



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

November 19, 2020

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

**RE: Notice of Exempt Modification for Connecticut Public Broadcasting, Inc. - 873128**  
**800 Booth Hill Road, Trumbull, CT 06611**  
**Latitude: 41° 16' 44.26" / Longitude: -73° 11' 6.40"**

Dear Ms. Bachman:

Connecticut Public Broadcasting, Inc. currently maintains one (1) pole antenna at the 458-foot mount on the existing 458-Guyed Tower, located at 800 Booth Hill Road, Trumbull, CT. The property and tower are owned by Crown Castle. Connecticut Public Broadcasting, Inc. now intends to remove and replace (1) pole antennas with (1) new 515 MHz antenna. The new antenna will be installed at the 458-ft level of the tower.

The facility was originally approved by the Town of Trumbull. The included email confirmation from the Town provides that the original approval was not retained within their records, therefore the approval conditions, if any, are unknown.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Vicki Tesoro, First Selectwoman for the Town of Trumbull, Douglas Wenz, Zoning Enforcement Officer, and Crown Castle is the tower and property owner.

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

Melanie A. Bachman

Page 2

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

Sincerely,

Anne Marie Zsamba  
Site Acquisition Specialist  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
(201) 236-9224  
AnneMarie.Zsamba@crowncastle.com

Attachments

cc:

The Honorable Vicki Tesoro, First Selectwoman (*via email only to firstselectman@trumbull-ct.gov*)  
5866Main Street  
2<sup>nd</sup> Floor  
Trumbull, CT 06611

Douglas Wenz, Zoning Enforcement Officer (*via email only to dwenz@trumbull-ct.gov*)  
5866Main Street  
2<sup>nd</sup> Floor  
Trumbull, CT 06611

**From:** [Zsamba, Anne Marie](mailto:Zsamba, Anne Marie)  
**To:** [firstselectman@trumbull-ct.gov](mailto:firstselectman@trumbull-ct.gov)  
**Subject:** Notice of Exempt Modification - 800 Booth Hill Road - Connecticut Public Broadcasting, Inc. - 873128  
**Date:** Thursday, November 19, 2020 4:33:00 PM  
**Attachments:** [EM-CTPUBLICBROADCASTING-800 BOOTH HILL RD TRUMBULL-873128-NOTICE.pdf](#)

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Dear First Selectwoman Tesoro:

Attached please find Connecticut Public Broadcasting's exempt modification application that is being submitted to the Connecticut Siting Council today, November 19, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,  
Anne Marie Zsamba

**ANNE MARIE ZSAMBA**  
Site Acquisition Specialist  
T: (201) 236-9224  
M: (518) 350-3639  
F: (724) 416-6112

**CROWN CASTLE**  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
[CrownCastle.com](http://CrownCastle.com)

**From:** [Zsamba, Anne Marie](#)  
**To:** ["dwenz@trumbull-ct.gov"](mailto:dwenz@trumbull-ct.gov)  
**Subject:** Notice of Exempt Modification - 800 Booth Hill Road - Connecticut Public Broadcasting, Inc. - 873128  
**Date:** Thursday, November 19, 2020 4:33:00 PM  
**Attachments:** [EM-CTPUBLICBROADCASTING-800 BOOTH HILL RD TRUMBULL-873128-NOTICE.pdf](#)

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Dear ZEO Wenz:

Attached please find Connecticut Public Broadcasting's exempt modification application that is being submitted to the Connecticut Siting Council today, November 19, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,  
Anne Marie Zsamba

**ANNE MARIE ZSAMBA**  
Site Acquisition Specialist  
T: (201) 236-9224  
M: (518) 350-3639  
F: (724) 416-6112

**CROWN CASTLE**  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
[CrownCastle.com](http://CrownCastle.com)



# Exhibit A

## **Original Facility Approval**

**From:** [Holzschuh, Cymon](#)  
**To:** [Myl, Kimberly](#); [CSC-DL Siting Council](#)  
**Cc:** [Helton, Heather \(Contractor\)](#)  
**Subject:** RE: Existing Telecommunication Facility 800 Booth Hill Road, Trumbull (Crown: 873128 | T-Mobile: CT11203B)  
**Date:** Tuesday, January 19, 2016 2:40:02 PM

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Thank you for your submission.

Although Docket 77 is the first filing the Council has on record for this facility, it appears that this facility was not certificated by the Council.

Docket 77 was filed by Metro Mobile CTS (now Verizon) to install antennas on the existing tower. T-Mobile is not bound to the conditions of approval for Docket 77.

I will note for our records that according to the Trumbull Zoning Officer, records of this facility's approval have not been retained.

Thanks,

Cymon Holzschuh  
Siting Analyst  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051  
P: 860.827.2941 | F: 860.827.2950



<http://www.ct.gov/csc/>

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**From:** Myl, Kimberly [mailto:Kimberly.Myl@crowncastle.com]  
**Sent:** Tuesday, January 19, 2016 11:43 AM  
**To:** CSC-DL Siting Council  
**Cc:** Helton, Heather (Contractor)  
**Subject:** Existing Telecommunication Facility 800 Booth Hill Road, Trumbull (Crown: 873128 | T-Mobile: CT11203B)

To Whom It May Concern:

Please be advised both the township (email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

**KIMBERLY MYL**  
Real Estate Specialist  
T: (201) 236-9069 | M: (201) 993-3697

**CROWN CASTLE**  
1200 MacArthur Blvd, Suite 200  
Mahwah, NJ 07430

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**From:** Gail Andreyka [mailto:gandreyka@trumbull-ct.gov]  
**Sent:** Tuesday, January 19, 2016 9:59 AM  
**To:** Myl, Kimberly  
**Subject:** RE: INFO NEEDED

Hi Kimberly,

Doug Wenz, our Zoning Officer said that this application predates our records. Only copies of building permits would be available. The Building Department phone number is 203-452-5020.

Gail

This email may contain confidential or privileged material. Use or disclosure of it by anyone other than the recipient is unauthorized. If you are not an intended recipient, please delete this email.

# Exhibit B

## Property Card

# 800 BOOTH HILL ROAD

**Location** 800 BOOTH HILL ROAD

**Mblu** H/04 / 00072/ 000/

**Acct#**

**Owner** GLOBAL SIGNAL  
ACQUISITIONS IV LLC

**Assessment** \$4,200,000

**Appraisal** \$6,000,000

**PID** 2543

**Building Count** 1

**Fire District** N

## Current Value

Appraisal	
Valuation Year	Total
2015	\$6,000,000

Assessment	
Valuation Year	Total
2015	\$4,200,000

## Owner of Record

**Owner** GLOBAL SIGNAL ACQUISITIONS IV LLC  
**Co-Owner** C/O CROWN CASTLE USA INC  
**Address** 2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

**Sale Price** \$575,000  
**Book & Page** 1714/ 158  
**Sale Date** 05/17/2016  
**Instrument** 25

## Ownership History

Ownership History				
Owner	Sale Price	Book & Page	Instrument	Sale Date
GLOBAL SIGNAL ACQUISITIONS IV LLC	\$575,000	1714/ 158	25	05/17/2016
DADDARIO F FRANCIS	\$0	434/ 371		12/31/1979

## Building Information

### Building 1 : Section 1

**Year Built:** 1952  
**Living Area:** 4,470

**Building Attributes**

Field	Description
STYLE	Telephone Bldg
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Concrete
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Minimum/Plywd
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air
AC Type	Central
Bldg Use	Rad/TV Tw
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Walls	Ceil & Walls
Rooms/Prtns	Average
Wall Height	10
% Comn Wall	

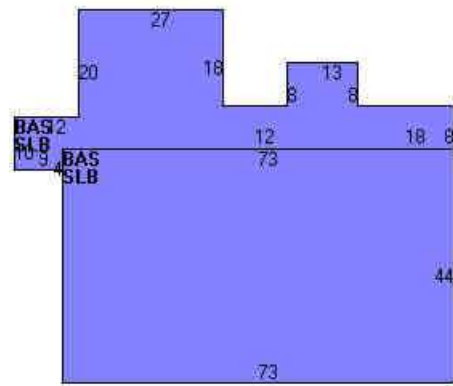
### Building Photo



H04-72 05/04/2015

(<http://images.vgsi.com/photos2/TrumbullCTPhotos/\00\02\46\15.JPG>)

### Building Layout



([http://images.vgsi.com/photos2/TrumbullCTPhotos//Sketches/2543\\_2543.](http://images.vgsi.com/photos2/TrumbullCTPhotos//Sketches/2543_2543.))

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	4,470	4,470
SLB	Slab	4,470	0
		8,940	4,470

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Land

#### Land Use

Use Code	433
Description	Rad/TV Tw

#### Land Line Valuation

Size (Acres)	15.9
Frontage	

**Zone** AA  
**Neighborhood** 350  
**Alt Land Appr** No  
**Category**

**Depth**

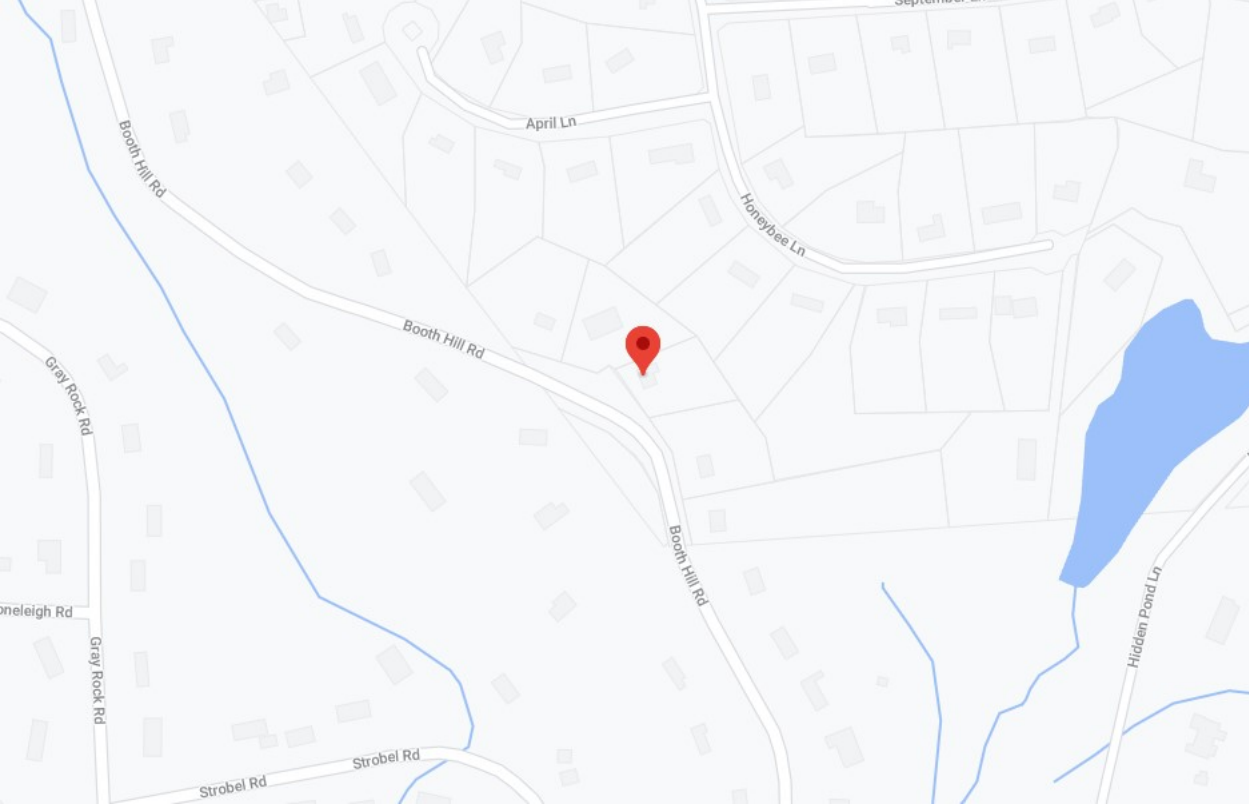
**Outbuildings**

Outbuildings					<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Bldg #
PAV1	Paving Asph.			22800 S.F.	1
FN5	Fence 10'			250 L.F.	1
ANTG	Guyed Tower			436 L.F.	1

**Valuation History**

Appraisal	
Valuation Year	Total
2018	\$6,000,000
2017	\$6,000,000
2016	\$9,710,400

Assessment	
Valuation Year	Total
2018	\$4,200,000
2017	\$4,200,000
2016	\$6,797,280





# Exhibit C

## **Construction Drawings**



**CROWN CASTLE USA INC.**  
**SITE NAME: TRUMBULL**  
**SITE TYPE: GUYED TOWER**  
**TOWER HEIGHT: 458'-0"**

**BUSINESS UNIT #: 873128**  
**SITE ADDRESS: 800 BOOTH HILL RD.**  
**TRUMBULL, CT 06611**  
**COUNTY: FAIRFIELD**  
**JURISDICTION: TOWN OF TRUMBULL**



**CONNECTICUT PUBLIC BROADCASTING INC**

CONNECTICUT PUBLIC BROADCASTING INC SITE NUMBER: 873128

BU #: 873128 TRUMBULL

800 BOOTH HILL RD. TRUMBULL, CT 06611

EXISTING 458'-0" GUYED TOWER

**SITE INFORMATION**

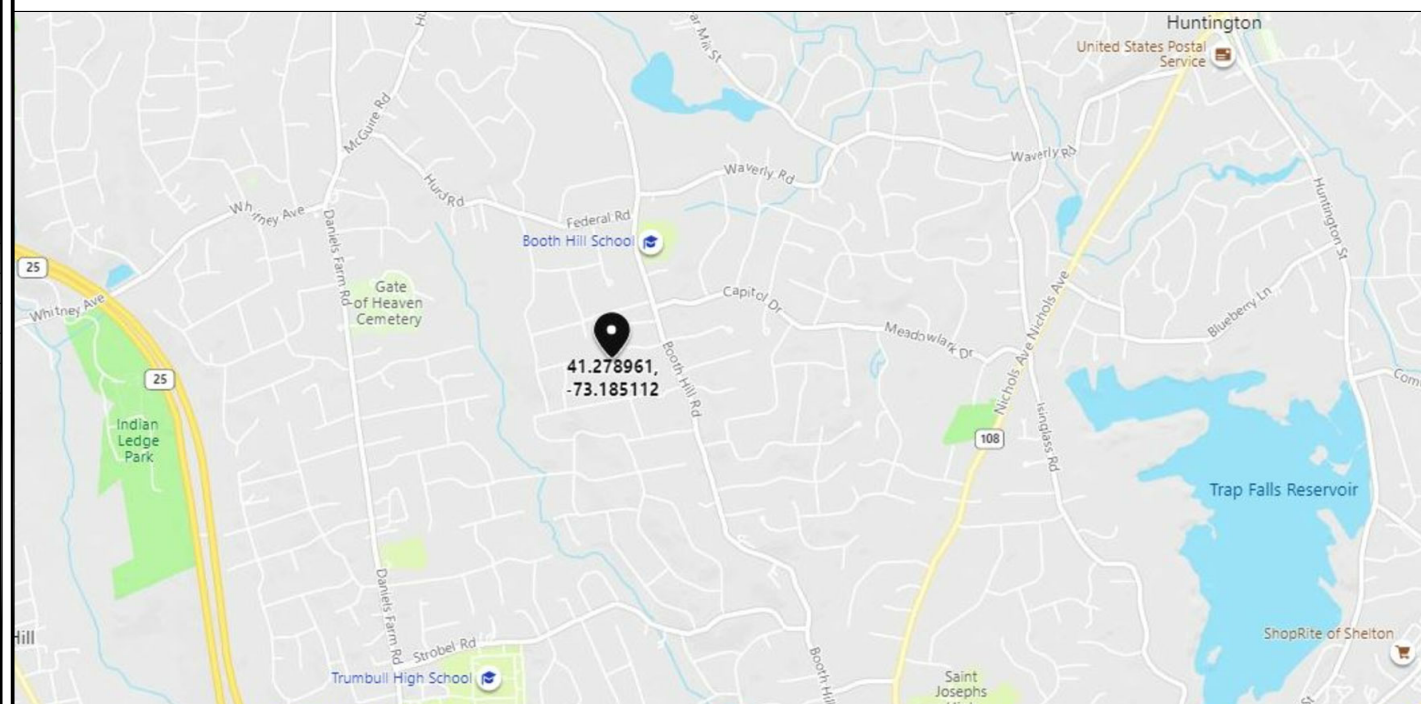
CROWN CASTLE USA INC. TRUMBULL  
 SITE NAME:  
 SITE ADDRESS: 800 BOOTH HILL RD. TRUMBULL, CT 06611  
 COUNTY: FAIRFIELD  
 MAP/PARCEL #: 726085  
 AREA OF CONSTRUCTION: EXISTING  
 LATITUDE: 41° 16' 44.26"  
 LONGITUDE: -73° 11' 06.40"  
 LAT/LONG TYPE: NAD83  
 GROUND ELEVATION: 520 FT.  
 CURRENT ZONING: AA  
 JURISDICTION: TOWN OF TRUMBULL  
 OCCUPANCY CLASSIFICATION: U  
 TYPE OF CONSTRUCTION: IIB  
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION  
 PROPERTY OWNER: GLOBAL SIGNAL ACQUISITIONS IV LLC PO BOX 277455 ATLANTA,GA 30384-7455  
 TOWER OWNER: PINNACLE TOWERS LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317  
 CARRIER/APPLICANT: CONNECTICUT PUBLIC BROADCASTING INC  
 ELECTRIC PROVIDER: CONNECTICUT LIGHT & POWER CO (800) 268-2000  
 TELCO PROVIDER: LIGHTOWER (888) 583-4237

**DRAWING INDEX**

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
G-1	EQUIPMENT GROUNDING PLANS
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	ANTENNA SPECS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

**LOCATION MAP**



NO SCALE

**PROJECT DESCRIPTION**

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

- TOWER SCOPE OF WORK**
- REMOVE EXISTING EQUIPMENT AND MOUNTS AT THE FOLLOWING LEVELS: 75', 186', 188', 284', 328', 340', 364'
  - REMOVE (1) POLE ANTENNA
  - REMOVE (1) (4-1/16") CABLE
  - INSTALL (1) POLE ANTENNA
  - INSTALL (1) (3-1/2") CABLE

- GROUND SCOPE OF WORK**
- NONE

**APPLICABLE CODES/REFERENCE DOCUMENTS**

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

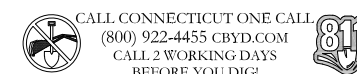
CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

**REFERENCE DOCUMENTS:**

STRUCTURAL ANALYSIS: TOWER ENGINEERING PROFESSIONALS  
 DATED: OCTOBER 29, 2020  
 MOUNT ANALYSIS: POD GROUP  
 DATED: OCTOBER 16, 2020

ORDER ID: 530677  
 REVISION: 3

NOTE: PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

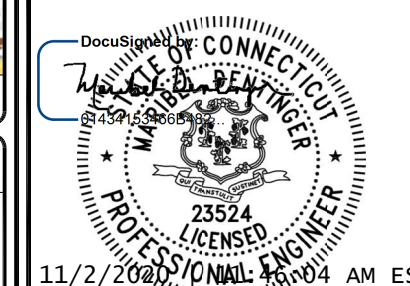


**PROJECT TEAM**

A&E FIRM: CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWN.AE.APPROVAL@CROWNCastle.COM  
 CROWN CASTLE USA INC. DISTRICT CONTACTS: 3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065  
 JOE FRANZEN - PROJECT MANAGER (724) 416-6430  
 JASON D'AMICO - CONSTRUCTION MANAGER (860) 209-0104

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/20/20	TJ	PRELIMINARY	TJ
0	11/02/20	TJ	CONSTRUCTION	MD



Crown Castle USA Inc. Certificate of Registration #PEC.0001101

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

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



**CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:**

- NOTICE TO PROCEED- NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
- "LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONALITY OF THE SAFETY CLIMB. ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE THIS SHALL INCLUDE, BUT NOT BE LIMITED TO PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
- PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
- ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED-STD-10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
- ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED-STD-10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS." IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS. LATEST APPROVED REVISION.
- CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

**GREENFIELD GROUNDING NOTES:**

- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
- METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
- EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTI-OXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
- GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (I.E., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
- BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM. THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

**GENERAL NOTES:**

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER: CONNECTICUT PUBLIC BROADCASTING INC  
TOWER OWNER: CROWN CASTLE USA INC.
- THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
- THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
- NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
- SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
- CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
- CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90° AT TIME OF PLACEMENT.
- CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
- ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WFF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:  
#4 BARS AND SMALLER.....40 ksi  
#5 BARS AND LARGER.....60 ksi
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"  
CONCRETE EXPOSED TO EARTH OR WEATHER:  
#6 BARS AND LARGER.....2"  
#5 BARS AND SMALLER.....1-1/2"  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:  
SLAB AND WALLS.....3/4"  
BEAMS AND COLUMNS.....1-1/2"
- A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

**ELECTRICAL INSTALLATION NOTES:**

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.  
4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.  
4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
- EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET NEW FITTINGS WHEN NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREFOLD SPCMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (I.E. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
- METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "CONNECTICUT PUBLIC BROADCASTING INC".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
120/208V, 3Ø	GROUND	GREEN
	A PHASE	BLACK
	B PHASE	RED
277/480V, 3Ø	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
DC VOLTAGE	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**

\* SEE NEC 210.5(C)(1) AND (2)  
\*\* POLARITY MARKED AT TERMINATION

**ABBREVIATIONS:**

- ANT ANTENNA
- (E) EXISTING
- FIF FACILITY INTERFACE FRAME
- GEN GENERATOR
- GPS GLOBAL POSITIONING SYSTEM
- GSM GLOBAL SYSTEM FOR MOBILE
- LTE LONG TERM EVOLUTION
- MGB MASTER GROUND BAR
- MW MICROWAVE
- (N) NEW
- NEC NATIONAL ELECTRIC CODE
- (P) PROPOSED
- PP POWER PLANT
- QTY QUANTITY
- RECT RECTIFIER
- RBS RADIO BASE STATION
- RETS REMOTE ELECTRIC TILT
- RFDS RADIO FREQUENCY DATA SHEET
- RRH REMOTE RADIO HEAD
- RRU REMOTE RADIO UNIT
- SIAD SMART INTEGRATED DEVICE
- TMA TOWER MOUNTED AMPLIFIER
- TYP TYPICAL
- UMTS UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
- W.P. WORK POINT

**APWA UNIFORM COLOR CODE:**

- WHITE PROPOSED EXCAVATION
- PINK TEMPORARY SURVEY MARKINGS
- RED ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
- YELLOW GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
- ORANGE COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
- BLUE POTABLE WATER
- PURPLE RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
- GREEN SEWERS AND DRAIN LINES



3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

CONNECTICUT PUBLIC  
BROADCASTING INC SITE  
NUMBER: 873128

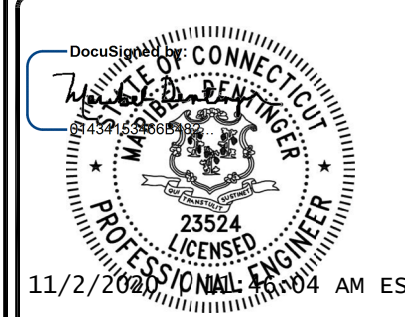
BU #: 873128  
TRUMBULL

800 BOOTH HILL RD.  
TRUMBULL, CT 06611

EXISTING 458'-0" GUYED  
TOWER

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/20/20	TJ	PRELIMINARY	TJ
0	11/02/20	TJ	CONSTRUCTION	MD



11/2/2020 11:04 AM EST

Crown Castle USA Inc.  
Certificate of Registration #PEC.0001101

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TO ALTER THIS DOCUMENT.

SHEET NUMBER: REVISION:

T-2 0



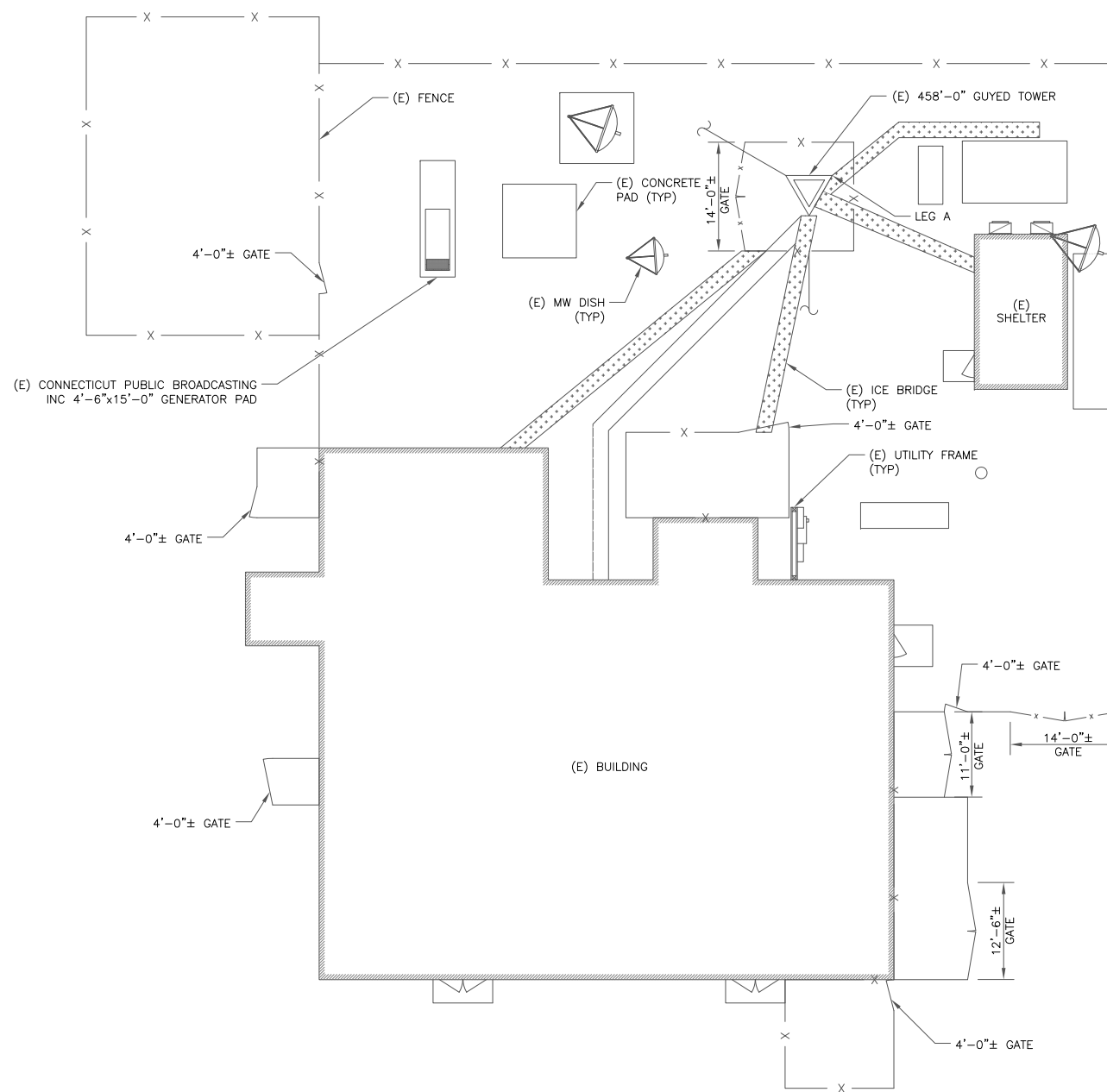
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

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SHEET NUMBER: REVISION:

C-1 0

1 SITE PLAN  
SCALE: 3/32"=1'-0" (FULL SIZE)  
3/64"=1'-0" (11x17)





STRUCTURE W/ APPURTENANCE  
ELEV. = 499'-3"

HEIGHT OF STRUCTURE  
ELEV. = 458'-0"  
FACE WIDTH (6'-0")  
ELEV. = 458'-0"

NEW CONNECTICUT PUBLIC BROADCASTING INC EQUIPMENT:  
(1) RFS/CELWAVE - SAA18-04A-JA80-ET5R-21 ANTENNA

EXISTING CONNECTICUT PUBLIC BROADCASTING INC ACL  
ELEV. = 458'-0"  
EXISTING MCL  
ELEV. = 445'-0"  
EXISTING MCL  
ELEV. = 441'-0"  
EXISTING MCL  
ELEV. = 439'-0"  
EXISTING MCL  
ELEV. = 420'-0"  
EXISTING MCL  
ELEV. = 393'-0"  
EXISTING MCL  
ELEV. = 388'-0"

EXISTING CONNECTICUT PUBLIC BROADCASTING INC MCL  
ELEV. = 150'-0"  
EXISTING CONNECTICUT PUBLIC BROADCASTING INC MCL  
ELEV. = 146'-0"  
EXISTING CONNECTICUT PUBLIC BROADCASTING INC MCL  
ELEV. = 140'-0"  
EXISTING CONNECTICUT PUBLIC BROADCASTING INC MCL  
ELEV. = 136'-0"

EXISTING MCL  
ELEV. = 133'-0"  
EXISTING MCL  
ELEV. = 117'-0"  
EXISTING MCL  
ELEV. = 109'-0"  
EXISTING MCL  
ELEV. = 108'-0"  
EXISTING MCL  
ELEV. = 99'-0"

EXISTING MCL  
ELEV. = 62'-0"

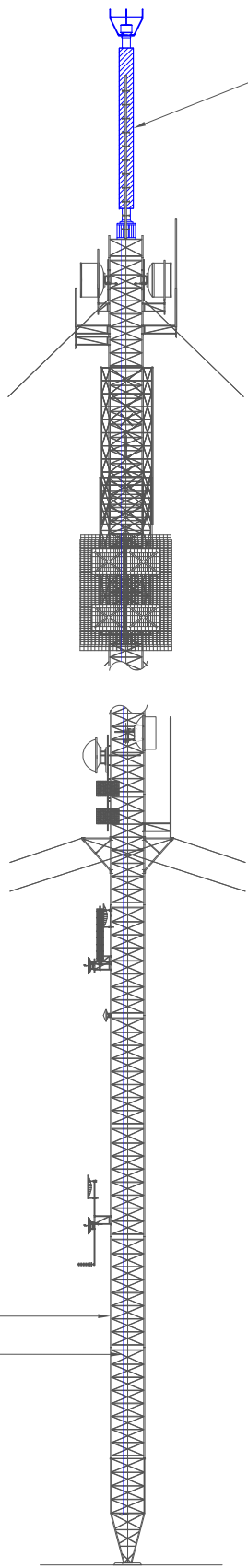
**INSTALLER NOTE:**  
EXISTING TOWER SECTIONS FROM 154'-0" TO 227'-0" NOT SHOWN FOR CLARITY.

**INSTALLER NOTE:**  
EQUIPMENT AND MOUNTS AT THE LEVELS SHALL BE REMOVED PRIOR TO INSTALLATION OF NEW EQUIPMENT - 75', 186', 188', 284', 328', 340', 364'.

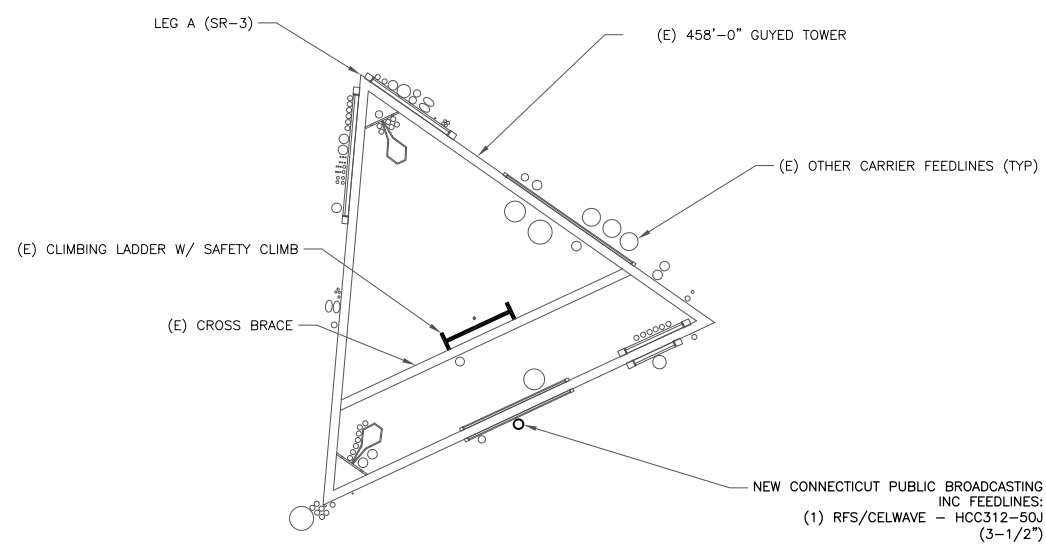
**CONNECTICUT PUBLIC BROADCASTING INC EQUIPMENT**  
ANTENNA CL: 477'-0"  
MOUNT CL: 458'-0"

**INSTALLER NOTE:**  
DIRECT TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ CLIMBING PEGS/STEPS AND SAFETY CLIMB.

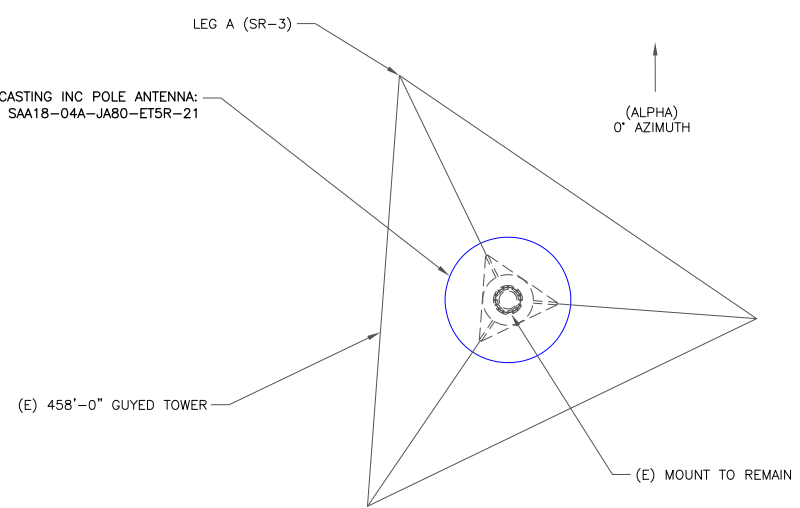
(E) 458'-0" GUYED TOWER  
NEW CONNECTICUT PUBLIC BROADCASTING INC FEEDLINES:  
(1) RFS/CELWAVE - HCC312-50J (3-1/2")



1 FINAL ELEVATION  
SCALE: NOT TO SCALE



2 OVERALL FEEDLINE LAYOUT  
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN  
SCALE: NOT TO SCALE

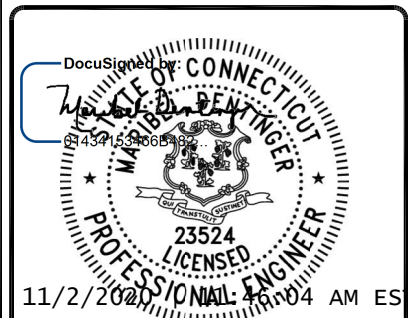


**CROWN CASTLE**  
3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

CONNECTICUT PUBLIC BROADCASTING INC SITE NUMBER: 873128  
  
BU #: 873128  
**TRUMBULL**  
  
800 BOOTH HILL RD.  
TRUMBULL, CT 06611  
  
EXISTING 458'-0" GUYED TOWER

**ISSUED FOR:**

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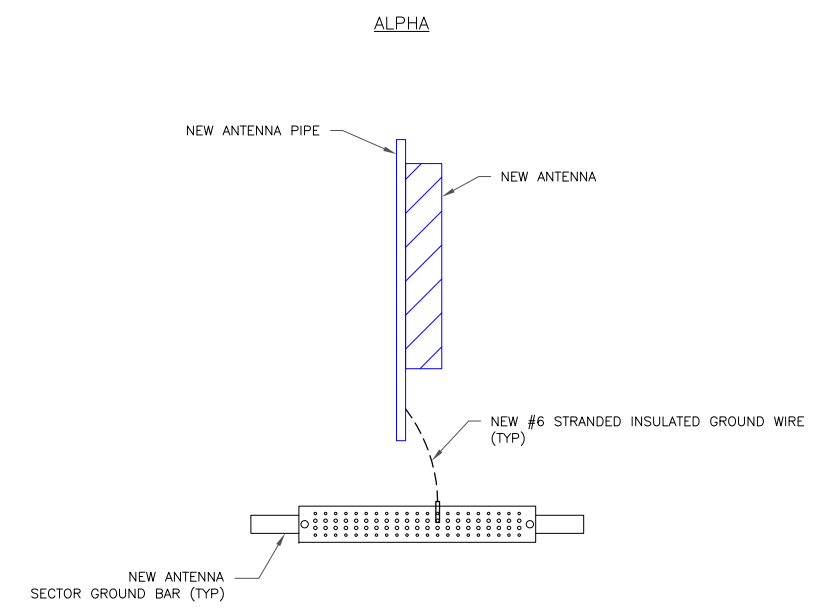


CONNECTICUT PUBLIC BROADCASTING INC SITE NUMBER: 873128

BU #: 873128 TRUMBULL

800 BOOTH HILL RD. TRUMBULL, CT 06611

EXISTING 458'-0" GUYED TOWER



ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/20/20	TJ	PRELIMINARY	TJ
0	11/02/20	TJ	CONSTRUCTION	MD

DocuSigned by: *Michael Bentinger*

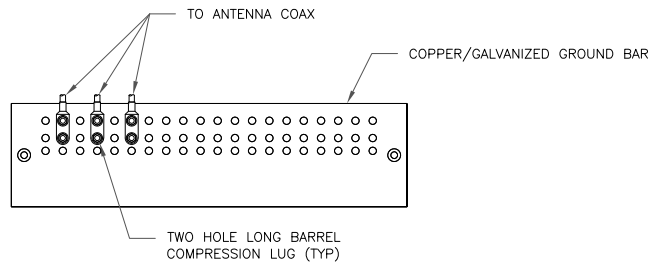
11/2/2020 11:04 AM EST

Crown Castle USA Inc.  
Certificate of Registration #PEC.0001101

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1 ANTENNA GROUNDING PLAN  
SCALE: NOT TO SCALE

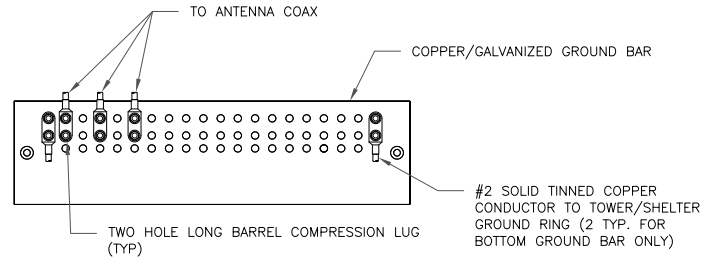
SHEET NUMBER: <b>G-1</b>	REVISION: <b>0</b>
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NOTES:

- DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
- GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

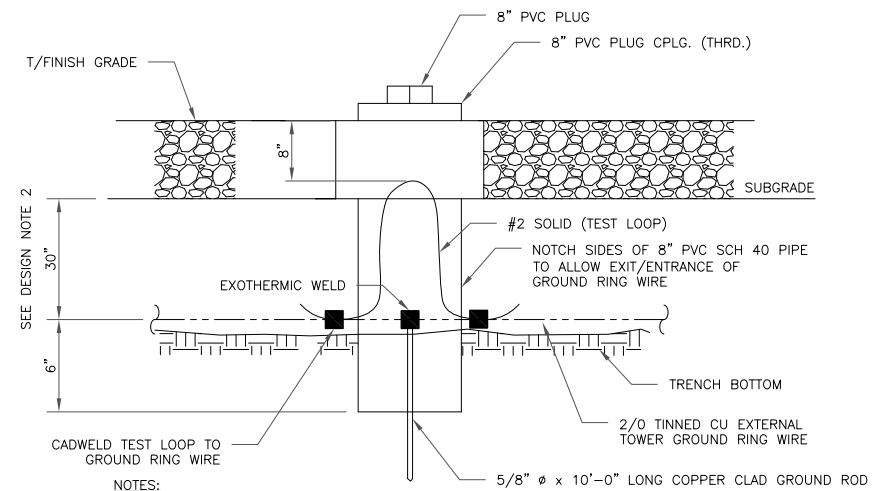
1 ANTENNA SECTOR GROUND BAR DETAIL  
SCALE: NOT TO SCALE



NOTES:

- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
- GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
- GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

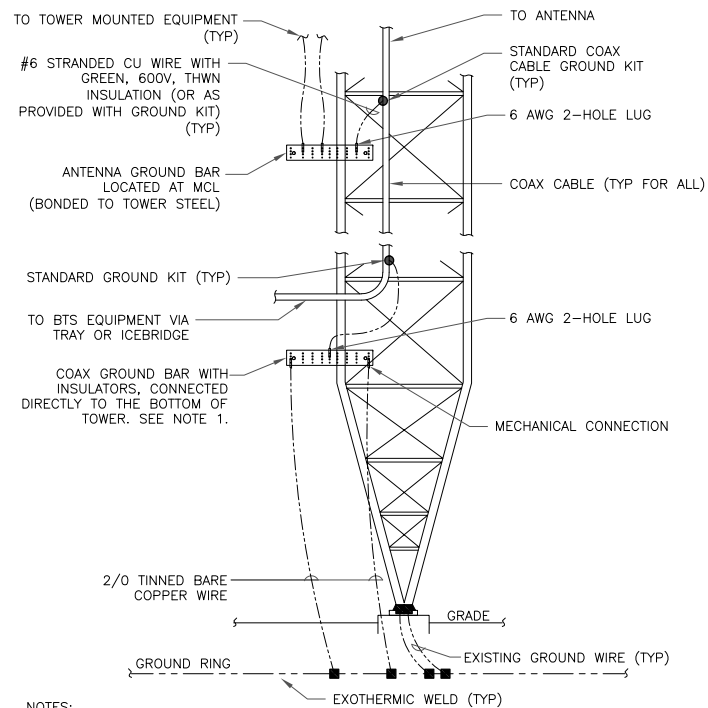
2 TOWER/SHELTER GROUND BAR DETAIL  
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
- GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

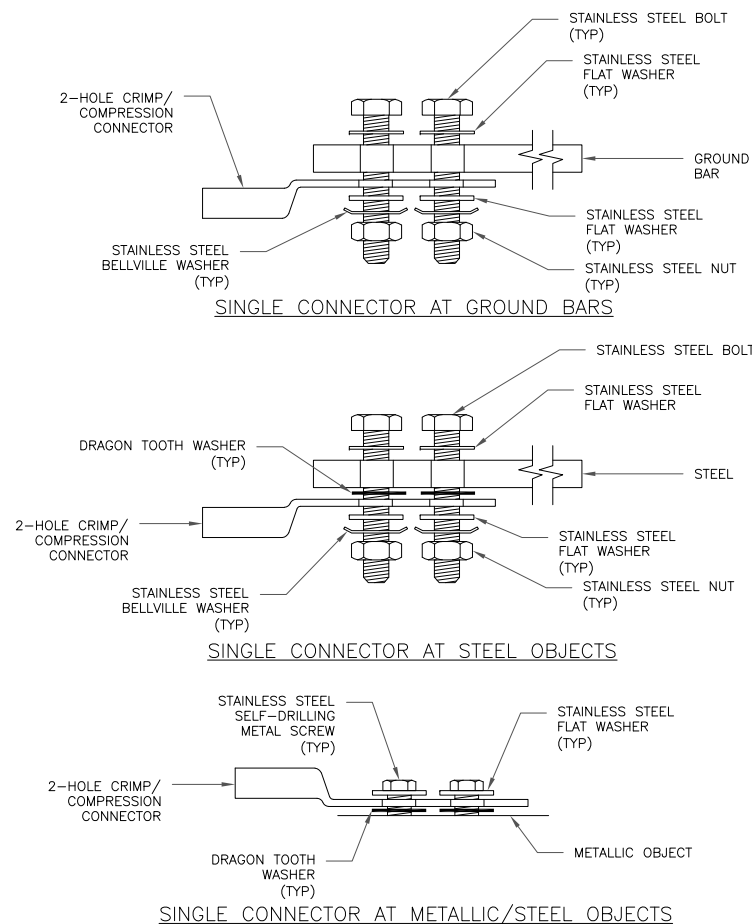
3 INSPECTION WELL DETAIL  
SCALE: NOT TO SCALE



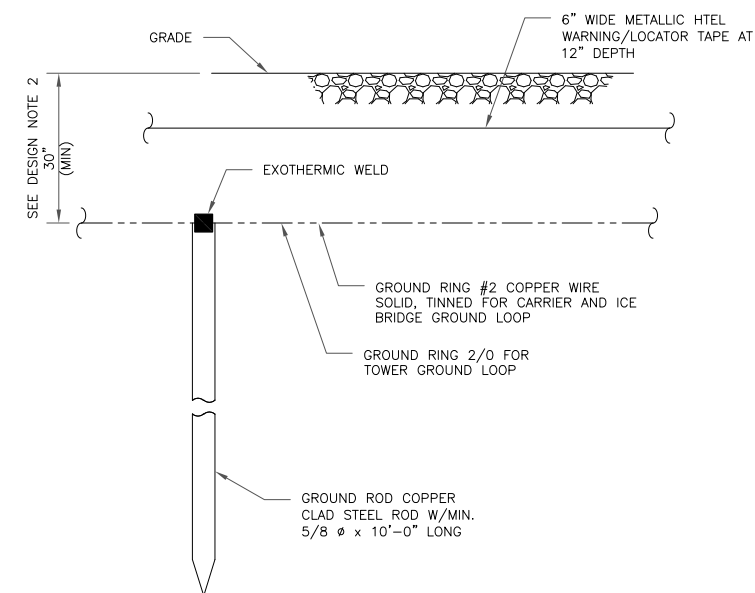
NOTES:

- NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
- ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING  
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS  
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
- GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL  
SCALE: NOT TO SCALE



3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

CONNECTICUT PUBLIC  
BROADCASTING INC SITE  
NUMBER: 873128

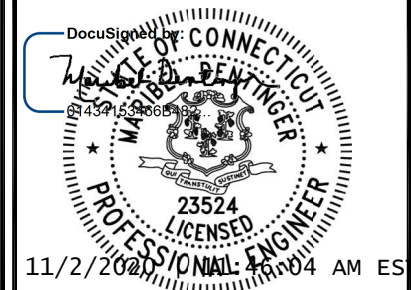
BU #: 873128  
TRUMBULL

800 BOOTH HILL RD.  
TRUMBULL, CT 06611

EXISTING 458'-0" GUYED  
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11/2/2020 11:04 AM EST  
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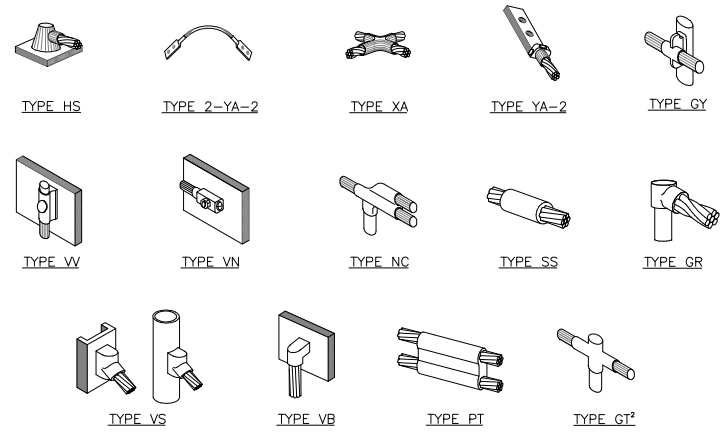
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SHEET NUMBER:

G-2

REVISION:

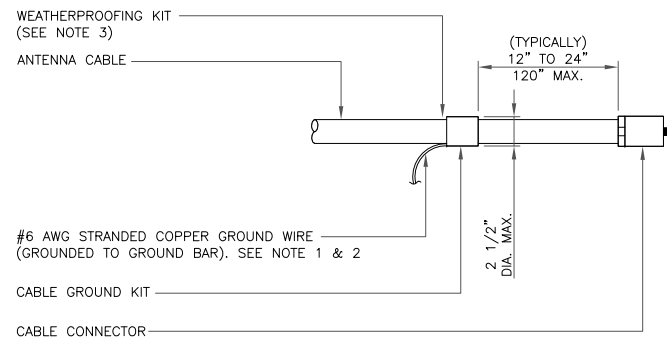
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**NOTE:**

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

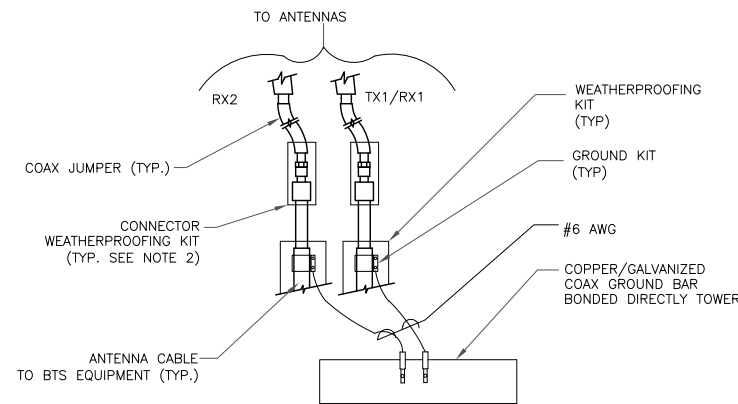
**1 CADWELD GROUNDING CONNECTIONS**  
SCALE: NOT TO SCALE



**NOTES:**

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

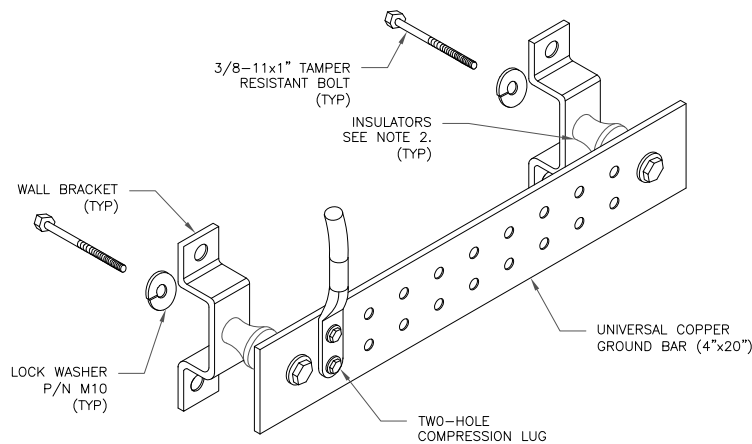
**3 CABLE GROUND KIT CONNECTION**  
SCALE: NOT TO SCALE



**NOTES:**

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

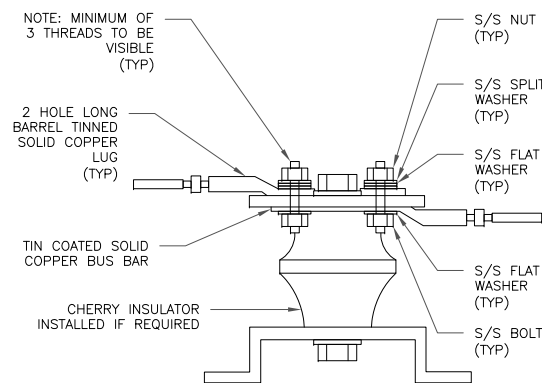
**4 GROUND CABLE CONNECTION**  
SCALE: NOT TO SCALE



**NOTES:**

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY GAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

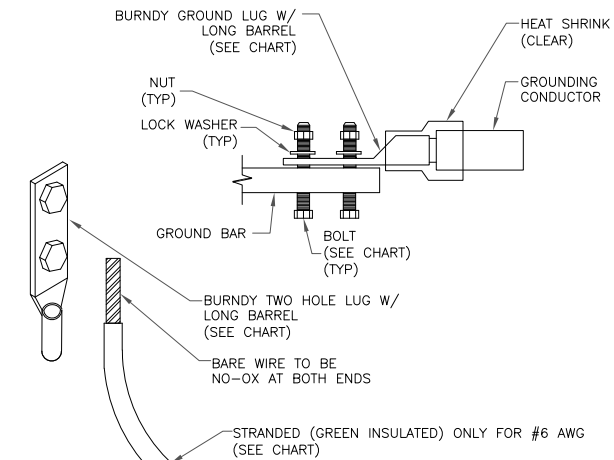
**6 GROUND BAR DETAIL**  
SCALE: NOT TO SCALE



NOTE: MINIMUM OF 3 THREADS TO BE VISIBLE (TYP)

**7 LUG DETAIL**  
SCALE: NOT TO SCALE

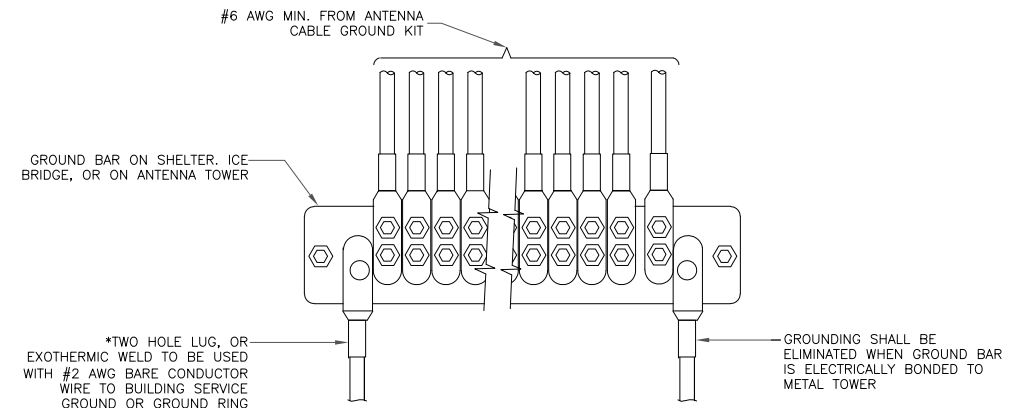
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



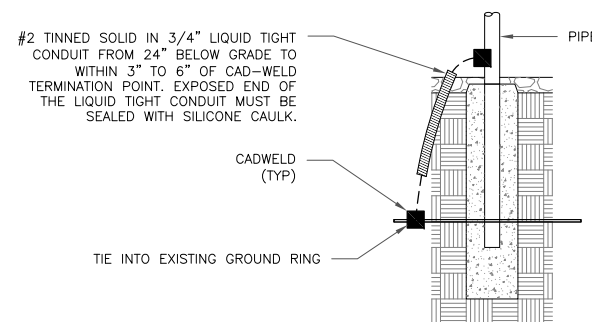
**NOTES:**

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

**2 MECHANICAL LUG CONNECTION**  
SCALE: NOT TO SCALE



**5 GROUNDWIRE INSTALLATION**  
SCALE: NOT TO SCALE



**8 TRANSITIONING GROUND DETAIL**  
SCALE: NOT TO SCALE



3 CORPORATE PARK DRIVE, SUITE 101  
CLIFTON PARK, NY 12065

CONNECTICUT PUBLIC BROADCASTING INC SITE  
NUMBER: 873128

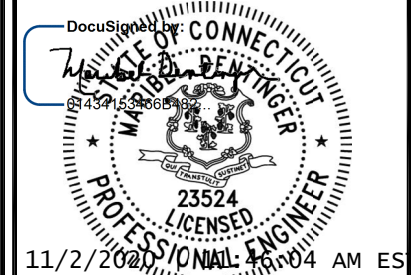
BU #: 873128  
TRUMBULL

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TRUMBULL, CT 06611

EXISTING 458'-0" GUYED  
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SHEET NUMBER:

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REVISION:

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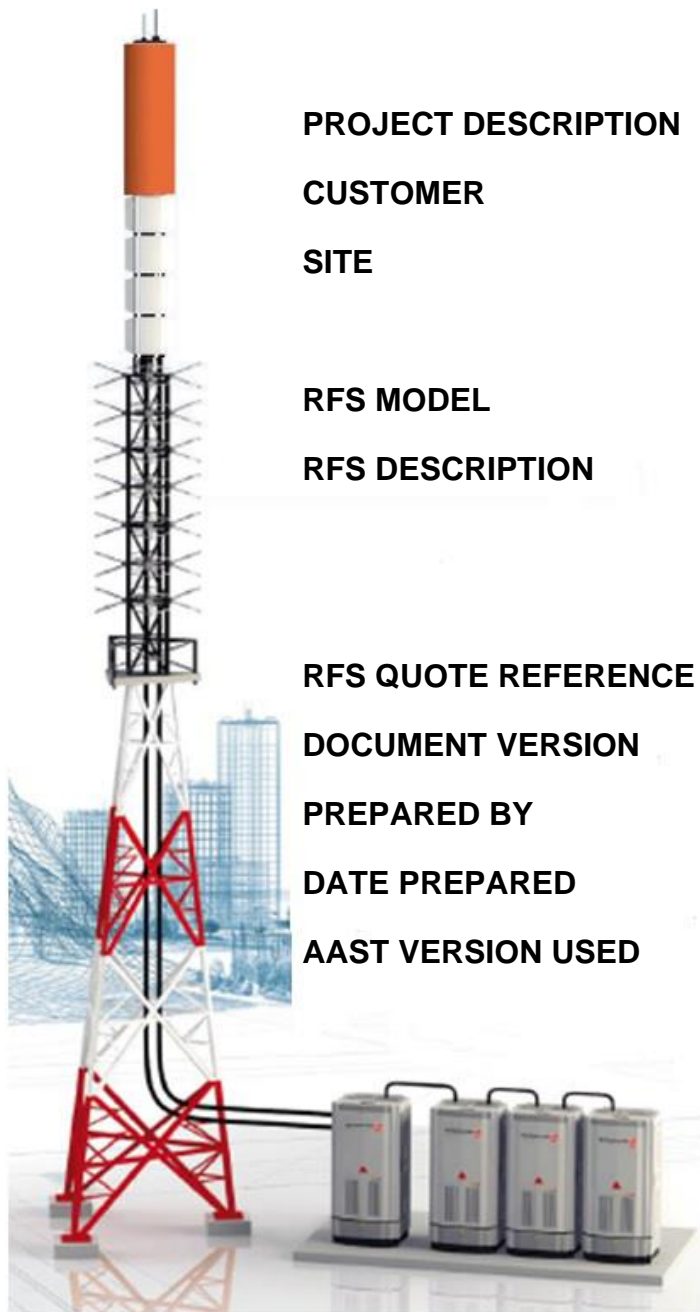


# The new wave in broadcast solutions

## Antennas



## TECHNICAL PROPOSAL



<b>PROJECT DESCRIPTION</b>	<b>TV Spectrum Repack</b>
<b>CUSTOMER</b>	<b>Station WEDW-TV</b>
<b>SITE</b>	<b>Shelton, CT.</b>
<b>RFS MODEL</b>	<b>SAA18-O4A-J480-ET5R-21</b>
<b>RFS DESCRIPTION</b>	<b>RFStar™ Slotted Array Antenna</b>
<b>RFS QUOTE REFERENCE</b>	<b>20093610</b>
<b>DOCUMENT VERSION</b>	
<b>PREPARED BY</b>	<b>Brandon George</b>
<b>DATE PREPARED</b>	<b>September 15, 2020</b>
<b>AAST VERSION USED</b>	<b>1.0.17.0</b>

TV & RADIO | IN-BUILDING | WIRELESS | IN-TUNNEL | HF & DEFENSE | MICROWAVE | MOBILE RADIO



# A new wave in TV and Radio Solutions

Because no two networks are the same, Radio Frequency Systems is primed and ready to provide the widest possible range of options for you.

