



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

November 12, 2018

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

RE: Request of T-Mobile Northeast LLC for an Order to Approve the Shared Use of an Existing Tower at 136 Wright Road, Torrington, CT 06790

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes (“C.G.S.”) §16-50aa, as amended, T-Mobile Northeast LLC (“T-Mobile”) hereby requests an order from the Connecticut Siting Council (“Council”) to approve the shared use by T-Mobile of an existing telecommunication tower at 136 Wright Road, in Torrington Connecticut (the “Property”)¹ The existing 153-foot tower is owned by Crown Castle International Corp. (“Crown Castle”). The underlying property is owned by John Jay and Diane Wright and William and Jill Jobert. T-Mobile requests that the Council find that the proposed shared use of the Crown Castle tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. A copy of this filing is being sent to The Honorable Elinor Carbone, Mayor, City of Torrington, the Planning & Zoning Commission, as well as the property owners

Background

The existing Crown Castle facility consists of a 153-foot monopole tower on 18.39-acre parcel along the west side of Wright Road. Sprint maintains antennas at the 149 and 148-foot level, Verizon currently maintains antennas at the 138-foot level, AT&T antennas are located at the 128-foot level and the City of Torrington has an antenna at the 79-foot level. AT&T’s equipment is located to north of the tower, Verizon’s equipment shelter is located to the east of the tower, Sprint’s equipment is located to the west of the tower.

T-Mobile is licensed by the Federal Communications Commission (“FCC”) to provide wireless services throughout the State of Connecticut. T-Mobile and Crown Castle have agreed to the proposed shared use of the 136 Wright Road tower pursuant to mutually acceptable terms and conditions. Likewise, T-Mobile and Crown Castle have agreed to the proposed installation of equipment cabinets on the ground on the south side of the tower. Crown Castle has authorized T-Mobile to apply for all necessary permits and approvals that may be required to share the existing tower.

¹ Please note the City of Torrington did not have the original approval for this tower available at the time of this filing and indicated they may not still have a record of it.

T-Mobile proposes to install eight (8) panel antennas, one (1) MW dish antenna, eight (8) RRUs, four (4) hybrid fiber lines, and (1) coax line.

In addition, T-Mobile will install a diesel fueled 220 gallon 25 KW DC back-up generator within a 10'x 20' concrete pad. Included in the Construction Drawings are T-Mobile's project specifications for locations of all proposed site improvements. The Construction Drawings also contain specifications for T-Mobile's proposed antennas and backup generator.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." T-Mobile respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing Crown Castle tower is structurally capable of supporting T-Mobile's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support T-Mobile's proposed loading. A copy of the Structural Report has been included in this application.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the Crown Castle tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the Crown Castle tower would have a minimal environmental effect for the following reasons:

1. The proposed installation of eight (8) panel antennas, one (1) MW dish antenna, eight (8) RRUs, four (4) hybrid fiber lines, and (1) coax line will have no visual impact on the area of the tower. T-Mobile's cabinet and generator would be installed within an expanded facility compound. T-Mobile's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.
2. Operation of T-Mobile's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that T-Mobile's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the Crown Castle facility other than periodic maintenance. The proposed shared use of the Crown Castle tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, T-Mobile has entered into an agreement with Crown Castle for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible. (Please see included authorization.)

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting T-Mobile's full array eight (8) panel antennas, one (1) MW dish antenna, eight (8) RRUs, four (4) hybrid fiber lines, (1) coax line and all related equipment. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing Crown Castle tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 300 Governors Highway satisfies the criteria state in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Sincerely,

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

Melanie A. Bachman

November 12, 2018

Page 4

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)

Copies to:

The Honorable Elinor Carbone
Torrington City Hall
140 Main Street
Torrington, CT 06790

Planning & Zoning Commission
Torrington City Hall
140 Main Street Room 324
Torrington, CT 06790

John Jay & Diane Wright
100 Stage Road
Nottingham, NH 03290

William A. and Jill Jobert
108 Springfield Drive
Advance, NC 27006

ORIGIN ID:GFLA (518) 373-3523
ANNIE MARIE ZSAMBRA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 14NOV18
ACTWT: 1.00 LB
CAD: 104924194N1ET4040
BILL SENDER

TO ELINOR CARBONE - MAYOR
CITY OF TORRINGTON
140 MAIN ST

TORRINGTON CT 06790
(860) 489-2228 REF: 1734 7880
PO. DEPT.

552J3/C3B2/DCA6



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3 CORPORATE PARK DRIVE
SUITE 101
LITTLETON PARK NY 12085
UNITED STATES US

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ACTWGT: 1.00 LB
CAD: 104924194INET4040
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TO PLANNING AND ZONING

CITY OF TORRINGTON

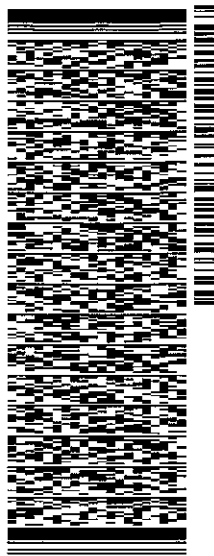
140 MAIN ST

ROOM 324

TORRINGTON CT 06790

PO. (888) 489-2228 REF: 1734-7880
NV. DEPT.

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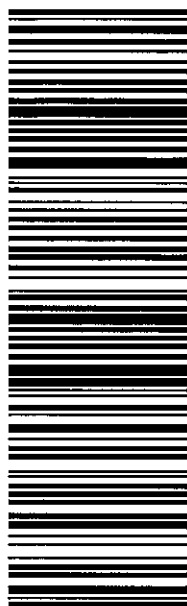


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3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK NY 12065
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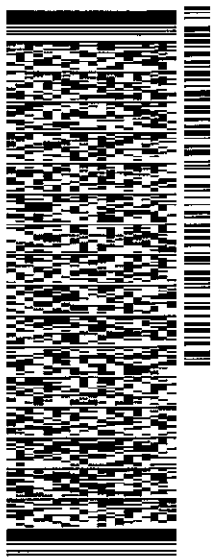
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CAD: 104924194IN/ET4040
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TO JOHN JAY AND DIANE WRIGHT

100 STAGE ROAD

NOTTINGHAM NH 03290

(518) 373-3643 REF: 17247680
DEPT:



552J/C3B2/DC45

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SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 14NOV18
ACTWT: 1.00 LB
CAD: 104924194IN/ET4040
BILL SENDER

TO WILLIAM A AND JILL ROBERT

108 SPRINGFIELD DR

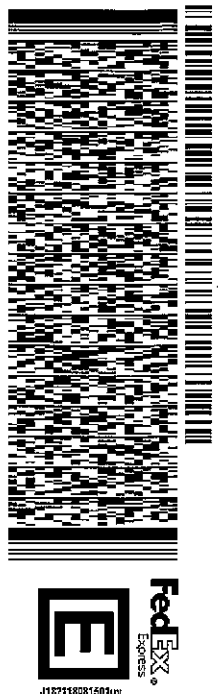
ADVANCE NC 27006

(518) 373-3543

REF: 173417800

PO:

DEPT:



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ANNIE MARIE ZSAMBA
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3 CORPORATE PARK DRIVE
SUITE 101
QUINTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 14NOV18
ACTWGT: 18.00 LB
CAD: 104924194IN/ET/4040
BILL SENDER

TO
MELANIE BACHMAN
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

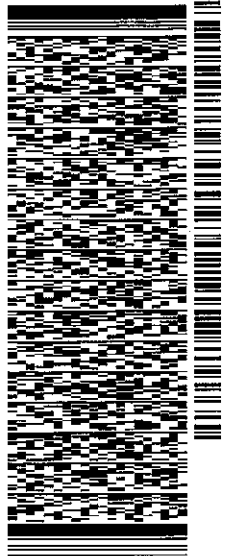
NEW BRITAIN CT 06051

(860) 827-2951

REF: 1765 6890

PO:

DEPT:



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0201

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3530 Toringdon Way
Charlotte, NC 28277

Phone: (980) 209-8221
Fax: (724) 416-4688
www.crowncastle.com

November 13, 2018

JOHN JAY & DIANE WRIGHT
100 STAGE ROAD
NOTTINGHAM, NH 03290

RE: Letter of Authorization
Site ID: 876373
Site Name: LONG EDDY / WRIGHT PROPERTY
Site Address: 136 Wright Rd., TORRINGTON, CT 06790

Dear JOHN JAY & DIANE WRIGHT:

T-MOBILE has proposed install (8) antennas, (4) hybrids, (8) RRHs, (1) MW and (1) associated line, and install a diesel generator in a 10' x 15' lease area.

Please allow this letter to serve as notification that T-MOBILE has contracted with GLOBAL SIGNAL ACQUISITIONS II LLC (a subsidiary of Crown Castle) to provide services related to local government zoning and permitting. GLOBAL SIGNAL ACQUISITIONS II LLC is working with T-MOBILE to manage this process.

This letter of authorization is required by CT - CITY OF TORRINGTON for T-MOBILE to apply for its building permit/zoning approvals which are required for the modification of their existing telecommunications equipment.

This letter neither overrides nor changes your current lease with GLOBAL SIGNAL ACQUISITIONS II LLC.

Please execute this letter of authorization where indicated below, thus granting your authorization for this application and send the original to Bianca Reyes using the self-addressed, stamped, envelope included in this mailing, or the email listed below.

Thank you for your continued cooperation with GLOBAL SIGNAL ACQUISITIONS II LLC.

Sincerely,

Bianca Reyes
Real Estate Project Coordinator
Phone: (980) 209-8221 / E-mail: Bianca.Reyes@crowncastle.com

Approved By:

Name: Bianca Reyes

Date: 11/13/18

Signature: Bianca Reyes

- signing as Attorney-in-fact for John Jay and Diane Wright by Global Signal Acquisitions II, LLC

**FIRST AMENDMENT TO PCS SITE AGREEMENT
(BUN 876373)**

THIS FIRST AMENDMENT TO PCS SITE AGREEMENT ("Amendment") is made effective this 26 day of June 20 12 by and between **JILL S. JOBERT, WILLIAM A. JOBERT, DIANE M. WRIGHT and JOHN JAY WRIGHT** (together, "Owner"), with a mailing address of 108 Springfield Drive, Advance, NC 27006, and **STC FIVE LLC**, a Delaware limited liability company ("Tenant"), by and through **GLOBAL SIGNAL ACQUISITIONS II LLC**, a Delaware limited liability company, its Attorney in Fact, with a mailing address of c/o Crown Castle USA Inc., 2000 Corporate Drive, Canonsburg, Pennsylvania 15317-8564.

WHEREAS, John J. Wright and Mildred B. Wright and Sprint Spectrum, L.P. ("SSLP") entered into a PCS Site Agreement dated July 26, 1999, ("Original Lease" and as amended and assigned, the "Lease"), whereby John J. Wright and Mildred B. Wright leased to SSLP a portion of land (as amended, and together with those certain access, utility and/or maintenance easements and/or rights-of-way granted in the Lease, the "Site") originally described as an approximately 5625 square feet portion of that property located in the City of Torrington, Litchfield County, Connecticut, as shown on the Tax Map of said town as Map 214, Block 2, Lot 5; and

WHEREAS, the Lease is evidenced by and the premises described in the Notice of Lease dated July 26, 1999, and recorded in Volume 0729, Page 0818, in the Office of the Litchfield County, Connecticut Recorder of Deeds ("Registry/Recorder"); and

WHEREAS, Mildred Wright and the Estate of John J. Wright, by Mildred B. Wright, the executrix of the Estate, the Trust Under the Will of John J. Wright, by Mildred B. Wright and James N. Wright, Co-Trustees, Jill S. Jobert, William A. Jobert, John Jay Wright, Diane M. Wright, James N. Wright and Carol E. Wright granted to SSLP an easement and right of way for the purposes of building, construction, maintaining, using, operating and repairing any wires, cables and other incidental installations commonly associated with the servicing of a telecommunications facility and for ingress and egress to the telecommunications facility (the "Easement") which Easement dated August 14, 2000, and recorded in Volume 0729, Page 0823, in the Registry/Recorder; and

WHEREAS, the Site may be used for the purpose of constructing, maintaining and operating a communications facility, including tower structures, equipment shelters, cabinets, meter boards, utilities, antennas, equipment, any related improvements and structures and uses incidental thereto; and

WHEREAS, the Lease has an original term, including all renewal terms, that will expire on July 25, 2023 ("Original Term"), and Owner and Tenant now desire to amend the terms of the Lease to provide for additional renewal terms beyond the Original Term, and to make other changes.

notice shall provide for a due diligence period of less than sixty (60) days, from the date Owner sends notice of the offer to Tenant, then the due diligence period shall be extended to be sixty (60) days from exercise of the right of first refusal and closing shall occur no earlier than fifteen days thereafter. If Tenant does not exercise its right of first refusal by written notice to Owner given within thirty (30) days, Owner may convey the property as described in Owner's notice. If Tenant declines to exercise its right of first refusal, then the Lease shall continue in full force and effect and Tenant's right of first refusal shall survive any such conveyance. Tenant shall have the right, at its sole discretion, to assign the right of first refusal to any person or entity, either separate from an assignment of the Lease or as part of any assignment of the Lease. Such assignment may occur either prior to or after Tenant's receipt of Owner's notice and the assignment shall be effective upon written notice to Owner.

7. Owner's Cooperation. If requested by Tenant, Owner will execute, at Tenant's sole cost and expense, all documents required by any governmental authority in connection with any development of, or construction on, the Site, including documents necessary to petition the appropriate public bodies for certificates, permits, licenses and other approvals deemed necessary by Tenant in Tenant's absolute discretion to utilize the Site for the purpose of constructing, maintaining and operating communications facilities, or any part thereof, including without limitation, tower structures, antenna support structures, cabinets, meter boards, buildings, antennas, cables, equipment and uses incidental thereto. Owner agrees to be named applicant if requested by Tenant. **In furtherance of the foregoing, Owner hereby appoints Tenant as Owner's attorney-in-fact to execute all land use applications, permits, licenses and other approvals on Owner's behalf. Owner shall be entitled to no further consideration with respect to any of the foregoing matters.**

8. Estoppels. Owner and Tenant agree as follows:

- (a) The Site is owned by Owner free and clear of any mortgage, deed of trust, lien, or right of any individual, entity or governmental authority arising under any option, right of first refusal, lease, license, easement or other instrument, except for the rights of Tenant arising under the Lease as amended hereby and the rights of utility providers under recorded easements.
- (b) In the event that the Site shall be encumbered by a mortgage, deed of trust, lien or other encumbrance hereafter, Owner shall obtain and furnish to Tenant a non-disturbance agreement for each such mortgage, in recordable form. If Owner fails to provide any non-disturbance agreement, Tenant may withhold and accrue, without interest, the rent until such time as Tenant receives all such documentation.
- (c) Upon Tenant's request, Owner agrees to cure any defect in Owner's title to the Site which in the reasonable opinion of Tenant has or may have an adverse effect on Tenant's use or possession of the Site.

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2014.



Information on the Property Records for the Municipality of Torrington was last updated on 8/2/2017.

Parcel Information

Location:	136 WRIGHT RD	Property Use:	Residential	Primary Use:	Residential
Unique ID:	12325	Map Block Lot:	215/005/001	Acres:	19.39
490 Acres:	18.39	Zone:	R-WP	Volume / Page:	0385/0645
Developers Map / Lot:		Census:	3108-2N		

Value Information

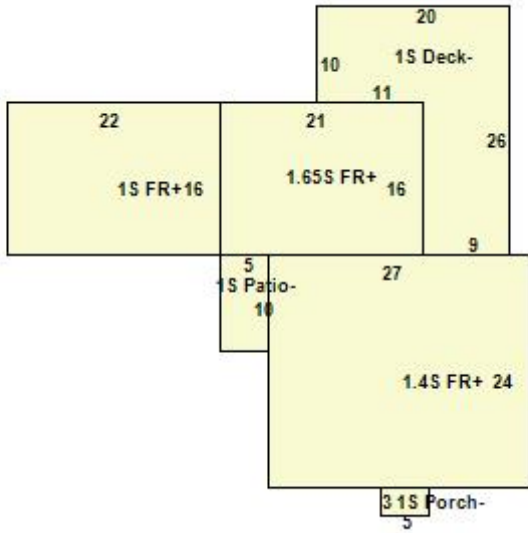
	Appraised Value	70% Assessed Value
Land	58,661	41,060
Buildings	89,199	62,440
Detached Outbuildings	557	390
Total	148,417	103,890

Owner's Information

Owner's Data

WRIGHT JAMES N & CAROL E SURV
104 WRIGHT RD
TORRINGTON CT 06790

Building 1

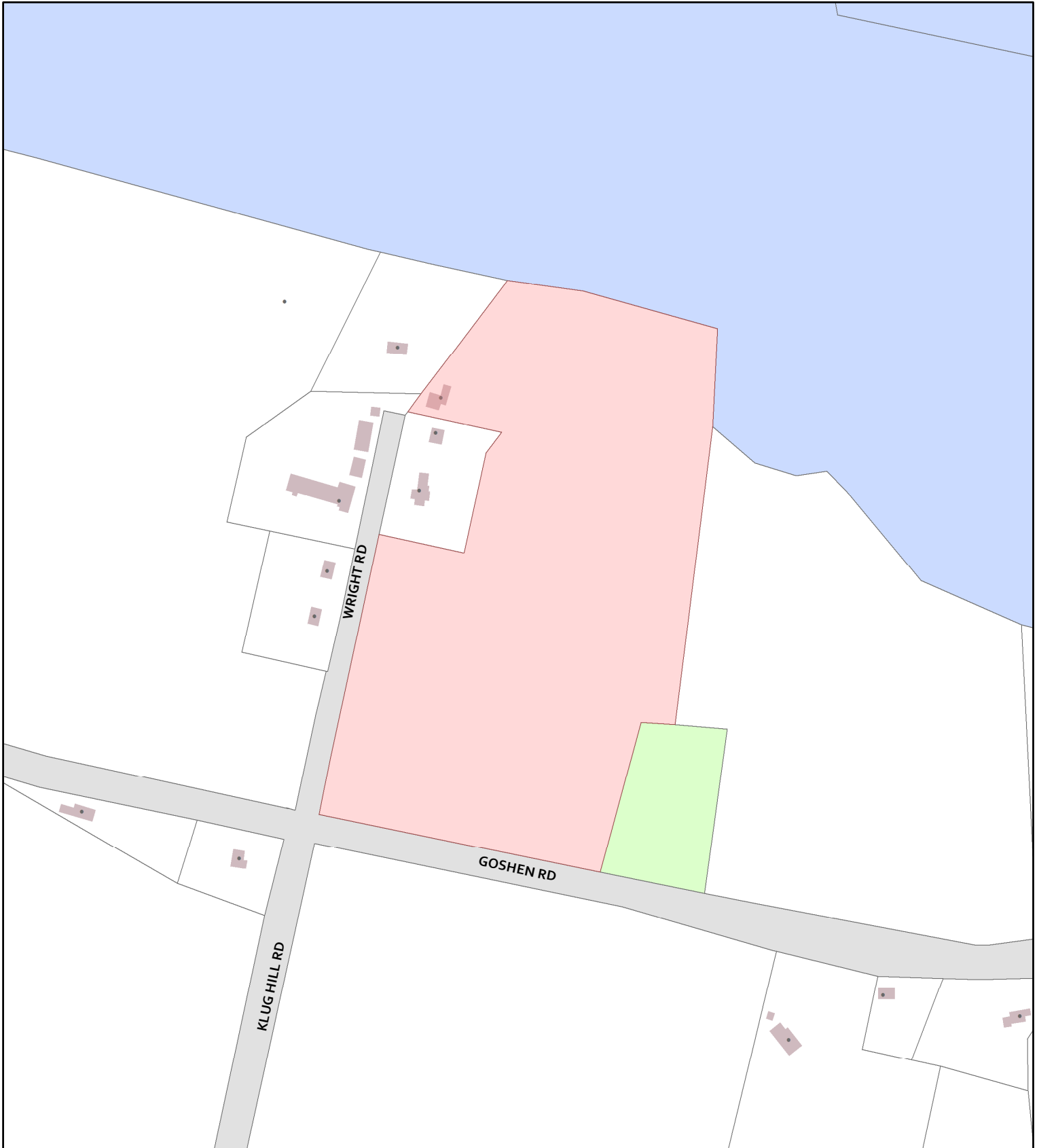


Building Use:	Single Family	Style:	Cape	Living Area:	1,814
Stories:	1.65	Construction:	Wood Frame	Year Built:	1941
Total Rooms:	9	Bedrooms:	4	Full Baths:	3
Half Baths:	0	Fireplaces:	1	Heating:	FHA
Fuel:	Oil	Cooling Percent:	0	Basement Area:	1,336

City of Torrington, Connecticut - Assessment Parcel Map

Map/Block/Lot 215-005-001

Address: 136 WRIGHT RD



Approximate Scale: 1 inch = 300 feet

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

Map Produced May 2017

SHEET INDEX	
NO.	DESCRIPTION
T1	TITLE PAGE
N1	NOTES
C1	SITE PLAN
C2	PLAN & ELEVATION
C3	RF CHART & ORIENTATION
C4	CABLE DETAILS
D1	EQUIPMENT DETAILS
D2	EQUIPMENT DETAILS
D3	EQUIPMENT DETAILS
D4	EQUIPMENT DETAILS
E1	ELECTRIC DETAILS
G1	GROUNDING PLAN
G2	GROUNDING DETAILS
G3	GROUNDING DETAILS

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



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





CBU
876373
 SITE ID
CTNH551A
 SITE NAME
LONG EDDY / WRIGHT PROPERTY
 SITE ADDRESS
 136 WRIGHT ROAD
 TORRINGTON, CT 06790
 CONFIGURATION
4SEC-67D97DB

PROJECT SITE INFORMATION

SITE ID: CTNH551A
 SITE NAME: LONG EDDY / WRIGHT PROPERTY
 SITE ADDRESS: 136 WRIGHT ROAD
 TORRINGTON, CT 06790
 PERMITTING JURISDICTION: CITY OF TORRINGTON
 COUNTY: LITCHFIELD
 ZONING: R-WP
 SITE COORDINATES:
 LATITUDE: N 41° 49' 38.34" (NAD 83)
 LONGITUDE: W 73° 10' 13.97" (NAD 83)
 APPLICANT: T-MOBILE NORTHEAST LLC
 103 MONARCH DRIVE
 LIVERPOOL, NY 13088

STRUCTURAL ANALYSIS INFORMATION

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

ANTENNA MOUNTS
 INFINGY ENGINEERING HAS NOT EVALUATED THE PROPOSED 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: INFINGY
 6865 DEERPATH ROAD SUITE 152
 ELK RIDGE, MD 21075

ENGINEER CONTACT: MATTHEW LIVERETTE
 (518) 690-0790

SCOPE OF WORK

SCOPE OF WORK:
 TMO 4SEC-67D97DB: INSTALLING ON A 4-SECTOR SITE (8) ANTENNAS, (4) HYBRIDS, (8) RRHS, (1) MW AND (1) ASSOCIATED LINE GROUND: 10' X 15' LEASE AREA WITH A BACK UP DIESEL GENERATOR.



TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG TOLL FREE: 1-800-922-4455 OR www.cbyd.com


CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE



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



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



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NO.	Submittal / Revision	App'd	Date
0	ISSUED FOR CONSTRUCTION	SKB	10/29/18
A	ISSUED FOR REVIEW	SL	03/14/18

Drawn: SL
 Designed: MRL
 Checked: A.D.

Project Number: 600-007

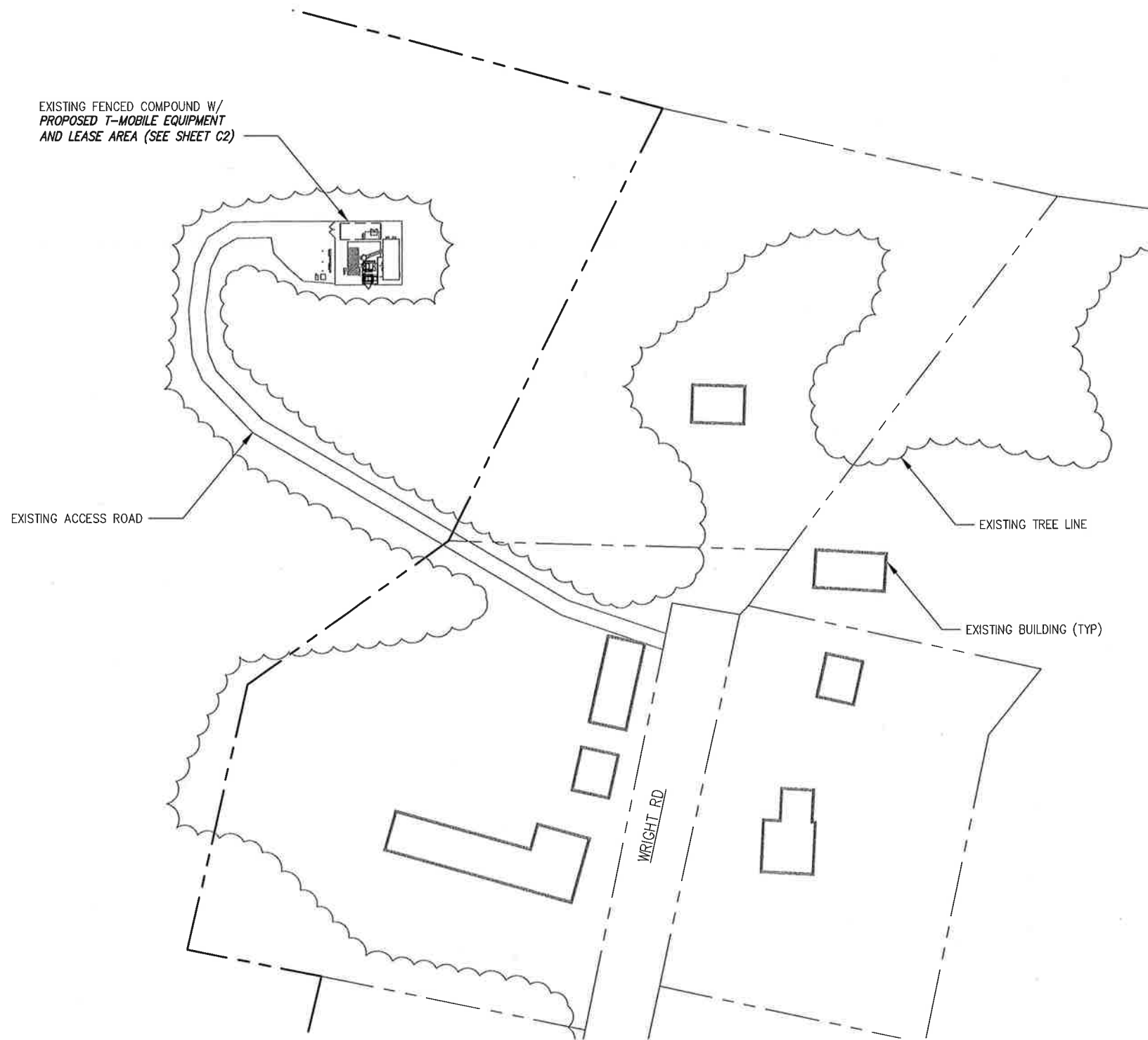
Project Title:
CTNH551A
 LONG EDDY / WRIGHT PROPERTY
 136 WRIGHT ROAD
 TORRINGTON, CT 06790

Prepared For:



Drawing Title:
TITLE PAGE

Drawing Number:
T1





EXISTING FENCED COMPOUND W/
PROPOSED T-MOBILE EQUIPMENT
AND LEASE AREA (SEE SHEET C2)


EXISTING ACCESS ROAD

EXISTING TREE LINE

EXISTING BUILDING (TYP)

WRIGHT RD

 NORTH
 1 SITE PLAN
 C1 SCALE: AS NOTED

GRAPHIC SCALE:

 SCALE (11x17): 1" = 100'-0"
 SCALE (22x34): 1" = 50'-0"

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

INFINIGY&
 6865 DEERPATH ROAD SUITE 152
 ELKRIDGE, MD 21075
 TEL (443) 582-3143



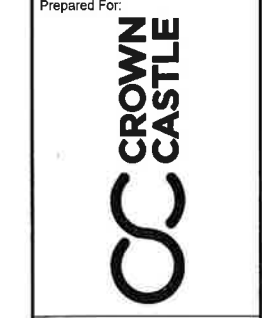
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ISSUED FOR CONSTRUCTION	SL	10/29/18
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		Date

Drawn: SL
 Designed: MR
 Checked: AD

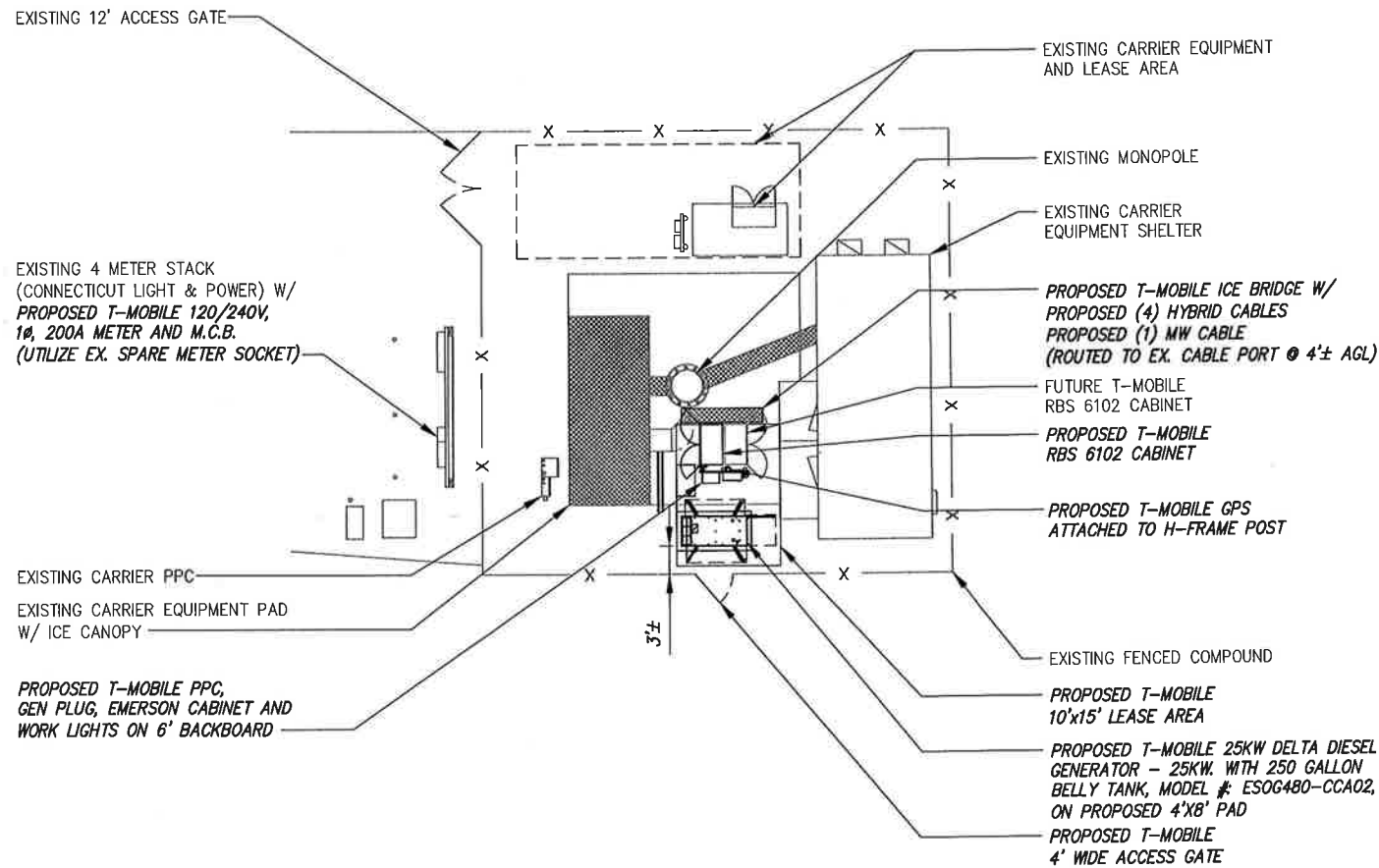
Project Number:
 600-007

Project Title:
CTNH551A
 LONG EDDY /
 WRIGHT PROPERTY
 138 WRIGHT ROAD
 TORRINGTON, CT 06790

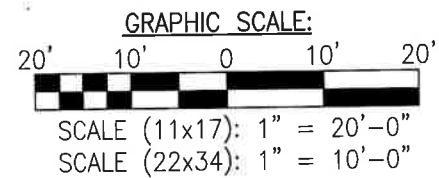


Drawing Title
SITE PLAN

Drawing Number
C1



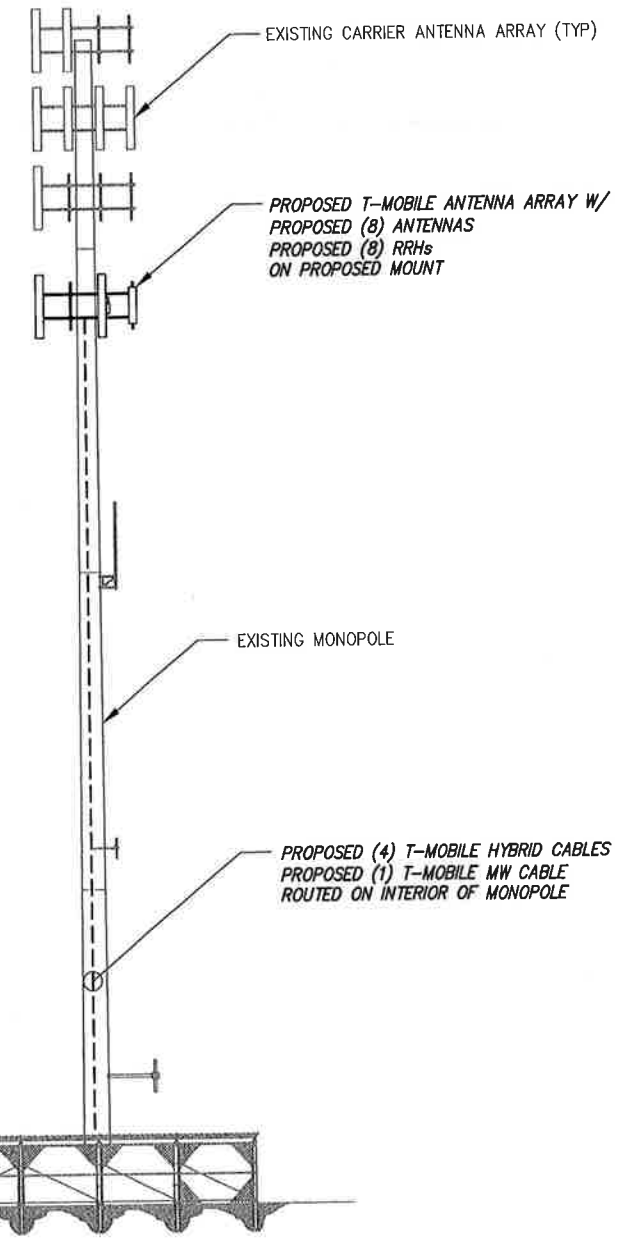
1 PLAN VIEW
 C2 SCALE: AS NOTED



TOP OF EXISTING MONOPOLE
 153'-0"± AGL

PROPOSED T-MOBILE ANTENNA CENTERLINE
 114'-0"± AGL

GRADE LEVEL
 0'-0" AGL



2 ELEVATION
 C2 SCALE: NOT TO SCALE

T-Mobile

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

INFINIGY &

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



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 600-007

Project Title:
CTNH551A
 LONG EDDY /
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 138 WRIGHT ROAD
 TORRINGTON, CT 06790

Prepared For:



Drawing Title
PLAN AND ELEVATION

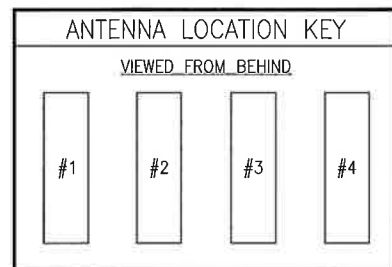
Drawing Number
C2

ANTENNA AND RRU SCHEDULE									
SECTOR	ANTENNA POSITION	ANTENNA MAKE	ANTENNA MODEL	RAD. CTR. FT. AGL	AZIMUTH	RRU/ODU	E-TILT	M-TILT	CABLE
ALPHA	#1	RFS	SC2-W100AB	114'-0"	0°	AVIAT ODU 600	N/A	N/A	(1) 1/2"Ø CABLE
	#2	ERICSSON	AIR32 B2A/B66A	114'-0"	10°	-	2' (L2100) 2' (U1900/L1900)	0°	(1) 6X12 HYBRID (SHARED BY ALPHA)
	#3	RFS	APXVAARR24_43-U-NA20	114'-0"	10°	ERICSSON 4449 B71+B12 ERICSSON 4449 B71+B12	2' (L700/L600)	0°	(1) 6X12 HYBRID (SHARED BY ALPHA)
	#4	FUTURE	-	-	-	-	-	-	-
BETA	#1	ERICSSON	AIR32 B2A/B66A	114'-0"	100°	-	2' (L2100) 2' (U1900/L1900)	0°	(1) 6X12 HYBRID (SHARED BY BETA)
	#2	FUTURE	-	-	-	-	-	-	-
	#3	RFS	APXVAARR24_43-U-NA20	114'-0"	100°	ERICSSON 4449 B71+B12 ERICSSON 4449 B71+B12	2' (L700/L600)	0°	(1) 6X12 HYBRID (SHARED BY BETA)
	#4	FUTURE	-	-	-	-	-	-	-
GAMMA	#1	ERICSSON	AIR32 B2A/B66A	114'-0"	190°	-	2' (L2100) 2' (U1900/L1900)	0°	(1) 6X12 HYBRID (SHARED BY GAMMA)
	#2	FUTURE	-	-	-	-	-	-	-
	#3	RFS	APXVAARR24_43-U-NA20	114'-0"	190°	ERICSSON 4449 B71+B12 ERICSSON 4449 B71+B12	2' (L700/L600)	0°	(1) 6X12 HYBRID (SHARED BY GAMMA)
	#4	FUTURE	-	-	-	-	-	-	-
DELTA	#1	ERICSSON	AIR32 B2A/B66A	114'-0"	280°	-	2' (L2100) 2' (U1900/L1900)	0°	(1) 6X12 HYBRID (SHARED BY DELTA)
	#2	FUTURE	-	-	-	-	-	-	-
	#3	RFS	APXVAARR24_43-U-NA20	114'-0"	280°	ERICSSON 4449 B71+B12 ERICSSON 4449 B71+B12	2' (L700/L600)	0°	(1) 6X12 HYBRID (SHARED BY DELTA)
	#4	FUTURE	-	-	-	-	-	-	-

KEY
FUTURE
PROPOSED

SEE CABLE SCHEDULE FOR LENGTHS AND PER SECTOR QUANTITIES

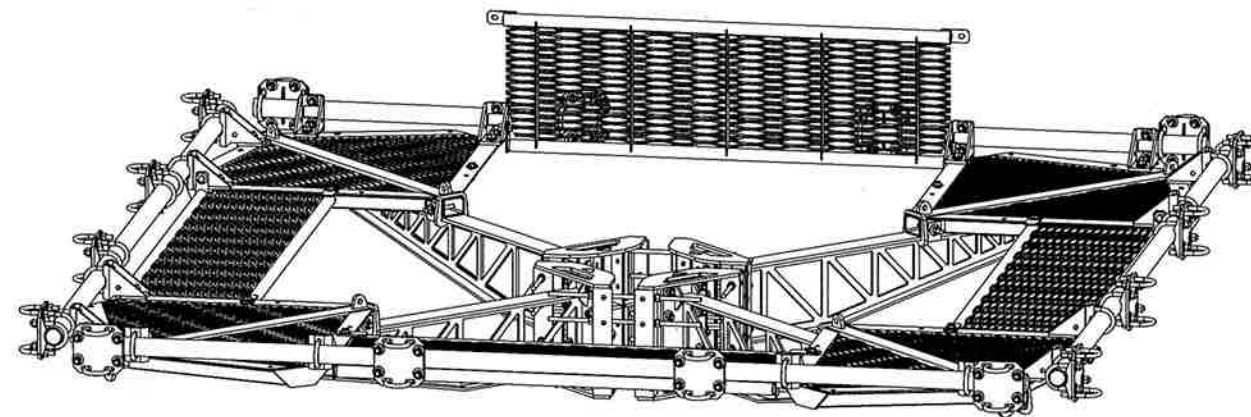
CABLE SCHEDULE			
SYSTEM	TYPE	QTY	LENGTH/SECTOR
RRUs/ANTENNAS	6x12 HYBRID FIBER/DC	1	150'± (ALPHA)
MW	1/2"Ø CABLE	1	150'± (ALPHA)
RRUs/ANTENNAS	6x12 HYBRID FIBER/DC	1	150'± (BETA)
RRUs/ANTENNAS	6x12 HYBRID FIBER/DC	1	150'± (GAMMA)
RRUs/ANTENNAS	6x12 HYBRID FIBER/DC	1	150'± (DELTA)



GENERAL NOTES:

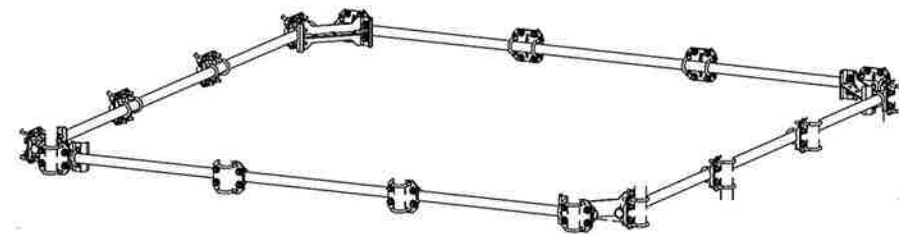
- CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT AT TIME OF CONSTRUCTION.
- CABLE LENGTHS INCLUDE 10% MARKUP AND SHOWN FOR REFERENCE ONLY. CONTRACTOR TO CONFIRM CABLE LENGTHS FOR ANY PROPOSED CABLES/JUMPERS PRIOR TO CONSTRUCTION.

