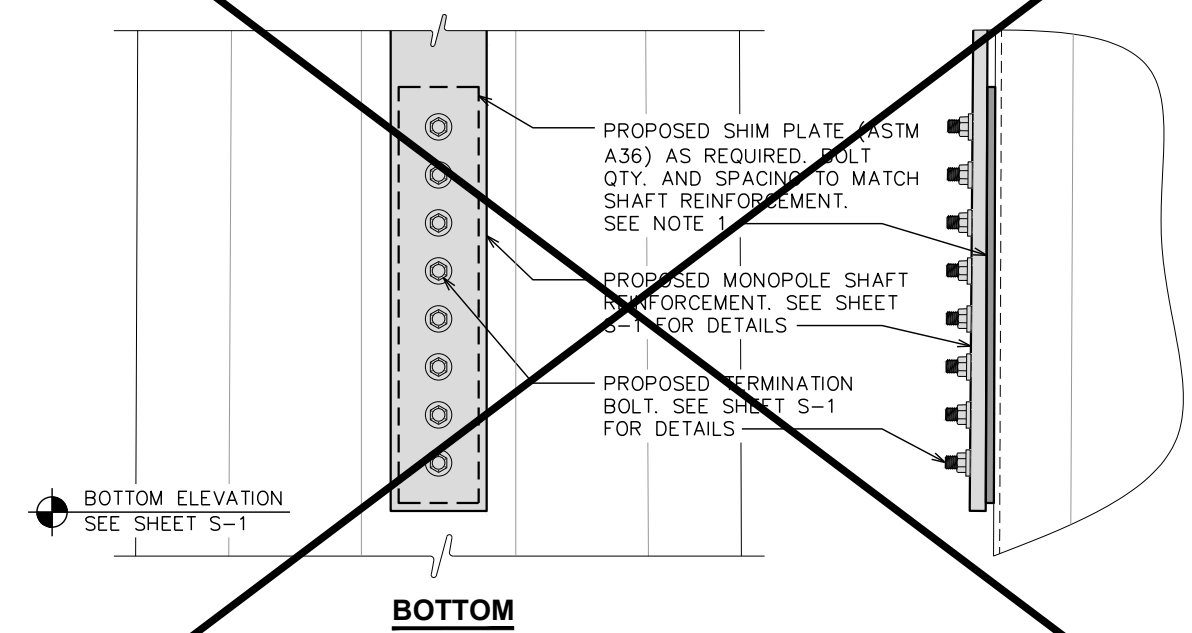
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TEP#: 25677.185485



NOTE:

1. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.

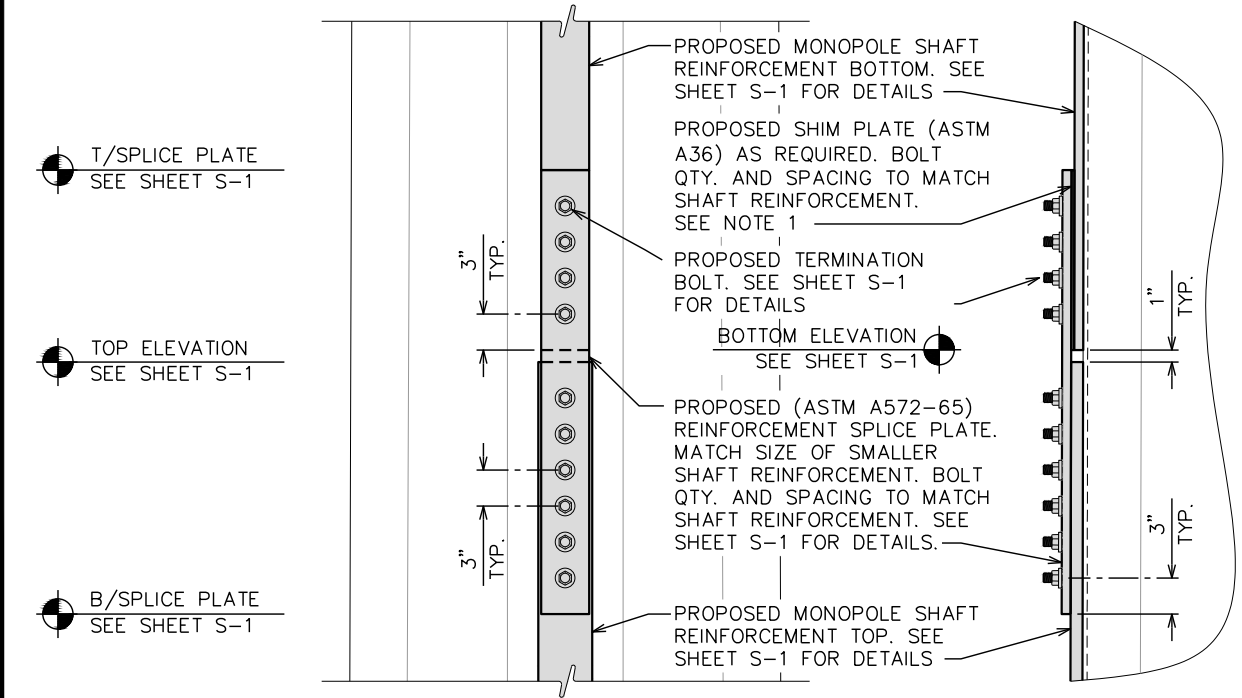


TOP TERMINATION DETAILS (3A)
SCALE: N.T.S.

BOTTOM TERMINATION DETAILS (3B)
SCALE: N.T.S.