RFS broadcast antennas are recognized throughout the broadcast industry for their quality and broadband performance. As the only supplier who can offer end-to-end passive broadcast solutions, RFS provides RF systems from the output of the transmitter, to the antennas. This provides a single point of accountability with a fully integrated solution and a complete system warranty.

We offer a vast portfolio of premium performance antenna solutions for television, radio and HF.

### Broadband panel arrays

With all polarization options available, RFS broadband panel arrays support Bands I, II (87.5-108MHz), III (174-240MHz), IV and V (470-860MHz). Each array can be tailored for specific coverage and power-handling capability.

### Top mount antennas

We offer a range of lightweight and low profile antennas (including super turnstile slot, dipole, and collinear antennas) that support single or multi-channel services

### Side mount antennas

Providing a range of polarization and power options, RFS' side mount antennas are an ideal alternative for television and radio applications where the tower cannot support a top mounted antenna.

### New technologies

Whichever broadcast band is in use for fixed or mobile television or radio broadcast, we're fully conversant with all global broadcasting standards and emerging digital technologies, including: Television (analogue and digital) – DVB-T, DVB-T2, ATSC, ISDB-T, DMB-T/H, PAL,NTSC, etc. Radio (analogue and digital) – FM, DAB, DAB+, HD Radio, CDR, etc

### HELIFLEX® – the original and still the best

Our world-renowned HELIFLEX® air-dielectric coaxial transmission line is installed easily and quickly, providing maximum strength and reliability.

HELIFLEX® is available in a wide range of sizes (3/8-inch to 9-inch diameter) and ensures a completely sealed feeder system, without the need for joining flanges or suspension hanger systems..

HELIFLEX®'s electrical performance is unsurpassed, delivering consistently low VSWR across the entire broadcast band, and low attenuation performance. It is also one of the few flexible feeder cables that can support the high-power requirements of multiple broadcast services.

## > Why RFS

Product	Best-in-class technical performance	Future proof	Bespoke/ standard designs	Cyclone rated	Low wind load	Rugged construction
VHF TV Band I	✓		✓		✓	✓
VHF FM Radio Band II	✓	✓	✓	✓	✓	✓
VHF TV Band III	✓	✓	✓	✓	✓	✓
UHF Band IV/V	✓	✓	✓	✓	✓	✓



# ANTENNA SPECIFICATIONS

## ELECTRICAL SPECIFICATIONS

Antenna Model	SAA18-O4A-J480-ET5R-21
Frequency Range	470 - 608 MHz
Operating Channels	CH US 21 (515.00 MHz)
Polarization	Elliptical (Vertical Component Ratio 30.0% at design frequency 515 MHz)
Number of Slots	18
Azimuth Pattern	O4A
Impedance	75 Ohm
VSWR	<1.08:1 (Return Loss > 28.3 dB)
Input Power Rating	36.7 kW Into full antenna system
Input Connector Size	4-1/16" EIA
Input Connector Location	Antenna Base (approx.)
Antenna Gain	Hpol: 15.3 (11.83 dBd) Vpol: 4.6 (6.60 dBd)
Beam Tilt	1.20 degrees
Null Fill	Refer Elevation Pattern
Note: Beam tilt and Null fill can be modified, if required	

## MECHANICAL SPECIFICATIONS

Antenna Mounting	Top Mount
Operating Temperature	-40°F to 113°F
Height (aperture) (H)	(H1) 39.57 ft (H2) 41.57 ft
Diameter (D)	1.75 ft
Center of Radiation (COR) above base	19.29 ft
Weight (Including adaptor stand)	4600 lbs
Effective Projected Area (EPA=CaAa)	40 ft <sup>2</sup>

Note: Calculated weight and effective projected area (EPA) is based on preliminary antenna design and assumed site conditions. More accurate weight and EPA for the specific antenna design will be provided at the time of quotation. Site specific operating temperature (lowest monthly mean) will be considered for the antenna structural steel materials qualification in accordance with TIA-222-G standard.

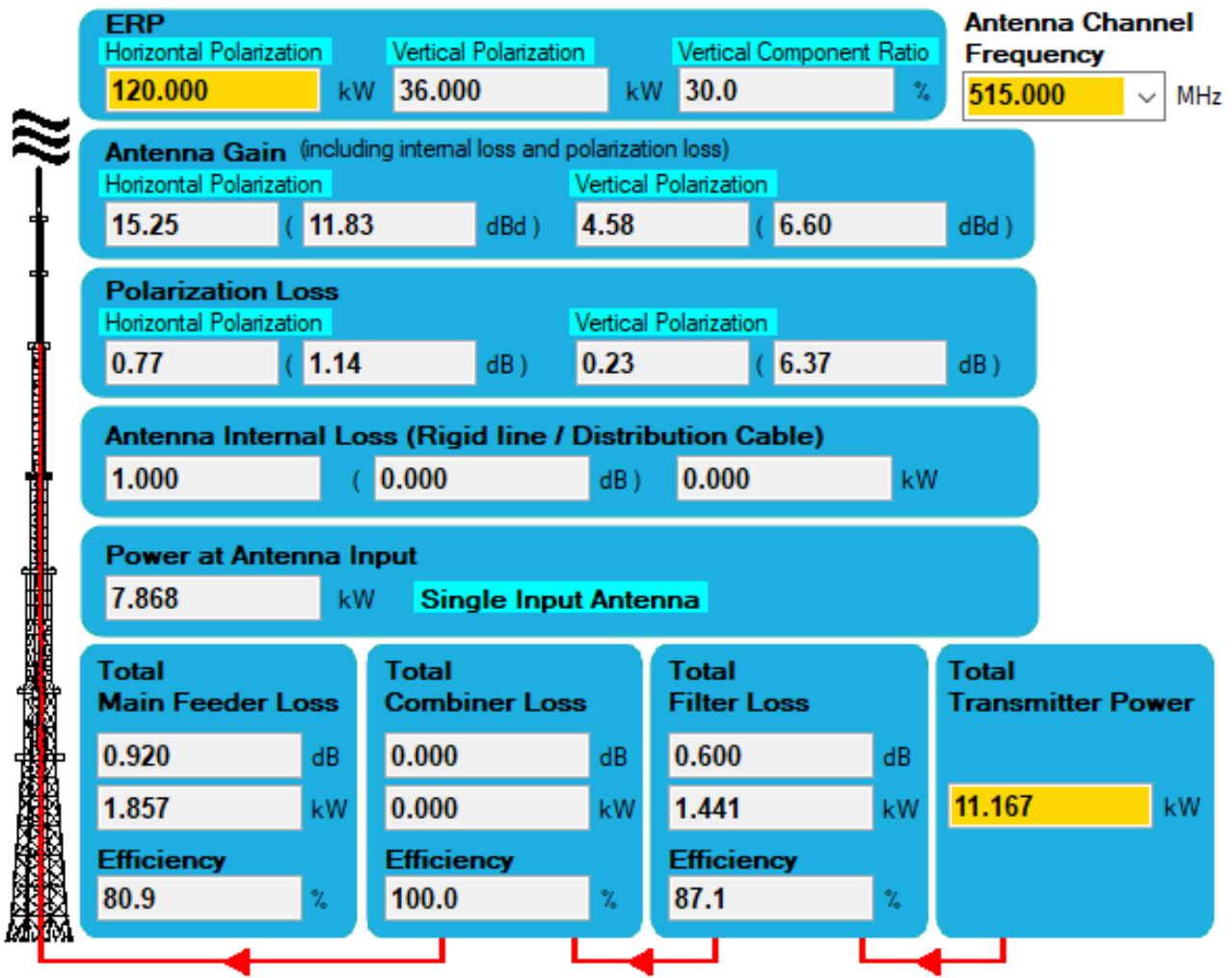
## Factory Test Data

Factory Tests	VSWR, Phasing, Pressurization, HRP and VRP (Both calc. from phasing). ISO 9001 Quality testing
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# SYSTEM SUMMARY

ANTENNA MODEL: SAA18-O4A-J480-ET5R-21





## SYSTEM SUMMARY

**ANTENNA MODEL: SAA18-O4A-J480-ET5R-21**

### Antenna

Channel	US 21
Frequency (MHz)	515.00 MHz
ERP	Hpol: 120.00 kW (20.79 dBk) Vpol: 36.00 kW (15.56 dBk)
Peak Directivity	Hpol: 19.8 (12.97 dBd) Vpol: 19.8 (12.97 dBd)
Polarization Loss	Hpol: 0.77 (1.14 dB) Vpol: 0.23 (6.37 dB)
Antenna Internal Loss	1.00 (0.00 dB)
Antenna Gain	Hpol: 15.3 (11.83 dBd) Vpol: 4.6 (6.60 dBd)
Power at Antenna Input	7.87 kW (8.96 dBk)

### Transmission Line

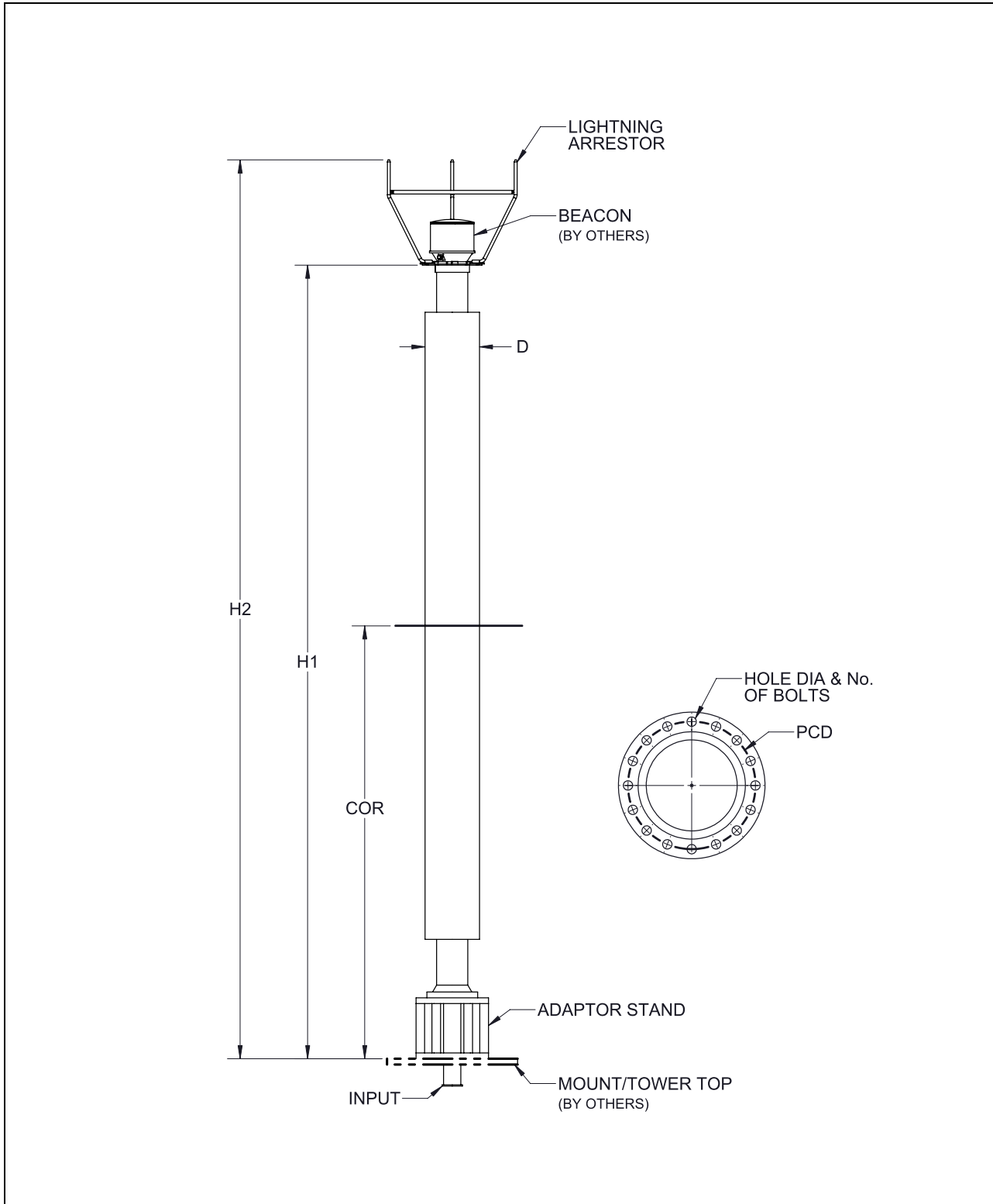
Type	4 1/16" 50 Ohm Rigid Line
Impedance	50 ohm
Length	550.00 ft
Attenuation	0.92 dB
Efficiency	80.9 %

### Transmitter

Filter Loss	0.87 (0.60 dB)
Combiner Loss	1.00 (0.00 dB)
Power Required	11.17 kW (10.48 dBk)



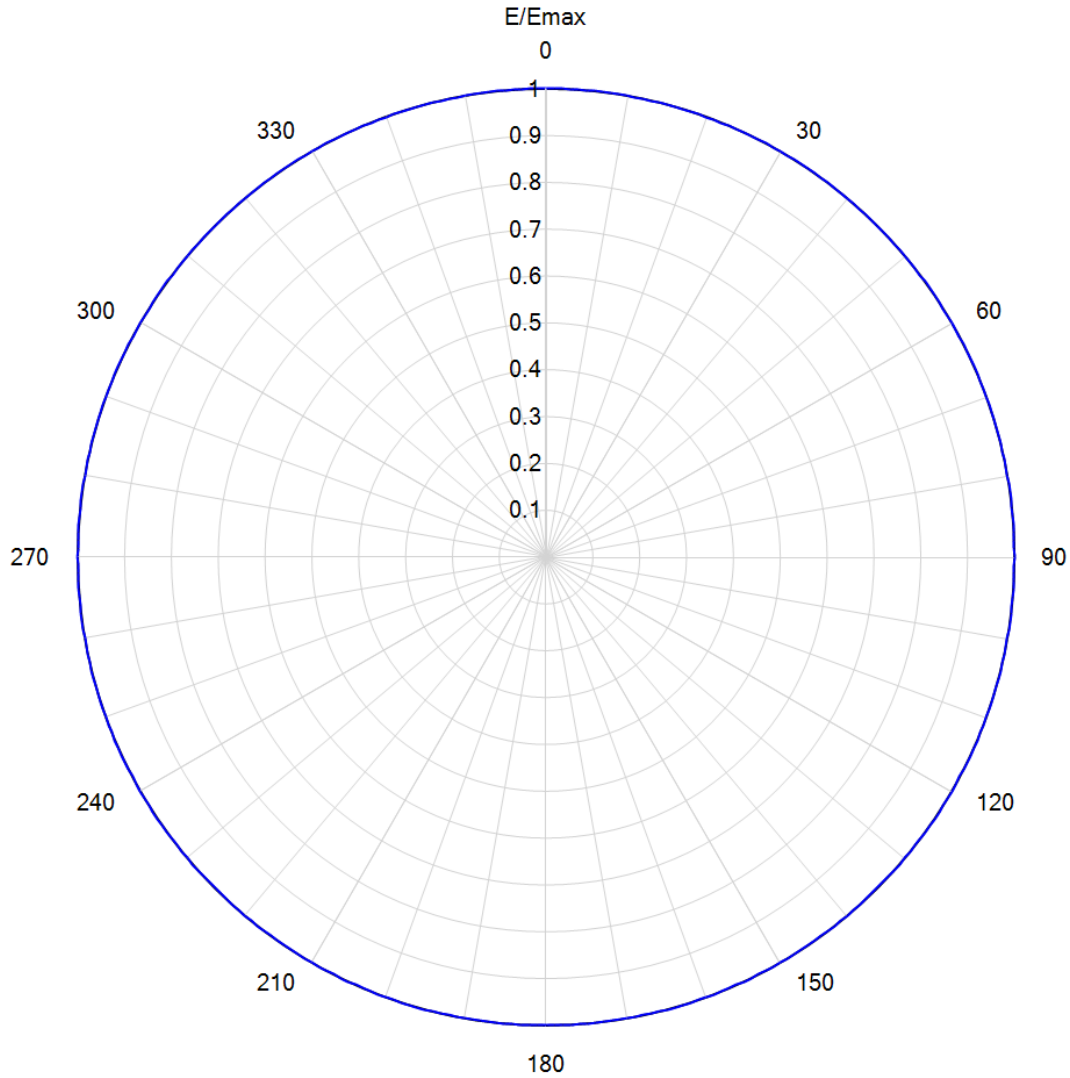
# ANTENNA DRAWING



TV & RADIO | IN-BUILDING | WIRELESS | IN-TUNNEL | HF & DEFENSE | MICROWAVE | MOBILE RADIO



### Azimuth Pattern



Model: SAA18-O4A-J480-ET5R-21

Location: Shelton, CT.

Customer: Station WEDW-TV

Date: September 15, 2020

Rotation Angle: 0 degrees

Note: Pattern Tolerance +/-5% of Emax

Polarization: Horizontal

Frequency: 515.00 MHz

Directivity: 1.0 (0.00 dB)

Elevation Angle: 1.20 degrees

Horizontal Unit Pattern:

File = 0-OM-360-0.00-500-O4A.pat



Model: **SAA18-O4A-J480-ET5R-21**  
 Location: **Shelton, CT.**  
 Customer: **Station WEDW-TV**  
 Date: **September 15, 2020**

Polarization: **Horizontal**  
 Frequency (MHz): **515.00**  
 Directivity: **1.0 (0.00 dB)**  
 Elevation Angle: **1.00 degrees**  
 Rotation Angle: **0 degrees**

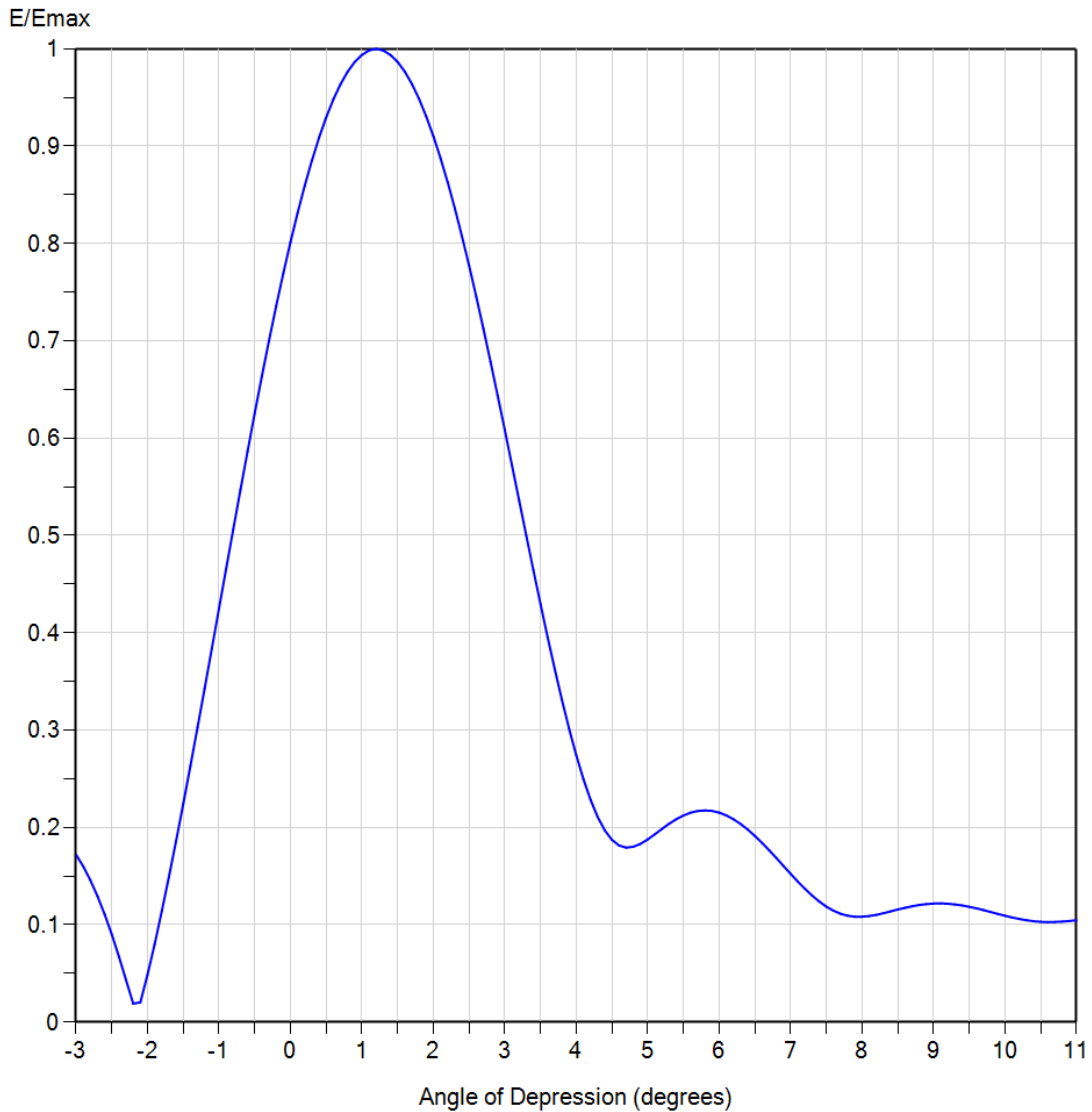
**TABULATED AZIMUTH PATTERN**

Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field
0	1.000	45	1.000	90	1.000	135	1.000	180	1.000	225	1.000	270	1.000	315	1.000
1	1.000	46	1.000	91	1.000	136	1.000	181	1.000	226	1.000	271	1.000	316	1.000
2	1.000	47	1.000	92	1.000	137	1.000	182	1.000	227	1.000	272	1.000	317	1.000
3	1.000	48	1.000	93	1.000	138	1.000	183	1.000	228	1.000	273	1.000	318	1.000
4	1.000	49	1.000	94	1.000	139	1.000	184	1.000	229	1.000	274	1.000	319	1.000
5	1.000	50	1.000	95	1.000	140	1.000	185	1.000	230	1.000	275	1.000	320	1.000
6	1.000	51	1.000	96	1.000	141	1.000	186	1.000	231	1.000	276	1.000	321	1.000
7	1.000	52	1.000	97	1.000	142	1.000	187	1.000	232	1.000	277	1.000	322	1.000
8	1.000	53	1.000	98	1.000	143	1.000	188	1.000	233	1.000	278	1.000	323	1.000
9	1.000	54	1.000	99	1.000	144	1.000	189	1.000	234	1.000	279	1.000	324	1.000
10	1.000	55	1.000	100	1.000	145	1.000	190	1.000	235	1.000	280	1.000	325	1.000
11	1.000	56	1.000	101	1.000	146	1.000	191	1.000	236	1.000	281	1.000	326	1.000
12	1.000	57	1.000	102	1.000	147	1.000	192	1.000	237	1.000	282	1.000	327	1.000
13	1.000	58	1.000	103	1.000	148	1.000	193	1.000	238	1.000	283	1.000	328	1.000
14	1.000	59	1.000	104	1.000	149	1.000	194	1.000	239	1.000	284	1.000	329	1.000
15	1.000	60	1.000	105	1.000	150	1.000	195	1.000	240	1.000	285	1.000	330	1.000
16	1.000	61	1.000	106	1.000	151	1.000	196	1.000	241	1.000	286	1.000	331	1.000
17	1.000	62	1.000	107	1.000	152	1.000	197	1.000	242	1.000	287	1.000	332	1.000
18	1.000	63	1.000	108	1.000	153	1.000	198	1.000	243	1.000	288	1.000	333	1.000
19	1.000	64	1.000	109	1.000	154	1.000	199	1.000	244	1.000	289	1.000	334	1.000
20	1.000	65	1.000	110	1.000	155	1.000	200	1.000	245	1.000	290	1.000	335	1.000
21	1.000	66	1.000	111	1.000	156	1.000	201	1.000	246	1.000	291	1.000	336	1.000
22	1.000	67	1.000	112	1.000	157	1.000	202	1.000	247	1.000	292	1.000	337	1.000
23	1.000	68	1.000	113	1.000	158	1.000	203	1.000	248	1.000	293	1.000	338	1.000
24	1.000	69	1.000	114	1.000	159	1.000	204	1.000	249	1.000	294	1.000	339	1.000
25	1.000	70	1.000	115	1.000	160	1.000	205	1.000	250	1.000	295	1.000	340	1.000
26	1.000	71	1.000	116	1.000	161	1.000	206	1.000	251	1.000	296	1.000	341	1.000
27	1.000	72	1.000	117	1.000	162	1.000	207	1.000	252	1.000	297	1.000	342	1.000
28	1.000	73	1.000	118	1.000	163	1.000	208	1.000	253	1.000	298	1.000	343	1.000
29	1.000	74	1.000	119	1.000	164	1.000	209	1.000	254	1.000	299	1.000	344	1.000
30	1.000	75	1.000	120	1.000	165	1.000	210	1.000	255	1.000	300	1.000	345	1.000
31	1.000	76	1.000	121	1.000	166	1.000	211	1.000	256	1.000	301	1.000	346	1.000
32	1.000	77	1.000	122	1.000	167	1.000	212	1.000	257	1.000	302	1.000	347	1.000
33	1.000	78	1.000	123	1.000	168	1.000	213	1.000	258	1.000	303	1.000	348	1.000
34	1.000	79	1.000	124	1.000	169	1.000	214	1.000	259	1.000	304	1.000	349	1.000
35	1.000	80	1.000	125	1.000	170	1.000	215	1.000	260	1.000	305	1.000	350	1.000
36	1.000	81	1.000	126	1.000	171	1.000	216	1.000	261	1.000	306	1.000	351	1.000
37	1.000	82	1.000	127	1.000	172	1.000	217	1.000	262	1.000	307	1.000	352	1.000
38	1.000	83	1.000	128	1.000	173	1.000	218	1.000	263	1.000	308	1.000	353	1.000
39	1.000	84	1.000	129	1.000	174	1.000	219	1.000	264	1.000	309	1.000	354	1.000
40	1.000	85	1.000	130	1.000	175	1.000	220	1.000	265	1.000	310	1.000	355	1.000
41	1.000	86	1.000	131	1.000	176	1.000	221	1.000	266	1.000	311	1.000	356	1.000
42	1.000	87	1.000	132	1.000	177	1.000	222	1.000	267	1.000	312	1.000	357	1.000
43	1.000	88	1.000	133	1.000	178	1.000	223	1.000	268	1.000	313	1.000	358	1.000
44	1.000	89	1.000	134	1.000	179	1.000	224	1.000	269	1.000	314	1.000	359	1.000





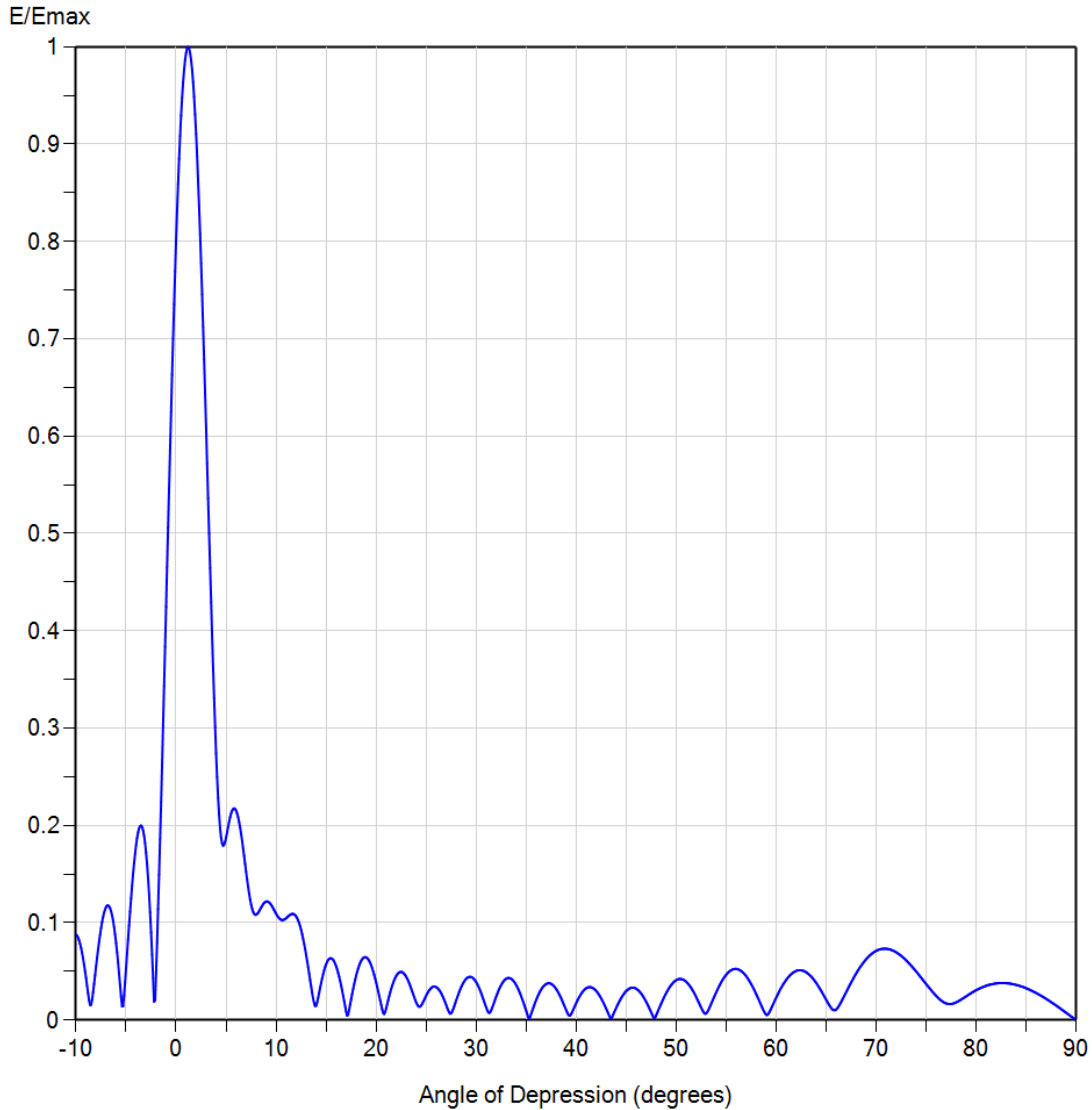
### Elevation Pattern



Model:	SAA18-O4A-J480-ET5R-21	Frequency:	515.00 MHz
Polarization:	<u>Horizontal</u>	Directivity (Main Lobe):	19.8 (12.97 dBd)
Location:	Shelton, CT.	Directivity (At Horizon):	12.7 (11.05 dBd)
Customer:	Station WEDW-TV	Beam Tilt:	1.20 degrees
Date:	September 15, 2020	Azimuth Angle:	0 degrees



### Elevation Pattern



Model:	SAA18-O4A-J480-ET5R-21	Frequency:	515.00 MHz
Polarization:	<u>Horizontal</u>	Directivity (Main Lobe):	19.8 (12.97 dBd)
Location:	Shelton, CT.	Directivity (At Horizon):	12.7 (11.05 dBd)
Customer:	Station WEDW-TV	Beam Tilt:	1.20 degrees
Date:	September 15, 2020	Azimuth Angle:	0 degrees



Model: **SAA18-O4A-J480-ET5R-21**  
 Location: **Shelton, CT.**  
 Customer: **Station WEDW-TV**  
 Date: **September 15, 2020**

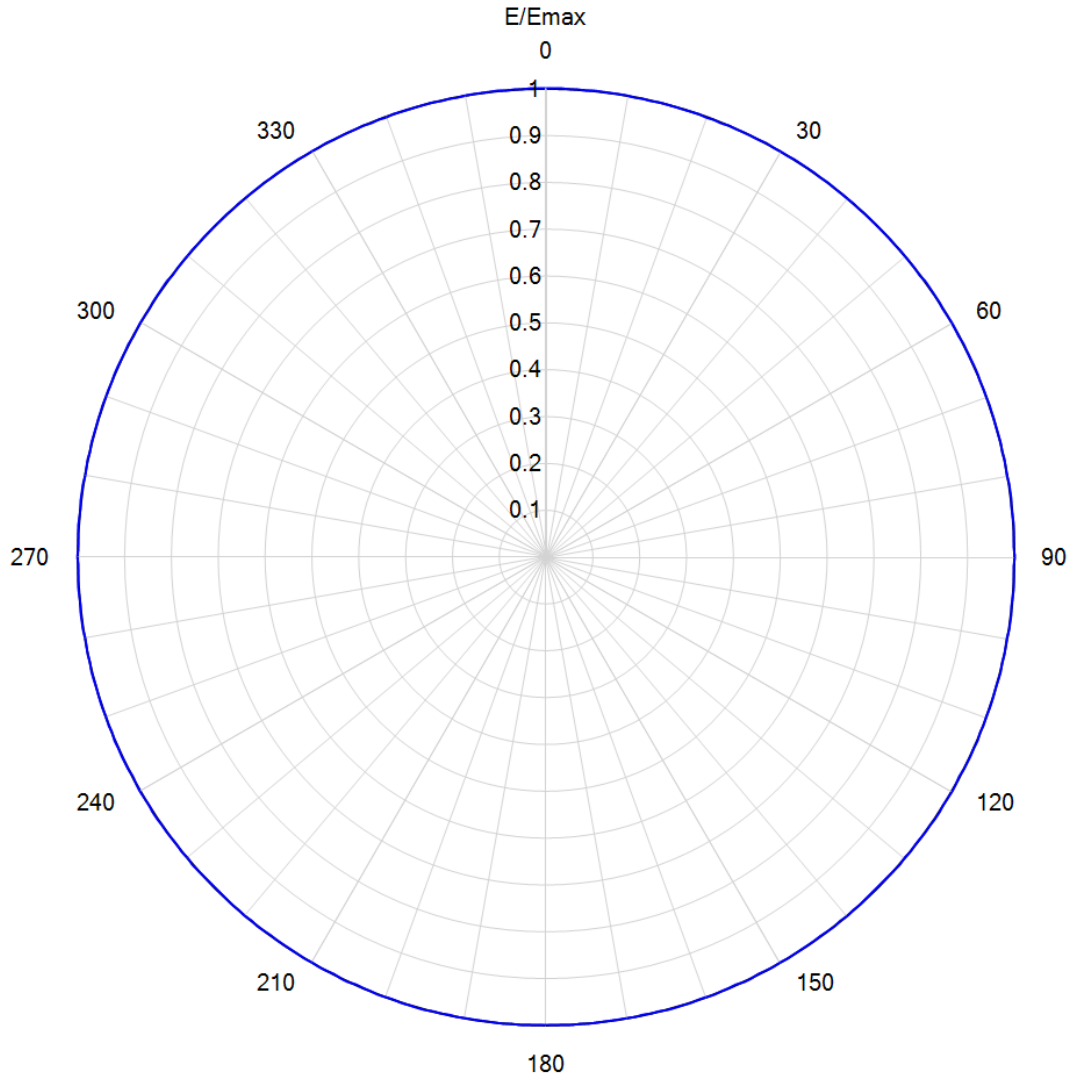
Polarization: **Horizontal**  
 Frequency (MHz): **515.00**  
 Directivity (Main Lobe): **19.8 (12.97 dB)**  
 Directivity (At Horizon): **12.7 (11.05 dB)**  
 Beam Tilt: **1.20 degrees**

### TABULATED ELEVATION PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.088	2.4	0.808	10.6	0.103	30.5	0.028	51.0	0.039	71.5	0.072
-9.5	0.074	2.6	0.746	10.8	0.103	31.0	0.013	51.5	0.033	72.0	0.070
-9.0	0.043	2.8	0.679	11.0	0.105	31.5	0.010	52.0	0.023	72.5	0.066
-8.5	0.016	3.0	0.608	11.5	0.109	32.0	0.024	52.5	0.013	73.0	0.061
-8.0	0.055	3.2	0.536	12.0	0.107	32.5	0.036	53.0	0.007	73.5	0.056
-7.5	0.095	3.4	0.465	12.5	0.093	33.0	0.043	53.5	0.017	74.0	0.050
-7.0	0.116	3.6	0.395	13.0	0.067	33.5	0.042	54.0	0.029	74.5	0.043
-6.5	0.112	3.8	0.331	13.5	0.035	34.0	0.036	54.5	0.039	75.0	0.037
-6.0	0.079	4.0	0.274	14.0	0.015	34.5	0.024	55.0	0.047	75.5	0.030
-5.5	0.024	4.2	0.228	14.5	0.038	35.0	0.009	55.5	0.051	76.0	0.025
-5.0	0.053	4.4	0.197	15.0	0.057	35.5	0.007	56.0	0.053	76.5	0.020
-4.5	0.125	4.6	0.181	15.5	0.064	36.0	0.021	56.5	0.050	77.0	0.017
-4.0	0.180	4.8	0.180	16.0	0.055	36.5	0.031	57.0	0.045	77.5	0.017
-3.5	0.200	5.0	0.188	16.5	0.035	37.0	0.037	57.5	0.037	78.0	0.018
-3.0	0.172	5.2	0.198	17.0	0.009	37.5	0.037	58.0	0.026	78.5	0.021
-2.8	0.146	5.4	0.208	17.5	0.021	38.0	0.032	58.5	0.015	79.0	0.025
-2.6	0.111	5.6	0.215	18.0	0.046	38.5	0.022	59.0	0.005	79.5	0.028
-2.4	0.067	5.8	0.217	18.5	0.061	39.0	0.010	59.5	0.012	80.0	0.031
-2.2	0.019	6.0	0.215	19.0	0.064	39.5	0.006	60.0	0.023	80.5	0.033
-2.0	0.049	6.2	0.208	19.5	0.056	40.0	0.018	60.5	0.033	81.0	0.035
-1.8	0.114	6.4	0.198	20.0	0.039	40.5	0.027	61.0	0.041	81.5	0.037
-1.6	0.186	6.6	0.184	20.5	0.016	41.0	0.033	61.5	0.047	82.0	0.038
-1.4	0.263	6.8	0.169	21.0	0.012	41.5	0.034	62.0	0.051	82.5	0.038
-1.2	0.343	7.0	0.152	21.5	0.032	42.0	0.030	62.5	0.051	83.0	0.038
-1.0	0.425	7.2	0.137	22.0	0.045	42.5	0.022	63.0	0.049	83.5	0.037
-0.8	0.506	7.4	0.124	22.5	0.050	43.0	0.011	63.5	0.045	84.0	0.036
-0.6	0.586	7.6	0.114	23.0	0.045	43.5	0.002	64.0	0.038	84.5	0.035
-0.4	0.663	7.8	0.109	23.5	0.032	44.0	0.013	64.5	0.030	85.0	0.033
-0.2	0.735	8.0	0.108	24.0	0.018	44.5	0.023	65.0	0.021	85.5	0.030
0.0	0.801	8.2	0.110	24.5	0.015	45.0	0.030	65.5	0.012	86.0	0.028
0.2	0.859	8.4	0.114	25.0	0.025	45.5	0.033	66.0	0.011	86.5	0.025
0.4	0.909	8.6	0.117	25.5	0.033	46.0	0.032	66.5	0.019	87.0	0.022
0.6	0.948	8.8	0.120	26.0	0.034	46.5	0.027	67.0	0.029	87.5	0.018
0.8	0.976	9.0	0.122	26.5	0.028	47.0	0.019	67.5	0.039	88.0	0.015
1.0	0.994	9.2	0.122	27.0	0.016	47.5	0.008	68.0	0.048	88.5	0.011
1.2	1.000	9.4	0.120	27.5	0.007	48.0	0.005	68.5	0.056	89.0	0.007
1.4	0.994	9.6	0.117	28.0	0.020	48.5	0.017	69.0	0.063	89.5	0.004
1.6	0.977	9.8	0.113	28.5	0.034	49.0	0.028	69.5	0.068	90.0	0.000
1.8	0.949	10.0	0.109	29.0	0.042	49.5	0.036	70.0	0.071		
2.0	0.910	10.2	0.106	29.5	0.044	50.0	0.041	70.5	0.073		
2.2	0.863	10.4	0.104	30.0	0.039	50.5	0.042	71.0	0.073		



### Azimuth Pattern



Model:	SAA18-O4A-J480-ET5R-21	Polarization:	<u>Vertical</u>
Location:	Shelton, CT.	Frequency:	515.00 MHz
Customer:	Station WEDW-TV	Directivity:	1.0 (0.00 dB)
Date:	September 15, 2020	Elevation Angle:	1.20 degrees
Rotation Angle:	0 degrees	Horizontal Unit Pattern:	
Note: Pattern Tolerance +/-5% of Emax		File =	0-OM-360-0.00-500-O4A.pat



Model: **SAA18-O4A-J480-ET5R-21**  
 Location: **Shelton, CT.**  
 Customer: **Station WEDW-TV**  
 Date: **September 15, 2020**

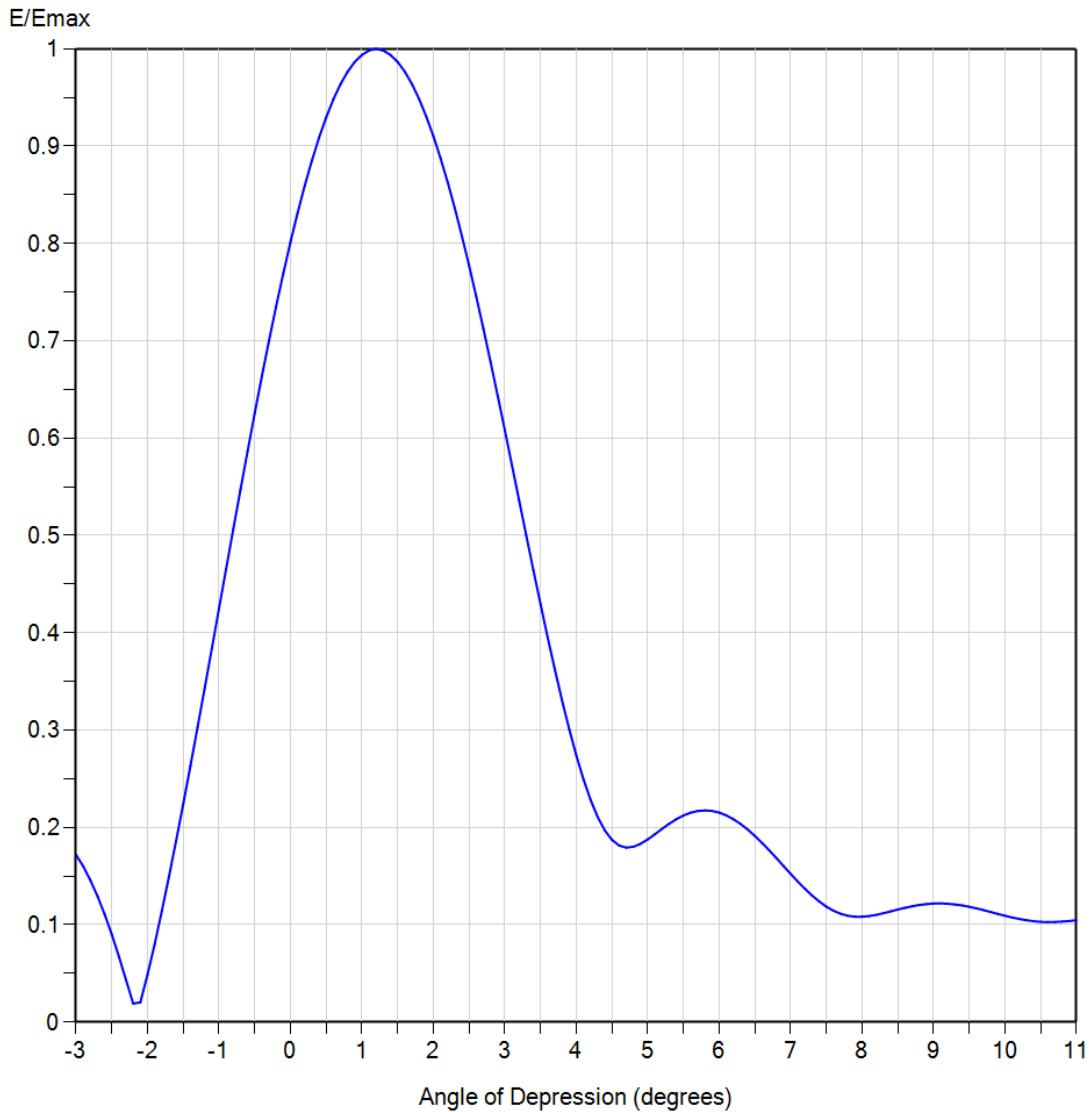
Polarization: **Vertical**  
 Frequency (MHz): **515.00**  
 Directivity: **1.0 (0.00 dB)**  
 Elevation Angle: **1.20 degrees**  
 Rotation Angle: **0 degrees**

### TABULATED AZIMUTH PATTERN

Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field	Angl	Field
0	1.000	45	1.000	90	1.000	135	1.000	180	1.000	225	1.000	270	1.000	315	1.000
1	1.000	46	1.000	91	1.000	136	1.000	181	1.000	226	1.000	271	1.000	316	1.000
2	1.000	47	1.000	92	1.000	137	1.000	182	1.000	227	1.000	272	1.000	317	1.000
3	1.000	48	1.000	93	1.000	138	1.000	183	1.000	228	1.000	273	1.000	318	1.000
4	1.000	49	1.000	94	1.000	139	1.000	184	1.000	229	1.000	274	1.000	319	1.000
5	1.000	50	1.000	95	1.000	140	1.000	185	1.000	230	1.000	275	1.000	320	1.000
6	1.000	51	1.000	96	1.000	141	1.000	186	1.000	231	1.000	276	1.000	321	1.000
7	1.000	52	1.000	97	1.000	142	1.000	187	1.000	232	1.000	277	1.000	322	1.000
8	1.000	53	1.000	98	1.000	143	1.000	188	1.000	233	1.000	278	1.000	323	1.000
9	1.000	54	1.000	99	1.000	144	1.000	189	1.000	234	1.000	279	1.000	324	1.000
10	1.000	55	1.000	100	1.000	145	1.000	190	1.000	235	1.000	280	1.000	325	1.000
11	1.000	56	1.000	101	1.000	146	1.000	191	1.000	236	1.000	281	1.000	326	1.000
12	1.000	57	1.000	102	1.000	147	1.000	192	1.000	237	1.000	282	1.000	327	1.000
13	1.000	58	1.000	103	1.000	148	1.000	193	1.000	238	1.000	283	1.000	328	1.000
14	1.000	59	1.000	104	1.000	149	1.000	194	1.000	239	1.000	284	1.000	329	1.000
15	1.000	60	1.000	105	1.000	150	1.000	195	1.000	240	1.000	285	1.000	330	1.000
16	1.000	61	1.000	106	1.000	151	1.000	196	1.000	241	1.000	286	1.000	331	1.000
17	1.000	62	1.000	107	1.000	152	1.000	197	1.000	242	1.000	287	1.000	332	1.000
18	1.000	63	1.000	108	1.000	153	1.000	198	1.000	243	1.000	288	1.000	333	1.000
19	1.000	64	1.000	109	1.000	154	1.000	199	1.000	244	1.000	289	1.000	334	1.000
20	1.000	65	1.000	110	1.000	155	1.000	200	1.000	245	1.000	290	1.000	335	1.000
21	1.000	66	1.000	111	1.000	156	1.000	201	1.000	246	1.000	291	1.000	336	1.000
22	1.000	67	1.000	112	1.000	157	1.000	202	1.000	247	1.000	292	1.000	337	1.000
23	1.000	68	1.000	113	1.000	158	1.000	203	1.000	248	1.000	293	1.000	338	1.000
24	1.000	69	1.000	114	1.000	159	1.000	204	1.000	249	1.000	294	1.000	339	1.000
25	1.000	70	1.000	115	1.000	160	1.000	205	1.000	250	1.000	295	1.000	340	1.000
26	1.000	71	1.000	116	1.000	161	1.000	206	1.000	251	1.000	296	1.000	341	1.000
27	1.000	72	1.000	117	1.000	162	1.000	207	1.000	252	1.000	297	1.000	342	1.000
28	1.000	73	1.000	118	1.000	163	1.000	208	1.000	253	1.000	298	1.000	343	1.000
29	1.000	74	1.000	119	1.000	164	1.000	209	1.000	254	1.000	299	1.000	344	1.000
30	1.000	75	1.000	120	1.000	165	1.000	210	1.000	255	1.000	300	1.000	345	1.000
31	1.000	76	1.000	121	1.000	166	1.000	211	1.000	256	1.000	301	1.000	346	1.000
32	1.000	77	1.000	122	1.000	167	1.000	212	1.000	257	1.000	302	1.000	347	1.000
33	1.000	78	1.000	123	1.000	168	1.000	213	1.000	258	1.000	303	1.000	348	1.000
34	1.000	79	1.000	124	1.000	169	1.000	214	1.000	259	1.000	304	1.000	349	1.000
35	1.000	80	1.000	125	1.000	170	1.000	215	1.000	260	1.000	305	1.000	350	1.000
36	1.000	81	1.000	126	1.000	171	1.000	216	1.000	261	1.000	306	1.000	351	1.000
37	1.000	82	1.000	127	1.000	172	1.000	217	1.000	262	1.000	307	1.000	352	1.000
38	1.000	83	1.000	128	1.000	173	1.000	218	1.000	263	1.000	308	1.000	353	1.000
39	1.000	84	1.000	129	1.000	174	1.000	219	1.000	264	1.000	309	1.000	354	1.000
40	1.000	85	1.000	130	1.000	175	1.000	220	1.000	265	1.000	310	1.000	355	1.000
41	1.000	86	1.000	131	1.000	176	1.000	221	1.000	266	1.000	311	1.000	356	1.000
42	1.000	87	1.000	132	1.000	177	1.000	222	1.000	267	1.000	312	1.000	357	1.000
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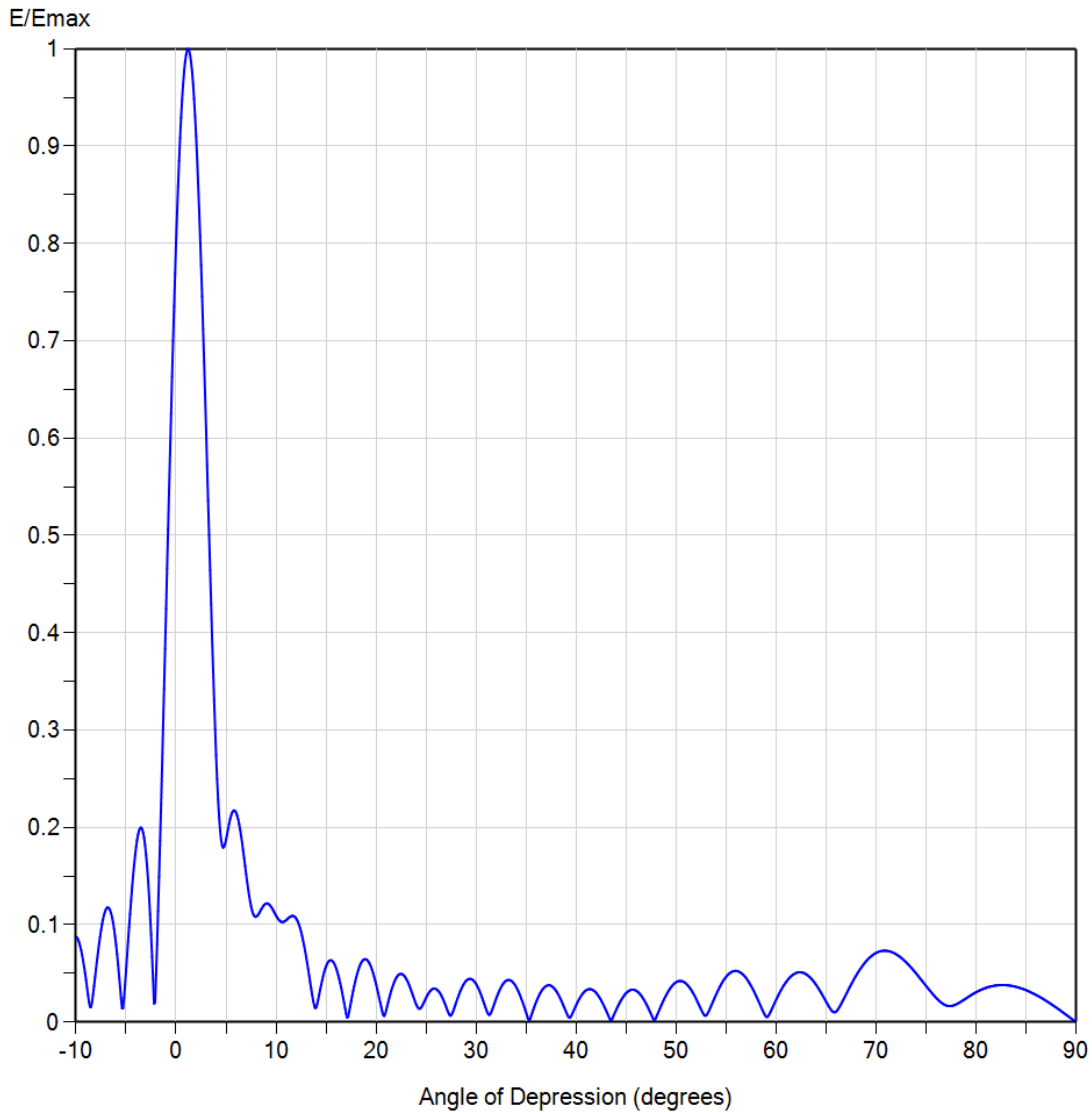
### Elevation Pattern



Model:	SAA18-O4A-J480-ET5R-21	Frequency:	515.00 MHz
Polarization:	<u>Vertical</u>	Directivity (Main Lobe):	19.8 (12.97 dBd)
Location:	Shelton, CT.	Directivity (At Horizon):	12.7 (11.05 dBd)
Customer:	Station WEDW-TV	Beam Tilt:	1.20 degrees
Date:	September 15, 2020	Azimuth Angle:	0 degrees



### Elevation Pattern



Model:	SAA18-O4A-J480-ET5R-21	Frequency:	515.00 MHz
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Date:	September 15, 2020	Azimuth Angle:	0 degrees



Model: **SAA18-O4A-J480-ET5R-21**  
 Location: **Shelton, CT.**  
 Customer: **Station WEDW-TV**  
 Date: **September 15, 2020**

Polarization: **Vertical**  
 Frequency (MHz): **515.00**  
 Directivity (Main Lobe): **19.8 (12.97 dB)**  
 Directivity (At Horizon): **12.7 (11.05 dB)**  
 Beam Tilt: **1.20 degrees**

### TABULATED ELEVATION PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.088	2.4	0.808	10.6	0.103	30.5	0.028	51.0	0.039	71.5	0.072
-9.5	0.074	2.6	0.746	10.8	0.103	31.0	0.013	51.5	0.033	72.0	0.070
-9.0	0.043	2.8	0.679	11.0	0.105	31.5	0.010	52.0	0.023	72.5	0.066
-8.5	0.016	3.0	0.608	11.5	0.109	32.0	0.024	52.5	0.013	73.0	0.061
-8.0	0.055	3.2	0.536	12.0	0.107	32.5	0.036	53.0	0.007	73.5	0.056
-7.5	0.095	3.4	0.465	12.5	0.093	33.0	0.043	53.5	0.017	74.0	0.050
-7.0	0.116	3.6	0.395	13.0	0.067	33.5	0.042	54.0	0.029	74.5	0.043
-6.5	0.112	3.8	0.331	13.5	0.035	34.0	0.036	54.5	0.039	75.0	0.037
-6.0	0.079	4.0	0.274	14.0	0.015	34.5	0.024	55.0	0.047	75.5	0.030
-5.5	0.024	4.2	0.228	14.5	0.038	35.0	0.009	55.5	0.051	76.0	0.025
-5.0	0.053	4.4	0.197	15.0	0.057	35.5	0.007	56.0	0.053	76.5	0.020
-4.5	0.125	4.6	0.181	15.5	0.064	36.0	0.021	56.5	0.050	77.0	0.017
-4.0	0.180	4.8	0.180	16.0	0.055	36.5	0.031	57.0	0.045	77.5	0.017
-3.5	0.200	5.0	0.188	16.5	0.035	37.0	0.037	57.5	0.037	78.0	0.018
-3.0	0.172	5.2	0.198	17.0	0.009	37.5	0.037	58.0	0.026	78.5	0.021
-2.8	0.146	5.4	0.208	17.5	0.021	38.0	0.032	58.5	0.015	79.0	0.025
-2.6	0.111	5.6	0.215	18.0	0.046	38.5	0.022	59.0	0.005	79.5	0.028
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-2.2	0.019	6.0	0.215	19.0	0.064	39.5	0.006	60.0	0.023	80.5	0.033
-2.0	0.049	6.2	0.208	19.5	0.056	40.0	0.018	60.5	0.033	81.0	0.035
-1.8	0.114	6.4	0.198	20.0	0.039	40.5	0.027	61.0	0.041	81.5	0.037
-1.6	0.186	6.6	0.184	20.5	0.016	41.0	0.033	61.5	0.047	82.0	0.038
-1.4	0.263	6.8	0.169	21.0	0.012	41.5	0.034	62.0	0.051	82.5	0.038
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-0.6	0.586	7.6	0.114	23.0	0.045	43.5	0.002	64.0	0.038	84.5	0.035
-0.4	0.663	7.8	0.109	23.5	0.032	44.0	0.013	64.5	0.030	85.0	0.033
-0.2	0.735	8.0	0.108	24.0	0.018	44.5	0.023	65.0	0.021	85.5	0.030
0.0	0.801	8.2	0.110	24.5	0.015	45.0	0.030	65.5	0.012	86.0	0.028
0.2	0.859	8.4	0.114	25.0	0.025	45.5	0.033	66.0	0.011	86.5	0.025
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1.4	0.994	9.6	0.117	28.0	0.020	48.5	0.017	69.0	0.063	89.5	0.004
1.6	0.977	9.8	0.113	28.5	0.034	49.0	0.028	69.5	0.068	90.0	
1.8	0.949	10.0	0.109	29.0	0.042	49.5	0.036	70.0	0.071		
2.0	0.910	10.2	0.106	29.5	0.044	50.0	0.041	70.5	0.073		
2.2	0.863	10.4	0.104	30.0	0.039	50.5	0.042	71.0	0.073		





## NORTH AMERICA

### ***United States of America***

200 Pondview Drive  
Meriden, Connecticut 06450, USA  
Tel: +1 203 630 3311  
[BroadcastTechSupport@rfsworld.com](mailto:BroadcastTechSupport@rfsworld.com)

## ASIA PACIFIC

### ***Australia***

36 Garden Street  
Kilsyth, Victoria 3137, Australia  
Tel: +61 3 9751 8400  
[sales.aps@rfsworld.com](mailto:sales.aps@rfsworld.com)

### ***People Republic of China***

299 Rongle Road(E), Songjiang  
201613, Shanghai, P.R. China  
Tel: +86 21 3773 8888  
[sales.apn@rfsworld.com](mailto:sales.apn@rfsworld.com)

## LATIN AMERICA

### ***Brazil***

Rua Marcelino Pinto Teixeira, 481  
CEP 06816-000 Embu - Sao Paulo, Brazil  
Tel: +55 11 4785 6000  
[sales.latam@rfsworld.com](mailto:sales.latam@rfsworld.com)

## EUROPE

### ***France***

Centre de Villarceaux, Route de Villejust  
Bâtiment Newton E, 91620 Nozay, France  
Tel: +33 (0) 2 40 45 95 45  
[sales.europe@rfsworld.com](mailto:sales.europe@rfsworld.com)

### ***Germany***

Kabelkamp 20  
30179 Hannover, Germany  
Tel: +49 511 676 2000  
[sales.europe@rfsworld.com](mailto:sales.europe@rfsworld.com)

### ***United Kingdom***

9, Haddenham Business Park  
Pegasus Way, Haddenham,  
Aylesbury, Bucks, HP17 8LJ  
United Kingdom  
Tel: +44 1844 2949 00  
[rfs.uk@rfsworld.com](mailto:rfs.uk@rfsworld.com)

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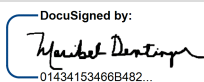
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# Exhibit D

## **Structural Analysis Report**

Date: **October 29, 2020**

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



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

**Subject: Structural Analysis Report**

**Carrier Designation:** **Connecticut Public Broadcasting Inc. Co-Locate**  
**Carrier Site Number:** N/A  
**Carrier Site Name:** Cox Radio

**Crown Castle Designation:** **Crown Castle BU Number:** 873128  
**Crown Castle Site Name:** Trumbull  
**Crown Castle JDE Job Number:** 621136  
**Crown Castle Work Order Number:** 1895850  
**Crown Castle Order Number:** 530677 Rev. 4

**Engineering Firm Designation:** **TEP Project Number:** 25575.455021

**Site Data:** **800 Booth Hill Rd., Trumbull, Fairfield County, CT 06611**  
**Latitude 41° 16' 44.26", Longitude -73° 11' 6.40"**  
**457 Foot - Guyed Tower**

Dear Denice Nicholson,

Tower Engineering Professionals 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**

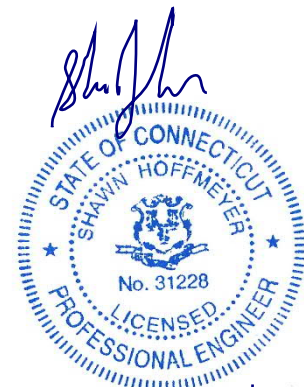
Structure Capacity	Foundation Capacity
97.5%	92.1%

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Travis L. Infante, E.I. / EJB

Respectfully submitted by:

Shawn Hoffmeyer, P.E.