1 ANTENNA/CABLE/RRU SCHEDULE
C3 SCALE: NOT TO SCALE



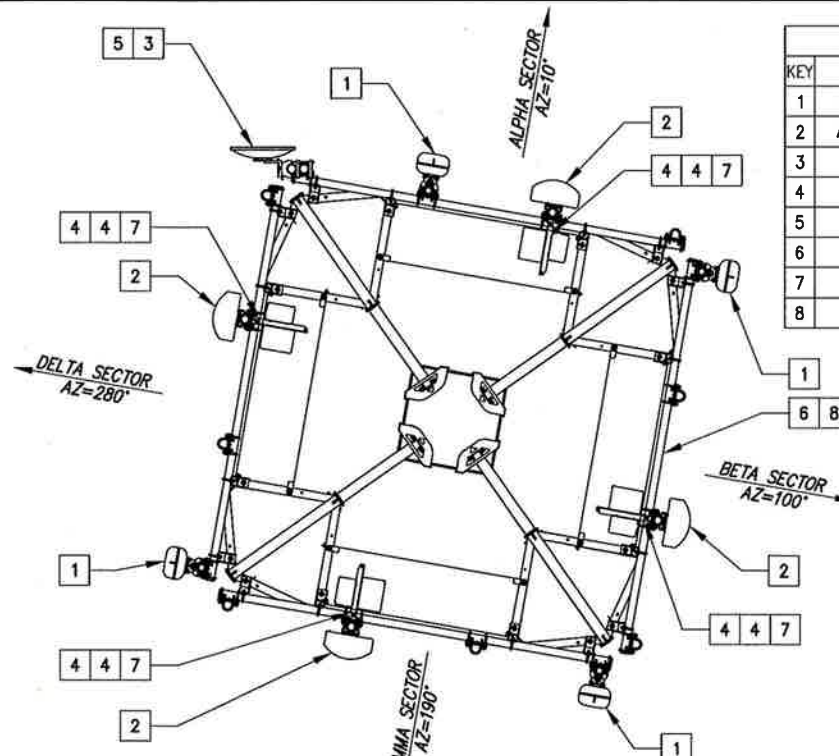
2 ANTENNA MOUNT DETAIL
C3 SCALE: NOT TO SCALE

SITE PRO 1 F4P-12W MOUNT
12' SECTOR FACE



3 HANDRAIL KIT DETAIL
C3 SCALE: NOT TO SCALE

SITE PRO 1 F4P-HRK12
HAND RAIL KIT



ORIENTATION PLAN KEY				
KEY	DESCRIPTION	TYPE	QTY	STATUS
1	AIR32 B2A/B66A	ANTENNA	3	PROPOSED
2	APXVAARR24_43-U-NA20	ANTENNA	3	PROPOSED
3	SC2-W100AB	MW DISH	1	PROPOSED
4	4449 B71+B12	RRU	6	PROPOSED
5	ODU 600	ODU	6	PROPOSED
6	F4P-12W	PLATFORM	1	PROPOSED
7	RRUDSM	RRU SWIVEL MOUNT	3	PROPOSED
8	F4P-HRK12	HANDRAIL KIT	1	PROPOSED



4 ANTENNA ORIENTATION
C3 SCALE: NOT TO SCALE

INFINIGY & **T-Mobile**

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

6865 DEERPATH ROAD SUITE 152
ELK RIDGE, MD 21075
TEL (443) 692-3143



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Drawn: SL
Designed: MRL
Checked: AJP

Project Number:
600-007

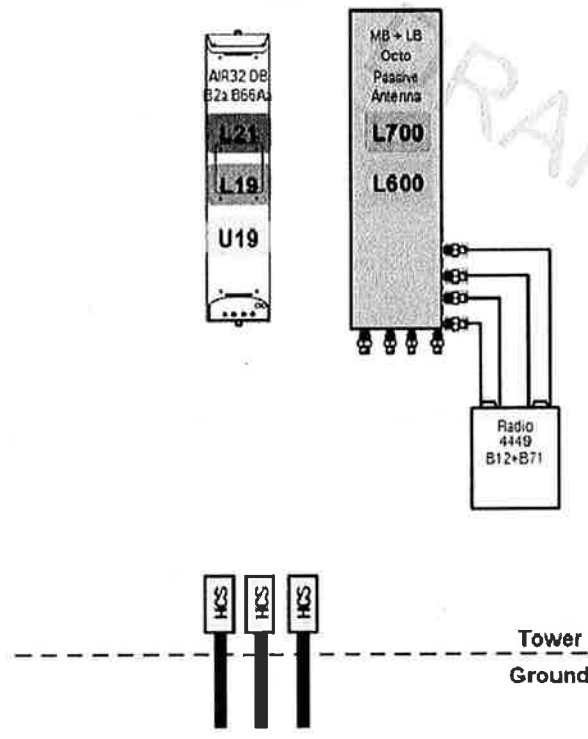
Project Title:
CTNH551A
LONG EDDY /
WRIGHT PROPERTY
136 WRIGHT ROAD
TORRINGTON, CT 06790

Prepared For:

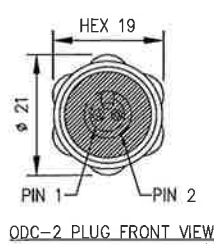
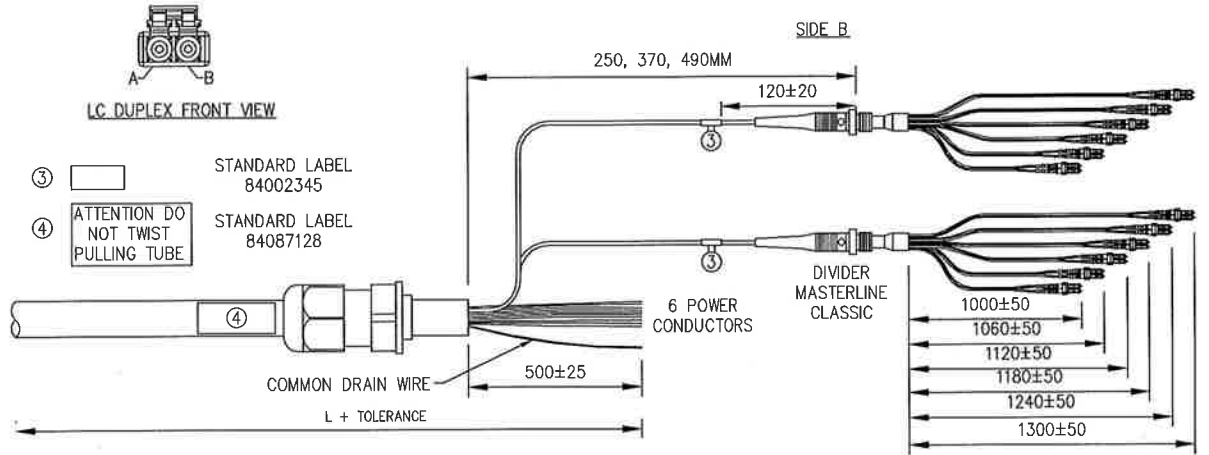
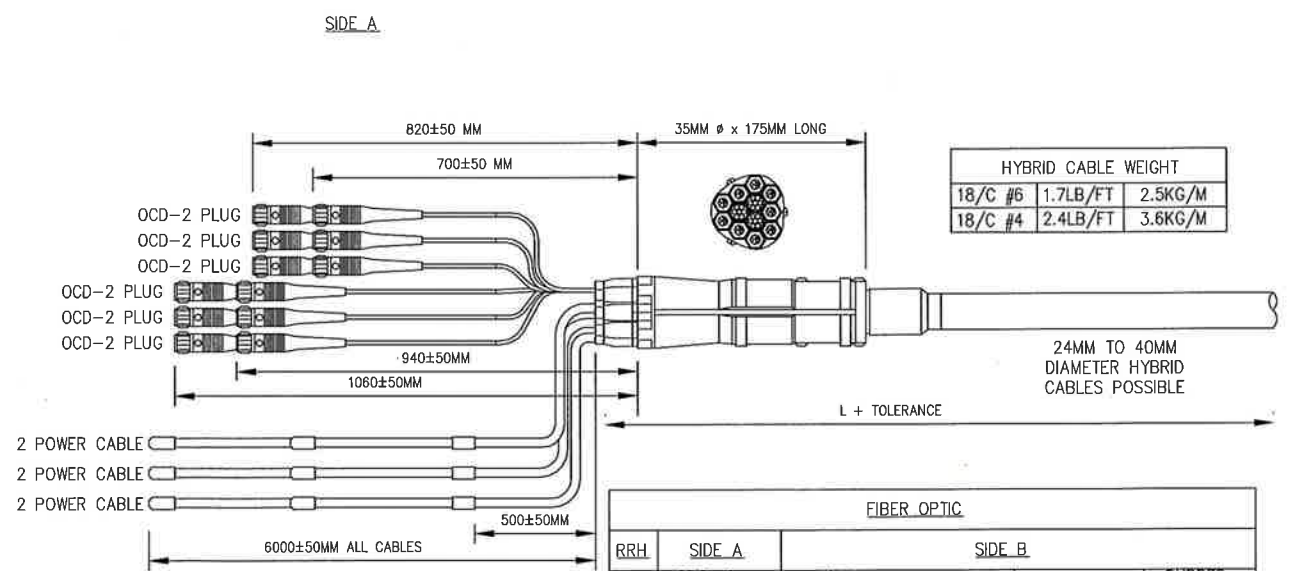


Drawing Title:
RF CHART & ORIENTATION

Drawing Number:
C3



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE



TOLERANCE	ASSEMBLY LENGTH
+80	L < 5M
+2%	L ≥ 5M

POWER	
LENGTH	DIAMETER
L ≤ 60M	6MM ² (10AWG)
L ≥ 60M	10MM ² (8AWG)

RRH NO.	SIDE A		SIDE B		RUBBER GROMMETS
	ODC PLUG	PIN.	COLOR LCD BOOTS	LENGTH SIDE B	
1	ODC-2 RED	1 B	RED (SHORT BREAKOUT)	1000±50	1
	ODC-2 RED	2 A			
2	ODC-2 GREEN	1 B	GREEN	1060±50	1
	ODC-2 GREEN	2 A			
3	ODC-2 BLUE	1 B	BLUE	1120±50	1
	ODC-2 BLUE	2 A			
4	ODC-2 YELLOW	1 B	RED (SHORT BREAKOUT)	1180±50	1
	ODC-2 YELLOW	2 A			
5	ODC-2 WHITE	1 B	GREEN	1240±50	1
	ODC-2 WHITE	2 A			
6	ODC-2 BLACK	1 B	BLUE	1300±50	1
	ODC-2 BLACK	2 A			

RRH NO.	REF HOOK UP	SIDE A		SIDE B
		WIRE COLOR	CABLE DESIGNATOR	WIRE COLOR
1	-48V	BLACK	RED	RED
	0V	GREY	RED	BLACK
	GROUND	DRAIN		COMMON DRAIN
2	-48V	BLACK	GREEN	GREEN
	0V	GREY	GREEN	WHITE
	GROUND	DRAIN		COMMON DRAIN
3	-48V	BLACK	BLUE	BLUE
	0V	GREY	BLUE	ORANGE
	GROUND	DRAIN		COMMON DRAIN

RRH NO.	REF HOOK UP	SIDE A		SIDE B
		WIRE COLOR	CABLE DESIGNATOR	WIRE COLOR
4	-48V	BLACK	RED	RED
	0V	GREY	RED x2 BANDS	BLACK
	GROUND	DRAIN		COMMON DRAIN
5	-48V	BLACK	GREEN	GREEN
	0V	GREY	GREEN x2 BANDS	WHITE
	GROUND	DRAIN		COMMON DRAIN
6	-48V	BLACK	BLUE	BLUE
	0V	GREY	BLUE x2 BANDS	ORANGE
	GROUND	DRAIN		COMMON DRAIN

2 MLE HYBRID CABLE (6 POWER/12 FIBER)
SCALE: NOT TO SCALE



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Drawn: SL
Designed: MR
Checked: AD
Project Number: 600-007
Project Title: CTNH551A LONG EDDY / WRIGHT PROPERTY 136 WRIGHT ROAD TORRINGTON, CT 06790



CABLE DETAILS

Drawing Number

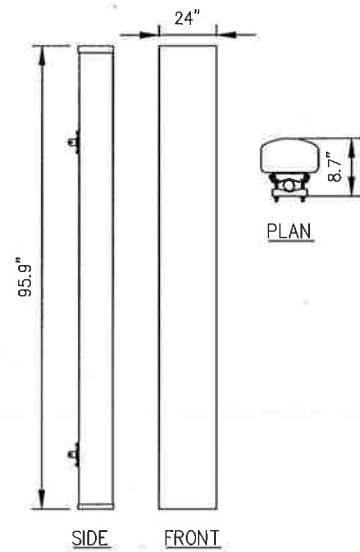
C4

T-Mobile

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

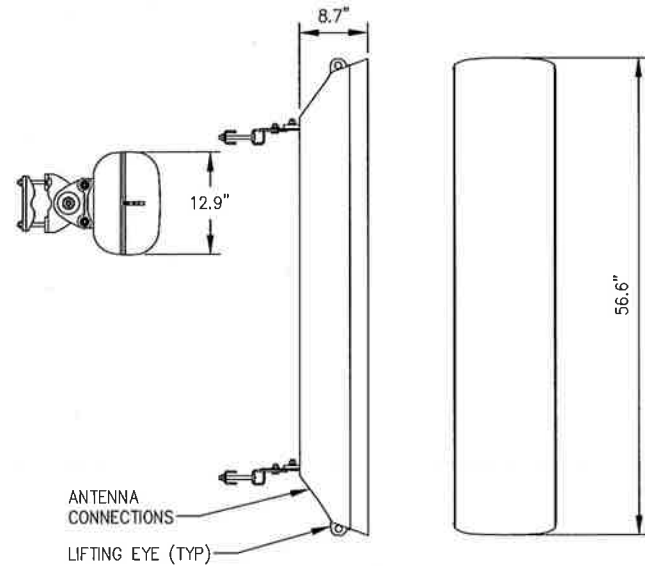
FINIGY8

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ELK RIDGE, MD 21075
TEL (443) 592-3143



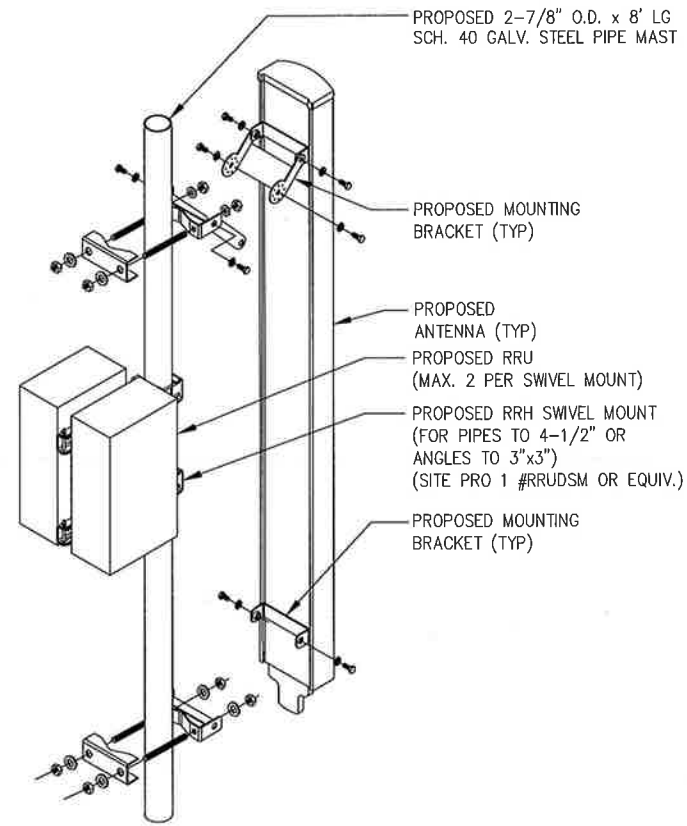
RFS MODEL NO.:	APXVAARR24_43-U-NA20
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD:	95.9"x24"x8.7"
WEIGHT, W/O MOUNTING KIT:	128 LBS

1 APX
ANTENNA DETAIL
D1 SCALE: NOT TO SCALE

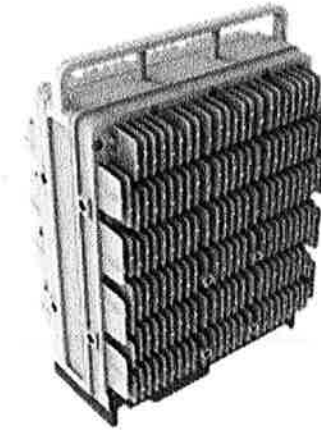


ERICSSON MODEL NO.:	AIR32 B2A/B66A
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	56.6"x12.9"x8.7"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	132.2 LBS

2 AIR32 B2A/B66A
ANTENNA DETAIL
D1 SCALE: NOT TO SCALE



3 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

4 4449 B71+B12
RRU DETAIL
D1 SCALE: NOT TO SCALE



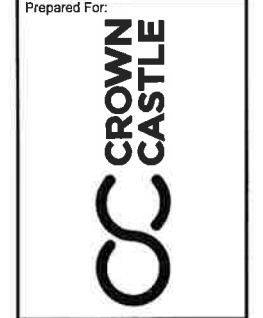
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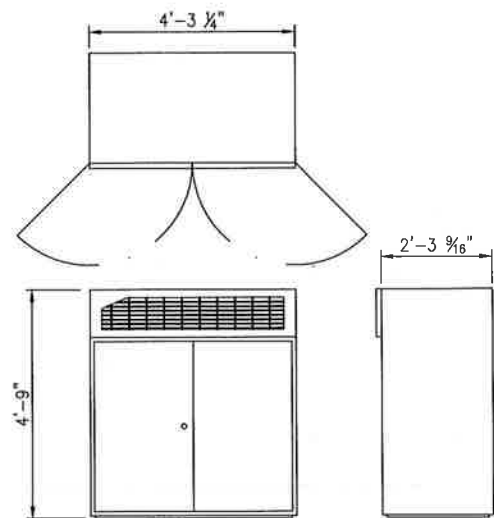
Drawing Title
EQUIPMENT DETAILS

Drawing Number
D1

INFINIGY & T-Mobile

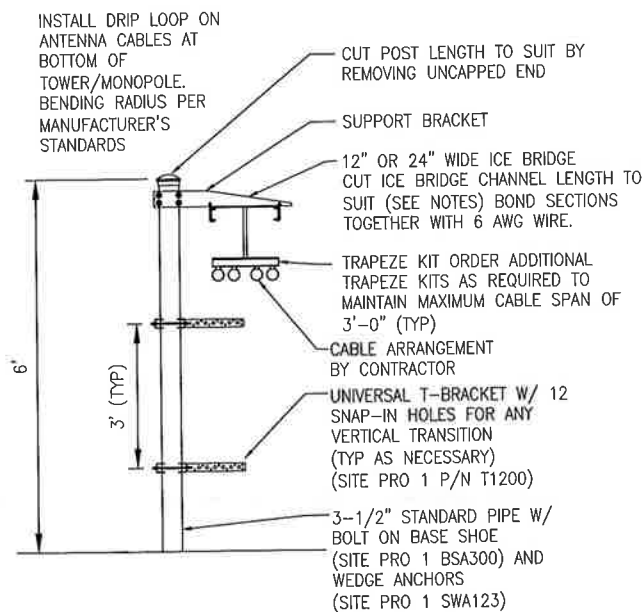
T-MOBILE NORTHEAST, LLC
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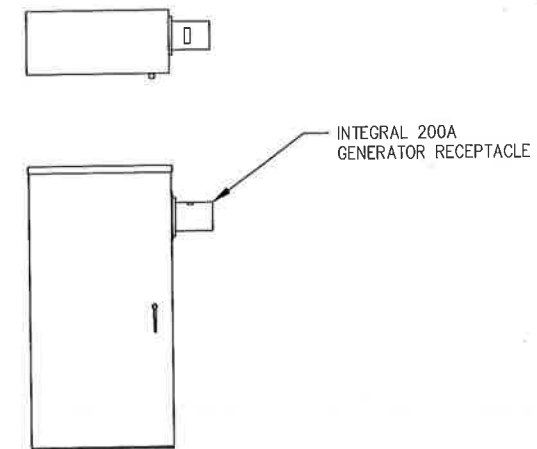
ERICSSON MODEL NO.: RBS 6102
 DIMENSIONS, HxWxD: 4'-9"x4'-3 1/4"x2'-3 9/16"
 WEIGHT: 772 LBS (W/O BATTERIES)

1 RBS 6102 DETAIL
 D2 SCALE: NOT TO SCALE



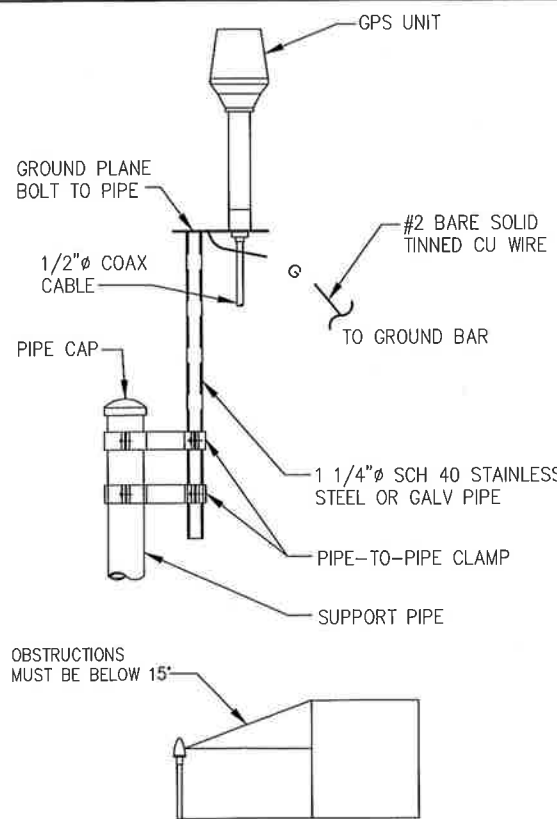
- NOTES:**
1. WHEN USING COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 6 FEET.
 2. WHEN USING COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
 3. WHEN USING COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
 4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
 5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM OTHER MANUFACTURERS, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
 6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
 7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS REQUIRE ENGINEERING APPROVAL.
 8. HEIGHT OF POST SHALL BE 10'-6" MAX. ABOVE GROUND LEVEL.

2 ICE BRIDGE DETAIL
 D2 SCALE: NOT TO SCALE



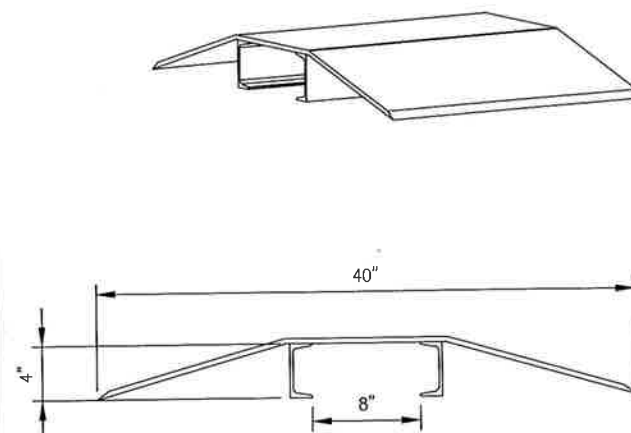
VERTIV PPC MODEL CAC
 DIMENSIONS, HxWxD: 39"x20"x10"
 WEIGHT: 75± LBS
 NEMA RATING: 3R
 OPERATING VOLTAGE: 120/240V, 1φ, 3W & GROUND
 SERVICE: 100AMP OR 200AMP
 LOAD CENTER: 200AMP, 24 POSITION

3 PPC DETAIL
 D2 NOT TO SCALE



- NOTES:**
1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
 2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A GROUND PLANE BOLTED TO A STANDARD 1-1/4" DIAMETER, SCHEDULE 40 GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
 3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
 4. DO NOT SWEEP TEST GPS ANTENNA.

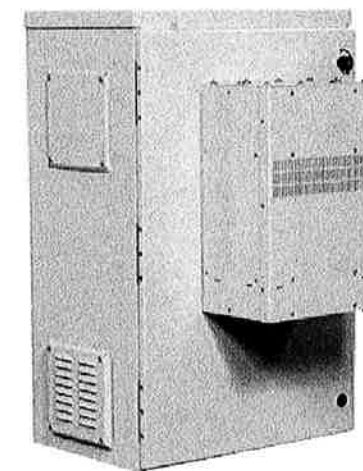
4 GPS MOUNTING DETAIL
 D2 SCALE: NOT TO SCALE



MCMASTER CARR #2233T72
 MAXIMUM CAPACITY: 2000 LBS
 WIDTH: 40"
 CHANNEL DIMENSIONS (HxW): 4"Hx8"W
 TEXTURE: DIAMOND
 MATERIAL: ALUMINUM

- NOTES:**
1. POSITION AS NECESSARY FOR CONDUIT ROUTING.
 2. MAXIMUM HEIGHT OF CABLE RAMP NOT TO EXCEED PLINTH HEIGHT OF RBS 6102.

5 CABLE RAMP DETAIL
 D2 SCALE: NOT TO SCALE



EMERSON SSC #NX2416
 DIMENSIONS (W/O HEAT EXCHANGER): 24"Hx24"Wx16"D
 (W/ HEAT EXCHANGER): 24"Hx24"Wx17"D
 WEIGHT: 45LBS (EMPTY)
 100LBS (W/ (4) BATTERIES)

6 EMERSON SSC DETAIL
 D2 SCALE: NOT TO SCALE

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 LIVERPOOL, NY 13088

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STATE OF CONNECTICUT
 JOHN S. STEVENS
 OCT 9 2018
 No. 24705
 LICENSED PROFESSIONAL ENGINEER

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Drawn: SL
 Designed: MRL
 Checked: AAD

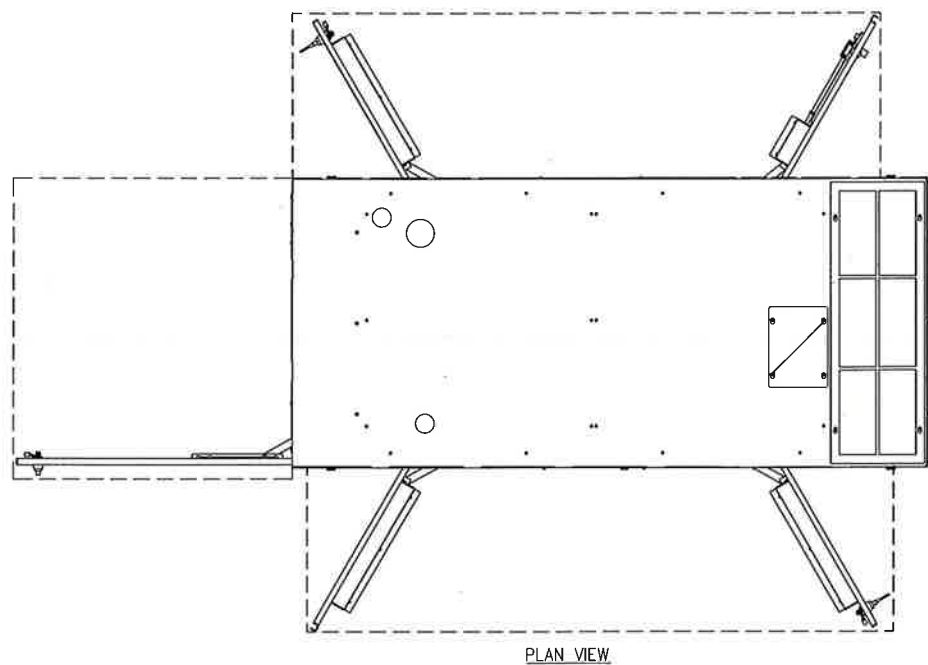
Project Number: 600-007

Project Title: **CTNH551A**
 LONG EDDY / WRIGHT PROPERTY
 138 WRIGHT ROAD
 TORRINGTON, CT 06790

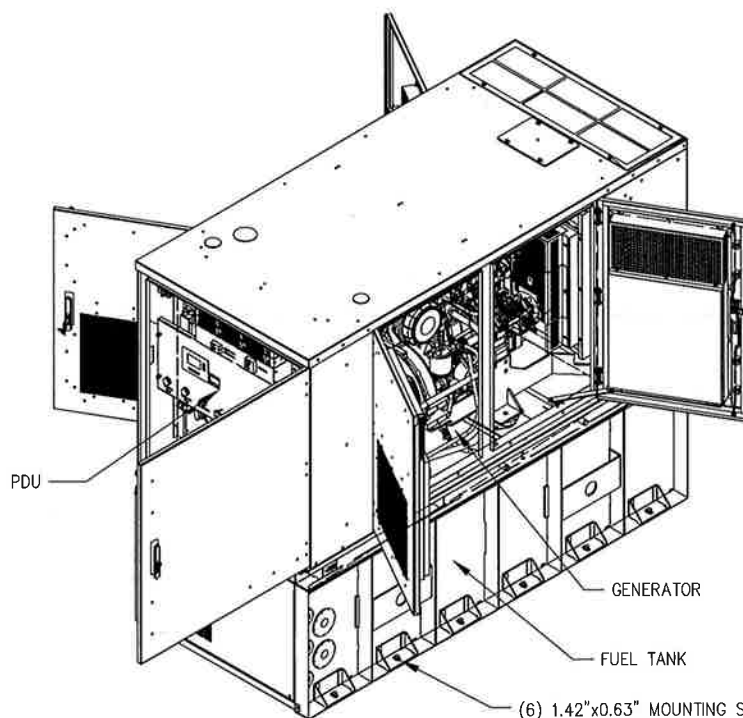
Prepared For: **CROWN CASTLE**

Drawing Title: **EQUIPMENT DETAILS**

Drawing Number: **D2**



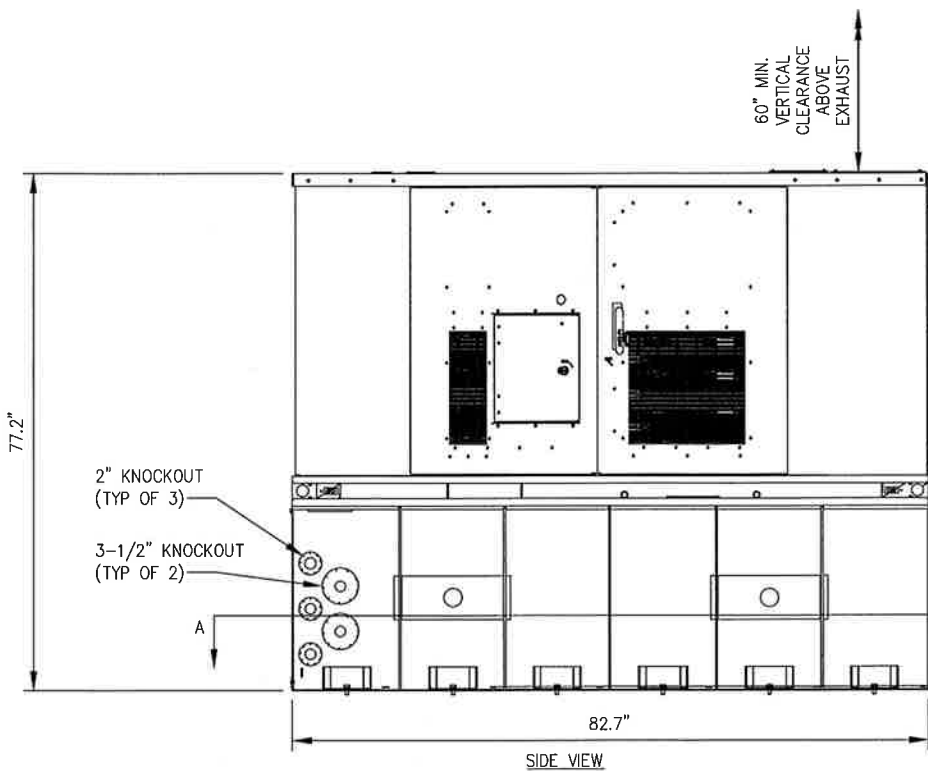
PLAN VIEW



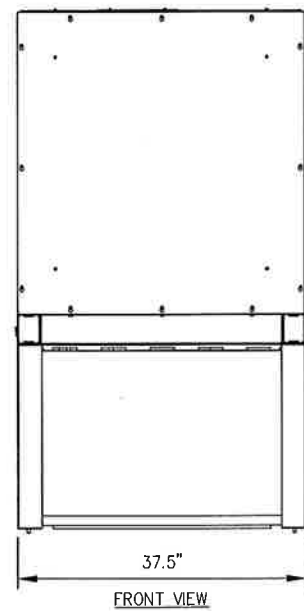
(6) 1.42"x0.63" MOUNTING SLOTS
(TYP EA. SIDE, 12 TOTAL)
AT 13.7" CENTERS
(BOLTS TO BE 5/8-11
GRADE 5 (USE STD. SAE
TORQUE SPEC))

HAZARD INFORMATION SIGNAGE NOTES:

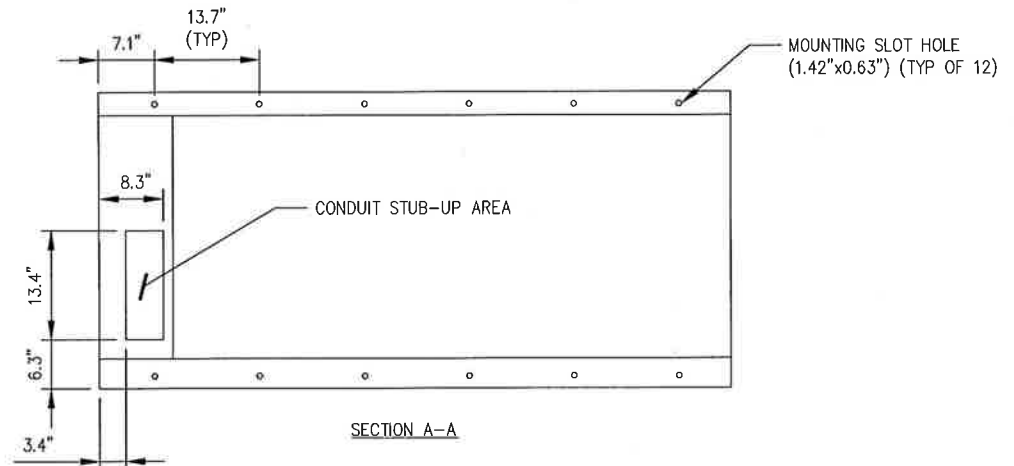
- GC TO AFFIX NFPA DIESEL FUEL 1-2-0 SIGN ON GENERATOR SIDE FACING MAIN COMPOUND ENTRY OR WHERE VISIBLE BY APPROACHING FIRE SAFETY SERVICE PERSONNEL.
- SIGN TO BE MIN. 10"x14" AND ADHESIVE BACKED VINYL LABEL.
- WHEN SIGN IS EXPOSED TO THE ELEMENTS, IT SHALL BE CHECKED ANNUALLY FOR LEGIBILITY.
- SIGN TO BE SAFETYSIGN.COM ITEM #M3348 OR EQUIVALENT.