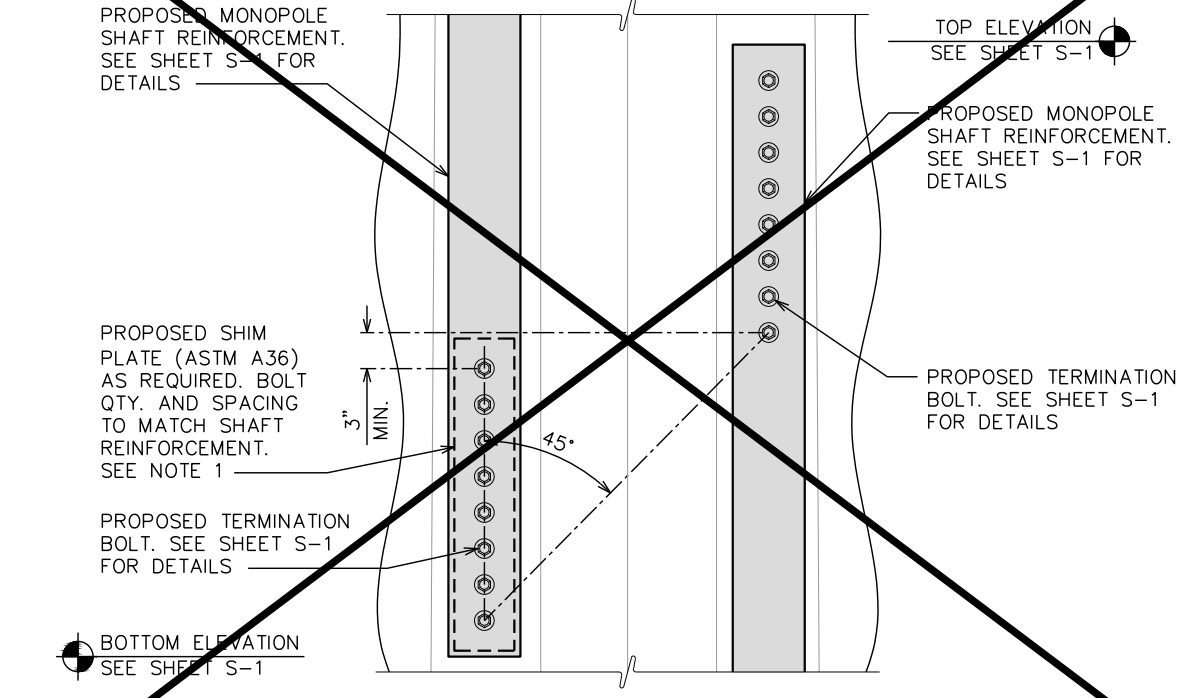
NOTE:

1. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED BETWEEN THE SHAFT REINFORCEMENT PLATE AND THE REINFORCEMENT SPLICE PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.



NOTE:

1. SHIMS GREATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.

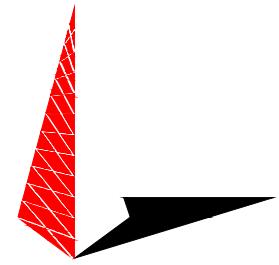



REINFORCEMENT SPLICE DETAILS (4)
SCALE: N.T.S.

OVERLAP SPLICE DETAILS (5)
SCALE: N.T.S.

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
HRT 100 943239
BU #: 806376
1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

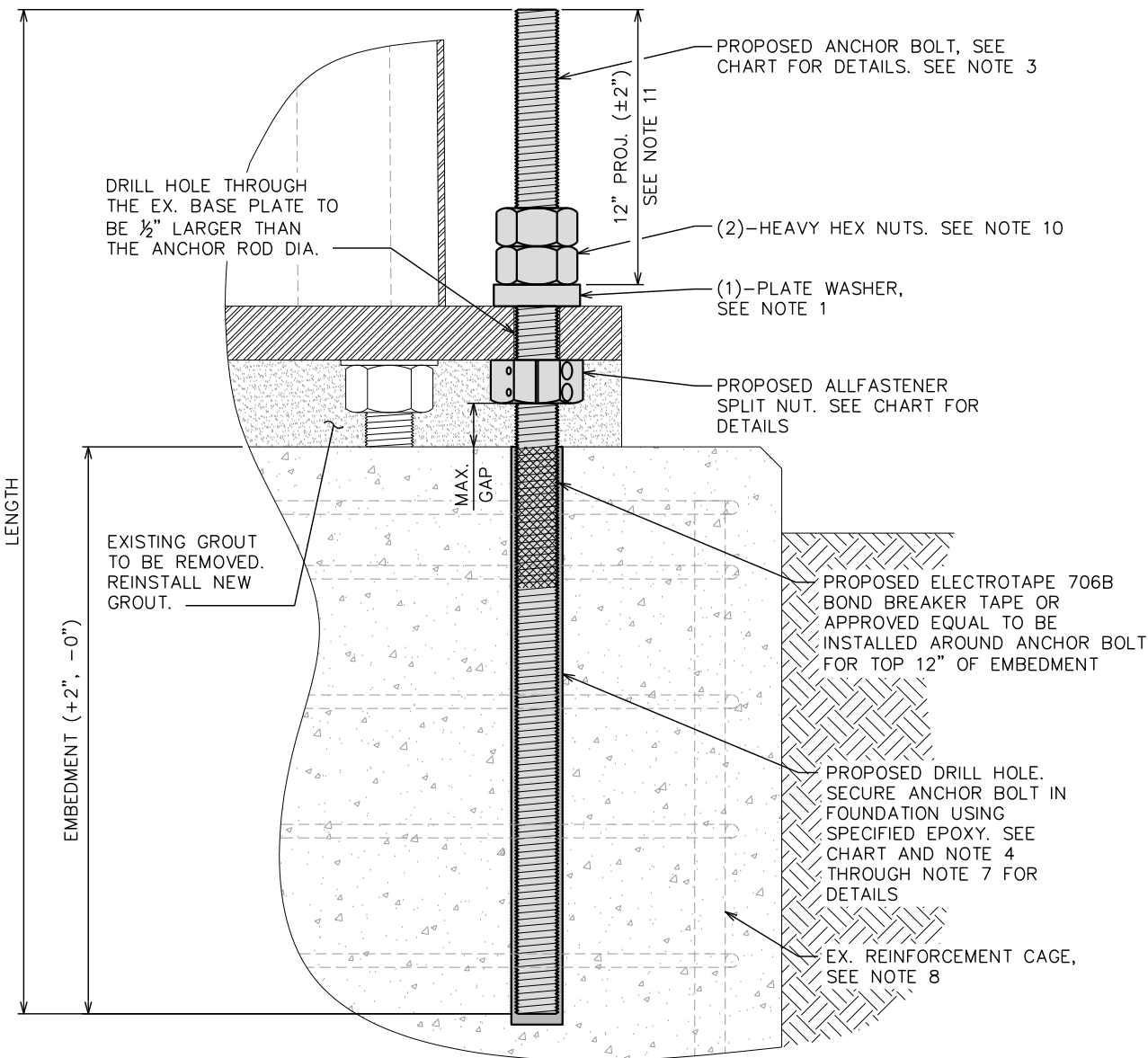
SEAL:

Electronic Copy
October 1, 2018

0	10-01-18	MODIFICATION DRAWINGS
REV	DATE	ISSUED FOR:

DRAWN BY: JLW | CHECKED BY: RKE

SHEET TITLE:
TYP. SHAFT REINFORCEMENT DETAILS II

SHEET NUMBER: **S-6** | REVISION: **0**
TEP#: 25677.185485



NOTES

1. PLATE WASHER SHALL FULLY BEAR ON THE BASE PLATE.
2. REFERENCE CED-CAT-10300 (CURRENT VERSION) FOR ANCHOR ROD DIMENSIONS.
3. RODS SHALL BE GALVANIZED FROM THE TOP OF THE PROJECTION TO 15" BELOW THE SURFACE OF THE CONCRETE, AT A MINIMUM.
4. CORED HOLES SHALL BE MECHANICALLY ROUGHENED USING A CARBIDE HOLE ROUGHENER OR EQUIVALENT. BRUSHING WITH A NYLON OR WIRE BRUSH SHALL BE USED IN THE PROCESS OF HOLE CLEANING, BUT DOES NOT SATISFY THE HOLE ROUGHENING REQUIREMENT.
5. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS FOR HOLE CLEANING.
6. ALL HOLES SHALL BE DRY PRIOR TO PLACING EPOXY.
7. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS REGARDING HANDLING OF THREADED ROD AND EPOXY, AS WELL AS ALL INSTALLATION INSTRUCTIONS AND REQUIREMENTS.
8. TAKE ALL MEASUREMENTS NECESSARY TO AVOID DAMAGING EXISTING REINFORCING BARS DURING CORING OPERATIONS. NOTIFY EOR IMMEDIATELY IF EXISTING REINFORCING BARS ARE ENCOUNTERED AND INTERFERE WITH PLACEMENT OF NEW ANCHORS. MINOR ADJUSTMENT TO PROPOSED LOCATION OF NEW ANCHORS MAY BE REQUIRED.
9. IF BASE PLATE GROUT REPAIR IS REQUIRED FOR ANCHOR ROD INSTALLATION, SEE ENG-STD-10323: BASE PLATE GROUT, FOR PROCEDURES AND RECOMMENDED MANUFACTURERS. CONTRACTOR SHALL DETERMINE THE QUANTITY REQUIRED.
10. ONCE ALL RESIN AND GROUT HAVE CURED, NEW ANCHOR ROD REINFORCING SHALL BE TARGET TENSIONED TO THE VALUE LISTED IN THE TABLE ON THIS SHEET. SEE CED-PRC-10119: PULL-OUT TESTING POST-INSTALLED ANCHOR RODS, FOR SPECIFICATIONS. AFTER ANCHOR BOLT LOAD TESTING IS COMPLETE, INSTALL FIRST NUT TO SNUG TIGHT PLUS 1/4 TURN BEFORE INSTALLING SECOND NUT.
11. CONTRACTOR SHALL VERIFY THAT A PULL TEST IS ABLE TO BE PERFORMED USING THE ANCHOR ROD PROJECTION SHOWN.
12. WHEN COMPLETED WITH EPOXY INSTALLATION, THE TOP OF THE EPOXY SHALL BE EQUAL TO OR HIGHER THAN THE TOP OF THE FOUNDATION, SUCH THAT WATER IS NOT ABLE TO COLLECT IN THE ANNULAR AREA AROUND THE EXPOSED PORTION OF THE ANCHOR ROD.

ANCHOR BOLT

DESCRIPTION	MEASUREMENT
PART NO.	CCI-AR-0175
ANCHOR BOLT DIA.	1 3/4"
LENGTH	6'-9"
EMBEDMENT	5'-0"
MATERIAL	ASTM A193 GR. B7
TOTAL QUANTITY	3
MAX. GAP	1 3/4"
TARGET TENSION	111 KIPS
DRILL HOLE DIAMETER	2"
EPOXY	ALLFASTENERS AF35LVE

ACCESSORIES

DESCRIPTION	MEASUREMENT
HEAVY HEX NUT	1 3/4"
MATERIAL	ASTM A563
TOTAL QUANTITY	6
DESCRIPTION	MEASUREMENT
ALLFASTENER SPLIT NUT	2SPN175M
MATERIAL	ASTM A563
TOTAL QUANTITY	3
DESCRIPTION	MEASUREMENT
PLATE WASHER	1/2" x 3 1/2" O.D. (1 1/8" I.D.)
MATERIAL	ASTM A572-50
TOTAL QUANTITY	3

PLANS PREPARED FOR:

CROWN CASTLE

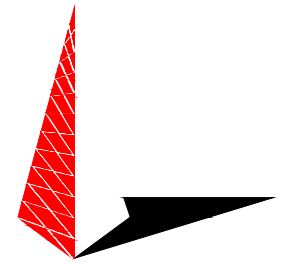
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

HRT 100 943239 BU #: 806376

1455 FORBES STREET
EAST HARTFORD, CT 06118
(HARTFORD COUNTY)

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS

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RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

SEAL:



REV	DATE	ISSUED FOR:
0	10-01-18	MODIFICATION DRAWINGS

DRAWN BY: JLW CHECKED BY: RKE

SHEET TITLE: ANCHOR BOLT REINFORCEMENT DETAILS

SHEET NUMBER: **S-7** REVISION: **0**
TEP#: 25677.185485

ANCHOR BOLT REINFORCEMENT

SCALE: N.T.S.

D

Date: **September 21, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6607



Subject: **Mount Analysis Report**

Carrier Designation: **T-Mobile Equipment Change-Out**
Carrier Site Number: CT11186A
Carrier Site Name: CT11186A

Crown Castle Designation: **Crown Castle BU Number:** 806369
Crown Castle Site Name: HRT 100 943239
Crown Castle JDE Job Number: 513141
Crown Castle Order Number: 446236

Engineering Firm Designation: Maser Consulting Connecticut **Report Designation:** 18922054A

Site Data: **1455 Forbes Street, East Hartford, Hartford County, CT, 06118**
Latitude 41°43'53.30" Longitude -72°36'28"

Structure Information: **Tower Height & Type:** 131 ft Monopole
Mount Elevation: 87 ft
Mount Type: 12.5 ft Sector Mount

Dear Charles McGuirt,

Maser Consulting Connecticut is pleased to submit this **“Mount Analysis Report”** to determine the structural integrity of T-Mobile’s antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Mount

Sufficient

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2016 Connecticut State Building Code. Exposure Category C with a maximum topographic factor, Kzt, of 1 and Risk Category II were used in this analysis.

Mount structural analysis prepared by: Dejian Xu, P.E.
Respectfully Submitted by:



Petros E. Tsoukalas, P.E.
Principal Associate Geographic Discipline Leader
Connecticut License: 32577
856-797-0412
Ptsoukalas@Maserconsulting.com

Dejian Xu, P.E.
Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

Table 4 - Tieback End Reactions

4.1) Recommendations

5) APPENDIX A

Wire Frame and Rendered Models

6) APPENDIX B

Software Input Calculations

7) APPENDIX C

Software Analysis Output

8) APPENDIX D

Additional Calculations

1) INTRODUCTION

This mount is a existing 12.5 ft Sector Mount mapped by Tower Engineering Professionals. This mount is installed at the 87 ft elevation on 3 sector(s) of the 131 ft Monopole.