Electronic Copy

10/29/2020

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## 1) INTRODUCTION

This tower is a 457-ft guyed tower designed by Blaw Knox and mapped by Pinnacle Towers in July of 2003. The tower has been modified multiple times in the past to accommodate additional loading.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor:</b>	1.0
<b>Ice Thickness:</b>	1.50 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)
458.0	477.0	1	RFS/Celwave	SAA18-04A-J480-ET5R-21	1	4-1/16
150.0	150.0	1	Andrew	HPX6-65-P3A	2	EW63
146.0	146.0	1	Andrew	PL6-65-PXA	1	EW63
		1	Tower Mounts	Pipe Mount [PM 601-1]	1	EW52
140.0	140.0	1	Channel Master	CM 4228HD	1	3/8
136.0	138.0	1	RFS Celwave	MGA2-16N	3	3/8
	136.0	1	CSI-Cellular Specialties	CSI-AY/809-960/11		
	135.0	1	Channel Master	CM 4228HD		
	134.0	1	RFS Celwave	MGAR3-23N		

**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)
450.0	450.0	2	Commscope	USX6-6W-6GR	6 12	1/2 1/4
		4	SAF	MXM Repeater MK2		
		2	Tower Mounts	Pipe Mount [PM 601-1]		
441.0	451.0	1	Sinclair	SRL-235-2	1	7/8
	441.0	1	Tower Mounts	Side Arm Mount [SO 308-1]		
439.0	445.0	1	Antel	BCD-87077	1	2-1/4
	439.0	1	Tower Mounts	Side Arm Mount [SO 308-1]		
420.0	420.0	3	ERI	1183-3CP	3	3
393.0	393.0	3	Shively Labs	6014-2	1 1	1-5/8 4
388.0	388.0	3	Shively Labs	6014-2	1	2-1/4
367.0	367.0	1	Shively Labs	6828-2	1	4



Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
364.0	368.0	1	Andrew	DB806E-XT	-	-
	364.0	1	Tower Mounts	Side Arm Mount [SO 601-1]		
344.0	354.0	1	RFS Celwave	455-6	1	1/2
		1	Tower Mounts	Side Arm Mount [SO 601-1]		
342.0	352.0	1	RFS Celwave	455-6	1 1	1/2 1-1/4
	350.0	1	Antel	BCD-87077		
	347.0	1	RFS Celwave	A09009-3		
	342.0	1	Tower Mounts	Side Arm Mount [SO 601-1]		
		1	Tower Mounts	Side Arm Mount [SO 303-1]		
1	Tower Mounts	Side Arm Mount [SO 305-1]				
340.0	350.0	1	RFS Celwave	455-6	1	7/8
	340.0	1	Tower Mounts	Side Arm Mount [SO 308-1]		
330.0	335.0	1	Andrew	PG1N0F-0090-310	1	1-1/4
	330.0	1	Tower Mounts	Side Arm Mount [SO 602-1]	1	1-5/8
328.0	328.0	1	Dielectric	7P-C1-2-CP-L	1	3-1/2
		3	Tower Mounts	Side Arm Mount [SO 701-1]		
326.0	329.0	1	Decibel	DB201-A	-	-
	326.0	1	Tower Mounts	Side Arm Mount [SO 602-1]		
325.0	325.0	1	Decibel	DB408	1	1-1/4
		1	Tower Mounts	Side Arm Mount [SO 303-1]		
322.0	327.0	1	Sinclair	SRL-310C-4HD	1 1	1-1/4 1/2
	322.0	1	Radiowaves	SPD3-5.8		
		1	Tower Mounts	Side Arm Mount [SO 308-1]		
1	Tower Mounts	Pipe Mount [PM 601-1]				
310.0	316.0	3	Shively Labs	6014-2	1	1-5/8
	306.0	3	Shively Labs	6014-2		
284.0	284.0	1	Andrew	DB404-B w/ Mount Pipe	-	-
277.0	283.0	1	RFS Celwave	BMR10-A-B1	1	1-5/8
264.0	273.0	1	Telewave	ANT150F6	1	1-5/8
	264.0	1	Tower Mounts	Side Arm Mount [SO 303-1]		
255.0	261.0	1	Decibel	DB809KT3E-Y	1	1-1/4
	255.0	1	Tower Mounts	Side Arm Mount [SO 203-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
247.0	247.0	3	RFS Celwave	APX16DWV-16DWVS-C w/ Mount Pipe	16 2	7/8 1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	KRY 112 489/2		
		3	Ericsson	Radio 4449 B12/B71		
		6	RFS Celwave	FDBL5003D-S		
		3	RFS Celwave	ATMAA1412D-1A20		
		1	Tower Mounts	Sector Mount [SM 301-3]		
230.0	232.0	3	Commscope	HBXX-6516DS-VTM w/ Mount Pipe	2 18	1-5/8 7/8
		3	Andrew	SBNHH-1D65B w/ Mount Pipe		
		2	Andrew	LNx-8513DS-VTM w/ Mount Pipe		
		1	Andrew	LNx-6514DS-VTM w/ Mount Pipe		
		3	Alcatel Lucent	B4 RRH2X60-4R		
		3	Alcatel Lucent	B25 RRH4X30		
		3	Alcatel Lucent	B13 RRH 4X30		
	2	Raycap	RRFDC-3315-PF-48			
	230.0	1	Tower Mounts	Sector Mount [SM 407-3]		
206.0	206.0	1	Mark	P-9A72GN-U	1	7/8
200.0	200.0	1	Gabriel Elec.	DFPD1-52 w/ Mount Pipe	1	1/4
188.0	188.0	1	PCTEL	BMYD745K	-	-
186.0	186.0	1	Decibel	ASP-960	-	-
178.0	178.0	1	Radiowaves	SPD4-5.2	1	1/2
133.0	143.0	1	RFS Celwave	220-5	2 1	7/8 1/2
	142.0	1	Decibel	DB264-A		
	133.0	1	Tower Mounts	Side Arm Mount [SO 601-1]		
		1	Tower Mounts	Side Arm Mount [SO 202-1]		
117.0	117.0	1	Mark	P-9A48GN-U	1	7/8
109.0	113.0	1	RFS Celwave	PD1132-D	1	7/8
	109.0	1	Tower Mounts	Side Arm Mount [SO 202-1]		
108.0	108.0	1	Mark	SSH-9A72GN	1	7/8
99.0	99.0	1	Ligowave	PTP 900-13 w/ Mount Pipe	1	7/8
		1	Radiowaves	SPD2-5.8	1	1/4
75.0	75.0	-	-	-	1	1-5/8
62.0	68.0	1	Mark	P-9A48GN-U	3	7/8
	62.0	2	Tower Mounts	Side Arm Mount [SO 601-1]		
	61.0	1	Mark	SSH-9A72GN		
	54.0	1	CSI-Cellular Specialties	CSI-AY/809-960/11		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Reference	Source
Geotechnical Reports	FDH Engineering	1418454	CCISites
Tower Foundation Mapping	Tower Engineering Professionals	1520339	CCISites
Tower Mapping Report	Pinnacle Towers Inc.	1327906	CCISites
Tower Reinforcement Design	Tower Engineering Professionals	2407618	CCISites
Post-Modification Inspection	Pinnacle Towers Inc.	1956007	CCISites
Tower Reinforcement Design	Tower Engineering Professionals	2633757	CCISites
Post-Modification Inspection	Tower Engineering Professionals	2438393	CCISites
Tower Reinforcement Design	Tower Engineering Professionals	2755396	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3417531	CCISites
Tower Reinforcement Design	Tower Engineering Professionals	3006419	CCISites
Post-Modification Inspection	Sinnott Gering and Schmitt Towers, Inc.	5760315	CCISites
Tower Reinforcement Design	Tower Engineering Professionals	5592838	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3442609	CCISites
Appurtenance Mapping	Tower Engineering Professionals	1327906	CCISites

#### 3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the reinforced leg sections. These calculations are presented in Appendix C.

#### 3.2) Assumptions

- 1) The tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1, 2 and the referenced drawings.
- 3) Per photos from CCI Sites, the termination and stitch welds of the reinforcing sleeves to the tower legs at 361-ft to 401-ft were assumed to be 3/16" fillet welds by 3" long. The end gaps between the sleeves and the flange were assumed to be 12".
- 4) The following material grades were assumed:
  - a) Leg Grade: A7-33
  - b) Original Bracing Grade: A7-33
  - c) Original Connection Bolts: A307
  - d) 2L3-1/2x3-1/2x3/8 Pull-off: A36
  - e) 2L3x3x3/16 Bottom Torque Arm Members: A36
  - f) Top Torque Arm Members: A36
- 5) TEP could not analyze the base casting as its thickness was not provided. TEP recommends a base casting thickness be obtained prior to modification. TEP assumes the base casting is sufficient for the purposes of this analysis.

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

#### 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	$\phi P_{allow}$ (lb)	% Capacity	Pass / Fail
T1	457 - 436	Leg	3	3	-31210	156820	19.9	Pass
T2	436 - 421	Leg	2 3/4	45	-50477	128255	39.4	Pass
T3	421 - 401	Leg	2 3/4	75	-99049	128255	77.2	Pass
T4-T7	401 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	Note 1	Note 1	Note 1	79.4	Pass
T8-T11	381 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	Note 1	Note 1	Note 1	71.5	Pass
T12	361 - 341	Leg	3	192	-145566	204054	71.3	Pass
T13	341 - 321	Leg	3	237	-120035	161863	74.2	Pass
T14	321 - 301	Leg	3	270	-104304	161863	64.4	Pass
T15	301 - 281	Leg	3	302	-115808	161863	71.5	Pass
T16	281 - 276	Leg	3	335	-120798	161863	74.6	Pass
T17	276 - 271	Leg	3	344	-125924	161863	77.8	Pass
T18	271 - 266	Leg	3	353	-132496	161863	81.9	Pass
T19	266 - 261	Leg	3	365	-138131	161863	85.3	Pass
T20	261 - 256	Leg	3	377	-149739	161863	92.5	Pass
T21	256 - 251	Leg	3	386	-153845	204054	75.4	Pass
T22	251 - 246	Leg	3	398	-122889	161863	75.9	Pass
T23	246 - 241	Leg	3	410	-113766	204054	55.8	Pass
T24	241 - 221	Leg	3	427	-116578	161863	72.0	Pass
T25	221 - 201	Leg	3 1/4	458	-151193	198845	76.0	Pass
T26	201 - 181	Leg	3 1/4	491	-165084	198845	83.0	Pass
T27	181 - 161	Leg	3 1/4	524	-166127	198845	83.5	Pass
T28	161 - 141	Leg	3 1/2	557	-156298	239126	65.4	Pass
T29	141 - 121	Leg	3 1/2	592	-134750	227739	59.2	Pass
T30	121 - 101	Leg	3 1/2	623	-188603	239126	78.9	Pass
T31	101 - 81	Leg	3 1/2	657	-209369	239126	87.6	Pass
T32	81 - 61	Leg	3 1/2	690	-213731	239126	89.4	Pass
T33	61 - 41	Leg	3 1/2	723	-209720	239126	87.7	Pass
T34	41 - 20	Leg	3 1/2	757	-189334	233628	81.0	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-190723	209100	91.2	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-195165	245056	79.6	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	15	-3363	24604	13.7 34.5 (b)	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	51	-4858	19146	25.4 28.7 (b)	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	83	-7318	19146	38.2 48.4 (b)	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	110	-7807	19146	40.8 51.3 (b)	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	119	-8484	19146	44.3 56.8 (b)	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	131	-10887	19146	56.9 64.9 (b)	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	144	-10313	19146	53.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	$\phi P_{allow}$ (lb)	% Capacity	Pass / Fail
							77.2 (b)	
T8	381 - 376	Diagonal	L2 1/2x2x3/16	157	-7936	19146	41.4 62.1 (b)	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	166	-9239	19146	48.3 54.6 (b)	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	178	-8133	19146	42.5 55.0 (b)	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	187	-7702	19146	40.2 50.8 (b)	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	229	-7154	19146	37.4 46.5 (b)	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	265	-4571	19146	23.9 30.6 (b)	Pass
T14	321 - 301	Diagonal	L2 1/2x2x3/16	280	-3183	19146	16.6 27.4 (b)	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	313	-5395	19146	28.2 46.5 (b)	Pass
T16	281 - 276	Diagonal	L2 1/2x2x3/16	340	-5927	19146	31.0 40.2 (b)	Pass
T17	276 - 271	Diagonal	L2 1/2x2x3/16	349	-6780	19146	35.4 44.4 (b)	Pass
T18	271 - 266	Diagonal	L2 1/2x2x3/16	361	-6624	19146	34.6 52.0 (b)	Pass
T19	266 - 261	Diagonal	L2 1/2x2x3/16	373	-8174	19146	42.7 49.4 (b)	Pass
T20	261 - 256	Diagonal	L3x3x1/4	383	13319	43976	30.3 71.8 (b)	Pass
T21	256 - 251	Diagonal	L3x3x1/4	390	17973	43976	40.9 96.9 (b)	Pass
T22	251 - 246	Diagonal	L3x3x1/4	404	-12912	42355	30.5 69.6 (b)	Pass
T23	246 - 241	Diagonal	L3x3x1/4	417	11448	43976	26.0 61.7 (b)	Pass
T24	241 - 221	Diagonal	L3x3x1/4	452	-10374	42355	24.5 55.9 (b)	Pass
T25	221 - 201	Diagonal	L2 1/2x2x3/16	485	-6900	19146	36.0 59.5 (b)	Pass
T26	201 - 181	Diagonal	L2 1/2x2x3/16	518	-4027	19146	21.0 34.7 (b)	Pass
T27	181 - 161	Diagonal	L2 1/2x2x3/16	535	-3879	19146	20.3 33.4 (b)	Pass
T28	161 - 141	Diagonal	L3x3x1/4	568	-7568	42423	17.8 32.2 (b)	Pass
T29	141 - 121	Diagonal	L3x3x1/4	614	9915	42906	23.1 43.6 (b)	Pass
T30	121 - 101	Diagonal	L2 1/2x2x3/16	652	-6648	19146	34.7 43.4 (b)	Pass
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3928	19146	20.5 33.9 (b)	Pass
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-2082	19146	10.9 18.0 (b)	Pass
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-4530	19146	23.7 39.1 (b)	Pass
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-6848	18871	36.3 59.1 (b)	Pass
T35	20 - 6.70833	Diagonal	L2x2x3/16	792	-2233	18534	12.0 19.3 (b)	Pass
T36	6.70833 - 0	Diagonal	L2x2x3/16	815	-4846	22580	21.5 41.8 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	$\phi P_{allow}$ (lb)	% Capacity	Pass / Fail
T1	457 - 436	Horizontal	L2 1/2x2x1/4	35	-1169	16395	7.1 10.1 (b)	Pass
T2	436 - 421	Horizontal	L2 1/2x2x1/4	58	1436	32027	4.5 12.4 (b)	Pass
T12	361 - 341	Secondary Horizontal	L2x2x1/4	207	-2521	23775	10.6 24.9 (b)	Pass
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	396	26192	154196	17.0 70.6 (b)	Pass
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1970	154196	1.3 5.3 (b)	Pass
T1	457 - 436	Top Girt	C8x13.75	6	-1	68630	0.2	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	8	1165	32027	3.6 10.0 (b)	Pass
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	780	32027	2.4 6.7 (b)	Pass
T4	401 - 396	Top Girt	L2 1/2x2x1/4	79	-470	16654	2.8 5.0 (b)	Pass
T6	391 - 386	Top Girt	L2 1/2x2x1/4	128	785	33056	2.4	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	841	33056	2.5	Pass
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	610	32027	1.9 5.3 (b)	Pass
T13	341 - 321	Top Girt	L2 1/2x2x1/4	195	426	32027	1.3 3.7 (b)	Pass
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	457	32027	1.4 3.9 (b)	Pass
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	429	24516	1.7 3.7 (b)	Pass
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	371	32027	1.2 3.2 (b)	Pass
T18	271 - 266	Top Girt	L2 1/2x2x1/4	358	-831	16395	5.1 7.2 (b)	Pass
T20	261 - 256	Top Girt	L2 1/2x2x3/16	370	-5990	12631	47.4 51.6 (b)	Pass
T22	251 - 246	Top Girt	L2 1/2x2x3/16	403	-6422	12631	50.8 55.4 (b)	Pass
T24	241 - 221	Top Girt	L2 1/2x2x3/16	414	-718	12631	5.7 6.2 (b)	Pass
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	716	24516	2.9 6.2 (b)	Pass
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	747	24516	3.0 6.4 (b)	Pass
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	964	73267	1.3 4.2 (b)	Pass
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	895	24516	3.7 7.7 (b)	Pass
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1901	24516	7.8 16.4 (b)	Pass
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7945	12763	62.3 68.5 (b)	Pass
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	968	24516	3.9 8.3 (b)	Pass
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	1074	24516	4.4 9.3 (b)	Pass
T33	61 - 41	Top Girt	L2 1/2x2x3/16	694	1101	24516	4.5 9.5 (b)	Pass
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	949	24516	3.9 8.2 (b)	Pass
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	17739	49003	36.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	$\phi P_{allow}$ (lb)	% Capacity	Pass / Fail
							59.6 (b)	
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	11	4303	32027	13.4 37.1 (b)	Pass
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	82	-181	16310	1.1 2.6 (b)	Pass
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	391	32027	1.2 3.4 (b)	Pass
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	244	343	32027	1.1 3.0 (b)	Pass
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	525	32027	1.6 4.5 (b)	Pass
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	358	24516	1.5 3.1 (b)	Pass
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	664	24516	2.7 5.7 (b)	Pass
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	699	24516	2.9 6.0 (b)	Pass
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	760	24516	3.1 6.5 (b)	Pass
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	759	24516	3.1 6.5 (b)	Pass
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	864	24516	3.5 7.4 (b)	Pass
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	598	-10249	12763	80.3 97.5 (b)	Pass
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	631	645	24516	2.6 5.6 (b)	Pass
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	1048	24516	4.3 9.0 (b)	Pass
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	697	1069	24516	4.4 9.2 (b)	Pass
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	1000	24516	4.1 8.6 (b)	Pass
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1425	24516	5.8 12.3 (b)	Pass
T1	457 - 436	Guy A@446.5	9/16	826	13690	22050	62.1	Pass
T8	381 - 376	Guy A@381	1 3/8	829	69147	146157	47.3	Pass
T21	256 - 251	Guy A@254.5	1 1/4	832	67832	120958	56.1	Pass
T29	141 - 121	Guy A@131	11/16	845	25520	31499	81.0	Pass
T1	457 - 436	Guy B@446.5	9/16	825	13738	22050	62.3	Pass
T8	381 - 376	Guy B@381	1 3/8	828	70294	146157	48.1	Pass
T21	256 - 251	Guy B@254.5	1 1/4	831	69464	120958	57.4	Pass
T29	141 - 121	Guy B@131	11/16	840	25557	31499	81.1	Pass
T1	457 - 436	Guy C@446.5	9/16	824	13745	22050	62.3	Pass
T8	381 - 376	Guy C@381	1 3/8	827	69430	146157	47.5	Pass
T21	256 - 251	Guy C@254.5	1 1/4	830	68900	120958	57.0	Pass
T29	141 - 121	Guy C@131	11/16	833	25142	31499	79.8	Pass
T8	381 - 376	Top Guy Pull-Off@381	2L3x2x1/4x3/8	141	21856	73267	29.8 94.2 (b)	Pass
T29	141 - 121	Torque Arm Top@131	L3x3x3/8 (TA - BU#873128)	848	23835	61040	39.0 67.1 (b)	Pass
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-26729	33027	80.9	Pass
							Summary	

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	$\phi P_{allow}$ (lb)	% Capacity	Pass / Fail
						Leg (T20)	92.5	Pass
						Diagonal (T21)	96.9	Pass
						Horizontal (T2)	12.4	Pass
						Secondary Horizontal (T21)	70.6	Pass
						Top Girt (T30)	68.5	Pass
						Mid Girt (T29)	97.5	Pass
						Guy A (T29)	81.0	Pass
						Guy B (T29)	81.1	Pass
						Guy C (T29)	79.8	Pass
						Top Guy Pull-Off (T8)	94.2	Pass
						Torque Arm Top (T29)	67.1	Pass
						Torque Arm Bottom (T29)	80.9	Pass
						Bolt Checks	97.5	Pass
						<b>RATING =</b>	<b>97.5</b>	<b>Pass</b>

**Table 5 - Tower Component Stresses vs. Capacity - LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Mast Foundation	-	52.6	Pass
1,2	Guy Anchor Foundation	-	92.1	Pass

<b>Structure Rating (max from all components) =</b>	<b>97.5%</b>
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Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5

**Table 6 - Dish Twist/Sway Results for 60 mph Service Wind Speed**

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
150.0	Andrew HPX6-65-P3A	4.9378	0.0981	0.0923
146.0	Andrew PL6-65-PXA	4.8616	0.1005	0.0901
140.0	Channel Master CM 4228HD	4.7443	0.1026	0.0869
138.0	RFS Celwave MGA2-16N	4.7048	0.1029	0.0859
135.0	Channel Master CM 4228HD	4.6452	0.1030	0.0843
134.0	RFS Celwave MGAR3-23N	4.6253	0.1030	0.0838

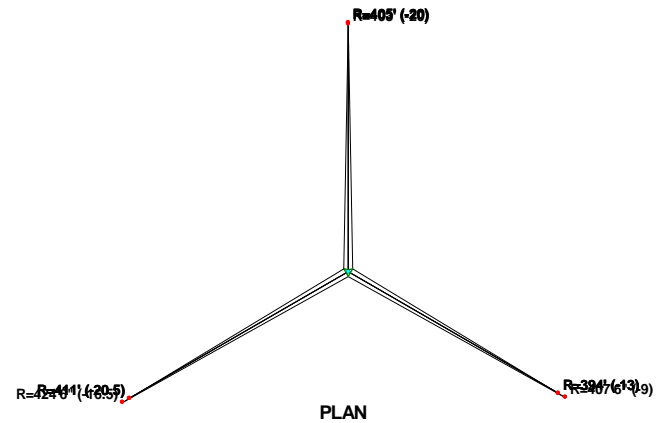
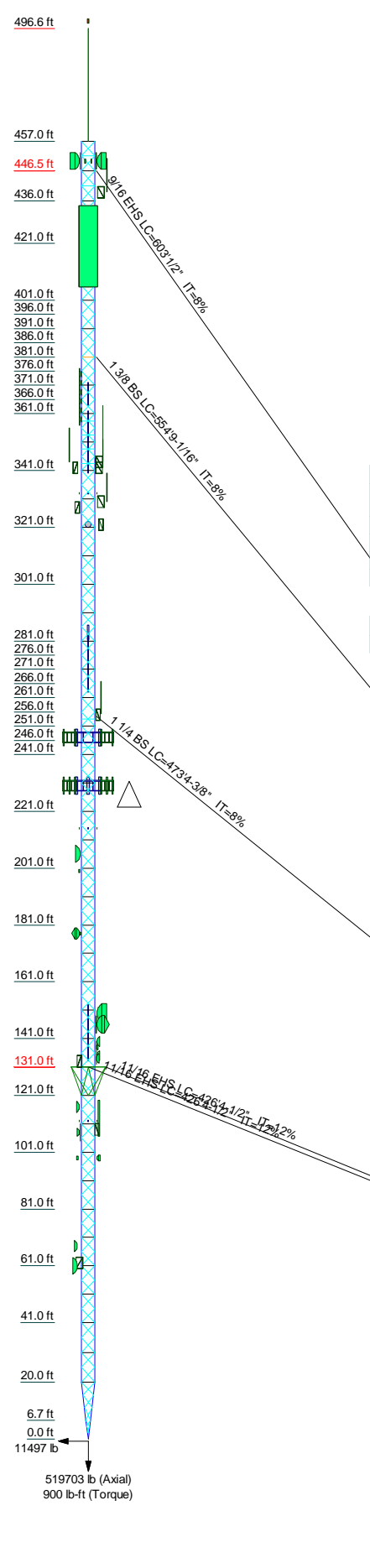
#### 4.1) Recommendations

- 1) The tower and its base and anchor foundations have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.



**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26	T27	T28	T29	T30	T31	T32	T33	T34	T35	T36			
Legs	SR 3	A	B	SR 3	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4	SR 3 1/4			
Leg Grade	C																																						
Diagonals	L2 1/2x2x3/16																																						
Diagonal Grade	A7-33																																						
Top Girts	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	
Mid Girts	N.A.																																						
Horizontal	L2 1/2x2x1/4																																						
Sec. Horizontal	N.A.																																						
Top Guy Pull-Offs	F																																						
# Panels @ (ft)	4 @ 5.25																																						
Weight (lb)	59105.0																																						



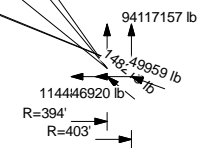
**SYMBOL LIST**

MARK	SIZE	MARK	SIZE
A	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	F	2L3x2x1/4x3/8
B	3.5" S.R. w/ 3.5 SCH40 Half Pipe	G	2L2 1/2x2x3/16x1/4
C	L2 1/2x2x1/4	H	2L3 1/2x3 1/2x3/8x3/8
D	N.A.	I	3 @ 4.43056
E	L2 1/2x2x3/16	J	3 @ 2.23611

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A7-33	33 ksi	60 ksi	A36	36 ksi	58 ksi

- TOWER DESIGN NOTES**
1. Tower is located in Fairfield County, Connecticut.
  2. Tower designed for Exposure B to the TIA-222-H Standard.
  3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
  4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
  5. Deflections are based upon a 60 mph wind.
  6. Tower Risk Category II.
  7. Topographic Category 1 with Crest Height of 0'
  8. 39'6-27/32" RFS/Celwave SAA18-04A-J480-ET5R-21 is included for load transfer only.
  9. TOWER RATING: 97.5%



ALL REACTIONS ARE FACTORED



Tower Engineering Professionals, Inc.

**Tower Engineering Professionals, Inc.**

326 Tryon Road  
Raleigh, NC 27603  
Phone: (919) 661-6351  
FAX: (919) 661-6350

Job: **Trumbull (BU 873128)**

Project: **TEP No. 25575.455021**

Client: Crown Castle	Drawn by: EJB	App'd:
Code: TIA-222-H	Date: 10/28/20	Scale: NTS
Path:		Dwg No. E-1

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 1 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

## Tower Input Data

The main tower is a 3x guyed tower with an overall height of 457' above the ground line.

The base of the tower is set at an elevation of 0' above the ground line.

The face width of the tower is 6' at the top and tapered at the base.

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

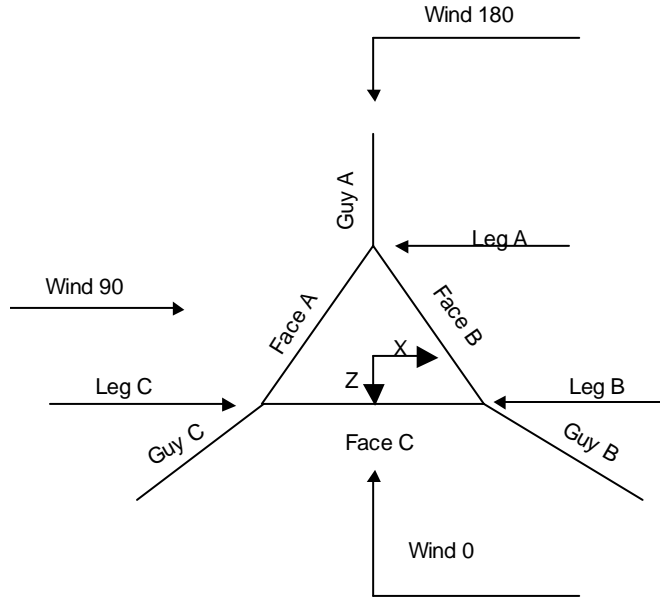
The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Tower base elevation above sea level: 520'.
- 3) Basic wind speed of 125 mph.
- 4) Risk Category II.
- 5) Exposure Category B.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0'.
- 9) Nominal ice thickness of 1.50 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) Pressures are calculated at each section.
- 16) Safety factor used in guy design is 0.9524.
- 17) Tower analysis based on target reliabilities in accordance with Annex S.
- 18) Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- 19) Stress ratio used in tower member design is 1.05.
- 20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

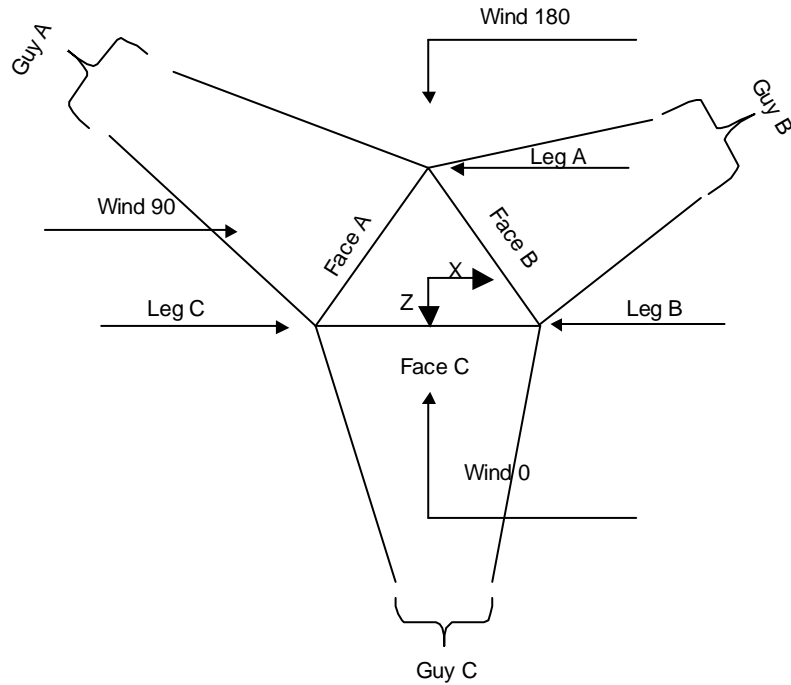
<ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>Use Code Stress Ratios</li> <li>Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>√ Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>√ Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>√ Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>√ Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>Ignore KL/ry For 60 Deg. Angle Legs</li> </ul>	<ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>√ SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>√ Include Angle Block Shear Check</li> <li>Use TIA-222-H Bracing Resist. Exemption</li> <li>Use TIA-222-H Tension Splice Exemption</li> </ul> <div style="background-color: #e0e0e0; text-align: center; padding: 2px;">Poles</div> <ul style="list-style-type: none"> <li>Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are Known</li> </ul>
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<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	2 of 106
<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB



**Corner & Starmount Guyed Tower**

<p><b>tnxTower</b></p> <p><i>Tower Engineering Professionals, Inc.</i>  326 Tryon Road  Raleigh, NC 27603  Phone: (919) 661-6351  FAX: (919) 661-6350</p>	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 3 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB



**Face Guyed**

**Tower Section Geometry**

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	457'-436'			6'	1	21'
T2	436'-421'			6'	1	15'
T3	421'-401'			6'	1	20'
T4	401'-396'			6'	1	5'
T5	396'-391'			6'	1	5'
T6	391'-386'			6'	1	5'
T7	386'-381'			6'	1	5'
T8	381'-376'			6'	1	5'
T9	376'-371'			6'	1	5'
T10	371'-366'			6'	1	5'
T11	366'-361'			6'	1	5'
T12	361'-341'			6'	1	20'
T13	341'-321'			6'	1	20'
T14	321'-301'			6'	1	20'
T15	301'-281'			6'	1	20'
T16	281'-276'			6'	1	5'

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Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T17	276'-271'			6'	1	5'
T18	271'-266'			6'	1	5'
T19	266'-261'			6'	1	5'
T20	261'-256'			6'	1	5'
T21	256'-251'			6'	1	5'
T22	251'-246'			6'	1	5'
T23	246'-241'			6'	1	5'
T24	241'-221'			6'	1	20'
T25	221'-201'			6'	1	20'
T26	201'-181'			6'	1	20'
T27	181'-161'			6'	1	20'
T28	161'-141'			6'	1	20'
T29	141'-121'			6'	1	20'
T30	121'-101'			6'	1	20'
T31	101'-81'			6'	1	20'
T32	81'-61'			6'	1	20'
T33	61'-41'			6'	1	20'
T34	41'-20'			6'	1	21'
T35	20'-6'8-17/32"			6'	1	13'3-15/32"
T36	6'8-17/32"-0'			2'	1	6'8-17/32"

### Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	457'-436'	5'3"	X Brace	No	Yes	0.00	0.00
T2	436'-421'	5'	X Brace	No	Yes	0.00	0.00
T3	421'-401'	5'	X Brace	No	Yes	0.00	0.00
T4	401'-396'	5'	X Brace	No	Yes	0.00	0.00
T5	396'-391'	5'	X Brace	No	Yes	0.00	0.00
T6	391'-386'	5'	X Brace	No	Yes	0.00	0.00
T7	386'-381'	5'	X Brace	No	Yes	0.00	0.00
T8	381'-376'	5'	X Brace	No	Yes	0.00	0.00
T9	376'-371'	5'	X Brace	No	Yes	0.00	0.00
T10	371'-366'	5'	X Brace	No	Yes	0.00	0.00
T11	366'-361'	5'	X Brace	No	Yes	0.00	0.00
T12	361'-341'	5'	X Brace	No	Yes	0.00	0.00
T13	341'-321'	5'	X Brace	No	Yes	0.00	0.00
T14	321'-301'	5'	X Brace	No	Yes	0.00	0.00
T15	301'-281'	5'	X Brace	No	Yes	0.00	0.00
T16	281'-276'	5'	X Brace	No	Yes	0.00	0.00
T17	276'-271'	5'	X Brace	No	Yes	0.00	0.00
T18	271'-266'	5'	X Brace	No	Yes	0.00	0.00
T19	266'-261'	5'	X Brace	No	Yes	0.00	0.00
T20	261'-256'	5'	X Brace	No	Yes	0.00	0.00
T21	256'-251'	5'	X Brace	No	Yes	0.00	0.00
T22	251'-246'	5'	X Brace	No	Yes	0.00	0.00
T23	246'-241'	5'	X Brace	No	Yes	0.00	0.00
T24	241'-221'	5'	X Brace	No	Yes	0.00	0.00
T25	221'-201'	5'	X Brace	No	Yes	0.00	0.00
T26	201'-181'	5'	X Brace	No	Yes	0.00	0.00
T27	181'-161'	5'	X Brace	No	Yes	0.00	0.00
T28	161'-141'	5'	X Brace	No	Yes	0.00	0.00

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Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T29	141'-121'	5'	X Brace	No	Yes	0.00	0.00
T30	121'-101'	5'	X Brace	No	Yes	0.00	0.00
T31	101'-81'	5'	X Brace	No	Yes	0.00	0.00
T32	81'-61'	5'	X Brace	No	Yes	0.00	0.00
T33	61'-41'	5'	X Brace	No	Yes	0.00	0.00
T34	41'-20'	5'3"	X Brace	No	Yes	0.00	0.00
T35	20'-6'8-17/32"	4'5-5/32"	X Brace	No	Yes	0.00	0.00
T36	6'8-17/32"-0'	2'2-7/8"	X Brace	No	Yes	0.00	0.00

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 457'-436'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T2 436'-421'	Solid Round	2 3/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T3 421'-401'	Solid Round	2 3/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T4 401'-396'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T5 396'-391'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T6 391'-386'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T7 386'-381'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T8 381'-376'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T9 376'-371'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T10 371'-366'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T11 366'-361'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T12 361'-341'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T13 341'-321'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T14 321'-301'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T15 301'-281'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T16 281'-276'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T17 276'-271'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T18 271'-266'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T19 266'-261'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T20 261'-256'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T21 256'-251'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T22 251'-246'	Solid Round	3	A7-33	Single Angle	L3x3x1/4	A36

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Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T23 246'-241'	Solid Round	3	(33 ksi) A7-33	Single Angle	L3x3x1/4	(36 ksi) A36
T24 241'-221'	Solid Round	3	(33 ksi) A7-33	Single Angle	L3x3x1/4	(36 ksi) A36
T25 221'-201'	Solid Round	3 1/4	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(36 ksi) A7-33
T26 201'-181'	Solid Round	3 1/4	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T27 181'-161'	Solid Round	3 1/4	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T28 161'-141'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L3x3x1/4	(33 ksi) A36
T29 141'-121'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L3x3x1/4	(36 ksi) A36
T30 121'-101'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(36 ksi) A7-33
T31 101'-81'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T32 81'-61'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T33 61'-41'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T34 41'-20'	Solid Round	3 1/2	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T35 20'-6'-8"-17/32"	Solid Round	3 1/4	(33 ksi) A7-33	Single Angle	L2x2x3/16	(33 ksi) A7-33
T36 6'-8"-17/32"-0"	Solid Round	3 1/4	(33 ksi) A7-33	Single Angle	L2x2x3/16	(33 ksi) A7-33

### Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 457'-436'	Channel	C8x13.75	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T2 436'-421'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T3 421'-401'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T4 401'-396'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T6 391'-386'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T7 386'-381'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T8 381'-376'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T10 371'-366'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T11 366'-361'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T12 361'-341'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T13 341'-321'	Single Angle	L2 1/2x2x1/4	A7-33	Single Angle	L2 1/2x2x1/4	A7-33



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Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T14 321'-301'	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33
T15 301'-281'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T16 281'-276'	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33
T18 271'-266'	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33
T19 266'-261'	Single Angle		(33 ksi) A7-33	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33
T20 261'-256'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33
T22 251'-246'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33
T23 246'-241'	Single Angle		(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T24 241'-221'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T25 221'-201'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T26 201'-181'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T27 181'-161'	Double Angle	2L3x2x1/4x3/8	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T28 161'-141'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T29 141'-121'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T30 121'-101'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T31 101'-81'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T32 81'-61'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T33 61'-41'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33
T34 41'-20'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33
T35 20'-6'8-17/32"	Double Angle	2L2 1/2x2x3/16x1/4	(33 ksi) A7-33	Single Angle		(33 ksi) A7-33

### Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 457'-436'	1	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33
T2 436'-421'	None	Single Angle		(33 ksi) A7-33	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33
T3 421'-401'	1	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Solid Round		(36 ksi) A36
T12 361'-341'	1	Single Angle	L2 1/2x2x1/4	(33 ksi) A7-33	Single Angle		(36 ksi) A36

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Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T13 341'-321'	1	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Solid Round		A36 (36 ksi)
T14 321'-301'	1	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Solid Round		A36 (36 ksi)
T15 301'-281'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Solid Round		A36 (36 ksi)
T24 241'-221'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T25 221'-201'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T26 201'-181'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T27 181'-161'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T28 161'-141'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T29 141'-121'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T30 121'-101'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T31 101'-81'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T32 81'-61'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T33 61'-41'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
T34 41'-20'	1	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T12 361'-341'	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T21 256'-251'	Double Equal Angle	2L3 1/2x3 1/2x3/8x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T23 246'-241'	Double Equal Angle	2L3 1/2x3 1/2x3/8x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 457'-436'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00

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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 Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
T2 436'-421'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T3 421'-401'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T4 401'-396'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T5 396'-391'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T6 391'-386'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T7 386'-381'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T8 381'-376'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T9 376'-371'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T10 371'-366'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T11 366'-361'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T12 361'-341'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T13 341'-321'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T14 321'-301'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T15 301'-281'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T16 281'-276'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T17 276'-271'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T18 271'-266'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T19 266'-261'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T20 261'-256'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T21 256'-251'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T22 251'-246'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T23 246'-241'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T24 241'-221'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T25 221'-201'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T26 201'-181'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T27 181'-161'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T28 161'-141'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T29 141'-121'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	38.00	38.00	36.00
T30 121'-101'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T31 101'-81'	0.00	0.38	A7-33	1.03	1	1.05	Third-Pt	Third-Pt	36.00



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Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors <sup>1</sup>								
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
				X Y	X Y	X Y	X Y	X Y	X Y	X Y	
T19 266'-261'	Yes	No	1	1	1	1	1	1	1	1	1
T20 261'-256'	Yes	No	1	1	1	1	1	1	1	1	1
T21 256'-251'	Yes	No	1	1	1	1	1	1	1	1	1
T22 251'-246'	Yes	No	1	1	1	1	1	1	1	0.5	1
T23 246'-241'	Yes	No	1	1	1	1	1	1	1	0.5	1
T24 241'-221'	Yes	No	1	1	1	1	1	1	1	1	1
T25 221'-201'	Yes	No	1	1	1	1	1	1	1	1	1
T26 201'-181'	Yes	No	1	1	1	1	1	1	1	1	1
T27 181'-161'	Yes	No	1	1	1	1	1	1	1	1	1
T28 161'-141'	Yes	No	1	1	1	1	1	1	1	1	1
T29 141'-121'	Yes	No	1	1	1	1	1	1	1	1	1
T30 121'-101'	Yes	No	1	1	1	1	1	1	1	1	1
T31 101'-81'	Yes	No	1	1	1	1	1	1	1	1	1
T32 81'-61'	Yes	No	1	1	1	1	1	1	1	1	1
T33 61'-41'	Yes	No	1	1	1	1	1	1	1	1	1
T34 41'-20'	Yes	No	1	1	1	1	1	1	1	1	1
T35 20'-6'8"-17/32"	Yes	No	1	1	1	1	1	1	1	1	1
T36 6'8"-17/32"-0'	Yes	No	1	1	1	1	1	1	1	1	1

<sup>1</sup>Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 457'-436'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1
T2 436'-421'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75	0.00	1
T3 421'-401'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T4 401'-396'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1
T5 396'-391'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T6 391'-386'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	0.75
T7 386'-381'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	0.75
T8 381'-376'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1
T9 376'-371'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1
T10 371'-366'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1
T11 366'-361'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1
T12 361'-341'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T13 341'-321'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T14 321'-301'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T15 301'-281'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T16 281'-276'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T17 276'-271'	0.00	1	0.00	0.75	0.00	1	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T18 271'-266'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T19 266'-261'	0.00	1	0.00	0.75	0.00	1	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T20 261'-256'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T21 256'-251'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T22 251'-246'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T23 246'-241'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T24 241'-221'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T25 221'-201'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T26 201'-181'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T27 181'-161'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T28 161'-141'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T29 141'-121'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T30 121'-101'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T31 101'-81'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T32 81'-61'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T33 61'-41'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	1
T34 41'-20'	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	1	0.00	0.75
T35	0.00	1	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1	0.00	0.75
20'-6'8-17/32"														
T36	0.00	1	0.00	0.75	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
6'8-17/32"-0'														

### Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
in	in	in	in	in	in	in	in	
T1 457'-436'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T2 436'-421'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T3 421'-401'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T4 401'-396'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T5 396'-391'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T6 391'-386'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T7 386'-381'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T8 381'-376'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T9 376'-371'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00

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Tower Elevation  ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
	in	in	in	in	in	in	in	in
T10 371'-366'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T11 366'-361'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T12 361'-341'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T13 341'-321'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T14 321'-301'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T15 301'-281'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T16 281'-276'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T17 276'-271'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T18 271'-266'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T19 266'-261'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T20 261'-256'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T21 256'-251'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T22 251'-246'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T23 246'-241'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T24 241'-221'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T25 221'-201'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T26 201'-181'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T27 181'-161'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T28 161'-141'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T29 141'-121'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T30 121'-101'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T31 101'-81'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T32 81'-61'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T33 61'-41'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T34 41'-20'	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T35	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
20'-6'8-17/32"								
T36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6'8-17/32"-0'								

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 457'-436'	Flange	0.88	8	0.50	2	0.50	2	0.50	2	0.50	2	0.50	2	0.00	0
		A307		A307		A307		A307		A307		A307		A325X	
T2 436'-421'	Flange	0.88	8	0.50	2	0.50	2	0.50	2	0.50	0	0.50	2	0.00	0
		A307		A325X		A307		A307		A307		A307		A325X	
T3 421'-401'	Flange	0.88	8	0.50	2	0.50	2	0.50	2	0.50	2	0.00	0	0.00	0
		A307		A325N		A307		A307		A307		A307		A325X	
T4 401'-396'	Flange	0.88	0	0.50	2	0.50	2	0.00	0	0.50	0	0.00	0	0.00	0
		A307		A325N		A307		A307		A307		A307		A325X	
T5 396'-391'	Flange	0.88	0	0.50	2	0.00	0	0.00	0	0.50	0	0.00	0	0.00	0
		A307		A325N		A307		A307		A307		A307		A325X	
T6 391'-386'	Flange	0.88	0	0.50	2	0.00	2	0.00	0	0.50	0	0.00	0	0.50	0
		A307		A325X		A307		A307		A307		A307		A325X	
T7 386'-381'	Flange	0.88	8	0.50	2	0.00	0	0.50	2	0.50	0	0.00	0	0.50	0
		A307		A325X		A307		A307		A307		A307		A325X	





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### Guy Data

Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	$L_u$	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft			lb		ksi	plf	ft	ft	°	ft	%
446.5	EHS	A 9/16	2800	8%	23000	1	615'3-27/32"	405'	0.0000	-20'	100%
		B 9/16	2800	8%	23000	1	602'10-3/32"	394'	0.0000	-13'	100%
		C 9/16	2800	8%	23000	1	619'7-9/16"	411'	0.0000	-20'6"	100%
381	BS	A 1 3/8	18560	8%	24000	4	567'2-3/4"	405'	0.0000	-20'	100%
		B 1 3/8	18560	8%	24000	4	554'6-1/8"	394'	0.0000	-13'	100%
		C 1 3/8	18560	8%	24000	4	571'10-3/16"	411'	0.0000	-20'6"	100%
254.5	BS	A 1 1/4	15360	8%	24000	3	486'2-13/32"	405'	0.0000	-20'	100%
		B 1 1/4	15360	8%	24000	3	473'1-29/32"	394'	0.0000	-13'	100%
		C 1 1/4	15360	8%	24000	3	491'5-9/32"	411'	0.0000	-20'6"	100%
131	EHS	A 11/16	6000	12%	24000	1	426'27/32"	403'	0.0000	-20'	100%
		B 11/16	6000	12%	24000	1	426'6-19/32"	407'6"	0.0000	-9'	100%
		C 11/16	6000	12%	24000	1	445'23/32"	424'6"	0.0000	-16'6"	100%

### Guy Data(cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
446.5	Corner						
381	Corner						
254.5	Corner						
131	Torque Arm	15'	53.0000	Bat Ear	A36 (36 ksi)	Double Equal Angle	L3x3x3/8 (TA - BU#873128) 2L3x3x3/16x3/4

### Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
446'6"	A572-50 (50 ksi)	Solid Round				A7-33 (33 ksi)	Double Angle	
381'	A572-50 (50 ksi)	Solid Round			No	A7-33 (33 ksi)	Double Angle	2L3x2x1/4x3/8
254'6"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Double Angle	
131'	A572-50 (50 ksi)	Solid Round				A7-33 (33 ksi)	Double Angle	

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### Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept		Tower Intercept	
					A ft	B ft	C ft	D ft
446.5	413	405	416		43'3/8"	41'3-31/32"	43'7-9/16"	
381	2252	2201	2270		11.3 sec/pulse 33'15/32"	11.1 sec/pulse 31'7-3/16"	11.4 sec/pulse 33'6-31/32"	
254.5	1595	1552	1612		9.9 sec/pulse 24'6-19/32"	9.7 sec/pulse 23'3-1/4"	10.0 sec/pulse 25'31/32"	
131	424	424	442		8.6 sec/pulse 14'10-7/16"	8.3 sec/pulse 14'11-1/32"	8.6 sec/pulse 16'2-3/4"	
					6.7 sec/pulse	6.7 sec/pulse	7.0 sec/pulse	

### Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K <sub>x</sub>	K <sub>y</sub>	K <sub>x</sub>	K <sub>y</sub>	K <sub>x</sub>	K <sub>y</sub>
446.5	No	No			1	1	1	1
381	No	No			1	1	1	1
254.5	No	No			1	1	1	1
131	Yes	Yes	0.98	0.98	1	1	1	1

### Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
446.5	0.00	0	0.00	1	0.00	0	0.00	1	0.63	0	0.00	0.75
381	A325N 0.63	0	0.00	0.75	A325N 0.50	2	0.00	0.75	A325N 0.63	0	0.00	0.75
254.5	A325N 0.63	0	0.00	0.75	A307 0.00	0	0.00	1	A325N 0.63	0	0.00	0.75
131	A325N 0.75	2	0.00	0.75	A325N 0.00	0	0.00	1	A325N 0.63	0	0.00	0.75
	A325N				A325N				A325N			

### Guy Pressures

Guy Elevation ft	Guy Location	z ft	q <sub>z</sub> psf	q <sub>z</sub> Ice psf	Ice Thickness in
	B	216'9"	39	6	1.54
	C	213'	39	6	1.54
381	A	180'6"	37	6	1.51
	B	184'	37	6	1.51

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Guy Elevation ft	Guy Location	z ft	qz psf	qz Ice psf	Ice Thickness in
254.5	C	180'3"	37	6	1.51
	A	117'3"	33	5	1.45
	B	120'9"	33	5	1.45
131	C	117'	33	5	1.45
	A	55'6"	26	4	1.34
	B	61'	27	4	1.36
	C	57'3"	27	4	1.35

### Guy-Tensioning Information

Temperature At Time Of Tensioning																	
Guy Elevation ft	H ft	V ft	0 F		20 F		40 F		60 F		80 F		100 F		120 F		
			Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	
			446.5	A	401.54	466.50	3196	37.91	3057	39.57	2924	41.28	2800	43.03	2676	44.93	2568
	B	390.54	459.50	3201	36.37	3059	37.98	2926	39.63	2800	41.33	2682	43.06	2564	44.94	2462	46.70
	C	407.54	467.00	3197	38.44	3057	40.12	2924	41.86	2800	43.63	2676	45.55	2568	47.37	2467	49.20
381	A	401.54	401.00	21808	28.28	20660	29.79	19577	31.38	18560	33.04	17610	34.75	16726	36.52	15906	38.32
	B	390.54	394.00	21845	26.99	20686	28.46	19590	29.99	18560	31.60	17597	33.26	16700	34.97	15868	36.73
	C	407.54	401.50	21815	28.73	20663	30.28	19578	31.89	18560	33.58	17610	35.32	16727	37.11	15909	38.93
254.5	A	401.54	274.50	19088	19.85	17746	21.32	16502	22.89	15360	24.55	14320	26.29	13381	28.08	12536	29.92
	B	390.54	267.50	19167	18.74	17798	20.15	16528	21.66	15360	23.27	14296	24.96	13335	26.70	12472	28.50
	C	407.54	275.00	19076	20.30	17737	21.80	16497	23.40	15360	25.08	14326	26.85	13393	28.66	12554	30.52
131	A	398.74	151.00	7859	11.38	7214	12.39	6600	13.53	6000	14.87	5469	16.30	4987	17.85	4557	19.52
	B	403.24	140.00	7890	11.37	7233	12.39	6609	13.55	6000	14.92	5463	16.37	4977	17.95	4544	19.64
	C	420.24	147.50	7845	12.44	7201	13.54	6569	14.84	6000	16.23	5478	17.76	5006	19.42	4585	21.18