SIDE VIEW



FRONT VIEW



SECTION A-A

DELTA 25kW DC DIESEL GENSET (MODEL #ESOG480-CCA02)
W/ 250 GALLON TANK
DOUBLE WALL TANK UL RATING: UL142
OUTPUT: 25kW @ 52VDC
WEIGHT: 3220LBS (W/O FUEL)

1 GENERATOR DETAIL
D3 NOT TO SCALE



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Designed: MRL		
Checked: AJD		

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Project Title: CTNH551A LONG EDDY / WRIGHT PROPERTY
136 WRIGHT ROAD TORRINGTON, CT 06790



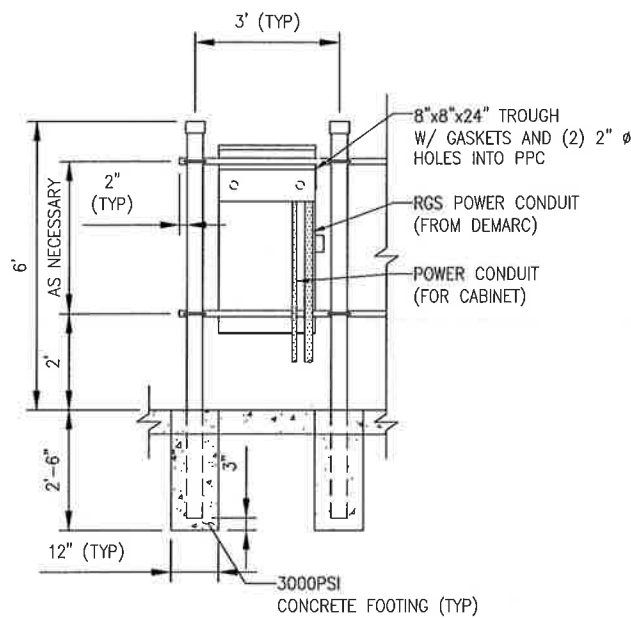
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Drawing Number: **D3**

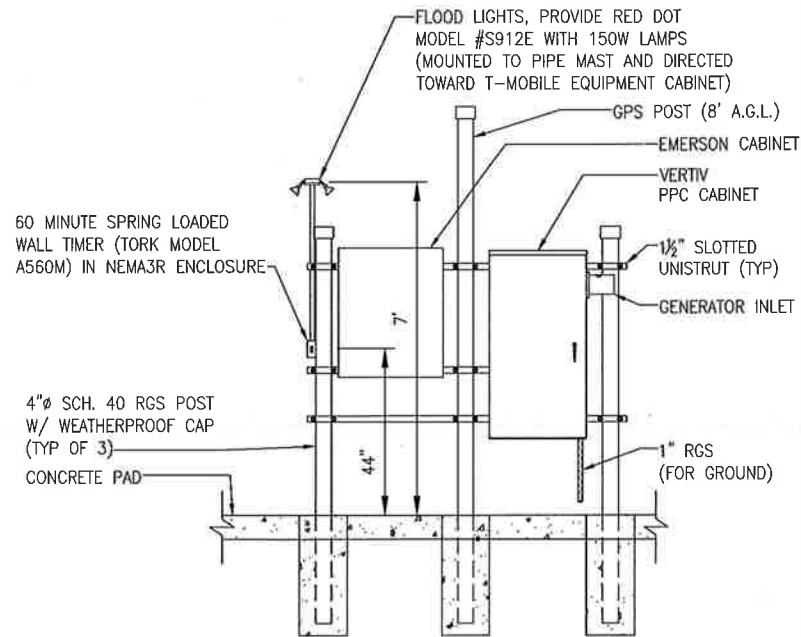
INFINIGY & T-Mobile

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

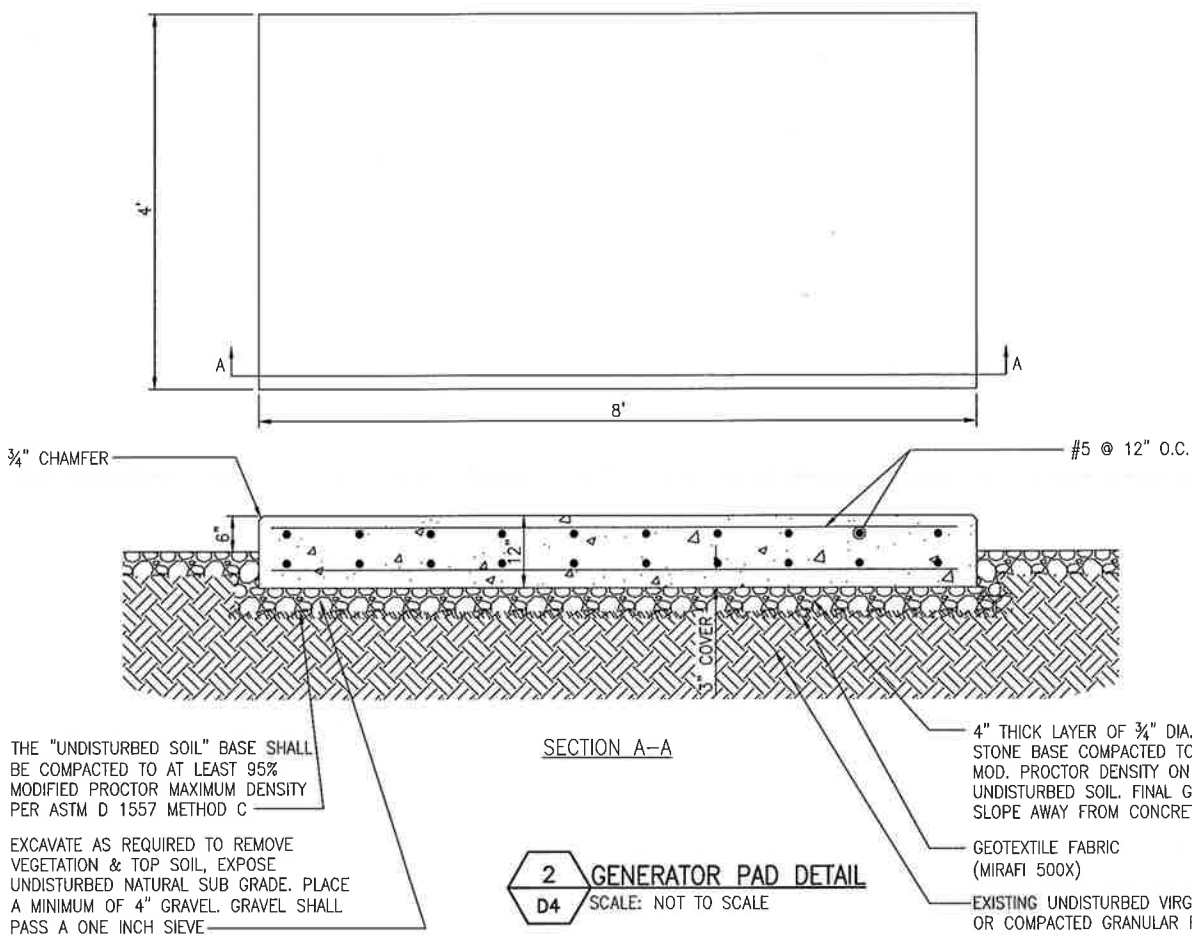
T-Mobile NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088



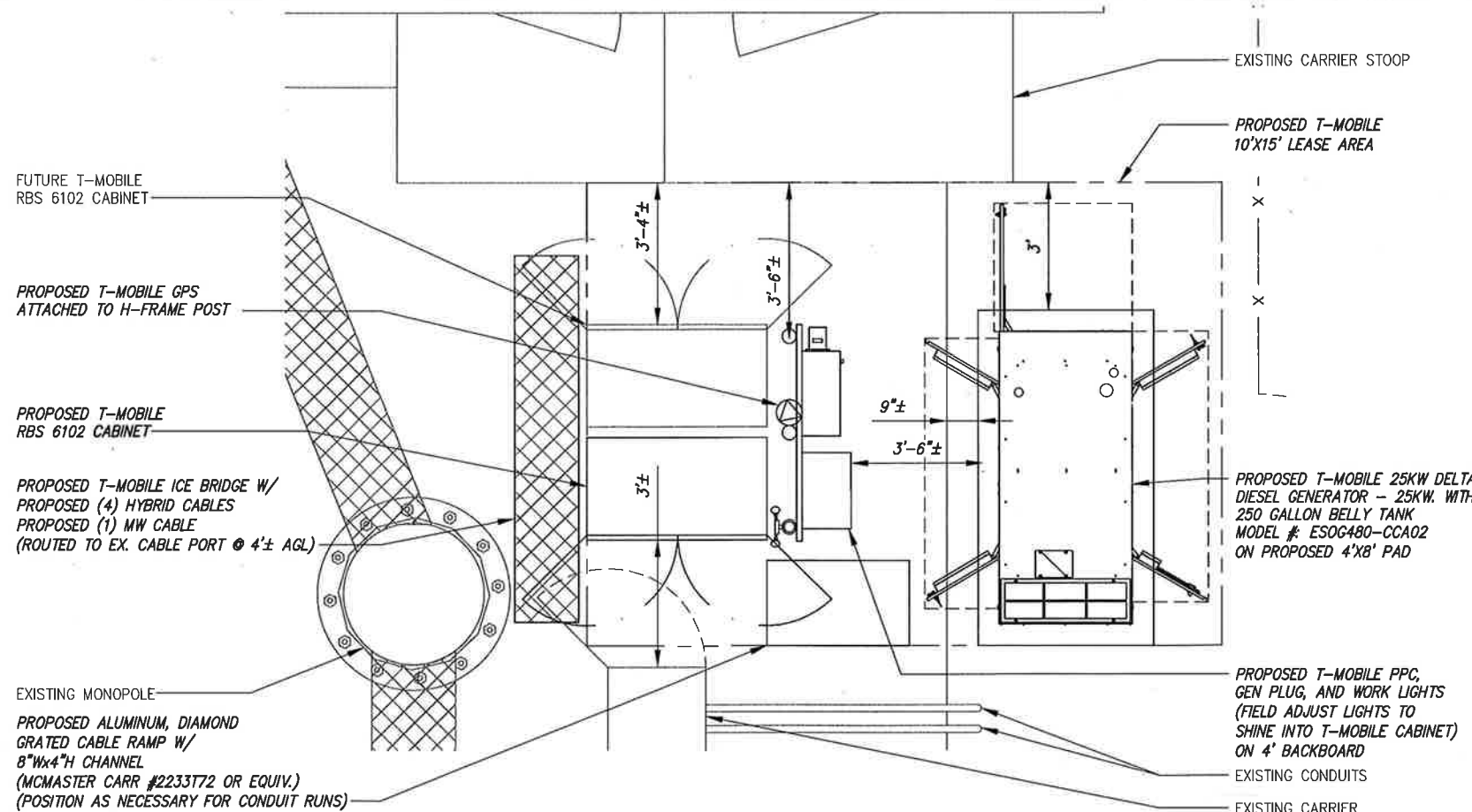
1 PPC BACKBOARD DETAIL
D4 SCALE: NOT TO SCALE



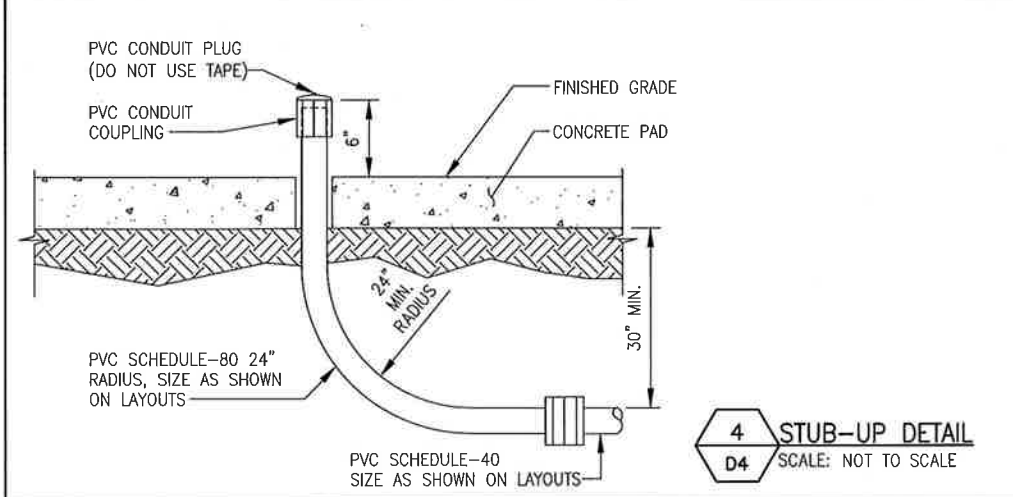
2 GENERATOR PAD DETAIL
D4 SCALE: NOT TO SCALE



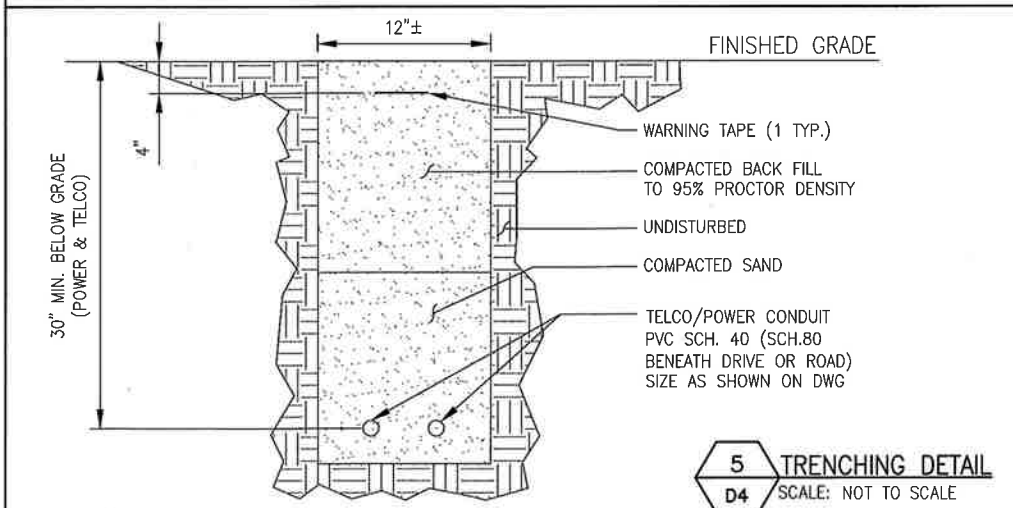
SECTION A-A



3 EQUIPMENT PAD LAYOUT PLAN
D4 SCALE: NOT TO SCALE



4 STUB-UP DETAIL
D4 SCALE: NOT TO SCALE



5 TRENCHING DETAIL
D4 SCALE: NOT TO SCALE

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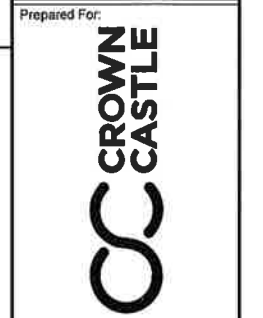
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6865 DEERPATH ROAD SUITE 152
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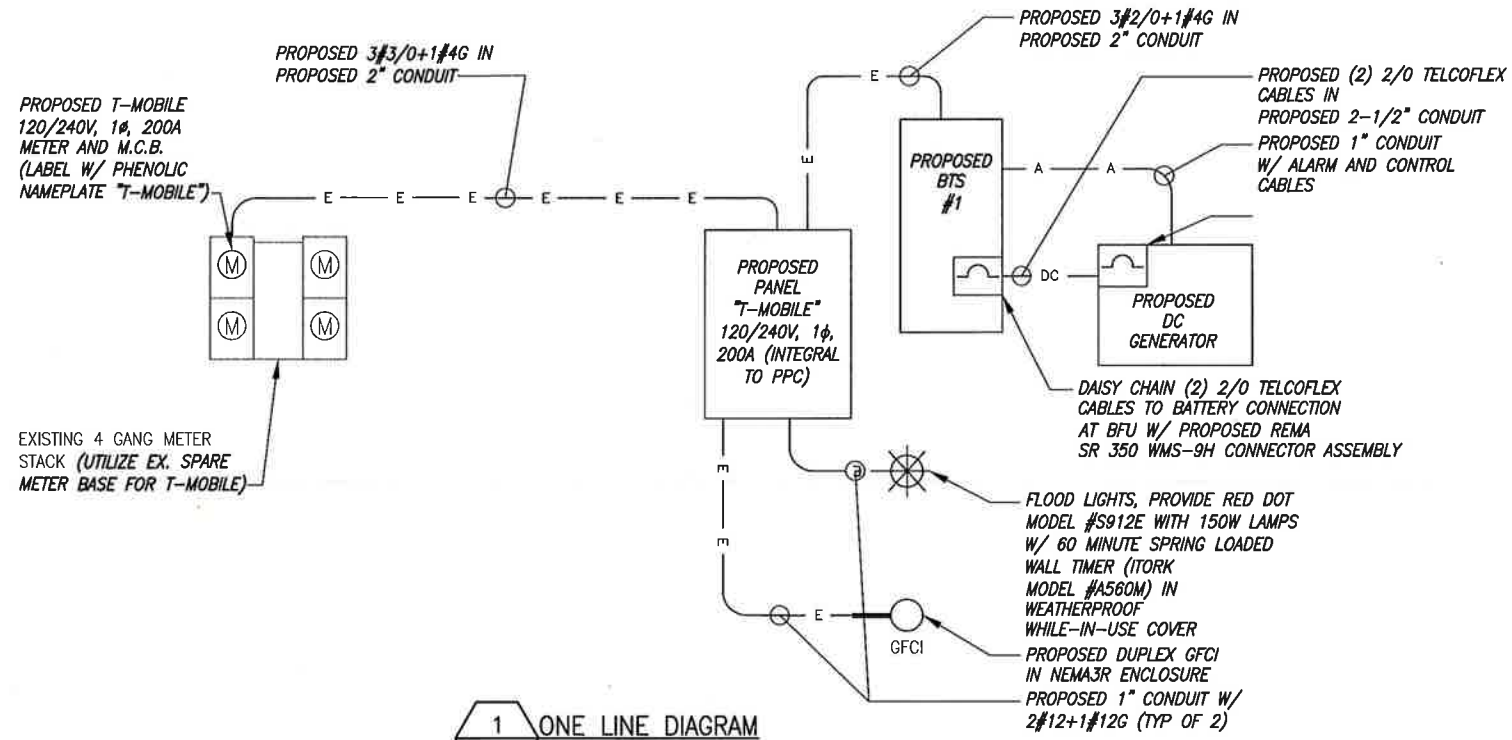
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Designed:	MRL	
Checked:	AD	

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LONG EDDY / WRIGHT PROPERTY
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TORRINGTON, CT 06790



Prepared For:
EQUIPMENT DETAILS
Drawing Number: **D4**



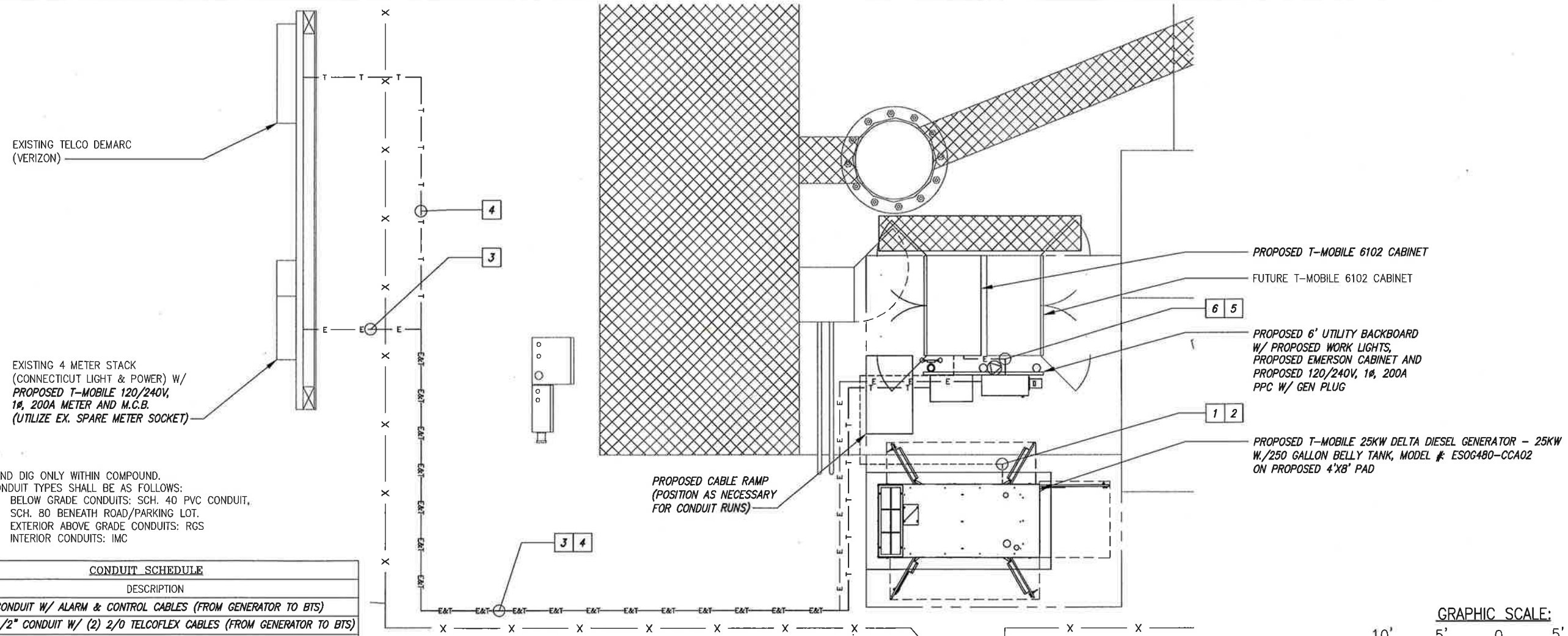
1 ONE LINE DIAGRAM
E1 SCALE: NOT TO SCALE

AC POWER PANEL T-MOBILE
(PANEL IS INTEGRAL TO PPC)
120/240 VOLTS, 1-PHASE, 3-WIRE, 200A

DESCRIPTION	MAIN BREAKER RATING (A):				200				DESCRIPTION		
	VA	CNC	BKR	POSN	L1	L2	POSN	BKR		CNC	VA
TVSS	1	C	60	1	401		2	20	NC	400	GFCI
BTS #1 / 6102	1	C		3		801	4	20	NC	800	LIGHTS
	14400	C	150	5	14400		6	S			SPACE
	14400	C		7		14400	8	S			SPACE
SPACE			S	9	0		10	S			SPACE
SPACE			S	11	0		12	S			SPACE
SPACE			S	13	0		14	S			SPACE
SPACE			S	15	0		16	S			SPACE
SPACE			S	17	0		18	S			SPACE
SPACE			S	19	0		20	S			SPACE
SPACE			S	21	0		22	S			SPACE
SPACE			S	23	0		24	S			SPACE
SPACE			S	25	0		26	S			SPACE
SPACE			S	27	0		28	S			SPACE
SPACE			S	29	0		30	S			SPACE
SPACE			S	31	0		32	S			SPACE
SPACE			S	33	0		34	S			SPACE
SPACE			S	35	0		36	S			SPACE
SPACE			S	37	0		38	S			SPACE
SPACE			S	39	0		40	S			SPACE
SPACE			S	41	0		42	S			SPACE
PHASE TOTALS (VA)				14801	15201						
CURRENT PER PHASE (A)				123.3	126.7						
PANEL TOTAL (VA)				30002							

PANEL CAPACITY (kVA): 48.0
PANEL LOAD X 1.25 (kVA): 37.2

2 PANEL SCHEDULE
E1 SCALE: NOT TO SCALE

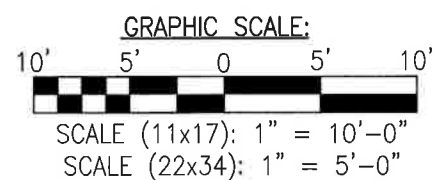


- NOTES:
- HAND DIG ONLY WITHIN COMPOUND.
 - CONDUIT TYPES SHALL BE AS FOLLOWS:
 - BELOW GRADE CONDUITS: SCH. 40 PVC CONDUIT, SCH. 80 BENEATH ROAD/PARKING LOT.
 - EXTERIOR ABOVE GRADE CONDUITS: RGS
 - INTERIOR CONDUITS: IMC

CONDUIT SCHEDULE

KEY	DESCRIPTION
1	1" CONDUIT W/ ALARM & CONTROL CABLES (FROM GENERATOR TO BTS)
2	2-1/2" CONDUIT W/ (2) 2/0 TELCOFLEX CABLES (FROM GENERATOR TO BTS)
3	2" CONDUIT W/ 3 $\#$ 4/0+1 $\#$ 4G (FROM METER/DISCONNECT TO PPC)
4	2" CONDUIT W/ 500 $\#$ PULLSTRING (FROM TELCO DEMARC TO BTS)
5	2" CONDUIT W/ 3 $\#$ 2/0+1 $\#$ 4G (FROM PPC TO BTS)
6	1" CONDUIT W/ PULLSTRING (FROM PPC TO BTS)

3 ENLARGED UTILITY PLAN
E1 SCALE: NOT TO SCALE



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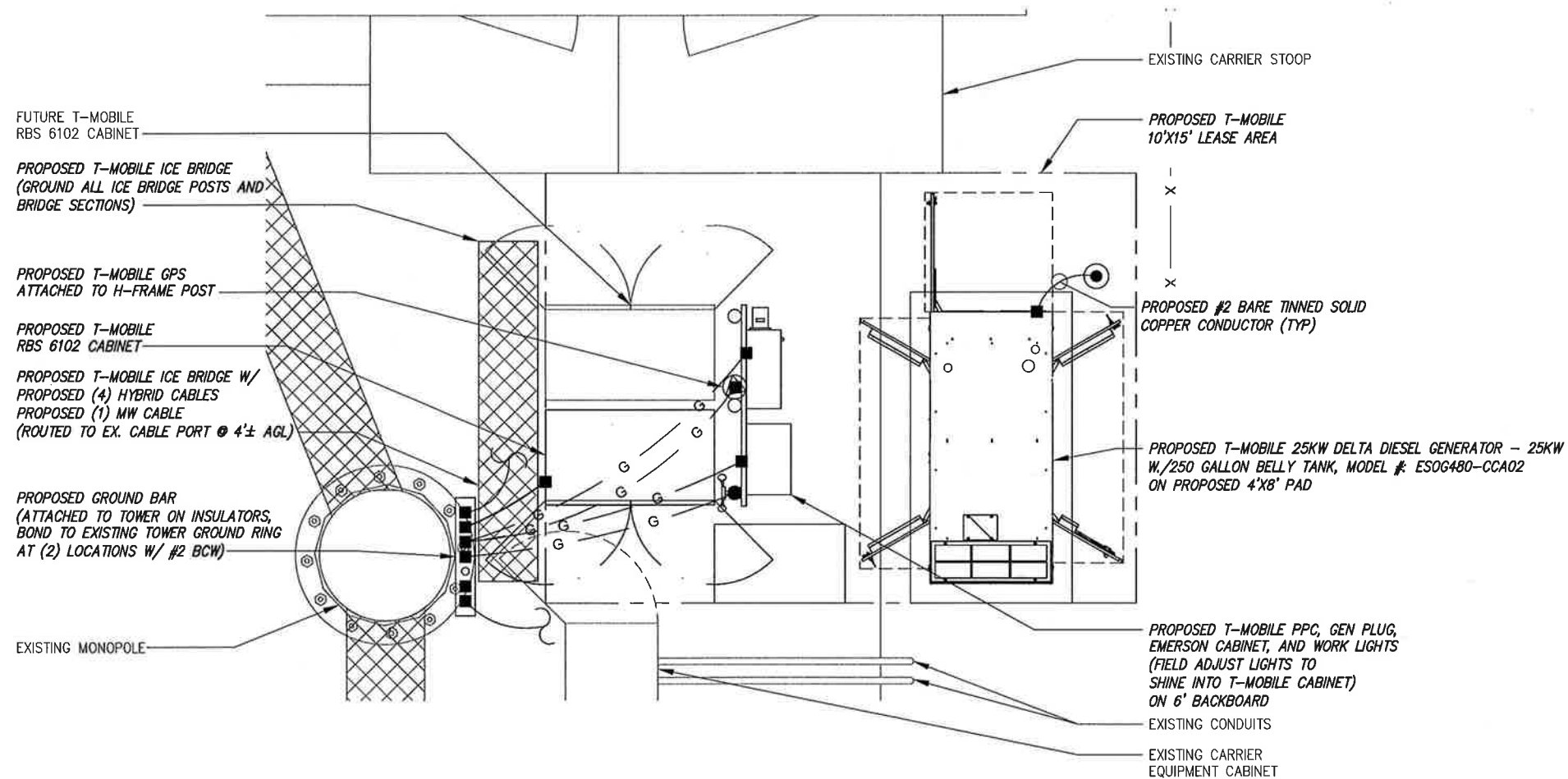
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136 WRIGHT ROAD TORRINGTON, CT 06790



Drawing Title: **ELECTRIC DETAILS**
Drawing Number: **E1**

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LIVERPOOL, NY 13088

INFINIGY
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TEL (443) 552-3143



- KEY**
- GROUND TEST PIT
 - GROUND ROD
 - MECHANICAL GROUNDING CONNECTION
 - CADWELD

- NOTES:**
1. HAND DIG ONLY WITHIN COMPOUND.
 2. GROUND ALL ICE BRIDGE POSTS AND BRIDGE SECTIONS.

NORTH

1 GROUNDING PLAN
G1 SCALE: NOT TO SCALE

T-Mobile

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 LIVERPOOL, NY 13086

INFINIGY8

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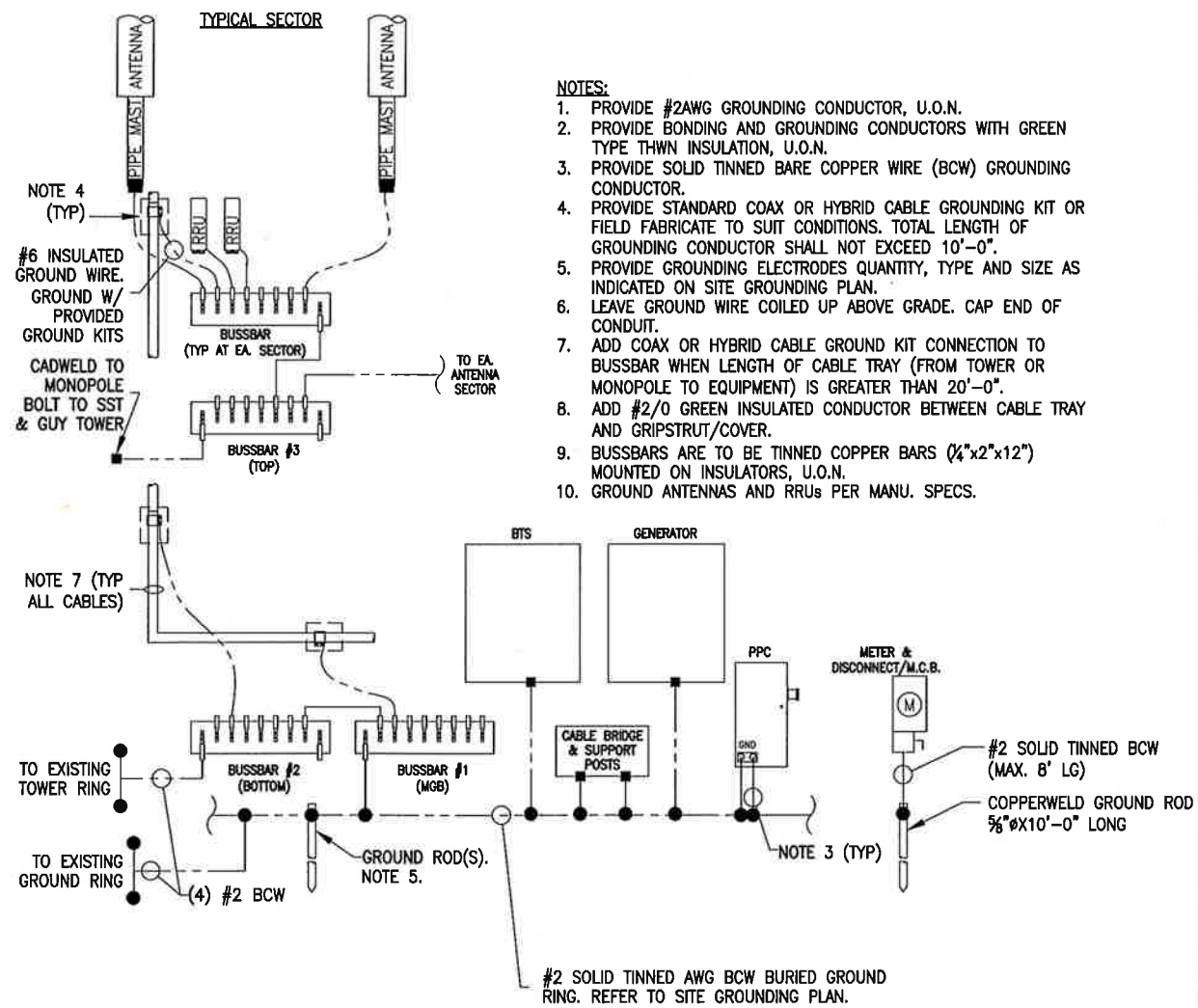
Project Number: 600-007

Project Title:
CTNH551A
 LONG EDDY /
 WRIGHT PROPERTY
 136 WRIGHT ROAD
 TORRINGTON, CT 06790

Prepared For:

Drawing Title:
GROUNDING PLAN

Drawing Number:
G1

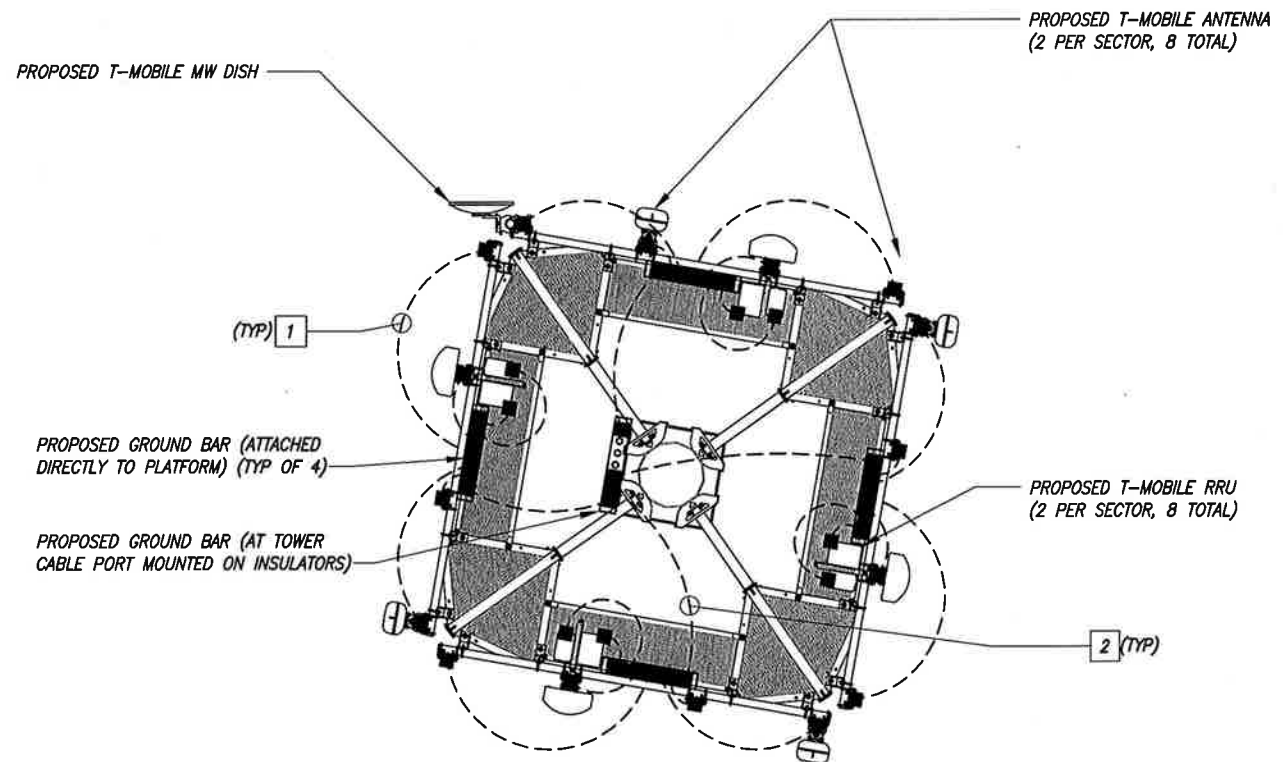


- NOTES:**
1. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
 2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
 3. PROVIDE SOLID TINNED BARE COPPER WIRE (BCW) GROUNDING CONDUCTOR.
 4. PROVIDE STANDARD COAX OR HYBRID CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. 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 BUSBAR 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 ANTENNAS AND RRU's PER MANU. SPECS.