2) ANALYSIS CRITERIA

Building Code:	2016 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.18
Seismic S₁:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
87	87	3	ERICSSON	AIR -32 B2A/B66AA	12.5 ft Sector Mount
		3	ERICSSON	AIR 21 B2A B4P	
		3	RFS	APXVAARR24_43-UNA20	
		3	ERICSSON	RADIO 4449 B12/B71	
		3	ERICSSON	KRY 112 144/1	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Mount Mapping Report	Tower Engineering Professionals	25677.177478	CCIsites

3.1) Analysis Method

RISA-3D, a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes. The program performs an analysis based on the steel code to determine the adequacy of the members and produces the reactions at the connection points of the mounts to the existing structure.

Proprietary excel sheets were used to calculate appurtenance and member loading for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3(a) - Mount Component Stresses vs. Capacity (Sector Mount, Alpha Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Antenna Pipe	8	87	53.9	Pass
1	Standoff Arm	1	87	59.5	Pass
1	Horizontal Pipe	4	87	99.8	Pass
1	Mount to Tower Connection	-	87	63.2	Pass

Structure Rating (max from all components) =	99.8%
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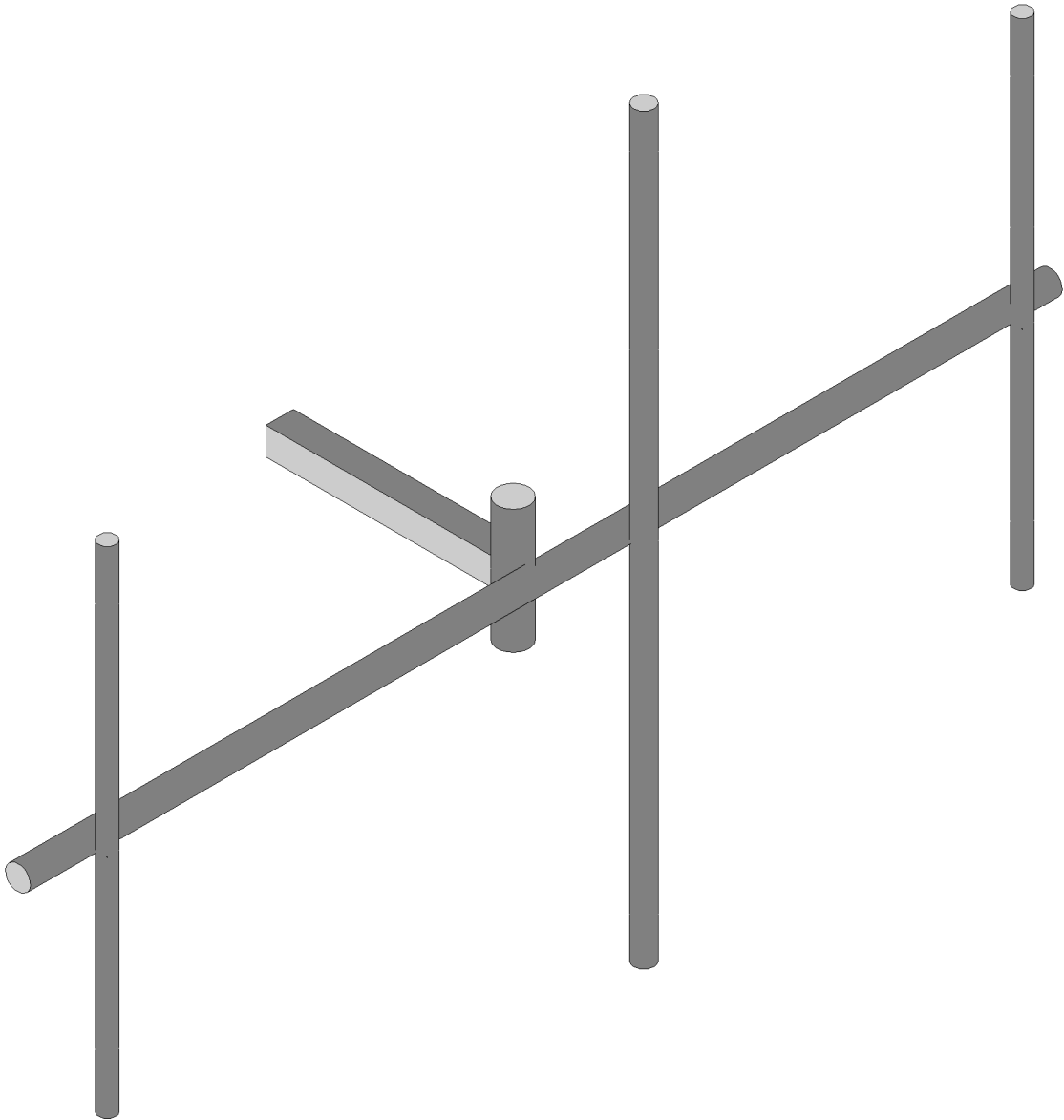
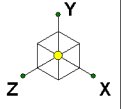
Notes:

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

4.1) Recommendations

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

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Maser Consulting Connecti...