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HB158-1-08U 8-S8J18( 1-5/8)	C	No	No	Ar (CaAa)	230' - 10'	-5.00	0.35	2	2	0.50	1.98		1
LCF78-50A( 7/8")	A	No	No	Ar (CaAa)	230' - 10'	-4.00	0.35	6	2	0.50	1.09		0
LDF5-50A(7/ 8")	A	No	No	Ar (CaAa)	247' - 10'	0.00	0.4	12	6	1.00	1.09		0
LDF5-50A(7/ 8")	A	No	No	Ar (CaAa)	247' - 10'	0.00	0.15	4	2	0.50	1.09		0
HB158-1-08U 8-S8J18( 1-5/8)	A	No	No	Ar (CaAa)	247' - 10'	0.00	0.29	2	2	0.50	1.98		1
LDF4-50A(1/ 2")	A	No	No	Ar (CaAa)	450' - 10'	0.00	0.21	6	4	0.50	0.63		0
CAT6(1/4)	A	No	No	Ar (CaAa)	450' - 10'	1.00	0.223	6	2	0.25	0.24		0
760178129(1/ 4)	A	No	No	Ar (CaAa)	450' - 10'	0.00	0.25	6	2	0.33	0.33		0
EW63(ELLIP TICAL)	A	No	No	Ar (CaAa)	150' - 10'	0.00	-0.28	2	1	0.50	2.01		1
LCF78-50A( 7/8")	A	No	No	Ar (CaAa)	206' - 10'	-3.00	-0.38	7	7	0.50	1.09		0
LCF78-50A( 7/8")	A	No	No	Ar (CaAa)	230' - 206'	-3.00	-0.38	6	6	0.50	1.09		0

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Professionals, Inc.**326 Tryon Road  
Raleigh, NC 27603  
Phone: (919) 661-6351  
FAX: (919) 661-6350

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1" Rigid Conduit	A	No	No	Ar (CaAa)	457' - 10'	0.00	-0.33	1	1	1.00	1.00		1
3/8" Cable (Lights)	C	No	No	Ar (CaAa)	457' - 10'	0.00	0.49	1	1	0.38	0.38		0
1/4 Coax	B	No	No	Ar (CaAa)	99' - 10'	0.00	-0.18	1	1	0.25	0.25		0
1/4 Coax	C	No	No	Ar (CaAa)	200' - 10'	0.00	0.4	1	1	0.25	0.25		0
3/8" Coax	A	No	No	Ar (CaAa)	136' - 10'	0.00	-0.15	3	2	0.38	0.38		0
3/8" Coax	A	No	No	Ar (CaAa)	140' - 10'	0.00	-0.17	1	1	0.38	0.38		0
Banjo (6" dia, 36" step)	A	No	No	Af (CaAa)	230' - 10'	-2.00	0.35	1	1	0.33	0.33		0
Banjo (6" dia, 36" step)	A	No	No	Af (CaAa)	230' - 10'	-2.00	-0.38	1	1	0.33	0.33		0
LDF5-50A(7/8")	B	No	No	Ar (CaAa)	133' - 10'	0.00	-0.4	2	2	0.75	1.09		0
LDF5-50A(7/8")	B	No	No	Ar (CaAa)	441' - 133'	0.00	-0.4	1	1	1.09	1.09		0
LDF12-50A(2-1/4")	B	No	No	Ar (CaAa)	439' - 10'	0.00	-0.31	1	1	2.35	2.35		1
HJ8-50B(3")	B	No	No	Ar (CaAa)	420' - 10'	0.00	0.2	3	3	0.50	3.01		2
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	330' - 10'	0.00	-0.05	1	1	1.55	1.55		1
HJ11-50(4")	B	No	No	Ar (CaAa)	393' - 10'	-2.00	0.12	1	1	4.00	4.00		3
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	264' - 10'	-2.00	0.2	1	1	1.98	1.98		1
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	310' - 10'	0.00	0	1	1	1.98	1.98		1
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	277' - 10'	0.00	0.35	1	1	1.98	1.98		1
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	322' - 10'	-2.00	-0.42	1	1	0.50	1.55		1
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	325' - 10'	0.00	-0.28	1	1	0.50	1.55		1
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	330' - 10'	0.00	-0.35	1	1	1.98	1.98		1
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	133' - 10'	0.00	-0.14	3	2	0.30	0.63		0
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	178' - 133'	0.00	-0.14	2	2	0.30	0.63		0
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	322' - 178'	0.00	-0.14	1	1	0.30 0.63	0.63		0
LDF4-50A(1/2")	B	No	No	Ar (CaAa)	342' - 10'	1.00	0.4	1	1	0.50	0.63		0
EW63(ELLIP TICAL)	B	No	No	Ar (CaAa)	146' - 10'	0.00	-0.23	1	1	2.01	2.01		1
EW52(ELLIP TICAL)	B	No	No	Ar (CaAa)	146' - 10'	2.00	-0.23	1	1	0.50	2.25		1
AVA5-50(7/8")	C	No	No	Ar (CaAa)	230' - 10'	-1.00	-0.4	6	6	0.50	1.10		0
475-000(4-1/16)	C	No	No	Ar (CaAa)	457' - 10'	-6.00	-0.05	1	1	4.06	4.06		6
LDF12-50(2-1/4")	C	No	No	Ar (CaAa)	388' - 10'	0.00	-0.35	1	1	2.35	2.35		1
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	109' - 10'	0.00	-0.4	1	1	1.09	1.09		0
HJ11-50(4)	C	No	No	Ar (CaAa)	367' - 10'	0.00	0.5	1	1	0.50	4.00		3
LDF6-50A(1-1/4")	C	No	No	Ar (CaAa)	255' - 10'	0.00	0.1	1	1	0.50	1.55		1
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	133' - 117'	0.00	0.475	1	1	1.09	1.09		0

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	117' - 99'	0.00	0.475	2	2	0.50	1.09		0
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	99' - 62'	0.00	0.475	3	2	0.50	1.09		0
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	62' - 10'	0.00	0.475	6	2	0.50	1.09		0
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	108' - 10'	0.00	0.45	1	1	1.09	1.09		0
LDF7-50A(1-5/8")	C	No	No	Ar (CaAa)	393' - 10'	0.00	0.2	1	1	1.98	1.98		1
** Thin Flat Climbing Ladder Safety Line 3/8	C	No	No	Af (CaAa)	457' - 10'	-9.00	0	1	1	2.00	2.00		4
***	C	No	No	Ar (CaAa)	457' - 10'	-9.00	0	1	1	0.38	0.38		0
**Abandoned lines**													
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	344' - 10'	1.00	-0.135	1	1	0.63	0.63		0
LDF6-50A(1-1/4)	B	No	No	Ar (CaAa)	342' - 10'	2.00	-0.28	1	1	1.55	1.55		1
LDF5-50A(7/8")	B	No	No	Ar (CaAa)	340' - 10'	0.00	0.4	1	1	1.09	1.09		0
HCC312-50J(3-1/2")	B	No	No	Ar (CaAa)	328' - 10'	-2.00	0.05	1	1	3.53	3.53		2
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	75' - 10'	2.00	0.35	1	1	1.98	1.98		1

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
**								
***								

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T1	457'-436'	A	0.000	0.000	12.180	0.000	44
		B	0.000	0.000	1.250	0.000	5
		C	0.000	0.000	15.022	0.000	209
T2	436'-421'	A	0.000	0.000	12.300	0.000	39
		B	0.000	0.000	5.160	0.000	23
		C	0.000	0.000	10.757	0.000	149

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Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T3	421'-401'	A	0.000	0.000	16.400	0.000	51
		B	0.000	0.000	24.037	0.000	132
		C	0.000	0.000	14.380	0.000	199
T4	401'-396'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	6.235	0.000	34
		C	0.000	0.000	3.602	0.000	50
T5	396'-391'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	6.861	0.000	39
		C	0.000	0.000	4.001	0.000	51
T6	391'-386'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.801	0.000	47
		C	0.000	0.000	5.068	0.000	56
T7	386'-381'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.804	0.000	47
		C	0.000	0.000	5.775	0.000	60
T8	381'-376'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.807	0.000	47
		C	0.000	0.000	5.778	0.000	60
T9	376'-371'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.810	0.000	47
		C	0.000	0.000	5.781	0.000	60
T10	371'-366'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.813	0.000	47
		C	0.000	0.000	6.100	0.000	62
T11	366'-361'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	7.816	0.000	47
		C	0.000	0.000	7.368	0.000	72
T12	361'-341'	A	0.000	0.000	16.400	0.000	51
		B	0.000	0.000	31.701	0.000	189
		C	0.000	0.000	29.537	0.000	290
T13	341'-321'	A	0.000	0.000	16.400	0.000	51
		B	0.000	0.000	45.294	0.000	243
		C	0.000	0.000	29.644	0.000	290
T14	321'-301'	A	0.000	0.000	16.400	0.000	51
		B	0.000	0.000	61.964	0.000	319
		C	0.000	0.000	29.758	0.000	290
T15	301'-281'	A	0.000	0.000	16.400	0.000	51
		B	0.000	0.000	64.265	0.000	328
		C	0.000	0.000	29.882	0.000	290
T16	281'-276'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	16.285	0.000	83
		C	0.000	0.000	7.491	0.000	72
T17	276'-271'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	17.085	0.000	86
		C	0.000	0.000	7.500	0.000	72
T18	271'-266'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	17.094	0.000	86
		C	0.000	0.000	7.508	0.000	72
T19	266'-261'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	17.697	0.000	88
		C	0.000	0.000	7.517	0.000	72
T20	261'-256'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	18.102	0.000	90
		C	0.000	0.000	7.526	0.000	72
T21	256'-251'	A	0.000	0.000	4.100	0.000	13
		B	0.000	0.000	18.111	0.000	90
		C	0.000	0.000	8.155	0.000	75
T22	251'-246'	A	0.000	0.000	6.240	0.000	21
		B	0.000	0.000	18.121	0.000	90
		C	0.000	0.000	8.320	0.000	76
T23	246'-241'	A	0.000	0.000	14.800	0.000	52

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	21 of 106
	<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T24	241'-221'	B	0.000	0.000	18.130	0.000	90
		C	0.000	0.000	8.330	0.000	76
		A	0.000	0.000	71.971	0.000	254
T25	221'-201'	B	0.000	0.000	72.623	0.000	360
		C	0.000	0.000	42.934	0.000	342
		A	0.000	0.000	88.125	0.000	310
T26	201'-181'	B	0.000	0.000	72.799	0.000	360
		C	0.000	0.000	54.739	0.000	391
		A	0.000	0.000	89.760	0.000	315
T27	181'-161'	B	0.000	0.000	72.995	0.000	360
		C	0.000	0.000	55.410	0.000	393
		A	0.000	0.000	89.760	0.000	315
T28	161'-141'	B	0.000	0.000	74.286	0.000	363
		C	0.000	0.000	55.656	0.000	393
		A	0.000	0.000	93.378	0.000	324
T29	141'-121'	B	0.000	0.000	76.749	0.000	369
		C	0.000	0.000	55.909	0.000	393
		A	0.000	0.000	100.200	0.000	340
T30	121'-101'	B	0.000	0.000	85.350	0.000	391
		C	0.000	0.000	57.511	0.000	397
		A	0.000	0.000	100.800	0.000	342
T31	101'-81'	B	0.000	0.000	86.901	0.000	395
		C	0.000	0.000	62.112	0.000	410
		A	0.000	0.000	100.800	0.000	342
T32	81'-61'	B	0.000	0.000	87.567	0.000	397
		C	0.000	0.000	67.666	0.000	425
		A	0.000	0.000	100.800	0.000	342
T33	61'-41'	B	0.000	0.000	90.667	0.000	408
		C	0.000	0.000	68.768	0.000	427
		A	0.000	0.000	100.800	0.000	342
T34	41'-20'	B	0.000	0.000	91.870	0.000	413
		C	0.000	0.000	75.135	0.000	446
		A	0.000	0.000	105.840	0.000	359
T35	20'-6'8-17/32"	B	0.000	0.000	96.463	0.000	434
		C	0.000	0.000	78.891	0.000	468
		A	0.000	0.000	50.400	0.000	171
T36	6'8-17/32"-0'	B	0.000	0.000	45.935	0.000	207
		C	0.000	0.000	37.567	0.000	223
		A	0.000	0.000	0.000	0.000	0

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T1	457'-436'	A	1.654	0.000	0.000	46.292	0.000	482
		B		0.000	0.000	3.897	0.000	57
		C		0.000	0.000	44.899	0.000	816
T2	436'-421'	A	1.648	0.000	0.000	46.239	0.000	465
		B		0.000	0.000	15.046	0.000	227
		C		0.000	0.000	31.989	0.000	580
T3	421'-401'	A	1.641	0.000	0.000	61.481	0.000	617
		B		0.000	0.000	54.974	0.000	800
		C		0.000	0.000	42.543	0.000	770
T4	401'-396'	A	1.636	0.000	0.000	15.338	0.000	154
		B		0.000	0.000	14.185	0.000	206

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	<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T5	396'-391'	C	1.634	0.000	0.000	10.615	0.000	192
		A		0.000	0.000	15.326	0.000	153
		B		0.000	0.000	15.631	0.000	233
T6	391'-386'	C	1.632	0.000	0.000	11.657	0.000	208
		A		0.000	0.000	15.312	0.000	153
		B		0.000	0.000	17.801	0.000	274
T7	386'-381'	C	1.629	0.000	0.000	14.343	0.000	250
		A		0.000	0.000	15.299	0.000	153
		B		0.000	0.000	17.792	0.000	274
T8	381'-376'	C	1.627	0.000	0.000	16.014	0.000	277
		A		0.000	0.000	15.286	0.000	153
		B		0.000	0.000	17.782	0.000	273
T9	376'-371'	C	1.625	0.000	0.000	16.001	0.000	276
		A		0.000	0.000	15.272	0.000	152
		B		0.000	0.000	17.772	0.000	273
T10	371'-366'	C	1.623	0.000	0.000	15.988	0.000	276
		A		0.000	0.000	15.259	0.000	152
		B		0.000	0.000	17.761	0.000	273
T11	366'-361'	C	1.621	0.000	0.000	16.700	0.000	289
		A		0.000	0.000	15.245	0.000	152
		B		0.000	0.000	17.751	0.000	272
T12	361'-341'	C	1.615	0.000	0.000	19.583	0.000	343
		A		0.000	0.000	60.837	0.000	605
		B		0.000	0.000	72.919	0.000	1110
T13	341'-321'	C	1.606	0.000	0.000	78.172	0.000	1368
		A		0.000	0.000	60.601	0.000	600
		B		0.000	0.000	120.213	0.000	1758
T14	321'-301'	C	1.596	0.000	0.000	77.908	0.000	1359
		A		0.000	0.000	60.351	0.000	595
		B		0.000	0.000	168.386	0.000	2460
T15	301'-281'	C	1.585	0.000	0.000	77.629	0.000	1350
		A		0.000	0.000	60.086	0.000	590
		B		0.000	0.000	173.412	0.000	2525
T16	281'-276'	C	1.578	0.000	0.000	77.333	0.000	1340
		A		0.000	0.000	14.978	0.000	147
		B		0.000	0.000	43.758	0.000	636
T17	276'-271'	C	1.575	0.000	0.000	19.285	0.000	333
		A		0.000	0.000	14.960	0.000	146
		B		0.000	0.000	45.765	0.000	665
T18	271'-266'	C	1.572	0.000	0.000	19.265	0.000	333
		A		0.000	0.000	14.942	0.000	146
		B		0.000	0.000	45.716	0.000	663
T19	266'-261'	C	1.569	0.000	0.000	19.244	0.000	332
		A		0.000	0.000	14.924	0.000	146
		B		0.000	0.000	47.203	0.000	685
T20	261'-256'	C	1.566	0.000	0.000	19.224	0.000	331
		A		0.000	0.000	14.905	0.000	145
		B		0.000	0.000	48.174	0.000	698
T21	256'-251'	C	1.563	0.000	0.000	19.203	0.000	331
		A		0.000	0.000	14.886	0.000	145
		B		0.000	0.000	48.120	0.000	697
T22	251'-246'	C	1.560	0.000	0.000	21.052	0.000	356
		A		0.000	0.000	19.004	0.000	200
		B		0.000	0.000	48.065	0.000	695
T23	246'-241'	C	1.557	0.000	0.000	21.495	0.000	362
		A		0.000	0.000	35.521	0.000	422
		B		0.000	0.000	48.009	0.000	693
T24	241'-221'	C	1.549	0.000	0.000	21.469	0.000	361
		A		0.000	0.000	173.266	0.000	2065
		B		0.000	0.000	191.456	0.000	2756
		C		0.000	0.000	110.384	0.000	1715



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	<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T25	221'-201'	A	1.535	0.000	0.000	211.843	0.000	2524
		B		0.000	0.000	190.470	0.000	2726
		C		0.000	0.000	140.025	0.000	2037
T26	201'-181'	A	1.520	0.000	0.000	213.664	0.000	2536
		B		0.000	0.000	189.396	0.000	2693
		C		0.000	0.000	145.586	0.000	2079
T27	181'-161'	A	1.503	0.000	0.000	212.548	0.000	2508
		B		0.000	0.000	194.437	0.000	2681
		C		0.000	0.000	145.092	0.000	2058
T28	161'-141'	A	1.484	0.000	0.000	221.425	0.000	2600
		B		0.000	0.000	199.265	0.000	2716
		C		0.000	0.000	144.176	0.000	2030
T29	141'-121'	A	1.463	0.000	0.000	249.266	0.000	2852
		B		0.000	0.000	219.614	0.000	2927
		C		0.000	0.000	147.965	0.000	2058
T30	121'-101'	A	1.439	0.000	0.000	251.140	0.000	2832
		B		0.000	0.000	222.087	0.000	2901
		C		0.000	0.000	163.162	0.000	2170
T31	101'-81'	A	1.411	0.000	0.000	248.742	0.000	2774
		B		0.000	0.000	225.221	0.000	2888
		C		0.000	0.000	175.411	0.000	2287
T32	81'-61'	A	1.377	0.000	0.000	245.814	0.000	2704
		B		0.000	0.000	229.395	0.000	2902
		C		0.000	0.000	173.593	0.000	2235
T33	61'-41'	A	1.332	0.000	0.000	242.023	0.000	2614
		B		0.000	0.000	228.086	0.000	2830
		C		0.000	0.000	173.556	0.000	2242
T34	41'-20'	A	1.265	0.000	0.000	248.198	0.000	2608
		B		0.000	0.000	233.002	0.000	2802
		C		0.000	0.000	177.735	0.000	2234
T35	20'-6'8-17/32"	A	1.165	0.000	0.000	113.954	0.000	1147
		B		0.000	0.000	106.311	0.000	1218
		C		0.000	0.000	81.419	0.000	980
T36	6'8-17/32"-0'	A	1.014	0.000	0.000	0.000	0.000	0
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	0

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
T1	457'-436'	-0.94	-0.12	-2.70	-0.40
T2	436'-421'	-0.94	-2.39	-2.63	-3.52
T3	421'-401'	1.25	-2.03	-0.82	-3.35
T4	401'-396'	1.25	-1.85	-0.62	-2.92
T5	396'-391'	1.74	-1.74	-0.53	-3.01
T6	391'-386'	2.25	-0.94	0.13	-1.75
T7	386'-381'	2.91	-0.60	0.73	-1.49
T8	381'-376'	2.57	-0.54	0.60	-1.25
T9	376'-371'	2.90	-0.60	0.72	-1.47
T10	371'-366'	2.15	-0.26	0.31	-1.07
T11	366'-361'	0.42	0.91	-0.99	-0.36
T12	361'-341'	0.41	0.80	-0.73	-0.38
T13	341'-321'	1.78	-0.20	1.71	-1.69
T14	321'-301'	2.74	-1.87	2.80	-3.93
T15	301'-281'	2.91	-1.95	3.02	-4.03

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
T16	281'-276'	2.90	-1.83	2.98	-3.75
T17	276'-271'	3.58	-1.75	3.85	-3.81
T18	271'-266'	3.31	-1.63	3.50	-3.48
T19	266'-261'	3.80	-1.68	4.13	-3.70
T20	261'-256'	3.51	-1.48	3.80	-3.23
T21	256'-251'	3.32	-1.20	3.55	-2.79
T22	251'-246'	3.13	-2.14	3.35	-3.46
T23	246'-241'	2.21	-5.37	2.43	-5.83
T24	241'-221'	2.02	-5.20	2.14	-5.69
T25	221'-201'	1.71	-4.80	1.66	-5.17
T26	201'-181'	1.58	-4.62	1.31	-4.83
T27	181'-161'	1.60	-4.63	1.34	-4.88
T28	161'-141'	1.24	-4.53	1.01	-4.86
T29	141'-121'	0.73	-4.83	0.06	-5.11
T30	121'-101'	0.44	-4.75	-0.42	-4.86
T31	101'-81'	0.15	-4.22	-0.41	-4.45
T32	81'-61'	0.39	-3.99	-0.06	-4.31
T33	61'-41'	0.49	-3.60	0.10	-4.09
T34	41'-20'	0.26	-3.59	0.12	-4.11
T35	20'-6'8-17/32"	0.19	-2.78	0.12	-3.08
T36	6'8-17/32"-0'	0.00	0.00	0.00	0.00

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	6	LDF4-50A(1/2")	436.00 - 450.00	0.6000	0.5177
T1	7	CAT6(1/4)	436.00 - 450.00	0.6000	0.5177
T1	8	760178129(1/4)	436.00 - 450.00	0.6000	0.5177
T1	12	1" Rigid Conduit	436.00 - 457.00	0.6000	0.5177
T1	13	3/8" Cable (Lights)	436.00 - 457.00	0.6000	0.5177
T1	23	LDF5-50A(7/8")	436.00 - 441.00	0.6000	0.5177
T1	24	LDF12-50A(2-1/4")	436.00 - 439.00	0.6000	0.5177
T1	50	475-000(4-1/16)	436.00 - 457.00	1.0000	0.5177
T1	74	Thin Flat Climbing Ladder	436.00 - 457.00	0.6000	0.5177
T1	75	Safety Line 3/8	436.00 - 457.00	0.6000	0.5177
T2	6	LDF4-50A(1/2")	421.00 - 436.00	0.6000	0.5326
T2	7	CAT6(1/4)	421.00 - 436.00	0.6000	0.5326
T2	8	760178129(1/4)	421.00 - 436.00	0.6000	0.5326
T2	12	1" Rigid Conduit	421.00 - 436.00	0.6000	0.5326
T2	13	3/8" Cable (Lights)	421.00 -	0.6000	0.5326

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			436.00		
T2	23	LDF5-50A(7/8")	421.00 - 436.00	0.6000	0.5326
T2	24	LDF12-50A(2-1/4")	421.00 - 436.00	0.6000	0.5326
T2	50	475-000(4-1/16)	421.00 - 436.00	1.0000	0.5326
T2	74	Thin Flat Climbing Ladder	421.00 - 436.00	0.6000	0.5326
T2	75	Safety Line 3/8	421.00 - 436.00	0.6000	0.5326
T3	6	LDF4-50A(1/2")	401.00 - 421.00	0.6000	0.5769
T3	7	CAT6(1/4)	401.00 - 421.00	0.6000	0.5769
T3	8	760178129(1/4)	401.00 - 421.00	0.6000	0.5769
T3	12	1" Rigid Conduit	401.00 - 421.00	0.6000	0.5769
T3	13	3/8" Cable (Lights)	401.00 - 421.00	0.6000	0.5769
T3	23	LDF5-50A(7/8")	401.00 - 421.00	0.6000	0.5769
T3	24	LDF12-50A(2-1/4")	401.00 - 421.00	0.6000	0.5769
T3	25	HJ8-50B(3")	401.00 - 420.00	0.6000	0.5769
T3	50	475-000(4-1/16)	401.00 - 421.00	1.0000	0.5769
T3	74	Thin Flat Climbing Ladder	401.00 - 421.00	0.6000	0.5769
T3	75	Safety Line 3/8	401.00 - 421.00	0.6000	0.5769
T4	6	LDF4-50A(1/2")	396.00 - 401.00	0.6000	0.5150
T4	7	CAT6(1/4)	396.00 - 401.00	0.6000	0.5150
T4	8	760178129(1/4)	396.00 - 401.00	0.6000	0.5150
T4	12	1" Rigid Conduit	396.00 - 401.00	0.6000	0.5150
T4	13	3/8" Cable (Lights)	396.00 - 401.00	0.6000	0.5150
T4	23	LDF5-50A(7/8")	396.00 - 401.00	0.6000	0.5150
T4	24	LDF12-50A(2-1/4")	396.00 - 401.00	0.6000	0.5150
T4	25	HJ8-50B(3")	396.00 - 401.00	0.6000	0.5150
T4	50	475-000(4-1/16)	396.00 - 401.00	1.0000	0.5150
T4	74	Thin Flat Climbing Ladder	396.00 - 401.00	0.6000	0.5150
T4	75	Safety Line 3/8	396.00 - 401.00	0.6000	0.5150
T5	6	LDF4-50A(1/2")	391.00 - 396.00	0.6000	0.5996
T5	7	CAT6(1/4)	391.00 - 396.00	0.6000	0.5996
T5	8	760178129(1/4)	391.00 - 396.00	0.6000	0.5996
T5	12	1" Rigid Conduit	391.00 -	0.6000	0.5996

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 26 of 106
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			396.00		
T5	13	3/8" Cable (Lights)	391.00 - 396.00	0.6000	0.5996
T5	23	LDF5-50A(7/8")	391.00 - 396.00	0.6000	0.5996
T5	24	LDF12-50A(2-1/4")	391.00 - 396.00	0.6000	0.5996
T5	25	HJ8-50B(3")	391.00 - 396.00	0.6000	0.5996
T5	30	HJ11-50(4")	391.00 - 393.00	1.0000	0.5996
T5	50	475-000(4-1/16)	391.00 - 396.00	1.0000	0.5996
T5	72	LDF7-50A(1-5/8")	391.00 - 393.00	0.6000	0.5996
T5	74	Thin Flat Climbing Ladder	391.00 - 396.00	0.6000	0.5996
T5	75	Safety Line 3/8	391.00 - 396.00	0.6000	0.5996
T6	6	LDF4-50A(1/2")	386.00 - 391.00	0.6000	0.5156
T6	7	CAT6(1/4)	386.00 - 391.00	0.6000	0.5156
T6	8	760178129(1/4)	386.00 - 391.00	0.6000	0.5156
T6	12	1" Rigid Conduit	386.00 - 391.00	0.6000	0.5156
T6	13	3/8" Cable (Lights)	386.00 - 391.00	0.6000	0.5156
T6	23	LDF5-50A(7/8")	386.00 - 391.00	0.6000	0.5156
T6	24	LDF12-50A(2-1/4")	386.00 - 391.00	0.6000	0.5156
T6	25	HJ8-50B(3")	386.00 - 391.00	0.6000	0.5156
T6	30	HJ11-50(4")	386.00 - 391.00	1.0000	0.5156
T6	50	475-000(4-1/16)	386.00 - 391.00	1.0000	0.5156
T6	52	LDF12-50(2-1/4")	386.00 - 388.00	0.6000	0.5156
T6	72	LDF7-50A(1-5/8")	386.00 - 391.00	0.6000	0.5156
T6	74	Thin Flat Climbing Ladder	386.00 - 391.00	0.6000	0.5156
T6	75	Safety Line 3/8	386.00 - 391.00	0.6000	0.5156
T7	6	LDF4-50A(1/2")	381.00 - 386.00	0.6000	0.6000
T7	7	CAT6(1/4)	381.00 - 386.00	0.6000	0.6000
T7	8	760178129(1/4)	381.00 - 386.00	0.6000	0.6000
T7	12	1" Rigid Conduit	381.00 - 386.00	0.6000	0.6000
T7	13	3/8" Cable (Lights)	381.00 - 386.00	0.6000	0.6000
T7	23	LDF5-50A(7/8")	381.00 - 386.00	0.6000	0.6000
T7	24	LDF12-50A(2-1/4")	381.00 - 386.00	0.6000	0.6000
T7	25	HJ8-50B(3")	381.00 -	0.6000	0.6000

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 27 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
			386.00		
T7	30	HJ11-50(4")	381.00 - 386.00	1.0000	0.6000
T7	50	475-000(4-1/16)	381.00 - 386.00	1.0000	0.6000
T7	52	LDF12-50(2-1/4")	381.00 - 386.00	0.6000	0.6000
T7	72	LDF7-50A(1-5/8")	381.00 - 386.00	0.6000	0.6000
T7	74	Thin Flat Climbing Ladder	381.00 - 386.00	0.6000	0.6000
T7	75	Safety Line 3/8	381.00 - 386.00	0.6000	0.6000
T8	6	LDF4-50A(1/2")	376.00 - 381.00	0.6000	0.5034
T8	7	CAT6(1/4)	376.00 - 381.00	0.6000	0.5034
T8	8	760178129(1/4)	376.00 - 381.00	0.6000	0.5034
T8	12	1" Rigid Conduit	376.00 - 381.00	0.6000	0.5034
T8	13	3/8" Cable (Lights)	376.00 - 381.00	0.6000	0.5034
T8	23	LDF5-50A(7/8")	376.00 - 381.00	0.6000	0.5034
T8	24	LDF12-50A(2-1/4")	376.00 - 381.00	0.6000	0.5034
T8	25	HJ8-50B(3")	376.00 - 381.00	0.6000	0.5034
T8	30	HJ11-50(4")	376.00 - 381.00	1.0000	0.5034
T8	50	475-000(4-1/16)	376.00 - 381.00	1.0000	0.5034
T8	52	LDF12-50(2-1/4")	376.00 - 381.00	0.6000	0.5034
T8	72	LDF7-50A(1-5/8")	376.00 - 381.00	0.6000	0.5034
T8	74	Thin Flat Climbing Ladder	376.00 - 381.00	0.6000	0.5034
T8	75	Safety Line 3/8	376.00 - 381.00	0.6000	0.5034
T9	6	LDF4-50A(1/2")	371.00 - 376.00	0.6000	0.5948
T9	7	CAT6(1/4)	371.00 - 376.00	0.6000	0.5948
T9	8	760178129(1/4)	371.00 - 376.00	0.6000	0.5948
T9	12	1" Rigid Conduit	371.00 - 376.00	0.6000	0.5948
T9	13	3/8" Cable (Lights)	371.00 - 376.00	0.6000	0.5948
T9	23	LDF5-50A(7/8")	371.00 - 376.00	0.6000	0.5948
T9	24	LDF12-50A(2-1/4")	371.00 - 376.00	0.6000	0.5948
T9	25	HJ8-50B(3")	371.00 - 376.00	0.6000	0.5948
T9	30	HJ11-50(4")	371.00 - 376.00	1.0000	0.5948
T9	50	475-000(4-1/16)	371.00 - 376.00	1.0000	0.5948
T9	52	LDF12-50(2-1/4")	371.00 - 376.00	0.6000	0.5948

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 28 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			376.00		
T9	72	LDF7-50A(1-5/8")	371.00 - 376.00	0.6000	0.5948
T9	74	Thin Flat Climbing Ladder	371.00 - 376.00	0.6000	0.5948
T9	75	Safety Line 3/8	371.00 - 376.00	0.6000	0.5948
T10	6	LDF4-50A(1/2")	366.00 - 371.00	0.6000	0.5114
T10	7	CAT6(1/4)	366.00 - 371.00	0.6000	0.5114
T10	8	760178129(1/4)	366.00 - 371.00	0.6000	0.5114
T10	12	1" Rigid Conduit	366.00 - 371.00	0.6000	0.5114
T10	13	3/8" Cable (Lights)	366.00 - 371.00	0.6000	0.5114
T10	23	LDF5-50A(7/8")	366.00 - 371.00	0.6000	0.5114
T10	24	LDF12-50A(2-1/4")	366.00 - 371.00	0.6000	0.5114
T10	25	HJ8-50B(3")	366.00 - 371.00	0.6000	0.5114
T10	30	HJ11-50(4")	366.00 - 371.00	1.0000	0.5114
T10	50	475-000(4-1/16)	366.00 - 371.00	1.0000	0.5114
T10	52	LDF12-50(2-1/4")	366.00 - 371.00	0.6000	0.5114
T10	56	HJ11-50(4)	366.00 - 367.00	1.0000	0.5114
T10	72	LDF7-50A(1-5/8")	366.00 - 371.00	0.6000	0.5114
T10	74	Thin Flat Climbing Ladder	366.00 - 371.00	0.6000	0.5114
T10	75	Safety Line 3/8	366.00 - 371.00	0.6000	0.5114
T11	6	LDF4-50A(1/2")	361.00 - 366.00	0.6000	0.5953
T11	7	CAT6(1/4)	361.00 - 366.00	0.6000	0.5953
T11	8	760178129(1/4)	361.00 - 366.00	0.6000	0.5953
T11	12	1" Rigid Conduit	361.00 - 366.00	0.6000	0.5953
T11	13	3/8" Cable (Lights)	361.00 - 366.00	0.6000	0.5953
T11	23	LDF5-50A(7/8")	361.00 - 366.00	0.6000	0.5953
T11	24	LDF12-50A(2-1/4")	361.00 - 366.00	0.6000	0.5953
T11	25	HJ8-50B(3")	361.00 - 366.00	0.6000	0.5953
T11	30	HJ11-50(4")	361.00 - 366.00	1.0000	0.5953
T11	50	475-000(4-1/16)	361.00 - 366.00	1.0000	0.5953
T11	52	LDF12-50(2-1/4")	361.00 - 366.00	0.6000	0.5953
T11	56	HJ11-50(4)	361.00 - 366.00	1.0000	0.5953
T11	72	LDF7-50A(1-5/8")	361.00 - 366.00	0.6000	0.5953

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 29 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			366.00		
T11	74	Thin Flat Climbing Ladder	361.00 -	0.6000	0.5953
			366.00		
T11	75	Safety Line 3/8	361.00 -	0.6000	0.5953
			366.00		
T12	6	LDF4-50A(1/2")	341.00 -	0.6000	0.4977
			361.00		
T12	7	CAT6(1/4)	341.00 -	0.6000	0.4977
			361.00		
T12	8	760178129(1/4)	341.00 -	0.6000	0.4977
			361.00		
T12	12	1" Rigid Conduit	341.00 -	0.6000	0.4977
			361.00		
T12	13	3/8" Cable (Lights)	341.00 -	0.6000	0.4977
			361.00		
T12	23	LDF5-50A(7/8")	341.00 -	0.6000	0.4977
			361.00		
T12	24	LDF12-50A(2-1/4")	341.00 -	0.6000	0.4977
			361.00		
T12	25	HJ8-50B(3")	341.00 -	0.6000	0.4977
			361.00		
T12	30	HJ11-50(4")	341.00 -	1.0000	0.4977
			361.00		
T12	42	LDF4-50A(1/2")	341.00 -	0.6000	0.4977
			342.00		
T12	50	475-000(4-1/16)	341.00 -	1.0000	0.4977
			361.00		
T12	52	LDF12-50(2-1/4")	341.00 -	0.6000	0.4977
			361.00		
T12	56	HJ11-50(4)	341.00 -	1.0000	0.4977
			361.00		
T12	72	LDF7-50A(1-5/8")	341.00 -	0.6000	0.4977
			361.00		
T12	74	Thin Flat Climbing Ladder	341.00 -	0.6000	0.4977
			361.00		
T12	75	Safety Line 3/8	341.00 -	0.6000	0.4977
			361.00		
T12	78	LDF4-50A(1/2)	341.00 -	0.6000	0.4977
			344.00		
T12	79	LDF6-50A(1-1/4)	341.00 -	0.6000	0.4977
			342.00		
T13	6	LDF4-50A(1/2")	321.00 -	0.6000	0.5767
			341.00		
T13	7	CAT6(1/4)	321.00 -	0.6000	0.5767
			341.00		
T13	8	760178129(1/4)	321.00 -	0.6000	0.5767
			341.00		
T13	12	1" Rigid Conduit	321.00 -	0.6000	0.5767
			341.00		
T13	13	3/8" Cable (Lights)	321.00 -	0.6000	0.5767
			341.00		
T13	23	LDF5-50A(7/8")	321.00 -	0.6000	0.5767
			341.00		
T13	24	LDF12-50A(2-1/4")	321.00 -	0.6000	0.5767
			341.00		
T13	25	HJ8-50B(3")	321.00 -	0.6000	0.5767
			341.00		
T13	27	LDF6-50A(1 1/4")	321.00 -	0.6000	0.5767
			330.00		
T13	30	HJ11-50(4")	321.00 -	1.0000	0.5767
			341.00		
T13	36	LDF6-50A(1-1/4")	321.00 -	0.6000	0.5767

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 30 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
			322.00		
T13	37	LDF6-50A(1-1/4")	321.00 - 325.00	0.6000	0.5767
T13	38	LDF7-50A(1-5/8")	321.00 - 330.00	0.6000	0.5767
T13	41	LDF4P-50A(1/2")	321.00 - 322.00	0.6000	0.5767
T13	42	LDF4-50A(1/2")	321.00 - 341.00	0.6000	0.5767
T13	50	475-000(4-1/16)	321.00 - 341.00	1.0000	0.5767
T13	52	LDF12-50(2-1/4")	321.00 - 341.00	0.6000	0.5767
T13	56	HJ11-50(4)	321.00 - 341.00	1.0000	0.5767
T13	72	LDF7-50A(1-5/8")	321.00 - 341.00	0.6000	0.5767
T13	74	Thin Flat Climbing Ladder	321.00 - 341.00	0.6000	0.5767
T13	75	Safety Line 3/8	321.00 - 341.00	0.6000	0.5767
T13	78	LDF4-50A(1/2)	321.00 - 341.00	0.6000	0.5767
T13	79	LDF6-50A(1-1/4)	321.00 - 341.00	0.6000	0.5767
T13	80	LDF5-50A(7/8")	321.00 - 340.00	0.6000	0.5767
T13	81	HCC312-50J(3-1/2")	321.00 - 328.00	1.0000	0.5767
T14	6	LDF4-50A(1/2")	301.00 - 321.00	0.6000	0.5780
T14	7	CAT6(1/4)	301.00 - 321.00	0.6000	0.5780
T14	8	760178129(1/4)	301.00 - 321.00	0.6000	0.5780
T14	12	1" Rigid Conduit	301.00 - 321.00	0.6000	0.5780
T14	13	3/8" Cable (Lights)	301.00 - 321.00	0.6000	0.5780
T14	23	LDF5-50A(7/8")	301.00 - 321.00	0.6000	0.5780
T14	24	LDF12-50A(2-1/4")	301.00 - 321.00	0.6000	0.5780
T14	25	HJ8-50B(3")	301.00 - 321.00	0.6000	0.5780
T14	27	LDF6-50A(1 1/4")	301.00 - 321.00	0.6000	0.5780
T14	30	HJ11-50(4")	301.00 - 321.00	1.0000	0.5780
T14	32	LDF7-50A(1-5/8")	301.00 - 310.00	0.6000	0.5780
T14	36	LDF6-50A(1-1/4")	301.00 - 321.00	0.6000	0.5780
T14	37	LDF6-50A(1-1/4")	301.00 - 321.00	0.6000	0.5780
T14	38	LDF7-50A(1-5/8")	301.00 - 321.00	0.6000	0.5780
T14	41	LDF4P-50A(1/2")	301.00 - 321.00	0.6000	0.5780
T14	42	LDF4-50A(1/2")	301.00 - 321.00	0.6000	0.5780
T14	50	475-000(4-1/16)	301.00 -	1.0000	0.5780



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 31 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			321.00		
T14	52	LDF12-50(2-1/4")	301.00 - 321.00	0.6000	0.5780
T14	56	HJ11-50(4)	301.00 - 321.00	1.0000	0.5780
T14	72	LDF7-50A(1-5/8")	301.00 - 321.00	0.6000	0.5780
T14	74	Thin Flat Climbing Ladder	301.00 - 321.00	0.6000	0.5780
T14	75	Safety Line 3/8	301.00 - 321.00	0.6000	0.5780
T14	78	LDF4-50A(1/2)	301.00 - 321.00	0.6000	0.5780
T14	79	LDF6-50A(1-1/4)	301.00 - 321.00	0.6000	0.5780
T14	80	LDF5-50A(7/8")	301.00 - 321.00	0.6000	0.5780
T14	81	HCC312-50J(3-1/2")	301.00 - 321.00	1.0000	0.5780
T15	6	LDF4-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	7	CAT6(1/4)	281.00 - 301.00	0.6000	0.5794
T15	8	760178129(1/4)	281.00 - 301.00	0.6000	0.5794
T15	12	1" Rigid Conduit	281.00 - 301.00	0.6000	0.5794
T15	13	3/8" Cable (Lights)	281.00 - 301.00	0.6000	0.5794
T15	23	LDF5-50A(7/8")	281.00 - 301.00	0.6000	0.5794
T15	24	LDF12-50A(2-1/4")	281.00 - 301.00	0.6000	0.5794
T15	25	HJ8-50B(3")	281.00 - 301.00	0.6000	0.5794
T15	27	LDF6-50A(1 1/4")	281.00 - 301.00	0.6000	0.5794
T15	30	HJ11-50(4")	281.00 - 301.00	1.0000	0.5794
T15	32	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	36	LDF6-50A(1-1/4")	281.00 - 301.00	0.6000	0.5794
T15	37	LDF6-50A(1-1/4")	281.00 - 301.00	0.6000	0.5794
T15	38	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	41	LDF4P-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	42	LDF4-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	50	475-000(4-1/16)	281.00 - 301.00	1.0000	0.5794
T15	52	LDF12-50(2-1/4")	281.00 - 301.00	0.6000	0.5794
T15	56	HJ11-50(4)	281.00 - 301.00	1.0000	0.5794
T15	72	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	74	Thin Flat Climbing Ladder	281.00 - 301.00	0.6000	0.5794
T15	75	Safety Line 3/8	281.00 - 301.00	0.6000	0.5794

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 32 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			301.00		
T15	78	LDF4-50A(1/2)	281.00 - 301.00	0.6000	0.5794
T15	79	LDF6-50A(1-1/4)	281.00 - 301.00	0.6000	0.5794
T15	80	LDF5-50A(7/8")	281.00 - 301.00	0.6000	0.5794
T15	81	HCC312-50J(3-1/2")	281.00 - 301.00	1.0000	0.5794
T16	6	LDF4-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	7	CAT6(1/4)	276.00 - 281.00	0.6000	0.5381
T16	8	760178129(1/4)	276.00 - 281.00	0.6000	0.5381
T16	12	1" Rigid Conduit	276.00 - 281.00	0.6000	0.5381
T16	13	3/8" Cable (Lights)	276.00 - 281.00	0.6000	0.5381
T16	23	LDF5-50A(7/8")	276.00 - 281.00	0.6000	0.5381
T16	24	LDF12-50A(2-1/4")	276.00 - 281.00	0.6000	0.5381
T16	25	HJ8-50B(3")	276.00 - 281.00	0.6000	0.5381
T16	27	LDF6-50A(1 1/4")	276.00 - 281.00	0.6000	0.5381
T16	30	HJ11-50(4")	276.00 - 281.00	1.0000	0.5381
T16	32	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	33	LDF7-50A(1-5/8")	276.00 - 277.00	0.6000	0.5381
T16	36	LDF6-50A(1-1/4")	276.00 - 281.00	0.6000	0.5381
T16	37	LDF6-50A(1-1/4")	276.00 - 281.00	0.6000	0.5381
T16	38	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	41	LDF4P-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	42	LDF4-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	50	475-000(4-1/16)	276.00 - 281.00	1.0000	0.5381
T16	52	LDF12-50(2-1/4")	276.00 - 281.00	0.6000	0.5381
T16	56	HJ11-50(4)	276.00 - 281.00	1.0000	0.5381
T16	72	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	74	Thin Flat Climbing Ladder	276.00 - 281.00	0.6000	0.5381
T16	75	Safety Line 3/8	276.00 - 281.00	0.6000	0.5381
T16	78	LDF4-50A(1/2)	276.00 - 281.00	0.6000	0.5381
T16	79	LDF6-50A(1-1/4)	276.00 - 281.00	0.6000	0.5381
T16	80	LDF5-50A(7/8")	276.00 - 281.00	0.6000	0.5381
T16	81	HCC312-50J(3-1/2")	276.00 -	1.0000	0.5381

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 33 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			281.00		
T17	6	LDF4-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	7	CAT6(1/4)	271.00 - 276.00	0.6000	0.6000
T17	8	760178129(1/4)	271.00 - 276.00	0.6000	0.6000
T17	12	1" Rigid Conduit	271.00 - 276.00	0.6000	0.6000
T17	13	3/8" Cable (Lights)	271.00 - 276.00	0.6000	0.6000
T17	23	LDF5-50A(7/8")	271.00 - 276.00	0.6000	0.6000
T17	24	LDF12-50A(2-1/4")	271.00 - 276.00	0.6000	0.6000
T17	25	HJ8-50B(3")	271.00 - 276.00	0.6000	0.6000
T17	27	LDF6-50A(1 1/4")	271.00 - 276.00	0.6000	0.6000
T17	30	HJ11-50(4")	271.00 - 276.00	1.0000	0.6000
T17	32	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	33	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	36	LDF6-50A(1-1/4")	271.00 - 276.00	0.6000	0.6000
T17	37	LDF6-50A(1-1/4")	271.00 - 276.00	0.6000	0.6000
T17	38	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	41	LDF4P-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	42	LDF4-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	50	475-000(4-1/16)	271.00 - 276.00	1.0000	0.6000
T17	52	LDF12-50(2-1/4")	271.00 - 276.00	0.6000	0.6000
T17	56	HJ11-50(4)	271.00 - 276.00	1.0000	0.6000
T17	72	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	74	Thin Flat Climbing Ladder	271.00 - 276.00	0.6000	0.6000
T17	75	Safety Line 3/8	271.00 - 276.00	0.6000	0.6000
T17	78	LDF4-50A(1/2)	271.00 - 276.00	0.6000	0.6000
T17	79	LDF6-50A(1-1/4)	271.00 - 276.00	0.6000	0.6000
T17	80	LDF5-50A(7/8")	271.00 - 276.00	0.6000	0.6000
T17	81	HCC312-50J(3-1/2")	271.00 - 276.00	1.0000	0.6000
T18	6	LDF4-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	7	CAT6(1/4)	266.00 - 271.00	0.6000	0.5390
T18	8	760178129(1/4)	266.00 - 271.00	0.6000	0.5390
T18	12	1" Rigid Conduit	266.00 -	0.6000	0.5390

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 34 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			271.00		
T18	13	3/8" Cable (Lights)	266.00 - 271.00	0.6000	0.5390
T18	23	LDF5-50A(7/8")	266.00 - 271.00	0.6000	0.5390
T18	24	LDF12-50A(2-1/4")	266.00 - 271.00	0.6000	0.5390
T18	25	HJ8-50B(3")	266.00 - 271.00	0.6000	0.5390
T18	27	LDF6-50A(1 1/4")	266.00 - 271.00	0.6000	0.5390
T18	30	HJ11-50(4")	266.00 - 271.00	1.0000	0.5390
T18	32	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	33	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	36	LDF6-50A(1-1/4")	266.00 - 271.00	0.6000	0.5390
T18	37	LDF6-50A(1-1/4")	266.00 - 271.00	0.6000	0.5390
T18	38	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	41	LDF4P-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	42	LDF4-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	50	475-000(4-1/16)	266.00 - 271.00	1.0000	0.5390
T18	52	LDF12-50(2-1/4")	266.00 - 271.00	0.6000	0.5390
T18	56	HJ11-50(4)	266.00 - 271.00	1.0000	0.5390
T18	72	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	74	Thin Flat Climbing Ladder	266.00 - 271.00	0.6000	0.5390
T18	75	Safety Line 3/8	266.00 - 271.00	0.6000	0.5390
T18	78	LDF4-50A(1/2)	266.00 - 271.00	0.6000	0.5390
T18	79	LDF6-50A(1-1/4)	266.00 - 271.00	0.6000	0.5390
T18	80	LDF5-50A(7/8")	266.00 - 271.00	0.6000	0.5390
T18	81	HCC312-50J(3-1/2")	266.00 - 271.00	1.0000	0.5390
T19	6	LDF4-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	7	CAT6(1/4)	261.00 - 266.00	0.6000	0.6000
T19	8	760178129(1/4)	261.00 - 266.00	0.6000	0.6000
T19	12	1" Rigid Conduit	261.00 - 266.00	0.6000	0.6000
T19	13	3/8" Cable (Lights)	261.00 - 266.00	0.6000	0.6000
T19	23	LDF5-50A(7/8")	261.00 - 266.00	0.6000	0.6000
T19	24	LDF12-50A(2-1/4")	261.00 - 266.00	0.6000	0.6000
T19	25	HJ8-50B(3")	261.00 -	0.6000	0.6000

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 35 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			266.00		
T19	27	LDF6-50A(1 1/4")	261.00 - 266.00	0.6000	0.6000
T19	30	HJ11-50(4")	261.00 - 266.00	1.0000	0.6000
T19	31	LDF7-50A(1-5/8")	261.00 - 264.00	0.6000	0.6000
T19	32	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	33	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	36	LDF6-50A(1-1/4")	261.00 - 266.00	0.6000	0.6000
T19	37	LDF6-50A(1-1/4")	261.00 - 266.00	0.6000	0.6000
T19	38	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	41	LDF4P-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	42	LDF4-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	50	475-000(4-1/16)	261.00 - 266.00	1.0000	0.6000
T19	52	LDF12-50(2-1/4")	261.00 - 266.00	0.6000	0.6000
T19	56	HJ11-50(4)	261.00 - 266.00	1.0000	0.6000
T19	72	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	74	Thin Flat Climbing Ladder	261.00 - 266.00	0.6000	0.6000
T19	75	Safety Line 3/8	261.00 - 266.00	0.6000	0.6000
T19	78	LDF4-50A(1/2)	261.00 - 266.00	0.6000	0.6000
T19	79	LDF6-50A(1-1/4)	261.00 - 266.00	0.6000	0.6000
T19	80	LDF5-50A(7/8")	261.00 - 266.00	0.6000	0.6000
T19	81	HCC312-50J(3-1/2")	261.00 - 266.00	1.0000	0.6000
T20	6	LDF4-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	7	CAT6(1/4)	256.00 - 261.00	0.6000	0.5201
T20	8	760178129(1/4)	256.00 - 261.00	0.6000	0.5201
T20	12	1" Rigid Conduit	256.00 - 261.00	0.6000	0.5201
T20	13	3/8" Cable (Lights)	256.00 - 261.00	0.6000	0.5201
T20	23	LDF5-50A(7/8")	256.00 - 261.00	0.6000	0.5201
T20	24	LDF12-50A(2-1/4")	256.00 - 261.00	0.6000	0.5201
T20	25	HJ8-50B(3")	256.00 - 261.00	0.6000	0.5201
T20	27	LDF6-50A(1 1/4")	256.00 - 261.00	0.6000	0.5201
T20	30	HJ11-50(4")	256.00 - 261.00	1.0000	0.5201
T20	31	LDF7-50A(1-5/8")	256.00 -	0.6000	0.5201

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 36 of 106
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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
			261.00		
T20	32	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	33	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	36	LDF6-50A(1-1/4")	256.00 - 261.00	0.6000	0.5201
T20	37	LDF6-50A(1-1/4")	256.00 - 261.00	0.6000	0.5201
T20	38	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	41	LDF4P-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	42	LDF4-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	50	475-000(4-1/16)	256.00 - 261.00	1.0000	0.5201
T20	52	LDF12-50(2-1/4")	256.00 - 261.00	0.6000	0.5201
T20	56	HJ11-50(4)	256.00 - 261.00	1.0000	0.5201
T20	72	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	74	Thin Flat Climbing Ladder	256.00 - 261.00	0.6000	0.5201
T20	75	Safety Line 3/8	256.00 - 261.00	0.6000	0.5201
T20	78	LDF4-50A(1/2)	256.00 - 261.00	0.6000	0.5201
T20	79	LDF6-50A(1-1/4)	256.00 - 261.00	0.6000	0.5201
T20	80	LDF5-50A(7/8")	256.00 - 261.00	0.6000	0.5201
T20	81	HCC312-50J(3-1/2")	256.00 - 261.00	1.0000	0.5201
T21	6	LDF4-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	7	CAT6(1/4)	251.00 - 256.00	0.6000	0.5054
T21	8	760178129(1/4)	251.00 - 256.00	0.6000	0.5054
T21	12	1" Rigid Conduit	251.00 - 256.00	0.6000	0.5054
T21	13	3/8" Cable (Lights)	251.00 - 256.00	0.6000	0.5054
T21	23	LDF5-50A(7/8")	251.00 - 256.00	0.6000	0.5054
T21	24	LDF12-50A(2-1/4")	251.00 - 256.00	0.6000	0.5054
T21	25	HJ8-50B(3")	251.00 - 256.00	0.6000	0.5054
T21	27	LDF6-50A(1 1/4")	251.00 - 256.00	0.6000	0.5054
T21	30	HJ11-50(4")	251.00 - 256.00	1.0000	0.5054
T21	31	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	32	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	33	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	36	LDF6-50A(1-1/4")	251.00 -	0.6000	0.5054

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 37 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			256.00		
T21	37	LDF6-50A(1-1/4")	251.00 - 256.00	0.6000	0.5054
T21	38	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	41	LDF4P-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	42	LDF4-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	50	475-000(4-1/16)	251.00 - 256.00	1.0000	0.5054
T21	52	LDF12-50(2-1/4")	251.00 - 256.00	0.6000	0.5054
T21	56	HJ11-50(4)	251.00 - 256.00	1.0000	0.5054
T21	62	LDF6-50A(1-1/4")	251.00 - 255.00	0.6000	0.5054
T21	72	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	74	Thin Flat Climbing Ladder	251.00 - 256.00	0.6000	0.5054
T21	75	Safety Line 3/8	251.00 - 256.00	0.6000	0.5054
T21	78	LDF4-50A(1/2)	251.00 - 256.00	0.6000	0.5054
T21	79	LDF6-50A(1-1/4)	251.00 - 256.00	0.6000	0.5054
T21	80	LDF5-50A(7/8")	251.00 - 256.00	0.6000	0.5054
T21	81	HCC312-50J(3-1/2")	251.00 - 256.00	1.0000	0.5054
T22	3	LDF5-50A(7/8")	246.00 - 247.00	0.6000	0.5210
T22	4	LDF5-50A(7/8")	246.00 - 247.00	0.6000	0.5210
T22	5	HB158-1-08U8-S8J18( 1-5/8)	246.00 - 247.00	0.6000	0.5210
T22	6	LDF4-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	7	CAT6(1/4)	246.00 - 251.00	0.6000	0.5210
T22	8	760178129(1/4)	246.00 - 251.00	0.6000	0.5210
T22	12	1" Rigid Conduit	246.00 - 251.00	0.6000	0.5210
T22	13	3/8" Cable (Lights)	246.00 - 251.00	0.6000	0.5210
T22	23	LDF5-50A(7/8")	246.00 - 251.00	0.6000	0.5210
T22	24	LDF12-50A(2-1/4")	246.00 - 251.00	0.6000	0.5210
T22	25	HJ8-50B(3")	246.00 - 251.00	0.6000	0.5210
T22	27	LDF6-50A(1 1/4")	246.00 - 251.00	0.6000	0.5210
T22	30	HJ11-50(4")	246.00 - 251.00	1.0000	0.5210
T22	31	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	32	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	33	LDF7-50A(1-5/8")	246.00 -	0.6000	0.5210

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 38 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			251.00		
T22	36	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	37	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	38	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	41	LDF4P-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	42	LDF4-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	50	475-000(4-1/16)	246.00 - 251.00	1.0000	0.5210
T22	52	LDF12-50(2-1/4")	246.00 - 251.00	0.6000	0.5210
T22	56	HJ11-50(4)	246.00 - 251.00	1.0000	0.5210
T22	62	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	72	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	74	Thin Flat Climbing Ladder	246.00 - 251.00	0.6000	0.5210
T22	75	Safety Line 3/8	246.00 - 251.00	0.6000	0.5210
T22	78	LDF4-50A(1/2)	246.00 - 251.00	0.6000	0.5210
T22	79	LDF6-50A(1-1/4)	246.00 - 251.00	0.6000	0.5210
T22	80	LDF5-50A(7/8")	246.00 - 251.00	0.6000	0.5210
T22	81	HCC312-50J(3-1/2")	246.00 - 251.00	1.0000	0.5210
T23	3	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	4	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	5	HB158-1-08U8-S8J18( 1-5/8)	241.00 - 246.00	0.6000	0.5063
T23	6	LDF4-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	7	CAT6(1/4)	241.00 - 246.00	0.6000	0.5063
T23	8	760178129(1/4)	241.00 - 246.00	0.6000	0.5063
T23	12	1" Rigid Conduit	241.00 - 246.00	0.6000	0.5063
T23	13	3/8" Cable (Lights)	241.00 - 246.00	0.6000	0.5063
T23	23	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	24	LDF12-50A(2-1/4")	241.00 - 246.00	0.6000	0.5063
T23	25	HJ8-50B(3")	241.00 - 246.00	0.6000	0.5063
T23	27	LDF6-50A(1 1/4")	241.00 - 246.00	0.6000	0.5063
T23	30	HJ11-50(4")	241.00 - 246.00	1.0000	0.5063
T23	31	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	32	LDF7-50A(1-5/8")	241.00 -	0.6000	0.5063