1 GROUNDING DIAGRAM
G2 SCALE: NOT TO SCALE

GROUND CONDUCTOR SCHEDULE	
KEY	DESCRIPTION
1	#6 AWG GREEN, STRANDED, INSULATED COPPER (RRUs, PIPE MASTS, AND ANTENNAS)
2	#2 AWG GREEN, STRANDED, INSULATED COPPER (BUSSBAR TO BUSSBAR CONNECTIONS)

- NOTES:**
1. NO CADWELDING AT TOWER LEVEL. ALL GROUNDING CONNECTIONS TO BE MECHANICAL.



2 ANTENNA SECTOR GROUNDING
G2 SCALE: NOT TO SCALE



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Designed: MRL
Checked: AD

Project Number: 600-007

Project Title:
CTNH551A
LONG EDDY /
WRIGHT PROPERTY
136 WRIGHT ROAD
TORRINGTON, CT 06790

Prepared For:
CROWN CASTLE

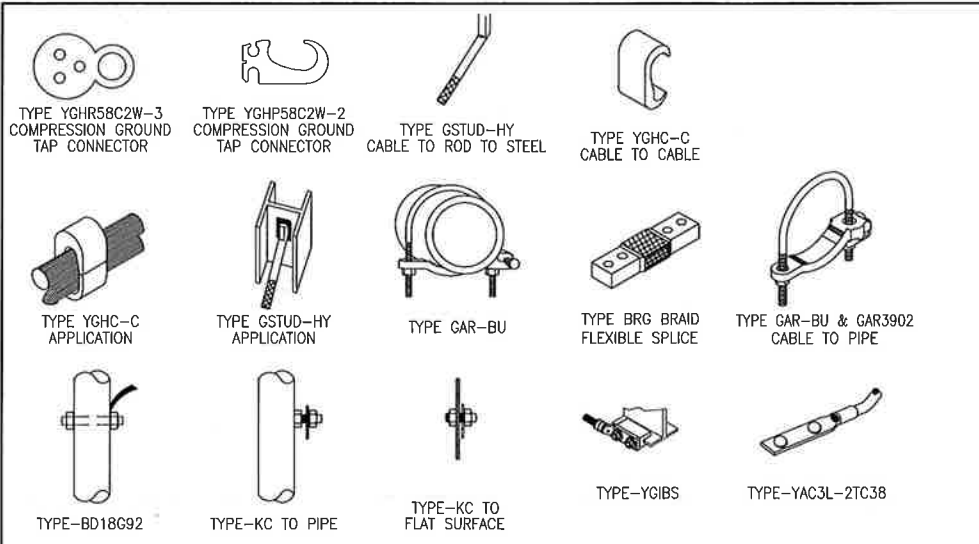
Drawing Title:
GROUNDING DETAILS

Drawing Number:
G2

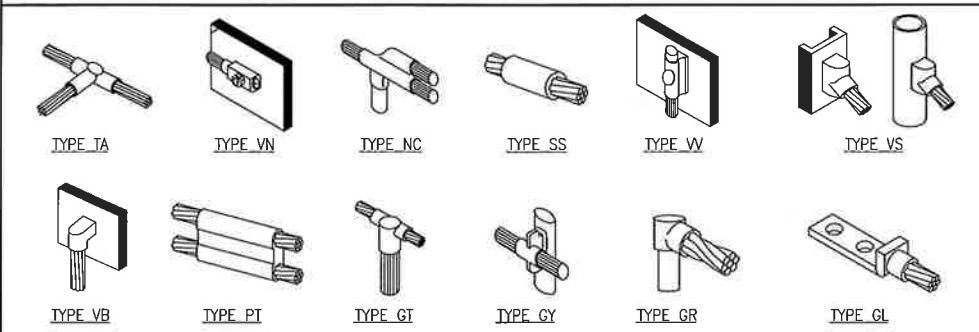
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1 BURNDY MECHANICAL GROUNDING DETAILS
G3 SCALE: NOT TO SCALE

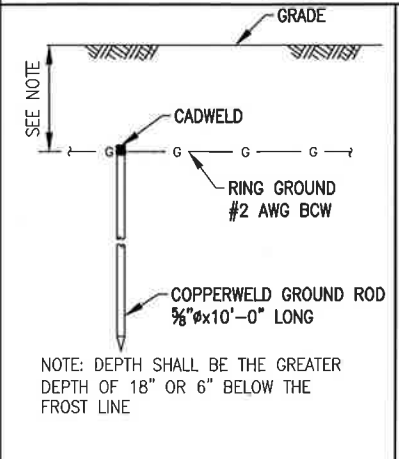


2 BURNDY CADWELD GROUNDING DETAILS
G3 SCALE: NOT TO SCALE

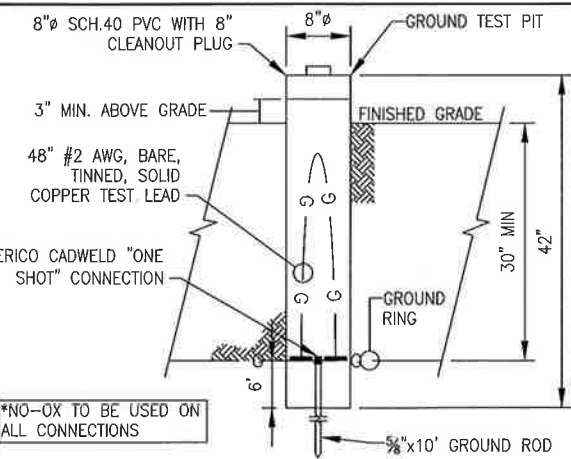
TERMINATION TYPES:
 A. MECHANICAL COMPRESSION LUG
 B. DOUBLE BARRELL COMPRESSION CONNECTOR
 C. EXOTHERMIC TERMINATION
 D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GROUND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GROUND RING
SOLID #2 TINNED COPPER	B OR C	B OR C		A, C, OR D	A, C, OR D	C
#6 GROUND LEAD	B OR C			A, C, OR D	A, C, OR D	C
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A, C, OR D	A, C, OR D	C
MASTER GROUND BAR	C	A	A			
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D			
GROUND RING	C		C			C

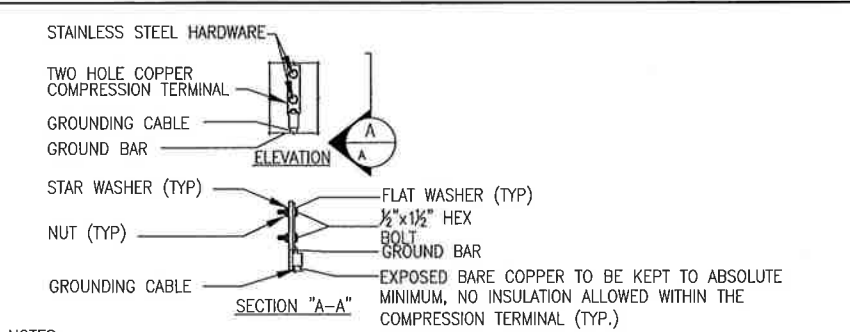
3 GROUNDING TERMINATION MATRIX
G3 SCALE: NOT TO SCALE



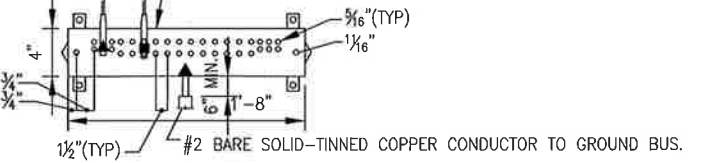
4 GROUND ROD DETAIL
G3 SCALE: NOT TO SCALE



5 GROUND TEST PIT DETAIL
G3 SCALE: NOT TO SCALE

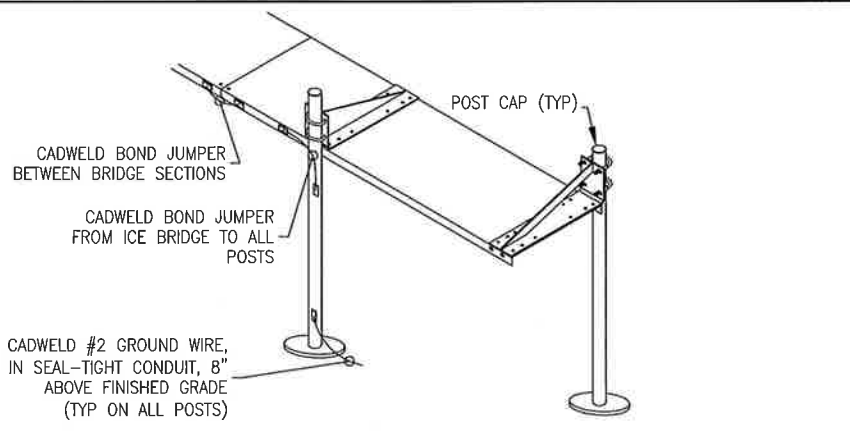


NOTES:
 1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 #2AWG WITH LONG BARREL COMPRESSION LUGS, USE STAR WASHERS, LOCKWASHERS, AND STAINLESS STEEL HARDWARE TO SECURE TO EXTERNAL GROUND BAR BY GENERAL CONTRACTOR.
 NEW COAXIAL GROUND KITS WITH LONG BARREL COMPRESSION LUGS WITH TWO (2) 3/8" BOLTS AND LOCK WASHERS SIMILAR TO ANDREW 3241088-9.
 NEW COPPER GROUND BAR INSTALLED BY GENERAL CONTRACTOR.

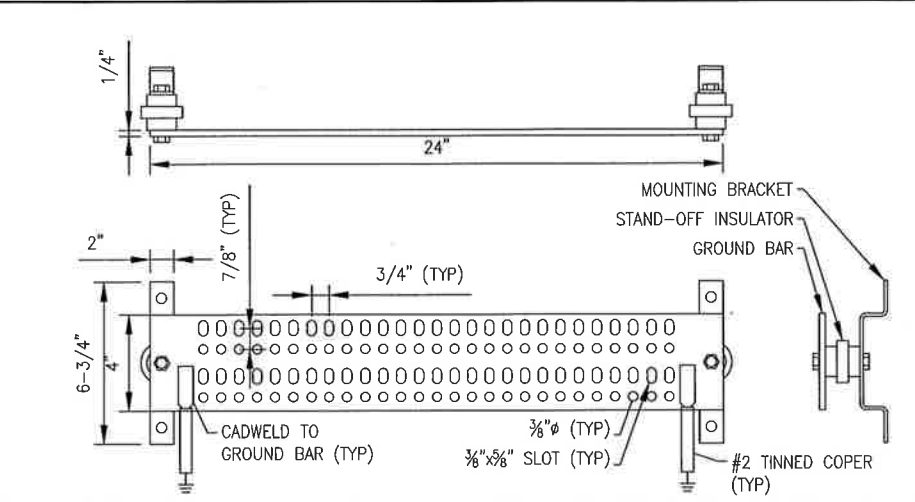


NOTES:
 1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
 2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
 3. ALL HOLES ARE COUNTERSUNK 1/16".

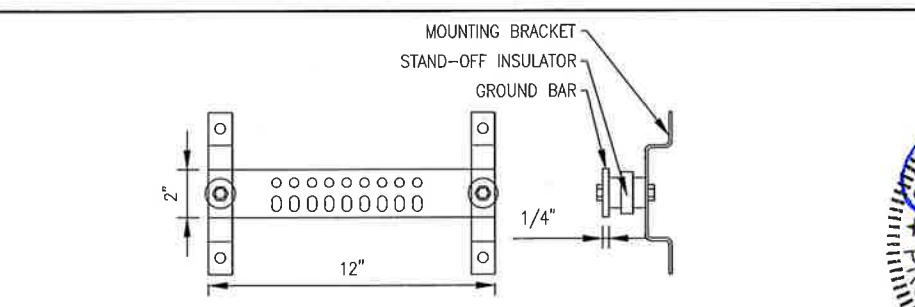
6 TYPICAL GROUND BAR CONNECTIONS DETAIL
G3 SCALE: NOT TO SCALE



7 ICE BRIDGE GROUNDING DETAIL
G3 SCALE: NOT TO SCALE



8 MASTER GROUND BAR DETAIL
G3 SCALE: NOT TO SCALE



9 GROUND BAR DETAIL
G3 SCALE: NOT TO SCALE

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Drawn: SL
 Designed: MRL
 Checked: AD

Project Number: 600-007

Project Title:
CTNH551A
 LONG EDDY /
 WRIGHT PROPERTY
 136 WRIGHT ROAD
 TORRINGTON, CT 06790



Drawing Title
GROUNDING DETAILS

Drawing Number
G3



September 20, 2018

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

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

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CTNH551A
Carrier Site Name: CTNH551A

Crown Castle Designation: **Crown Castle BU Number:** 876373
Crown Castle Site Name: Long Eddy / Wright Property
Crown Castle JDE Job Number: 518570
Crown Castle Work Order Number: 1633871
Crown Castle Order Number: 450074 Rev. 0

Engineering Firm Designation: **B+T Group Project Number:** 89028.009.01

Site Data: **136 Wright Rd., Torrington, Litchfield County, CT**
Latitude 41° 49' 38.34", Longitude -73° 10' 13.97"
148 Foot - Monopole Tower

Dear Denice Nicholson,

B+T Group is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration **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 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

Structural analysis prepared by: Zach Smith

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

Chad E. Tuttle, P.E.

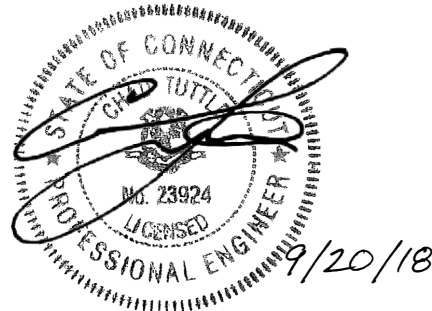


TABLE OF CONTENTS

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

1) INTRODUCTION

This tower is a 148 ft. Monopole tower designed by Summit manufacturing in June of 2000. This tower has been modified by B+T Group in February of 2014 and those modifications are incorporated in our Analysis.

2) ANALYSIS CRITERIA

Building Code:	2016 CBC
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	93 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 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)
114.0	114.0	4	Ericsson	AIR 32 B2A/B66AA	4 1	1-5/8 1/2
		1	RFS Celwave	SC2-W100AB		
		8	Ericsson	RADIO 4449 B12/B71		
		4	RFS Celwave	APXVAARR24_43-U-NA20		
		1	Site Pro1	F4P-HRK12 Handrail		
		1	Site Pro1	F4P-12W Mount		

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)
149.0	150.0	3	Alcatel Lucent	1900MHz RRH (65MHz)	--	--
		3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER		
		3	Alcatel Lucent	800MHZ RRH		
	149.0	1	--	Pipe Mount [PM 601-3]		
148.0	150.0	3	Rfs Celwave	APXVSPP18-C-A20	3	1-1/4
		3	Rfs Celwave	APXVTM14-ALU-I20	1	1-1/4
	148.0	3	Alcatel Lucent	TD-RRH8x20-25	--	--
		9	Rfs Celwave	ACU-A20-N		
		1	--	Platform Mount [LP 712-1]		
138.0	138.0	1	Antel	BXA-171063-8BF-2	18	1-5/8
		2	Antel	BXA-171085-8BF-EDIN-2		
		3	Antel	BXA-70063-6CF-2		
		2	Antel	LPA-80063/6CF		
		4	Antel	LPA-80080/6CF		
		1	--	Platform Mount [LP 712-1]		
128.0	128.0	2	Raycap	DC6-48-60-18-8F	5	3/4
		3	Cci Antennas	HPA-65R-BUU-H8	1	3/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		9	Ericsson	RRU-11		
		1	--	Sector Mount [SM 406-3]		
79.0	84.0	1	Rfs Celwave	PD1109E	1	1/2
	79.0	1	--	Side Arm Mount [SO 701-1]		
45.0	45.0	1	GPS	GPS_A	1	1/2
		1	--	Side Arm Mount [SO 701-1]		
13.0	13.0	1	GPS	GPS_A	1	1/2
		1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	T-Mobile Co-locate, Revision# 0	450074	CCI Sites
Tower Manufacturer Drawing	Summit, Date: 06/23/2000	1631601	CCI Sites
Tower Modification Drawing	B+T Group, Date: 02/25/2014	4491592	CCI Sites
Post Modification Inspection	TEP, Date: 07/31/2014	5215998	CCI Sites
Foundation Drawing	Summit, Job No. 10185	1634518	CCI Sites
Geotech Report	Clerence Welti Assoc. Inc., Date: 05/12/2000	1531964	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 08/30/2018	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP24.87x24x0.2188	Pole	5.2%	Pass
143 - 138	Pole	TP25.74x24.87x0.2188	Pole	8.9%	Pass
138 - 133	Pole	TP26.61x25.74x0.2188	Pole	15.6%	Pass
133 - 128	Pole	TP27.479x26.61x0.2188	Pole	21.6%	Pass
128 - 123	Pole	TP28.349x27.479x0.2188	Pole	29.1%	Pass
123 - 120.25	Pole	TP29.48x28.349x0.2188	Pole	32.9%	Pass
120.25 - 115.25	Pole	TP29.26x28.39x0.25	Pole	31.7%	Pass
115.25 - 110.25	Pole	TP30.13x29.26x0.25	Pole	39.8%	Pass
110.25 - 105.25	Pole	TP31x30.13x0.25	Pole	47.2%	Pass
105.25 - 100.25	Pole	TP31.87x31x0.25	Pole	54.1%	Pass
100.25 - 98.75	Pole	TP32.131x31.87x0.25	Pole	56.1%	Pass
98.75 - 98.5	Pole	TP32.175x32.131x0.25	Pole	56.4%	Pass
98.5 - 98.25	Pole + Reinf.	TP32.218x32.175x0.45	Reinf. 5 Tension Rupture	47.2%	Pass
98.25 - 93.25	Pole + Reinf.	TP33.088x32.218x0.4438	Reinf. 5 Tension Rupture	52.5%	Pass
93.25 - 88.25	Pole + Reinf.	TP33.958x33.088x0.4375	Reinf. 5 Tension Rupture	57.5%	Pass
88.25 - 84.75	Pole + Reinf.	TP35.35x33.958x0.4375	Reinf. 5 Tension Rupture	60.7%	Pass
84.75 - 79.75	Pole + Reinf.	TP34.937x34.067x0.5	Reinf. 5 Tension Rupture	58.3%	Pass
79.75 - 74.75	Pole + Reinf.	TP35.808x34.937x0.4875	Reinf. 5 Tension Rupture	62.0%	Pass
74.75 - 69.75	Pole + Reinf.	TP36.678x35.808x0.4875	Reinf. 5 Tension Rupture	65.3%	Pass
69.75 - 66.75	Pole + Reinf.	TP37.2x36.678x0.4875	Reinf. 5 Tension Rupture	67.3%	Pass
66.75 - 66.5	Pole + Reinf.	TP37.244x37.2x0.625	Reinf. 4 Compression	49.4%	Pass
66.5 - 61.5	Pole + Reinf.	TP38.114x37.244x0.6125	Reinf. 4 Compression	51.8%	Pass
61.5 - 56.5	Pole + Reinf.	TP38.984x38.114x0.6125	Reinf. 4 Compression	54.1%	Pass
56.5 - 51.5	Pole + Reinf.	TP39.855x38.984x0.6	Reinf. 4 Compression	56.2%	Pass
51.5 - 46.5	Pole + Reinf.	TP40.725x39.855x0.6	Reinf. 4 Compression	58.2%	Pass
46.5 - 45	Pole + Reinf.	TP41.9x40.725x0.5875	Reinf. 4 Compression	58.8%	Pass
45 - 38.75	Pole + Reinf.	TP41.448x40.361x0.65	Reinf. 4 Compression	56.6%	Pass
38.75 - 33.75	Pole + Reinf.	TP42.318x41.448x0.65	Reinf. 4 Compression	58.2%	Pass
33.75 - 31.75	Pole + Reinf.	TP42.666x42.318x0.65	Reinf. 4 Compression	58.7%	Pass
31.75 - 31.5	Pole + Reinf.	TP42.71x42.666x0.65	Reinf. 2 Compression	58.8%	Pass
31.5 - 26.5	Pole + Reinf.	TP43.58x42.71x0.6375	Reinf. 2 Compression	60.2%	Pass
26.5 - 21.5	Pole + Reinf.	TP44.45x43.58x0.625	Reinf. 2 Compression	61.6%	Pass
21.5 - 17.75	Pole + Reinf.	TP45.102x44.45x0.625	Reinf. 2 Compression	62.5%	Pass
17.75 - 17.5	Pole + Reinf.	TP45.145x45.102x0.725	Reinf. 2 Compression	58.6%	Pass
17.5 - 14.25	Pole + Reinf.	TP45.711x45.145x0.725	Reinf. 2 Compression	59.3%	Pass
14.25 - 14	Pole + Reinf.	TP45.754x45.711x0.6375	Reinf. 1 Tension Rupture	64.0%	Pass
14 - 9	Pole + Reinf.	TP46.624x45.754x0.625	Reinf. 1 Tension Rupture	65.2%	Pass
9 - 4	Pole + Reinf.	TP47.494x46.624x0.625	Reinf. 1 Tension Rupture	66.3%	Pass
4 - 0	Pole + Reinf.	TP48.19x47.494x0.625	Reinf. 1 Tension Rupture	67.2%	Pass
				Summary	
			Pole	56.4%	Pass
			Reinforcement	67.3%	Pass
			Overall	67.3%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rod Bracket	Base	69.0	Pass
1	Anchor Rods	Base	53.1	Pass
1	Base Plate	Base	51.9	Pass
1	Base Foundation(Structure)	Base	40.1	Pass
1	Base Foundation (Soil Interaction)	Base	73.6	Pass

Structure Rating (max from all components) =	73.6%
---	--------------

Notes:

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

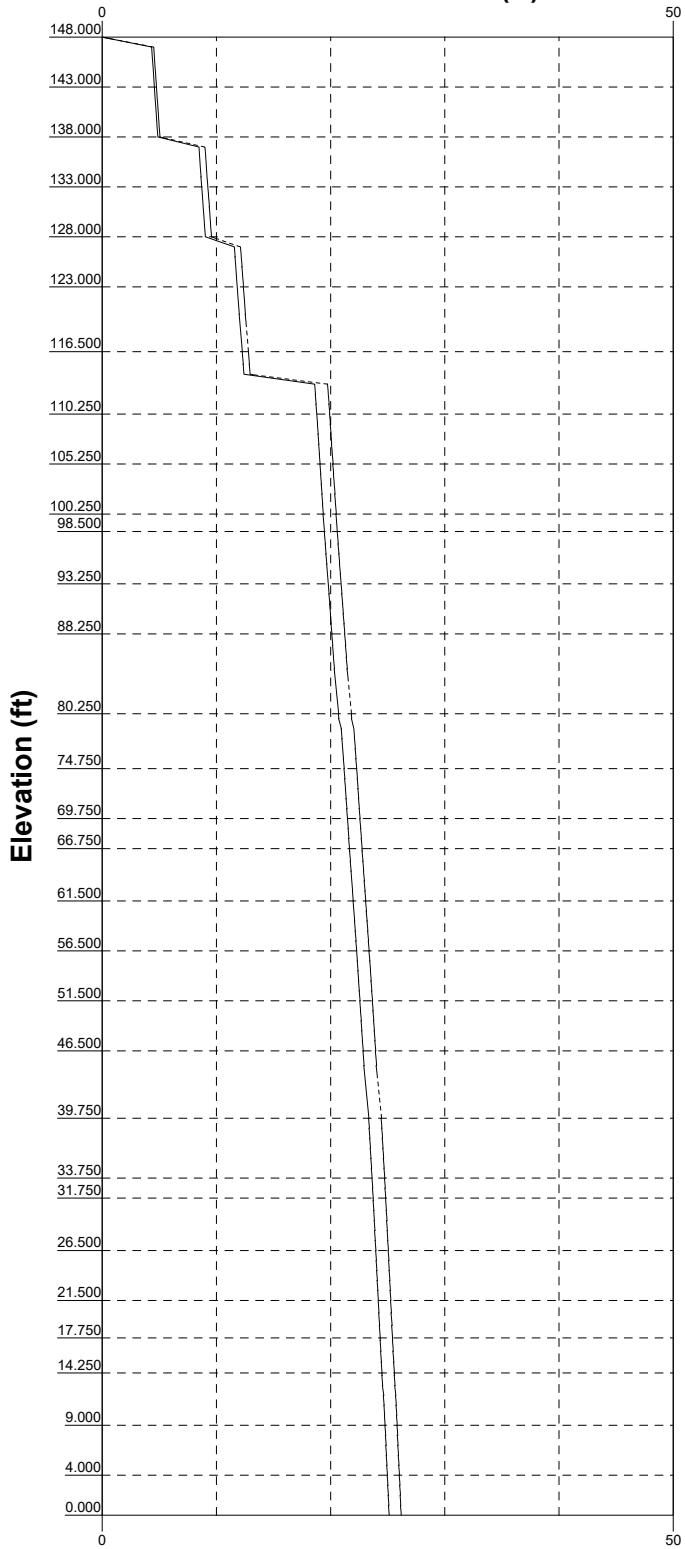
Vx

Vz

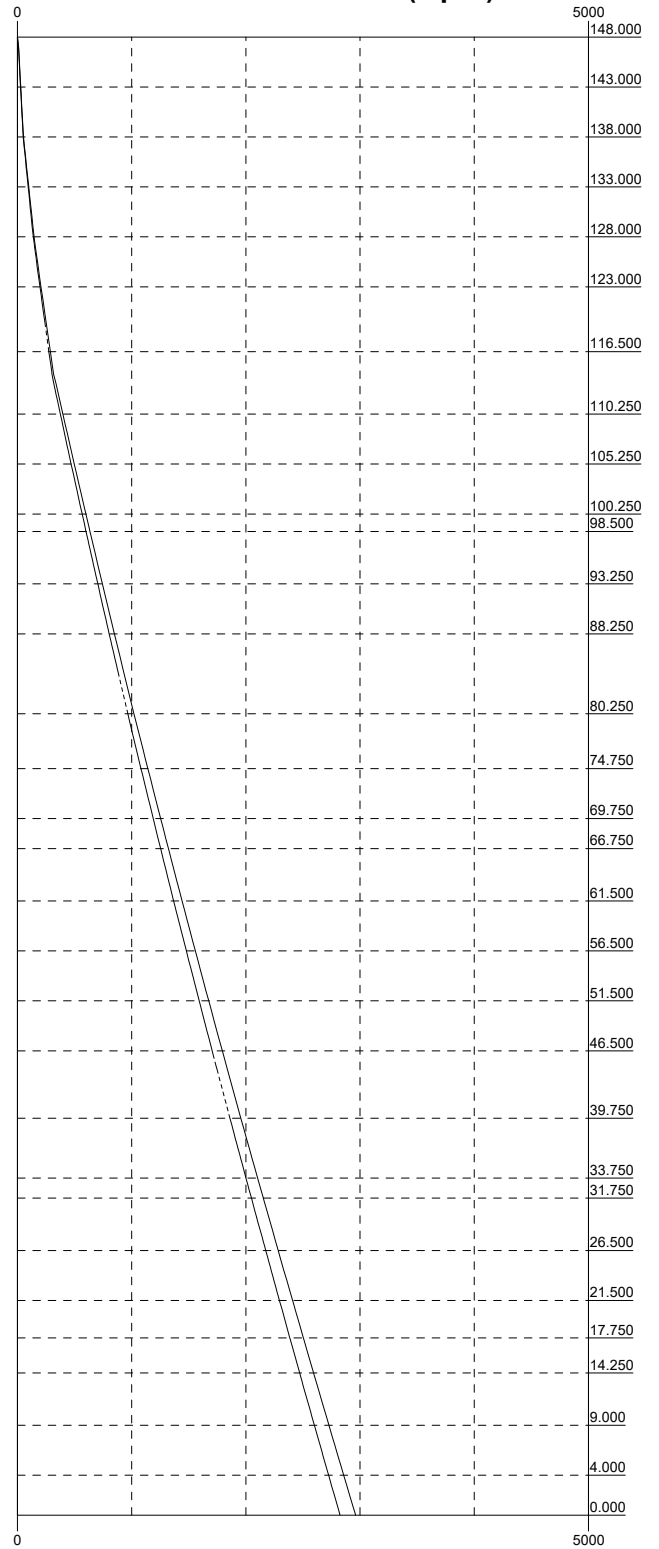
Mx

Mz

Global Mast Shear (K)

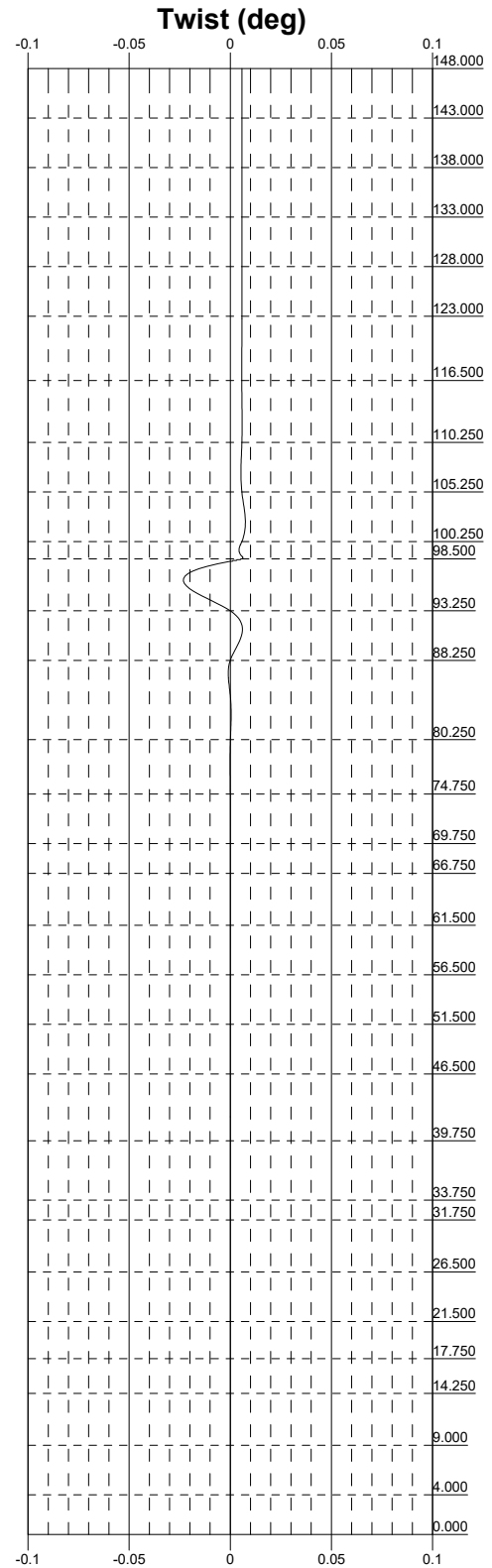
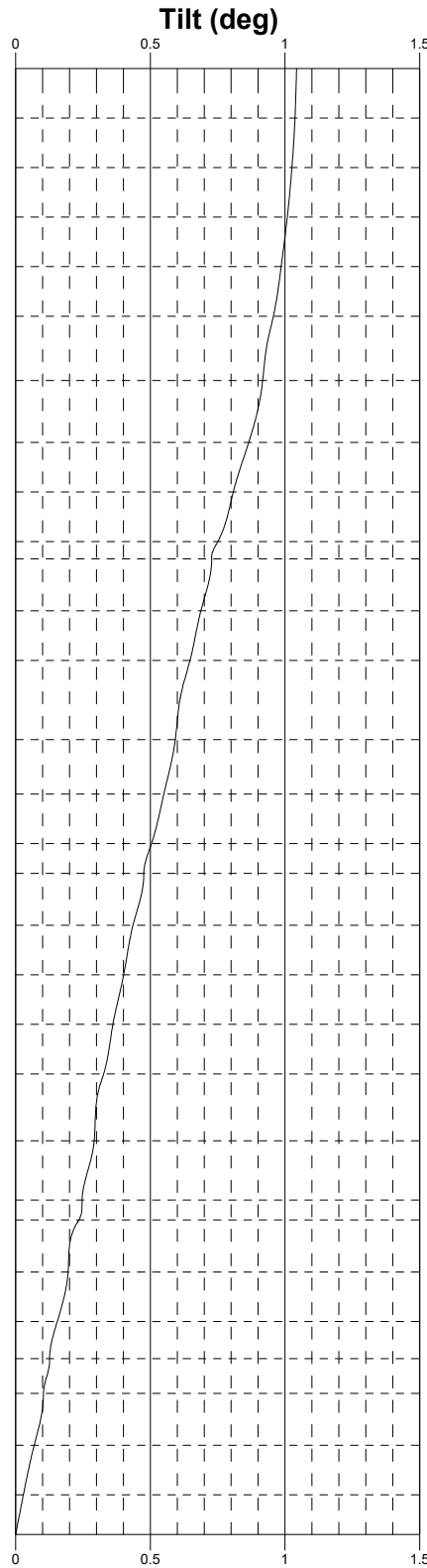
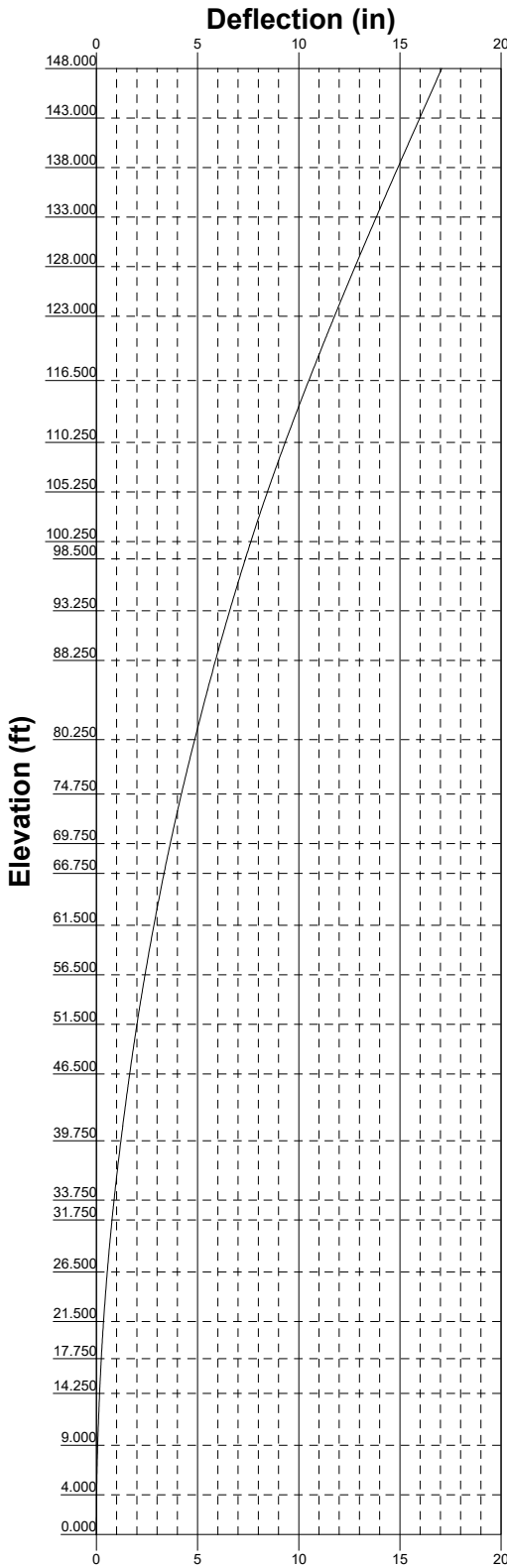