DX

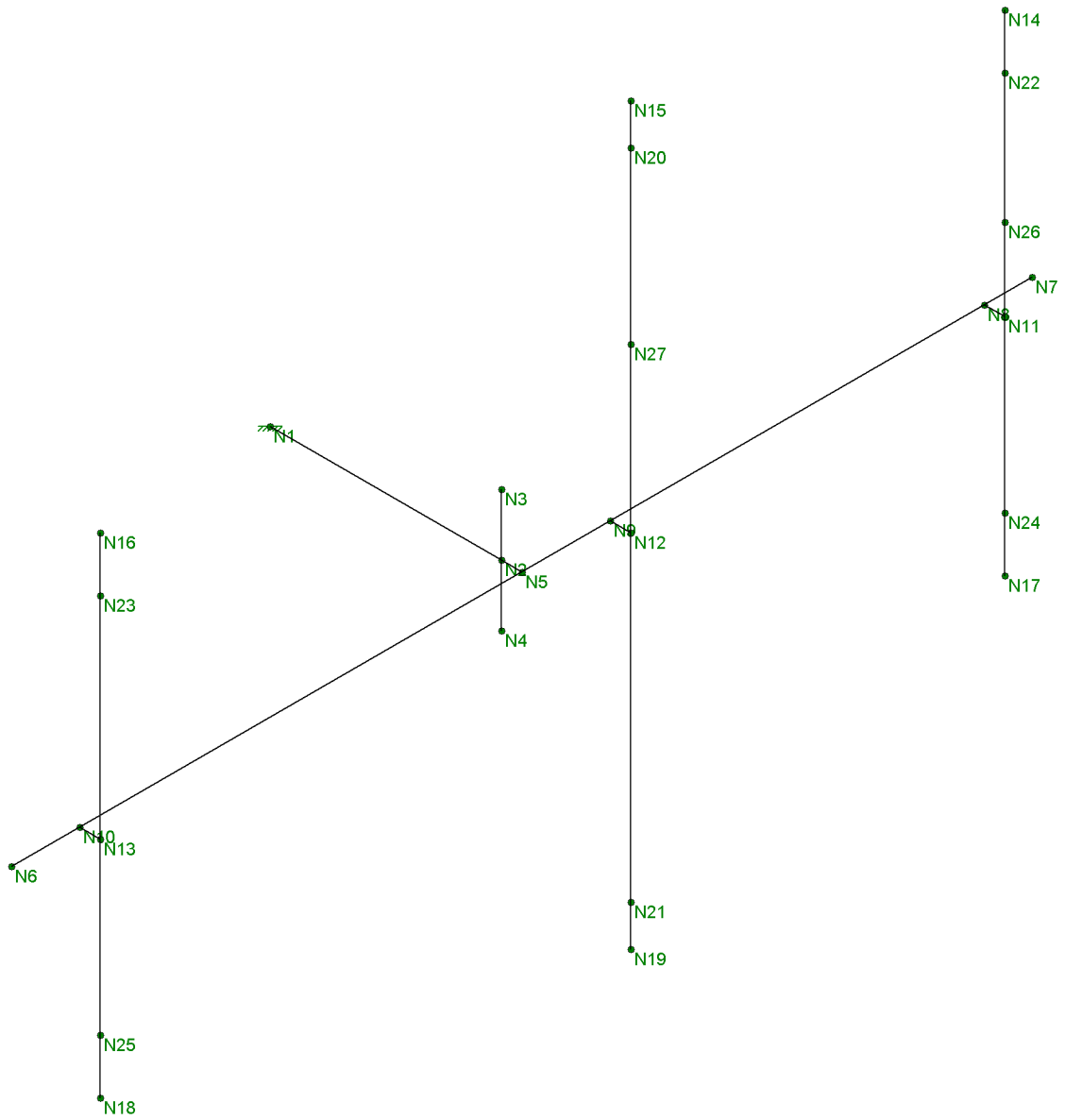
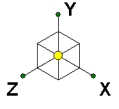
18922054

Antenna Mount Analysis

SK - 1

Sept 21, 2018 at 3:28 PM

Sector Frame.R3D



Envelope Only Solution

Maser Consulting Connecti...

DX

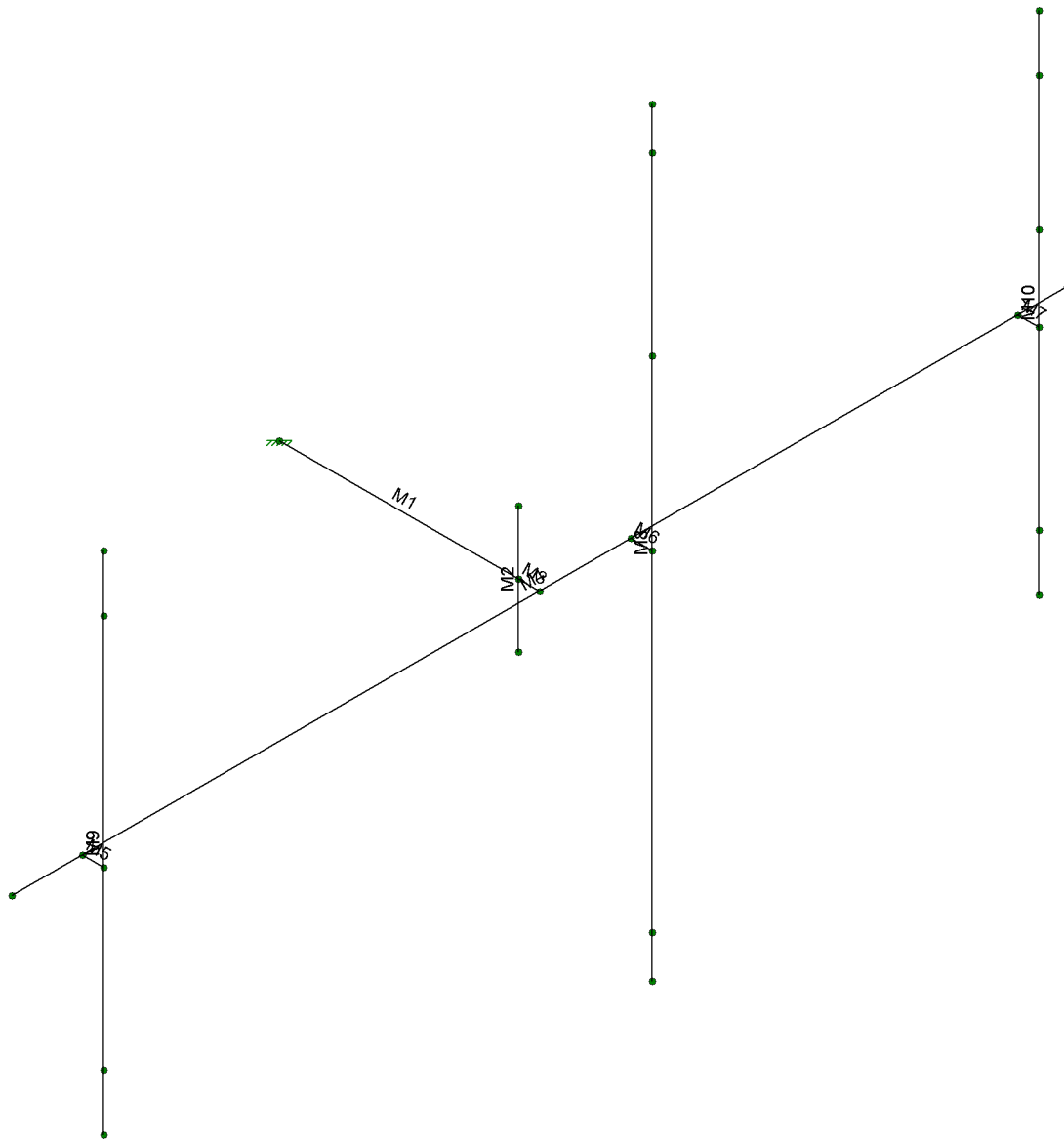
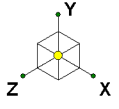
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Antenna Mount Analysis

SK - 2

Sept 21, 2018 at 3:28 PM

Sector Frame.R3D



Envelope Only Solution

Maser Consulting Connecti...