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 39 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T23	33	LDF7-50A(1-5/8")	246.00 241.00 - 246.00	0.6000	0.5063
T23	36	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	37	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	38	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	41	LDF4P-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	42	LDF4-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	50	475-000(4-1/16)	241.00 - 246.00	1.0000	0.5063
T23	52	LDF12-50(2-1/4")	241.00 - 246.00	0.6000	0.5063
T23	56	HJ11-50(4)	241.00 - 246.00	1.0000	0.5063
T23	62	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	72	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	74	Thin Flat Climbing Ladder	241.00 - 246.00	0.6000	0.5063
T23	75	Safety Line 3/8	241.00 - 246.00	0.6000	0.5063
T23	78	LDF4-50A(1/2)	241.00 - 246.00	0.6000	0.5063
T23	79	LDF6-50A(1-1/4)	241.00 - 246.00	0.6000	0.5063
T23	80	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	81	HCC312-50J(3-1/2")	241.00 - 246.00	1.0000	0.5063
T24	1	HB158-1-08U8-S8J18( 1-5/8)	221.00 - 230.00	0.6000	0.5644
T24	2	LCF78-50A( 7/8")	221.00 - 230.00	0.6000	0.5644
T24	3	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	4	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	5	HB158-1-08U8-S8J18( 1-5/8)	221.00 - 241.00	0.6000	0.5644
T24	6	LDF4-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	7	CAT6(1/4)	221.00 - 241.00	0.6000	0.5644
T24	8	760178129(1/4)	221.00 - 241.00	0.6000	0.5644
T24	11	LCF78-50A( 7/8")	221.00 - 230.00	0.6000	0.5644
T24	12	1" Rigid Conduit	221.00 - 241.00	0.6000	0.5644
T24	13	3/8" Cable (Lights)	221.00 - 241.00	0.6000	0.5644
T24	18	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	19	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	23	LDF5-50A(7/8")	221.00 -	0.6000	0.5644

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 40 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T24	24	LDF12-50A(2-1/4")	241.00 221.00 - 241.00	0.6000	0.5644
T24	25	HJ8-50B(3")	221.00 - 241.00	0.6000	0.5644
T24	27	LDF6-50A(1 1/4")	221.00 - 241.00	0.6000	0.5644
T24	30	HJ11-50(4")	221.00 - 241.00	1.0000	0.5644
T24	31	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	32	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	33	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	36	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	37	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	38	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	41	LDF4P-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	42	LDF4-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	46	AVA5-50( 7/8")	221.00 - 230.00	0.6000	0.5644
T24	50	475-000(4-1/16)	221.00 - 241.00	1.0000	0.5644
T24	52	LDF12-50(2-1/4")	221.00 - 241.00	0.6000	0.5644
T24	56	HJ11-50(4)	221.00 - 241.00	1.0000	0.5644
T24	62	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	72	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	74	Thin Flat Climbing Ladder	221.00 - 241.00	0.6000	0.5644
T24	75	Safety Line 3/8	221.00 - 241.00	0.6000	0.5644
T24	78	LDF4-50A(1/2)	221.00 - 241.00	0.6000	0.5644
T24	79	LDF6-50A(1-1/4)	221.00 - 241.00	0.6000	0.5644
T24	80	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	81	HCC312-50J(3-1/2")	221.00 - 241.00	1.0000	0.5644
T25	1	HB158-1-08U8-S8J18( 1-5/8)	201.00 - 221.00	0.6000	0.5811
T25	2	LCF78-50A( 7/8")	201.00 - 221.00	0.6000	0.5811
T25	3	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5811
T25	4	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5811
T25	5	HB158-1-08U8-S8J18( 1-5/8)	201.00 - 221.00	0.6000	0.5811
T25	6	LDF4-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	7	CAT6(1/4)	201.00 -	0.6000	0.5811

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 41 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T25	8	760178129(1/4)	221.00 201.00 - 221.00	0.6000	0.5811
T25	10	LCF78-50A( 7/8")	201.00 - 206.00	0.6000	0.5811
T25	11	LCF78-50A( 7/8")	206.00 - 221.00	0.6000	0.5811
T25	12	1" Rigid Conduit	201.00 - 221.00	0.6000	0.5811
T25	13	3/8" Cable (Lights)	201.00 - 221.00	0.6000	0.5811
T25	18	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5811
T25	19	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5811
T25	23	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5811
T25	24	LDF12-50A(2-1/4")	201.00 - 221.00	0.6000	0.5811
T25	25	HJ8-50B(3")	201.00 - 221.00	0.6000	0.5811
T25	27	LDF6-50A(1 1/4")	201.00 - 221.00	0.6000	0.5811
T25	30	HJ11-50(4")	201.00 - 221.00	1.0000	0.5811
T25	31	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	32	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	33	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	36	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5811
T25	37	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5811
T25	38	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	41	LDF4P-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	42	LDF4-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	46	AVA5-50( 7/8")	201.00 - 221.00	0.6000	0.5811
T25	50	475-000(4-1/16)	201.00 - 221.00	1.0000	0.5811
T25	52	LDF12-50(2-1/4")	201.00 - 221.00	0.6000	0.5811
T25	56	HJ11-50(4)	201.00 - 221.00	1.0000	0.5811
T25	62	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5811
T25	72	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	74	Thin Flat Climbing Ladder	201.00 - 221.00	0.6000	0.5811
T25	75	Safety Line 3/8	201.00 - 221.00	0.6000	0.5811
T25	78	LDF4-50A(1/2)	201.00 - 221.00	0.6000	0.5811
T25	79	LDF6-50A(1-1/4)	201.00 - 221.00	0.6000	0.5811
T25	80	LDF5-50A(7/8")	201.00 -	0.6000	0.5811

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 42 of 106
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T25	81	HCC312-50J(3-1/2")	221.00 201.00 - 221.00	1.0000	0.5811
T26	1	HB158-1-08U8-S8J18( 1-5/8)	181.00 - 201.00	0.6000	0.5831
T26	2	LCF78-50A( 7/8")	181.00 - 201.00	0.6000	0.5831
T26	3	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	4	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	5	HB158-1-08U8-S8J18( 1-5/8)	181.00 - 201.00	0.6000	0.5831
T26	6	LDF4-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	7	CAT6(1/4)	181.00 - 201.00	0.6000	0.5831
T26	8	760178129(1/4)	181.00 - 201.00	0.6000	0.5831
T26	10	LCF78-50A( 7/8")	181.00 - 201.00	0.6000	0.5831
T26	12	1" Rigid Conduit	181.00 - 201.00	0.6000	0.5831
T26	13	3/8" Cable (Lights)	181.00 - 201.00	0.6000	0.5831
T26	15	1/4 Coax	181.00 - 200.00	0.6000	0.5831
T26	18	Banjo (6" dia, 36" step)	181.00 - 201.00	0.6000	0.5831
T26	19	Banjo (6" dia, 36" step)	181.00 - 201.00	0.6000	0.5831
T26	23	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	24	LDF12-50A(2-1/4")	181.00 - 201.00	0.6000	0.5831
T26	25	HJ8-50B(3")	181.00 - 201.00	0.6000	0.5831
T26	27	LDF6-50A(1 1/4")	181.00 - 201.00	0.6000	0.5831
T26	30	HJ11-50(4")	181.00 - 201.00	1.0000	0.5831
T26	31	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	32	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	33	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	36	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	37	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	38	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	41	LDF4P-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	42	LDF4-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	46	AVA5-50( 7/8")	181.00 - 201.00	0.6000	0.5831
T26	50	475-000(4-1/16)	181.00 - 201.00	1.0000	0.5831
T26	52	LDF12-50(2-1/4")	181.00 -	0.6000	0.5831

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 43 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
			201.00		
T26	56	HJ11-50(4)	181.00 - 201.00	1.0000	0.5831
T26	62	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	72	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	74	Thin Flat Climbing Ladder	181.00 - 201.00	0.6000	0.5831
T26	75	Safety Line 3/8	181.00 - 201.00	0.6000	0.5831
T26	78	LDF4-50A(1/2)	181.00 - 201.00	0.6000	0.5831
T26	79	LDF6-50A(1-1/4)	181.00 - 201.00	0.6000	0.5831
T26	80	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	81	HCC312-50J(3-1/2")	181.00 - 201.00	1.0000	0.5831
T27	1	HB158-1-08U8-S8J18( 1-5/8)	161.00 - 181.00	0.6000	0.5834
T27	2	LCF78-50A( 7/8")	161.00 - 181.00	0.6000	0.5834
T27	3	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	4	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	5	HB158-1-08U8-S8J18( 1-5/8)	161.00 - 181.00	0.6000	0.5834
T27	6	LDF4-50A(1/2")	161.00 - 181.00	0.6000	0.5834
T27	7	CAT6(1/4)	161.00 - 181.00	0.6000	0.5834
T27	8	760178129(1/4)	161.00 - 181.00	0.6000	0.5834
T27	10	LCF78-50A( 7/8")	161.00 - 181.00	0.6000	0.5834
T27	12	1" Rigid Conduit	161.00 - 181.00	0.6000	0.5834
T27	13	3/8" Cable (Lights)	161.00 - 181.00	0.6000	0.5834
T27	15	1/4 Coax	161.00 - 181.00	0.6000	0.5834
T27	18	Banjo (6" dia, 36" step)	161.00 - 181.00	0.6000	0.5834
T27	19	Banjo (6" dia, 36" step)	161.00 - 181.00	0.6000	0.5834
T27	23	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	24	LDF12-50A(2-1/4")	161.00 - 181.00	0.6000	0.5834
T27	25	HJ8-50B(3")	161.00 - 181.00	0.6000	0.5834
T27	27	LDF6-50A(1 1/4")	161.00 - 181.00	0.6000	0.5834
T27	30	HJ11-50(4")	161.00 - 181.00	1.0000	0.5834
T27	31	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	32	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	33	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 44 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
			181.00		
T27	36	LDF6-50A(1-1/4")	161.00 -	0.6000	0.5834
			181.00		
T27	37	LDF6-50A(1-1/4")	161.00 -	0.6000	0.5834
			181.00		
T27	38	LDF7-50A(1-5/8")	161.00 -	0.6000	0.5834
			181.00		
T27	40	LDF4P-50A(1/2")	161.00 -	0.6000	0.5834
			178.00		
T27	41	LDF4P-50A(1/2")	178.00 -	0.6000	0.5834
			181.00		
T27	42	LDF4-50A(1/2")	161.00 -	0.6000	0.5834
			181.00		
T27	46	AVA5-50( 7/8")	161.00 -	0.6000	0.5834
			181.00		
T27	50	475-000(4-1/16)	161.00 -	1.0000	0.5834
			181.00		
T27	52	LDF12-50(2-1/4")	161.00 -	0.6000	0.5834
			181.00		
T27	56	HJ11-50(4)	161.00 -	1.0000	0.5834
			181.00		
T27	62	LDF6-50A(1-1/4")	161.00 -	0.6000	0.5834
			181.00		
T27	72	LDF7-50A(1-5/8")	161.00 -	0.6000	0.5834
			181.00		
T27	74	Thin Flat Climbing Ladder	161.00 -	0.6000	0.5834
			181.00		
T27	75	Safety Line 3/8	161.00 -	0.6000	0.5834
			181.00		
T27	78	LDF4-50A(1/2)	161.00 -	0.6000	0.5834
			181.00		
T27	79	LDF6-50A(1-1/4)	161.00 -	0.6000	0.5834
			181.00		
T27	80	LDF5-50A(7/8")	161.00 -	0.6000	0.5834
			181.00		
T27	81	HCC312-50J(3-1/2")	161.00 -	1.0000	0.5834
			181.00		
T28	1	HB158-1-08U8-S8J18( 1-5/8)	141.00 -	0.6000	0.5632
			161.00		
T28	2	LCF78-50A( 7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	3	LDF5-50A(7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	4	LDF5-50A(7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	5	HB158-1-08U8-S8J18( 1-5/8)	141.00 -	0.6000	0.5632
			161.00		
T28	6	LDF4-50A(1/2")	141.00 -	0.6000	0.5632
			161.00		
T28	7	CAT6(1/4)	141.00 -	0.6000	0.5632
			161.00		
T28	8	760178129(1/4)	141.00 -	0.6000	0.5632
			161.00		
T28	9	EW63(ELLIPTICAL)	141.00 -	0.6000	0.5632
			150.00		
T28	10	LCF78-50A( 7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	12	1" Rigid Conduit	141.00 -	0.6000	0.5632
			161.00		
T28	13	3/8" Cable (Lights)	141.00 -	0.6000	0.5632
			161.00		
T28	15	1/4 Coax	141.00 -	0.6000	0.5632

<b><i>tnxTower</i></b>  <b><i>Tower Engineering Professionals, Inc.</i></b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 45 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
			161.00		
T28	18	Banjo (6" dia, 36" step)	141.00 -	0.6000	0.5632
			161.00		
T28	19	Banjo (6" dia, 36" step)	141.00 -	0.6000	0.5632
			161.00		
T28	23	LDF5-50A(7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	24	LDF12-50A(2-1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	25	HJ8-50B(3")	141.00 -	0.6000	0.5632
			161.00		
T28	27	LDF6-50A(1 1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	30	HJ11-50(4")	141.00 -	1.0000	0.5632
			161.00		
T28	31	LDF7-50A(1-5/8")	141.00 -	0.6000	0.5632
			161.00		
T28	32	LDF7-50A(1-5/8")	141.00 -	0.6000	0.5632
			161.00		
T28	33	LDF7-50A(1-5/8")	141.00 -	0.6000	0.5632
			161.00		
T28	36	LDF6-50A(1-1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	37	LDF6-50A(1-1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	38	LDF7-50A(1-5/8")	141.00 -	0.6000	0.5632
			161.00		
T28	40	LDF4P-50A(1/2")	141.00 -	0.6000	0.5632
			161.00		
T28	42	LDF4-50A(1/2")	141.00 -	0.6000	0.5632
			161.00		
T28	43	EW63(ELLIPTICAL)	141.00 -	0.6000	0.5632
			146.00		
T28	44	EW52(ELLIPTICAL)	141.00 -	0.6000	0.5632
			146.00		
T28	46	AVA5-50( 7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	50	475-000(4-1/16)	141.00 -	1.0000	0.5632
			161.00		
T28	52	LDF12-50(2-1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	56	HJ11-50(4)	141.00 -	1.0000	0.5632
			161.00		
T28	62	LDF6-50A(1-1/4")	141.00 -	0.6000	0.5632
			161.00		
T28	72	LDF7-50A(1-5/8")	141.00 -	0.6000	0.5632
			161.00		
T28	74	Thin Flat Climbing Ladder	141.00 -	0.6000	0.5632
			161.00		
T28	75	Safety Line 3/8	141.00 -	0.6000	0.5632
			161.00		
T28	78	LDF4-50A(1/2)	141.00 -	0.6000	0.5632
			161.00		
T28	79	LDF6-50A(1-1/4)	141.00 -	0.6000	0.5632
			161.00		
T28	80	LDF5-50A(7/8")	141.00 -	0.6000	0.5632
			161.00		
T28	81	HCC312-50J(3-1/2")	141.00 -	1.0000	0.5632
			161.00		
T29	1	HB158-1-08U8-S8J18( 1-5/8)	121.00 -	0.6000	0.5659
			141.00		
T29	2	LCF78-50A( 7/8")	121.00 -	0.6000	0.5659

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 46 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			141.00		
T29	3	LDF5-50A(7/8")	121.00 -	0.6000	0.5659
			141.00		
T29	4	LDF5-50A(7/8")	121.00 -	0.6000	0.5659
			141.00		
T29	5	HB158-1-08U8-S8J18( 1-5/8)	121.00 -	0.6000	0.5659
			141.00		
T29	6	LDF4-50A(1/2")	121.00 -	0.6000	0.5659
			141.00		
T29	7	CAT6(1/4)	121.00 -	0.6000	0.5659
			141.00		
T29	8	760178129(1/4)	121.00 -	0.6000	0.5659
			141.00		
T29	9	EW63(ELLIPTICAL)	121.00 -	0.6000	0.5659
			141.00		
T29	10	LCF78-50A( 7/8")	121.00 -	0.6000	0.5659
			141.00		
T29	12	1" Rigid Conduit	121.00 -	0.6000	0.5659
			141.00		
T29	13	3/8" Cable (Lights)	121.00 -	0.6000	0.5659
			141.00		
T29	15	1/4 Coax	121.00 -	0.6000	0.5659
			141.00		
T29	16	3/8" Coax	121.00 -	0.6000	0.5659
			136.00		
T29	17	3/8" Coax	121.00 -	0.6000	0.5659
			140.00		
T29	18	Banjo (6" dia, 36" step)	121.00 -	0.6000	0.5659
			141.00		
T29	19	Banjo (6" dia, 36" step)	121.00 -	0.6000	0.5659
			141.00		
T29	22	LDF5-50A(7/8")	121.00 -	0.6000	0.5659
			133.00		
T29	23	LDF5-50A(7/8")	133.00 -	0.6000	0.5659
			141.00		
T29	24	LDF12-50A(2-1/4")	121.00 -	0.6000	0.5659
			141.00		
T29	25	HJ8-50B(3")	121.00 -	0.6000	0.5659
			141.00		
T29	27	LDF6-50A(1 1/4")	121.00 -	0.6000	0.5659
			141.00		
T29	30	HJ11-50(4")	121.00 -	1.0000	0.5659
			141.00		
T29	31	LDF7-50A(1-5/8")	121.00 -	0.6000	0.5659
			141.00		
T29	32	LDF7-50A(1-5/8")	121.00 -	0.6000	0.5659
			141.00		
T29	33	LDF7-50A(1-5/8")	121.00 -	0.6000	0.5659
			141.00		
T29	36	LDF6-50A(1-1/4")	121.00 -	0.6000	0.5659
			141.00		
T29	37	LDF6-50A(1-1/4")	121.00 -	0.6000	0.5659
			141.00		
T29	38	LDF7-50A(1-5/8")	121.00 -	0.6000	0.5659
			141.00		
T29	39	LDF4P-50A(1/2")	121.00 -	0.6000	0.5659
			133.00		
T29	40	LDF4P-50A(1/2")	133.00 -	0.6000	0.5659
			141.00		
T29	42	LDF4-50A(1/2")	121.00 -	0.6000	0.5659
			141.00		
T29	43	EW63(ELLIPTICAL)	121.00 -	0.6000	0.5659



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 47 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T29	44	EW52(ELLIPTICAL)	141.00 121.00 -	0.6000	0.5659
T29	46	AVA5-50( 7/8")	141.00 121.00 -	0.6000	0.5659
T29	50	475-000(4-1/16)	141.00 121.00 -	1.0000	0.5659
T29	52	LDF12-50(2-1/4")	141.00 121.00 -	0.6000	0.5659
T29	56	HJ11-50(4)	141.00 121.00 -	1.0000	0.5659
T29	62	LDF6-50A(1-1/4")	141.00 121.00 -	0.6000	0.5659
T29	67	LDF5-50A(7/8")	141.00 121.00 -	0.6000	0.5659
T29	72	LDF7-50A(1-5/8")	133.00 121.00 -	0.6000	0.5659
T29	74	Thin Flat Climbing Ladder	141.00 121.00 -	0.6000	0.5659
T29	75	Safety Line 3/8	141.00 121.00 -	0.6000	0.5659
T29	78	LDF4-50A(1/2)	141.00 121.00 -	0.6000	0.5659
T29	79	LDF6-50A(1-1/4)	141.00 121.00 -	0.6000	0.5659
T29	80	LDF5-50A(7/8")	141.00 121.00 -	0.6000	0.5659
T29	81	HCC312-50J(3-1/2")	141.00 121.00 -	1.0000	0.5659
T30	1	HB158-1-08U8-S8J18( 1-5/8)	141.00 101.00 -	0.6000	0.5888
T30	2	LCF78-50A( 7/8")	121.00 101.00 -	0.6000	0.5888
T30	3	LDF5-50A(7/8")	121.00 101.00 -	0.6000	0.5888
T30	4	LDF5-50A(7/8")	121.00 101.00 -	0.6000	0.5888
T30	5	HB158-1-08U8-S8J18( 1-5/8)	121.00 101.00 -	0.6000	0.5888
T30	6	LDF4-50A(1/2")	121.00 101.00 -	0.6000	0.5888
T30	7	CAT6(1/4)	121.00 101.00 -	0.6000	0.5888
T30	8	760178129(1/4)	121.00 101.00 -	0.6000	0.5888
T30	9	EW63(ELLIPTICAL)	121.00 101.00 -	0.6000	0.5888
T30	10	LCF78-50A( 7/8")	121.00 101.00 -	0.6000	0.5888
T30	12	1" Rigid Conduit	121.00 101.00 -	0.6000	0.5888
T30	13	3/8" Cable (Lights)	121.00 101.00 -	0.6000	0.5888
T30	15	1/4 Coax	121.00 101.00 -	0.6000	0.5888
T30	16	3/8" Coax	121.00 101.00 -	0.6000	0.5888
T30	17	3/8" Coax	121.00 101.00 -	0.6000	0.5888
T30	18	Banjo (6" dia, 36" step)	121.00 101.00 -	0.6000	0.5888
T30	19	Banjo (6" dia, 36" step)	121.00 101.00 -	0.6000	0.5888

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 48 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			121.00		
T30	22	LDF5-50A(7/8")	101.00 -	0.6000	0.5888
			121.00		
T30	24	LDF12-50A(2-1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	25	HJ8-50B(3")	101.00 -	0.6000	0.5888
			121.00		
T30	27	LDF6-50A(1 1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	30	HJ11-50(4")	101.00 -	1.0000	0.5888
			121.00		
T30	31	LDF7-50A(1-5/8")	101.00 -	0.6000	0.5888
			121.00		
T30	32	LDF7-50A(1-5/8")	101.00 -	0.6000	0.5888
			121.00		
T30	33	LDF7-50A(1-5/8")	101.00 -	0.6000	0.5888
			121.00		
T30	36	LDF6-50A(1-1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	37	LDF6-50A(1-1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	38	LDF7-50A(1-5/8")	101.00 -	0.6000	0.5888
			121.00		
T30	39	LDF4P-50A(1/2")	101.00 -	0.6000	0.5888
			121.00		
T30	42	LDF4-50A(1/2")	101.00 -	0.6000	0.5888
			121.00		
T30	43	EW63(ELLIPTICAL)	101.00 -	0.6000	0.5888
			121.00		
T30	44	EW52(ELLIPTICAL)	101.00 -	0.6000	0.5888
			121.00		
T30	46	AVA5-50( 7/8")	101.00 -	0.6000	0.5888
			121.00		
T30	50	475-000(4-1/16)	101.00 -	1.0000	0.5888
			121.00		
T30	52	LDF12-50(2-1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	54	LDF5-50A(7/8")	101.00 -	0.6000	0.5888
			109.00		
T30	56	HJ11-50(4)	101.00 -	1.0000	0.5888
			121.00		
T30	62	LDF6-50A(1-1/4")	101.00 -	0.6000	0.5888
			121.00		
T30	67	LDF5-50A(7/8")	117.00 -	0.6000	0.5888
			121.00		
T30	68	LDF5-50A(7/8")	101.00 -	0.6000	0.5888
			117.00		
T30	71	LDF5-50A(7/8")	101.00 -	0.6000	0.5888
			108.00		
T30	72	LDF7-50A(1-5/8")	101.00 -	0.6000	0.5888
			121.00		
T30	74	Thin Flat Climbing Ladder	101.00 -	0.6000	0.5888
			121.00		
T30	75	Safety Line 3/8	101.00 -	0.6000	0.5888
			121.00		
T30	78	LDF4-50A(1/2)	101.00 -	0.6000	0.5888
			121.00		
T30	79	LDF6-50A(1-1/4)	101.00 -	0.6000	0.5888
			121.00		
T30	80	LDF5-50A(7/8")	101.00 -	0.6000	0.5888
			121.00		
T30	81	HCC312-50J(3-1/2")	101.00 -	1.0000	0.5888

<p><b>tnxTower</b></p> <p><i>Tower Engineering Professionals, Inc.</i></p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p><b>Job</b></p> <p>Trumbull (BU 873128)</p>	<p><b>Page</b></p> <p>49 of 106</p>
	<p><b>Project</b></p> <p>TEP No. 25575.455021</p>	<p><b>Date</b></p> <p>18:56:49 10/28/20</p>
	<p><b>Client</b></p> <p>Crown Castle</p>	<p><b>Designed by</b></p> <p>EJB</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			121.00		
T31	1	HB158-1-08U8-S8J18( 1-5/8)	81.00 - 101.00	0.6000	0.5925
T31	2	LCF78-50A( 7/8")	81.00 - 101.00	0.6000	0.5925
T31	3	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	4	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	5	HB158-1-08U8-S8J18( 1-5/8)	81.00 - 101.00	0.6000	0.5925
T31	6	LDF4-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	7	CAT6(1/4)	81.00 - 101.00	0.6000	0.5925
T31	8	760178129(1/4)	81.00 - 101.00	0.6000	0.5925
T31	9	EW63(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	10	LCF78-50A( 7/8")	81.00 - 101.00	0.6000	0.5925
T31	12	1" Rigid Conduit	81.00 - 101.00	0.6000	0.5925
T31	13	3/8" Cable (Lights)	81.00 - 101.00	0.6000	0.5925
T31	14	1/4 Coax	81.00 - 99.00	0.6000	0.5925
T31	15	1/4 Coax	81.00 - 101.00	0.6000	0.5925
T31	16	3/8" Coax	81.00 - 101.00	0.6000	0.5925
T31	17	3/8" Coax	81.00 - 101.00	0.6000	0.5925
T31	18	Banjo (6" dia, 36" step)	81.00 - 101.00	0.6000	0.5925
T31	19	Banjo (6" dia, 36" step)	81.00 - 101.00	0.6000	0.5925
T31	22	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	24	LDF12-50A(2-1/4")	81.00 - 101.00	0.6000	0.5925
T31	25	HJ8-50B(3")	81.00 - 101.00	0.6000	0.5925
T31	27	LDF6-50A(1 1/4")	81.00 - 101.00	0.6000	0.5925
T31	30	HJ11-50(4")	81.00 - 101.00	1.0000	0.5925
T31	31	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	32	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	33	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	36	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	37	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	38	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	39	LDF4P-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	42	LDF4-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	43	EW63(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	44	EW52(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	46	AVA5-50( 7/8")	81.00 - 101.00	0.6000	0.5925
T31	50	475-000(4-1/16)	81.00 - 101.00	1.0000	0.5925
T31	52	LDF12-50(2-1/4")	81.00 - 101.00	0.6000	0.5925
T31	54	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	56	HJ11-50(4)	81.00 - 101.00	1.0000	0.5925
T31	62	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	68	LDF5-50A(7/8")	99.00 - 101.00	0.6000	0.5925
T31	69	LDF5-50A(7/8")	81.00 - 99.00	0.6000	0.5925
T31	71	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	72	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	74	Thin Flat Climbing Ladder	81.00 - 101.00	0.6000	0.5925
T31	75	Safety Line 3/8	81.00 - 101.00	0.6000	0.5925
T31	78	LDF4-50A(1/2)	81.00 - 101.00	0.6000	0.5925
T31	79	LDF6-50A(1-1/4)	81.00 - 101.00	0.6000	0.5925
T31	80	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	81	HCC312-50J(3-1/2")	81.00 - 101.00	1.0000	0.5925
T32	1	HB158-1-08U8-S8J18( 1-5/8)	61.00 - 81.00	0.6000	0.5971
T32	2	LCF78-50A( 7/8")	61.00 - 81.00	0.6000	0.5971
T32	3	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	4	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	5	HB158-1-08U8-S8J18( 1-5/8)	61.00 - 81.00	0.6000	0.5971
T32	6	LDF4-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	7	CAT6(1/4)	61.00 - 81.00	0.6000	0.5971
T32	8	760178129(1/4)	61.00 - 81.00	0.6000	0.5971
T32	9	EW63(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	10	LCF78-50A( 7/8")	61.00 - 81.00	0.6000	0.5971
T32	12	1" Rigid Conduit	61.00 - 81.00	0.6000	0.5971
T32	13	3/8" Cable (Lights)	61.00 - 81.00	0.6000	0.5971

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 50 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T32	14	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	15	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	16	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	17	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	18	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	19	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	22	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	24	LDF12-50A(2-1/4")	61.00 - 81.00	0.6000	0.5971
T32	25	HJ8-50B(3")	61.00 - 81.00	0.6000	0.5971
T32	27	LDF6-50A(1 1/4")	61.00 - 81.00	0.6000	0.5971
T32	30	HJ11-50(4")	61.00 - 81.00	1.0000	0.5971
T32	31	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	32	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	33	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	36	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	37	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	38	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	39	LDF4P-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	42	LDF4-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	43	EW63(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	44	EW52(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	46	AVA5-50( 7/8")	61.00 - 81.00	0.6000	0.5971
T32	50	475-000(4-1/16)	61.00 - 81.00	1.0000	0.5971
T32	52	LDF12-50(2-1/4")	61.00 - 81.00	0.6000	0.5971
T32	54	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	56	HJ11-50(4)	61.00 - 81.00	1.0000	0.5971
T32	62	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	69	LDF5-50A(7/8")	62.00 - 81.00	0.6000	0.5971
T32	70	LDF5-50A(7/8")	61.00 - 62.00	0.6000	0.5971
T32	71	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	72	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	74	Thin Flat Climbing Ladder	61.00 - 81.00	0.6000	0.5971
T32	75	Safety Line 3/8	61.00 - 81.00	0.6000	0.5971
T32	78	LDF4-50A(1/2)	61.00 - 81.00	0.6000	0.5971
T32	79	LDF6-50A(1-1/4)	61.00 - 81.00	0.6000	0.5971
T32	80	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	81	HCC312-50J(3-1/2")	61.00 - 81.00	1.0000	0.5971
T32	82	LDF7-50A(1-5/8")	61.00 - 75.00	0.6000	0.5971
T33	1	HB158-1-08U8-S8J18( 1-5/8)	41.00 - 61.00	0.6000	0.6000
T33	2	LCF78-50A( 7/8")	41.00 - 61.00	0.6000	0.6000
T33	3	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	4	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	5	HB158-1-08U8-S8J18( 1-5/8)	41.00 - 61.00	0.6000	0.6000
T33	6	LDF4-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	7	CAT6(1/4)	41.00 - 61.00	0.6000	0.6000
T33	8	760178129(1/4)	41.00 - 61.00	0.6000	0.6000
T33	9	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	10	LCF78-50A( 7/8")	41.00 - 61.00	0.6000	0.6000
T33	12	1" Rigid Conduit	41.00 - 61.00	0.6000	0.6000
T33	13	3/8" Cable (Lights)	41.00 - 61.00	0.6000	0.6000
T33	14	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	15	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	16	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	17	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	18	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	19	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	22	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	24	LDF12-50A(2-1/4")	41.00 - 61.00	0.6000	0.6000
T33	25	HJ8-50B(3")	41.00 - 61.00	0.6000	0.6000
T33	27	LDF6-50A(1 1/4")	41.00 - 61.00	0.6000	0.6000
T33	30	HJ11-50(4")	41.00 - 61.00	1.0000	0.6000
T33	31	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000

<p><b>tnxTower</b></p> <p><i>Tower Engineering Professionals, Inc.</i></p> <p>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p><b>Job</b></p> <p>Trumbull (BU 873128)</p>	<p><b>Page</b></p> <p>51 of 106</p>
	<p><b>Project</b></p> <p>TEP No. 25575.455021</p>	<p><b>Date</b></p> <p>18:56:49 10/28/20</p>
	<p><b>Client</b></p> <p>Crown Castle</p>	<p><b>Designed by</b></p> <p>EJB</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T33	32	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	33	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	36	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	37	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	38	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	39	LDF4P-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	42	LDF4-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	43	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	44	EW52(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	46	AVA5-50( 7/8")	41.00 - 61.00	0.6000	0.6000
T33	50	475-000(4-1/16)	41.00 - 61.00	1.0000	0.6000
T33	52	LDF12-50(2-1/4")	41.00 - 61.00	0.6000	0.6000
T33	54	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	56	HJ11-50(4)	41.00 - 61.00	1.0000	0.6000
T33	62	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	70	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	71	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	72	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	74	Thin Flat Climbing Ladder	41.00 - 61.00	0.6000	0.6000
T33	75	Safety Line 3/8	41.00 - 61.00	0.6000	0.6000
T33	78	LDF4-50A(1/2)	41.00 - 61.00	0.6000	0.6000
T33	79	LDF6-50A(1-1/4)	41.00 - 61.00	0.6000	0.6000
T33	80	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	81	HCC312-50J(3-1/2")	41.00 - 61.00	1.0000	0.6000
T33	82	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T34	1	HB158-1-08U8-S8J18( 1-5/8)	20.00 - 41.00	0.6000	0.6000
T34	2	LCF78-50A( 7/8")	20.00 - 41.00	0.6000	0.6000
T34	3	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	4	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	5	HB158-1-08U8-S8J18( 1-5/8)	20.00 - 41.00	0.6000	0.6000
T34	6	LDF4-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	7	CAT6(1/4)	20.00 - 41.00	0.6000	0.6000
T34	8	760178129(1/4)	20.00 - 41.00	0.6000	0.6000
T34	9	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	10	LCF78-50A( 7/8")	20.00 - 41.00	0.6000	0.6000
T34	12	1" Rigid Conduit	20.00 - 41.00	0.6000	0.6000
T34	13	3/8" Cable (Lights)	20.00 - 41.00	0.6000	0.6000
T34	14	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	15	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	16	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	17	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	18	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	19	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	22	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	24	LDF12-50A(2-1/4")	20.00 - 41.00	0.6000	0.6000
T34	25	HJ8-50B(3")	20.00 - 41.00	0.6000	0.6000
T34	27	LDF6-50A(1 1/4")	20.00 - 41.00	0.6000	0.6000
T34	30	HJ11-50(4")	20.00 - 41.00	1.0000	0.6000
T34	31	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	32	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	33	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	36	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	37	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	38	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	39	LDF4P-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	42	LDF4-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	43	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	44	EW52(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	46	AVA5-50( 7/8")	20.00 - 41.00	0.6000	0.6000
T34	50	475-000(4-1/16)	20.00 - 41.00	1.0000	0.6000
T34	52	LDF12-50(2-1/4")	20.00 - 41.00	0.6000	0.6000
T34	54	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000

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	<p><b>Project</b></p> <p>TEP No. 25575.455021</p>	<p><b>Date</b></p> <p>18:56:49 10/28/20</p>
	<p><b>Client</b></p> <p>Crown Castle</p>	<p><b>Designed by</b></p> <p>EJB</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T34	56	HJ11-50(4)	20.00 - 41.00	1.0000	0.6000
T34	62	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	70	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	71	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	72	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	74	Thin Flat Climbing Ladder	20.00 - 41.00	0.6000	0.6000
T34	75	Safety Line 3/8	20.00 - 41.00	0.6000	0.6000
T34	78	LDF4-50A(1/2)	20.00 - 41.00	0.6000	0.6000
T34	79	LDF6-50A(1-1/4)	20.00 - 41.00	0.6000	0.6000
T34	80	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	81	HCC312-50J(3-1/2")	20.00 - 41.00	0.6000	0.6000
T34	82	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T35	1	HB158-1-08U8-S8J18( 1-5/8)	10.00 - 20.00	0.6000	0.5399
T35	2	LCF78-50A( 7/8")	10.00 - 20.00	0.6000	0.5399
T35	3	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	4	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	5	HB158-1-08U8-S8J18( 1-5/8)	10.00 - 20.00	0.6000	0.5399
T35	6	LDF4-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	7	CAT6(1/4)	10.00 - 20.00	0.6000	0.5399
T35	8	760178129(1/4)	10.00 - 20.00	0.6000	0.5399
T35	9	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	10	LCF78-50A( 7/8")	10.00 - 20.00	0.6000	0.5399
T35	12	1" Rigid Conduit	10.00 - 20.00	0.6000	0.5399
T35	13	3/8" Cable (Lights)	10.00 - 20.00	0.6000	0.5399
T35	14	1/4 Coax	10.00 - 20.00	0.6000	0.5399
T35	15	1/4 Coax	10.00 - 20.00	0.6000	0.5399
T35	16	3/8" Coax	10.00 - 20.00	0.6000	0.5399
T35	17	3/8" Coax	10.00 - 20.00	0.6000	0.5399
T35	18	Banjo (6" dia, 36" step)	10.00 - 20.00	0.6000	0.5399
T35	19	Banjo (6" dia, 36" step)	10.00 - 20.00	0.6000	0.5399
T35	22	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	24	LDF12-50A(2-1/4")	10.00 - 20.00	0.6000	0.5399
T35	25	HJ8-50B(3")	10.00 - 20.00	0.6000	0.5399
T35	27	LDF6-50A(1 1/4")	10.00 - 20.00	0.6000	0.5399
T35	30	HJ11-50(4")	10.00 - 20.00	1.0000	0.5399
T35	31	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	32	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	33	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	36	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5399
T35	37	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5399
T35	38	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	39	LDF4P-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	42	LDF4-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	43	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	44	EW52(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	46	AVA5-50( 7/8")	10.00 - 20.00	0.6000	0.5399
T35	50	475-000(4-1/16)	10.00 - 20.00	1.0000	0.5399
T35	52	LDF12-50(2-1/4")	10.00 - 20.00	0.6000	0.5399
T35	54	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	56	HJ11-50(4)	10.00 - 20.00	1.0000	0.5399
T35	62	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5399
T35	70	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	71	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	72	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	74	Thin Flat Climbing Ladder	10.00 - 20.00	0.6000	0.5399
T35	75	Safety Line 3/8	10.00 - 20.00	0.6000	0.5399
T35	78	LDF4-50A(1/2)	10.00 - 20.00	0.6000	0.5399
T35	79	LDF6-50A(1-1/4)	10.00 - 20.00	0.6000	0.5399
T35	80	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	81	HCC312-50J(3-1/2")	10.00 - 20.00	0.6000	0.5399
T35	82	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 53 of 106
	<b>Project</b> TEP No. 25575.455021	<b>Date</b> 18:56:49 10/28/20
	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

**Antenna Pole Forces RFS/Cel/wave SAA18-04A-J480-ET5R-21**

Length of Pole	Ix	Iy	Modulus E	Antenna Pole C <sub>AA</sub>	Antenna Pole Weight	Length of Beacon	Beacon C <sub>AA</sub>	Beacon Weight
ft	in <sup>4</sup>	in <sup>4</sup>	ksi	ft <sup>2</sup> /ft	plf	ft	ft <sup>2</sup>	lb
39'6-27/32"	9547.00	9547.00	29000	No Ice	1.05	116	0.00	0
				With Ice	1.15	143	0.00	0

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral	Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
12" x 3' Beacon	A	From Centroid-LEG	0.00	0.0000	457'	No Ice	1.53	1.53	21
			0'			1/2" Ice	2.36	2.36	49
			41'6"			1" Ice	2.60	2.60	79
						2" Ice	3.11	3.11	150
3" x 6" SideLight	A	From Leg	1.00	0.0000	333'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	B	From Leg	1.00	0.0000	333'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	C	From Leg	1.00	0.0000	333'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	A	From Leg	1.00	0.0000	215'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	B	From Leg	1.00	0.0000	215'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	C	From Leg	1.00	0.0000	215'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	A	From Leg	1.00	0.0000	112'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2
			0'			1" Ice	0.19	0.19	5
						2" Ice	0.34	0.34	12
3" x 6" SideLight	B	From Leg	1.00	0.0000	112'	No Ice	0.09	0.09	1
			0'			1/2" Ice	0.14	0.14	2





<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	55 of 106
	<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Lateral Vert					
ERI 1183-3CP	C	None			0.0000	435' - 405'	No Ice 119.38 1/2" Ice 167.05 1" Ice 169.13 2" Ice 173.32	119.38 167.05 169.13 173.32	4350 6270 8216 12193
***									
6014-2	A	None			0.0000	393'	No Ice 65.00 1/2" Ice 135.00 1" Ice 205.00 2" Ice 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
6014-2	C	None			0.0000	388'	No Ice 65.00 1/2" Ice 135.00 1" Ice 205.00 2" Ice 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
***									
6828-2	C	From Leg	1.00 0' 0'		-20.0000	367'	No Ice 12.50 1/2" Ice 14.98 1" Ice 17.46 2" Ice 22.42	11.70 14.02 16.34 20.98	240 369 498 756
***									
DB806E-XT	A	From Leg	4.00 0' 4'		-60.0000	364'	No Ice 2.40 1/2" Ice 3.19 1" Ice 3.67 2" Ice 4.68	2.40 3.19 3.67 4.68	16 34 56 119
Side Arm Mount [SO 601-1]	A	From Leg	2.00 0' 0'		-60.0000	364'	No Ice 1.04 1/2" Ice 1.41 1" Ice 1.78 2" Ice 2.52	5.32 6.43 7.67 10.67	159 196 241 359
***									
455-6	B	From Leg	4.00 0' 10'		-20.0000	344'	No Ice 5.50 1/2" Ice 7.53 1" Ice 9.58 2" Ice 13.73	5.50 7.53 9.58 13.73	25 65 118 262
Side Arm Mount [SO 601-1]	B	From Leg	2.00 0' 0'		-20.0000	344'	No Ice 1.04 1/2" Ice 1.41 1" Ice 1.78 2" Ice 2.52	5.32 6.43 7.67 10.67	159 196 241 359
***									
BCD-87077	C	From Leg	6.00 0' 8'		90.0000	342'	No Ice 3.06 1/2" Ice 4.27 1" Ice 5.49 2" Ice 7.55	3.06 4.27 5.49 7.55	27 49 79 163
Side Arm Mount [SO 303-1]	C	From Leg	3.00 0' 0'		90.0000	342'	No Ice 1.08 1/2" Ice 1.63 1" Ice 2.21 2" Ice 3.44	5.31 7.57 9.93 15.19	115 158 217 379
AO9009-3	B	From Leg	4.00 0' 5'		90.0000	342'	No Ice 2.55 1/2" Ice 3.60 1" Ice 4.67 2" Ice 6.14	2.55 3.60 4.67 6.14	11 30 56 127
Side Arm Mount [SO 305-1]	B	From Leg	2.00 0' 0'		90.0000	342'	No Ice 0.53 1/2" Ice 0.78 1" Ice 1.06 2" Ice 1.73	1.52 2.07 2.66 3.91	30 44 64 125
455-6	A	From Leg	4.00 0' 10'		-60.0000	342'	No Ice 5.50 1/2" Ice 7.53 1" Ice 9.58 2" Ice 13.73	5.50 7.53 9.58 13.73	25 65 118 262

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	56 of 106
	<b>Project</b>	TEP No. 25575.455021	<b>Date</b>	18:56:49 10/28/20
	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
Side Arm Mount [SO 601-1]	A	From Leg	2.00		-60.0000	342'	No Ice	1.04	5.32	159
			0'				1/2" Ice	1.41	6.43	196
			0'				1" Ice	1.78	7.67	241
							2" Ice	2.52	10.67	359
***										
455-6	A	From Leg	6.00		-50.0000	340'	No Ice	5.50	5.50	25
			0'				1/2" Ice	7.53	7.53	65
			10'				1" Ice	9.58	9.58	118
							2" Ice	13.73	13.73	262
Side Arm Mount [SO 308-1]	A	From Leg	3.00		-50.0000	340'	No Ice	0.41	3.06	53
			0'				1/2" Ice	0.81	5.10	80
			0'				1" Ice	1.23	7.20	122
							2" Ice	2.09	11.96	246
***										
PG1N0F-0090-310	B	From Leg	6.00		-60.0000	330'	No Ice	3.00	3.00	28
			0'				1/2" Ice	4.03	4.03	50
			5'				1" Ice	5.03	5.03	78
							2" Ice	6.26	6.26	155
Side Arm Mount [SO 601-1]	B	From Leg	3.00		-60.0000	330'	No Ice	1.04	5.32	159
			0'				1/2" Ice	1.41	6.43	196
			0'				1" Ice	1.78	7.67	241
							2" Ice	2.52	10.67	359
***										
7P-C1-2-CP-L	C	From Leg	4.00		90.0000	328'	No Ice	7.00	7.00	250
			0'				1/2" Ice	8.00	8.00	350
			0'				1" Ice	9.00	9.00	450
							2" Ice	11.00	11.00	650
(3) Side Arm Mount [SO 701-1]	C	From Leg	2.00		90.0000	328'	No Ice	0.85	1.67	65
			0'				1/2" Ice	1.14	2.34	79
			0'				1" Ice	1.43	3.01	93
							2" Ice	2.01	4.35	121
***										
***										
DB201-A	A	From Leg	6.00		0.0000	326'	No Ice	1.10	1.10	25
			0'				1/2" Ice	1.98	1.98	33
			3'				1" Ice	2.86	2.86	40
							2" Ice	4.62	4.62	55
Side Arm Mount [SO 602-1]	A	From Leg	3.00		0.0000	326'	No Ice	2.58	10.83	146
			0'				1/2" Ice	3.39	13.16	221
			0'				1" Ice	4.18	15.84	314
							2" Ice	5.70	22.98	549
***										
DB408	A	From Leg	6.00		0.0000	325'	No Ice	1.90	1.90	17
			0'				1/2" Ice	3.42	3.42	22
			0'				1" Ice	4.94	4.94	27
							2" Ice	7.98	7.98	37
Side Arm Mount [SO 303-1]	A	From Leg	3.00		0.0000	325'	No Ice	1.08	5.31	115
			0'				1/2" Ice	1.63	7.57	158
			0'				1" Ice	2.21	9.93	217
							2" Ice	3.44	15.19	379
***										
SRL310C-4HD	B	From Leg	6.00		0.0000	322'	No Ice	1.14	1.14	15
			0'				1/2" Ice	2.09	2.09	25
			5'				1" Ice	3.04	3.04	35
							2" Ice	4.94	4.94	55
Side Arm Mount [SO 308-1]	B	From Leg	3.00		0.0000	322'	No Ice	0.41	3.06	53
			0'				1/2" Ice	0.81	5.10	80

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	57 of 106
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Lateral	Vert					
							1" Ice	1.23	7.20	122
							2" Ice	2.09	11.96	246
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	322'	No Ice	1.32	1.32	65	
			0'			1/2" Ice	1.58	1.58	77	
			0'			1" Ice	1.84	1.84	93	
			0'			2" Ice	2.40	2.40	134	
***										
6014-2	A	None		0.0000	316'	No Ice	65.00	65.00	1086	
						1/2" Ice	135.00	135.00	2388	
						1" Ice	205.00	205.00	3690	
						2" Ice	345.00	345.00	6294	
6014-2	A	None		0.0000	306'	No Ice	65.00	65.00	1086	
						1/2" Ice	135.00	135.00	2388	
						1" Ice	205.00	205.00	3690	
						2" Ice	345.00	345.00	6294	
***										
***										
DB404-B w/ Mount Pipe	A	From Leg	0.50	0.0000	284'	No Ice	4.13	4.13	49	
			0'			1/2" Ice	5.67	5.67	103	
			0'			1" Ice	6.38	6.38	163	
						2" Ice	7.87	7.87	303	
***										
BMR10-A-B1	B	From Leg	1.00	-30.0000	277'	No Ice	8.60	8.60	55	
			0'			1/2" Ice	9.90	9.90	113	
			6'			1" Ice	11.20	11.20	180	
						2" Ice	13.80	13.80	340	
***										
ANT150F6	A	From Leg	6.00	0.0000	264'	No Ice	4.80	4.80	30	
			0'			1/2" Ice	6.83	6.83	66	
			9'			1" Ice	8.87	8.87	114	
						2" Ice	13.01	13.01	249	
Side Arm Mount [SO 303-1]	A	From Leg	3.00	0.0000	264'	No Ice	1.08	5.31	115	
			0'			1/2" Ice	1.63	7.57	158	
			0'			1" Ice	2.21	9.93	217	
						2" Ice	3.44	15.19	379	
***										
DB809KT3E-Y	B	From Leg	3.00	-60.0000	255'	No Ice	3.39	3.39	30	
			0'			1/2" Ice	4.55	4.55	55	
			6'			1" Ice	5.73	5.73	86	
						2" Ice	7.38	7.38	173	
Side Arm Mount [SO 203-1]	B	From Leg	1.50	-60.0000	255'	No Ice	1.78	3.79	125	
			0'			1/2" Ice	2.24	4.47	153	
			0'			1" Ice	2.75	5.21	189	
						2" Ice	3.89	6.78	291	
***										
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	-10.0000	247'	No Ice	14.69	6.87	186	
			5'			1/2" Ice	15.46	7.55	315	
			0'			1" Ice	16.23	8.25	458	
						2" Ice	17.82	9.67	788	
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00	-30.0000	247'	No Ice	14.69	6.87	186	
			5'			1/2" Ice	15.46	7.55	315	
			0'			1" Ice	16.23	8.25	458	
						2" Ice	17.82	9.67	788	
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	-50.0000	247'	No Ice	14.69	6.87	186	
			5'			1/2" Ice	15.46	7.55	315	
			0'			1" Ice	16.23	8.25	458	
						2" Ice	17.82	9.67	788	

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	58 of 106
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb
APX16DWV-16DWVS-C w/ Mount Pipe	A	From Leg	4.00	-10.0000	247'	No Ice	6.29	2.76	61
			-5'			1/2" Ice	6.86	3.27	105
			0'			1" Ice	7.45	3.79	157
						2" Ice	8.68	4.90	290
						No Ice	6.29	2.76	61
APX16DWV-16DWVS-C w/ Mount Pipe	B	From Leg	4.00	-30.0000	247'	No Ice	6.29	2.76	61
			-5'			1/2" Ice	6.86	3.27	105
			0'			1" Ice	7.45	3.79	157
						2" Ice	8.68	4.90	290
						No Ice	6.29	2.76	61
APX16DWV-16DWVS-C w/ Mount Pipe	C	From Leg	4.00	-50.0000	247'	No Ice	6.29	2.76	61
			-5'			1/2" Ice	6.86	3.27	105
			0'			1" Ice	7.45	3.79	157
						2" Ice	8.68	4.90	290
						No Ice	6.29	2.76	61
RADIO 4449 B12/B71	A	From Leg	4.00	-10.0000	247'	No Ice	1.64	1.15	75
			-5'			1/2" Ice	1.80	1.29	91
			0'			1" Ice	1.97	1.44	110
						2" Ice	2.33	1.75	156
						No Ice	1.64	1.15	75
RADIO 4449 B12/B71	B	From Leg	4.00	-30.0000	247'	No Ice	1.64	1.15	75
			-5'			1/2" Ice	1.80	1.29	91
			0'			1" Ice	1.97	1.44	110
						2" Ice	2.33	1.75	156
						No Ice	1.64	1.15	75
RADIO 4449 B12/B71	C	From Leg	4.00	-50.0000	247'	No Ice	1.64	1.15	75
			-5'			1/2" Ice	1.80	1.29	91
			0'			1" Ice	1.97	1.44	110
						2" Ice	2.33	1.75	156
						No Ice	1.64	1.15	75
KRY 112 489/2	A	From Leg	4.00	-10.0000	247'	No Ice	0.56	0.37	15
			5'			1/2" Ice	0.66	0.45	20
			0'			1" Ice	0.76	0.54	27
						2" Ice	1.00	0.75	46
						No Ice	0.56	0.37	15
KRY 112 489/2	B	From Leg	4.00	-30.0000	247'	No Ice	0.56	0.37	15
			5'			1/2" Ice	0.66	0.45	20
			0'			1" Ice	0.76	0.54	27
						2" Ice	1.00	0.75	46
						No Ice	0.56	0.37	15
KRY 112 489/2	C	From Leg	4.00	-50.0000	247'	No Ice	0.56	0.37	15
			5'			1/2" Ice	0.66	0.45	20
			0'			1" Ice	0.76	0.54	27
						2" Ice	1.00	0.75	46
						No Ice	0.56	0.37	15
(2) FDBL5003D-S	A	From Leg	4.00	-10.0000	247'	No Ice	0.52	0.13	8
			5'			1/2" Ice	0.62	0.18	11
			0'			1" Ice	0.71	0.24	16
						2" Ice	0.94	0.39	31
						No Ice	0.52	0.13	8
(2) FDBL5003D-S	B	From Leg	4.00	-30.0000	247'	No Ice	0.52	0.13	8
			-5'			1/2" Ice	0.62	0.18	11
			0'			1" Ice	0.71	0.24	16
						2" Ice	0.94	0.39	31
						No Ice	0.52	0.13	8
(2) FDBL5003D-S	C	From Leg	4.00	-50.0000	247'	No Ice	0.52	0.13	8
			0'			1/2" Ice	0.62	0.18	11
			0'			1" Ice	0.71	0.24	16
						2" Ice	0.94	0.39	31
						No Ice	0.52	0.13	8
ATMAA1412D-1A20	A	From Leg	4.00	-10.0000	247'	No Ice	1.00	0.41	13
			5'			1/2" Ice	1.13	0.50	21
			0'			1" Ice	1.26	0.59	30
						2" Ice	1.55	0.81	56
						No Ice	1.00	0.41	13
ATMAA1412D-1A20	B	From Leg	4.00	-30.0000	247'	No Ice	1.00	0.41	13
			5'			1/2" Ice	1.13	0.50	21
			0'			1" Ice	1.26	0.59	30
						2" Ice	1.55	0.81	56
						No Ice	1.00	0.41	13
ATMAA1412D-1A20	C	From Leg	4.00	-50.0000	247'	No Ice	1.00	0.41	13

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
				5'					21
				0'					30
									56
2.4" Dia x 6-ft Pipe	A	From Leg	4.00	0.0000	247'	No Ice	1.43	1.43	22
			0'			1/2" Ice	1.93	1.93	33
			0'			1" Ice	2.30	2.30	48
						2" Ice	3.06	3.06	90
2.4" Dia x 6-ft Pipe	B	From Leg	4.00	0.0000	247'	No Ice	1.43	1.43	22
			0'			1/2" Ice	1.93	1.93	33
			0'			1" Ice	2.30	2.30	48
						2" Ice	3.06	3.06	90
2.4" Dia x 6-ft Pipe	C	From Leg	4.00	0.0000	247'	No Ice	1.43	1.43	22
			0'			1/2" Ice	1.93	1.93	33
			0'			1" Ice	2.30	2.30	48
						2" Ice	3.06	3.06	90
Sector Mount [SM 301-3]	C	None		0.0000	247'	No Ice	29.46	29.46	1302
						1/2" Ice	37.01	37.01	1821
						1" Ice	44.76	44.76	2472
						2" Ice	61.18	61.18	4168
***									
HBXX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2" Ice	5.70	4.47	94
			2'			1" Ice	6.24	4.98	147
						2" Ice	7.36	6.06	280
HBXX-6516DS-VTM w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2" Ice	5.70	4.47	94
			2'			1" Ice	6.24	4.98	147
						2" Ice	7.36	6.06	280
HBXX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2" Ice	5.70	4.47	94
			2'			1" Ice	6.24	4.98	147
						2" Ice	7.36	6.06	280
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66
			-2'			1/2" Ice	4.49	3.68	130
			2'			1" Ice	4.89	4.07	204
						2" Ice	5.72	4.87	386
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66
			-2'			1/2" Ice	4.49	3.68	130
			2'			1" Ice	4.89	4.07	204
						2" Ice	5.72	4.87	386
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66
			-2'			1/2" Ice	4.49	3.68	130
			2'			1" Ice	4.89	4.07	204
						2" Ice	5.72	4.87	386
LNx-8513DS-VTM w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2" Ice	4.49	3.68	128
			2'			1" Ice	4.89	4.06	202
						2" Ice	5.71	4.87	384
LNx-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2" Ice	4.49	3.68	128
			2'			1" Ice	4.89	4.06	202
						2" Ice	5.71	4.87	383
LNx-8513DS-VTM w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2" Ice	4.49	3.68	128
			2'			1" Ice	4.89	4.06	202
						2" Ice	5.71	4.87	384
B4 RRH2X60-4R	A	From Leg	4.00	-30.0000	230'	No Ice	3.36	2.00	55

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
				-6'		1/2" Ice	3.61	2.24	78	
				2'		1" Ice	3.88	2.48	105	
						2" Ice	4.42	2.97	170	
B4 RRH2X60-4R	B	From Leg	4.00		-30.0000	230'	No Ice	3.36	2.00	55
				-6'			1/2" Ice	3.61	2.24	78
				2'			1" Ice	3.88	2.48	105
							2" Ice	4.42	2.97	170
B4 RRH2X60-4R	C	From Leg	4.00		-30.0000	230'	No Ice	3.36	2.00	55
				-6'			1/2" Ice	3.61	2.24	78
				2'			1" Ice	3.88	2.48	105
							2" Ice	4.42	2.97	170
B25 RRH4X30	A	From Leg	4.00		-30.0000	230'	No Ice	2.12	1.29	53
				-2'			1/2" Ice	2.31	1.45	70
				2'			1" Ice	2.50	1.61	90
							2" Ice	2.92	1.96	140
B25 RRH4X30	B	From Leg	4.00		-30.0000	230'	No Ice	2.12	1.29	53
				-2'			1/2" Ice	2.31	1.45	70
				2'			1" Ice	2.50	1.61	90
							2" Ice	2.92	1.96	140
B25 RRH4X30	C	From Leg	4.00		-30.0000	230'	No Ice	2.12	1.29	53
				-2'			1/2" Ice	2.31	1.45	70
				2'			1" Ice	2.50	1.61	90
							2" Ice	2.92	1.96	140
B13 RRH 4X30	A	From Leg	4.00		-30.0000	230'	No Ice	2.06	1.32	56
				2'			1/2" Ice	2.24	1.48	73
				2'			1" Ice	2.43	1.64	93
							2" Ice	2.84	2.00	142
B13 RRH 4X30	B	From Leg	4.00		-30.0000	230'	No Ice	2.06	1.32	56
				2'			1/2" Ice	2.24	1.48	73
				2'			1" Ice	2.43	1.64	93
							2" Ice	2.84	2.00	142
B13 RRH 4X30	C	From Leg	4.00		-30.0000	230'	No Ice	2.06	1.32	56
				2'			1/2" Ice	2.24	1.48	73
				2'			1" Ice	2.43	1.64	93
							2" Ice	2.84	2.00	142
(2) RRFDC-3315-PF-48	B	From Leg	4.00		-30.0000	230'	No Ice	3.36	2.19	21
				-2'			1/2" Ice	3.60	2.39	50
				2'			1" Ice	3.84	2.61	82
							2" Ice	4.34	3.05	158
Sector Mount [SM 407-3]	C	None			0.0000	230'	No Ice	20.42	20.42	956
							1/2" Ice	30.23	30.23	1359
							1" Ice	40.13	40.13	1913
							2" Ice	60.99	60.99	3458
***										
***										
***										
DFPD1-52 w/ Mount Pipe	C	From Leg	1.00		60.0000	200'	No Ice	1.63	0.93	22
				0'			1/2" Ice	1.84	1.17	38
				0'			1" Ice	2.07	1.43	58
							2" Ice	2.56	1.99	109
***										
BMYP745K	A	From Leg	1.00		-80.0000	188'	No Ice	1.70	1.70	25
				0'			1/2" Ice	2.00	2.00	35
				0'			1" Ice	2.30	2.30	45
							2" Ice	2.90	2.90	65
***										
ASP-960	A	From Leg	0.50		-80.0000	186'	No Ice	1.92	1.92	4