Global Mast Moment (kip-ft)



B+T Group
 1717 South Boulder Ave.
 Tulsa, OK
 Phone: (918) 587-4630
 FAX:

Job: 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 87637)		
Project:		
Client: Crown Castle	Drawn by: zsmith	App'd:
Code: TIA-222-G	Date: 09/20/18	Scale: NTS
Path:	Dwg No. E-4	



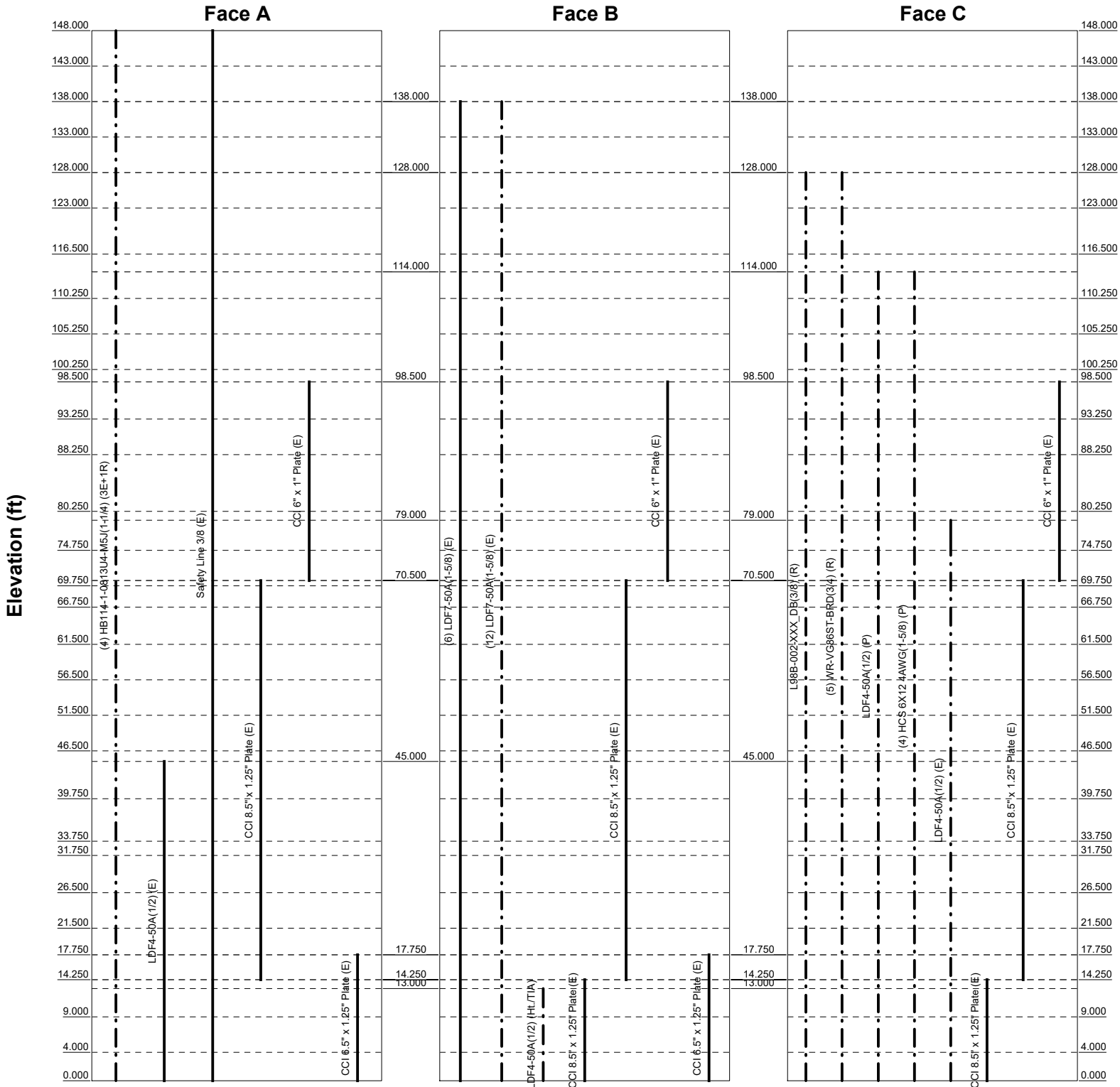
B+T Group
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Job: 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 87637)		
Project:		
Client: Crown Castle	Drawn by: zsmith	App'd:
Code: TIA-222-G	Date: 09/20/18	Scale: NTS
Path:	Dwg No: E-5	

Feed Line Distribution Chart

0' - 148'

Round Flat App In Face App Out Face Truss Leg



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Project:		
Client: Crown Castle	Drawn by: zsmith	App'd:
Code: TIA-222-G	Date: 09/20/18	Scale: NTS
Path:	Dwg No. E-7	

tnxTower

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Phone: (918) 587-4630
FAX:

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89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU#
876373)

Page
2 of 36

Project

Date
16:58:16 09/20/18

Client
Crown Castle

Designed by
zsmith

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	148.000-143.000	5.000	0.000	18	24.000	24.870	0.219	0.875	A607-60 (60 ksi)
L2	143.000-138.000	5.000	0.000	18	24.870	25.740	0.219	0.875	A607-60 (60 ksi)
L3	138.000-133.000	5.000	0.000	18	25.740	26.610	0.219	0.875	A607-60 (60 ksi)
L4	133.000-128.000	5.000	0.000	18	26.610	27.479	0.219	0.875	A607-60 (60 ksi)
L5	128.000-123.000	5.000	0.000	18	27.479	28.349	0.219	0.875	A607-60 (60 ksi)
L6	123.000-116.500	6.500	3.750	18	28.349	29.480	0.219	0.875	A607-60 (60 ksi)
L7	116.500-115.250	5.000	0.000	18	28.390	29.260	0.250	1.000	A607-65 (65 ksi)
L8	115.250-110.250	5.000	0.000	18	29.260	30.130	0.250	1.000	A607-65 (65 ksi)
L9	110.250-105.250	5.000	0.000	18	30.130	31.000	0.250	1.000	A607-65 (65 ksi)
L10	105.250-100.250	5.000	0.000	18	31.000	31.870	0.250	1.000	A607-65 (65 ksi)
L11	100.250-98.750	1.500	0.000	18	31.870	32.131	0.250	1.000	A607-65 (65 ksi)
L12	98.750-98.500	0.250	0.000	18	32.131	32.175	0.250	1.000	A607-65 (65 ksi)
L13	98.500-98.250	0.250	0.000	18	32.175	32.218	0.450	1.800	A607-65 (65 ksi)
L14	98.250-93.250	5.000	0.000	18	32.218	33.088	0.444	1.775	A607-65 (65 ksi)
L15	93.250-88.250	5.000	0.000	18	33.088	33.958	0.438	1.750	A607-65 (65 ksi)
L16	88.250-80.250	8.000	4.500	18	33.958	35.350	0.438	1.750	A607-65 (65 ksi)
L17	80.250-79.750	5.000	0.000	18	34.067	34.937	0.500	2.000	A607-65 (65 ksi)
L18	79.750-74.750	5.000	0.000	18	34.937	35.808	0.487	1.950	A607-65 (65 ksi)
L19	74.750-69.750	5.000	0.000	18	35.808	36.678	0.487	1.950	A607-65 (65 ksi)
L20	69.750-66.750	3.000	0.000	18	36.678	37.200	0.487	1.950	A607-65 (65 ksi)
L21	66.750-66.500	0.250	0.000	18	37.200	37.244	0.625	2.500	A607-65 (65 ksi)
L22	66.500-61.500	5.000	0.000	18	37.244	38.114	0.613	2.450	A607-65 (65 ksi)
L23	61.500-56.500	5.000	0.000	18	38.114	38.984	0.613	2.450	A607-65 (65 ksi)
L24	56.500-51.500	5.000	0.000	18	38.984	39.855	0.600	2.400	A607-65 (65 ksi)
L25	51.500-46.500	5.000	0.000	18	39.855	40.725	0.600	2.400	A607-65 (65 ksi)
L26	46.500-39.750	6.750	5.250	18	40.725	41.900	0.588	2.350	A607-65 (65 ksi)
L27	39.750-38.750	6.250	0.000	18	40.361	41.448	0.650	2.600	A607-65 (65 ksi)
L28	38.750-33.750	5.000	0.000	18	41.448	42.318	0.650	2.600	A607-65 (65 ksi)
L29	33.750-31.750	2.000	0.000	18	42.318	42.666	0.650	2.600	A607-65 (65 ksi)
L30	31.750-31.500	0.250	0.000	18	42.666	42.710	0.650	2.600	A607-65 (65 ksi)
L31	31.500-26.500	5.000	0.000	18	42.710	43.580	0.637	2.550	A607-65

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 3 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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	26.500-21.500	5.000	0.000	18	43.580	44.450	0.625	2.500	(65 ksi) A607-65
L33	21.500-17.750	3.750	0.000	18	44.450	45.102	0.625	2.500	(65 ksi) A607-65
L34	17.750-17.500	0.250	0.000	18	45.102	45.145	0.725	2.900	(65 ksi) A607-65
L35	17.500-14.250	3.250	0.000	18	45.145	45.711	0.725	2.900	(65 ksi) A607-65
L36	14.250-14.000	0.250	0.000	18	45.711	45.754	0.637	2.550	(65 ksi) A607-65
L37	14.000-9.000	5.000	0.000	18	45.754	46.624	0.625	2.500	(65 ksi) A607-65
L38	9.000-4.000	5.000	0.000	18	46.624	47.494	0.625	2.500	(65 ksi) A607-65
L39	4.000-0.000	4.000		18	47.494	48.190	0.625	2.500	(65 ksi) A607-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	24.336	16.512	1179.768	8.442	12.192	96.766	2361.088	8.257	3.839	17.55
	25.220	17.116	1314.017	8.751	12.634	104.007	2629.762	8.559	3.992	18.25
L2	25.220	17.116	1314.017	8.751	12.634	104.007	2629.762	8.559	3.992	18.25
	26.103	17.720	1458.082	9.060	13.076	111.510	2918.083	8.861	4.145	18.949
L3	26.103	17.720	1458.082	9.060	13.076	111.510	2918.083	8.861	4.145	18.949
	26.986	18.323	1612.311	9.369	13.518	119.275	3226.743	9.163	4.298	19.649
L4	26.986	18.323	1612.311	9.369	13.518	119.275	3226.743	9.163	4.298	19.649
	27.870	18.927	1777.049	9.678	13.960	127.300	3556.436	9.465	4.451	20.349
L5	27.870	18.927	1777.049	9.678	13.960	127.300	3556.436	9.465	4.451	20.349
	28.753	19.531	1952.643	9.986	14.401	135.587	3907.855	9.768	4.604	21.049
L6	28.753	19.531	1952.643	9.986	14.401	135.587	3907.855	9.768	4.604	21.049
	29.901	20.316	2197.713	10.388	14.976	146.751	4398.319	10.160	4.803	21.959
L7	29.901	20.316	2197.713	10.388	14.976	146.751	4398.319	10.160	4.803	21.959
	29.452	22.329	2233.892	9.990	14.422	154.893	4470.723	11.167	4.557	18.227
L8	29.452	22.329	2233.892	9.990	14.422	154.893	4470.723	11.167	4.557	18.227
	29.673	23.020	2447.554	10.299	14.864	164.662	4898.328	11.512	4.710	18.839
L9	29.673	23.020	2447.554	10.299	14.864	164.662	4898.328	11.512	4.710	18.839
	30.556	23.710	2674.423	10.607	15.306	174.729	5352.365	11.857	4.863	19.452
L10	30.556	23.710	2674.423	10.607	15.306	174.729	5352.365	11.857	4.863	19.452
	31.440	24.400	2914.895	10.916	15.748	185.096	5833.625	12.202	5.016	20.064
L11	31.440	24.400	2914.895	10.916	15.748	185.096	5833.625	12.202	5.016	20.064
	32.323	25.091	3169.366	11.225	16.190	195.761	6342.903	12.548	5.169	20.677
L12	32.323	25.091	3169.366	11.225	16.190	195.761	6342.903	12.548	5.169	20.677
	32.588	25.298	3248.497	11.318	16.323	199.019	6501.268	12.651	5.215	20.86
L13	32.588	25.298	3248.497	11.318	16.323	199.019	6501.268	12.651	5.215	20.86
	32.632	25.332	3261.812	11.333	16.345	199.564	6527.916	12.668	5.223	20.891
L14	32.632	25.332	3261.812	11.333	16.345	199.564	6527.916	12.668	5.223	20.891
	32.601	45.312	5761.605	11.262	16.345	352.507	11530.791	22.660	4.871	10.824
L15	32.601	45.312	5761.605	11.262	16.345	352.507	11530.791	22.660	4.871	10.824
	32.646	45.374	5785.338	11.278	16.367	353.481	11578.288	22.691	4.878	10.841
L16	32.646	45.374	5785.338	11.278	16.367	353.481	11578.288	22.691	4.878	10.841
	33.530	45.978	6190.196	11.589	16.809	368.273	12388.536	22.993	5.042	11.363
L17	33.530	45.978	6190.196	11.589	16.809	368.273	12388.536	22.993	5.042	11.363
	33.531	45.339	6106.516	11.591	16.809	363.294	12221.067	22.674	5.053	11.551
L18	33.531	45.339	6106.516	11.591	16.809	363.294	12221.067	22.674	5.053	11.551
	34.414	46.547	6607.769	11.900	17.251	383.044	13224.232	23.278	5.207	11.901
L19	34.414	46.547	6607.769	11.900	17.251	383.044	13224.232	23.278	5.207	11.901
	35.828	48.480	7465.610	12.394	17.958	415.731	14941.043	24.245	5.452	12.461
L20	35.828	48.480	7465.610	12.394	17.958	415.731	14941.043	24.245	5.452	12.461
	35.311	53.271	7583.200	11.916	17.306	438.182	15176.377	26.640	5.116	10.232
L21	35.311	53.271	7583.200	11.916	17.306	438.182	15176.377	26.640	5.116	10.232
	35.399	54.652	8188.481	12.225	17.748	461.370	16387.738	27.331	5.269	10.538

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 4 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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
L18	35.401	53.305	7992.466	12.230	17.748	450.326	15995.449	26.658	5.291	10.853
	36.285	54.652	8613.658	12.539	18.190	473.530	17238.649	27.331	5.444	11.167
L19	36.285	54.652	8613.658	12.539	18.190	473.530	17238.649	27.331	5.444	11.167
	37.169	55.998	9266.230	12.848	18.632	497.317	18544.652	28.005	5.597	11.482
L20	37.169	55.998	9266.230	12.848	18.632	497.317	18544.652	28.005	5.597	11.482
	37.699	56.806	9673.157	13.033	18.898	511.869	19359.043	28.409	5.689	11.67
L21	37.678	72.556	12262.663	12.984	18.898	648.897	24541.462	36.285	5.447	8.716
	37.722	72.642	12306.485	13.000	18.920	650.455	24629.164	36.328	5.455	8.728
L22	37.724	71.214	12072.710	13.004	18.920	638.099	24161.306	35.614	5.477	8.942
	38.608	72.906	12953.835	13.313	19.362	669.036	25924.714	36.460	5.630	9.192
L23	38.608	72.906	12953.835	13.313	19.362	669.036	25924.714	36.460	5.630	9.192
	39.491	74.598	13876.821	13.622	19.804	700.706	27771.901	37.306	5.783	9.442
L24	39.493	73.099	13606.909	13.626	19.804	687.076	27231.723	36.557	5.805	9.675
	40.377	74.757	14553.628	13.935	20.246	718.833	29126.407	37.385	5.958	9.931
L25	40.377	74.757	14553.628	13.935	20.246	718.833	29126.407	37.385	5.958	9.931
	41.261	76.414	15543.272	14.244	20.688	751.306	31106.996	38.214	6.112	10.186
L26	41.263	74.845	15233.682	14.249	20.688	736.342	30487.409	37.430	6.134	10.44
	42.456	77.036	16611.034	14.666	21.285	780.403	33243.926	38.526	6.340	10.792
L27	41.811	81.928	16322.819	14.097	20.503	796.101	32667.117	40.972	5.960	9.169
	41.988	84.171	17700.684	14.483	21.056	840.655	35424.659	42.094	6.151	9.463
L28	41.988	84.171	17700.684	14.483	21.056	840.655	35424.659	42.094	6.151	9.463
	42.871	85.966	18857.194	14.792	21.498	877.171	37739.201	42.991	6.304	9.699
L29	42.871	85.966	18857.194	14.792	21.498	877.171	37739.201	42.991	6.304	9.699
	43.224	86.684	19333.547	14.916	21.674	891.996	38692.533	43.350	6.365	9.793
L30	43.224	86.684	19333.547	14.916	21.674	891.996	38692.533	43.350	6.365	9.793
	43.268	86.774	19393.649	14.931	21.697	893.857	38812.816	43.395	6.373	9.805
L31	43.270	85.130	19037.658	14.936	21.697	877.450	38100.366	42.573	6.395	10.031
	44.154	86.890	20243.088	15.244	22.138	914.385	40512.813	43.453	6.548	10.271
L32	44.156	85.211	19863.501	15.249	22.138	897.239	39753.139	42.614	6.570	10.512
	45.039	86.937	21094.867	15.558	22.580	934.213	42217.491	43.477	6.723	10.757
L33	45.039	86.937	21094.867	15.558	22.580	934.213	42217.491	43.477	6.723	10.757
	45.701	88.231	22051.062	15.789	22.912	962.433	44131.139	44.124	6.838	10.941
L34	45.686	102.118	25407.086	15.754	22.912	1108.909	50847.603	51.069	6.662	9.189
	45.730	102.218	25481.863	15.769	22.934	1111.101	50997.256	51.119	6.670	9.199
L35	45.730	102.218	25481.863	15.769	22.934	1111.101	50997.256	51.119	6.670	9.199
	46.304	103.519	26467.358	15.970	23.221	1139.797	52969.543	51.769	6.769	9.337
L36	46.318	91.203	23409.088	16.001	23.221	1008.095	46848.979	45.610	6.923	10.86
	46.362	91.291	23476.920	16.016	23.243	1010.055	46984.731	45.654	6.931	10.872
L37	46.364	89.525	23035.724	16.021	23.243	991.073	46101.759	44.771	6.953	11.124
	47.247	91.251	24393.610	16.330	23.685	1029.913	48819.319	45.634	7.106	11.369
L38	47.247	91.251	24393.610	16.330	23.685	1029.913	48819.319	45.634	7.106	11.369
	48.130	92.977	25803.837	16.639	24.127	1069.500	51641.628	46.497	7.259	11.614
L39	48.130	92.977	25803.837	16.639	24.127	1069.500	51641.628	46.497	7.259	11.614
	48.837	94.357	26970.369	16.886	24.481	1101.707	53976.227	47.188	7.381	11.81

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 148.000-143.0 00				1	1	1			
L2 143.000-138.0 00				1	1	1			
L3 138.000-133.0 00				1	1	1			
L4 133.000-128.0				1	1	1			

<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 5 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
00									
L5				1	1	1			
128.000-123.000									
L6				1	1	1			
123.000-116.500									
L7				1	1	1			
116.500-115.250									
L8				1	1	1			
115.250-110.250									
L9				1	1	1			
110.250-105.250									
L10				1	1	1			
105.250-100.250									
L11				1	1	1			
100.250-98.750									
L12				1	1	1			
98.750-98.500									
L13				1	1	0.955768			
98.500-98.250									
L14				1	1	0.958228			
98.250-93.250									
L15				1	1	0.961341			
93.250-88.250									
L16				1	1	0.954384			
88.250-80.250									
L17				1	1	0.957771			
80.250-79.750									
L18				1	1	0.973571			
79.750-74.750									
L19				1	1	0.965574			
74.750-69.750									
L20				1	1	0.960958			
69.750-66.750									
L21				1	1	0.943076			
66.750-66.500									
L22				1	1	0.951509			
66.500-61.500									
L23				1	1	0.9415			
61.500-56.500									
L24				1	1	0.951047			
56.500-51.500									
L25				1	1	0.941715			
51.500-46.500									
L26				1	1	0.958676			
46.500-39.750									
L27				1	1	0.959517			
39.750-38.750									
L28				1	1	0.95153			
38.750-33.750									
L29				1	1	0.948428			
33.750-31.750									
L30				1	1	0.948044			

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 7 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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 klf
CCI 6.5" x 1.25" Plate (E)	A	No	Surface Af (CaAa)	17.750 - 0.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E)	B	No	Surface Af (CaAa)	17.750 - 0.000	1	1	0.000 0.000	6.500	15.500	0.000
/>										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
HB114-1-0813U4-M 5J(1-1/4) (3E+1R)	A	No	No	Inside Pole	148.000 - 0.000	4	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
LDF7-50A(1-5/8) (E)	B	No	No	Inside Pole	138.000 - 0.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
/>									
L98B-002-XXX_DB (3/8) (R)	C	No	No	Inside Pole	128.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (R)	C	No	No	Inside Pole	128.000 - 0.000	5	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
/>									
LDF4-50A(1/2) (P)	C	No	No	Inside Pole	114.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
HCS 6X12 4AWG(1-5/8) (P)	C	No	No	Inside Pole	114.000 - 0.000	4	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
/>									
LDF4-50A(1/2) (E)	C	No	No	Inside Pole	79.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
/>									
LDF4-50A(1/2) (Ht./TIA)	B	No	No	Inside Pole	13.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
/>									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	148.000-143.000	A	0.000	0.000	0.188	0.000	0.025
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	143.000-138.000	A	0.000	0.000	0.188	0.000	0.025

tnxTower

B+T Group
1717 South Boulder Ave.
Tulsa, OK
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Job
89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU#
876373)

Page
8 of 36

Project

Date
16:58:16 09/20/18

Client
Crown Castle

Designed by
zsmith

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
L3	138.000-133.000	B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
		A	0.000	0.000	0.188	0.000	0.025
L4	133.000-128.000	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.000
		A	0.000	0.000	0.188	0.000	0.025
L5	128.000-123.000	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.000
		A	0.000	0.000	0.188	0.000	0.025
L6	123.000-116.500	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.015
		A	0.000	0.000	0.244	0.000	0.033
L7	116.500-115.250	B	0.000	0.000	7.722	0.000	0.096
		C	0.000	0.000	0.000	0.000	0.019
		A	0.000	0.000	0.047	0.000	0.006
L8	115.250-110.250	B	0.000	0.000	1.485	0.000	0.018
		C	0.000	0.000	0.000	0.000	0.004
		A	0.000	0.000	0.188	0.000	0.025
L9	110.250-105.250	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.051
		A	0.000	0.000	0.188	0.000	0.025
L10	105.250-100.250	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.064
		A	0.000	0.000	0.188	0.000	0.025
L11	100.250-98.750	B	0.000	0.000	5.940	0.000	0.074
		C	0.000	0.000	0.000	0.000	0.064
		A	0.000	0.000	0.056	0.000	0.008
L12	98.750-98.500	B	0.000	0.000	1.782	0.000	0.022
		C	0.000	0.000	0.000	0.000	0.019
		A	0.000	0.000	0.009	0.000	0.001
L13	98.500-98.250	B	0.000	0.000	0.297	0.000	0.004
		C	0.000	0.000	0.000	0.000	0.003
		A	0.000	0.000	0.259	0.000	0.001
L14	98.250-93.250	B	0.000	0.000	0.547	0.000	0.004
		C	0.000	0.000	0.250	0.000	0.003
		A	0.000	0.000	5.188	0.000	0.025
L15	93.250-88.250	B	0.000	0.000	10.940	0.000	0.074
		C	0.000	0.000	5.000	0.000	0.064
		A	0.000	0.000	5.188	0.000	0.025
L16	88.250-80.250	B	0.000	0.000	10.940	0.000	0.074
		C	0.000	0.000	5.000	0.000	0.064
		A	0.000	0.000	8.300	0.000	0.040
L17	80.250-79.750	B	0.000	0.000	17.504	0.000	0.118
		C	0.000	0.000	8.000	0.000	0.102
		A	0.000	0.000	0.519	0.000	0.003
L18	79.750-74.750	B	0.000	0.000	1.094	0.000	0.007
		C	0.000	0.000	0.500	0.000	0.006
		A	0.000	0.000	5.188	0.000	0.025
L19	74.750-69.750	B	0.000	0.000	10.940	0.000	0.074
		C	0.000	0.000	5.000	0.000	0.064
		A	0.000	0.000	5.500	0.000	0.025
L20	69.750-66.750	B	0.000	0.000	11.253	0.000	0.074
		C	0.000	0.000	5.313	0.000	0.064
		A	0.000	0.000	4.362	0.000	0.015
L21	66.750-66.500	B	0.000	0.000	7.814	0.000	0.044
		C	0.000	0.000	4.250	0.000	0.039
		A	0.000	0.000	0.364	0.000	0.001
L22	66.500-61.500	B	0.000	0.000	0.651	0.000	0.004
		C	0.000	0.000	0.354	0.000	0.003
		A	0.000	0.000	7.271	0.000	0.025
		B	0.000	0.000	13.023	0.000	0.074

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 9 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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
L23	61.500-56.500	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	7.271	0.000	0.025
		B	0.000	0.000	13.023	0.000	0.074
L24	56.500-51.500	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	7.271	0.000	0.025
		B	0.000	0.000	13.023	0.000	0.074
L25	51.500-46.500	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	7.271	0.000	0.025
		B	0.000	0.000	13.023	0.000	0.074
L26	46.500-39.750	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	10.146	0.000	0.035
		B	0.000	0.000	17.581	0.000	0.100
L27	39.750-38.750	C	0.000	0.000	9.563	0.000	0.087
		A	0.000	0.000	1.517	0.000	0.005
		B	0.000	0.000	2.605	0.000	0.015
L28	38.750-33.750	C	0.000	0.000	1.417	0.000	0.013
		A	0.000	0.000	7.586	0.000	0.026
		B	0.000	0.000	13.023	0.000	0.074
L29	33.750-31.750	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	3.034	0.000	0.010
		B	0.000	0.000	5.209	0.000	0.030
L30	31.750-31.500	C	0.000	0.000	2.833	0.000	0.026
		A	0.000	0.000	0.379	0.000	0.001
		B	0.000	0.000	0.651	0.000	0.004
L31	31.500-26.500	C	0.000	0.000	0.354	0.000	0.003
		A	0.000	0.000	7.586	0.000	0.026
		B	0.000	0.000	13.023	0.000	0.074
L32	26.500-21.500	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	7.586	0.000	0.026
		B	0.000	0.000	13.023	0.000	0.074
L33	21.500-17.750	C	0.000	0.000	7.083	0.000	0.064
		A	0.000	0.000	5.689	0.000	0.019
		B	0.000	0.000	9.768	0.000	0.055
L34	17.750-17.500	C	0.000	0.000	5.313	0.000	0.048
		A	0.000	0.000	0.650	0.000	0.001
		B	0.000	0.000	0.922	0.000	0.004
L35	17.500-14.250	C	0.000	0.000	0.354	0.000	0.003
		A	0.000	0.000	8.452	0.000	0.017
		B	0.000	0.000	11.986	0.000	0.048
L36	14.250-14.000	C	0.000	0.000	4.604	0.000	0.042
		A	0.000	0.000	0.296	0.000	0.001
		B	0.000	0.000	0.892	0.000	0.004
L37	14.000-9.000	C	0.000	0.000	0.324	0.000	0.003
		A	0.000	0.000	5.919	0.000	0.026
		B	0.000	0.000	17.838	0.000	0.074
L38	9.000-4.000	C	0.000	0.000	6.482	0.000	0.064
		A	0.000	0.000	5.919	0.000	0.026
		B	0.000	0.000	17.838	0.000	0.075
L39	4.000-0.000	C	0.000	0.000	6.482	0.000	0.064
		A	0.000	0.000	4.735	0.000	0.021
		B	0.000	0.000	14.271	0.000	0.060
		C	0.000	0.000	5.185	0.000	0.052

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
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tnxTower

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Page
 10 of 36

Project

Date
 16:58:16 09/20/18

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 Crown Castle

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	148.000-143.000	A	1.740	0.000	0.000	1.927	0.000	0.048
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	143.000-138.000	A	1.734	0.000	0.000	1.921	0.000	0.047
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	138.000-133.000	A	1.728	0.000	0.000	1.915	0.000	0.047
		B		0.000	0.000	9.584	0.000	0.188
		C		0.000	0.000	0.000	0.000	0.000
L4	133.000-128.000	A	1.721	0.000	0.000	1.909	0.000	0.047
		B		0.000	0.000	9.576	0.000	0.187
		C		0.000	0.000	0.000	0.000	0.000
L5	128.000-123.000	A	1.714	0.000	0.000	1.902	0.000	0.047
		B		0.000	0.000	9.568	0.000	0.187
		C		0.000	0.000	0.000	0.000	0.015
L6	123.000-116.500	A	1.706	0.000	0.000	2.462	0.000	0.061
		B		0.000	0.000	12.425	0.000	0.242
		C		0.000	0.000	0.000	0.000	0.019
L7	116.500-115.250	A	1.701	0.000	0.000	0.473	0.000	0.012
		B		0.000	0.000	2.389	0.000	0.047
		C		0.000	0.000	0.000	0.000	0.004
L8	115.250-110.250	A	1.696	0.000	0.000	1.884	0.000	0.047
		B		0.000	0.000	9.545	0.000	0.185
		C		0.000	0.000	0.000	0.000	0.051
L9	110.250-105.250	A	1.688	0.000	0.000	1.876	0.000	0.046
		B		0.000	0.000	9.536	0.000	0.185
		C		0.000	0.000	0.000	0.000	0.064
L10	105.250-100.250	A	1.680	0.000	0.000	1.868	0.000	0.046
		B		0.000	0.000	9.526	0.000	0.184
		C		0.000	0.000	0.000	0.000	0.064
L11	100.250-98.750	A	1.675	0.000	0.000	0.559	0.000	0.014
		B		0.000	0.000	2.856	0.000	0.055
		C		0.000	0.000	0.000	0.000	0.019
L12	98.750-98.500	A	1.674	0.000	0.000	0.093	0.000	0.002
		B		0.000	0.000	0.476	0.000	0.009
		C		0.000	0.000	0.000	0.000	0.003
L13	98.500-98.250	A	1.673	0.000	0.000	0.427	0.000	0.006
		B		0.000	0.000	0.809	0.000	0.012
		C		0.000	0.000	0.334	0.000	0.006
L14	98.250-93.250	A	1.669	0.000	0.000	8.525	0.000	0.112
		B		0.000	0.000	16.179	0.000	0.249
		C		0.000	0.000	6.669	0.000	0.130
L15	93.250-88.250	A	1.660	0.000	0.000	8.507	0.000	0.111
		B		0.000	0.000	16.159	0.000	0.248
		C		0.000	0.000	6.660	0.000	0.129
L16	88.250-80.250	A	1.647	0.000	0.000	13.571	0.000	0.176
		B		0.000	0.000	25.810	0.000	0.395
		C		0.000	0.000	10.636	0.000	0.206
L17	80.250-79.750	A	1.639	0.000	0.000	0.848	0.000	0.011
		B		0.000	0.000	1.613	0.000	0.025
		C		0.000	0.000	0.665	0.000	0.013
L18	79.750-74.750	A	1.633	0.000	0.000	8.454	0.000	0.109
		B		0.000	0.000	16.100	0.000	0.245
		C		0.000	0.000	6.633	0.000	0.128
L19	74.750-69.750	A	1.622	0.000	0.000	8.744	0.000	0.111
		B		0.000	0.000	16.388	0.000	0.246
		C		0.000	0.000	6.935	0.000	0.131
L20	69.750-66.750	A	1.613	0.000	0.000	6.298	0.000	0.075
		B		0.000	0.000	10.883	0.000	0.156
		C		0.000	0.000	5.218	0.000	0.087
L21	66.750-66.500	A	1.609	0.000	0.000	0.524	0.000	0.006

tnxTower

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Page
 11 of 36

Project

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 16:58:16 09/20/18

Client
 Crown Castle

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
		B		0.000	0.000	0.906	0.000	0.013
		C		0.000	0.000	0.435	0.000	0.007
L22	66.500-61.500	A	1.603	0.000	0.000	10.476	0.000	0.124
		B		0.000	0.000	18.114	0.000	0.258
		C		0.000	0.000	8.686	0.000	0.144
L23	61.500-56.500	A	1.590	0.000	0.000	10.450	0.000	0.123
		B		0.000	0.000	18.085	0.000	0.257
		C		0.000	0.000	8.673	0.000	0.143
L24	56.500-51.500	A	1.576	0.000	0.000	10.422	0.000	0.122
		B		0.000	0.000	18.054	0.000	0.255
		C		0.000	0.000	8.659	0.000	0.142
L25	51.500-46.500	A	1.560	0.000	0.000	10.392	0.000	0.121
		B		0.000	0.000	18.019	0.000	0.253
		C		0.000	0.000	8.644	0.000	0.141
L26	46.500-39.750	A	1.541	0.000	0.000	15.924	0.000	0.183
		B		0.000	0.000	24.266	0.000	0.338
		C		0.000	0.000	11.642	0.000	0.189
L27	39.750-38.750	A	1.526	0.000	0.000	2.442	0.000	0.028
		B		0.000	0.000	3.595	0.000	0.050
		C		0.000	0.000	1.725	0.000	0.028
L28	38.750-33.750	A	1.514	0.000	0.000	12.128	0.000	0.137
		B		0.000	0.000	17.915	0.000	0.247
		C		0.000	0.000	8.597	0.000	0.139
L29	33.750-31.750	A	1.499	0.000	0.000	4.833	0.000	0.054
		B		0.000	0.000	7.152	0.000	0.098
		C		0.000	0.000	3.433	0.000	0.055
L30	31.750-31.500	A	1.494	0.000	0.000	0.603	0.000	0.007
		B		0.000	0.000	0.893	0.000	0.012
		C		0.000	0.000	0.429	0.000	0.007
L31	31.500-26.500	A	1.481	0.000	0.000	12.028	0.000	0.134
		B		0.000	0.000	17.840	0.000	0.243
		C		0.000	0.000	8.564	0.000	0.137
L32	26.500-21.500	A	1.453	0.000	0.000	11.945	0.000	0.131
		B		0.000	0.000	17.777	0.000	0.239
		C		0.000	0.000	8.536	0.000	0.135
L33	21.500-17.750	A	1.424	0.000	0.000	8.893	0.000	0.096
		B		0.000	0.000	13.284	0.000	0.176
		C		0.000	0.000	6.381	0.000	0.100
L34	17.750-17.500	A	1.409	0.000	0.000	0.929	0.000	0.009
		B		0.000	0.000	1.222	0.000	0.015
		C		0.000	0.000	0.425	0.000	0.007
L35	17.500-14.250	A	1.394	0.000	0.000	12.042	0.000	0.118
		B		0.000	0.000	15.862	0.000	0.187
		C		0.000	0.000	5.510	0.000	0.086
L36	14.250-14.000	A	1.378	0.000	0.000	0.500	0.000	0.006
		B		0.000	0.000	1.156	0.000	0.014
		C		0.000	0.000	0.361	0.000	0.007
L37	14.000-9.000	A	1.350	0.000	0.000	9.922	0.000	0.110
		B		0.000	0.000	23.037	0.000	0.281
		C		0.000	0.000	7.205	0.000	0.129
L38	9.000-4.000	A	1.275	0.000	0.000	9.709	0.000	0.104
		B		0.000	0.000	22.841	0.000	0.268
		C		0.000	0.000	7.165	0.000	0.125
L39	4.000-0.000	A	1.133	0.000	0.000	7.442	0.000	0.074
		B		0.000	0.000	17.973	0.000	0.195
		C		0.000	0.000	5.673	0.000	0.093