DX

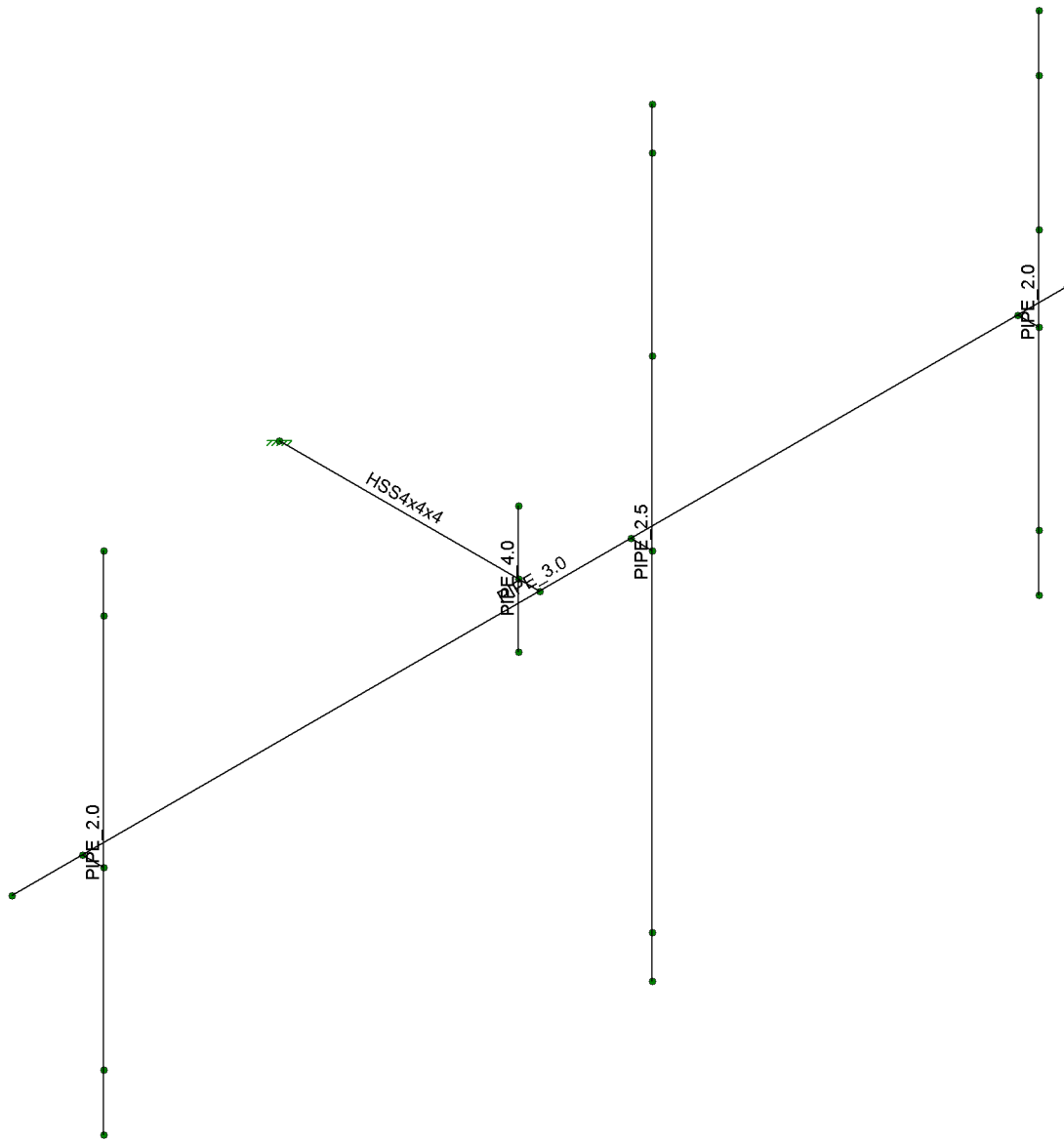
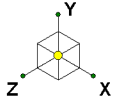
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Antenna Mount Analysis

SK - 3

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Sector Frame.R3D



Envelope Only Solution

Maser Consulting Connecti...

DX

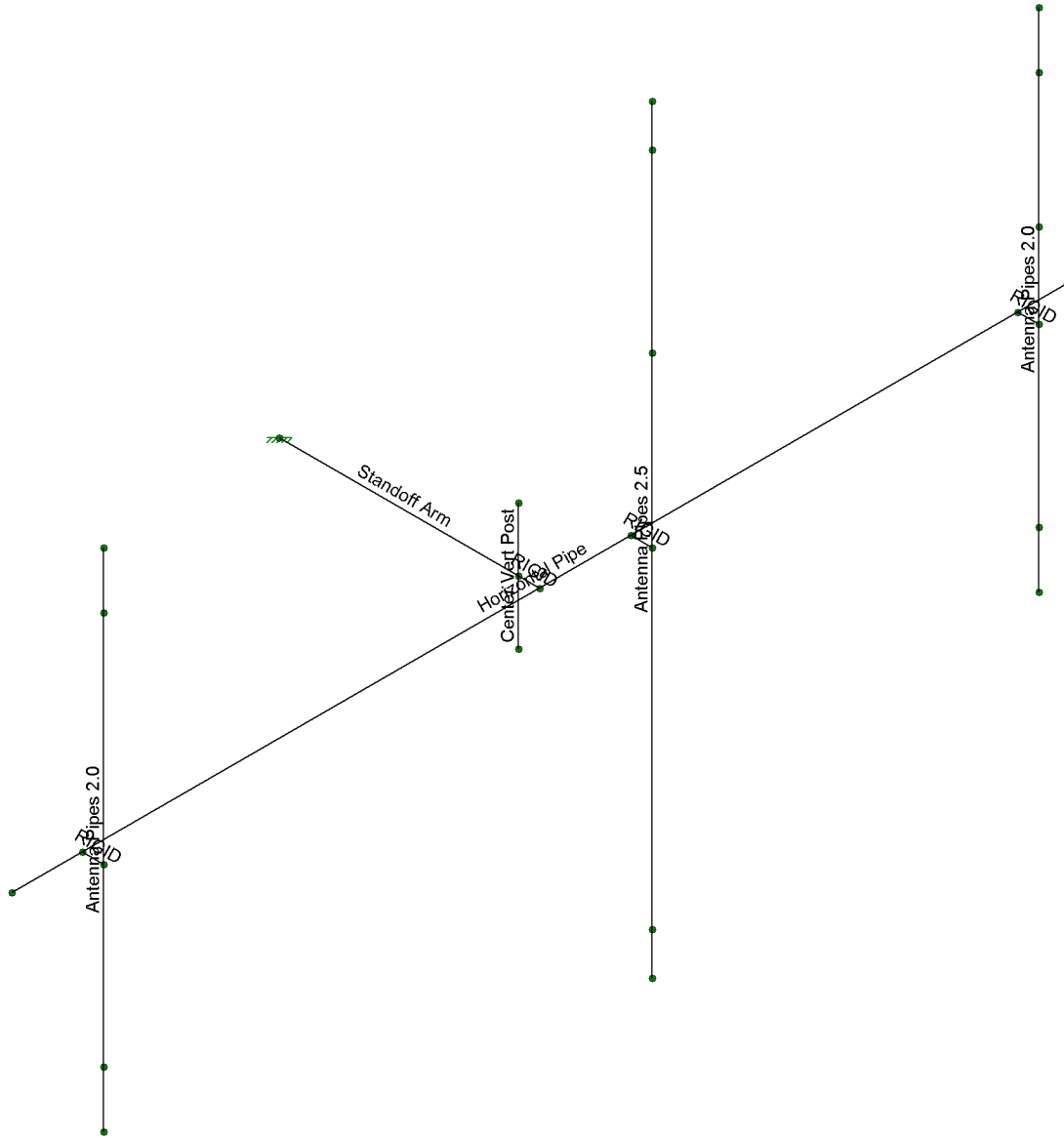
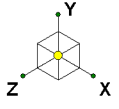
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Antenna Mount Analysis