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	61 of 106
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Lateral					
***									
12"x12"x3" TMA	C	From Leg	0.50	0.0000	178'	No Ice	1.20	0.32	15
			0'			1/2" Ice	1.34	0.40	23
			0'			1" Ice	1.48	0.49	33
						2" Ice	1.79	0.69	59
1.9" x 5.5' Pipe (Horizontal)	B	From Leg	0.00	0.0000	150'	No Ice	1.04	0.03	14
			-2'			1/2" Ice	1.43	0.05	24
			0'			1" Ice	1.81	0.09	39
						2" Ice	2.61	0.17	85
***									
Pipe Mount [PM 601-1]	B	From Leg	0.50	-50.0000	146'	No Ice	1.32	1.32	65
			0'			1/2" Ice	1.58	1.58	77
			0'			1" Ice	1.84	1.84	93
						2" Ice	2.40	2.40	134
***									
CSI-AY/809-960/11	B	From Leg	1.50	20.0000	136'	No Ice	0.16	0.21	7
			0'			1/2" Ice	0.50	0.69	13
			0'			1" Ice	0.84	1.17	19
						2" Ice	1.52	2.13	32
2.4" Dia x 8-ft Mount Pipe	B	From Leg	0.67	0.0000	136'	No Ice	1.90	1.90	29
			0'			1/2" Ice	2.73	2.73	44
			0'			1" Ice	3.40	3.40	63
						2" Ice	4.40	4.40	119
***									
220-5	A	From Leg	6.00	-60.0000	133'	No Ice	3.40	3.40	22
			0'			1/2" Ice	5.42	5.42	49
			10'			1" Ice	7.46	7.46	89
						2" Ice	11.59	11.59	206
Side Arm Mount [SO 601-1]	A	From Leg	3.00	-60.0000	133'	No Ice	1.04	5.32	159
			0'			1/2" Ice	1.41	6.43	196
			0'			1" Ice	1.78	7.67	241
						2" Ice	2.52	10.67	359
DB264-A	C	From Leg	2.00	-20.0000	133'	No Ice	3.16	3.16	36
			0'			1/2" Ice	5.69	5.69	47
			9'			1" Ice	8.22	8.22	58
						2" Ice	13.27	13.27	79
Side Arm Mount [SO 202-1]	C	From Leg	1.00	-20.0000	133'	No Ice	1.78	2.97	110
			0'			1/2" Ice	2.24	3.57	133
			0'			1" Ice	2.75	4.19	163
						2" Ice	3.89	5.55	249
***									
***									
PD1132-D	B	From Leg	2.00	80.0000	109'	No Ice	24.89	24.89	105
			0'			1/2" Ice	25.85	25.85	276
			4'			1" Ice	26.81	26.81	459
						2" Ice	28.75	28.75	862
Side Arm Mount [SO 202-1]	B	From Leg	1.00	80.0000	109'	No Ice	1.78	2.97	110
			0'			1/2" Ice	2.24	3.57	133
			0'			1" Ice	2.75	4.19	163
						2" Ice	3.89	5.55	249
***									
2.4" Dia x 4-ft Mount Pipe	C	From Leg	0.50	0.0000	108'	No Ice	0.87	0.87	15
			0'			1/2" Ice	1.12	1.12	22
			0'			1" Ice	1.37	1.37	32

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 62 of 106
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
***						2" Ice	1.91	1.91	62
PTP 900-13 w/ Mount Pipe	C	From Leg	2.00 0' 0'	50.0000	99'	No Ice 1/2" Ice 1" Ice 2" Ice	2.15 2.39 2.64 3.18	0.92 1.17 1.44 2.03	15 34 56 113
***									
CSI-AY/809-960/11	C	From Leg	2.00 0' -8'	-20.0000	62'	No Ice 1/2" Ice 1" Ice 2" Ice	0.16 0.50 0.84 1.52	0.21 0.69 1.17 2.13	7 13 19 32
(2) Side Arm Mount [SO 601-1]	C	From Leg	1.00 0' 0'	0.0000	62'	No Ice 1/2" Ice 1" Ice 2" Ice	1.04 1.41 1.78 2.52	5.32 6.43 7.67 10.67	159 196 241 359
***									
(2) PL6" x 0.5"	A	From Face	0.00 0' 0'	0.0000	258'6"	No Ice 1/2" Ice 1" Ice 2" Ice	9.40 10.75 12.10 14.80	0.01 0.02 0.03 0.05	123 153 184 246
(2) PL6" x 0.5"	B	From Face	0.00 0' 0'	0.0000	258'6"	No Ice 1/2" Ice 1" Ice 2" Ice	9.40 10.75 12.10 14.80	0.01 0.02 0.03 0.05	123 153 184 246
(2) PL6" x 0.5"	C	From Face	0.00 0' 0'	0.0000	258'6"	No Ice 1/2" Ice 1" Ice 2" Ice	9.40 10.75 12.10 14.80	0.01 0.02 0.03 0.05	123 153 184 246

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft ft ft	°	°	ft	ft	ft <sup>2</sup>	lb	
USX6-6W-6GR	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	-29.0000		450'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.07 29.86 31.44	198 347 496 795
USX6-6W-6GR	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	30.0000		450'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.07 29.86 31.44	198 347 496 795
SPD3-5.8	A	Paraboloid w/Radome	From Leg	1.00 0' 0'	0.0000		322'	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	35 73 112 188
P-9A72GN-U	C	Grid	From Leg	0.50 0'	60.0000		206'	6.00	No Ice 1/2" Ice	28.27 29.07	112 261



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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft <sup>2</sup>	lb	
				0'					1" Ice	29.86	410
									2" Ice	31.44	709
SPD4-5.2	C	Paraboloid w/Radome	From Leg	1.00	50.0000		178'	4.00	No Ice	12.57	0
				0'					1/2" Ice	13.10	0
				0'					1" Ice	13.62	0
									2" Ice	14.68	0
HPX6-65-P3A	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000		150'	6.46	No Ice	32.76	359
				0'					1/2" Ice	33.61	532
				0'					1" Ice	34.46	704
									2" Ice	36.16	1049
PL6-65-PXA	B	Paraboloid w/Radome	From Leg	1.00	-50.0000		146'	6.36	No Ice	31.75	161
				0'					1/2" Ice	32.59	167
				0'					1" Ice	33.43	174
									2" Ice	35.10	186
CM 4228HD	B	Grid	From Leg	1.00	-20.0000		140'	3.55	No Ice	9.90	40
				0'					1/2" Ice	10.37	93
				0'					1" Ice	10.84	56
									2" Ice	11.78	63
CM 4228HD	B	Grid	From Leg	1.00	10.0000		136'	3.55	No Ice	9.90	40
				0'					1/2" Ice	10.37	93
				-1'					1" Ice	10.84	56
									2" Ice	11.78	63
MGA2-16N	B	Grid	From Leg	0.67	0.0000		136'	2.00	No Ice	3.14	20
				0'					1/2" Ice	3.41	38
				2'					1" Ice	3.68	55
									2" Ice	4.21	90
MGAR3-23N	B	Grid	From Leg	0.67	20.0000		136'	3.38	No Ice	9.00	30
				0'					1/2" Ice	9.45	79
				-2'					1" Ice	9.90	127
									2" Ice	10.79	224
P-9A48GN-U	C	Grid	From Leg	1.00	-60.0000		117'	4.00	No Ice	12.57	112
				0'					1/2" Ice	13.10	179
				0'					1" Ice	13.62	246
									2" Ice	14.68	381
SSH-9A72GN	C	Grid	From Leg	1.00	0.0000		108'	2.84	No Ice	6.35	38
				0'					1/2" Ice	6.73	128
				0'					1" Ice	7.11	219
									2" Ice	7.86	400
SPD2-5.8	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000		99'	2.00	No Ice	3.14	22
				0'					1/2" Ice	3.41	40
				0'					1" Ice	3.68	60
									2" Ice	4.21	90
P-9A48GN-U	C	Grid	From Leg	2.00	-20.0000		62'	4.00	No Ice	12.57	112
				0'					1/2" Ice	13.10	179
				6'					1" Ice	13.62	246
									2" Ice	14.68	381
SSH-9A72GN	C	Grid	From Leg	2.00	-60.0000		62'	6.00	No Ice	28.27	112
				0'					1/2" Ice	29.07	261
				-1'					1" Ice	29.86	410
									2" Ice	31.44	709

## Load Combinations

Comb. No.	Description
1	Dead Only

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<i>Comb. No.</i>	<i>Description</i>
2	1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy
3	1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy
4	1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy
5	1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy
6	1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy
7	1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy
8	1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy
9	1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy
10	1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy
11	1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy
12	1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy
13	1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy
14	1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy
15	1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy
16	1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy
17	1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy
18	1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy
19	1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy
20	1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy
21	1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy
22	1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy
23	1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy
24	1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy
25	1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy
26	1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy
27	1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy
28	1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy
29	1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy
30	1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy
31	1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy
32	1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy
33	1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy
34	1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy
35	1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy
36	1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy
37	1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Ice+1.0 Temp+Guy
39	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
40	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
41	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
42	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
43	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
44	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
45	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
46	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
47	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
48	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
49	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
51	Dead+Wind 0 deg - Service+Guy
52	Dead+Wind 30 deg - Service+Guy
53	Dead+Wind 60 deg - Service+Guy
54	Dead+Wind 90 deg - Service+Guy
55	Dead+Wind 120 deg - Service+Guy
56	Dead+Wind 150 deg - Service+Guy
57	Dead+Wind 180 deg - Service+Guy
58	Dead+Wind 210 deg - Service+Guy
59	Dead+Wind 240 deg - Service+Guy
60	Dead+Wind 270 deg - Service+Guy
61	Dead+Wind 300 deg - Service+Guy
62	Dead+Wind 330 deg - Service+Guy

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## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T1	457 - 436	Leg	Max Tension	33	15482	-715	-192	
			Max. Compression	15	-31210	642	185	
			Max. Mx	12	-17237	-1329	47	
			Max. My	3	-19199	-7	1033	
			Max. Vy	12	-1244	-1329	47	
		Diagonal	Max. Vx	36	731	746	614	
			Max Tension	29	3998	0	0	
			Max. Compression	12	-3363	0	0	
			Max. Mx	43	425	38	-1	
			Max. My	32	-2103	9	6	
			Max. Vy	43	-32	38	-1	
			Max. Vx	32	-2	0	0	
		Horizontal	Max Tension	9	736	0	0	
			Max. Compression	39	-1169	0	0	
			Max. Mx	38	603	-65	0	
			Max. My	5	-199	0	0	
			Max. Vy	38	-43	0	0	
			Max. Vx	5	0	0	0	
			Top Girt	Max Tension	29	1	0	0
		Max. Compression		29	-1	0	0	
		Max. Mx		43	0	169	0	
		Max. My		5	1	0	0	
		Max. Vy		43	-113	0	0	
		Mid Girt	Max. Vx	5	0	0	0	
			Max Tension	39	4303	0	0	
			Max. Compression	1	0	0	0	
			Max. Mx	38	3365	-65	0	
			Max. My	5	2177	0	0	
		Guy A	Max. Vy	38	-43	0	0	
			Max. Vx	5	0	0	0	
			Bottom Tension	45	12846			
			Top Tension	20	13690			
			Top Cable Vert	45	11168			
			Top Cable Norm	45	7917			
			Top Cable Tan	45	1			
			Bot Cable Vert	20	-9404			
			Bot Cable Norm	20	8751			
			Bot Cable Tan	20	0			
			Guy B	Bottom Tension	49	13393		
				Top Tension	32	13738		
				Top Cable Vert	49	11239		
				Top Cable Norm	49	7901		
				Top Cable Tan	49	0		
		Bot Cable Vert		32	-9876			
		Bot Cable Norm		32	9046			
Guy C	Bot Cable Tan	32	5					
	Bottom Tension	41	13240					
	Top Tension	8	13745					
	Top Cable Vert	41	11163					
	Top Cable Norm	41	8019					
	Top Cable Tan	41	1					
	Bot Cable Vert	8	-9640					
Pole Antenna	Bot Cable Norm	8	9077					
	Bot Cable Tan	8	5					
	Max Tension	8	0	-9	5			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T2	436 - 421	Leg	Max. Compression	43	-6561	-8203	-4678	
			Max. Mx	29	-5475	56082	295	
			Max. My	20	-5479	-491	-55952	
			Max. Vy	29	-2835	56082	295	
			Max. Vx	20	2829	-491	-55952	
			Max. Torque	5			0	
			Max Tension	33	33599	1096	450	
			Max. Compression	15	-50477	973	414	
			Max. Mx	14	-50011	-1224	-567	
			Max. My	2	-45145	22	1223	
			Max. Vy	14	-606	-1224	-567	
			Max. Vx	2	625	22	1223	
		Diagonal	Max Tension	29	4270	0	0	
			Max. Compression	11	-4858	0	0	
			Max. Mx	48	-274	28	0	
			Max. My	8	-3581	-5	-4	
			Max. Vy	48	-27	28	0	
			Max. Vx	8	1	-5	-4	
		Horizontal	Max Tension	33	1436	0	0	
			Max. Compression	15	-382	0	0	
			Max. Mx	38	1147	-64	0	
			Max. My	5	261	0	0	
			Max. Vy	38	-43	0	0	
			Max. Vx	5	0	0	0	
Top Girt	Max Tension	39	1165	0	0			
	Max. Compression	15	-37	0	0			
	Max. Mx	38	1055	-64	0			
	Max. My	5	337	0	0			
	Max. Vy	38	-43	0	0			
	Max. Vx	5	0	0	0			
T3	421 - 401	Leg	Max Tension	32	72170	1742	846	
			Max. Compression	14	-99049	1207	592	
			Max. Mx	14	-84780	-1979	-1028	
			Max. My	2	-77368	29	2094	
			Max. Vy	26	896	1974	-987	
			Max. Vx	2	962	29	2094	
			Diagonal	Max Tension	29	7196	0	0
				Max. Compression	29	-7318	0	0
				Max. Mx	14	5204	53	-2
				Max. My	11	-6778	-28	-10
				Max. Vy	49	-32	44	0
				Max. Vx	11	-3	0	0
		Top Girt	Max Tension	33	780	0	0	
			Max. Compression	15	-239	0	0	
			Max. Mx	38	602	-64	0	
			Max. My	5	154	0	0	
			Max. Vy	38	-43	0	0	
			Max. Vx	5	0	0	0	
		Mid Girt	Max Tension	33	296	0	0	
			Max. Compression	15	-181	0	0	
			Max. Mx	38	156	-64	0	
			Max. My	5	34	0	0	
			Max. Vy	38	-43	0	0	
			Max. Vx	5	0	0	0	
T4	401 - 396	Leg	Max Tension	32	86280	-2778	157	
			Max. Compression	14	-114325	-2171	82	
			Max. Mx	14	-114104	2980	-114	
			Max. My	5	-24003	271	-885	
			Max. Vy	14	1073	2980	-114	
			Max. Vx	5	-273	271	-885	
		Diagonal	Max Tension	29	7628	0	0	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T5	396 - 391	Top Girt	Max. Compression	29	-7807	0	0	
			Max. Mx	29	3337	30	1	
			Max. My	8	-6947	-9	-9	
			Max. Vy	49	-26	23	0	
			Max. Vx	8	-2	-9	-9	
			Max Tension	32	580	0	0	
			Max. Compression	14	-470	0	0	
			Max. Mx	38	165	-64	0	
			Max. My	5	40	0	0	
			Max. Vy	38	43	0	0	
		Leg	Max. Vx	5	0	0	0	
			Max Tension	32	101178	-2435	147	
			Max. Compression	14	-131051	-1390	109	
			Max. Mx	14	-130403	2457	-120	
			Max. My	5	-25526	123	-1536	
			Max. Vy	32	-1168	-2435	147	
			Max. Vx	5	-785	123	-1536	
			Diagonal	Max Tension	29	8447	0	0
				Max. Compression	29	-8484	0	0
				Max. Mx	14	6281	41	-2
Max. My	5	-6752		-12	-10			
Max. Vy	49	-30		37	0			
Max. Vx	5	3		-12	-10			
T6	391 - 386	Leg		Max Tension	32	119476	-3981	113
				Max. Compression	14	-150249	-3235	61
				Max. Mx	32	119476	-3981	113
				Max. My	5	-26857	146	-1460
			Max. Vy	14	1819	3942	-80	
		Diagonal	Max. Vx	5	-764	146	-1460	
			Max Tension	29	9657	0	0	
			Max. Compression	29	-10887	0	0	
			Max. Mx	29	4050	49	0	
			Max. My	8	-9722	-5	-14	
Top Girt	Max. Vy	49	-27	28	1			
	Max. Vx	11	-4	0	0			
	Max Tension	39	785	0	0			
	Max. Compression	1	0	0	0			
	Max. Mx	38	495	-64	0			
	Max. My	5	396	0	0			
	Max. Vy	38	-43	0	0			
	Max. Vx	5	0	0	0			
	T7	386 - 381	Leg	Max Tension	32	137479	-2357	163
				Max. Compression	14	-172895	-982	101
Max. Mx				26	-170588	3224	178	
Max. My				5	-30203	534	-2016	
Max. Vy				26	883	3224	178	
Diagonal			Max. Vx	5	-557	534	-2016	
			Max Tension	29	11488	0	0	
			Max. Compression	11	-10313	0	0	
			Max. Mx	29	-3298	-51	8	
			Max. My	5	-8566	-31	-17	
T8	381 - 376	Leg	Max. Vy	49	-28	33	0	
			Max. Vx	5	5	-31	-17	
			Max Tension	32	95293	-1479	105	
			Max. Compression	14	-181557	1087	58	
			Max. Mx	27	-138757	2263	-55	
		Diagonal	Max. My	12	-46757	280	1446	
			Max. Vy	27	-584	2263	-55	
			Max. Vx	12	-384	280	1446	
			Max Tension	6	9238	0	0	
			Max. Compression	6	-7936	0	0	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	5	-4351	48	5
			Max. My	12	-6844	20	-12
			Max. Vy	48	-31	41	-1
			Max. Vx	12	-3	0	0
		Guy A	Bottom Tension	25	67565		
			Top Tension	25	69147		
			Top Cable Vert	25	49734		
			Top Cable Norm	25	48039		
			Top Cable Tan	25	296		
			Bot Cable Vert	25	-46641		
			Bot Cable Norm	25	48879		
			Bot Cable Tan	25	675		
		Guy B	Bottom Tension	31	68739		
			Top Tension	31	70294		
			Top Cable Vert	31	50768		
			Top Cable Norm	31	48618		
			Top Cable Tan	31	283		
			Bot Cable Vert	31	-47738		
			Bot Cable Norm	31	49455		
			Bot Cable Tan	31	675		
		Guy C	Bottom Tension	13	67846		
			Top Tension	13	69430		
			Top Cable Vert	13	49612		
			Top Cable Norm	13	48571		
			Top Cable Tan	13	301		
			Bot Cable Vert	13	-46498		
			Bot Cable Norm	13	49402		
			Bot Cable Tan	13	674		
		Top Guy Pull-Off	Max Tension	28	21856	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	11387	118	0
			Max. My	5	12291	0	0
			Max. Vy	38	-78	0	0
			Max. Vx	5	0	0	0
T9	376 - 371	Leg	Max Tension	32	87824	1663	146
			Max. Compression	14	-171272	1991	89
			Max. Mx	27	-120153	-3128	143
			Max. My	12	-45747	25	768
			Max. Vy	27	-1270	3011	-109
			Max. Vx	12	-308	25	768
		Diagonal	Max Tension	6	8121	0	0
			Max. Compression	6	-9239	0	0
			Max. Mx	14	-5094	50	-8
			Max. My	36	-8943	24	11
			Max. Vy	49	-31	44	1
			Max. Vx	36	-3	0	0
T10	371 - 366	Leg	Max Tension	32	77556	1035	118
			Max. Compression	14	-162473	1182	48
			Max. Mx	9	33080	-2275	110
			Max. My	12	-46880	-163	1211
			Max. Vy	9	1036	-2275	110
			Max. Vx	18	622	-254	-942
		Diagonal	Max Tension	6	8186	0	0
			Max. Compression	6	-8133	0	0
			Max. Mx	14	4166	-42	0
			Max. My	11	-3944	10	-7
			Max. Vy	49	-26	23	1
			Max. Vx	11	-2	0	0
		Top Girt	Max Tension	29	841	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	584	-63	0

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T11	366 - 361	Leg	Max. My	5	461	0	0	
			Max. Vy	38	42	0	0	
			Max. Vx	5	0	0	0	
			Max Tension	32	69048	967	177	
			Max. Compression	14	-153817	1692	152	
			Max. Mx	27	-88665	2929	-144	
		Diagonal	Max. My	12	-47562	-2	1041	
			Max. Vy	27	-1153	2929	-144	
			Max. Vx	12	-419	-2	1041	
			Max Tension	36	7557	0	0	
			Max. Compression	36	-7702	0	0	
			Max. Mx	14	-4282	50	-6	
			Max. My	36	-7678	25	9	
			Max. Vy	48	-32	47	0	
T12	361 - 341	Leg	Max. Vx	36	-2	0	0	
			Max Tension	32	60934	-612	-435	
			Max. Compression	14	-145566	-246	-222	
			Max. Mx	27	-60859	-2059	1324	
			Max. My	3	-53754	-50	-2335	
			Max. Vy	27	-982	356	-212	
		Diagonal	Max. Vx	3	-1100	-1	373	
			Max Tension	36	6909	-29	1	
			Max. Compression	36	-7154	0	0	
			Max. Mx	14	-4101	66	-11	
			Max. My	14	-4101	66	-11	
			Max. Vy	39	-37	66	-2	
			Max. Vx	14	3	0	0	
			Max Tension	14	2521	0	0	
Secondary Horizontal	Max. Compression	14	-2521	22	-6			
	Max. Mx	42	1123	33	-4			
	Max. My	14	-2521	-6	-9			
	Max. Vy	42	30	33	-4			
	Max. Vx	14	3	0	0			
	Top Girt	Max Tension	32	610	0	0		
		Max. Compression	14	-283	0	0		
		Max. Mx	38	279	-63	0		
		Max. My	5	149	0	0		
		Max. Vy	38	-42	0	0		
		Max. Vx	5	0	0	0		
	Mid Girt	Max Tension	32	391	0	0		
		Max. Compression	14	-157	0	0		
		Max. Mx	38	217	-63	0		
Max. My		5	115	0	0			
Max. Vy		38	-42	0	0			
Max. Vx		5	0	0	0			
T13	341 - 321	Leg	Max Tension	32	33898	743	545	
			Max. Compression	14	-120035	-561	-414	
			Max. Mx	15	-26419	-1136	-674	
			Max. My	3	-16738	-6	1218	
			Max. Vy	31	616	-188	-143	
			Max. Vx	3	-517	-6	1218	
		Diagonal	Max Tension	36	4544	0	0	
			Max. Compression	36	-4571	0	0	
			Max. Mx	42	155	75	2	
			Max. My	5	-2895	49	-7	
			Max. Vy	42	-39	75	2	
			Max. Vx	5	2	49	-7	
			Top Girt	Max Tension	28	426	0	0
				Max. Compression	14	-71	0	0
Max. Mx	38	267		-63	0			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T14	321 - 301	Mid Girt	Max. My	23	204	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	23	0	0	0
			Max Tension	32	343	0	0
			Max. Compression	14	-82	0	0
			Max. Mx	38	215	-63	0
		Leg	Max. My	23	183	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	23	0	0	0
			Max Tension	32	16869	-360	-196
			Max. Compression	14	-104304	-141	-75
			Max. Mx	10	-61864	1011	-591
		Diagonal	Max. My	22	-60767	25	1154
			Max. Vy	31	1148	739	523
			Max. Vx	22	-1252	-44	-992
			Max Tension	34	3138	0	0
			Max. Compression	16	-3183	0	0
			Max. Mx	39	116	80	-1
		Top Girt	Max. My	6	-1664	-3	-5
			Max. Vy	39	-41	80	-1
			Max. Vx	6	1	-3	-5
			Max Tension	32	457	0	0
			Max. Compression	14	-143	0	0
			Max. Mx	38	233	-63	0
Mid Girt	Max. My	23	189	0	0		
	Max. Vy	38	42	0	0		
	Max. Vx	23	0	0	0		
	Max Tension	32	525	0	0		
	Max. Compression	14	-190	0	0		
	Max. Mx	38	267	-63	0		
T15	301 - 281	Leg	Max. My	23	188	0	0
			Max. Vy	38	42	0	0
			Max. Vx	23	0	0	0
			Max Tension	32	23101	602	361
			Max. Compression	26	-115808	-268	106
			Max. Mx	10	-27506	-1494	893
		Diagonal	Max. My	22	-27085	-69	-1709
			Max. Vy	10	-623	-1494	893
			Max. Vx	22	-728	-69	-1709
			Max Tension	19	5281	0	0
			Max. Compression	19	-5395	0	0
			Max. Mx	39	-52	77	-1
		Top Girt	Max. My	5	-1218	19	-6
			Max. Vy	39	-40	77	-1
			Max. Vx	5	2	19	-6
			Max Tension	32	429	0	0
			Max. Compression	14	-98	0	0
			Max. Mx	38	286	-57	0
		Mid Girt	Max. My	48	269	0	0
			Max. Vy	38	-38	0	0
			Max. Vx	48	0	0	0
			Max Tension	32	358	0	0
			Max. Compression	14	-53	0	0
			Max. Mx	49	252	-57	0
Leg	Max. My	48	245	0	0		
	Max. Vy	38	38	0	0		
	Max. Vx	48	0	0	0		
	Max Tension	32	26704	487	339		
	Max. Compression	26	-120798	-706	395		
	Max. Mx	28	-61260	1766	-1059		
T16	281 - 276	Leg	Max. My	4	-58243	113	1989
			Max. Vy	38	38	0	0



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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T17	276 - 271	Diagonal	Max. Vy	28	737	1766	-1059	
			Max. Vx	4	821	113	1989	
			Max Tension	19	5986	0	0	
			Max. Compression	19	-5927	0	0	
			Max. Mx	14	-2143	-58	4	
			Max. My	5	-1648	-4	-6	
			Max. Vy	50	-30	0	0	
			Max. Vx	5	2	-4	-6	
			Max Tension	32	371	0	0	
			Max. Compression	14	-145	0	0	
			Max. Mx	38	235	-62	0	
			Max. My	48	215	0	0	
		Leg	Max. Vy	38	41	0	0	
			Max. Vx	48	0	0	0	
			Max Tension	32	31180	734	449	
			Max. Compression	26	-125924	-526	240	
			Max. Mx	10	-3337	-1824	994	
			Max. My	22	-3525	-150	-2034	
			Max. Vy	10	-707	-1824	994	
			Max. Vx	22	-791	-150	-2034	
			Diagonal	Max Tension	19	6609	0	0
				Max. Compression	19	-6780	0	0
				Max. Mx	49	209	76	-2
				Max. My	5	-1688	18	-8
Max. Vy	49	-39		76	-2			
Max. Vx	5	2		18	-8			
T18	271 - 266	Leg	Max Tension	32	35376	632	417	
			Max. Compression	26	-132496	-753	336	
			Max. Mx	28	-90397	2156	-1238	
			Max. My	4	-86468	138	2409	
			Max. Vy	28	825	2156	-1238	
			Max. Vx	4	916	138	2409	
		Diagonal	Max Tension	19	7733	0	0	
			Max. Compression	19	-6624	0	0	
			Max. Mx	14	-2329	-67	4	
			Max. My	5	-1485	-10	-7	
			Max. Vy	49	-32	0	0	
			Max. Vx	5	2	-10	-7	
		Top Girt	Max Tension	32	297	0	0	
			Max. Compression	14	-831	0	0	
			Max. Mx	38	-88	-62	0	
			Max. My	48	-134	0	0	
			Max. Vy	38	41	0	0	
			Max. Vx	48	0	0	0	
T19	266 - 261	Leg	Max Tension	32	41715	665	371	
			Max. Compression	26	-138131	-953	464	
			Max. Mx	28	-105305	-2228	1252	
			Max. My	4	-101240	-125	-2482	
			Max. Vy	28	815	1740	-1117	
			Max. Vx	4	965	153	1974	
		Diagonal	Max Tension	19	7345	0	0	
			Max. Compression	19	-8174	0	0	
			Max. Mx	48	1783	88	-2	
			Max. My	16	-7764	46	8	
			Max. Vy	48	-42	88	-2	
			Max. Vx	16	-2	46	8	
T20	261 - 256	Leg	Max Tension	32	43041	957	730	
			Max. Compression	26	-149739	-710	412	
			Max. Mx	31	17513	-5830	-3357	
			Max. My	25	12401	-144	6565	
			Max. Vy	31	1771	2249	891	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T21	256 - 251	Diagonal	Max. Vx	22	-2000	-160	-2751	
			Max Tension	19	13319	-118	-2	
			Max. Compression	16	-4987	-83	0	
			Max. Mx	14	-897	-242	1	
			Max. My	16	-2889	-82	26	
			Max. Vy	48	-82	0	0	
			Max. Vx	16	-7	-82	26	
		Top Girt	Max Tension	1	0	0	0	
			Max. Compression	16	-5990	0	0	
			Max. Mx	38	-2252	-57	0	
			Max. My	48	-2468	0	0	
			Max. Vy	38	38	0	0	
			Max. Vx	48	0	0	0	
			Leg	Max Tension	34	50487	-2773	-1430
		Max. Compression		26	-153845	381	-210	
		Max. Mx		31	-11007	21070	-6906	
		Max. My		19	-14080	-49	-23931	
		Max. Vy		31	32764	-11699	-6906	
		Max. Vx		19	-37227	-49	13300	
		Diagonal		Max Tension	13	17973	-36	-38
				Max. Compression	11	-12900	0	0
				Max. Mx	16	5278	274	-28
				Max. My	13	7878	-15	112
				Max. Vy	47	-98	270	31
		Secondary Horizontal		Max. Vx	13	30	-15	112
				Max Tension	31	26192	-868	-80
			Max. Compression	26	-2665	0	0	
			Max. Mx	16	-886	-983	-89	
			Max. My	34	3134	-517	144	
			Max. Vy	16	360	-983	-89	
			Max. Vx	34	48	-517	144	
			Guy A	Bottom Tension	19	66937		
				Top Tension	19	67832		
				Top Cable Vert	19	38954		
		Top Cable Norm		19	55531			
		Top Cable Tan		19	70			
		Bot Cable Vert		19	-36882			
		Bot Cable Norm		19	55858			
		Guy B	Bot Cable Tan	19	522			
			Bottom Tension	31	68592			
			Top Tension	31	69464			
			Top Cable Vert	31	39902			
			Top Cable Norm	31	56860			
			Top Cable Tan	31	57			
			Bot Cable Vert	31	-37881			
		Guy C	Bot Cable Norm	31	57181			
			Bot Cable Tan	31	524			
Bottom Tension	13		68004					
Top Tension	13		68900					
Top Cable Vert	13		39220					
Top Cable Norm	13		56648					
Top Cable Tan	13		72					
Leg	Bot Cable Vert	13	-37130					
	Bot Cable Norm	13	56971					
	Bot Cable Tan	13	524					
	Max Tension	1	0	0	0			
	Max. Compression	26	-122889	2974	-1759			
	Max. Mx	14	-118211	3464	1938			
	Max. My	2	-114519	85	-3775			
Max. Vy	14	1986	-3187	-1723				

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T23	246 - 241	Diagonal	Max. Vx	2	-2231	-132	3474	
			Max Tension	11	11639	0	0	
			Max. Compression	11	-12912	20	10	
			Max. Mx	47	1526	-179	1	
			Max. My	6	-11915	-1	-25	
			Max. Vy	47	-73	0	0	
		Top Girt	Max. Vx	6	7	-1	-25	
			Max Tension	10	177	0	0	
			Max. Compression	16	-6422	0	0	
			Max. Mx	38	-2144	-56	0	
			Max. My	5	-2577	0	0	
			Max. Vy	38	38	0	0	
		Leg	Max. Vx	5	0	0	0	
			Max Tension	1	0	0	0	
			Max. Compression	47	-113766	393	-228	
			Max. Mx	14	-96203	-3198	-1805	
			Max. My	2	-93826	-81	3460	
			Max. Vy	14	1190	-3198	-1805	
			Diagonal	Max. Vx	2	-1294	-81	3460
				Max Tension	11	11448	0	0
				Max. Compression	11	-10319	0	0
				Max. Mx	49	787	215	28
				Max. My	6	4020	157	-43
				Max. Vy	49	-83	215	28
			Secondary Horizontal	Max. Vx	6	12	157	-43
				Max Tension	47	1970	-578	51
				Max. Compression	47	-1970	0	0
		Max. Mx		47	-1970	-579	51	
		Max. My		41	1921	-565	54	
		Max. Vy		47	250	-579	51	
		Leg		Max. Vx	49	-18	0	0
				Max Tension	1	0	0	0
				Max. Compression	15	-116578	-520	-503
Max. Mx	14		-52019	-3028	-1676			
Max. My	2		-52388	-70	3270			
Max. Vy	14		1191	-3028	-1676			
Diagonal	Max. Vx		2	-1298	-70	3270		
	Max Tension		11	10027	0	0		
	Max. Compression		11	-10373	0	0		
	Max. Mx		47	15	214	-2		
	Max. My		15	-4806	59	24		
	Max. Vy		47	-83	214	-2		
Top Girt	Max. Vx		15	-6	59	24		
	Max Tension		22	378	0	0		
	Max. Compression		28	-718	0	0		
	Max. Mx	38	84	-56	0			
	Max. My	5	-153	0	0			
	Max. Vy	38	-37	0	0			
Mid Girt	Max. Vx	5	0	0	0			
	Max Tension	15	664	0	0			
	Max. Compression	33	-146	0	0			
	Max. Mx	38	349	-56	0			
	Max. My	5	179	0	0			
	Max. Vy	38	-37	0	0			
Leg	Max. Vx	5	0	0	0			
	Max Tension	15	40472	1331	508			
	Max. Compression	12	-151193	-486	-285			
	Max. Mx	32	-115945	-2033	-977			
	Max. My	20	-112107	-151	2108			
	Max. Vy	32	-773	1779	858			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T26	201 - 181	Diagonal	Max. Vx	20	818	145	-1848	
			Max Tension	11	6651	0	0	
			Max. Compression	14	-6900	0	0	
			Max. Mx	48	-180	89	-3	
			Max. My	16	-5241	-14	13	
			Max. Vy	48	-42	89	-3	
		Top Girt	Max. Vx	16	-4	-14	13	
			Max Tension	15	716	0	0	
			Max. Compression	32	-31	0	0	
			Max. Mx	38	444	-56	0	
			Max. My	5	251	0	0	
			Max. Vy	38	37	0	0	
		Mid Girt	Max. Vx	5	0	0	0	
			Max Tension	15	699	0	0	
			Max. Compression	32	-35	0	0	
			Max. Mx	47	500	-56	0	
			Max. My	32	390	0	0	
			Max. Vy	38	37	0	0	
		Leg	Max. Vx	32	0	0	0	
			Max Tension	15	54692	552	0	
			Max. Compression	11	-165084	61	-578	
			Max. Mx	11	-154091	1211	-461	
			Max. My	17	-152798	-22	1224	
			Max. Vy	32	-447	965	393	
			Diagonal	Max. Vx	17	468	160	-983
				Max Tension	5	3725	0	0
				Max. Compression	14	-4027	0	0
				Max. Mx	48	-701	94	-4
				Max. My	13	-2287	-18	12
				Max. Vy	48	-43	94	-4
			Top Girt	Max. Vx	13	-3	-18	12
				Max Tension	15	747	0	0
				Max. Compression	32	-92	0	0
				Max. Mx	47	513	-55	0
				Max. My	31	-3	0	0
				Max. Vy	38	37	0	0
		Mid Girt	Max. Vx	31	0	0	0	
			Max Tension	15	760	0	0	
			Max. Compression	32	-148	0	0	
			Max. Mx	47	502	-55	0	
			Max. My	16	50	0	0	
			Max. Vy	38	37	0	0	
T27	181 - 161	Leg	Max. Vx	16	0	0	0	
			Max Tension	14	55675	183	-85	
			Max. Compression	11	-166127	-272	221	
			Max. Mx	6	-146066	1055	-416	
			Max. My	21	-138551	87	1220	
			Max. Vy	6	-427	-993	203	
		Diagonal	Max. Vx	21	-485	-116	-1077	
			Max Tension	34	3735	0	0	
			Max. Compression	16	-3879	0	0	
			Max. Mx	48	-817	94	-4	
			Max. My	16	-3856	58	13	
			Max. Vy	48	-43	94	-4	
		Top Girt	Max. Vx	16	-4	58	13	
			Max Tension	15	964	0	0	
			Max. Compression	32	-209	0	0	
			Max. Mx	47	632	111	0	
			Max. My	16	52	0	0	
			Max. Vy	38	-74	0	0	
	Max. Vx	16	0	0	0			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T28	161 - 141	Mid Girt	Max Tension	14	759	0	0	
			Max. Compression	32	-131	0	0	
			Max. Mx	47	522	-54	0	
			Max. My	13	229	0	0	
			Max. Vy	47	-36	0	0	
		Leg	Max. Vx	13	0	0	0	
			Max Tension	14	45383	-647	-697	
			Max. Compression	11	-156298	521	-41	
			Max. Mx	9	-107048	-1850	990	
			Max. My	21	-104582	-328	-2115	
			Max. Vy	30	1096	1655	1328	
			Max. Vx	21	-1027	-328	-2115	
			Diagonal	Max Tension	19	7327	0	0
				Max. Compression	19	-7568	0	0
				Max. Mx	48	-1561	185	-10
		Max. My		16	-7214	31	40	
		Max. Vy		48	-74	185	-10	
		Top Girt	Max. Vx	16	11	31	40	
			Max Tension	14	895	0	0	
			Max. Compression	32	-126	0	0	
Max. Mx	38		527	-54	0			
Max. My	13		252	0	0			
Mid Girt	Max. Vy	38	36	0	0			
	Max. Vx	13	0	0	0			
	Max Tension	14	864	0	0			
	Max. Compression	1	0	0	0			
	Max. Mx	38	624	-54	0			
	Max. My	16	211	0	0			
	Max. Vy	38	36	0	0			
	Max. Vx	16	0	0	0			
	T29	141 - 121	Leg	Max Tension	14	8025	-1406	-1178
				Max. Compression	39	-140219	-34	-113
Max. Mx				33	-80228	2630	1820	
Max. My				21	-76177	-278	-2982	
Max. Vy				30	1041	2492	120	
Diagonal			Max. Vx	3	1039	344	2055	
			Max Tension	16	9915	0	0	
			Max. Compression	34	-9776	0	0	
			Max. Mx	14	-287	230	3	
			Max. My	19	-8930	20	97	
Top Girt			Max. Vy	47	-80	208	0	
			Max. Vx	19	26	20	97	
			Max Tension	34	1901	0	0	
			Max. Compression	28	-566	0	0	
			Max. Mx	38	759	-53	0	
Mid Girt	Max. My	13	333	0	0			
	Max. Vy	38	35	0	0			
	Max. Vx	13	0	0	0			
	Max Tension	33	14508	0	0			
	Max. Compression	16	-10249	0	0			
Guy A	Max. Mx	38	1550	-53	0			
	Max. My	13	331	0	0			
	Max. Vy	38	35	0	0			
	Max. Vx	13	0	0	0			
	Bottom Tension	18	25371					
	Top Tension	18	25520					
	Top Cable Vert	18	9246					
	Top Cable Norm	18	23786					
Top Cable Tan	18	14						
Bot Cable Vert	18	-8713						
Bot Cable Norm	18	23827						

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T30	121 - 101	Guy B	Bot Cable Tan	18	169			
			Bottom Tension	31	25419			
			Top Tension	31	25557			
			Top Cable Vert	31	8600			
			Top Cable Norm	31	24066			
			Top Cable Tan	31	24			
			Bot Cable Vert	31	-8070			
			Bot Cable Norm	31	24103			
			Bot Cable Tan	31	181			
			Guy C	Bottom Tension	13	24997		
				Top Tension	13	25142		
				Top Cable Vert	13	8554		
				Top Cable Norm	13	23642		
				Top Cable Tan	13	30		
		Bot Cable Vert		13	-8003			
		Bot Cable Norm		13	23681			
		Bot Cable Tan		13	181			
		Torque Arm Top		Max Tension	34	23835	0	0
				Max. Compression	37	-2705	0	0
			Max. Mx	47	12886	169	0	
			Max. My	16	17259	0	0	
			Max. Vy	47	-90	0	0	
			Max. Vx	16	0	0	0	
		Torque Arm Bottom	Max Tension	16	14890	0	0	
			Max. Compression	18	-26729	0	0	
			Max. Mx	48	-9173	285	0	
			Max. My	16	14586	0	1	
			Max. Vy	48	91	0	0	
			Max. Vx	16	0	0	0	
			Leg	Max Tension	14	51954	1328	804
				Max. Compression	11	-188603	-394	-21
				Max. Mx	37	-145357	2309	746
				Max. My	22	-129917	73	-2546
		Max. Vy		37	-929	2309	746	
		Max. Vx		22	1020	73	-2546	
		Diagonal		Max Tension	37	6448	0	0
				Max. Compression	34	-6648	0	0
				Max. Mx	46	214	96	1
				Max. My	15	-5163	-33	-18
				Max. Vy	46	-43	96	1
				Max. Vx	15	-5	0	0
		Top Girt		Max Tension	33	6413	0	0
Max. Compression	16			-7945	0	0		
Max. Mx	38			375	-52	0		
Max. My	13			947	0	0		
Max. Vy	38			-35	0	0		
Mid Girt	Max. Vx	13		0	0	0		
	Max Tension	48		645	0	0		
	Max. Compression	1		0	0	0		
	Max. Mx	38		608	-52	0		
	Max. My	13		366	0	0		
Leg	Max. Vy	38	-35	0	0			
	Max. Vx	13	0	0	0			
	Max Tension	14	69125	644	366			
	Max. Compression	29	-209368	-295	-306			
	Max. Mx	34	-179204	-1588	-942			
	Max. My	22	-175242	-85	1821			
	Max. Vy	34	-618	1324	801			
	Max. Vx	22	703	92	-1521			
	Diagonal	Max Tension	25	3644	0	0		
		Max. Compression	25	-3928	0	0		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T32	81 - 61	Top Girt	Max. Mx	46	-121	100	2
			Max. My	29	-2281	-27	8
			Max. Vy	46	-44	100	2
			Max. Vx	29	2	0	0
			Max Tension	14	968	0	0
			Max. Compression	32	-113	0	0
			Max. Mx	38	635	-51	0
			Max. My	13	335	0	0
			Max. Vy	38	-34	0	0
			Max. Vx	13	0	0	0
			Max Tension	14	1048	0	0
			Max. Compression	32	-202	0	0
		Mid Girt	Max. Mx	38	641	-51	0
			Max. My	13	346	0	0
			Max. Vy	38	-34	0	0
			Max. Vx	13	0	0	0
			Max Tension	14	69634	27	6
			Max. Compression	32	-213731	248	98
			Max. Mx	37	-205036	-1019	-333
			Max. My	22	-197701	-100	1110
			Max. Vy	2	-418	925	-344
			Max. Vx	17	-405	272	-745
			Max Tension	2	1744	0	0
			Max. Compression	2	-2082	0	0
		Diagonal	Max. Mx	46	-414	102	1
			Max. My	2	-853	34	-7
			Max. Vy	46	-44	102	1
			Max. Vx	2	2	0	0
			Max Tension	14	1074	0	0
			Max. Compression	32	-246	0	0
Max. Mx	38		648	-50	0		
Max. My	13		352	0	0		
Max. Vy	38		-34	0	0		
Max. Vx	13		0	0	0		
Max Tension	14		1069	0	0		
Max. Compression	32		-256	0	0		
Top Girt	Max. Mx	38	654	-50	0		
	Max. My	13	359	0	0		
	Max. Vy	38	-34	0	0		
	Max. Vx	13	0	0	0		
	Max Tension	14	56781	-796	-441		
	Max. Compression	32	-209720	-192	-67		
	Max. Mx	11	-193034	1651	-752		
	Max. My	20	-190076	9	1832		
	Max. Vy	32	594	1282	721		
	Max. Vx	20	-677	-7	-1449		
	Max Tension	11	4200	0	0		
	Max. Compression	11	-4530	0	0		
Diagonal	Max. Mx	46	-698	102	1		
	Max. My	11	-3370	30	-7		
	Max. Vy	46	-43	102	1		
	Max. Vx	11	-2	0	0		
	Max Tension	14	1101	0	0		
	Max. Compression	20	-290	0	0		
	Max. Mx	47	790	-49	0		
	Max. My	13	343	0	0		
	Max. Vy	47	-33	0	0		
	Max. Vx	13	0	0	0		
	Max Tension	14	1000	0	0		
	Max. Compression	32	-184	0	0		
Mid Girt	Max. Mx	47	785	-49	0		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T34	41 - 20	Leg	Max. My	13	373	0	0
			Max. Vy	47	-33	0	0
			Max. Vx	13	0	0	0
			Max Tension	14	19875	-1461	-838
			Max. Compression	45	-189334	1	-592
			Max. Mx	14	-7038	2394	1323
		Diagonal	Max. My	2	-9473	16	-2634
			Max. Vy	14	-819	-1831	-1053
			Max. Vx	2	912	3	2036
			Max Tension	17	6851	0	0
			Max. Compression	11	-6848	0	0
			Max. Mx	46	-757	103	1
		Top Girt	Max. My	14	-4963	27	-6
			Max. Vy	46	-42	103	1
			Max. Vx	14	2	0	0
			Max Tension	14	949	0	0
			Max. Compression	32	-85	0	0
			Max. Mx	47	826	-47	0
		Mid Girt	Max. My	13	408	0	0
			Max. Vy	47	31	0	0
			Max. Vx	13	0	0	0
			Max Tension	47	1425	0	0
			Max. Compression	1	0	0	0
			Max. Mx	47	1425	-47	0
T35	20 - 6.70833	Leg	Max. My	13	781	0	0
			Max. Vy	47	31	0	0
			Max. Vx	13	0	0	0
			Max Tension	1	0	0	0
			Max. Compression	45	-190723	-86	2
			Max. Mx	15	-30868	2668	60
		Diagonal	Max. My	15	-143251	-1259	1839
			Max. Vy	15	-595	126	-20
			Max. Vx	15	-357	423	335
			Max Tension	31	1826	-11	-1
			Max. Compression	48	-2233	0	0
			Max. Mx	13	-1551	-143	-16
		Top Girt	Max. My	13	-1551	-143	-16
			Max. Vy	46	-84	0	0
			Max. Vx	13	-9	0	0
			Max Tension	47	17739	0	0
			Max. Compression	1	0	0	0
			Max. Mx	47	17739	72	0
T36	6.70833 - 0	Leg	Max. My	48	16261	0	6
			Max. Vy	47	-48	0	0
			Max. Vx	48	4	0	0
			Max Tension	1	0	0	0
			Max. Compression	45	-195165	-788	1
			Max. Mx	14	-22769	2540	31
		Diagonal	Max. My	15	-148741	-1549	1767
			Max. Vy	47	1686	-1967	321
			Max. Vx	31	-1281	-1083	1492
			Max Tension	31	2875	-51	-20
			Max. Compression	34	-4846	100	-40
			Max. Mx	49	-3246	-425	-5



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 79 of 106
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## Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	47	519703	806	-621
	Max. H <sub>x</sub>	29	297563	11154	-63
	Max. H <sub>z</sub>	2	306772	24	11187
	Max. M <sub>x</sub>	1	0	-15	-11
	Max. M <sub>z</sub>	1	0	-15	-11
	Max. Torsion	13	843	-9843	224
	Min. Vert	1	196127	-15	-11
	Min. H <sub>x</sub>	11	295074	-11263	-161
	Min. H <sub>z</sub>	20	271641	-94	-10981
	Min. M <sub>x</sub>	1	0	-15	-11
	Min. M <sub>z</sub>	1	0	-15	-11
	Min. Torsion	34	-900	8962	5205
	Guy C @ 411 ft Elev -20.5 ft Azimuth 240 deg	Max. Vert	28	-2348	-2828
Max. H <sub>x</sub>		28	-2348	-2828	1633
Max. H <sub>z</sub>		7	-90154	-96167	57173
Min. Vert		13	-91895	-99643	55840
Min. H <sub>x</sub>		13	-91895	-99643	55840
Min. H <sub>z</sub>		28	-2348	-2828	1633
Guy B @ 394 ft Elev -13 ft Azimuth 120 deg	Max. Vert	16	-2215	2538	1465
	Max. H <sub>x</sub>	31	-94131	99876	55975
	Max. H <sub>z</sub>	37	-91417	95752	56939
	Min. Vert	31	-94131	99876	55975
	Min. H <sub>x</sub>	16	-2215	2538	1465
	Min. H <sub>z</sub>	16	-2215	2538	1465
Guy A @ 405 ft Elev -20 ft Azimuth 0 deg	Max. Vert	4	-2362	0	-3180
	Max. H <sub>x</sub>	31	-49743	2972	-60676
	Max. H <sub>z</sub>	4	-2362	0	-3180
	Min. Vert	25	-91430	1448	-111953
	Min. H <sub>x</sub>	13	-49361	-2974	-60246
	Min. H <sub>z</sub>	25	-91430	1448	-111953
Guy C @ 424.5 ft Elev -16.5 ft Azimuth 240 deg	Max. Vert	28	-355	-1740	1004
	Max. H <sub>x</sub>	28	-355	-1740	1004
	Max. H <sub>z</sub>	12	-15695	-40416	22952
	Min. Vert	12	-15695	-40416	22952
	Min. H <sub>x</sub>	12	-15695	-40416	22952
	Min. H <sub>z</sub>	28	-355	-1740	1004
Guy B @ 407.5 ft Elev -9 ft Azimuth 120 deg	Max. Vert	16	-302	1590	917
	Max. H <sub>x</sub>	30	-15834	41150	23377
	Max. H <sub>z</sub>	36	-15789	40691	23908
	Min. Vert	30	-15834	41150	23377
	Min. H <sub>x</sub>	16	-302	1590	917
	Min. H <sub>z</sub>	16	-302	1590	917
Guy A @ 403 ft Elev -20 ft Azimuth 0 deg	Max. Vert	3	-357	0	-1795
	Max. H <sub>x</sub>	31	-8683	791	-24077
	Max. H <sub>z</sub>	3	-357	0	-1795
	Min. Vert	18	-17157	-363	-46920

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. H <sub>x</sub>	13	-8791	-796	-24363
	Min. H <sub>z</sub>	18	-17157	-363	-46920

## Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead Only	196127	15	11	0	0	0
1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy	306772	-24	-11187	0	0	275
1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy	315377	-30	-9861	0	0	268
1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy	324901	-33	-9456	0	0	281
1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy	289436	5331	-9310	0	0	679
1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy	296832	5002	-8238	0	0	619
1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy	304484	4938	-7924	0	0	562
1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy	270486	9527	-5413	0	0	5
1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy	274059	8825	-5008	0	0	-106
1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy	277112	8717	-4934	0	0	-169
1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy	295074	11263	161	0	0	-727
1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy	302657	10141	-111	0	0	-814
1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy	309082	9843	-224	0	0	-843
1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy	311362	9947	5766	0	0	-603
1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy	320132	8773	5086	0	0	-674
1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy	328500	8417	4894	0	0	-708
1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy	294028	5832	9797	0	0	-255
1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy	300932	5082	9000	0	0	-298
1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy	307308	4834	8822	0	0	-340
1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy	271641	94	10981	0	0	-480
1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy	275041	109	10191	0	0	-487
1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy	278504	111	10072	0	0	-507
1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy	294507	-5305	9196	0	0	-601
1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy	302192	-4516	8362	0	0	-536
1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy	308881	-4270	8183	0	0	-518

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	<p><b>Client</b></p> <p style="text-align: center;">Crown Castle</p>	<p><b>Designed by</b></p> <p style="text-align: center;">EJB</p>

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy	313022	-9515	5490	0	0	132
1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy	322508	-8307	4784	0	0	213
1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy	331147	-7956	4591	0	0	235
1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy	297563	-11154	63	0	0	741
1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy	305337	-10032	-218	0	0	829
1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy	311830	-9741	-331	0	0	857
1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy	273640	-9748	-5651	0	0	706
1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy	276998	-9067	-5274	0	0	820
1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy	280014	-8962	-5205	0	0	900
1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy	291525	-5630	-9947	0	0	135
1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy	298351	-5322	-8922	0	0	171
1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy	305702	-5263	-8610	0	0	253
1.2 Dead+1.0 Ice+1.0 Temp+Guy	507655	65	144	0	0	0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	517826	54	-978	0	0	6
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	514981	804	-895	0	0	-9
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	512709	1247	-646	0	0	-260
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	514631	1272	-42	0	0	-377
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	517140	975	664	0	0	-251
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	515031	554	1317	0	0	-61
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	513710	79	1571	0	0	-31
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	516595	-383	1282	0	0	-40
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	519703	-806	621	0	0	200
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	517044	-1137	-70	0	0	384
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	514477	-1158	-666	0	0	206
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	515845	-699	-942	0	0	8
Dead+Wind 0 deg - Service+Guy	203587	-3	-2595	0	0	92
Dead+Wind 30 deg - Service+Guy	201433	1285	-2124	0	0	182
Dead+Wind 60 deg - Service+Guy	200030	2230	-1247	0	0	-23
Dead+Wind 90 deg - Service+Guy	201550	2654	9	0	0	-225
Dead+Wind 120 deg - Service+Guy	203479	2360	1370	0	0	-193
Dead+Wind 150 deg -	201690	1346	2328	0	0	-77

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Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Service+Guy						
Dead+Wind 180 deg - Service+Guy	200696	29	2568	0	0	-101
Dead+Wind 210 deg - Service+Guy	202656	-1202	2177	0	0	-162
Dead+Wind 240 deg - Service+Guy	205128	-2237	1296	0	0	47
Dead+Wind 270 deg - Service+Guy	203171	-2622	-18	0	0	226
Dead+Wind 300 deg - Service+Guy	201242	-2282	-1311	0	0	173
Dead+Wind 330 deg - Service+Guy	202084	-1355	-2287	0	0	48