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 12 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Feed Line Center of Pressure

Section	Elevation ft	CP _x	CP _z	CP _x	CP _z
		in	in	Ice in	Ice in
L1	148.000-143.000	-0.336	-0.032	-1.482	-0.140
L2	143.000-138.000	-0.336	-0.032	-1.490	-0.141
L3	138.000-133.000	2.665	-5.612	1.202	-4.101
L4	133.000-128.000	2.698	-5.684	1.222	-4.167
L5	128.000-123.000	2.731	-5.753	1.242	-4.230
L6	123.000-116.500	2.766	-5.829	1.264	-4.301
L7	116.500-115.250	2.775	-5.847	1.268	-4.318
L8	115.250-110.250	2.794	-5.887	1.282	-4.355
L9	110.250-105.250	2.823	-5.949	1.301	-4.413
L10	105.250-100.250	2.851	-6.009	1.319	-4.469
L11	100.250-98.750	2.869	-6.047	1.331	-4.505
L12	98.750-98.500	2.874	-6.057	1.334	-4.515
L13	98.500-98.250	1.436	-3.028	0.828	-2.803
L14	98.250-93.250	1.450	-3.056	0.836	-2.828
L15	93.250-88.250	1.474	-3.108	0.852	-2.875
L16	88.250-80.250	1.505	-3.174	0.872	-2.935
L17	80.250-79.750	1.512	-3.188	0.875	-2.948
L18	79.750-74.750	1.525	-3.216	0.886	-2.973
L19	74.750-69.750	1.503	-3.170	0.886	-2.966
L20	69.750-66.750	1.306	-2.754	0.820	-2.739
L21	66.750-66.500	1.313	-2.769	0.825	-2.753
L22	66.500-61.500	1.324	-2.792	0.833	-2.774
L23	61.500-56.500	1.344	-2.835	0.847	-2.814
L24	56.500-51.500	1.364	-2.878	0.862	-2.853
L25	51.500-46.500	1.384	-2.920	0.877	-2.892
L26	46.500-39.750	1.267	-2.963	0.403	-2.914
L27	39.750-38.750	1.228	-2.963	0.268	-2.911
L28	38.750-33.750	1.239	-2.988	0.283	-2.932
L29	33.750-31.750	1.250	-3.017	0.293	-2.958
L30	31.750-31.500	1.254	-3.026	0.296	-2.966
L31	31.500-26.500	1.263	-3.047	0.304	-2.985
L32	26.500-21.500	1.279	-3.087	0.322	-3.020
L33	21.500-17.750	1.293	-3.122	0.340	-3.050
L34	17.750-17.500	1.023	-4.937	0.289	-4.530
L35	17.500-14.250	1.028	-4.961	0.297	-4.550
L36	14.250-14.000	4.315	-4.171	2.520	-4.056
L37	14.000-9.000	4.344	-4.199	2.553	-4.076
L38	9.000-4.000	4.398	-4.251	2.631	-4.110
L39	4.000-0.000	4.447	-4.298	2.752	-4.124

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	21	Safety Line 3/8	143.00 - 148.00	1.0000	1.0000
L2	21	Safety Line 3/8	138.00 - 143.00	1.0000	1.0000
L3	3	LDF7-50A(1-5/8)	133.00 -	1.0000	1.0000

tnxTower

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Page
 13 of 36

Project

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 16:58:16 09/20/18

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			138.00		
L3	21	Safety Line 3/8	133.00 - 138.00	1.0000	1.0000
L4	3	LDF7-50A(1-5/8)	128.00 - 133.00	1.0000	1.0000
L4	21	Safety Line 3/8	128.00 - 133.00	1.0000	1.0000
L5	3	LDF7-50A(1-5/8)	123.00 - 128.00	1.0000	1.0000
L5	21	Safety Line 3/8	123.00 - 128.00	1.0000	1.0000
L6	3	LDF7-50A(1-5/8)	116.50 - 123.00	1.0000	1.0000
L6	21	Safety Line 3/8	116.50 - 123.00	1.0000	1.0000
L8	3	LDF7-50A(1-5/8)	110.25 - 115.25	1.0000	1.0000
L8	21	Safety Line 3/8	110.25 - 115.25	1.0000	1.0000
L9	3	LDF7-50A(1-5/8)	105.25 - 110.25	1.0000	1.0000
L9	21	Safety Line 3/8	105.25 - 110.25	1.0000	1.0000
L10	3	LDF7-50A(1-5/8)	100.25 - 105.25	1.0000	1.0000
L10	21	Safety Line 3/8	100.25 - 105.25	1.0000	1.0000
L11	3	LDF7-50A(1-5/8)	98.75 - 100.25	1.0000	1.0000
L11	21	Safety Line 3/8	98.75 - 100.25	1.0000	1.0000
L12	3	LDF7-50A(1-5/8)	98.50 - 98.75	1.0000	1.0000
L12	21	Safety Line 3/8	98.50 - 98.75	1.0000	1.0000
L13	3	LDF7-50A(1-5/8)	98.25 - 98.50	1.0000	1.0000
L13	21	Safety Line 3/8	98.25 - 98.50	1.0000	1.0000
L13	30	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L13	31	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L13	32	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L14	3	LDF7-50A(1-5/8)	93.25 - 98.25	1.0000	1.0000
L14	21	Safety Line 3/8	93.25 - 98.25	1.0000	1.0000
L14	30	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L14	31	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L14	32	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L15	3	LDF7-50A(1-5/8)	88.25 - 93.25	1.0000	1.0000
L15	21	Safety Line 3/8	88.25 - 93.25	1.0000	1.0000
L15	30	CCI 6" x 1" Plate	88.25 - 93.25	1.0000	1.0000
L15	31	CCI 6" x 1" Plate	88.25 - 93.25	1.0000	1.0000
L15	32	CCI 6" x 1" Plate	88.25 - 93.25	1.0000	1.0000
L16	3	LDF7-50A(1-5/8)	80.25 - 88.25	1.0000	1.0000
L16	21	Safety Line 3/8	80.25 - 88.25	1.0000	1.0000
L16	30	CCI 6" x 1" Plate	80.25 - 88.25	1.0000	1.0000
L16	31	CCI 6" x 1" Plate	80.25 - 88.25	1.0000	1.0000
L16	32	CCI 6" x 1" Plate	80.25 - 88.25	1.0000	1.0000
L18	3	LDF7-50A(1-5/8)	74.75 - 79.75	1.0000	1.0000
L18	21	Safety Line 3/8	74.75 - 79.75	1.0000	1.0000
L18	30	CCI 6" x 1" Plate	74.75 - 79.75	1.0000	1.0000
L18	31	CCI 6" x 1" Plate	74.75 - 79.75	1.0000	1.0000
L18	32	CCI 6" x 1" Plate	74.75 - 79.75	1.0000	1.0000
L19	3	LDF7-50A(1-5/8)	69.75 - 74.75	1.0000	1.0000
L19	21	Safety Line 3/8	69.75 - 74.75	1.0000	1.0000
L19	26	CCI 8.5" x 1.25" Plate	69.75 - 70.50	1.0000	1.0000
L19	27	CCI 8.5" x 1.25" Plate	69.75 - 70.50	1.0000	1.0000
L19	28	CCI 8.5" x 1.25" Plate	69.75 - 70.50	1.0000	1.0000
L19	30	CCI 6" x 1" Plate	70.50 - 74.75	1.0000	1.0000

tnxTower

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Page
14 of 36

Project

Date
16:58:16 09/20/18

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	31	CCI 6" x 1" Plate	70.50 - 74.75	1.0000	1.0000
L19	32	CCI 6" x 1" Plate	70.50 - 74.75	1.0000	1.0000
L20	3	LDF7-50A(1-5/8)	66.75 - 69.75	1.0000	1.0000
L20	21	Safety Line 3/8	66.75 - 69.75	1.0000	1.0000
L20	26	CCI 8.5" x 1.25" Plate	66.75 - 69.75	1.0000	1.0000
L20	27	CCI 8.5" x 1.25" Plate	66.75 - 69.75	1.0000	1.0000
L20	28	CCI 8.5" x 1.25" Plate	66.75 - 69.75	1.0000	1.0000
L21	3	LDF7-50A(1-5/8)	66.50 - 66.75	1.0000	1.0000
L21	21	Safety Line 3/8	66.50 - 66.75	1.0000	1.0000
L21	26	CCI 8.5" x 1.25" Plate	66.50 - 66.75	1.0000	1.0000
L21	27	CCI 8.5" x 1.25" Plate	66.50 - 66.75	1.0000	1.0000
L21	28	CCI 8.5" x 1.25" Plate	66.50 - 66.75	1.0000	1.0000
L22	3	LDF7-50A(1-5/8)	61.50 - 66.50	1.0000	1.0000
L22	21	Safety Line 3/8	61.50 - 66.50	1.0000	1.0000
L22	26	CCI 8.5" x 1.25" Plate	61.50 - 66.50	1.0000	1.0000
L22	27	CCI 8.5" x 1.25" Plate	61.50 - 66.50	1.0000	1.0000
L22	28	CCI 8.5" x 1.25" Plate	61.50 - 66.50	1.0000	1.0000
L23	3	LDF7-50A(1-5/8)	56.50 - 61.50	1.0000	1.0000
L23	21	Safety Line 3/8	56.50 - 61.50	1.0000	1.0000
L23	26	CCI 8.5" x 1.25" Plate	56.50 - 61.50	1.0000	1.0000
L23	27	CCI 8.5" x 1.25" Plate	56.50 - 61.50	1.0000	1.0000
L23	28	CCI 8.5" x 1.25" Plate	56.50 - 61.50	1.0000	1.0000
L24	3	LDF7-50A(1-5/8)	51.50 - 56.50	1.0000	1.0000
L24	21	Safety Line 3/8	51.50 - 56.50	1.0000	1.0000
L24	26	CCI 8.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L24	27	CCI 8.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L24	28	CCI 8.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L25	3	LDF7-50A(1-5/8)	46.50 - 51.50	1.0000	1.0000
L25	21	Safety Line 3/8	46.50 - 51.50	1.0000	1.0000
L25	26	CCI 8.5" x 1.25" Plate	46.50 - 51.50	1.0000	1.0000
L25	27	CCI 8.5" x 1.25" Plate	46.50 - 51.50	1.0000	1.0000
L25	28	CCI 8.5" x 1.25" Plate	46.50 - 51.50	1.0000	1.0000
L26	3	LDF7-50A(1-5/8)	39.75 - 46.50	1.0000	1.0000
L26	17	LDF4-50A(1/2)	39.75 - 45.00	1.0000	1.0000
L26	21	Safety Line 3/8	39.75 - 46.50	1.0000	1.0000
L26	26	CCI 8.5" x 1.25" Plate	39.75 - 46.50	1.0000	1.0000
L26	27	CCI 8.5" x 1.25" Plate	39.75 - 46.50	1.0000	1.0000
L26	28	CCI 8.5" x 1.25" Plate	39.75 - 46.50	1.0000	1.0000
L28	3	LDF7-50A(1-5/8)	33.75 - 38.75	1.0000	1.0000
L28	17	LDF4-50A(1/2)	33.75 - 38.75	1.0000	1.0000
L28	21	Safety Line 3/8	33.75 - 38.75	1.0000	1.0000
L28	26	CCI 8.5" x 1.25" Plate	33.75 - 38.75	1.0000	1.0000
L28	27	CCI 8.5" x 1.25" Plate	33.75 - 38.75	1.0000	1.0000
L28	28	CCI 8.5" x 1.25" Plate	33.75 - 38.75	1.0000	1.0000
L29	3	LDF7-50A(1-5/8)	31.75 - 33.75	1.0000	1.0000
L29	17	LDF4-50A(1/2)	31.75 - 33.75	1.0000	1.0000
L29	21	Safety Line 3/8	31.75 - 33.75	1.0000	1.0000
L29	26	CCI 8.5" x 1.25" Plate	31.75 - 33.75	1.0000	1.0000
L29	27	CCI 8.5" x 1.25" Plate	31.75 - 33.75	1.0000	1.0000
L29	28	CCI 8.5" x 1.25" Plate	31.75 - 33.75	1.0000	1.0000
L30	3	LDF7-50A(1-5/8)	31.50 - 31.75	1.0000	1.0000
L30	17	LDF4-50A(1/2)	31.50 - 31.75	1.0000	1.0000
L30	21	Safety Line 3/8	31.50 - 31.75	1.0000	1.0000
L30	26	CCI 8.5" x 1.25" Plate	31.50 - 31.75	1.0000	1.0000
L30	27	CCI 8.5" x 1.25" Plate	31.50 - 31.75	1.0000	1.0000
L30	28	CCI 8.5" x 1.25" Plate	31.50 - 31.75	1.0000	1.0000
L31	3	LDF7-50A(1-5/8)	26.50 - 31.50	1.0000	1.0000
L31	17	LDF4-50A(1/2)	26.50 - 31.50	1.0000	1.0000
L31	21	Safety Line 3/8	26.50 - 31.50	1.0000	1.0000
L31	26	CCI 8.5" x 1.25" Plate	26.50 - 31.50	1.0000	1.0000
L31	27	CCI 8.5" x 1.25" Plate	26.50 - 31.50	1.0000	1.0000
L31	28	CCI 8.5" x 1.25" Plate	26.50 - 31.50	1.0000	1.0000

<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 15 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L32	3	LDF7-50A(1-5/8)	21.50 - 26.50	1.0000	1.0000
L32	17	LDF4-50A(1/2)	21.50 - 26.50	1.0000	1.0000
L32	21	Safety Line 3/8	21.50 - 26.50	1.0000	1.0000
L32	26	CCI 8.5" x 1.25" Plate	21.50 - 26.50	1.0000	1.0000
L32	27	CCI 8.5" x 1.25" Plate	21.50 - 26.50	1.0000	1.0000
L32	28	CCI 8.5" x 1.25" Plate	21.50 - 26.50	1.0000	1.0000
L33	3	LDF7-50A(1-5/8)	17.75 - 21.50	1.0000	1.0000
L33	17	LDF4-50A(1/2)	17.75 - 21.50	1.0000	1.0000
L33	21	Safety Line 3/8	17.75 - 21.50	1.0000	1.0000
L33	26	CCI 8.5" x 1.25" Plate	17.75 - 21.50	1.0000	1.0000
L33	27	CCI 8.5" x 1.25" Plate	17.75 - 21.50	1.0000	1.0000
L33	28	CCI 8.5" x 1.25" Plate	17.75 - 21.50	1.0000	1.0000
L34	3	LDF7-50A(1-5/8)	17.50 - 17.75	1.0000	1.0000
L34	17	LDF4-50A(1/2)	17.50 - 17.75	1.0000	1.0000
L34	21	Safety Line 3/8	17.50 - 17.75	1.0000	1.0000
L34	26	CCI 8.5" x 1.25" Plate	17.50 - 17.75	1.0000	1.0000
L34	27	CCI 8.5" x 1.25" Plate	17.50 - 17.75	1.0000	1.0000
L34	28	CCI 8.5" x 1.25" Plate	17.50 - 17.75	1.0000	1.0000
L34	34	CCI 6.5" x 1.25" Plate	17.50 - 17.75	1.0000	1.0000
L34	35	CCI 6.5" x 1.25" Plate	17.50 - 17.75	1.0000	1.0000
L35	3	LDF7-50A(1-5/8)	14.25 - 17.50	1.0000	1.0000
L35	17	LDF4-50A(1/2)	14.25 - 17.50	1.0000	1.0000
L35	21	Safety Line 3/8	14.25 - 17.50	1.0000	1.0000
L35	26	CCI 8.5" x 1.25" Plate	14.25 - 17.50	1.0000	1.0000
L35	27	CCI 8.5" x 1.25" Plate	14.25 - 17.50	1.0000	1.0000
L35	28	CCI 8.5" x 1.25" Plate	14.25 - 17.50	1.0000	1.0000
L35	34	CCI 6.5" x 1.25" Plate	14.25 - 17.50	1.0000	1.0000
L35	35	CCI 6.5" x 1.25" Plate	14.25 - 17.50	1.0000	1.0000
L36	3	LDF7-50A(1-5/8)	14.00 - 14.25	1.0000	1.0000
L36	17	LDF4-50A(1/2)	14.00 - 14.25	1.0000	1.0000
L36	21	Safety Line 3/8	14.00 - 14.25	1.0000	1.0000
L36	23	CCI 8.5" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L36	24	CCI 8.5" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L36	34	CCI 6.5" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L36	35	CCI 6.5" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L37	3	LDF7-50A(1-5/8)	9.00 - 14.00	1.0000	1.0000
L37	17	LDF4-50A(1/2)	9.00 - 14.00	1.0000	1.0000
L37	21	Safety Line 3/8	9.00 - 14.00	1.0000	1.0000
L37	23	CCI 8.5" x 1.25" Plate	9.00 - 14.00	1.0000	1.0000
L37	24	CCI 8.5" x 1.25" Plate	9.00 - 14.00	1.0000	1.0000
L37	34	CCI 6.5" x 1.25" Plate	9.00 - 14.00	1.0000	1.0000
L37	35	CCI 6.5" x 1.25" Plate	9.00 - 14.00	1.0000	1.0000
L38	3	LDF7-50A(1-5/8)	4.00 - 9.00	1.0000	1.0000
L38	17	LDF4-50A(1/2)	4.00 - 9.00	1.0000	1.0000
L38	21	Safety Line 3/8	4.00 - 9.00	1.0000	1.0000
L38	23	CCI 8.5" x 1.25" Plate	4.00 - 9.00	1.0000	1.0000
L38	24	CCI 8.5" x 1.25" Plate	4.00 - 9.00	1.0000	1.0000
L38	34	CCI 6.5" x 1.25" Plate	4.00 - 9.00	1.0000	1.0000
L38	35	CCI 6.5" x 1.25" Plate	4.00 - 9.00	1.0000	1.0000
L39	3	LDF7-50A(1-5/8)	0.00 - 4.00	1.0000	1.0000
L39	17	LDF4-50A(1/2)	0.00 - 4.00	1.0000	1.0000
L39	21	Safety Line 3/8	0.00 - 4.00	1.0000	1.0000
L39	23	CCI 8.5" x 1.25" Plate	0.00 - 4.00	1.0000	1.0000
L39	24	CCI 8.5" x 1.25" Plate	0.00 - 4.00	1.0000	1.0000
L39	34	CCI 6.5" x 1.25" Plate	0.00 - 4.00	1.0000	1.0000
L39	35	CCI 6.5" x 1.25" Plate	0.00 - 4.00	1.0000	1.0000

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 16 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
Top Hat (E)	C	None			0.000	149.500	No Ice 3.000 1/2" Ice 3.480 1" Ice 3.960	3.000 3.480 3.960	0.081 0.111 0.141
/>									
800MHZ RRH (CL/Photo)	A	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ RRH (CL/Photo)	B	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ RRH (CL/Photo)	C	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800 EXTERNAL NOTCH FILTER (CL/Photo)	A	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER (CL/Photo)	B	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER (CL/Photo)	C	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
1900MHZ RRH (65MHz) (CL/Photo)	A	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.084 0.111
1900MHZ RRH (65MHz) (CL/Photo)	B	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.084 0.111
1900MHZ RRH (65MHz) (CL/Photo)	C	From Leg	1.000 0.000 1.000		0.000	149.000	No Ice 2.313 1/2" Ice 2.517 1" Ice 2.728	2.375 2.581 2.794	0.060 0.084 0.111
Pipe Mount [PM 601-3] (E)	C	None			0.000	149.000	No Ice 4.390 1/2" Ice 5.480 1" Ice 6.570	4.390 5.480 6.570	0.195 0.237 0.280
/>									
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000		0.000	148.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000		0.000	148.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000		0.000	148.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346	6.946 8.127 9.021	0.083 0.151 0.227
(3) ACU-A20-N (E)	A	From Leg	4.000 0.000 0.000		0.000	148.000	No Ice 0.067 1/2" Ice 0.104 1" Ice 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N (E)	B	From Leg	4.000 0.000 0.000		0.000	148.000	No Ice 0.067 1/2" Ice 0.104 1" Ice 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N (E)	C	From Leg	4.000 0.000 0.000		0.000	148.000	No Ice 0.067 1/2" Ice 0.104	0.117 0.162	0.001 0.002

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 17 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz Lateral ft	Vert ft						
APXVTM14-ALU-I20 w/ Mount Pipe (R)	A	From Leg	0.000		0.000	148.000	1" Ice	0.148	0.215	0.004
			4.000				No Ice	7.134	4.959	0.077
			0.000				1/2" Ice	7.662	5.754	0.132
APXVTM14-ALU-I20 w/ Mount Pipe (R)	B	From Leg	2.000		0.000	148.000	1" Ice	8.183	6.472	0.193
			4.000				No Ice	7.134	4.959	0.077
			0.000				1/2" Ice	7.662	5.754	0.132
APXVTM14-ALU-I20 w/ Mount Pipe (R)	C	From Leg	2.000		0.000	148.000	1" Ice	8.183	6.472	0.193
			4.000				No Ice	7.134	4.959	0.077
			0.000				1/2" Ice	7.662	5.754	0.132
(2) TD-RRH8x20-25 (R)	A	From Leg	2.000		0.000	148.000	1" Ice	8.183	6.472	0.193
			4.000				No Ice	4.720	1.703	0.070
			0.000				1/2" Ice	5.014	1.920	0.097
TD-RRH8x20-25 (R)	B	From Leg	0.000		0.000	148.000	1" Ice	5.316	2.145	0.128
			4.000				No Ice	4.720	1.703	0.070
			0.000				1/2" Ice	5.014	1.920	0.097
6' x 2" Mount Pipe (E)	A	From Leg	0.000		0.000	148.000	1" Ice	5.316	2.145	0.128
			4.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
6' x 2" Mount Pipe (E)	B	From Leg	0.000		0.000	148.000	1" Ice	2.294	2.294	0.048
			4.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
6' x 2" Mount Pipe (E)	C	From Leg	0.000		0.000	148.000	1" Ice	2.294	2.294	0.048
			4.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
Platform Mount [LP 712-1] (12/TIA)	C	None	0.000		0.000	148.000	1" Ice	2.294	2.294	0.048
							No Ice	24.530	24.530	1.335
							1/2" Ice	29.940	29.940	1.646
/>*										
(2) LPA-80063/6CF w/ Mount Pipe (E)	A	From Leg	0.000		0.000	138.000	1" Ice	35.350	35.350	1.956
			4.000				No Ice	9.831	10.215	0.052
			0.000				1/2" Ice	10.400	11.384	0.145
(2) LPA-80080/6CF w/ Mount Pipe (E)	B	From Leg	0.000		0.000	138.000	1" Ice	10.933	12.269	0.246
			4.000				No Ice	4.564	10.259	0.046
			0.000				1/2" Ice	5.105	11.427	0.113
(2) LPA-80080/6CF w/ Mount Pipe (E)	C	From Leg	0.000		0.000	138.000	1" Ice	5.612	12.312	0.187
			4.000				No Ice	4.564	10.259	0.046
			0.000				1/2" Ice	5.105	11.427	0.113
BXA-70063-6CF-2 w/ Mount Pipe (E)	A	From Leg	0.000		0.000	138.000	1" Ice	5.612	12.312	0.187
			4.000				No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103
BXA-70063-6CF-2 w/ Mount Pipe (E)	B	From Leg	0.000		0.000	138.000	1" Ice	8.872	7.819	0.171
			4.000				No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103
BXA-70063-6CF-2 w/ Mount Pipe (E)	C	From Leg	0.000		0.000	138.000	1" Ice	8.872	7.819	0.171
			4.000				No Ice	7.806	5.801	0.042
			0.000				1/2" Ice	8.357	6.953	0.103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe (E)	A	From Leg	0.000		0.000	138.000	1" Ice	8.872	7.819	0.171
			4.000				No Ice	3.179	3.353	0.029
			0.000				1/2" Ice	3.555	3.971	0.061
BXA-171085-8BF-EDIN-2 w/ Mount Pipe (E)	B	From Leg	0.000		0.000	138.000	1" Ice	3.930	4.595	0.099
			4.000				No Ice	3.179	3.353	0.029
			0.000				1/2" Ice	3.555	3.971	0.061
BXA-171063-8BF-2 w/ Mount Pipe (E)	C	From Leg	0.000		0.000	138.000	1" Ice	3.930	4.595	0.099
			4.000				No Ice	3.179	3.353	0.029
			0.000				1/2" Ice	3.555	3.971	0.061
Platform Mount [LP 712-1]	C	None			0.000	138.000	1" Ice	3.964	4.595	0.099
							No Ice	24.530	24.530	1.335

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 18 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
(12/TIA)						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956
/>*									
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.000	128.000	No Ice	13.213	9.582	0.100
(AT&T-R)			0.000			1/2" Ice	13.899	11.052	0.196
			0.000			1" Ice	14.587	12.496	0.303
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.000	128.000	No Ice	13.213	9.582	0.100
(R)			0.000			1/2" Ice	13.899	11.052	0.196
			0.000			1" Ice	14.587	12.496	0.303
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.000	128.000	No Ice	13.213	9.582	0.100
(R)			0.000			1/2" Ice	13.899	11.052	0.196
			0.000			1" Ice	14.587	12.496	0.303
(3) RRU-11 (R)	A	From Leg	4.000	0.000	128.000	No Ice	1.639	1.262	0.044
			0.000			1/2" Ice	1.802	1.410	0.060
			0.000			1" Ice	1.972	1.566	0.078
(3) RRU-11 (R)	B	From Leg	4.000	0.000	128.000	No Ice	1.639	1.262	0.044
			0.000			1/2" Ice	1.802	1.410	0.060
			0.000			1" Ice	1.972	1.566	0.078
(3) RRU-11 (R)	C	From Leg	4.000	0.000	128.000	No Ice	1.639	1.262	0.044
			0.000			1/2" Ice	1.802	1.410	0.060
			0.000			1" Ice	1.972	1.566	0.078
(2) DC6-48-60-18-8F (R)	B	From Leg	4.000	0.000	128.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			0.000			1" Ice	2.105	2.105	0.080
Sector Mount [SM 406-3] (R)	C	None		0.000	128.000	No Ice	19.830	19.830	0.923
						1/2" Ice	29.410	29.410	1.326
						1" Ice	38.990	38.990	1.729
/>*									
(2)	A	From Leg	4.000	0.000	114.000	No Ice	22.614	11.024	0.161
APXVAARR24_43-U-NA20 w/ Mount Pipe			0.000			1/2" Ice	23.499	12.550	0.297
(P)			0.000			1" Ice	24.394	14.099	0.444
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000	0.000	114.000	No Ice	22.614	11.024	0.161
(P)			0.000			1/2" Ice	23.499	12.550	0.297
			0.000			1" Ice	24.394	14.099	0.444
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000	0.000	114.000	No Ice	22.614	11.024	0.161
(P)			0.000			1/2" Ice	23.499	12.550	0.297
			0.000			1" Ice	24.394	14.099	0.444
(2) AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000	0.000	114.000	No Ice	7.336	6.145	0.153
(P)			0.000			1/2" Ice	7.868	7.014	0.214
			0.000			1" Ice	8.393	7.803	0.282
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000	0.000	114.000	No Ice	7.336	6.145	0.153
(P)			0.000			1/2" Ice	7.868	7.014	0.214
			0.000			1" Ice	8.393	7.803	0.282
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000	0.000	114.000	No Ice	7.336	6.145	0.153
(P)			0.000			1/2" Ice	7.868	7.014	0.214
			0.000			1" Ice	8.393	7.803	0.282
(3) RADIO 4449 B12/B71 (P)	A	From Leg	4.000	0.000	114.000	No Ice	1.917	1.344	0.078
			0.000			1/2" Ice	2.104	1.506	0.094
			0.000			1" Ice	2.299	1.675	0.113
(2) RADIO 4449 B12/B71 (P)	B	From Leg	4.000	0.000	114.000	No Ice	1.917	1.344	0.078
			0.000			1/2" Ice	2.104	1.506	0.094
			0.000			1" Ice	2.299	1.675	0.113
(3) RADIO 4449 B12/B71 (P)	C	From Leg	4.000	0.000	114.000	No Ice	1.917	1.344	0.078
			0.000			1/2" Ice	2.104	1.506	0.094
			0.000			1" Ice	2.299	1.675	0.113
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	114.000	No Ice	1.425	1.425	0.022

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 20 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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
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
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tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 21 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	148 - 143	Pole	Max Tension	26	0.000	0.000	-0.000
			Max. Compression	26	-8.053	-0.839	1.523
			Max. Mx	8	-3.344	-27.368	0.366
			Max. My	2	-3.314	-0.099	28.529
			Max. Vy	8	4.570	-27.368	0.366
			Max. Vx	2	-4.749	-0.099	28.529
			Max. Torque	10			0.604
L2	143 - 138	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-8.751	-0.830	1.580
			Max. Mx	8	-3.712	-50.974	0.136
			Max. My	2	-3.680	0.144	53.036
			Max. Vy	8	4.875	-50.974	0.136
			Max. Vx	2	-5.056	0.144	53.036
			Max. Torque	10			0.604
L3	138 - 133	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-15.916	-0.976	2.770
			Max. Mx	8	-6.137	-93.803	0.005
			Max. My	2	-6.066	0.359	98.571
			Max. Vy	8	8.719	-93.803	0.005
			Max. Vx	2	-9.248	0.359	98.571
			Max. Torque	10			0.604
L4	133 - 128	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-16.856	-1.126	2.950
			Max. Mx	8	-6.629	-138.212	-0.199
			Max. My	2	-6.557	0.573	145.620
			Max. Vy	8	9.036	-138.212	-0.199
			Max. Vx	2	-9.567	0.573	145.620
			Max. Torque	10			0.597
L5	128 - 123	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-23.156	-2.430	2.499
			Max. Mx	8	-9.015	-196.926	-0.587
			Max. My	2	-8.935	0.461	206.457
			Max. Vy	8	11.826	-196.926	-0.587
			Max. Vx	2	-12.365	0.461	206.457
			Max. Torque	12			0.729
L6	123 - 116.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-23.703	-2.518	2.616
			Max. Mx	8	-9.315	-229.697	-0.695
			Max. My	2	-9.236	0.579	240.704
			Max. Vy	8	12.000	-229.697	-0.695
			Max. Vx	2	-12.540	0.579	240.704
			Max. Torque	12			0.729
L7	116.5 - 115.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.310	-2.679	2.833
			Max. Mx	8	-10.222	-290.604	-0.891
			Max. My	2	-10.144	0.794	304.303
			Max. Vy	8	12.349	-290.604	-0.891
			Max. Vx	2	-12.891	0.794	304.303
			Max. Torque	12			0.729
L8	115.25 - 110.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.335	-2.124	12.098
			Max. Mx	8	-17.020	-375.727	2.352
			Max. My	2	-16.893	1.395	398.125
			Max. Vy	8	18.792	-375.727	2.352
			Max. Vx	14	19.919	-2.317	-389.786
			Max. Torque	8			4.064
L9	110.25 - 105.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.489	-2.299	12.357
			Max. Mx	8	-17.757	-470.416	2.206

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 22 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	105.25 - 100.25	Pole	Max. My	2	-17.636	1.576	498.104
			Max. Vy	8	19.082	-470.416	2.206
			Max. Vx	14	20.208	-2.575	-490.051
			Max. Torque	8			4.063
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.664	-2.474	12.601
			Max. Mx	8	-18.518	-566.527	2.056
			Max. My	2	-18.406	1.755	599.497
			Max. Vy	8	19.363	-566.527	2.056
			Max. Vx	14	20.488	-2.833	-591.733
L11	100.25 - 98.75	Pole	Max. Torque	8			4.061
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.021	-2.526	12.671
			Max. Mx	8	-18.747	-595.632	2.010
			Max. My	2	-18.637	1.808	630.184
			Max. Vy	8	19.450	-595.632	2.010
			Max. Vx	14	20.575	-2.910	-622.508
			Max. Torque	8			4.060
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.081	-2.535	12.683
L12	98.75 - 98.5	Pole	Max. Mx	8	-18.797	-600.495	2.002
			Max. My	2	-18.689	1.817	635.310
			Max. Vy	8	19.454	-600.495	2.002
			Max. Vx	14	20.578	-2.922	-627.649
			Max. Torque	8			4.060
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.169	-2.544	12.695
			Max. Mx	8	-18.854	-605.362	1.995
			Max. My	2	-18.746	1.826	640.440
			Max. Vy	8	19.470	-605.362	1.995
L13	98.5 - 98.25	Pole	Max. Vx	14	20.594	-2.935	-632.794
			Max. Torque	8			4.060
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.169	-2.544	12.695
			Max. Mx	8	-18.854	-605.362	1.995
			Max. My	2	-18.746	1.826	640.440
			Max. Vy	8	19.470	-605.362	1.995
			Max. Vx	14	20.594	-2.935	-632.794
			Max. Torque	8			4.060
			Max Tension	1	0.000	0.000	0.000
L14	98.25 - 93.25	Pole	Max. Compression	26	-43.933	-2.720	12.924
			Max. Mx	8	-19.968	-703.547	1.841
			Max. My	2	-19.865	2.004	743.897
			Max. Vy	8	19.798	-703.547	1.841
			Max. Vx	14	20.923	-3.192	-736.544
			Max. Torque	8			4.059
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.716	-2.898	13.148
			Max. Mx	8	-21.106	-803.341	1.685
			Max. My	2	-21.009	2.180	848.962
L15	93.25 - 88.25	Pole	Max. Vy	8	20.117	-803.341	1.685
			Max. Vx	14	21.242	-3.449	-841.903
			Max. Torque	8			4.058
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-46.977	-3.025	13.302
			Max. Mx	8	-21.915	-874.136	1.575
			Max. My	2	-21.821	2.303	923.444
			Max. Vy	8	20.337	-874.136	1.575
			Max. Vx	14	21.461	-3.630	-916.591
			Max. Torque	8			4.058
L16	88.25 - 80.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.093	-3.206	13.522
			Max. Mx	8	-24.028	-976.798	1.419
			Max. My	2	-23.937	2.479	1031.380
			Max. Vy	8	20.717	-976.798	1.419
			Max. Vx	14	21.844	-3.888	-1024.822
			Max. Torque	8			4.056
			Max. My	2	-23.937	2.479	1031.380
			Max. Vy	8	20.717	-976.798	1.419
			Max. Vx	14	21.844	-3.888	-1024.822
L17	80.25 - 79.75	Pole	Max. Torque	8			4.056
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.093	-3.206	13.522
			Max. Mx	8	-24.028	-976.798	1.419
			Max. My	2	-23.937	2.479	1031.380
			Max. Vy	8	20.717	-976.798	1.419
			Max. Vx	14	21.844	-3.888	-1024.822
			Max. Torque	8			4.056
			Max. My	2	-23.937	2.479	1031.380
			Max. Vy	8	20.717	-976.798	1.419

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 23 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	79.75 - 74.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.296	-3.388	14.634
			Max. Mx	8	-25.435	-1082.344	1.557
			Max. My	2	-25.351	2.654	1142.405
			Max. Vy	8	21.187	-1082.344	1.557
			Max. Vx	14	22.285	-4.146	-1135.499
			Max. Torque	8			4.666
L19	74.75 - 69.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.287	-3.571	14.846
			Max. Mx	8	-26.775	-1189.020	1.396
			Max. My	2	-26.698	2.828	1254.210
			Max. Vy	8	21.485	-1189.020	1.396
			Max. Vx	14	22.582	-4.405	-1247.599
			Max. Torque	8			4.665
L20	69.75 - 66.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.518	-3.682	14.970
			Max. Mx	8	-27.591	-1253.734	1.299
			Max. My	2	-27.517	2.932	1321.995
			Max. Vy	8	21.659	-1253.734	1.299
			Max. Vx	14	22.755	-4.560	-1315.562
			Max. Torque	8			4.664
L21	66.75 - 66.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.635	-3.691	14.981
			Max. Mx	8	-27.678	-1259.150	1.291
			Max. My	2	-27.606	2.941	1327.668
			Max. Vy	8	21.669	-1259.150	1.291
			Max. Vx	14	22.765	-4.573	-1321.250
			Max. Torque	8			4.664
L22	66.5 - 61.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.983	-3.877	15.184
			Max. Mx	8	-29.315	-1368.298	1.128
			Max. My	2	-29.247	3.113	1441.929
			Max. Vy	8	21.984	-1368.298	1.128
			Max. Vx	14	23.079	-4.831	-1435.807
			Max. Torque	8			4.664
L23	61.5 - 56.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.350	-4.063	15.384
			Max. Mx	8	-30.976	-1478.975	0.966
			Max. My	2	-30.914	3.284	1557.712
			Max. Vy	8	22.286	-1478.975	0.966
			Max. Vx	14	23.380	-5.090	-1551.887
			Max. Torque	8			4.663
L24	56.5 - 51.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.736	-4.251	15.579
			Max. Mx	8	-32.658	-1591.132	0.802
			Max. My	2	-32.602	3.454	1674.965
			Max. Vy	8	22.577	-1591.132	0.802
			Max. Vx	14	23.668	-5.349	-1669.436
			Max. Torque	8			4.662
L25	51.5 - 46.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.140	-4.440	15.771
			Max. Mx	8	-34.360	-1704.713	0.637
			Max. My	2	-34.310	3.622	1793.630
			Max. Vy	8	22.856	-1704.713	0.637
			Max. Vx	14	23.946	-5.608	-1788.397
			Max. Torque	8			4.662
L26	46.5 - 39.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.871	-4.489	15.832
			Max. Mx	8	-34.874	-1739.055	0.588
			Max. My	2	-34.824	3.673	1829.495
			Max. Vy	8	22.941	-1739.055	0.588