SK - 4

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Sector Frame.R3D



Envelope Only Solution

Maser Consulting Connecti...

DX

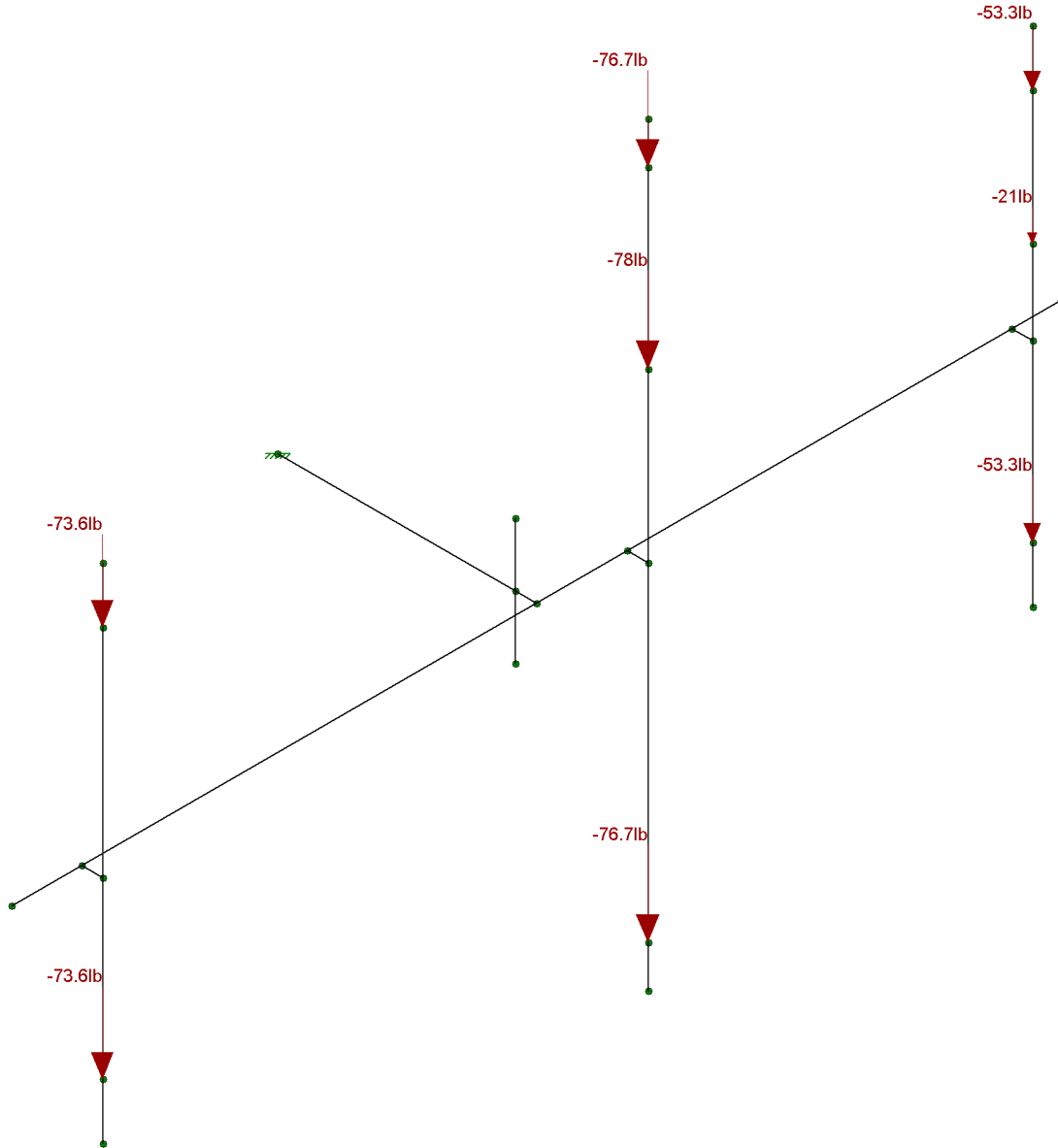
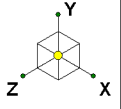
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Antenna Mount Analysis