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0	-117229	0	2	117229	0	0.001%
2	-934	-138486	-134127	934	138486	134121	0.003%
3	-803	-138486	-141830	803	138486	141823	0.003%
4	-800	-138486	-146978	800	138485	146971	0.003%
5	65809	-137617	-111593	-65809	137617	111587	0.003%
6	69802	-137617	-118214	-69803	137617	118208	0.003%
7	71726	-137617	-122761	-71726	137617	122755	0.003%
8	113821	-136743	-64237	-113819	136743	64241	0.003%
9	120525	-136743	-68080	-120522	136743	68086	0.003%
10	124199	-136743	-70717	-124196	136743	70722	0.003%
11	134812	-137655	563	-134807	137655	-559	0.003%
12	142623	-137655	447	-142618	137655	-443	0.003%
13	147066	-137655	454	-147061	137655	-450	0.003%
14	119717	-138554	68442	-119711	138554	-68439	0.004%
15	126491	-138554	72194	-126484	138554	-72191	0.004%
16	130259	-138554	74885	-130253	138554	-74882	0.004%
17	67691	-137655	114460	-67685	137655	-114457	0.003%
18	71288	-137655	120658	-71282	137655	-120655	0.003%
19	73136	-137655	125064	-73129	137655	-125061	0.003%
20	546	-136747	129142	-544	136747	-129143	0.001%
21	414	-136747	136409	-414	136747	-136410	0.000%
22	419	-136747	141340	-419	136747	-141340	0.000%
23	-65706	-137616	112018	65701	137616	-112016	0.003%
24	-69716	-137616	118668	69711	137616	-118666	0.003%
25	-71645	-137616	123216	71640	137616	-123213	0.003%
26	-118601	-138490	66776	118596	138490	-66773	0.003%
27	-125718	-138490	70878	125712	138490	-70874	0.003%
28	-129579	-138490	73625	129573	138490	-73621	0.003%
29	-135192	-137578	-503	135187	137578	507	0.003%
30	-143003	-137578	-356	142999	137578	359	0.003%
31	-147445	-137578	-361	147440	137578	365	0.003%
32	-115658	-136679	-65955	115656	136679	65959	0.002%
33	-122019	-136679	-69449	122016	136679	69454	0.003%
34	-125600	-136679	-72032	125598	136679	72036	0.002%
35	-68097	-137578	-114420	68098	137578	114414	0.003%
36	-71678	-137578	-120590	71679	137578	120583	0.003%
37	-73525	-137578	-124990	73526	137578	124984	0.003%
38	0	-377004	0	-5	377004	2	0.001%
39	-225	-377571	-48593	225	377571	48592	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
40	24236	-377004	-41859	-24237	377004	41856	0.001%
41	42234	-376433	-24177	-42232	376433	24175	0.001%
42	48667	-377027	100	-48665	377027	-98	0.001%
43	42391	-377613	24282	-42389	377613	-24281	0.001%
44	24403	-377027	41582	-24401	377027	-41581	0.001%
45	285	-376437	48077	-286	376437	-48076	0.000%
46	-24324	-377004	41726	24321	377004	-41725	0.001%
47	-42631	-377574	24153	42629	377574	-24152	0.001%
48	-48706	-376980	-197	48704	376980	199	0.001%
49	-42014	-376394	-24358	42011	376394	24358	0.001%
50	-24362	-376980	-41767	24363	376980	41764	0.001%
51	-201	-117440	-36539	201	117440	36538	0.001%
52	17959	-117230	-30478	-17960	117230	30477	0.001%
53	31007	-117018	-17544	-31008	117018	17546	0.002%
54	36676	-117239	114	-36675	117239	-113	0.001%
55	32520	-117457	18586	-32519	117457	-18585	0.001%
56	18311	-117239	31044	-18309	117239	-31043	0.001%
57	106	-117019	35127	-107	117019	-35128	0.002%
58	-17938	-117229	30588	17937	117229	-30588	0.001%
59	-32351	-117441	18271	32350	117441	-18270	0.001%
60	-36768	-117220	-92	36767	117220	93	0.002%
61	-31350	-117002	-17871	31350	117002	17873	0.001%
62	-18405	-117220	-31027	18406	117220	31026	0.001%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00002686
2	Yes	20	0.00005924	0.00006937
3	Yes	20	0.00005405	0.00006665
4	Yes	20	0.00005268	0.00007209
5	Yes	20	0.00007117	0.00006927
6	Yes	20	0.00006237	0.00006442
7	Yes	20	0.00005885	0.00006886
8	Yes	18	0.00009765	0.00005212
9	Yes	18	0.00009120	0.00003080
10	Yes	18	0.00006543	0.00001321
11	Yes	20	0.00007249	0.00007028
12	Yes	20	0.00006452	0.00006693
13	Yes	20	0.00006316	0.00007254
14	Yes	20	0.00006235	0.00007195
15	Yes	20	0.00005741	0.00007008
16	Yes	20	0.00005580	0.00007452
17	Yes	20	0.00006895	0.00006272
18	Yes	20	0.00006096	0.00005887
19	Yes	20	0.00006300	0.00006826
20	Yes	15	0.00006802	0.00008923
21	Yes	16	0.00005132	0.00006956
22	Yes	16	0.00005988	0.00007787
23	Yes	20	0.00005942	0.00006072
24	Yes	20	0.00005216	0.00005669
25	Yes	20	0.00005395	0.00006540
26	Yes	20	0.00005813	0.00007183
27	Yes	20	0.00005308	0.00006966
28	Yes	20	0.00005198	0.00007453

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29	Yes	20	0.00006731	0.00006756
30	Yes	20	0.00005895	0.00006346
31	Yes	20	0.00005804	0.00006902
32	Yes	18	0.00009910	0.00006556
33	Yes	18	0.00009205	0.00005164
34	Yes	18	0.00007094	0.00002695
35	Yes	20	0.00007756	0.00006963
36	Yes	20	0.00006721	0.00006396
37	Yes	20	0.00006359	0.00006877
38	Yes	11	0.00010000	0.00005733
39	Yes	18	0.00006042	0.00001961
40	Yes	17	0.00009042	0.00002515
41	Yes	14	0.00009343	0.00004421
42	Yes	17	0.00008042	0.00001932
43	Yes	18	0.00000001	0.00001605
44	Yes	17	0.00007778	0.00001863
45	Yes	15	0.00000001	0.00002189
46	Yes	17	0.00009474	0.00002690
47	Yes	18	0.00006242	0.00002105
48	Yes	17	0.00009412	0.00002548
49	Yes	14	0.00007618	0.00003661
50	Yes	17	0.00008609	0.00002264
51	Yes	17	0.00000001	0.00002193
52	Yes	16	0.00000001	0.00002487
53	Yes	12	0.00000001	0.00003615
54	Yes	16	0.00000001	0.00002783
55	Yes	17	0.00000001	0.00002274
56	Yes	16	0.00000001	0.00002413
57	Yes	12	0.00000001	0.00003181
58	Yes	16	0.00000001	0.00003306
59	Yes	17	0.00000001	0.00002902
60	Yes	16	0.00000001	0.00003285
61	Yes	13	0.00000001	0.00002968
62	Yes	16	0.00000001	0.00002105

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	496.57 - 457	7.5817	61	0.1430	0.2511
Antenna					
T1	457 - 436	6.6707	59	0.1377	0.2509
T2	436 - 421	6.3842	59	0.1314	0.2461
T3	421 - 401	6.1946	59	0.1221	0.2387
T4	401 - 396	5.9758	59	0.0963	0.2289
T5	396 - 391	5.9317	59	0.0904	0.2263
T6	391 - 386	5.8929	59	0.0834	0.2237
T7	386 - 381	5.8561	59	0.0753	0.2210
T8	381 - 376	5.8286	59	0.0658	0.2182
T9	376 - 371	5.8245	59	0.0591	0.2159
T10	371 - 366	5.8276	59	0.0533	0.2135
T11	366 - 361	5.8325	59	0.0485	0.2111
T12	361 - 341	5.8401	59	0.0445	0.2092
T13	341 - 321	5.8784	59	0.0341	0.2011
T14	321 - 301	5.8865	59	0.0296	0.1924
T15	301 - 281	5.8261	59	0.0348	0.1844
T16	281 - 276	5.7095	59	0.0330	0.1749
T17	276 - 271	5.6774	59	0.0304	0.1722
T18	271 - 266	5.6463	59	0.0272	0.1690

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	85 of 106
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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T19	266 - 261	5.6170	59	0.0231	0.1656
T20	261 - 256	5.5913	59	0.0177	0.1625
T21	256 - 251	5.5748	59	0.0111	0.1609
T22	251 - 246	5.5718	59	0.0125	0.1590
T23	246 - 241	5.5779	59	0.0160	0.1572
T24	241 - 221	5.5841	59	0.0176	0.1554
T25	221 - 201	5.5929	59	0.0108	0.1473
T26	201 - 181	5.5571	55	0.0328	0.1312
T27	181 - 161	5.4117	55	0.0615	0.1152
T28	161 - 141	5.1340	55	0.0880	0.0991
T29	141 - 121	4.7641	55	0.1024	0.0874
T30	121 - 101	4.3690	55	0.1045	0.0791
T31	101 - 81	3.9708	55	0.1242	0.0820
T32	81 - 61	3.4616	55	0.1541	0.0871
T33	61 - 41	2.8189	55	0.1876	0.0898
T34	41 - 20	2.0403	55	0.2186	0.0923
T35	20 - 6.70833	1.0980	55	0.2418	0.0923
T36	6.70833 - 0	0.4489	55	0.2988	0.1013

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
457'	12" x 3' Beacon	59	6.6707	0.1377	0.2509	68043
450'	USX6-6W-6GR	59	6.5711	0.1361	0.2499	91238
446'6"	Guy	59	6.5231	0.1351	0.2493	115558
441'	SRL-235-2	59	6.4496	0.1333	0.2478	173844
439'	BCD-87077	59	6.4233	0.1326	0.2472	208898
435'	ERI 1183-3CP	59	6.3712	0.1310	0.2456	243926
430'	ERI 1183-3CP	59	6.3069	0.1287	0.2433	165456
425'	ERI 1183-3CP	59	6.2439	0.1256	0.2408	109672
420'	ERI 1183-3CP	59	6.1825	0.1211	0.2382	82182
415'	ERI 1183-3CP	59	6.1235	0.1152	0.2357	68796
410'	ERI 1183-3CP	59	6.0673	0.1084	0.2333	59484
405'	ERI 1183-3CP	59	6.0148	0.1015	0.2309	52374
393'	6014-2	59	5.9081	0.0863	0.2247	74781
388'	6014-2	59	5.8705	0.0788	0.2221	51748
381'	Guy	59	5.8286	0.0658	0.2182	12368
367'	6828-2	59	5.8314	0.0494	0.2115	70913
364'	DB806E-XT	59	5.8353	0.0469	0.2103	66661
344'	455-6	59	5.8732	0.0355	0.2024	155273
342'	BCD-87077	59	5.8767	0.0346	0.2015	131461
340'	455-6	59	5.8799	0.0337	0.2007	115227
333'	3" x 6" SideLight	59	5.8881	0.0307	0.1976	83582
330'	PG1N0F-0090-310	59	5.8898	0.0296	0.1962	74935
328'	7P-C1-2-CP-L	59	5.8902	0.0289	0.1954	70101
326'	DB201-A	59	5.8900	0.0290	0.1945	65852
325'	DB408	59	5.8897	0.0291	0.1941	63931
322'	SPD3-5.8	59	5.8875	0.0295	0.1928	59628
316'	6014-2	59	5.8782	0.0305	0.1904	59552
306'	6014-2	59	5.8477	0.0336	0.1864	64922
284'	DB404-B w/ Mount Pipe	59	5.7287	0.0341	0.1763	245038
277'	BMR10-A-B1	59	5.6838	0.0310	0.1728	86260
264'	ANT150F6	59	5.6060	0.0212	0.1643	40969
258'6"	(2) PL6" x 0.5"	59	5.5815	0.0145	0.1616	22466
255'	DB809KT3E-Y	59	5.5731	0.0098	0.1606	19908

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	86 of 106
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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
254'6"	Guy	59	5.5725	0.0091	0.1604	20321
247'	APXVAARR24_43-U-NA20 w/ Mount Pipe	59	5.5765	0.0155	0.1575	93356
230'	HBXX-6516DS-VTM w/ Mount Pipe	59	5.5939	0.0152	0.1516	96469
215'	3" x 6" SideLight	59	5.5845	0.0152	0.1431	49718
206'	P-9A72GN-U	55	5.5725	0.0260	0.1355	40007
200'	DFPD1-52 w/ Mount Pipe	55	5.5531	0.0342	0.1303	36241
188'	BMYD745K	55	5.4782	0.0514	0.1208	34765
186'	ASP-960	55	5.4610	0.0543	0.1192	34570
178'	SPD4-5.2	55	5.3780	0.0658	0.1128	35770
150'	HPX6-65-P3A	55	4.9378	0.0981	0.0923	85441
146'	PL6-65-PXA	55	4.8616	0.1005	0.0901	116794
140'	CM 4228HD	55	4.7443	0.1026	0.0869	244016
138'	MGA2-16N	55	4.7048	0.1029	0.0859	355754
136'	CSI-AY/809-960/11	55	4.6651	0.1030	0.0848	633063
135'	CM 4228HD	55	4.6452	0.1030	0.0843	544554
134'	MGAR3-23N	55	4.6253	0.1030	0.0838	422944
133'	220-5	55	4.6054	0.1030	0.0833	343051
131'	Guy	55	4.5657	0.1030	0.0824	248987
117'	P-9A48GN-U	55	4.2922	0.1066	0.0788	388426
112'	3" x 6" SideLight	55	4.1960	0.1109	0.0789	108933
109'	PD1132-D	55	4.1372	0.1141	0.0791	67712
108'	SSH-9A72GN	55	4.1173	0.1152	0.0793	60128
99'	SPD2-5.8	55	3.9262	0.1269	0.0827	34339
68'	P-9A48GN-U	55	3.0586	0.1750	0.0880	37297
62'	CSI-AY/809-960/11	55	2.8541	0.1857	0.0895	37513
61'	SSH-9A72GN	55	2.8189	0.1876	0.0898	37268

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	496.57 - 457	48.9341	26	0.9443	0.9505
Antenna					
T1	457 - 436	41.1617	26	0.9222	0.9464
T2	436 - 421	37.5181	26	0.8936	0.9276
T3	421 - 401	35.0082	26	0.8476	0.8993
T4	401 - 396	32.9919	28	0.7215	0.8617
T5	396 - 391	32.8839	28	0.6925	0.8517
T6	391 - 386	32.7927	28	0.6589	0.8416
T7	386 - 381	32.7068	28	0.6198	0.8310
T8	381 - 376	32.6536	28	0.5746	0.8204
T9	376 - 371	32.6912	28	0.5397	0.8133
T10	371 - 366	32.7534	28	0.5074	0.8062
T11	366 - 361	32.8212	28	0.4774	0.7987
T12	361 - 341	32.8957	28	0.4495	0.7923
T13	341 - 321	33.1854	28	0.3108	0.7644
T14	321 - 301	33.2879	28	0.2162	0.7328
T15	301 - 281	33.1920	16	0.1399	0.7180
T16	281 - 276	32.9594	16	0.1441	0.6968
T17	276 - 271	32.8882	16	0.1383	0.6895
T18	271 - 266	32.8207	16	0.1275	0.6815
T19	266 - 261	32.7608	16	0.1354	0.6735
T20	261 - 256	32.7156	16	0.1675	0.6620



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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T21	256 - 251	32.7089	16	0.2020	0.6541
T22	251 - 246	32.7603	16	0.2320	0.6479
T23	246 - 241	32.8498	16	0.2507	0.6425
T24	241 - 221	32.9367	16	0.2595	0.6380
T25	221 - 201	33.1723	16	0.2169	0.6131
T26	201 - 181	33.0119	16	0.1732	0.5551
T27	181 - 161	32.2090	16	0.3246	0.4939
T28	161 - 141	30.6979	16	0.4757	0.4247
T29	141 - 121	28.6226	16	0.5896	0.3800
T30	121 - 101	26.2440	16	0.6514	0.3556
T31	101 - 81	23.7096	15	0.7835	0.3645
T32	81 - 61	20.5071	15	0.9536	0.3670
T33	61 - 41	16.5662	15	1.1336	0.3619
T34	41 - 20	11.9096	15	1.2962	0.3677
T35	20 - 6.70833	6.3766	15	1.4160	0.3665
T36	6.70833 - 0	2.5933	15	1.7357	0.4017

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
457'	12" x 3' Beacon	26	41.1617	0.9222	0.9464	11232
450'	USX6-6W-6GR	26	39.9157	0.9149	0.9425	15421
446'6"	Guy	26	39.3079	0.9105	0.9399	20006
441'	SRL-235-2	26	38.3662	0.9025	0.9343	30876
439'	BCD-87077	26	38.0264	0.8991	0.9318	33146
435'	ERI 1183-3CP	26	37.3488	0.8917	0.9260	31857
430'	ERI 1183-3CP	26	36.5044	0.8803	0.9171	21894
425'	ERI 1183-3CP	26	35.6678	0.8646	0.9073	16168
420'	ERI 1183-3CP	26	34.8450	0.8426	0.8974	13246
415'	ERI 1183-3CP	26	34.0410	0.8135	0.8879	12117
410'	ERI 1183-3CP	26	33.2590	0.7804	0.8787	11324
405'	ERI 1183-3CP	28	33.0899	0.7466	0.8694	10427
393'	6014-2	28	32.8280	0.6730	0.8456	14357
388'	6014-2	28	32.7402	0.6365	0.8354	9870
381'	Guy	28	32.6536	0.5746	0.8204	3122
367'	6828-2	28	32.8071	0.4831	0.8001	9867
364'	DB806E-XT	28	32.8503	0.4664	0.7961	8686
344'	455-6	28	33.1486	0.3297	0.7689	9976
342'	BCD-87077	28	33.1735	0.3169	0.7659	10092
340'	455-6	28	33.1967	0.3048	0.7629	10305
333'	3" x 6" SideLight	28	33.2600	0.2677	0.7519	11696
330'	PG1N0F-0090-310	28	33.2775	0.2538	0.7472	12455
328'	7P-C1-2-CP-L	28	33.2856	0.2450	0.7440	13018
326'	DB201-A	28	33.2904	0.2365	0.7408	13634
325'	DB408	28	33.2917	0.2323	0.7392	13962
322'	SPD3-5.8	28	33.2902	0.2202	0.7344	13363
316'	6014-2	28	33.2626	0.1966	0.7295	13585
306'	6014-2	16	33.2175	0.1574	0.7225	14455
284'	DB404-B w/ Mount Pipe	16	33.0019	0.1454	0.7007	13979
277'	BMR10-A-B1	16	32.9023	0.1399	0.6910	8736
264'	ANT150F6	16	32.7399	0.1478	0.6690	8220
258'6"	(2) PL6" x 0.5"	16	32.7056	0.1847	0.6576	5097
255'	DB809KT3E-Y	16	32.7145	0.2086	0.6528	4554
254'6"	Guy	16	32.7183	0.2119	0.6522	4652
247'	APXVAARR24_43-U-NA20 w/	16	32.8311	0.2478	0.6435	19133

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Mount Pipe					
230'	HBXX-6516DS-VTM w/ Mount Pipe	16	33.0972	0.2486	0.6275	15190
215'	3" x 6" SideLight	16	33.1790	0.1985	0.5982	8916
206'	P-9A72GN-U	16	33.1047	0.1594	0.5709	7325
200'	DFPD1-52 w/ Mount Pipe	16	32.9884	0.1803	0.5520	6669
188'	BMVD745K	16	32.5714	0.2698	0.5162	6259
186'	ASP-960	16	32.4770	0.2854	0.5101	6201
178'	SPD4-5.2	16	32.0260	0.3484	0.4836	6271
150'	HPX6-65-P3A	16	29.6108	0.5481	0.3972	9207
146'	PL6-65-PXA	16	29.1808	0.5687	0.3891	10241
140'	CM 4228HD	16	28.5085	0.5931	0.3782	12268
138'	MGA2-16N	16	28.2783	0.5995	0.3747	13091
136'	CSI-AY/809-960/11	16	28.0454	0.6054	0.3714	14020
135'	CM 4228HD	16	27.9281	0.6082	0.3699	14533
134'	MGAR3-23N	16	27.8102	0.6109	0.3683	15087
133'	220-5	16	27.6918	0.6135	0.3668	15683
131'	Guy	16	27.4536	0.6188	0.3641	17031
117'	P-9A48GN-U	15	25.7652	0.6707	0.3554	15930
112'	3" x 6" SideLight	15	25.1548	0.7007	0.3572	10078
109'	PD1132-D	15	24.7776	0.7212	0.3590	8255
108'	SSH-9A72GN	15	24.6495	0.7285	0.3597	7786
99'	SPD2-5.8	15	23.4246	0.8003	0.3657	5655
68'	P-9A48GN-U	15	18.0244	1.0560	0.3594	6568
62'	CSI-AY/809-960/11	15	16.7795	1.1207	0.3609	6787
61'	SSH-9A72GN	15	16.5662	1.1336	0.3619	6765

### Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	457	Leg	A307	0.88	8	1935	20778	0.093	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1999	5522	0.362	1.05	Bolt Shear
		Horizontal	A307	0.50	2	584	5522	0.106	1.05	Bolt Shear
		Top Girt	A307	0.50	2	0	5522	0.000	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	2152	5522	0.390	1.05	Bolt Shear
T2	436	Leg	A307	0.88	8	4200	20778	0.202	1.05	Bolt Tension
		Diagonal	A325X	0.50	2	2135	7082	0.301	1.05	Member Block Shear
		Horizontal	A307	0.50	2	718	5522	0.130	1.05	Bolt Shear
T3	421	Top Girt	A307	0.50	2	582	5522	0.105	1.05	Bolt Shear
		Leg	A307	0.88	8	9021	20778	0.434	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3598	7082	0.508	1.05	Member Block Shear
T4	401	Top Girt	A307	0.50	2	390	5522	0.071	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	148	5522	0.027	1.05	Bolt Shear
		Diagonal	A325N	0.50	2	3814	7082	0.539	1.05	Member Block Shear
T5	396	Top Girt	A307	0.50	2	290	5522	0.053	1.05	Bolt Shear
		Diagonal	A325N	0.50	2	4223	7082	0.596	1.05	Member Block Shear
T6	391	Diagonal	A325X	0.50	2	4828	7082	0.682	1.05	Member Block Shear
T7	386	Leg	A307	0.88	8	17185	20778	0.827	1.05	Bolt Tension

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T8	381	Diagonal	A325X	0.50	2	5744	7082	0.811	1.05	Member Block Shear
		Diagonal	A325N	0.50	2	4619	7082	0.652	1.05	Member Block Shear
T9	376	Top Guy Pull-Off@381	A307	0.50	2	10928	11045	0.989	1.05	Bolt Shear
		Diagonal	A325N	0.50	2	4061	7082	0.573	1.05	Member Block Shear
T10	371	Diagonal	A325N	0.50	2	4093	7082	0.578	1.05	Member Block Shear
T11	366	Leg	A307	0.88	8	8631	20778	0.415	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3779	7082	0.534	1.05	Member Block Shear
T12	361	Leg	A307	0.88	8	5218	20778	0.251	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3454	7082	0.488	1.05	Member Block Shear
T13	341	Secondary Horizontal	A325X	0.50	1	2521	9661	0.261	1.05	Member Block Shear
		Top Girt	A307	0.50	2	305	5522	0.055	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	195	5522	0.035	1.05	Bolt Shear
		Leg	A307	0.88	8	4464	20778	0.215	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	2272	7082	0.321	1.05	Member Block Shear
T14	321	Top Girt	A307	0.50	2	213	5522	0.039	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	171	5522	0.031	1.05	Bolt Shear
		Leg	A307	0.88	8	4338	20778	0.209	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1591	5522	0.288	1.05	Bolt Shear
T15	301	Top Girt	A307	0.50	2	228	5522	0.041	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	262	5522	0.048	1.05	Bolt Shear
		Leg	A307	0.88	8	4825	20778	0.232	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2697	5522	0.488	1.05	Bolt Shear
T16	281	Top Girt	A307	0.50	2	214	5522	0.039	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	179	5522	0.032	1.05	Bolt Shear
		Diagonal	A325N	0.50	2	2993	7082	0.423	1.05	Member Block Shear
T17	276	Top Girt	A307	0.50	2	186	5522	0.034	1.05	Bolt Shear
		Diagonal	A325N	0.50	2	3304	7082	0.467	1.05	Member Block Shear
T18	271	Diagonal	A325N	0.50	2	3867	7082	0.546	1.05	Member Block Shear
T19	266	Top Girt	A307	0.50	2	416	5522	0.075	1.05	Bolt Shear
		Leg	A307	0.88	8	5755	20778	0.277	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3672	7082	0.519	1.05	Member Block Shear
T20	261	Diagonal	A325N	0.50	2	6659	8836	0.754	1.05	Bolt Shear
		Top Girt	A307	0.50	2	2995	5522	0.542	1.05	Bolt Shear
T21	256	Diagonal	A325N	0.50	2	8987	8836	1.017	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.50	2	13096	17672	0.741	1.05	Bolt Shear
T22	251	Diagonal	A325N	0.50	2	6456	8836	0.731	1.05	Bolt Shear
		Top Girt	A307	0.50	2	3211	5522	0.581	1.05	Bolt Shear
T23	246	Leg	A307	0.63	8	4729	10170	0.465	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	5724	8836	0.648	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.50	2	985	17672	0.056	1.05	Bolt Shear
T24	241	Leg	A307	0.63	8	4857	10170	0.478	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	5187	8836	0.587	1.05	Bolt Shear
		Top Girt	A307	0.50	2	359	5522	0.065	1.05	Bolt Shear
T25	221	Mid Girt	A307	0.50	2	332	5522	0.060	1.05	Bolt Shear
		Leg	A307	0.88	8	6300	20778	0.303	1.05	Bolt Tension

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T26	201	Diagonal	A307	0.50	2	3450	5522	0.625	1.05	Bolt Shear
		Top Girt	A307	0.50	2	358	5522	0.065	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	350	5522	0.063	1.05	Bolt Shear
		Leg	A307	0.88	8	6879	20778	0.331	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2014	5522	0.365	1.05	Bolt Shear
T27	181	Top Girt	A307	0.50	2	373	5522	0.068	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	380	5522	0.069	1.05	Bolt Shear
		Leg	A307	0.88	8	6697	20778	0.322	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1939	5522	0.351	1.05	Bolt Shear
		Top Girt	A307	0.50	2	482	11045	0.044	1.05	Bolt Shear
T28	161	Mid Girt	A307	0.50	2	380	5522	0.069	1.05	Bolt Shear
		Leg	A307	0.63	8	5704	10170	0.561	1.05	Bolt Tension
		Diagonal	A325N	0.63	2	3664	10833	0.338	1.05	Member Block Shear
		Top Girt	A307	0.50	2	448	5522	0.081	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	432	5522	0.078	1.05	Bolt Shear
T29	141	Leg	A307	0.63	8	5615	10170	0.552	1	Bolt Tension
		Diagonal	A325N	0.63	2	4958	10833	0.458	1.05	Member Block Shear
		Top Girt	A307	0.50	2	950	5522	0.172	1.05	Bolt Shear
		Mid Girt	A325N	0.50	2	7254	7082	1.024	1.05	Member Block Shear
		Torque Arm Top@131	A325N	0.75	2	11917	16924	0.704	1.05	Member Block Shear
T30	121	Torque Arm Bottom@131	A325N	0.75	2	7445	16924	0.440	1.05	Member Block Shear
		Leg	A307	0.88	8	7858	20778	0.378	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3224	7082	0.455	1.05	Member Block Shear
		Top Girt	A307	0.50	2	3973	5522	0.719	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	323	5522	0.058	1.05	Bolt Shear
T31	101	Leg	A307	0.88	8	8724	20778	0.420	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1964	5522	0.356	1.05	Bolt Shear
		Top Girt	A307	0.50	2	484	5522	0.088	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	524	5522	0.095	1.05	Bolt Shear
		Leg	A307	0.88	8	8854	20778	0.426	1.05	Bolt Tension
T32	81	Diagonal	A307	0.50	2	1041	5522	0.189	1.05	Bolt Shear
		Top Girt	A307	0.50	2	537	5522	0.097	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	535	5522	0.097	1.05	Bolt Shear
		Leg	A307	0.88	8	8064	20778	0.388	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2265	5522	0.410	1.05	Bolt Shear
T33	61	Top Girt	A307	0.50	2	550	5522	0.100	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	500	5522	0.091	1.05	Bolt Shear
		Leg	A307	0.88	8	7760	20778	0.373	1.05	Bolt Tension
		Diagonal	A307	0.50	2	3426	5522	0.620	1.05	Bolt Shear
		Top Girt	A307	0.50	2	474	5522	0.086	1.05	Bolt Shear
T34	41	Mid Girt	A307	0.50	2	713	5522	0.129	1.05	Bolt Shear
		Leg	A307	0.88	8	7806	20778	0.376	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1117	5522	0.202	1.05	Bolt Shear
		Top Girt	A325N	0.50	2	8869	14165	0.626	1.05	Member Block Shear
		Diagonal	A307	0.50	2	2423	5522	0.439	1.05	Bolt Shear
T35	20	Diagonal	A307	0.50	2	2423	5522	0.439	1.05	Bolt Shear
T36	6.70833	Diagonal	A307	0.50	2	2423	5522	0.439	1.05	Bolt Shear

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual $T_u$ lb	Allowable $\phi T_n$ lb	Required S.F.	Actual S.F.
T1	446'6" (A) (826)	9/16 EHS	2800	35000	13690	22050	0.952	1.534
	446'6" (B) (825)	9/16 EHS	2800	35000	13738	22050	0.952	1.529
	446'6" (C) (824)	9/16 EHS	2800	35000	13745	22050	0.952	1.528
T8	381' (A) (829)	1 3/8 BS	18560	232000	69147	146157	0.952	2.013
	381' (B) (828)	1 3/8 BS	18560	232000	70294	146157	0.952	1.980
	381' (C) (827)	1 3/8 BS	18560	232000	69430	146157	0.952	2.005
T21	254'6" (A) (832)	1 1/4 BS	15360	192000	67832	120958	0.952	1.698
	254'6" (B) (831)	1 1/4 BS	15360	192000	69464	120958	0.952	1.658
	254'6" (C) (830)	1 1/4 BS	15360	192000	68900	120958	0.952	1.672
T29	131' (A) (845)	11/16 EHS	6000	50000	25520	31499	0.952	1.176
	131' (A) (846)	11/16 EHS	6000	50000	24745	31499	0.952	1.212
	131' (B) (839)	11/16 EHS	6000	50000	24712	31499	0.952	1.214
	131' (B) (840)	11/16 EHS	6000	50000	25557	31499	0.952	1.174
	131' (C) (833)	11/16 EHS	6000	50000	25142	31499	0.952	1.193
	131' (C) (834)	11/16 EHS	6000	50000	24237	31499	0.952	1.238

## Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0	7.07	-31210	149352	0.209 <sup>1</sup>
T2	436 - 421	2 3/4	15'	5'	87.3	5.94	-50477	122148	0.413 <sup>1</sup>
T3	421 - 401	2 3/4	20'	5'	87.3	5.94	-99049	122148	0.811 <sup>1</sup>
T4	401 - 396	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	-114325	232333	0.492 <sup>1</sup>
T5	396 - 391	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	-131051	232333	0.564 <sup>1</sup>
T6	391 - 386	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	-150249	232333	0.647 <sup>1</sup>
T7	386 - 381	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	-172895	232333	0.744 <sup>1</sup>
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	-181557	267249	0.679 <sup>1</sup>
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	-171272	267249	0.641 <sup>1</sup>
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	-162473	267249	0.608 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T11	366 - 361	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5 K=1.00	11.00	-153817	267249	0.576 <sup>1</sup>
T12	361 - 341	3	20'	2'6"	40.0 K=1.00	7.07	-145566	194337	0.749 <sup>1</sup>
T13	341 - 321	3	20'	5'	80.0 K=1.00	7.07	-120035	154155	0.779 <sup>1</sup>
T14	321 - 301	3	20'	5'	80.0 K=1.00	7.07	-104304	154155	0.677 <sup>1</sup>
T15	301 - 281	3	20'	5'	80.0 K=1.00	7.07	-115808	154155	0.751 <sup>1</sup>
T16	281 - 276	3	5'	5'	80.0 K=1.00	7.07	-120798	154155	0.784 <sup>1</sup>
T17	276 - 271	3	5'	5'	80.0 K=1.00	7.07	-125924	154155	0.817 <sup>1</sup>
T18	271 - 266	3	5'	5'	80.0 K=1.00	7.07	-132496	154155	0.859 <sup>1</sup>
T19	266 - 261	3	5'	5'	80.0 K=1.00	7.07	-138131	154155	0.896 <sup>1</sup>
T20	261 - 256	3	5'	5'	80.0 K=1.00	7.07	-149739	154155	0.971 <sup>1</sup>
T21	256 - 251	3	5'	2'6"	40.0 K=1.00	7.07	-153845	194337	0.792 <sup>1</sup>
T22	251 - 246	3	5'	5'	80.0 K=1.00	7.07	-122889	154155	0.797 <sup>1</sup>
T23	246 - 241	3	5'	2'6"	40.0 K=1.00	7.07	-113766	194337	0.585 <sup>1</sup>
T24	241 - 221	3	20'	5'	80.0 K=1.00	7.07	-116578	154155	0.756 <sup>1</sup>
T25	221 - 201	3 1/4	20'	5'	73.8 K=1.00	8.30	-151193	189376	0.798 <sup>1</sup>
T26	201 - 181	3 1/4	20'	5'	73.8 K=1.00	8.30	-165084	189376	0.872 <sup>1</sup>
T27	181 - 161	3 1/4	20'	5'	73.8 K=1.00	8.30	-166127	189376	0.877 <sup>1</sup>
T28	161 - 141	3 1/2	20'	5'	68.6 K=1.00	9.62	-156298	227739	0.686 <sup>1</sup>
T29	141 - 121	3 1/2	20'	5'	68.6 K=1.00	9.62	-134750	227739	0.592 <sup>*1</sup>
T30	121 - 101	3 1/2	20'	5'	68.6 K=1.00	9.62	-188603	227739	0.828 <sup>1</sup>
T31	101 - 81	3 1/2	20'	5'	68.6 K=1.00	9.62	-209369	227739	0.919 <sup>1</sup>
T32	81 - 61	3 1/2	20'	5'	68.6 K=1.00	9.62	-213731	227739	0.938 <sup>1</sup>
T33	61 - 41	3 1/2	20'	5'	68.6 K=1.00	9.62	-209720	227739	0.921 <sup>1</sup>
T34	41 - 20	3 1/2	21'	5'3"	72.0 K=1.00	9.62	-189334	222503	0.851 <sup>1</sup>
T35	20 - 6.70833	3 1/4	13'5-7/8"	4'6"	66.4 K=1.00	8.30	-190723	199143	0.958 <sup>1</sup>
T36	6.70833 - 0	3 1/4	6'9-23/32"	2'3-1/4"	33.5 K=1.00	8.30	-195165	233387	0.836 <sup>1</sup>

\* DL controls

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

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### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	7'7-13/16"	3'7-9/16'	107.0 K=1.04	1.06	-3363	23433	0.144 <sup>1</sup>
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4858	18234	0.266 <sup>1</sup>
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7318	18234	0.401 <sup>1</sup>
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7807	18234	0.428 <sup>1</sup>
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-8484	18234	0.465 <sup>1</sup>
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-10887	18234	0.597 <sup>1</sup>
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-10313	18234	0.566 <sup>1</sup>
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7936	18234	0.435 <sup>1</sup>
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-9239	18234	0.507 <sup>1</sup>
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-8133	18234	0.446 <sup>1</sup>
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7702	18234	0.422 <sup>1</sup>
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7154	18234	0.392 <sup>1</sup>
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4571	18234	0.251 <sup>1</sup>
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-3183	18234	0.175 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5395	18234	0.296 <sup>1</sup>
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5927	18234	0.325 <sup>1</sup>
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-6780	18234	0.372 <sup>1</sup>
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-6624	18234	0.363 <sup>1</sup>
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-8174	18234	0.448 <sup>1</sup>
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-4987	40338	0.124 <sup>1</sup>
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-12900	40338	0.320 <sup>1</sup>
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-12912	40338	0.320 <sup>1</sup>
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-10319	40338	0.256 <sup>1</sup>
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-10374	40338	0.257 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-6900	18234	0.378 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4027	18234	0.221 <sup>1</sup>
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-3879	18234	0.213 <sup>1</sup>
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.44	-7568	40403	0.187 <sup>1</sup>
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.44	-9776	40403	0.242 <sup>1</sup>

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	K=1.17 104.9	0.81	-6648	18234	0.365 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	K=1.05 104.9	0.81	-3928	18234	0.215 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	K=1.05 104.9	0.81	-2082	18234	0.114 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	K=1.05 104.9	0.81	-4530	18234	0.248 <sup>1</sup>
T34	41 - 20	L2 1/2x2x3/16	7'7-13/1 6"	3'7-9/16' '	K=1.05 106.5	0.81	-6848	17973	0.381 <sup>1</sup>
T35	20 - 6.70833	L2x2x3/16	4'9-1/8"	2'9-3/8"	K=1.04 93.5	0.71	-2233	17651	0.127 <sup>1</sup>
T36	6.70833 - 0	L2x2x3/16	2'5-17/3 2"	1'1-5/16' '	K=1.10 55.4	0.71	-4846	21505	0.225 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16' '	139.4 K=0.92	1.06	-1169	15614	0.075 <sup>1</sup>
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16' '	139.8 K=0.92	1.06	-382	15533	0.025 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2x2x1/4	6'	2'9-1/8"	102.4 K=1.21	0.94	-2521	22643	0.111 <sup>1</sup>
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/3 2"	30.4 K=1.00	4.97	-2665	164583	0.016 <sup>1</sup>
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/3 2"	30.4 K=1.00	4.97	-1970	164583	0.012 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	C8x13.75	6'	5'9"	112.2 K=1.00	4.04	-1	65362	0.000 <sup>1</sup>
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16'	139.8 K=0.92	1.06	-37	15533	0.002 <sup>1</sup>
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16'	139.8 K=0.92	1.06	-239	15533	0.015 <sup>1</sup>
T4	401 - 396	L2 1/2x2x1/4	6'	5'3-15/32"	138.3 K=0.92	1.06	-470	15861	0.030 <sup>1</sup>
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 K=0.92	1.06	-283	15614	0.018 <sup>1</sup>
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 K=0.92	1.06	-71	15614	0.005 <sup>1</sup>
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 K=0.92	1.06	-143	15614	0.009 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 K=0.92	0.81	-98	12030	0.008 <sup>1</sup>
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 K=0.92	1.06	-145	15614	0.009 <sup>1</sup>
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 K=0.92	1.06	-831	15614	0.053 <sup>1</sup>
T20	261 - 256	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 K=0.92	0.81	-5990	12030	0.498 <sup>1</sup>
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 K=0.92	0.81	-6422	12030	0.534 <sup>1</sup>
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 K=0.92	0.81	-718	12030	0.060 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-31	12092	0.003 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-92	12092	0.008 <sup>1</sup>
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	87.0 K=1.00	2.38	-209	58654	0.004 <sup>1</sup>
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-126	12156	0.010 <sup>1</sup>
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-566	12156	0.047 <sup>1</sup>
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-7945	12156	0.654 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-113	12156	0.009 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-246	12156	0.020 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-290	12156	0.024 <sup>1</sup>
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-85	12156	0.007 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16'	139.8 K=0.92	1.06	-181	15533	0.012 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 , K=0.92	1.06	-157	15614	0.010 <sup>1</sup>
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 , K=0.92	1.06	-82	15614	0.005 <sup>1</sup>
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16'	139.4 , K=0.92	1.06	-190	15614	0.012 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 , K=0.92	0.81	-53	12030	0.004 <sup>1</sup>
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16'	138.7 , K=0.92	0.81	-146	12030	0.012 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/3 2"	138.4 K=0.92	0.81	-35	12092	0.003 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/3 2"	138.4 K=0.92	0.81	-148	12092	0.012 <sup>1</sup>
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/3 2"	138.4 K=0.92	0.81	-131	12092	0.011 <sup>1</sup>
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/3 2"	138.0 K=0.92	0.81	-10249	12156	0.843 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/3 2"	138.0 K=0.92	0.81	-202	12156	0.017 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/3 2"	138.0 K=0.92	0.81	-256	12156	0.021 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/3 2"	138.0 K=0.92	0.81	-184	12156	0.015 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (835)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-1534	31544	0.049 <sup>1</sup>
T29	141 - 121 (836)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-1354	31544	0.043 <sup>1</sup>
T29	141 - 121 (841)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-1698	31544	0.054 <sup>1</sup>
T29	141 - 121 (842)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-2006	31544	0.064 <sup>1</sup>
T29	141 - 121 (847)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-2705	31544	0.086 <sup>1</sup>
T29	141 - 121 (848)	L3x3x3/8 (TA - BU#873128)	7'6-19/3 2"	7'4-13/1 6"	138.4 K=0.90	2.11	-2231	31544	0.071 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Torque-Arm Bottom Design Data

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (837)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-24637	31454	0.783 <sup>1</sup>
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-25184	31454	0.801 <sup>1</sup>
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-25922	31454	0.824 <sup>1</sup>
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-25796	31454	0.820 <sup>1</sup>
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-26126	31454	0.831 <sup>1</sup>
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8'	12'3-15/32"	140.8 K=0.90	2.18	-26729	31454	0.850 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

## Tension Checks

## Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0	7.07	15482	209937	0.074 <sup>1</sup>
T2	436 - 421	2 3/4	15'	5'	87.3	5.94	33599	176405	0.190 <sup>1</sup>
T3	421 - 401	2 3/4	20'	5'	87.3	5.94	72170	176405	0.409 <sup>1</sup>
T4	401 - 396	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	86280	290763	0.297 <sup>1</sup>
T5	396 - 391	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	101178	290763	0.348 <sup>1</sup>
T6	391 - 386	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	119476	290763	0.411 <sup>1</sup>
T7	386 - 381	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.79	137479	290763	0.473 <sup>1</sup>
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	95293	326700	0.292 <sup>1</sup>
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	87824	326700	0.269 <sup>1</sup>
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	77556	326700	0.237 <sup>1</sup>
T11	366 - 361	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	69048	326700	0.211 <sup>1</sup>
T12	361 - 341	3	20'	2'6"	40.0	7.07	60934	209937	0.290 <sup>1</sup>
T13	341 - 321	3	20'	5'	80.0	7.07	33898	209937	0.161 <sup>1</sup>
T14	321 - 301	3	20'	5'	80.0	7.07	16869	209937	0.080 <sup>1</sup>
T15	301 - 281	3	20'	5'	80.0	7.07	23101	209937	0.110 <sup>1</sup>
T16	281 - 276	3	5'	5'	80.0	7.07	26704	209937	0.127 <sup>1</sup>
T17	276 - 271	3	5'	5'	80.0	7.07	31180	209937	0.149 <sup>1</sup>
T18	271 - 266	3	5'	5'	80.0	7.07	35376	209937	0.169 <sup>1</sup>
T19	266 - 261	3	5'	5'	80.0	7.07	41716	209937	0.199 <sup>1</sup>
T20	261 - 256	3	5'	5'	80.0	7.07	43041	209937	0.205 <sup>1</sup>

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p><b>Job</b></p> <p style="text-align: center;">Trumbull (BU 873128)</p>	<p><b>Page</b></p> <p style="text-align: center;">98 of 106</p>
	<p><b>Project</b></p> <p style="text-align: center;">TEP No. 25575.455021</p>	<p><b>Date</b></p> <p style="text-align: center;">18:56:49 10/28/20</p>
	<p><b>Client</b></p> <p style="text-align: center;">Crown Castle</p>	<p><b>Designed by</b></p> <p style="text-align: center;">EJB</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T21	256 - 251	3	5'	2'6"	40.0	7.07	50487	209937	0.240 <sup>1</sup>
T25	221 - 201	3 1/4	20'	5'	73.8	8.30	40478	246384	0.164 <sup>1</sup>
T26	201 - 181	3 1/4	20'	5'	73.8	8.30	54692	246384	0.222 <sup>1</sup>
T27	181 - 161	3 1/4	20'	5'	73.8	8.30	55675	246384	0.226 <sup>1</sup>
T28	161 - 141	3 1/2	20'	5'	68.6	9.62	45383	285748	0.159 <sup>1</sup>
T29	141 - 121	3 1/2	20'	5'	68.6	9.62	8025	285748	0.028 <sup>1</sup>
T30	121 - 101	3 1/2	20'	5'	68.6	9.62	51954	285748	0.182 <sup>1</sup>
T31	101 - 81	3 1/2	20'	5'	68.6	9.62	69125	285748	0.242 <sup>1</sup>
T32	81 - 61	3 1/2	20'	5'	68.6	9.62	69634	285748	0.244 <sup>1</sup>
T33	61 - 41	3 1/2	20'	5'	68.6	9.62	56781	285748	0.199 <sup>1</sup>
T34	41 - 20	3 1/2	21'	5'3"	72.0	9.62	19875	285748	0.070 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	7'7"-13/16"	3'7"-9/16"	77.5	0.68	3998	30502	0.131 <sup>1</sup>
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	4270	23349	0.183 <sup>1</sup>
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	7196	23349	0.308 <sup>1</sup>
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	7628	23349	0.327 <sup>1</sup>
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	8447	23349	0.362 <sup>1</sup>
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	9657	23349	0.414 <sup>1</sup>
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	11488	23349	0.492 <sup>1</sup>
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	9238	23349	0.396 <sup>1</sup>
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	8121	23349	0.348 <sup>1</sup>
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	8186	23349	0.351 <sup>1</sup>
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	7557	23349	0.324 <sup>1</sup>
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	6909	23349	0.296 <sup>1</sup>
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	4544	23349	0.195 <sup>1</sup>
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	3138	23349	0.134 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	5281	23349	0.226 <sup>1</sup>
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	5986	23349	0.256 <sup>1</sup>
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	6609	23349	0.283 <sup>1</sup>
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	7733	23349	0.331 <sup>1</sup>
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6"-19/32"	75.0	0.52	7345	23349	0.315 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/3 2"	48.4	0.96	13319	41882	0.318 <sup>1</sup>
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/3 2"	48.4	0.96	17973	41882	0.429 <sup>1</sup>
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/3 2"	48.4	0.96	11639	41882	0.278 <sup>1</sup>
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/3 2"	48.4	0.96	11448	41882	0.273 <sup>1</sup>
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/3 2"	48.4	0.96	10027	41882	0.239 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	6651	23349	0.285 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	3725	23349	0.160 <sup>1</sup>
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	3735	23349	0.160 <sup>1</sup>
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/3 2"	48.4	0.94	7327	40863	0.179 <sup>1</sup>
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/3 2"	48.4	0.94	9915	40863	0.243 <sup>1</sup>
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	6448	23349	0.276 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	3644	23349	0.156 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	1744	23349	0.075 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/3 2"	75.0	0.52	4200	23349	0.180 <sup>1</sup>
T34	41 - 20	L2 1/2x2x3/16	7'7-13/1 6"	3'7-9/16' ,	76.6	0.52	6851	23349	0.293 <sup>1</sup>
T35	20 - 6.70833	L2x2x3/16	5'7-7/16' ,	3'31/32"	63.8	0.45	1826	20176	0.090 <sup>1</sup>
T36	6.70833 - 0	L2x2x3/16	2'9-19/3 2"	1'1-13/1 6"	26.3	0.45	2875	20176	0.143 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16' ,	116.5	0.68	736	30502	0.024 <sup>1</sup>
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16' ,	116.9	0.68	1436	30502	0.047 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2x2x1/4	6'	2'9-1/8"	113.3	0.59	2521	25505	0.099 <sup>1</sup>
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	42.9	3.38	26192	146853	0.178 <sup>1</sup>
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	42.9	3.38	1970	146853	0.013 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	C8x13.75	6'	5'9"	112.2	4.04	1	119988	0.000 <sup>1</sup>
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	1165	30502	0.038 <sup>1</sup>
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	780	30502	0.026 <sup>1</sup>
T4	401 - 396	L2 1/2x2x1/4	6'	5'3-15/32"	115.2	0.68	580	30502	0.019 <sup>1</sup>
T6	391 - 386	L2 1/2x2x1/4	6'	5'8-9/32"	115.2	1.06	785	31482	0.025 <sup>1</sup>
T10	371 - 366	L2 1/2x2x1/4	6'	5'8-1/32"	114.8	1.06	841	31482	0.027 <sup>1</sup>
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	610	30502	0.020 <sup>1</sup>
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	426	30502	0.014 <sup>1</sup>
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	457	30502	0.015 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	429	23349	0.018 <sup>1</sup>
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	371	30502	0.012 <sup>1</sup>
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	297	30502	0.010 <sup>1</sup>
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	177	23349	0.008 <sup>1</sup>
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	378	23349	0.016 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	716	23349	0.031 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	747	23349	0.032 <sup>1</sup>
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	77.2	1.55	964	69778	0.014 <sup>1</sup>
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	895	23349	0.038 <sup>1</sup>
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1901	23349	0.081 <sup>1</sup>
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	6413	23349	0.275 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	968	23349	0.041 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1074	23349	0.046 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1101	23349	0.047 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	949	23349	0.041 <sup>1</sup>
T35	20 - 6.70833	2L2 1/2x2x3/16x1/4	6'	5'3-31/3 2"	86.7	1.04	17739	46670	0.380 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16'	116.5	0.68	4303	30502	0.141 <sup>1</sup>
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16'	116.9	0.68	296	30502	0.010 <sup>1</sup>
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16'	116.5	0.68	391	30502	0.013 <sup>1</sup>
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16'	116.5	0.68	343	30502	0.011 <sup>1</sup>
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16'	116.5	0.68	525	30502	0.017 <sup>1</sup>
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16'	115.0	0.52	358	23349	0.015 <sup>1</sup>
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16'	115.0	0.52	664	23349	0.028 <sup>1</sup>
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/3 2"	114.6	0.52	699	23349	0.030 <sup>1</sup>
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/3 2"	114.6	0.52	760	23349	0.033 <sup>1</sup>
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/3 2"	114.6	0.52	759	23349	0.033 <sup>1</sup>
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	864	23349	0.037 <sup>1</sup>
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	14508	23349	0.621 <sup>1</sup>
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	645	23349	0.028 <sup>1</sup>
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	1048	23349	0.045 <sup>1</sup>
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	1069	23349	0.046 <sup>1</sup>
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	1000	23349	0.043 <sup>1</sup>
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/3 2"	114.2	0.52	1425	23349	0.061 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Guy Pull-Off Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T8	381 - 376	2L3x2x1/4x3/8	6'	5'8-1/32'	76.3	1.55	21856	69778	0.313 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (835)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	21334	58134	0.367 <sup>1</sup>
T29	141 - 121 (836)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	22488	58134	0.387 <sup>1</sup>
T29	141 - 121 (841)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	21887	58134	0.376 <sup>1</sup>
T29	141 - 121 (842)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	21632	58134	0.372 <sup>1</sup>
T29	141 - 121 (847)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	22966	58134	0.395 <sup>1</sup>
T29	141 - 121 (848)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	23835	58134	0.410 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (837)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	13955	60417	0.231 <sup>1</sup>
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14230	60417	0.236 <sup>1</sup>
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14285	60417	0.236 <sup>1</sup>
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14890	60417	0.246 <sup>1</sup>
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14586	60417	0.241 <sup>1</sup>
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14356	60417	0.238 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP <sub>allow</sub> lb	% Capacity	Pass Fail
T1	457 - 436	Leg	3	3	-31210	156820	19.9	Pass



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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T2	436 - 421	Leg	2 3/4	45	-50477	128255	39.4	Pass
T3	421 - 401	Leg	2 3/4	75	-99049	128255	77.2	Pass
T4-T7	401 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	Note 1	Note 1	Note 1	79.4	Pass
T8-T11	381 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	Note 1	Note 1	Note 1	71.5	Pass
T12	361 - 341	Leg	3	192	-145566	204054	71.3	Pass
T13	341 - 321	Leg	3	237	-120035	161863	74.2	Pass
T14	321 - 301	Leg	3	270	-104304	161863	64.4	Pass
T15	301 - 281	Leg	3	302	-115808	161863	71.5	Pass
T16	281 - 276	Leg	3	335	-120798	161863	74.6	Pass
T17	276 - 271	Leg	3	344	-125924	161863	77.8	Pass
T18	271 - 266	Leg	3	353	-132496	161863	81.9	Pass
T19	266 - 261	Leg	3	365	-138131	161863	85.3	Pass
T20	261 - 256	Leg	3	377	-149739	161863	92.5	Pass
T21	256 - 251	Leg	3	386	-153845	204054	75.4	Pass
T22	251 - 246	Leg	3	398	-122889	161863	75.9	Pass
T23	246 - 241	Leg	3	410	-113766	204054	55.8	Pass
T24	241 - 221	Leg	3	427	-116578	161863	72.0	Pass
T25	221 - 201	Leg	3 1/4	458	-151193	198845	76.0	Pass
T26	201 - 181	Leg	3 1/4	491	-165084	198845	83.0	Pass
T27	181 - 161	Leg	3 1/4	524	-166127	198845	83.5	Pass
T28	161 - 141	Leg	3 1/2	557	-156298	239126	65.4	Pass
T29	141 - 121	Leg	3 1/2	592	-134750	227739	59.2	Pass
T30	121 - 101	Leg	3 1/2	623	-188603	239126	78.9	Pass
T31	101 - 81	Leg	3 1/2	657	-209369	239126	87.6	Pass
T32	81 - 61	Leg	3 1/2	690	-213731	239126	89.4	Pass
T33	61 - 41	Leg	3 1/2	723	-209720	239126	87.7	Pass
T34	41 - 20	Leg	3 1/2	757	-189334	233628	81.0	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-190723	209100	91.2	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-195165	245056	79.6	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	15	-3363	24604	13.7	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	51	-4858	19146	34.5 (b) 25.4	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	83	-7318	19146	28.7 (b) 38.2	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	110	-7807	19146	48.4 (b) 40.8	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	119	-8484	19146	51.3 (b) 44.3	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	131	-10887	19146	56.8 (b) 56.9	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	144	-10313	19146	64.9 (b) 53.9	Pass
T8	381 - 376	Diagonal	L2 1/2x2x3/16	157	-7936	19146	77.2 (b) 41.4	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	166	-9239	19146	62.1 (b) 48.3	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	178	-8133	19146	54.6 (b) 42.5	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	187	-7702	19146	55.0 (b) 40.2	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	229	-7154	19146	50.8 (b) 37.4	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	265	-4571	19146	46.5 (b) 23.9	Pass
T14	321 - 301	Diagonal	L2 1/2x2x3/16	280	-3183	19146	30.6 (b) 16.6	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	313	-5395	19146	27.4 (b) 28.2	Pass
							46.5 (b)	

<p><b><i>tnxTower</i></b></p> <p><b><i>Tower Engineering Professionals, Inc.</i></b>  326 Tryon Road  Raleigh, NC 27603  Phone: (919) 661-6351  FAX: (919) 661-6350</p>	<b>Job</b>	Trumbull (BU 873128)	<b>Page</b>	104 of 106
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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T16	281 - 276	Diagonal	L2 1/2x2x3/16	340	-5927	19146	31.0	Pass
							40.2 (b)	
T17	276 - 271	Diagonal	L2 1/2x2x3/16	349	-6780	19146	35.4	Pass
							44.4 (b)	
T18	271 - 266	Diagonal	L2 1/2x2x3/16	361	-6624	19146	34.6	Pass
							52.0 (b)	
T19	266 - 261	Diagonal	L2 1/2x2x3/16	373	-8174	19146	42.7	Pass
							49.4 (b)	
T20	261 - 256	Diagonal	L3x3x1/4	383	13319	43976	30.3	Pass
							71.8 (b)	
T21	256 - 251	Diagonal	L3x3x1/4	390	17973	43976	40.9	Pass
							96.9 (b)	
T22	251 - 246	Diagonal	L3x3x1/4	404	-12912	42355	30.5	Pass
							69.6 (b)	
T23	246 - 241	Diagonal	L3x3x1/4	417	11448	43976	26.0	Pass
							61.7 (b)	
T24	241 - 221	Diagonal	L3x3x1/4	452	-10374	42355	24.5	Pass
							55.9 (b)	
T25	221 - 201	Diagonal	L2 1/2x2x3/16	485	-6900	19146	36.0	Pass
							59.5 (b)	
T26	201 - 181	Diagonal	L2 1/2x2x3/16	518	-4027	19146	21.0	Pass
							34.7 (b)	
T27	181 - 161	Diagonal	L2 1/2x2x3/16	535	-3879	19146	20.3	Pass
							33.4 (b)	
T28	161 - 141	Diagonal	L3x3x1/4	568	-7568	42423	17.8	Pass
							32.2 (b)	
T29	141 - 121	Diagonal	L3x3x1/4	614	9915	42906	23.1	Pass
							43.6 (b)	
T30	121 - 101	Diagonal	L2 1/2x2x3/16	652	-6648	19146	34.7	Pass
							43.4 (b)	
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3928	19146	20.5	Pass
							33.9 (b)	
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-2082	19146	10.9	Pass
							18.0 (b)	
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-4530	19146	23.7	Pass
							39.1 (b)	
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-6848	18871	36.3	Pass
							59.1 (b)	
T35	20 - 6.70833	Diagonal	L2x2x3/16	792	-2233	18534	12.0	Pass
							19.3 (b)	
T36	6.70833 - 0	Diagonal	L2x2x3/16	815	-4846	22580	21.5	Pass
							41.8 (b)	
T1	457 - 436	Horizontal	L2 1/2x2x1/4	35	-1169	16395	7.1	Pass
							10.1 (b)	
T2	436 - 421	Horizontal	L2 1/2x2x1/4	58	1436	32027	4.5	Pass
							12.4 (b)	
T12	361 - 341	Secondary Horizontal	L2x2x1/4	207	-2521	23775	10.6	Pass
							24.9 (b)	
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	396	26192	154196	17.0	Pass
							70.6 (b)	
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1970	154196	1.3	Pass
							5.3 (b)	
T1	457 - 436	Top Girt	C8x13.75	6	-1	68630	0.2	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	8	1165	32027	3.6	Pass
							10.0 (b)	
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	780	32027	2.4	Pass
							6.7 (b)	
T4	401 - 396	Top Girt	L2 1/2x2x1/4	79	-470	16654	2.8	Pass
							5.0 (b)	
T6	391 - 386	Top Girt	L2 1/2x2x1/4	128	785	33056	2.4	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	841	33056	2.5	Pass