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 24 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L27	39.75 - 38.75	Pole	Max. Vx	14	24.029	-5.685	-1824.351
			Max. Torque	8			4.661
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.242	-4.283	15.848
			Max. Mx	8	-38.836	-1883.783	0.195
			Max. My	2	-38.791	4.164	1980.738
			Max. Vy	8	23.393	-1883.783	0.195
			Max. Vx	14	24.494	-5.855	-1976.217
L28	38.75 - 33.75	Pole	Max. Torque	8			4.562
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.856	-4.440	16.050
			Max. Mx	8	-40.741	-2001.354	-0.022
			Max. My	2	-40.702	4.384	2103.437
			Max. Vy	8	23.639	-2001.354	-0.022
			Max. Vx	14	24.736	-6.165	-2099.210
			Max. Torque	8			4.562
L29	33.75 - 31.75	Pole	Max. Torque	8			4.562
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-74.908	-4.503	16.129
			Max. Mx	8	-41.511	-2048.721	-0.108
			Max. My	2	-41.474	4.471	2152.850
			Max. Vy	8	23.732	-2048.721	-0.108
			Max. Vx	14	24.829	-6.289	-2148.741
			Max. Torque	8			4.562
L30	31.75 - 31.5	Pole	Max. Torque	8			4.562
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-75.040	-4.511	16.139
			Max. Mx	8	-41.613	-2054.655	-0.119
			Max. My	2	-41.576	4.482	2159.039
			Max. Vy	8	23.736	-2054.655	-0.119
			Max. Vx	14	24.832	-6.304	-2154.945
			Max. Torque	8			4.561
L31	31.5 - 26.5	Pole	Max. Torque	8			4.561
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-77.677	-4.668	16.332
			Max. Mx	8	-43.547	-2173.918	-0.336
			Max. My	2	-43.516	4.699	2283.402
			Max. Vy	8	23.966	-2173.918	-0.336
			Max. Vx	14	25.058	-6.613	-2279.602
			Max. Torque	8			4.561
L32	26.5 - 21.5	Pole	Max. Torque	8			4.561
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.328	-4.814	16.485
			Max. Mx	8	-45.510	-2294.277	-0.552
			Max. My	2	-45.484	4.914	2408.837
			Max. Vy	8	24.183	-2294.277	-0.552
			Max. Vx	14	25.270	-6.921	-2405.331
			Max. Torque	8			4.561
L33	21.5 - 17.75	Pole	Max. Torque	8			4.561
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.324	-4.925	16.599
			Max. Mx	8	-46.996	-2385.251	-0.715
			Max. My	2	-46.975	5.074	2503.603
			Max. Vy	8	24.346	-2385.251	-0.715
			Max. Vx	14	25.430	-7.152	-2500.317
			Max. Torque	8			4.561
L34	17.75 - 17.5	Pole	Max. Torque	8			4.561
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.479	-4.933	16.613
			Max. Mx	8	-47.119	-2391.337	-0.726
			Max. My	2	-47.098	5.084	2509.941
			Max. Vy	8	24.345	-2391.337	-0.726
			Max. Vx	14	25.428	-7.167	-2506.670
			Max. Torque	8			4.560
L35	17.5 - 14.25	Pole	Max. Torque	8			4.560
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.499	-5.029	16.782
			Max. Mx	8	-48.623	-2470.723	-0.867

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 25 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L36	14.25 - 14	Pole	Max. My	2	-48.606	5.222	2592.601
			Max. Vy	8	24.504	-2470.723	-0.867
			Max. Vx	14	25.585	-7.367	-2589.520
			Max. Torque	8			4.560
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.641	-5.042	16.792
			Max. Mx	8	-48.734	-2476.850	-0.878
			Max. My	2	-48.718	5.233	2598.979
			Max. Vy	8	24.506	-2476.850	-0.878
			Max. Vx	14	25.586	-7.382	-2595.912
L37	14 - 9	Pole	Max. Torque	8			4.560
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.593	-5.301	17.457
			Max. Mx	8	-50.941	-2600.134	-0.824
			Max. My	2	-50.930	5.443	2727.462
			Max. Vy	8	24.775	-2600.134	-0.824
			Max. Vx	14	25.828	-7.689	-2724.146
			Max. Torque	8			4.742
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-90.396	-5.553	17.642
L38	9 - 4	Pole	Max. Mx	8	-53.096	-2724.503	-1.041
			Max. My	2	-53.091	5.651	2856.707
			Max. Vy	8	24.980	-2724.503	-1.041
			Max. Vx	14	26.027	-7.994	-2853.683
			Max. Torque	8			4.742
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-92.589	-5.741	17.776
			Max. Mx	8	-54.837	-2824.730	-1.214
			Max. My	2	-54.836	5.816	2960.811
			Max. Vy	8	25.142	-2824.730	-1.214
L39	4 - 0	Pole	Max. Vx	14	26.184	-8.238	-2958.021
			Max. Torque	8			4.742
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-92.589	-5.741	17.776
			Max. Mx	8	-54.837	-2824.730	-1.214
			Max. My	2	-54.836	5.816	2960.811

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	92.589	-0.000	0.000
	Max. H _x	20	54.843	25.127	0.053
	Max. H _z	2	54.843	0.051	26.097
	Max. M _x	2	2960.811	0.051	26.097
	Max. M _z	8	2824.730	-25.127	-0.049
	Max. Torsion	8	4.742	-25.127	-0.049
	Min. Vert	7	41.133	-21.758	12.994
	Min. H _x	8	54.843	-25.127	-0.049
	Min. H _z	14	54.843	-0.051	-26.169
	Min. M _x	14	-2958.021	-0.051	-26.169
	Min. M _z	20	-2822.309	25.127	0.053
	Min. Torsion	20	-4.740	25.127	0.053

Tower Mast Reaction Summary

<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 26 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

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	45.703	0.000	-0.000	-4.569	-0.986	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	54.843	-0.051	-26.097	-2960.811	5.816	0.310
0.9 Dead+1.6 Wind 0 deg - No Ice	41.133	-0.051	-26.097	-2930.120	6.052	0.297
1.2 Dead+1.6 Wind 30 deg - No Ice	54.843	12.551	-22.555	-2559.049	-1410.546	-2.271
0.9 Dead+1.6 Wind 30 deg - No Ice	41.133	12.551	-22.555	-2532.332	-1396.337	-2.283
1.2 Dead+1.6 Wind 60 deg - No Ice	54.843	21.758	-12.994	-1476.016	-2445.621	-4.072
0.9 Dead+1.6 Wind 60 deg - No Ice	41.133	21.758	-12.994	-1460.012	-2421.194	-4.078
1.2 Dead+1.6 Wind 90 deg - No Ice	54.843	25.127	0.049	1.215	-2824.730	-4.742
0.9 Dead+1.6 Wind 90 deg - No Ice	41.133	25.127	0.049	2.607	-2796.556	-4.741
1.2 Dead+1.6 Wind 120 deg - No Ice	54.843	21.778	13.255	1497.267	-2448.944	-4.166
0.9 Dead+1.6 Wind 120 deg - No Ice	41.133	21.778	13.255	1483.878	-2424.475	-4.158
1.2 Dead+1.6 Wind 150 deg - No Ice	54.843	12.578	22.719	2568.135	-1415.493	-2.460
0.9 Dead+1.6 Wind 150 deg - No Ice	41.133	12.578	22.719	2544.159	-1401.217	-2.448
1.2 Dead+1.6 Wind 180 deg - No Ice	54.843	0.051	26.169	2958.021	-8.238	-0.308
0.9 Dead+1.6 Wind 180 deg - No Ice	41.133	0.051	26.169	2930.195	-7.843	-0.295
1.2 Dead+1.6 Wind 210 deg - No Ice	54.843	-12.490	22.668	2561.129	1400.912	1.926
0.9 Dead+1.6 Wind 210 deg - No Ice	41.133	-12.490	22.668	2537.232	1387.403	1.937
1.2 Dead+1.6 Wind 240 deg - No Ice	54.843	-21.727	13.166	1485.108	2439.516	3.856
0.9 Dead+1.6 Wind 240 deg - No Ice	41.133	-21.727	13.166	1471.856	2415.755	3.862
1.2 Dead+1.6 Wind 270 deg - No Ice	54.843	-25.127	-0.053	-12.841	2822.309	4.740
0.9 Dead+1.6 Wind 270 deg - No Ice	41.133	-25.127	-0.053	-11.289	2794.764	4.739
1.2 Dead+1.6 Wind 300 deg - No Ice	54.843	-21.809	-13.083	-1488.176	2450.206	4.380
0.9 Dead+1.6 Wind 300 deg - No Ice	41.133	-21.809	-13.083	-1472.034	2426.330	4.373
1.2 Dead+1.6 Wind 330 deg - No Ice	54.843	-12.639	-22.606	-2566.055	1420.284	2.808
0.9 Dead+1.6 Wind 330 deg - No Ice	41.133	-12.639	-22.606	-2539.259	1406.568	2.796
1.2 Dead+1.0 Ice+1.0 Temp	92.589	0.000	-0.000	-17.776	-5.741	0.002
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	92.589	-0.012	-8.037	-937.000	-4.258	0.129
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	92.589	3.936	-6.950	-812.538	-453.050	-0.636
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	92.589	6.821	-4.006	-475.842	-781.105	-1.190
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	92.589	7.878	0.012	-16.405	-901.179	-1.414
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	92.589	6.827	4.066	447.546	-781.747	-1.265
1.2 Dead+1.0 Wind 150	92.589	3.943	6.987	781.473	-453.961	-0.774

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 27 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	92.589	0.012	8.053	903.268	-7.284	-0.125
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	92.589	-3.922	6.975	779.961	439.798	0.557
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	92.589	-6.814	4.045	444.926	768.693	1.140
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	92.589	-7.878	-0.013	-19.431	889.637	1.417
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	92.589	-6.834	-4.027	-478.463	771.076	1.320
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	92.589	-3.957	-6.962	-814.051	444.128	0.860
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	45.703	-0.012	-6.074	-688.493	0.623	0.071
Dead+Wind 30 deg - Service	45.703	2.921	-5.250	-595.513	-327.122	-0.534
Dead+Wind 60 deg - Service	45.703	5.065	-3.025	-344.891	-566.618	-0.955
Dead+Wind 90 deg - Service	45.703	5.849	0.011	-3.077	-654.331	-1.109
Dead+Wind 120 deg - Service	45.703	5.069	3.085	343.098	-567.394	-0.972
Dead+Wind 150 deg - Service	45.703	2.928	5.288	590.910	-328.270	-0.572
Dead+Wind 180 deg - Service	45.703	0.012	6.091	681.139	-2.627	-0.070
Dead+Wind 210 deg - Service	45.703	-2.907	5.276	589.285	323.452	0.450
Dead+Wind 240 deg - Service	45.703	-5.057	3.065	340.284	563.765	0.901
Dead+Wind 270 deg - Service	45.703	-5.849	-0.012	-6.327	652.326	1.109
Dead+Wind 300 deg - Service	45.703	-5.076	-3.045	-347.705	566.238	1.025
Dead+Wind 330 deg - Service	45.703	-2.942	-5.262	-597.137	327.932	0.657

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-45.703	0.000	0.000	45.703	0.000	0.000%
2	-0.051	-54.843	-26.097	0.051	54.843	26.097	0.000%
3	-0.051	-41.133	-26.097	0.051	41.133	26.097	0.000%
4	12.551	-54.843	-22.555	-12.551	54.843	22.555	0.000%
5	12.551	-41.133	-22.555	-12.551	41.133	22.555	0.000%
6	21.758	-54.843	-12.994	-21.758	54.843	12.994	0.000%
7	21.758	-41.133	-12.994	-21.758	41.133	12.994	0.000%
8	25.127	-54.843	0.049	-25.127	54.843	-0.049	0.000%
9	25.127	-41.133	0.049	-25.127	41.133	-0.049	0.000%
10	21.778	-54.843	13.255	-21.778	54.843	-13.255	0.000%
11	21.778	-41.133	13.255	-21.778	41.133	-13.255	0.000%
12	12.578	-54.843	22.719	-12.578	54.843	-22.719	0.000%
13	12.578	-41.133	22.719	-12.578	41.133	-22.719	0.000%
14	0.051	-54.843	26.169	-0.051	54.843	-26.169	0.000%
15	0.051	-41.133	26.169	-0.051	41.133	-26.169	0.000%
16	-12.490	-54.843	22.668	12.490	54.843	-22.668	0.000%
17	-12.490	-41.133	22.668	12.490	41.133	-22.668	0.000%
18	-21.727	-54.843	13.166	21.727	54.843	-13.166	0.000%
19	-21.727	-41.133	13.166	21.727	41.133	-13.166	0.000%
20	-25.127	-54.843	-0.053	25.127	54.843	0.053	0.000%
21	-25.127	-41.133	-0.053	25.127	41.133	0.053	0.000%
22	-21.809	-54.843	-13.083	21.809	54.843	13.083	0.000%
23	-21.809	-41.133	-13.083	21.809	41.133	13.083	0.000%
24	-12.639	-54.843	-22.606	12.639	54.843	22.606	0.000%
25	-12.639	-41.133	-22.606	12.639	41.133	22.606	0.000%
26	0.000	-92.589	0.000	-0.000	92.589	0.000	0.000%
27	-0.012	-92.589	-8.037	0.012	92.589	8.037	0.000%

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 28 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
28	3.936	-92.589	-6.950	-3.936	92.589	6.950	0.000%
29	6.821	-92.589	-4.006	-6.821	92.589	4.006	0.000%
30	7.878	-92.589	0.012	-7.878	92.589	-0.012	0.000%
31	6.827	-92.589	4.066	-6.827	92.589	-4.066	0.000%
32	3.943	-92.589	6.987	-3.943	92.589	-6.987	0.000%
33	0.012	-92.589	8.053	-0.012	92.589	-8.053	0.000%
34	-3.922	-92.589	6.975	3.922	92.589	-6.975	0.000%
35	-6.814	-92.589	4.045	6.814	92.589	-4.045	0.000%
36	-7.878	-92.589	-0.013	7.878	92.589	0.013	0.000%
37	-6.834	-92.589	-4.027	6.834	92.589	4.027	0.000%
38	-3.957	-92.589	-6.962	3.957	92.589	6.962	0.000%
39	-0.012	-45.703	-6.074	0.012	45.703	6.074	0.000%
40	2.921	-45.703	-5.250	-2.921	45.703	5.250	0.000%
41	5.065	-45.703	-3.025	-5.065	45.703	3.025	0.000%
42	5.849	-45.703	0.011	-5.849	45.703	-0.011	0.000%
43	5.069	-45.703	3.085	-5.069	45.703	-3.085	0.000%
44	2.928	-45.703	5.288	-2.928	45.703	-5.288	0.000%
45	0.012	-45.703	6.091	-0.012	45.703	-6.091	0.000%
46	-2.907	-45.703	5.276	2.907	45.703	-5.276	0.000%
47	-5.057	-45.703	3.065	5.057	45.703	-3.065	0.000%
48	-5.849	-45.703	-0.012	5.849	45.703	0.012	0.000%
49	-5.076	-45.703	-3.045	5.076	45.703	3.045	0.000%
50	-2.942	-45.703	-5.262	2.942	45.703	5.262	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000531
2	Yes	5	0.00000001	0.00010456
3	Yes	5	0.00000001	0.00004151
4	Yes	6	0.00000001	0.00017482
5	Yes	6	0.00000001	0.00006023
6	Yes	6	0.00000001	0.00019751
7	Yes	6	0.00000001	0.00006917
8	Yes	5	0.00000001	0.00076784
9	Yes	5	0.00000001	0.00037890
10	Yes	6	0.00000001	0.00017070
11	Yes	6	0.00000001	0.00005907
12	Yes	6	0.00000001	0.00019562
13	Yes	6	0.00000001	0.00006811
14	Yes	5	0.00000001	0.00013850
15	Yes	5	0.00000001	0.00006001
16	Yes	6	0.00000001	0.00018907
17	Yes	6	0.00000001	0.00006591
18	Yes	6	0.00000001	0.00016890
19	Yes	6	0.00000001	0.00005858
20	Yes	5	0.00000001	0.00081477
21	Yes	5	0.00000001	0.00040186
22	Yes	6	0.00000001	0.00020144
23	Yes	6	0.00000001	0.00007051
24	Yes	6	0.00000001	0.00017404
25	Yes	6	0.00000001	0.00005987
26	Yes	5	0.00000001	0.00015661
27	Yes	6	0.00000001	0.00039887
28	Yes	6	0.00000001	0.00045739

<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 29 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

29	Yes	6	0.00000001	0.00045774
30	Yes	6	0.00000001	0.00038198
31	Yes	6	0.00000001	0.00042874
32	Yes	6	0.00000001	0.00043538
33	Yes	6	0.00000001	0.00037332
34	Yes	6	0.00000001	0.00042531
35	Yes	6	0.00000001	0.00041939
36	Yes	6	0.00000001	0.00037515
37	Yes	6	0.00000001	0.00045289
38	Yes	6	0.00000001	0.00045195
39	Yes	4	0.00000001	0.00041642
40	Yes	5	0.00000001	0.00005539
41	Yes	5	0.00000001	0.00007735
42	Yes	5	0.00000001	0.00004105
43	Yes	5	0.00000001	0.00005551
44	Yes	5	0.00000001	0.00007041
45	Yes	4	0.00000001	0.00041077
46	Yes	5	0.00000001	0.00006519
47	Yes	5	0.00000001	0.00005373
48	Yes	5	0.00000001	0.00004137
49	Yes	5	0.00000001	0.00008011
50	Yes	5	0.00000001	0.00005504

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	17.067	39	1.042	0.005
L2	143 - 138	15.979	39	1.037	0.005
L3	138 - 133	14.898	39	1.027	0.005
L4	133 - 128	13.831	39	1.010	0.005
L5	128 - 123	12.785	39	0.986	0.005
L6	123 - 116.5	11.768	39	0.955	0.005
L7	120.25 - 115.25	11.224	39	0.935	0.005
L8	115.25 - 110.25	10.256	39	0.910	0.005
L9	110.25 - 105.25	9.327	39	0.864	0.004
L10	105.25 - 100.25	8.450	39	0.810	0.004
L11	100.25 - 98.75	7.633	39	0.749	0.003
L12	98.75 - 98.5	7.401	39	0.730	0.003
L13	98.5 - 98.25	7.362	39	0.727	0.003
L14	98.25 - 93.25	7.324	39	0.725	0.003
L15	93.25 - 88.25	6.585	39	0.686	0.003
L16	88.25 - 80.25	5.888	39	0.645	0.002
L17	84.75 - 79.75	5.426	39	0.614	0.002
L18	79.75 - 74.75	4.794	39	0.591	0.002
L19	74.75 - 69.75	4.198	39	0.547	0.002
L20	69.75 - 66.75	3.649	39	0.503	0.002
L21	66.75 - 66.5	3.341	39	0.476	0.001
L22	66.5 - 61.5	3.316	39	0.474	0.001
L23	61.5 - 56.5	2.839	39	0.437	0.001
L24	56.5 - 51.5	2.401	39	0.400	0.001
L25	51.5 - 46.5	2.002	39	0.362	0.001
L26	46.5 - 39.75	1.643	39	0.324	0.001
L27	45 - 38.75	1.543	39	0.312	0.001
L28	38.75 - 33.75	1.150	39	0.285	0.001
L29	33.75 - 31.75	0.871	39	0.248	0.001
L30	31.75 - 31.5	0.770	39	0.233	0.001
L31	31.5 - 26.5	0.758	39	0.231	0.001
L32	26.5 - 21.5	0.536	39	0.194	0.000

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 30 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L33	21.5 - 17.75	0.353	39	0.156	0.000
L34	17.75 - 17.5	0.241	39	0.128	0.000
L35	17.5 - 14.25	0.235	39	0.126	0.000
L36	14.25 - 14	0.156	39	0.105	0.000
L37	14 - 9	0.151	39	0.103	0.000
L38	9 - 4	0.062	39	0.066	0.000
L39	4 - 0	0.012	39	0.029	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Top Hat	39	17.067	1.042	0.005	38244
149.000	800MHZ RRH	39	17.067	1.042	0.005	38244
148.000	APXVSP18-C-A20 w/ Mount Pipe	39	17.067	1.042	0.005	38244
138.000	(2) LPA-80063/6CF w/ Mount Pipe	39	14.898	1.027	0.005	22028
128.000	HPA-65R-BUU-H8 w/ Mount Pipe	39	12.785	0.986	0.005	10413
114.000	SC2-W100AB	39	10.020	0.900	0.005	7088
79.000	PD1109E	39	4.702	0.586	0.002	7952
45.000	GPS_A	39	1.543	0.312	0.001	10219
13.000	GPS_A	39	0.130	0.096	0.000	8040

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	73.127	2	4.453	0.023
L2	143 - 138	68.477	2	4.434	0.022
L3	138 - 133	63.859	2	4.392	0.022
L4	133 - 128	59.297	2	4.322	0.021
L5	128 - 123	54.826	2	4.220	0.021
L6	123 - 116.5	50.478	2	4.086	0.020
L7	120.25 - 115.25	48.151	2	3.999	0.020
L8	115.25 - 110.25	44.014	2	3.892	0.020
L9	110.25 - 105.25	40.040	2	3.698	0.018
L10	105.25 - 100.25	36.286	2	3.470	0.015
L11	100.25 - 98.75	32.786	2	3.214	0.013
L12	98.75 - 98.5	31.790	2	3.133	0.012
L13	98.5 - 98.25	31.626	2	3.119	0.012
L14	98.25 - 93.25	31.463	2	3.111	0.012
L15	93.25 - 88.25	28.292	2	2.946	0.011
L16	88.25 - 80.25	25.301	2	2.768	0.010
L17	84.75 - 79.75	23.321	2	2.638	0.009
L18	79.75 - 74.75	20.607	2	2.537	0.009
L19	74.75 - 69.75	18.048	2	2.351	0.008
L20	69.75 - 66.75	15.686	2	2.160	0.007
L21	66.75 - 66.5	14.366	2	2.044	0.006
L22	66.5 - 61.5	14.259	2	2.036	0.006
L23	61.5 - 56.5	12.209	2	1.879	0.005
L24	56.5 - 51.5	10.325	2	1.720	0.005

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 31 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L25	51.5 - 46.5	8.609	2	1.557	0.004
L26	46.5 - 39.75	7.065	2	1.393	0.004
L27	45 - 38.75	6.635	2	1.342	0.003
L28	38.75 - 33.75	4.946	2	1.225	0.003
L29	33.75 - 31.75	3.747	2	1.066	0.003
L30	31.75 - 31.5	3.314	2	1.003	0.002
L31	31.5 - 26.5	3.261	2	0.995	0.002
L32	26.5 - 21.5	2.304	2	0.834	0.002
L33	21.5 - 17.75	1.517	2	0.671	0.002
L34	17.75 - 17.5	1.037	2	0.549	0.001
L35	17.5 - 14.25	1.009	2	0.542	0.001
L36	14.25 - 14	0.671	2	0.451	0.001
L37	14 - 9	0.647	2	0.444	0.001
L38	9 - 4	0.267	2	0.284	0.001
L39	4 - 0	0.053	2	0.125	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Top Hat	2	73.127	4.453	0.024	9472
149.000	800MHZ RRH	2	73.127	4.453	0.024	9472
148.000	APXVSP18-C-A20 w/ Mount Pipe	2	73.127	4.453	0.024	9472
138.000	(2) LPA-80063/6CF w/ Mount Pipe	2	63.859	4.392	0.022	5312
128.000	HPA-65R-BUU-H8 w/ Mount Pipe	2	54.826	4.220	0.021	2460
114.000	SC2-W100AB	2	43.002	3.853	0.020	1683
79.000	PD1109E	2	20.212	2.516	0.008	1865
45.000	GPS_A	2	6.635	1.342	0.003	2381
13.000	GPS A	2	0.558	0.412	0.001	1869

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	148 - 143 (1)	TP24.87x24x0.219	5.000	0.000	0.0	17.116	-3.314	1148.590	0.003
L2	143 - 138 (2)	TP25.74x24.87x0.219	5.000	0.000	0.0	17.719	-3.680	1177.470	0.003
L3	138 - 133 (3)	TP26.61x25.74x0.219	5.000	0.000	0.0	18.323	-6.066	1205.570	0.005
L4	133 - 128 (4)	TP27.479x26.61x0.219	5.000	0.000	0.0	18.927	-6.557	1232.870	0.005
L5	128 - 123 (5)	TP28.349x27.479x0.219	5.000	0.000	0.0	19.531	-8.935	1259.380	0.007
L6	123 - 116.5 (6)	TP29.48x28.349x0.219	6.500	0.000	0.0	19.864	-9.236	1273.620	0.007
L7	116.5 - 115.25 (7)	TP29.26x28.39x0.25	5.000	0.000	0.0	23.020	-10.144	1641.710	0.006
L8	115.25 - 110.25 (8)	TP30.13x29.26x0.25	5.000	0.000	0.0	23.710	-16.893	1675.570	0.010
L9	110.25 - 105.25 (9)	TP31x30.13x0.25	5.000	0.000	0.0	24.400	-17.636	1708.540	0.010

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 32 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L10	105.25 - 100.25 (10)	TP31.87x31x0.25	5.000	0.000	0.0	25.090	-18.406	1740.610	0.011
L11	100.25 - 98.75 (11)	TP32.131x31.87x0.25	1.500	0.000	0.0	25.298	-18.637	1750.060	0.011
L12	98.75 - 98.5 (12)	TP32.175x32.131x0.25	0.250	0.000	0.0	25.332	-18.689	1751.620	0.011
L13	98.5 - 98.25 (13)	TP32.218x32.175x0.45	0.250	0.000	0.0	45.374	-18.746	3371.080	0.006
L14	98.25 - 93.25 (14)	TP33.088x32.218x0.444	5.000	0.000	0.0	45.978	-19.865	3415.950	0.006
L15	93.25 - 88.25 (15)	TP33.958x33.088x0.438	5.000	0.000	0.0	46.547	-21.009	3458.240	0.006
L16	88.25 - 80.25 (16)	TP35.35x33.958x0.438	8.000	0.000	0.0	47.393	-21.821	3521.070	0.006
L17	80.25 - 79.75 (17)	TP34.937x34.067x0.5	5.000	0.000	0.0	54.652	-23.937	4060.380	0.006
L18	79.75 - 74.75 (18)	TP35.808x34.937x0.488	5.000	0.000	0.0	54.652	-25.351	4060.360	0.006
L19	74.75 - 69.75 (19)	TP36.678x35.808x0.488	5.000	0.000	0.0	55.999	-26.698	4160.410	0.006
L20	69.75 - 66.75 (20)	TP37.2x36.678x0.488	3.000	0.000	0.0	56.806	-27.517	4220.440	0.007
L21	66.75 - 66.5 (21)	TP37.244x37.2x0.625	0.250	0.000	0.0	72.642	-27.606	5396.970	0.005
L22	66.5 - 61.5 (22)	TP38.114x37.244x0.613	5.000	0.000	0.0	72.906	-29.247	5416.540	0.005
L23	61.5 - 56.5 (23)	TP38.984x38.114x0.613	5.000	0.000	0.0	74.598	-30.914	5542.250	0.006
L24	56.5 - 51.5 (24)	TP39.855x38.984x0.6	5.000	0.000	0.0	74.757	-32.602	5554.050	0.006
L25	51.5 - 46.5 (25)	TP40.725x39.855x0.6	5.000	0.000	0.0	76.414	-34.310	5677.190	0.006
L26	46.5 - 39.75 (26)	TP41.9x40.725x0.588	6.750	0.000	0.0	75.332	-34.824	5596.820	0.006
L27	39.75 - 38.75 (27)	TP41.448x40.361x0.65	6.250	0.000	0.0	84.171	-38.791	6253.510	0.006
L28	38.75 - 33.75 (28)	TP42.318x41.448x0.65	5.000	0.000	0.0	85.966	-40.702	6386.840	0.006
L29	33.75 - 31.75 (29)	TP42.666x42.318x0.65	2.000	0.000	0.0	86.684	-41.474	6440.180	0.006
L30	31.75 - 31.5 (30)	TP42.71x42.666x0.65	0.250	0.000	0.0	86.774	-41.576	6446.840	0.006
L31	31.5 - 26.5 (31)	TP43.58x42.71x0.638	5.000	0.000	0.0	86.890	-43.516	6455.510	0.007
L32	26.5 - 21.5 (32)	TP44.45x43.58x0.625	5.000	0.000	0.0	86.937	-45.484	6458.980	0.007
L33	21.5 - 17.75 (33)	TP45.102x44.45x0.625	3.750	0.000	0.0	88.231	-46.975	6555.130	0.007
L34	17.75 - 17.5 (34)	TP45.145x45.102x0.725	0.250	0.000	0.0	102.218	-47.099	7594.290	0.006
L35	17.5 - 14.25 (35)	TP45.711x45.145x0.725	3.250	0.000	0.0	103.519	-48.606	7690.960	0.006
L36	14.25 - 14 (36)	TP45.754x45.711x0.638	0.250	0.000	0.0	91.291	-48.718	6782.430	0.007
L37	14 - 9 (37)	TP46.624x45.754x0.625	5.000	0.000	0.0	91.251	-50.930	6779.490	0.008
L38	9 - 4 (38)	TP47.494x46.624x0.625	5.000	0.000	0.0	92.977	-53.090	6907.700	0.008
L39	4 - 0 (39)	TP48.19x47.494x0.625	4.000	0.000	0.0	94.357	-54.836	7010.260	0.008

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 $\frac{M_{uy}}{\phi M_{uy}}$
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<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 33 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

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 $\frac{M_{uy}}{\phi M_{ry}}$
L1	148 - 143 (1)	TP24.87x24x0.219	28.529	581.643	0.049	0.000	581.643	0.000
L2	143 - 138 (2)	TP25.74x24.87x0.219	53.036	617.496	0.086	0.000	617.496	0.000
L3	138 - 133 (3)	TP26.61x25.74x0.219	98.572	653.961	0.151	0.000	653.961	0.000
L4	133 - 128 (4)	TP27.479x26.61x0.219	145.621	690.993	0.211	0.000	690.993	0.000
L5	128 - 123 (5)	TP28.349x27.479x0.219	206.458	728.552	0.283	0.000	728.552	0.000
L6	123 - 116.5 (6)	TP29.48x28.349x0.219	240.705	749.418	0.321	0.000	749.418	0.000
L7	116.5 - 115.25 (7)	TP29.26x28.39x0.25	304.304	978.617	0.311	0.000	978.617	0.000
L8	115.25 - 110.25 (8)	TP30.13x29.26x0.25	398.128	1029.008	0.387	0.000	1029.008	0.000
L9	110.25 - 105.25 (9)	TP31x30.13x0.25	498.107	1080.058	0.461	0.000	1080.058	0.000
L10	105.25 - 100.25 (10)	TP31.87x31x0.25	599.499	1131.717	0.530	0.000	1131.717	0.000
L11	100.25 - 98.75 (11)	TP32.131x31.87x0.25	630.187	1147.325	0.549	0.000	1147.325	0.000
L12	98.75 - 98.5 (12)	TP32.175x32.131x0.25	635.313	1149.925	0.552	0.000	1149.925	0.000
L13	98.5 - 98.25 (13)	TP32.218x32.175x0.45	640.443	2188.483	0.293	0.000	2188.483	0.000
L14	98.25 - 93.25 (14)	TP33.088x32.218x0.444	743.900	2280.067	0.326	0.000	2280.067	0.000
L15	93.25 - 88.25 (15)	TP33.958x33.088x0.438	848.967	2371.525	0.358	0.000	2371.525	0.000
L16	88.25 - 80.25 (16)	TP35.35x33.958x0.438	923.450	2459.042	0.376	0.000	2459.042	0.000
L17	80.25 - 79.75 (17)	TP34.937x34.067x0.5	1031.383	2856.458	0.361	0.000	2856.458	0.000
L18	79.75 - 74.75 (18)	TP35.808x34.937x0.488	1142.408	2931.742	0.390	0.000	2931.742	0.000
L19	74.75 - 69.75 (19)	TP36.678x35.808x0.488	1254.217	3079.017	0.407	0.000	3079.017	0.000
L20	69.75 - 66.75 (20)	TP37.2x36.678x0.488	1322.000	3169.108	0.417	0.000	3169.108	0.000
L21	66.75 - 66.5 (21)	TP37.244x37.2x0.625	1327.675	4027.125	0.330	0.000	4027.125	0.000
L22	66.5 - 61.5 (22)	TP38.114x37.244x0.613	1441.933	4142.167	0.348	0.000	4142.167	0.000
L23	61.5 - 56.5 (23)	TP38.984x38.114x0.613	1557.717	4338.242	0.359	0.000	4338.242	0.000
L24	56.5 - 51.5 (24)	TP39.855x38.984x0.6	1674.967	4450.475	0.376	0.000	4450.475	0.000
L25	51.5 - 46.5 (25)	TP40.725x39.855x0.6	1793.633	4651.525	0.386	0.000	4651.525	0.000
L26	46.5 - 39.75 (26)	TP41.9x40.725x0.588	1829.500	4618.817	0.396	0.000	4618.817	0.000
L27	39.75 - 38.75 (27)	TP41.448x40.361x0.65	1980.742	5204.700	0.381	0.000	5204.700	0.000
L28	38.75 - 33.75 (28)	TP42.318x41.448x0.65	2103.442	5430.792	0.387	0.000	5430.792	0.000
L29	33.75 - 31.75 (29)	TP42.666x42.318x0.65	2152.858	5522.567	0.390	0.000	5522.567	0.000
L30	31.75 - 31.5 (30)	TP42.71x42.666x0.65	2159.042	5534.092	0.390	0.000	5534.092	0.000
L31	31.5 - 26.5 (31)	TP43.58x42.71x0.638	2283.408	5661.183	0.403	0.000	5661.183	0.000
L32	26.5 - 21.5 (32)	TP44.45x43.58x0.625	2408.842	5783.941	0.416	0.000	5783.941	0.000
L33	21.5 - 17.75 (33)	TP45.102x44.45x0.625	2503.608	5958.667	0.420	0.000	5958.667	0.000
L34	17.75 - 17.5 (34)	TP45.145x45.102x0.725	2509.950	6879.100	0.365	0.000	6879.100	0.000
L35	17.5 - 14.25 (35)	TP45.711x45.145x0.725	2592.608	7056.767	0.367	0.000	7056.767	0.000
L36	14.25 - 14 (36)	TP45.754x45.711x0.638	2598.983	6253.500	0.416	0.000	6253.500	0.000
L37	14 - 9 (37)	TP46.624x45.754x0.625	2727.467	6376.450	0.428	0.000	6376.450	0.000