SK - 5

Sept 21, 2018 at 3:29 PM

Sector Frame.R3D

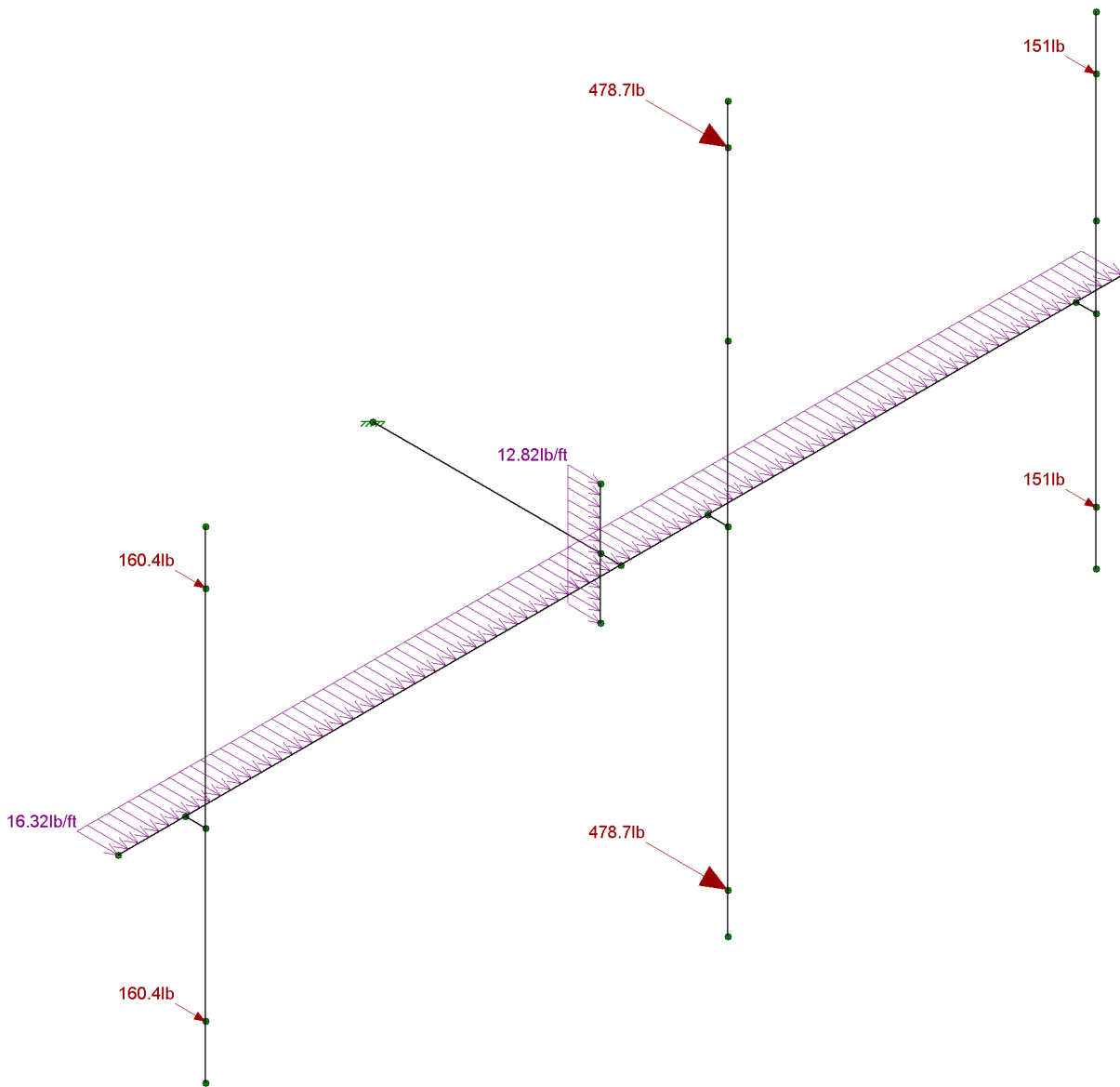
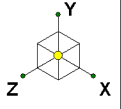


Loads: BLC 1, Dead
Envelope Only Solution

Maser Consulting Connecti...
DX
18922054

Antenna Mount Analysis

SK - 6
Sept 21, 2018 at 3:29 PM
Sector Frame.R3D



Loads: BLC 2, Wx
Envelope Only Solution

Maser Consulting Connecti...

DX

18922054

Antenna Mount Analysis

SK - 7

Sept 21, 2018 at 3:29 PM

Sector Frame.R3D



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

T-Mobile Existing Facility

Site ID: CT11186A

East Hartford/ Hills_1
1455 Forbes Street
East Hartford, CT 06118

October 1, 2018

EBI Project Number: 6218006464

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	26.12 %



October 1, 2018

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

Emissions Analysis for Site: **CT11186A – East Hartford/ Hills_1**

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

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) frequency 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 T-Mobile 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 T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 GSM channels (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 15 Watts per Channel.
- 2) 1 UMTS channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 6) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Ericsson AIR32 B66A/B2A & Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **87 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 12) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66A/B2A	Make / Model:	Ericsson AIR32 B66A/B2A	Make / Model:	Ericsson AIR32 B66A/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	87 feet	Height (AGL):	87 feet	Height (AGL):	87 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	200	Total TX Power(W):	200	Total TX Power(W):	200
ERP (W):	7,780.90	ERP (W):	7,780.90	ERP (W):	7,780.90
Antenna A1 MPE%	4.26	Antenna B1 MPE%	4.26	Antenna C1 MPE%	4.26
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	87 feet	Height (AGL):	87 feet	Height (AGL):	87 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	55	Total TX Power(W):	55	Total TX Power(W):	55
ERP (W):	2,139.75	ERP (W):	2,139.75	ERP (W):	2,139.75
Antenna A2 MPE%	1.17	Antenna B2 MPE%	1.17	Antenna C2 MPE%	1.17
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-U- NA20	Make / Model:	RFS APXVAARR24_43-U- NA20	Make / Model:	RFS APXVAARR24_43-U- NA20
Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd
Height (AGL):	87 feet	Height (AGL):	87 feet	Height (AGL):	87 feet
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,443.03	ERP (W):	2,443.03	ERP (W):	2,443.03
Antenna A3 MPE%	3.18	Antenna B3 MPE%	3.18	Antenna C3 MPE%	3.18

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	8.61 %
Sprint	6.41 %
Clearwire	0.22 %
AT&T	4.74 %
Verizon Wireless	6.14 %
Site Total MPE %:	26.12 %

T-Mobile Sector A Total:	8.61 %
T-Mobile Sector B Total:	8.61 %
T-Mobile Sector C Total:	8.61 %
Site Total:	
	26.12 %



T-Mobile Maximum MPE Power Values (Per Sector)

T-Mobile_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
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	87	17.03	PCS - 1900 MHz	1000.00	1.70%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	87	25.58	AWS - 2100 MHz	1000.00	2.56%
T-Mobile PCS - 1900 MHz GSM	1	583.57	87	3.20	PCS - 1900 MHz	1000.00	0.32%
T-Mobile AWS - 2100 MHz UMTS	1	1,556.18	87	8.53	AWS - 2100 MHz	1000.00	0.85%
T-Mobile 600 MHz LTE	2	788.97	87	8.65	600 MHz	400.00	2.16%
T-Mobile 700 MHz LTE	2	432.54	87	4.74	700 MHz	467.00	1.02%
						Total:	8.61%

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	8.61 %
Sector B:	8.61 %
Sector C:	8.61 %
T-Mobile Maximum MPE % (Per Sector):	8.61 %
Site Total:	26.12 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **26.12%** 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.