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	EJB

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	610	32027	1.9 5.3 (b)	Pass
T13	341 - 321	Top Girt	L2 1/2x2x1/4	195	426	32027	1.3 3.7 (b)	Pass
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	457	32027	1.4 3.9 (b)	Pass
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	429	24516	1.7 3.7 (b)	Pass
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	371	32027	1.2 3.2 (b)	Pass
T18	271 - 266	Top Girt	L2 1/2x2x1/4	358	-831	16395	5.1 7.2 (b)	Pass
T20	261 - 256	Top Girt	L2 1/2x2x3/16	370	-5990	12631	47.4 51.6 (b)	Pass
T22	251 - 246	Top Girt	L2 1/2x2x3/16	403	-6422	12631	50.8 55.4 (b)	Pass
T24	241 - 221	Top Girt	L2 1/2x2x3/16	414	-718	12631	5.7 6.2 (b)	Pass
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	716	24516	2.9 6.2 (b)	Pass
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	747	24516	3.0 6.4 (b)	Pass
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	964	73267	1.3 4.2 (b)	Pass
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	895	24516	3.7 7.7 (b)	Pass
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1901	24516	7.8 16.4 (b)	Pass
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7945	12763	62.3 68.5 (b)	Pass
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	968	24516	3.9 8.3 (b)	Pass
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	1074	24516	4.4 9.3 (b)	Pass
T33	61 - 41	Top Girt	L2 1/2x2x3/16	694	1101	24516	4.5 9.5 (b)	Pass
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	949	24516	3.9 8.2 (b)	Pass
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	17739	49003	36.2 59.6 (b)	Pass
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	11	4303	32027	13.4 37.1 (b)	Pass
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	82	-181	16310	1.1 2.6 (b)	Pass
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	391	32027	1.2 3.4 (b)	Pass
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	244	343	32027	1.1 3.0 (b)	Pass
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	525	32027	1.6 4.5 (b)	Pass
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	358	24516	1.5 3.1 (b)	Pass
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	664	24516	2.7 5.7 (b)	Pass
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	699	24516	2.9 6.0 (b)	Pass
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	760	24516	3.1 6.5 (b)	Pass
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	759	24516	3.1 6.5 (b)	Pass
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	864	24516	3.5	Pass

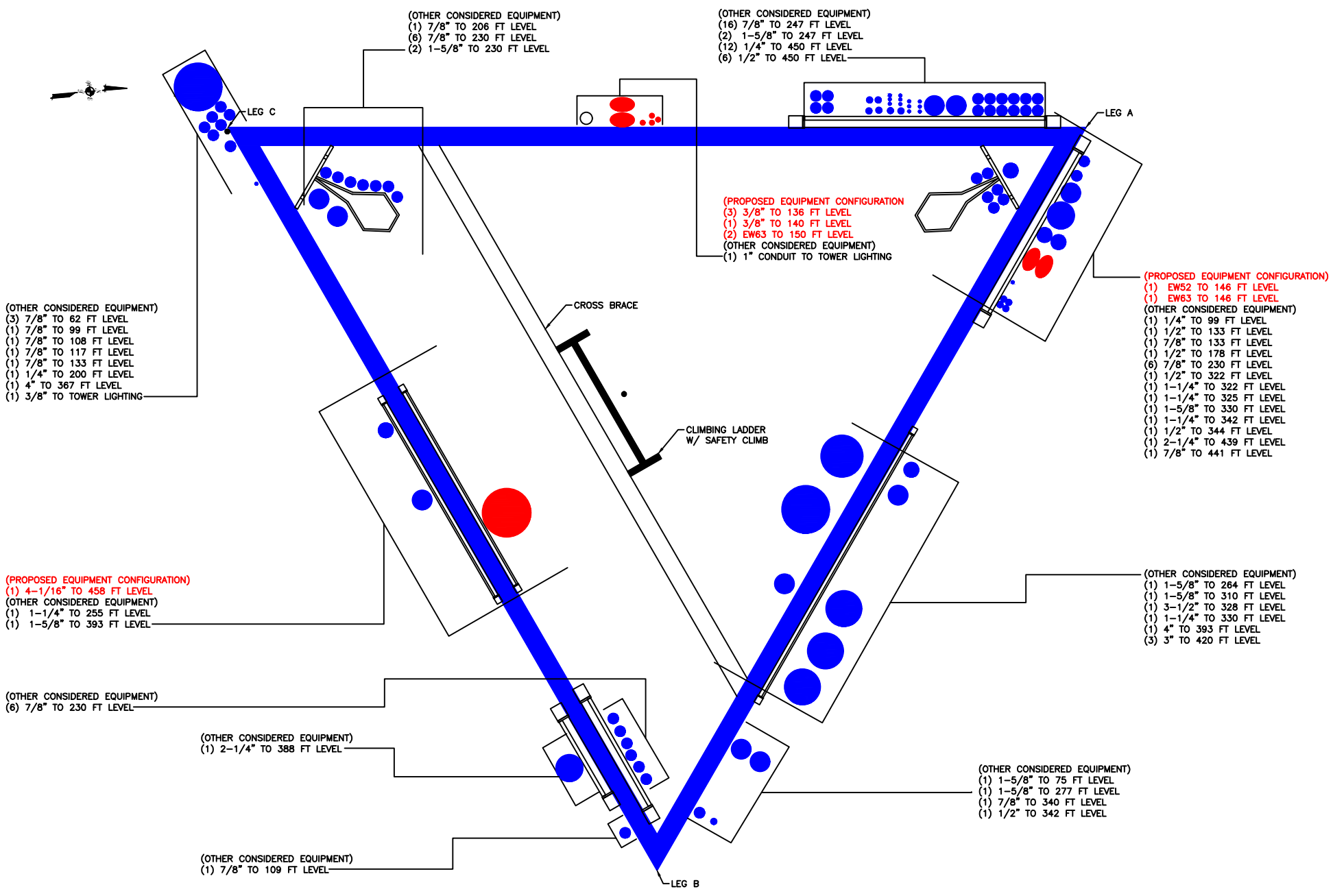
<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> Trumbull (BU 873128)	<b>Page</b> 106 of 106
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	<b>Client</b> Crown Castle	<b>Designed by</b> EJB

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail	
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	598	-10249	12763	7.4 (b) 80.3	Pass	
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	631	645	24516	97.5 (b) 2.6	Pass	
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	1048	24516	5.6 (b) 4.3	Pass	
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	697	1069	24516	9.0 (b) 4.4	Pass	
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	1000	24516	9.2 (b) 4.1	Pass	
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1425	24516	8.6 (b) 5.8	Pass	
T1	457 - 436	Guy A@446.5	9/16	826	13690	22050	12.3 (b) 62.1	Pass	
T8	381 - 376	Guy A@381	1 3/8	829	69147	146157	47.3	Pass	
T21	256 - 251	Guy A@254.5	1 1/4	832	67832	120958	56.1	Pass	
T29	141 - 121	Guy A@131	11/16	845	25520	31499	81.0	Pass	
T1	457 - 436	Guy B@446.5	9/16	825	13738	22050	62.3	Pass	
T8	381 - 376	Guy B@381	1 3/8	828	70294	146157	48.1	Pass	
T21	256 - 251	Guy B@254.5	1 1/4	831	69464	120958	57.4	Pass	
T29	141 - 121	Guy B@131	11/16	840	25557	31499	81.1	Pass	
T1	457 - 436	Guy C@446.5	9/16	824	13745	22050	62.3	Pass	
T8	381 - 376	Guy C@381	1 3/8	827	69430	146157	47.5	Pass	
T21	256 - 251	Guy C@254.5	1 1/4	830	68900	120958	57.0	Pass	
T29	141 - 121	Guy C@131	11/16	833	25142	31499	79.8	Pass	
T8	381 - 376	Top Guy	2L3x2x1/4x3/8	141	21856	73267	29.8	Pass	
		Pull-Off@381					94.2 (b)		
T29	141 - 121	Torque Arm Top@131	L3x3x3/8 (TA - BU#873128)	848	23835	61040	39.0	Pass	
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-26729	33027	67.1 (b) 80.9	Pass	
							<b>Summary</b>		
							Leg (T20)	92.5	Pass
							Diagonal (T21)	96.9	Pass
							Horizontal (T2)	12.4	Pass
							Secondary Horizontal (T21)	70.6	Pass
							Top Girt (T30)	68.5	Pass
							Mid Girt (T29)	97.5	Pass
							Guy A (T29)	81.0	Pass
							Guy B (T29)	81.1	Pass
							Guy C (T29)	79.8	Pass
							Top Guy Pull-Off (T8)	94.2	Pass
							Torque Arm Top (T29)	67.1	Pass
							Torque Arm Bottom (T29)	80.9	Pass
							Bolt Checks	97.5	Pass
							<b>RATING =</b>	<b>97.5</b>	<b>Pass</b>

Notes:

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

**APPENDIX B**  
**BASE LEVEL DRAWING**



(OTHER CONSIDERED EQUIPMENT)  
 (1) 7/8" TO 206 FT LEVEL  
 (6) 7/8" TO 230 FT LEVEL  
 (2) 1-5/8" TO 230 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (16) 7/8" TO 247 FT LEVEL  
 (2) 1-5/8" TO 247 FT LEVEL  
 (12) 1/4" TO 450 FT LEVEL  
 (6) 1/2" TO 450 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)  
 (3) 3/8" TO 136 FT LEVEL  
 (1) 3/8" TO 140 FT LEVEL  
 (2) EW63 TO 150 FT LEVEL  
 (OTHER CONSIDERED EQUIPMENT)  
 (1) 1" CONDUIT TO TOWER LIGHTING

(PROPOSED EQUIPMENT CONFIGURATION)  
 (1) EW52 TO 146 FT LEVEL  
 (1) EW63 TO 146 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (1) 1/4" TO 99 FT LEVEL  
 (1) 1/2" TO 133 FT LEVEL  
 (1) 7/8" TO 133 FT LEVEL  
 (1) 1/2" TO 178 FT LEVEL  
 (6) 7/8" TO 230 FT LEVEL  
 (1) 1/2" TO 322 FT LEVEL  
 (1) 1-1/4" TO 322 FT LEVEL  
 (1) 1-1/4" TO 325 FT LEVEL  
 (1) 1-5/8" TO 330 FT LEVEL  
 (1) 1-1/4" TO 342 FT LEVEL  
 (1) 1/2" TO 344 FT LEVEL  
 (1) 2-1/4" TO 439 FT LEVEL  
 (1) 7/8" TO 441 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (3) 7/8" TO 62 FT LEVEL  
 (1) 7/8" TO 99 FT LEVEL  
 (1) 7/8" TO 108 FT LEVEL  
 (1) 7/8" TO 117 FT LEVEL  
 (1) 7/8" TO 133 FT LEVEL  
 (1) 1/4" TO 200 FT LEVEL  
 (1) 4" TO 367 FT LEVEL  
 (1) 3/8" TO TOWER LIGHTING

(PROPOSED EQUIPMENT CONFIGURATION)  
 (1) 4-1/16" TO 458 FT LEVEL  
 (OTHER CONSIDERED EQUIPMENT)  
 (1) 1-1/4" TO 255 FT LEVEL  
 (1) 1-5/8" TO 393 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (1) 1-5/8" TO 264 FT LEVEL  
 (1) 1-5/8" TO 310 FT LEVEL  
 (1) 3-1/2" TO 328 FT LEVEL  
 (1) 1-1/4" TO 330 FT LEVEL  
 (1) 4" TO 393 FT LEVEL  
 (3) 3" TO 420 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (6) 7/8" TO 230 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (1) 2-1/4" TO 388 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (1) 1-5/8" TO 75 FT LEVEL  
 (1) 1-5/8" TO 277 FT LEVEL  
 (1) 7/8" TO 340 FT LEVEL  
 (1) 1/2" TO 342 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
 (1) 7/8" TO 109 FT LEVEL

CROSS BRACE

CLIMBING LADDER  
 W/ SAFETY CLIMB

LEG C

LEG A

LEG B

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

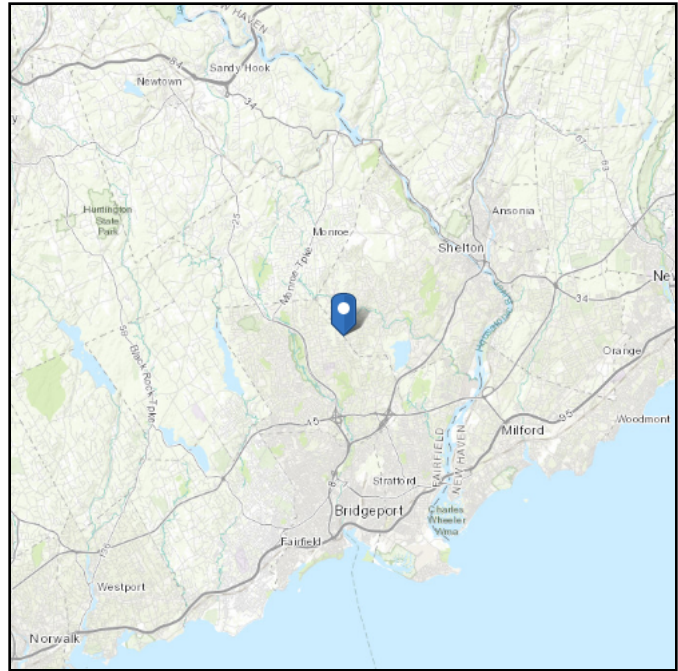
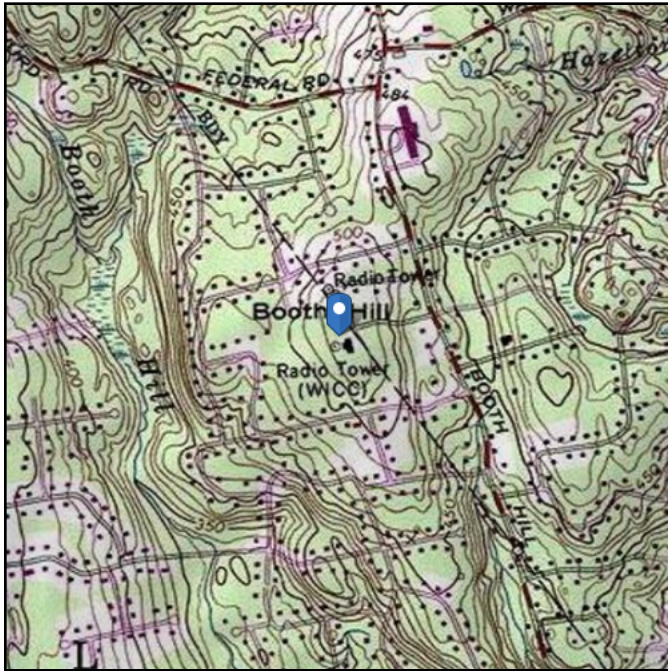


# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Elevation:** 519.67 ft (NAVD 88)  
**Latitude:** 41.278961  
**Longitude:** -73.185111



## Wind

### Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Connecticut State Building Code  
Wind speed: 125mph

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

**Date Accessed:** Fri Aug 02 2019

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

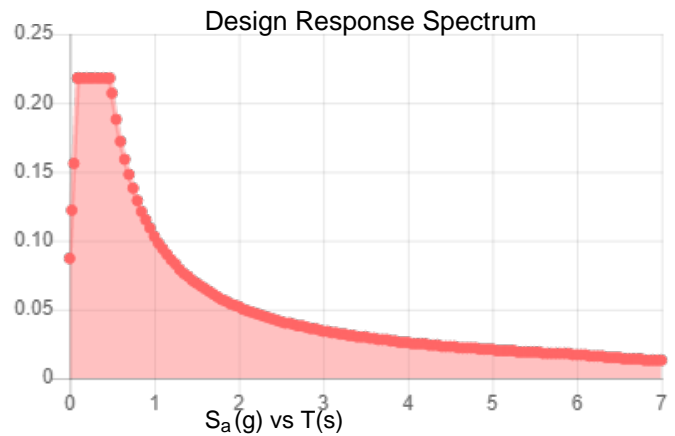
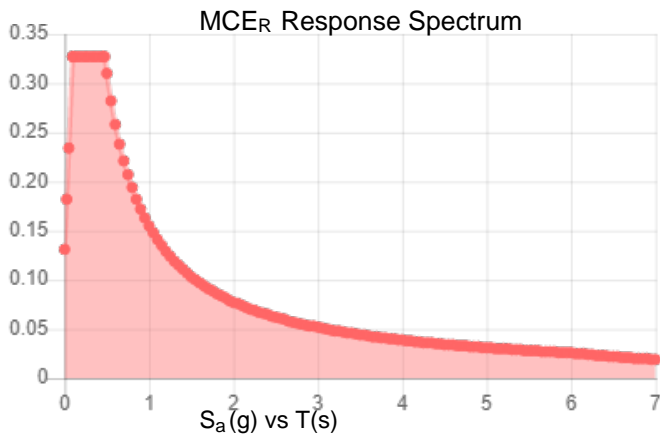


**Site Soil Class:** D - Stiff Soil

**Results:**

$S_S$ :	0.204	$S_{DS}$ :	0.218
$S_1$ :	0.065	$S_{D1}$ :	0.103
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.11
$S_{MS}$ :	0.327	$PGA_M$ :	0.174
$S_{M1}$ :	0.155	$F_{PGA}$ :	1.58
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Fri Aug 02 2019

**Date Source:**

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

## Ice

---

**Results:**

Ice Thickness: 0.75 in.  
Concurrent Temperature: 15 F  
Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

**Date Accessed:** Fri Aug 02 2019

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

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

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

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Project Name: Trumbull  
 Project Number: 25575.455021  
 Client Site Number: BU 873128

Engineer: TLJ  
 Check: EJB  
 Date: 10/28/20

**Sold rod Leg + Half Sleeve R/F - - - Elevations: 381-ft to 401-ft**

$\phi_c$  = 0.90 - LRFD strength reduction factor (compression)  
 $\phi_t$  = 0.90 - LRFD strength reduction factor (tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)

**Input - Loads**

$P_{initial}$ : 11.94 kips - force from initial load (no wind)  
 $P_{wind}$ : 172.90 kips - force due to final loading including reinforcement  
 $T_u$ : 137.48 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 73.1%  
 Crushing Check: 79.4%  
 Leg Comp. Check: 61.2%  
 Sleeve Check: 52.8%  
 Built-up Check: 73.6%  
 Slenderness Check: OK  
 Leg Tension Check: 62.4%

**Input - Tower Leg**

**3" Dia. SR**

K: 1.00 - effective length factor for leg  
 $L_{ij}$ : 5.00 ft - unbraced length of tower leg  
 $F_{y,leg}$ : 33.00 ksi - minimum specified yield strength of tower leg  
 $F_{u,leg}$ : 60.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 0.75 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 7.07 in<sup>2</sup> - area of tower leg  
 $D_i$ : 0.00 in - inside diameter of tower leg  
 $t_{leg}$ : 1.50 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*Ratings per TIA-222-H Section 15.5

**Input - Sleeve R/F 1**

**Sleeve: 3.75" OD Inner Sleeve & 3STD Outer Sleeve**

$F_{y,sleeve}$ : 35.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u,sleeve}$ : 60.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x,sleeve}$ : 0.51 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y,sleeve}$ : 1.16 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 1.11 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.22 in - thickness of tower leg

Termination: **Connected to Leg ONLY**

**Input - Sleeve Connection to Leg**

a: 6.00 in - spacing of connectors connecting the sleeve to the leg  
 D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 3.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 0.00 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 NO: 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 3.50 in - maximum width of the built-up leg  
 Gap: 12.00 in - length of leg considered for crushing

**Input - Built-up Leg Section**

$r_{x,bu}$ : 0.90 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y,bu}$ : 0.91 in - minimum radius of gyration of the built-up section about the y-axis

**Input - Leg w/ Single Sleeve**

A: 8.18 in<sup>2</sup> - area of (1) sleeve r/f + leg  
 $r_{x,bu}$ : 0.80 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y,bu}$ : 0.82 in - minimum radius of gyration of the built-up section about the y-axis  
 Inner Sleeve Gap: 18.00 in - length of leg considered for crushing

**Input - Grouted Leg**

$E_c$ : 0 ksi - Modulus of Elasticity of Grout  
 $E_{leg}$ : 29,000 ksi - Modulus of Elasticity of Leg  
 $E_{sleeve}$ : 29,000 ksi - Modulus of Elasticity of Sleeve

**Project Name:** Trumbull  
**Project Number:** 25575.455021  
**Client Site Number:** BU 873128  
**Elevation:** 361-ft to 381-ft

**Engineer:** TLI  
**Check:** EJB  
**Date:** 10/28/2020

**Solid Rod Leg + Half Sleeve R/F**

$\phi_C$  = 0.90 - LRFD strength reduction factor (compression)  
 $\phi_t$  = 0.90 - LRFD strength reduction factor (tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)

Mast St.: 1.00 - from tnxTower

**Input - Loads**

$P_{initial}$ : 27.64 kips - force from initial load (no wind)  
 $P_{wind}$ : 181.56 kips - force due to final loading including reinforcement  
 $T_u$ : 95.29 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 71.5%  
 Crushing Check: 61.1%  
 Leg Comp. Check: 54.4%  
 Sleeve Check: 42.7%  
 Built-up Check: 64.9%  
 Slenderness Check: OK  
 Leg Tension Check: 31.8%

**Input - Tower Leg** 3.5" SR

$K$ : 1.00 - effective length factor for leg  
 $L_u$ : 5.00 ft - unbraced length of tower leg  
 $F_{y_{leg}}$ : 33.00 ksi - minimum specified yield strength of tower leg  
 $F_{u_{leg}}$ : 60.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 0.88 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 9.62 in<sup>2</sup> - area of tower leg  
 $D_i$ : 0.00 in - inside diameter of tower leg  
 $t_{leg}$ : 1.75 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*Ratings per TIA-222-H Section 15.5

**Input - Sleeve R/F** 3.5 STD Gap Check: OK

$F_{y_{sleeve}}$ : 35.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u_{sleeve}}$ : 60.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x_{sleeve}}$ : 0.58 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y_{sleeve}}$ : 1.34 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 1.34 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.23 in - thickness of sleeve r/f

Termination: Connected to Leg ONLY

**Input - Sleeve Connection to Leg**

$a$ : 6.00 in - spacing of connectors connecting the sleeve to the leg  
 $D$ : 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 3.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 0.00 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 $N_o$ : 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 4.00 in - maximum width of the built-up leg  
 Gap: 12.00 in - length of leg considered for crushing

**Input - Built-up Leg Section** 3.5" SR w/3.5 STD Half Sleeve

$r_{x_{bu}}$ : 0.93 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y_{bu}}$ : 0.94 in - minimum radius of gyration of the built-up section about the y-axis

Bearing\*: 52.6%

<b>Pad</b>		
Width at the top of the pad (ft)	Width at the bottom of the pad (ft)	Thickness of the pad (ft)
10.50	10.50	2.00

<b>Pier</b>			
Width at the top of the pier (ft)	Width at the bottom of the pier (ft)	Length of the pier (ft)	Pier Extension above grade (ft)
4.50	10.00	3.00	0.50

Soil Density (kcf)	Depth to base of foundation (ft)	Factored Vertical Load (kip)	Factored Horizontal Load (kip)
0.115	5.00	519.7	11.50

Weight of Concrete 57.86 kip  
 $W_c$  (Replaced) 13.65 kip  
 Weight of Soil 18.54 kip  
 Total Vertical Load 611.39 kip  
 Moment 57.49 kip-ft  
 Section Modulus -  $S$  136.43 ft<sup>3</sup>  
 Area -  $A$  110.25 ft<sup>2</sup>  
 Min. Pressure -  $q_{min}$  5.12 ksf  
 Max Pressure -  $q_{max}$  5.97 ksf

All. Pressure -  $q_{all}$  6.00 ksf  
 Factor of Safety 3  
 $\phi$  0.6  
 $\phi q_n$  10.8

Net Bearing Pressure? No

Lateral\*: 6.1%

Coefficient of Friction ( $\mu$ )	Friction Angle ( $\phi$ ) (Degrees)	Cohesion (ksf)
0.4	34	0

$K_p$  3.54  
 Pressure<sub>Top</sub> 1.22 ksf  
 Pressure<sub>Bottom</sub> 2.03 ksf  
 Force from pressure 34.17 kip  
 Force from friction 203.80 kip  
 $\phi$  0.75  
 $\phi R_n$  178.47 kip

\*Ratings per TIA-222-H Section 15.5

**Deadman Anchor Analysis: A - Anchor Path**

Project Name: Trumbull  
 Job #: TEP No. 25575.455021  
 Client: BU 873128  
 Analysis by: TLI  
 Checked by: EJB

**Anchor Block is Adequate for Uplift 22.0%**

**Anchor Block is Adequate for Lateral 63.7%**

Ratings per TIA-222-H Section 15.5 \*

Loads

$U_{max}$ : 108.59 kips - maximum uplift reaction  
 $H_{max}$ : 158.87 kips - maximum horizontal reaction

Capacity

$U_{all}$ : 471.01 kips - allowable uplift  
 $H_{all}$ : 237.56 kips - allowable horizontal

Foundation Input

Guy Path: A  
 Anchor Ring: Anchor Path

$W_b$ : 18.50 ft - width of anchor block  
 $L_b$ : 23.00 ft - length of anchor block  
 $T_b$ : 3.30 ft - thickness of anchor block  
 $d$ : 2.00 ft - depth from  $T$  grade to  $T$  anchor block  
 $b$ : 5.30 ft - depth from  $T$  grade to  $b$  anchor block

Ultimate Soil Properties

$D_w$ : 8.50 ft - depth from  $T$  grade to water table

Geotechnical Firm: FDH Engineering  
 Report: 04-1229E  
 Date: 2/3/2005  
 Notes: Boring B-4  
42" Frost Depth (per CT building code)

**USE?** Yes  
 Soil Berm:  
 depth: 4.00 ft  
 width: 18.50 ft  
 length: 23.50 ft  
 density: 110.00 pcf

Weight: 191.29 kips

Layer	Begin (ft)	End (ft)	$\phi$ Friction Angle (deg)	$C$ Ult. Cohesion (psf)	$\gamma$ Eff. Unit Weight (pcf)	$f_s$ Ult. Skin Friction (ksf)	$\mu$ Friction Factor
1	0.00	2.00	33.00	0.00	115.00	0.00	0.00
2	2.00	3.50	0.00	0.00	115.00	0.00	0.40
3	3.50	4.00	33.00	0.00	115.00	0.36	0.40
4	4.00	5.30	41.00	0.00	125.00	0.65	0.40
5							
6							

Analysis Criteria

Uplift:  $F_{s\_sides}$  = 21.47 Yes  
 $F_{s\_front}$  = 23.65 Yes  
 $F_{s\_back}$  = 0.00 No

Horizontal:  $F_{s\_sides}$  = 31.41 Yes  
 $F_{s\_top}$  = 0.00 No  
 $F_{s\_bottom}$  = 0.00 No  
 $F_l \cdot \mu$  = 179.69 Yes



**Deadman Anchor Analysis: C - Anchor Path**

Project Name: Trumbull  
 Job #: TEP No. 25575.455021  
 Client: BU 873128  
 Analysis by: TLI  
 Checked by: EJB

Anchor Block is Adequate for Uplift	<b>76.0%</b>
Anchor Block is Adequate for Lateral	<b>55.6%</b>
Concrete Block is Adequate for Lateral	<b>90.4%</b>
Concrete Block is Adequate for Overturning	<b>45.5%</b>

**Loads**

Ratings per TIA-222-H Section 15.5 \*

U<sub>1</sub>: 91.90 kips - uplift reaction (block front)  
 H<sub>1</sub>: 114.21 kips - maximum horizontal reaction (block front)  
 U<sub>2</sub>: 15.70 kips - uplift reaction (block back)  
 H<sub>2</sub>: 46.45 kips - maximum horizontal reaction (block back)

**Capacity**

U<sub>all</sub>: 115.17 kips - allowable uplift  
 H<sub>all</sub>: 195.75 kips - allowable horizontal

**Foundation Input**

Guy Path: C  
 Anchor Ring: Anchor Path

W<sub>b</sub>: 7.00 ft - width of anchor block  
 L<sub>b</sub>: 6.00 ft - length of anchor block  
 T<sub>b</sub>: 5.50 ft - thickness of anchor block  
 d: 4.30 ft - depth from t/ grade to t/ anchor block  
 b: 9.80 ft - depth from t/ grade to b/ anchor block

**Ultimate Soil Properties**

D<sub>w</sub>: 8.50 ft - depth from t/ grade to water table

Geotechnical Firm: FDH Engineering  
 Report: 04-1229E  
 Date: 2/3/2005  
 Notes: Boring B-3  
42" Frost Depth (per CT building code)

**USE?** Yes  
 Concrete Berm:  
 depth (above gr): 3.00 ft  
 depth (below gr): 2.30 ft  
 width: 15.00 ft  
 length: 15.00 ft  
 density: 150.00 pcf

Layer	Begin (ft)	End (ft)	φ Friction Angle (deg)	c Ult. Cohesion (psf)	γ Eff. Unit Weight (pcf)	f <sub>s</sub> Ult. Skin Friction (ksf)	μ Friction Factor
1	0.00	2.30	0.00	0.00	115.00	0.00	0.00
2	2.30	4.00	34.00	0.00	115.00	0.00	0.40
3	4.00	8.50	39.00	0.00	120.00	0.84	0.40
4	8.50	9.00	39.00	0.00	57.60	1.09	0.40
5	9.00	15.50	43.00	0.00	62.60	1.24	0.40
6							

**Analysis Criteria**

Uplift: F<sub>s\_sides</sub>= 44.30 **Yes**      Horizontal: F<sub>s\_sides</sub> = 55.06 **Yes**  
 F<sub>s\_front</sub>= 30.29 **Yes**      F<sub>s\_top</sub> = 0.00 **No**  
 F<sub>s\_back</sub>= 0.00 **No**      F<sub>s\_bottom</sub> = 0.00 **No**  
 F<sub>⊥</sub> · μ = 82.96 **Yes**



# Exhibit E

## **Mount Analysis**



Date: **October 16, 2020**

Darcy Tarr  
Crown Castle  
6325 Ardrey Kell Rd, Suite 600  
Charlotte, NC 28277  
(704) 405-6589

POD Group  
1033 E Turkeyfoot Lake Rd. Suite 206  
Akron, OH 44312  
(330) 961.7432  
[mhoudeshell@podgrp.com](mailto:mhoudeshell@podgrp.com)

**Subject:** **Mount Analysis Report**

**Carrier Designation:** **CT Public Broadcasting**  
**Carrier Site Name:** **Trumbull**

**Crown Castle Designation:** **Crown Castle BU Number: 873128**  
**Crown Castle Site Name: Trumbull**  
**Crown Castle JDE Job Number: 621136**  
**Crown Castle Order Number: 530677 Rev 0**

**Engineering Firm Designation:** **POD Report Designation: 20-70569**

**Site Data:** **800 Booth Hill Rd., Trumbull, Fairfield County, CT 06611**  
**Latitude 41° 16' 44.26" Longitude -73° 11' 6.40"**

**Structure Information:** **Tower Height & Type: 458 ft Guyed Tower**  
**Mount Elevation: 458 ft**  
**Mount Type: Top Mount**

Dear Darcy Tarr,

*POD Group* is pleased to submit this "Mount Analysis Report" to determine the structural integrity of CT Public Broadcasting's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

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

**Top Mount (Individual Sector)**

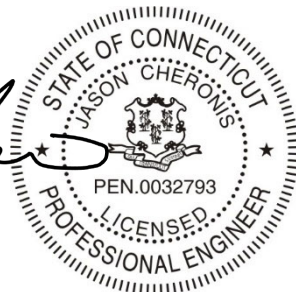
**Sufficient**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph as required for use in the TIA-222-H Standard. Exposure Category B with a maximum topographic factor, Kzt, of 1 and Risk Category II was used in this analysis.

Mount structural analysis prepared by: Matthew Maloney

Respectfully submitted by:

Jason Cheronis, PE  
Connecticut PE#: 0032793



10/16/2020

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  - Table 1 – Final Equipment Configuration
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  - 3.2) Assumptions
- 4) **ANALYSIS RESULTS**
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- 5) **DISCLAIMER OF WARRANTIES**
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  - Wire Frame and Rendered Models
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- 8) **APPENDIX C**
  - Software Analysis Output
- 9) **APPENDIX D**
  - Additional Calculations

## 1) INTRODUCTION

This mount is an existing Top Mount. This mount is installed at the 458 elevation on 1 sector of the 458 ft Guyed Tower.

## 2) ANALYSIS CRITERIA

<b>Building Code:</b>	2015 IBC, 2018 Connecticut State Building Code
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor at Base:</b>	1.000
<b>Topographic Factor at Mount:</b>	1.000
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic S<sub>s</sub>:</b>	0.207
<b>Seismic S<sub>1</sub>:</b>	0.065
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 - Final Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details	Note
458	478	1	RFS/Celwave	SAA18-O4A-J480-ET5R-21	Top Mount	-
150	150	1	Andrew	HPX6-65-P3A	-	1
146	146	1	Andrew	PL6-65-PXA		
140	140	1	Channel Master	CM 4228HD		
136	138	1	RFS/Celwave	MGA2-16N		
	136	1	CSI-Cellular Specialists	CSI-AY/809-960/11		
	135	1	Channel Master	CM 4228HD		
	134	1	RFS/Celwave	MGAR3-23N		

Notes:

- 1) Equipment not on mount, not considered in this analysis

### 3) ANALYSIS PROCEDURE

**Table 2 - Documents Provided**

Document	Remarks	Reference	Source
Crown Application	-	Crown Castle App 530677 Rev 0 Dated: 9/23/2020	Crown Castle
Exposure/Topo Document	-	Crown Castle BU #: 873128 Dated: 11/13/2015	Crown Castle

#### 3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases. Selected output from the analysis are included in the Appendices.

A tool internally developed, using Microsoft Excel, by POD Group, was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the calculations are included in Appendix B.

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

### 3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The weight of the mount was increased 10% in the analysis to account for connections, coax, and jumpers.
- 5) Member sizes have been assumed from photos of the site and experience with similar mounting systems. If the sizes assumed in this report differ from the actual member sizes, POD Group shall be contacted immediately, and the results of the analysis shall be considered null and void.
- 6) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 7) Mount connection to tower assumed to be fixed in order for model to converge.
- 8) Steel grades have been assumed as follows, unless noted otherwise:
  - a. Plate ASTM A36 (GR 36)
  - b. Connection Bolts ASTM A325

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and POD Group should be allowed to review any new information to determine its effect on the structural integrity of the mount.

### 4) ANALYSIS RESULTS

**Table 3 - Mount Component Stresses vs. Capacity (Top Mount)**

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Flange Plate	-	-	65.4	Pass
1	Bolts	-	-	9.7	Pass

<b>Structure Rating (max from all components) =</b>	<b>65.4 %</b>
---	---------------

Notes:

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

#### 4.1) Recommendations

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

## 5) DISCLAIMER OF WARRANTIES

POD Group has not performed a site visit to the structure to verify the member sizes or antenna/coax loading unless noted otherwise. If the existing conditions are not as represented in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the structure or foundation. This report does not replace a full structure inspection. The structure, foundations, and mounting systems are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by POD Group in connection with this Structural Analysis are limited to a computer analysis of the structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

POD Group does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing structure. POD Group provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed structure. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from POD Group, but are beyond the scope of this report.

POD Group makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this structure. POD Group will not be responsible whatsoever, for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of POD Group pursuant to this report will be limited to the total fee received for preparation of this report.

## **APPENDIX A**

### **Wire Frame and Rendered Models**





POD
MMM
20-70569

873128

SK - 1
Oct 16, 2020 at 1:42 PM
873128.r3d



POD

MMM

20-70569

873128

SK - 2

Oct 16, 2020 at 1:42 PM

873128.r3d



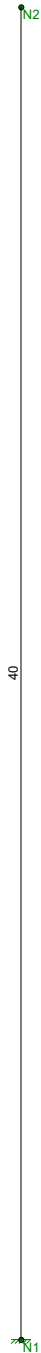
N2

N1

POD
MMM
20-70569

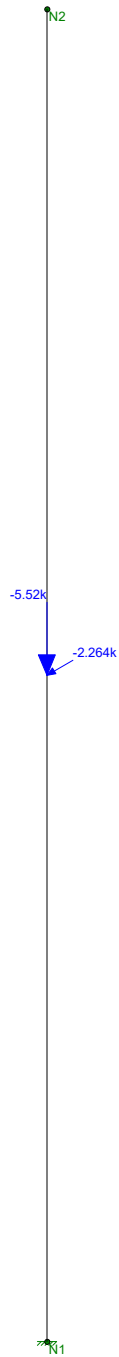
873128

SK - 3
Oct 16, 2020 at 1:43 PM
873128.r3d



Member Length (ft) Displayed

POD	873128	SK - 4
MMM		Oct 16, 2020 at 1:43 PM
20-70569		873128.r3d



Loads: LC 2, 1.2D + 1.0W(0)

POD

MMM

20-70569

873128

SK - 5

Oct 16, 2020 at 1:44 PM

873128.r3d

**APPENDIX B**  
**Software Input Calculations**



POD Job # 20-70082  
 Site Number 873128  
 Site Name Trumbull

**General Site Information**

Mount Type	MF	Risk Category	II	I (seismic)	1
V (Wind Speed)	125	Ij(ice)	1	Sms	0.331
Zs	519.67	Ss	0.207	Sm1	0.156
ti	1	S1	0.065	Sds	0.221
VI	50	Soil Site Class	D	Sd1	0.104
Kzt	1	Fa	1.600	Seismic Design Category	B
Exposure	B	Fv	2.400	Seismic Analysis Not Required	
zg	1200	Tower Type	Guyed	R	2 TIA-222-H 16.7
g	7	Tower Height	458	As	2.965065502 TIA-222-H 16.7
Kmin	0.7			Cs, Min	0.03 TIA-222-H 2.7.7.1.1
G <sub>r</sub>	1			Cs	0.1104 TIA-222-H 2.7.7.1.1
Ke	0.98				
K <sub>o</sub>	0.95				
K <sub>p</sub>	0.9				

**Appurtenance Information**

Model	Shielded	% Shielded	Centerline	Centerline on MP	Spacing (in)	Azimuth	Sector	Quantity	MP #
SAA18-04A-I480-ETS-21	No		478	20			A	1	1

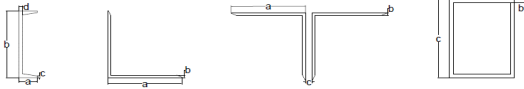
**Mount Information**

Elevation (ft)	4	Grating Thickness (in)	0
K <sub>r</sub>	0.70	Grating Ice Weight (k/ft <sup>2</sup> )	0.008
K <sub>iz</sub>	0.81		
t <sub>iz</sub>	0.81		

Mount Pipes	Length (ft)	Width (in)	Centerline
	40	2.375	458

**Flat Members**

Member	Length (ft)	Width (in)	Shape	A	B	C	D	Frame Member	# of Members
--------	-------------	------------	-------	---	---	---	---	--------------	--------------



**Appurtenance Wind Calculations**

Model	Height	Width	Depth	Weight (lbs)	Kz	qz (lb/ft <sup>2</sup> )	(EPA) <sub>w</sub> (ft <sup>2</sup> )	(EPA) <sub>e</sub> (ft <sup>2</sup> )	Front	Side	Wind Force (Kips)		
											Alpha	Beta	Gamma
SAA18-O4A-I480-ET5R-21	498.8	21.0	21.0	4600.0	1.55	57.62	39.28	39.28	2.264	2.264	2.264	2.264	2.264

**Appurtenance Ice Calculations**

Model	tiz (in)	Height	Width	Depth	Weight (lbs)	Kiz	qz (lb/ft <sup>2</sup> )	(EPA) <sub>w</sub> (ft <sup>2</sup> )	(EPA) <sub>e</sub> (ft <sup>2</sup> )	Front	Side	Wind Force (Kips)		
												Alpha	Beta	Gamma
SAA18-O4A-I480-ET5R-21	1.31	501.45	23.61	23.61	1931.68	1.31	9.22	82.62	82.62	0.762	0.762	0.762	0.762	0.762

**Flat Members**

Member	q <sub>w</sub> (lb/ft <sup>2</sup> )	Af	Cas	Wind Calculations		Load (k/ft)	Width (in)	Weight (k/ft)	q <sub>w</sub> (lb/ft <sup>2</sup> )	Arice	Ice Calculations		Load (k/ft)
				EPA	EPA					Rfice	Cas	EPA	

**Appurtenance Seismic Calculations**

Model	Weight	Sds	ρ	Cs	As	Ev	Eh
SAA18-O4A-I480-ET5R-21	4600.0	0.221	1.000	0.110	2.965	0.602	1.506

Version 3.21



**APPENDIX C**  
**Software Analysis Output**

















**APPENDIX D**  
**Additional Calculations**



**POD Job #** 20-70569  
**Site Number** 873128  
**Site Name** Trumbull

*Reactions from tnxTower*

Moment 45.273 ft-kip  
 Axial 5.52 kips  
 Shear 2.264 kips

*Ratings*

<b>Flange Bolts</b>	<b>30.7%</b>
<b>Flange Plate</b>	<b>65.4%</b>

*Flange Bolt Information*

Number of Bolts 12  
 Diameter 1 in  
 Grade A325  
 Bolt Circle 12 in  
 Threads Included Yes

*Upper Flange Plate*

Location = External  
 Plate Strength (Fy) = 36 ksi  
 Plate Tensile (Fu) = 58 ksi  
 Plate Thickness = 1 in  
 Outer Diameter = 18 in

*Lower Flange Plate*

Location = Internal  
 Plate Strength (Fy) = 36 ksi  
 Plate Tensile (Fu) = 58 ksi  
 Plate Thickness = 1.5 in  
 Hole Diameter = 9 in

*Pole Information*

Shaft Diam. (Upper) = 9 in  
 Thickness (Upper) = in  
 # of Sides (Upper) = Round  
 Fy (Upper) = 36 ksi  
  
 Shaft Diam. (Lower) = 27 in  
 Thickness (Lower) = in  
 # of Sides (Lower) = Round  
 Fy (Lower) = 36 ksi

*Upper Stiffeners*

Configuration = None

*Lower Stiffeners*

Configuration = None

# Exhibit F

## **Power Density/RF Emissions Report**



## RF EMISSIONS COMPLIANCE REPORT

### Crown Castle on behalf of Connecticut Public Broadcasting, Inc.

Crown Castle Site BU Number: 873128  
Crown Castle Site Name: Trumbull  
Connecticut Public Broadcasting, Inc. Site Name: Cox Radio  
800 Booth Hill Road  
Trumbull, CT  
11/18/2020

### Report Status:

**Connecticut Public Broadcasting, Inc. is Compliant**



Michael Fischer, P.E.  
Registered Professional Engineer (Electrical)  
Connecticut License Number 33928  
Expires January 31, 2021

Signed 18 November 2020

Prepared By:

Site Safe, LLC

Engineering Statement in Re:  
Electromagnetic Energy Analysis  
Crown Castle  
Trumbull, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of Connecticut Public Broadcasting, Inc. (CPB) (see attached Site Summary and Carrier documents) and that CPB's installation involves communications equipment, antennas and associated technical equipment at a location referred to as "Trumbull" ("the site"); and

That CPB proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by CPB and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure, and the antennas used are highly directional and oriented at angles at or just below the horizontal, and that the energy present at ground level is typically so low as to be considered insignificant and has not been included in this analysis (a list of microwave antennas is included); and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," which defines situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and 2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of CPB's operating frequencies as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed CPB operation is no more than 0.655% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 23.408% of the maximum in any accessible area up to two meters above the ground per OET 65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET 65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier(s) and frequency range(s) indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding radio frequency safety; and

In summary, it is stated here that the proposed operation at the site will not result in exposure of the public to excessive levels of radio frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307(b), and that CPB's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals and approved contractor personnel trained in radio frequency safety and that this instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower or in the immediate proximity of the antennas.

Note: Any antennas in the CCI database that have an "abandoned" or "not installed" status have not been included in this analysis.

**Crown Castle  
Trumbull  
Site Summary**

Carrier	Area Maximum Percentage MPE
American Medical Response	0.059 %
American Messaging Company	0.004 %
CRN Wireless, LLC	0.778 %
Calamp Corporation	0.015 %
Connecticut Public Broadcasting, Inc. (Proposed)	0.509 %
Connecticut Public Broadcasting, Inc.	0.146 %
Connoisseur Media, LLC	5.309 %
Crown MAS	0.003 %
Marcus Communications, LLC	0.023 %
Shelton Police Department	0.007 %
Spok, Inc.	0.003 %
Spok, Inc.	0.002 %
T-Mobile	0.217 %
T-Mobile	0.167 %
T-Mobile	0.124 %
T-Mobile	0.104 %
T-Mobile	0.092 %
The Kennedy Center, Inc.	0.043 %
U.S. Customs and Border Protection	0.053 %
Unknown Carrier	0.006 %
Unknown Carrier	0.051 %
Verizon Wireless	0.147 %
Verizon Wireless	0.127 %
Verizon Wireless	0.102 %
Verizon Wireless	0.081 %
WEZN	4.895 %
WPKN	5.835 %
WSHU	4.506 %
<b>Composite Site MPE:</b>	<b>23.408 %</b>

# American Medical Response Trumbull Carrier Summary

**Frequency:** 150 MHz  
**Maximum Permissible Exposure (MPE):** 200  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.11725  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.05863 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	PD220-5	143	260	100	0.117252	0.058626	0.117252	0.058626



**American Messaging Company  
Trumbull  
Carrier Summary**

Frequency: 850 MHz  
 Maximum Permissible Exposure (MPE): 566.67  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.02293  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00405 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	DB809KT3E-Y	261	20	100	0.022932	0.004047	0.022932	0.004047

**CRN Wireless, LLC  
Trumbull  
Carrier Summary**

Frequency: 959 MHz  
 Maximum Permissible Exposure (MPE): 639.33  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 4.97640  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.77837 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CSI	AY/806-960/11	54	180	77	4.755192	0.743774	4.976402	0.778374

**Calamp Corporation  
Trumbull  
Carrier Summary**

**Frequency:** 150 MHz  
**Maximum Permissible Exposure (MPE):** 200  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.03008  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.01504 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
TELEWAVE	ANT150F6	273	320	100	0.030082	0.015041	0.030082	0.015041

**Connecticut Public Broadcasting, Inc. (Proposed)**  
**Trumbull**  
**Carrier Summary**

Frequency: 512 MHz  
Maximum Permissible Exposure (MPE): 341.33  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.73896  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.50946 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	SAA18-O4A-J480-ET5R-21	477	0	53152	1.649599	0.483281	1.724351	0.505181
RFS	SAA18-O4A-J480-ET5R-21	477	0	53152	1.649599	0.483281	1.724351	0.505181

**Connecticut Public Broadcasting, Inc.  
Trumbull  
Carrier Summary**

Frequency: 900 MHz  
 Maximum Permissible Exposure (MPE): 600  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.87856  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.14643 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CSI	AY/806-960/11	136	100	100	0.825334	0.137556	0.878564	0.146427

**Connoisseur Media, LLC  
Trumbull  
Carrier Summary**

Frequency: 99.9 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 10.61728  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 5.30864 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Shively	6828-2	367	180	20500	10.617276	5.308638	10.617279	5.308640

## Crown MAS Trumbull Carrier Summary

**Frequency:** 450 MHz  
**Maximum Permissible Exposure (MPE):** 300  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.01016  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.00339 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	PD455-6	352	260	100	0.010160	0.003387	0.010160	0.003387

**Marcus Communications, LLC  
Trumbull  
Carrier Summary**

Frequency: 450 MHz  
 Maximum Permissible Exposure (MPE): 300  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.06772  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.02257 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	DB408	325	0	100	0.067719	0.022573	0.067719	0.022573



**Shelton Police Department  
Trumbull  
Carrier Summary**

Frequency: 850 MHz  
 Maximum Permissible Exposure (MPE): 566.67  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.04133  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00729 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	BMR10-O	283	50	100	0.020216	0.003568	0.041331	0.007294

**Spok, Inc.  
Trumbull  
Carrier Summary**

Frequency: 900 MHz  
 Maximum Permissible Exposure (MPE): 600  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.02046  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00341 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Antel	BCD87077	350	340	100	0.020024	0.003337	0.020459	0.003410

**Spok, Inc.  
Trumbull  
Carrier Summary**

Frequency: 901 MHz  
 Maximum Permissible Exposure (MPE): 600.67  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.01281  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.00213 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	PG1N0F-0090-310	335	20	100	0.012806	0.002132	0.012806	0.002132

## T-Mobile Trumbull Carrier Summary

**Frequency:** 2100 MHz  
**Maximum Permissible Exposure (MPE):** 1000  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 2.17423  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.21742 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Ericsson	AIR 32 B2A B66AA	247	50	4626	1.511104	0.151110	1.517808	0.151781
Ericsson	AIR 32 B2A B66AA	247	150	4626	1.511104	0.151110	1.517808	0.151781
Ericsson	AIR 32 B2A B66AA	247	310	4626	1.511104	0.151110	1.517808	0.151781

## T-Mobile Trumbull Carrier Summary

**Frequency:** 1900 MHz  
**Maximum Permissible Exposure (MPE):** 1000  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 1.66593  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.16659 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAARR24_43-U-NA20	247	50	4945	0.537082	0.053708	1.007010	0.100701
Ericsson	AIR 32 B2A B66AA	247	50	4626	0.350618	0.035062	0.403909	0.040391
RFS	APXVAARR24_43-U-NA20	247	150	4945	0.537082	0.053708	1.007010	0.100701
Ericsson	AIR 32 B2A B66AA	247	150	4626	0.350618	0.035062	0.403909	0.040391
RFS	APXVAARR24_43-U-NA20	247	310	4945	0.537082	0.053708	1.007010	0.100701
Ericsson	AIR 32 B2A B66AA	247	310	4626	0.350618	0.035062	0.403909	0.040391

## T-Mobile Trumbull Carrier Summary

**Frequency:** 700 MHz  
**Maximum Permissible Exposure (MPE):** 466.67  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.57676  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.12359 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAARR24_43-U-NA20	247	50	3484	0.349491	0.074891	0.370557	0.079405
RFS	APXVAARR24_43-U-NA20	247	150	3484	0.349491	0.074891	0.370557	0.079405
RFS	APXVAARR24_43-U-NA20	247	310	3484	0.349491	0.074891	0.370557	0.079405

## T-Mobile Trumbull Carrier Summary

**Frequency:** 600 MHz  
**Maximum Permissible Exposure (MPE):** 400  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.41586  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.10396 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAARR24_43-U-NA20	247	50	1251	0.136922	0.034230	0.140040	0.035010
RFS	APXVAARR24_43-U-NA20	247	50	1251	0.136922	0.034230	0.140040	0.035010
RFS	APXVAARR24_43-U-NA20	247	150	1251	0.136922	0.034230	0.140040	0.035010
RFS	APXVAARR24_43-U-NA20	247	150	1251	0.136922	0.034230	0.140040	0.035010
RFS	APXVAARR24_43-U-NA20	247	310	1251	0.136922	0.034230	0.140040	0.035010
RFS	APXVAARR24_43-U-NA20	247	310	1251	0.136922	0.034230	0.140040	0.035010

## T-Mobile Trumbull Carrier Summary

**Frequency:** 2500 MHz  
**Maximum Permissible Exposure (MPE):** 1000  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.92267  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.09227 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Ericsson	AIR 6449 B41	247	50	3178	0.326432	0.032643	0.414968	0.041497
Ericsson	AIR 6449 B41	247	50	3178	0.326432	0.032643	0.414968	0.041497
Ericsson	AIR 6449 B41	247	150	3178	0.326432	0.032643	0.414968	0.041497
Ericsson	AIR 6449 B41	247	150	3178	0.326432	0.032643	0.414968	0.041497
Ericsson	AIR 6449 B41	247	310	3178	0.326432	0.032643	0.414968	0.041497
Ericsson	AIR 6449 B41	247	310	3178	0.326432	0.032643	0.414968	0.041497



**The Kennedy Center, Inc.  
Trumbull  
Carrier Summary**

Frequency: 150 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.08623  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.04312 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	DB201-A	329	80	100	0.086238	0.043115	0.086238	0.043115

**U.S. Customs and Border Protection  
Trumbull  
Carrier Summary**

Frequency: 150 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 0.10665  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 0.05333 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	DB264-A	142	180	100	0.106652	0.053326	0.106652	0.053326

## Unknown Carrier Trumbull Carrier Summary

**Frequency:** 150 MHz  
**Maximum Permissible Exposure (MPE):** 200  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.01131  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.00565 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
SINCLAIR	SRL-235-2	451	40	100	0.005730	0.002865	0.011309	0.005654

## Unknown Carrier Trumbull Carrier Summary

**Frequency:** 450 MHz  
**Maximum Permissible Exposure (MPE):** 300  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.15366  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.05122 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	PD1132-D	113	160	100	0.028862	0.009621	0.059083	0.019694
SINCLAIR	SRL310-C-4HD	327	80	100	0.096658	0.032219	0.101264	0.033755

## Verizon Wireless Trumbull Carrier Summary

**Frequency:** 850 MHz  
**Maximum Permissible Exposure (MPE):** 566.67  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.83484  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.14732 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	LNX-8513DS-VTM	232	50	2918	0.369264	0.065164	0.493308	0.087054
ANDREW	LNX-6514DS-VTM	232	170	3784	0.529428	0.093429	0.794700	0.140241
ANDREW	LNX-8513DS-VTM	232	290	2918	0.369264	0.065164	0.493308	0.087054

## Verizon Wireless Trumbull Carrier Summary

**Frequency:** 2100 MHz  
**Maximum Permissible Exposure (MPE):** 1000  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 1.27463  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.12746 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	SBNHH-1D65B	232	50	5154	0.777463	0.077746	1.224975	0.122497
ANDREW	SBNHH-1D65B	232	170	5154	0.777463	0.077746	1.224975	0.122497
ANDREW	SBNHH-1D65B	232	290	5154	0.777463	0.077746	1.224975	0.122497

## Verizon Wireless Trumbull Carrier Summary

**Frequency:** 751 MHz  
**Maximum Permissible Exposure (MPE):** 500.67  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.50853  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.10157 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	SBNHH-1D65B	232	50	2043	0.265958	0.053121	0.429546	0.085795
ANDREW	SBNHH-1D65B	232	170	2043	0.265958	0.053121	0.429546	0.085795
ANDREW	SBNHH-1D65B	232	290	2043	0.265958	0.053121	0.429546	0.085795

## Verizon Wireless Trumbull Carrier Summary

**Frequency:** 1900 MHz  
**Maximum Permissible Exposure (MPE):** 1000  $\mu\text{W}/\text{cm}^2$   
**Maximum power density at ground level:** 0.81478  $\mu\text{W}/\text{cm}^2$   
**Highest percentage of Maximum Permissible Exposure:** 0.08148 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	HBXX-6516DS-VTM	232	50	3726	0.363472	0.036347	0.789964	0.078996
ANDREW	HBXX-6516DS-VTM	232	170	3726	0.363472	0.036347	0.789964	0.078996
ANDREW	HBXX-6516DS-VTM	232	290	3726	0.363472	0.036347	0.789964	0.078996



**WEZN  
Trumbull  
Carrier Summary**

Frequency: 99.9 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 9.78983  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 4.89491 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ERI	1183-3CP	420	0	9167	3.263275	1.631637	3.263276	1.631638
ERI	1183-3CP	420	90	9167	3.263275	1.631637	3.263276	1.631638
ERI	1183-3CP	420	180	9167	3.263275	1.631637	3.263276	1.631638

**WPKN  
Trumbull  
Carrier Summary**

Frequency: 89.5 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 11.67064  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 5.83532 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Shively	6014-2	310	35	3333	2.434832	1.217416	2.434833	1.217416
Shively	6014-2	310	155	3333	2.434833	1.217416	2.434833	1.217416
Shively	6014-2	310	275	3333	2.434832	1.217416	2.434833	1.217416
Shively	6014-2	388	35	3333	1.541955	0.770978	1.541955	0.770978
Shively	6014-2	388	155	3333	1.541955	0.770978	1.541955	0.770978
Shively	6014-2	388	275	3333	1.541955	0.770978	1.541955	0.770978

**WSHU  
Trumbull  
Carrier Summary**

Frequency: 99.1 MHz  
 Maximum Permissible Exposure (MPE): 200  $\mu\text{W}/\text{cm}^2$   
 Maximum power density at ground level: 9.01166  $\mu\text{W}/\text{cm}^2$   
 Highest percentage of Maximum Permissible Exposure: 4.50583 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Shively	6014-2	393	320	6667	3.003887	1.501944	3.003888	1.501944
Shively	6014-2	393	80	6667	3.003887	1.501944	3.003888	1.501944
Shively	6014-2	393	200	6667	3.003887	1.501944	3.003888	1.501944

## Trumbull Composite Microwave Antenna Summary

Carrier	Antenna Make/Model	Height (feet)
WPKN, Inc.	Mark SSH-9A72GN	61
Connoisseur Media, LLC	Mark P-9A48GN-U	68
Sacred Heart University WSHU	Radiowaves SPD2-5.8	99
Sacred Heart University WSHU	Ligowave PTP-900-13	99
American Medical Response Ambulance Service	Mark SSH-9A72GN	108
Connoisseur Media, LLC	Mark P-9A48GN-U	117
Connecticut Public Broadcasting, Inc.	RFS MGAR3-23N	134
Connecticut Public Broadcasting, Inc.	Channel Master CM-4228HD	135
Connecticut Public Broadcasting, Inc.	RFS MGA2-16N	138
Connecticut Public Broadcasting, Inc.	Channel Master CM-4228HD	140
Connecticut Public Broadcasting, Inc.	Andrew PL6-65-PXA	146
Connecticut Public Broadcasting, Inc.	Andrew HPX6-65-P3A	150
Marcus Communications, LLC	Radiowaves SPD4-5.2	178
Sacred Heart University WSHU	Gabriel DFPD1-52	200
Unknown Carrier	Mark P-9A72GN-U	206
Unknown Carrier	Radiowaves SPD3-5.8	322
DRW Canada Co.	Commscope USX6-6W-6GR	450
DRW Canada Co.	Commscope USX6-6W-6GR	450