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 34 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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 $\frac{M_{uy}}{\phi M_{uy}}$
L38	9 - 4 (38)	TP47.494x46.624x0.625	2856.708	6621.541	0.431	0.000	6621.541	0.000
L39	4 - 0 (39)	TP48.19x47.494x0.625	2960.817	6820.950	0.434	0.000	6820.950	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	148 - 143 (1)	TP24.87x24x0.219	4.749	574.294	0.008	0.300	1166.267	0.000
L2	143 - 138 (2)	TP25.74x24.87x0.219	5.056	588.737	0.009	0.300	1238.100	0.000
L3	138 - 133 (3)	TP26.61x25.74x0.219	9.248	602.784	0.015	0.300	1311.158	0.000
L4	133 - 128 (4)	TP27.479x26.61x0.219	9.567	616.435	0.016	0.300	1385.350	0.000
L5	128 - 123 (5)	TP28.349x27.479x0.219	12.365	629.688	0.020	0.664	1460.600	0.000
L6	123 - 116.5 (6)	TP29.48x28.349x0.219	12.540	636.808	0.020	0.664	1502.400	0.000
L7	116.5 - 115.25 (7)	TP29.26x28.39x0.25	12.891	820.855	0.016	0.664	1962.167	0.000
L8	115.25 - 110.25 (8)	TP30.13x29.26x0.25	19.854	837.786	0.024	0.482	2063.133	0.000
L9	110.25 - 105.25 (9)	TP31x30.13x0.25	20.142	854.269	0.024	0.482	2165.408	0.000
L10	105.25 - 100.25 (10)	TP31.87x31x0.25	20.421	870.305	0.023	0.482	2268.900	0.000
L11	100.25 - 98.75 (11)	TP32.131x31.87x0.25	20.508	875.029	0.023	0.482	2300.167	0.000
L12	98.75 - 98.5 (12)	TP32.175x32.131x0.25	20.511	875.812	0.023	0.482	2305.392	0.000
L13	98.5 - 98.25 (13)	TP32.218x32.175x0.45	20.527	1685.540	0.012	0.482	4391.650	0.000
L14	98.25 - 93.25 (14)	TP33.088x32.218x0.444	20.855	1707.980	0.012	0.482	4575.033	0.000
L15	93.25 - 88.25 (15)	TP33.958x33.088x0.438	21.174	1729.120	0.012	0.482	4758.158	0.000
L16	88.25 - 80.25 (16)	TP35.35x33.958x0.438	21.393	1760.540	0.012	0.482	4933.583	0.000
L17	80.25 - 79.75 (17)	TP34.937x34.067x0.5	21.776	2030.190	0.011	0.482	5732.367	0.000
L18	79.75 - 74.75 (18)	TP35.808x34.937x0.488	22.217	2030.180	0.011	0.481	5882.825	0.000
L19	74.75 - 69.75 (19)	TP36.678x35.808x0.488	22.513	2080.200	0.011	0.481	6178.041	0.000
L20	69.75 - 66.75 (20)	TP37.2x36.678x0.488	22.686	2110.220	0.011	0.481	6358.633	0.000
L21	66.75 - 66.5 (21)	TP37.244x37.2x0.625	22.695	2698.480	0.008	0.481	8084.717	0.000
L22	66.5 - 61.5 (22)	TP38.114x37.244x0.613	23.010	2708.270	0.008	0.481	8314.767	0.000
L23	61.5 - 56.5 (23)	TP38.984x38.114x0.613	23.310	2771.120	0.008	0.481	8707.917	0.000
L24	56.5 - 51.5 (24)	TP39.855x38.984x0.6	23.598	2777.020	0.008	0.481	8932.250	0.000
L25	51.5 - 46.5 (25)	TP40.725x39.855x0.6	23.875	2838.590	0.008	0.481	9335.333	0.000
L26	46.5 - 39.75 (26)	TP41.9x40.725x0.588	23.959	2798.410	0.009	0.481	9269.083	0.000
L27	39.75 - 38.75 (27)	TP41.448x40.361x0.65	24.424	3126.760	0.008	0.310	10447.000	0.000
L28	38.75 - 33.75 (28)	TP42.318x41.448x0.65	24.666	3193.420	0.008	0.310	10900.333	0.000
L29	33.75 - 31.75 (29)	TP42.666x42.318x0.65	24.758	3220.090	0.008	0.310	11084.333	0.000

tnxTower B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:	Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)	Page 35 of 36
	Project	Date 16:58:16 09/20/18
	Client Crown Castle	Designed by zsmith

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 $\frac{T_u}{\phi T_n}$
L30	31.75 - 31.5 (30)	TP42.71x42.666x0.65	24.762	3223.420	0.008	0.310	11107.417	0.000
L31	31.5 - 26.5 (31)	TP43.58x42.71x0.638	24.987	3227.760	0.008	0.310	11361.500	0.000
L32	26.5 - 21.5 (32)	TP44.45x43.58x0.625	25.199	3229.490	0.008	0.310	11606.833	0.000
L33	21.5 - 17.75 (33)	TP45.102x44.45x0.625	25.359	3277.570	0.008	0.310	11957.083	0.000
L34	17.75 - 17.5 (34)	TP45.145x45.102x0.725	25.357	3797.150	0.007	0.310	13808.749	0.000
L35	17.5 - 14.25 (35)	TP45.711x45.145x0.725	25.514	3845.480	0.007	0.310	14164.916	0.000
L36	14.25 - 14 (36)	TP45.754x45.711x0.638	25.515	3391.220	0.008	0.310	12548.833	0.000
L37	14 - 9 (37)	TP46.624x45.754x0.625	25.757	3389.750	0.008	0.310	12794.583	0.000
L38	9 - 4 (38)	TP47.494x46.624x0.625	25.956	3453.850	0.008	0.310	13285.833	0.000
L39	4 - 0 (39)	TP48.19x47.494x0.625	26.112	3505.130	0.007	0.310	13685.500	0.000

Pole Interaction Design Data

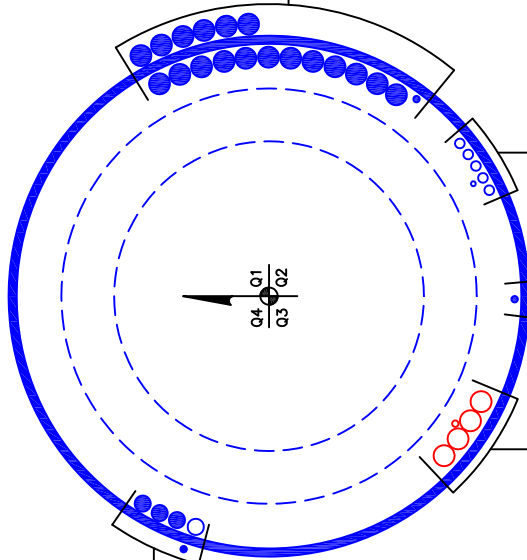
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	148 - 143 (1)	0.003	0.049	0.000	0.008	0.000	0.052	1.000	4.8.2 ✓
L2	143 - 138 (2)	0.003	0.086	0.000	0.009	0.000	0.089	1.000	4.8.2 ✓
L3	138 - 133 (3)	0.005	0.151	0.000	0.015	0.000	0.156	1.000	4.8.2 ✓
L4	133 - 128 (4)	0.005	0.211	0.000	0.016	0.000	0.216	1.000	4.8.2 ✓
L5	128 - 123 (5)	0.007	0.283	0.000	0.020	0.000	0.291	1.000	4.8.2 ✓
L6	123 - 116.5 (6)	0.007	0.321	0.000	0.020	0.000	0.329	1.000	4.8.2 ✓
L7	116.5 - 115.25 (7)	0.006	0.311	0.000	0.016	0.000	0.317	1.000	4.8.2 ✓
L8	115.25 - 110.25 (8)	0.010	0.387	0.000	0.024	0.000	0.398	1.000	4.8.2 ✓
L9	110.25 - 105.25 (9)	0.010	0.461	0.000	0.024	0.000	0.472	1.000	4.8.2 ✓
L10	105.25 - 100.25 (10)	0.011	0.530	0.000	0.023	0.000	0.541	1.000	4.8.2 ✓
L11	100.25 - 98.75 (11)	0.011	0.549	0.000	0.023	0.000	0.560	1.000	4.8.2 ✓
L12	98.75 - 98.5 (12)	0.011	0.552	0.000	0.023	0.000	0.564	1.000	4.8.2 ✓
L13	98.5 - 98.25 (13)	0.006	0.293	0.000	0.012	0.000	0.298	1.000	4.8.2 ✓
L14	98.25 - 93.25 (14)	0.006	0.326	0.000	0.012	0.000	0.332	1.000	4.8.2 ✓
L15	93.25 - 88.25 (15)	0.006	0.358	0.000	0.012	0.000	0.364	1.000	4.8.2 ✓

<p>tnxTower</p> <p>B+T Group 1717 South Boulder Ave. Tulsa, OK Phone: (918) 587-4630 FAX:</p>	<p>Job 89028.009.01 - LONG EDDY / WRIGHT PROPERTY, CT (BU# 876373)</p>	<p>Page 36 of 36</p>
	<p>Project</p>	<p>Date 16:58:16 09/20/18</p>
	<p>Client Crown Castle</p>	<p>Designed by zsmith</p>

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
L16	88.25 - 80.25 (16)	0.006	0.376	0.000	0.012	0.000	0.382	1.000	4.8.2 ✓
L17	80.25 - 79.75 (17)	0.006	0.361	0.000	0.011	0.000	0.367	1.000	4.8.2 ✓
L18	79.75 - 74.75 (18)	0.006	0.390	0.000	0.011	0.000	0.396	1.000	4.8.2 ✓
L19	74.75 - 69.75 (19)	0.006	0.407	0.000	0.011	0.000	0.414	1.000	4.8.2 ✓
L20	69.75 - 66.75 (20)	0.007	0.417	0.000	0.011	0.000	0.424	1.000	4.8.2 ✓
L21	66.75 - 66.5 (21)	0.005	0.330	0.000	0.008	0.000	0.335	1.000	4.8.2 ✓
L22	66.5 - 61.5 (22)	0.005	0.348	0.000	0.008	0.000	0.354	1.000	4.8.2 ✓
L23	61.5 - 56.5 (23)	0.006	0.359	0.000	0.008	0.000	0.365	1.000	4.8.2 ✓
L24	56.5 - 51.5 (24)	0.006	0.376	0.000	0.008	0.000	0.382	1.000	4.8.2 ✓
L25	51.5 - 46.5 (25)	0.006	0.386	0.000	0.008	0.000	0.392	1.000	4.8.2 ✓
L26	46.5 - 39.75 (26)	0.006	0.396	0.000	0.009	0.000	0.402	1.000	4.8.2 ✓
L27	39.75 - 38.75 (27)	0.006	0.381	0.000	0.008	0.000	0.387	1.000	4.8.2 ✓
L28	38.75 - 33.75 (28)	0.006	0.387	0.000	0.008	0.000	0.394	1.000	4.8.2 ✓
L29	33.75 - 31.75 (29)	0.006	0.390	0.000	0.008	0.000	0.396	1.000	4.8.2 ✓
L30	31.75 - 31.5 (30)	0.006	0.390	0.000	0.008	0.000	0.397	1.000	4.8.2 ✓
L31	31.5 - 26.5 (31)	0.007	0.403	0.000	0.008	0.000	0.410	1.000	4.8.2 ✓
L32	26.5 - 21.5 (32)	0.007	0.416	0.000	0.008	0.000	0.424	1.000	4.8.2 ✓
L33	21.5 - 17.75 (33)	0.007	0.420	0.000	0.008	0.000	0.427	1.000	4.8.2 ✓
L34	17.75 - 17.5 (34)	0.006	0.365	0.000	0.007	0.000	0.371	1.000	4.8.2 ✓
L35	17.5 - 14.25 (35)	0.006	0.367	0.000	0.007	0.000	0.374	1.000	4.8.2 ✓
L36	14.25 - 14 (36)	0.007	0.416	0.000	0.008	0.000	0.423	1.000	4.8.2 ✓
L37	14 - 9 (37)	0.008	0.428	0.000	0.008	0.000	0.435	1.000	4.8.2 ✓
L38	9 - 4 (38)	0.008	0.431	0.000	0.008	0.000	0.439	1.000	4.8.2 ✓
L39	4 - 0 (39)	0.008	0.434	0.000	0.007	0.000	0.442	1.000	4.8.2 ✓

APPENDIX B
BASE LEVEL DRAWING

(INSTALLED)
(1) 1/2" TO 16 FT LEVEL
(18) 1-5/8" TO 138 FT LEVEL



(RESERVED)
(1) 3/8" TO 128 FT LEVEL
(5) 3/4" TO 128 FT LEVEL

(INSTALLED)
(1) 1/2" TO 79 FT LEVEL

(PROPOSED)
(1) 1/2" TO 114 FT LEVEL
(4) 1-5/8" TO 114 FT LEVEL

(RESERVED)
(1) 1-1/4" TO 148 FT LEVEL
(INSTALLED)
(1) 1/2" TO 45 FT LEVEL
(3) 1-1/4" TO 148 FT LEVEL

BUSINESS UNIT: 876373

APPENDIX C
ADDITIONAL CALCULATIONS

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	148 - 143	5		18	24.000	24.870	0.21875	A607-60	1.000
2	143 - 138	5		18	24.870	25.740	0.21875	A607-60	1.000
3	138 - 133	5		18	25.740	26.610	0.21875	A607-60	1.000
4	133 - 128	5		18	26.610	27.479	0.21875	A607-60	1.000
5	128 - 123	5		18	27.479	28.349	0.21875	A607-60	1.000
6	123 - 120.25	6.5	3.75	18	28.349	29.480	0.21875	A607-60	1.000
7	120.25 - 115.25	5		18	28.390	29.260	0.25	A607-65	1.000
8	115.25 - 110.25	5		18	29.260	30.130	0.25	A607-65	1.000
9	110.25 - 105.25	5		18	30.130	31.000	0.25	A607-65	1.000
10	105.25 - 100.25	5		18	31.000	31.870	0.25	A607-65	1.000
11	100.25 - 98.75	1.5		18	31.870	32.131	0.25	A607-65	1.000
12	98.75 - 98.5	0.25		18	32.131	32.175	0.25	A607-65	1.000
13	98.5 - 98.25	0.25		18	32.175	32.218	0.45	A607-65	0.956
14	98.25 - 93.25	5		18	32.218	33.088	0.44375	A607-65	0.958
15	93.25 - 88.25	5		18	33.088	33.958	0.4375	A607-65	0.961
16	88.25 - 84.75	8	4.5	18	33.958	35.350	0.4375	A607-65	0.954
17	84.75 - 79.75	5		18	34.067	34.937	0.5	A607-65	0.958
18	79.75 - 74.75	5		18	34.937	35.808	0.4875	A607-65	0.974
19	74.75 - 69.75	5		18	35.808	36.678	0.4875	A607-65	0.966
20	69.75 - 66.75	3		18	36.678	37.200	0.4875	A607-65	0.961
21	66.75 - 66.5	0.25		18	37.200	37.244	0.625	A607-65	0.943
22	66.5 - 61.5	5		18	37.244	38.114	0.6125	A607-65	0.952
23	61.5 - 56.5	5		18	38.114	38.984	0.6125	A607-65	0.941
24	56.5 - 51.5	5		18	38.984	39.855	0.6	A607-65	0.951
25	51.5 - 46.5	5		18	39.855	40.725	0.6	A607-65	0.942
26	46.5 - 45	6.75	5.25	18	40.725	41.900	0.5875	A607-65	0.959
27	45 - 38.75	6.25		18	40.361	41.448	0.65	A607-65	0.960
28	38.75 - 33.75	5		18	41.448	42.318	0.65	A607-65	0.952
29	33.75 - 31.75	2		18	42.318	42.666	0.65	A607-65	0.948
30	31.75 - 31.5	0.25		18	42.666	42.710	0.65	A607-65	0.948
31	31.5 - 26.5	5		18	42.710	43.580	0.6375	A607-65	0.959
32	26.5 - 21.5	5		18	43.580	44.450	0.625	A607-65	0.970
33	21.5 - 17.75	3.75		18	44.450	45.102	0.625	A607-65	0.965
34	17.75 - 17.5	0.25		18	45.102	45.145	0.725	A607-65	0.992
35	17.5 - 14.25	3.25		18	45.145	45.711	0.725	A607-65	0.986
36	14.25 - 14	0.25		18	45.711	45.754	0.6375	A607-65	1.002
37	14 - 9	5		18	45.754	46.624	0.625	A607-65	1.014
38	9 - 4	5		18	46.624	47.494	0.625	A607-65	1.007
39	4 - 0	4		18	47.494	48.190	0.625	A607-65	1.001

TNX Section Forces

Increment (ft):		TNX Output				
	5	Section Height (ft)		P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	148 - 143	3.31	28.53	4.75		
2	143 - 138	3.68	53.04	5.06		
3	138 - 133	6.07	98.57	9.25		
4	133 - 128	6.56	145.62	9.57		
5	128 - 123	8.94	206.46	12.37		
6	123 - 120.25	9.24	240.70	12.54		
7	120.25 - 115.25	10.14	304.30	12.89		
8	115.25 - 110.25	16.89	398.13	19.85		
9	110.25 - 105.25	17.64	498.11	20.14		
10	105.25 - 100.25	18.41	599.50	20.42		
11	100.25 - 98.75	18.64	630.19	20.51		
12	98.75 - 98.5	18.69	635.31	20.51		
13	98.5 - 98.25	18.75	640.44	20.53		
14	98.25 - 93.25	19.86	743.90	20.86		
15	93.25 - 88.25	21.01	848.96	21.17		
16	88.25 - 84.75	21.82	923.45	21.39		
17	84.75 - 79.75	23.94	1031.38	21.78		
18	79.75 - 74.75	25.35	1142.41	22.22		
19	74.75 - 69.75	26.70	1254.21	22.51		
20	69.75 - 66.75	27.52	1322.00	22.69		
21	66.75 - 66.5	27.61	1327.67	22.70		
22	66.5 - 61.5	29.25	1441.93	23.01		
23	61.5 - 56.5	30.91	1557.72	23.31		
24	56.5 - 51.5	32.60	1674.97	23.60		
25	51.5 - 46.5	34.31	1793.63	23.88		
26	46.5 - 45	34.82	1829.50	23.96		
27	45 - 38.75	38.79	1980.74	24.42		
28	38.75 - 33.75	40.70	2103.44	24.67		
29	33.75 - 31.75	41.47	2152.85	24.76		
30	31.75 - 31.5	41.58	2159.04	24.76		
31	31.5 - 26.5	43.52	2283.41	24.99		
32	26.5 - 21.5	45.48	2408.84	25.20		
33	21.5 - 17.75	46.97	2503.61	25.36		
34	17.75 - 17.5	47.10	2509.95	25.36		
35	17.5 - 14.25	48.61	2592.61	25.51		
36	14.25 - 14	48.72	2598.98	25.51		
37	14 - 9	50.93	2727.47	25.76		
38	9 - 4	53.09	2856.71	25.96		
39	4 - 0	54.84	2960.82	26.11		

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP24.87x24x0.2188	Pole	5.2%	Pass
143 - 138	Pole	TP25.74x24.87x0.2188	Pole	8.9%	Pass
138 - 133	Pole	TP26.61x25.74x0.2188	Pole	15.6%	Pass
133 - 128	Pole	TP27.479x26.61x0.2188	Pole	21.6%	Pass
128 - 123	Pole	TP28.349x27.479x0.2188	Pole	29.1%	Pass
123 - 120.25	Pole	TP29.48x28.349x0.2188	Pole	32.9%	Pass
120.25 - 115.25	Pole	TP29.26x28.39x0.25	Pole	31.7%	Pass
115.25 - 110.25	Pole	TP30.13x29.26x0.25	Pole	39.8%	Pass
110.25 - 105.25	Pole	TP31x30.13x0.25	Pole	47.2%	Pass
105.25 - 100.25	Pole	TP31.87x31x0.25	Pole	54.1%	Pass
100.25 - 98.75	Pole	TP32.131x31.87x0.25	Pole	56.1%	Pass
98.75 - 98.5	Pole	TP32.175x32.131x0.25	Pole	56.4%	Pass
98.5 - 98.25	Pole + Reinf.	TP32.218x32.175x0.45	Reinf. 5 Tension Rupture	47.2%	Pass
98.25 - 93.25	Pole + Reinf.	TP33.088x32.218x0.4438	Reinf. 5 Tension Rupture	52.5%	Pass
93.25 - 88.25	Pole + Reinf.	TP33.958x33.088x0.4375	Reinf. 5 Tension Rupture	57.5%	Pass
88.25 - 84.75	Pole + Reinf.	TP35.35x33.958x0.4375	Reinf. 5 Tension Rupture	60.7%	Pass
84.75 - 79.75	Pole + Reinf.	TP34.937x34.067x0.5	Reinf. 5 Tension Rupture	58.3%	Pass
79.75 - 74.75	Pole + Reinf.	TP35.808x34.937x0.4875	Reinf. 5 Tension Rupture	62.0%	Pass
74.75 - 69.75	Pole + Reinf.	TP36.678x35.808x0.4875	Reinf. 5 Tension Rupture	65.3%	Pass
69.75 - 66.75	Pole + Reinf.	TP37.2x36.678x0.4875	Reinf. 5 Tension Rupture	67.3%	Pass
66.75 - 66.5	Pole + Reinf.	TP37.244x37.2x0.625	Reinf. 4 Compression	49.4%	Pass
66.5 - 61.5	Pole + Reinf.	TP38.114x37.244x0.6125	Reinf. 4 Compression	51.8%	Pass
61.5 - 56.5	Pole + Reinf.	TP38.984x38.114x0.6125	Reinf. 4 Compression	54.1%	Pass
56.5 - 51.5	Pole + Reinf.	TP39.855x38.984x0.6	Reinf. 4 Compression	56.2%	Pass
51.5 - 46.5	Pole + Reinf.	TP40.725x39.855x0.6	Reinf. 4 Compression	58.2%	Pass
46.5 - 45	Pole + Reinf.	TP41.9x40.725x0.5875	Reinf. 4 Compression	58.8%	Pass
45 - 38.75	Pole + Reinf.	TP41.448x40.361x0.65	Reinf. 4 Compression	56.6%	Pass
38.75 - 33.75	Pole + Reinf.	TP42.318x41.448x0.65	Reinf. 4 Compression	58.2%	Pass
33.75 - 31.75	Pole + Reinf.	TP42.666x42.318x0.65	Reinf. 4 Compression	58.7%	Pass
31.75 - 31.5	Pole + Reinf.	TP42.71x42.666x0.65	Reinf. 2 Compression	58.8%	Pass
31.5 - 26.5	Pole + Reinf.	TP43.58x42.71x0.6375	Reinf. 2 Compression	60.2%	Pass
26.5 - 21.5	Pole + Reinf.	TP44.45x43.58x0.625	Reinf. 2 Compression	61.6%	Pass
21.5 - 17.75	Pole + Reinf.	TP45.102x44.45x0.625	Reinf. 2 Compression	62.5%	Pass
17.75 - 17.5	Pole + Reinf.	TP45.145x45.102x0.725	Reinf. 2 Compression	58.6%	Pass
17.5 - 14.25	Pole + Reinf.	TP45.711x45.145x0.725	Reinf. 2 Compression	59.3%	Pass
14.25 - 14	Pole + Reinf.	TP45.754x45.711x0.6375	Reinf. 1 Tension Rupture	64.0%	Pass
14 - 9	Pole + Reinf.	TP46.624x45.754x0.625	Reinf. 1 Tension Rupture	65.2%	Pass
9 - 4	Pole + Reinf.	TP47.494x46.624x0.625	Reinf. 1 Tension Rupture	66.3%	Pass
4 - 0	Pole + Reinf.	TP48.19x47.494x0.625	Reinf. 1 Tension Rupture	67.2%	Pass
				Summary	
			Pole	56.4%	Pass
			Reinforcement	67.3%	Pass
			Overall	67.3%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
148 - 143	1314	n/a	1314	17.11	n/a	17.11	5.2%						
143 - 138	1458	n/a	1458	17.72	n/a	17.72	8.9%						
138 - 133	1612	n/a	1612	18.32	n/a	18.32	15.6%						
133 - 128	1776	n/a	1776	18.93	n/a	18.93	21.6%						
128 - 123	1952	n/a	1952	19.53	n/a	19.53	29.1%						
123 - 120.25	2053	n/a	2053	19.86	n/a	19.86	32.9%						
120.25 - 115.25	2447	n/a	2447	23.02	n/a	23.02	31.7%						
115.25 - 110.25	2673	n/a	2673	23.71	n/a	23.71	39.8%						
110.25 - 105.25	2914	n/a	2914	24.40	n/a	24.40	47.2%						
105.25 - 100.25	3168	n/a	3168	25.09	n/a	25.09	54.1%						
100.25 - 98.75	3247	n/a	3247	25.30	n/a	25.30	56.1%						
98.75 - 98.5	3261	n/a	3261	25.33	n/a	25.33	56.4%						
98.5 - 98.25	3274	2510	5784	25.37	18.00	43.37	31.7%					47.2%	47.2%
98.25 - 93.25	3549	2642	6191	26.06	18.00	44.06	35.6%					52.5%	52.5%
93.25 - 88.25	3838	2777	6616	26.75	18.00	44.75	39.4%					57.5%	57.5%
88.25 - 84.75	4050	2874	6924	27.23	18.00	45.23	41.9%					60.7%	60.7%
84.75 - 79.75	5200	2934	8134	34.34	18.00	52.34	37.5%					58.3%	58.3%
79.75 - 74.75	5602	3076	8678	35.21	18.00	53.21	40.2%					62.0%	62.0%
74.75 - 69.75	6024	3222	9246	36.07	18.00	54.07	42.7%					65.3%	65.3%
69.75 - 66.75	6288	3311	9599	36.59	18.00	54.59	44.2%					67.3%	67.3%
66.75 - 66.5	6310	6002	12312	36.63	31.88	68.50	34.7%				49.4%		
66.5 - 61.5	6767	6272	13038	37.49	31.88	69.37	36.6%				51.8%		
61.5 - 56.5	7245	6548	13793	38.36	31.88	70.23	38.6%				54.1%		
56.5 - 51.5	7745	6830	14575	39.22	31.88	71.09	40.4%				56.2%		
51.5 - 46.5	8268	7118	15386	40.08	31.88	71.96	42.2%				58.2%		
46.5 - 45	8429	7206	15635	40.34	31.88	72.22	42.7%				58.8%		
45 - 38.75	10416	7362	17778	48.89	31.88	80.76	39.0%				56.6%		
38.75 - 33.75	11092	7661	18753	49.92	31.88	81.80	40.3%				58.2%		
33.75 - 31.75	11370	7782	19153	50.34	31.88	82.21	40.8%				58.7%		
31.75 - 31.5	11405	7798	19203	50.39	31.88	82.26	40.9%		58.8%	58.8%			
31.5 - 26.5	12123	8105	20229	51.42	31.88	83.30	42.1%		60.2%	60.2%			
26.5 - 21.5	12870	8419	21289	52.46	31.88	84.33	43.4%		61.6%	61.6%			
21.5 - 17.75	13450	8658	22109	53.23	31.88	85.11	44.2%		62.5%	62.5%			
17.75 - 17.5	13718	12037	25755	53.29	48.13	101.41	41.6%	48.9%	58.6%	43.7%			
17.5 - 14.25	14241	12332	26573	53.96	48.13	102.08	42.3%	49.6%	59.3%	44.3%			
14.25 - 14	14065	9296	23361	54.01	37.50	91.51	45.3%	64.0%	60.2%				
14 - 9	14889	9640	24528	55.05	37.50	92.55	46.5%	65.2%	61.3%				
9 - 4	15744	9989	25734	56.08	37.50	93.58	47.5%	66.3%	62.3%				
4 - 0	16452	10274	26726	56.91	37.50	94.41	48.4%	67.2%	63.1%				

Note: Section capacity checked in 5 degree increments.

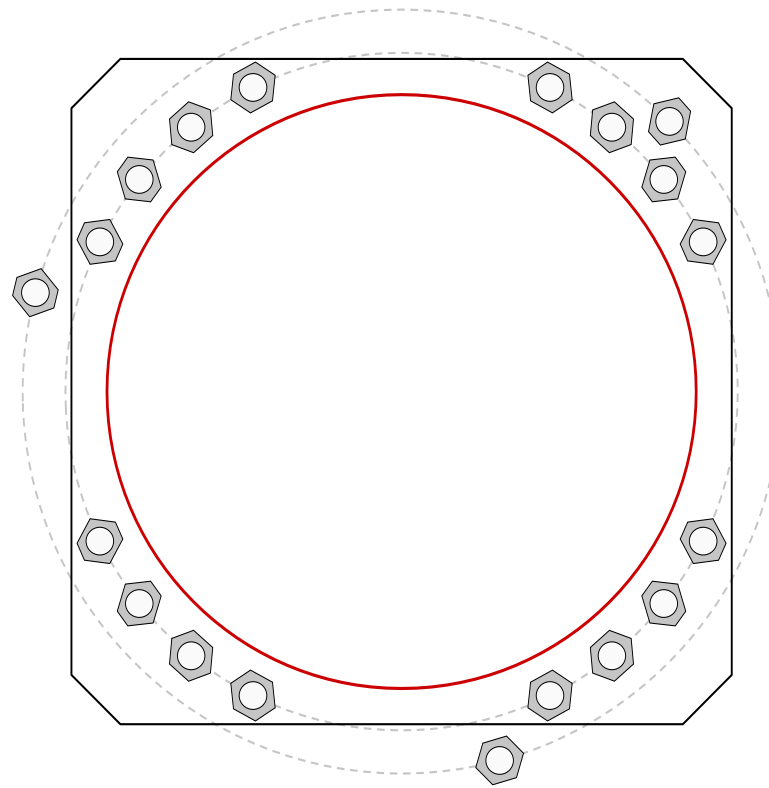
Monopole Base Plate Connection



Site Info	
BU #	876373
Site Name	Long Eddy
Order #	1633871

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	0
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	3021.04
Axial Force (kips)	42.33
Shear Force (kips)	26.12



Connection Properties	Analysis Results		
Anchor Rod Data <hr/> GROUP 1: (16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 55" BC GROUP 2: (3) 2-1/4" ϕ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 62" BC	Anchor Rod Summary <i>(units of kips, kip-in)</i>		
Base Plate Data <hr/> 54" OD x 2.75" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi)	GROUP 1: $P_u = 135.19$ $\phi P_n = 260$ Stress Rating $V_u = 1.37$ $\phi V_n = n/a$ 53.1% $M_u = n/a$ $\phi M_n = n/a$ Pass		
Stiffener Data <hr/> N/A	GROUP 2: $P_u = 152.14$ $\phi P_n = 325$ Stress Rating $V_u = 1.37$ $\phi V_n = n/a$ 47.7% $M_u = n/a$ $\phi M_n = n/a$ Pass		
Pole Data <hr/> 48.19" x 0.375" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)	Base Plate Summary <hr/> Max Stress (ksi): 25.69 (Flexural) $\text{Allowable Stress (ksi):}$ 49.5 Stress Rating: 51.9% Pass		

Proj. Number 89028.009.01
Proj. Name LONG EDDY / WRIGHT PROJ
Code Rev. G

Previously Added Anchor Rods

Diameter	2.25 in
Grade	A193 Gr B7
Quantity	3
Bolt Circle	62 in

Existing Mfg Anchor Rods

Diameter	2.25 in
Quantity	16
Bolt Circle	55 in

Summary Output	
- Anchor Rod Bracket Checks	
Tube Stress:	41.7%
Max. Weld Stress:	69.0%

Analysis Criteria

Load for Calcs?	Current Load
Current Load	152.14 kips
Capacity	325 kips

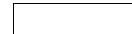
Foundation Properties

Type	Pad
Pad Thickness	3.5 ft
f_c	3000 psi
Clear Cover	3 inch
Pad Width	24.5 ft
	10
	18
	3
	60

Tower Properties

$F_{y_{pole}}$	65 ksi
$F_{u_{pole}}$	80 ksi
$F_{y_{base}}$	60 ksi
$F_{u_{base}}$	75 ksi

Anchor Rod Bracket Properties



Gusset Properties

Thickness	1.25 inch
Pole to Tube CL	6.8125 inch
Height	54 inch
Width at Tube	4.5625 inch
$F_{y_{plate}}$	65 ksi
$F_{u_{plate}}$	80 ksi
Gap	0 inch
Notch	0.75 inch

Pipe /Tube Properties

Size	4 XXS Pipe
L_{pipe}	14 inch
Length Above Gusset	0 inch
$F_{y_{pipe}}$	50 ksi
D_{pipe}	4.5 inch
t_{pipe}	0.674 inch
A_{pipe}	8.101300374 inch ²
I_{pipe}	15.28366215 inch ⁴
r_{pipe}	1.373524299 inch

Weld Properties

F_{EXX}	70 ksi	Weld Material Grade
Load Angle	45 degrees	

- Bracket to Tube Weld

Weld Type	Double Bevel+Fillet	
Fillet Size	6	Vertical fillet weld size in <u>sixteenths</u>
Bevel Depth	0.375 inch	Bevel Depth in inches
$l_{weldpipe}$	14 inch	Length of Vertical Weld to Pipe

- Bracket to Pole Weld

Weld Type	Double Fillet	
D_{vpole}	6	Vertical fillet weld size in <u>sixteenths</u>
H	54 inch	Height of vertical weld from base plate

- Gusset to Base Plate Weld

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

Additional Variables

C_1	1.00	Electrode Strength Coefficient
K_{rt}	0	Transverse Reinforcement Index :
ψ_i	1	Rebar Location Factor :

Pier and Pad Foundation



BU #:	876373
Site Name:	Long Eddy
App. Number:	450074

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?:	<input checked="" type="checkbox"/>
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Superstructure Analysis Reactions		
Compression, P_{comp} :	55	kips
Base Shear, Vu_{comp} :	26	kips
Moment, M_u :	2961	ft-kips
Tower Height, H :	148	ft
BP Dist. Above Fdn, bp_{dist} :	3	in
Bolt Circle / Bearing Plate Width, BC :	55	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	86.05	26.00	30.2%	Pass
<i>Bearing Pressure (ksf)</i>	9.00	2.30	25.5%	Pass
<i>Overtuning (kip*ft)</i>	4173.55	3071.50	73.6%	Pass
<i>Pad Flexure (kip*ft)</i>	3944.73	1581.73	40.1%	Pass
<i>Pad Shear - 1-way (kips)</i>	1050.72	207.35	19.7%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.003	1.9%	Pass

Soil Rating:	73.6%
Structural Rating:	40.1%

Pad Properties		
Depth, D :	3.5	ft
Pad Width, W :	24.5	ft
Pad Thickness, T :	4	ft
Pad Rebar Size, Sp :	8	
Pad Rebar Quantity, mp :	26	
Pad Clear Cover, cc_{pad} :	3	in

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

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Gross Bearing, Q_{ult} :	12.000	ksf
Cohesion, C_u :		ksf
Friction Angle, ϕ :	30	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.3	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	None	ft

--Toggle between Gross and Net



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

T-Mobile Existing Facility

Site ID: CTNH551A

Crown Castle Long Eddy_Wright Property
149 Wright Road
Torrington, CT 06790

October 25, 2018

EBI Project Number: 6218006849

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	11.64 %



October 25, 2018

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

Emissions Analysis for Site: **CTNH551A – Crown Castle Long Eddy_Wright Property**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **149 Wright Road, Torrington, 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), 2100 MHz (AWS) and 10 GHz 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 **149 Wright Road, Torrington, 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 and 20 dB for highly focused parabolic microwave dishes, 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 UMTS channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 2) 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.
- 3) 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.
- 4) 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.
- 5) 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.
- 6) 1 microwave backhaul channel (10 GHz) was considered on Sector A of the proposed facility. This channel has a transmit power of 1 Watt.



- 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 and 20 dB for highly focused parabolic microwave dishes, 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 B2A/66AA** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels as well as the **Commscope SC2-W100AB** for the proposed 10 GHz microwave backhaul. 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 and 20 dB for highly focused parabolic microwave dishes, 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 (both panel antennas and microwave dish) is **114 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	Sector:	D
Antenna #:	1	Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B2A/66AA	Make / Model:	Ericsson AIR32 B2A/66AA	Make / Model:	Ericsson AIR32 B2A/66AA	Make / Model:	Ericsson AIR32 B2A/66AA
Gain:	dBd	Gain:	dBd	Gain:	dBd	Gain:	dBd
Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 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)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	5	Channel Count	5	Channel Count	5	Channel Count	5
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.88	Antenna B1 MPE%	2.88	Antenna C1 MPE%	2.88	Antenna D1 MPE%	2.88
Antenna #:	2	Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	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	Gain:	12.95 / 13.35 dBd
Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet
Frequency Bands	600 MHz / 700 MHz	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	Channel Count	4
Total TX Power(W):	120	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	ERP (W):	2,443.03
Antenna A2 MPE%	1.79	Antenna B2 MPE%	1.79	Antenna C2 MPE%	1.79	Antenna D2 MPE%	1.79

Microwave Backhaul Data

Make / Model:	Gain	Height (AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Commscope SC2-100AB	32.35 dBd	114	10 GHz	1	1	1717.91	0.05	A

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Sector A)	4.72 %
Verizon Wireless	2.10 %
Sprint	2.63 %
AT&T	2.19 %
Site Total MPE %:	11.64 %

T-Mobile Sector A Total:	4.72 %
T-Mobile Sector B Total:	4.67 %
T-Mobile Sector C Total:	4.67 %
T-Mobile Sector D Total:	4.67 %
Site Total:	
	11.64 %



T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile_Frequency Band / Technology (Sector A)	# 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	114	9.59	PCS - 1900 MHz	1000.00	0.96%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	114	14.39	AWS - 2100 MHz	1000.00	1.44%
T-Mobile PCS - 1900 MHz UMTS	1	1,556.18	114	4.80	PCS - 1900 MHz	1000.00	0.48%
T-Mobile 600 MHz LTE	2	788.97	114	4.86	600 MHz	400.00	1.22%
T-Mobile 700 MHz LTE	2	432.54	114	2.67	700 MHz	467.00	0.57%
T-Mobile 10 GHz Microwave	1	1,717.91	114	0.53	10 GHz	1000.00	0.05%
						Total:	4.72%

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:	4.72 %
Sector B:	4.67%
Sector C:	4.67%
Sector D:	4.67%
T-Mobile Maximum MPE % (Sector A):	4.72 %
Site Total:	11.64 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **11.64%** 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.