January 15, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site BU: 873128
T-Mobile Site ID: CT11203B
800 Booth Hill Road, Trumbull, CT 06611
Latitude: 41° 16' 44.26" / Longitude: -73° 11' 6.4"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) total antennas at the 247-foot mount on the existing 460 foot guyed tower at 800 Booth Hill Road in Trumbull, CT. The property and tower are owned by Crown Castle. T-Mobile now intends to replace three (3) existing antennas as well as add three (3) new antennas and ancillary equipment. The new antennas will be installed at the 247-ft level of the tower. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:
Tower:

Remove:
(10) 7/8" Coax
(3) Twin Style 3CX-ATMA4P4DBP-1A20 TMA

Remove and Replace:
(3) APX16DWV-16DWV-S-E-A20 Antenna 1900/2100 MHz **(REMOVE)** - (3) AIR32 KRD901146-1_B66A_B2A Antenna 1900/2100 MHz **(REPLACE)**

(3) RFS - FDA4P5020S7-1C Diplexer **(REMOVE) -** (3) SDX1926Q-43 Diplexer **(REPLACE)**

Install New:
(2) 6x12 HCS 1 5/8" Hybrid cable
(3) Radio 4415 B25
(3) AIR6449 B41 5G 2500 MHz Antenna

Existing to Remain:
(3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz
(3) Twin Style 1BX-KRY 112 144/2 TMA

Ground:

Remove:
(1) RBS 3106 cabinet

Install new:
(1) 6160 equipment cabinet
(1) B160 battery cabinet
(1) BB 6630
(1) BB 6648
(1) PSU 4813
(1) iXRe router

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, and Douglas Wenz, Zoning Enforcement Officer for the Town of Trumbull.

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

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

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

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

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

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Richard Zajac
Site Acquisition Specialist
4545 East River Road, Suite 320
West Henrietta, NY 14586
(585) 445-5896
richard.zajac@crowncastle.com

Attachments

cc:

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

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

Zajac, Richard

From: Zajac, Richard
Sent: Friday, January 15, 2021 11:53 AM
To: firstselectman@trumbull-ct.gov
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 800 Booth Hill Rd.pdf

Good morning Ms. Tesoro,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 800 Booth Hill Road in Trumbull.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

Zajac, Richard

From: Zajac, Richard
Sent: Friday, January 15, 2021 11:56 AM
To: dwenz@trumbull-ct.gov
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 800 Booth Hill Rd.pdf

Good morning Mr. Wenz,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 800 Booth Hill Road in Trumbull.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

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

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/

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

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

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	**Sale Price**	$575,000
Co-Owner	C/O CROWN CASTLE USA INC	**Book & Page**	1714/ 158
Address	2000 CORPORATE DRIVE CANONSBURG, PA 15317	**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

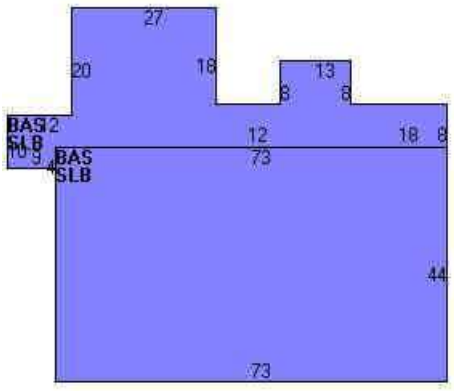
Field	Description
STYLE	Telephone Bldg
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Concrete
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Minimum/Plywd
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air
AC Type	Central
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.

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	**Depth**	
Neighborhood	350		
Alt Land Appr	No		
Category			

Outbuildings

Outbuildings					Legend
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


April Ln
Booth Hill Rd
Honeybee Ln
Booth Hill Rd
Gray Rock Rd
Booth Hill Rd
oneleigh Rd
Gray Rock Rd
Hidden Pond Ln
Strobel Rd
Strobel Rd

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11203B
T-MOBILE SITE NAME: TRUMBULL/RT 108
SITE TYPE: GUYED TOWER
TOWER HEIGHT: 458'-0"

BUSINESS UNIT #: 873128
SITE ADDRESS: 800 BOOTH HILL ROAD SHELTON, CT 06484
COUNTY: FAIRFIELD
JURISDICTION: FAIRFIELD COUNTY

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A997DB HYBRID

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	TRUMBULL
SITE ADDRESS:	800 BOOTH HILL ROAD SHELTON, CT 06484
COUNTY:	FAIRFIELD
MAP/PARCEL #:	TBD
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.27893000 (41° 16' 44.2")
LONGITUDE:	-73.18494000 (-73°11'05.8")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	524.9 FT
CURRENT ZONING:	TBD
JURISDICTION:	FAIRFIELD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TBD -- --
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	-- --
TELCO PROVIDER:	-- --

PROJECT TEAM

A&E FIRM:	INFINIGY 1033 WATERVLIET SHAKER RD. ALBANY, NY 12205
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065
	-- - PROJECT MANAGER --
	-- - CONSTRUCTION MANAGER --

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR ----. 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.

PROJECT DESCRIPTION

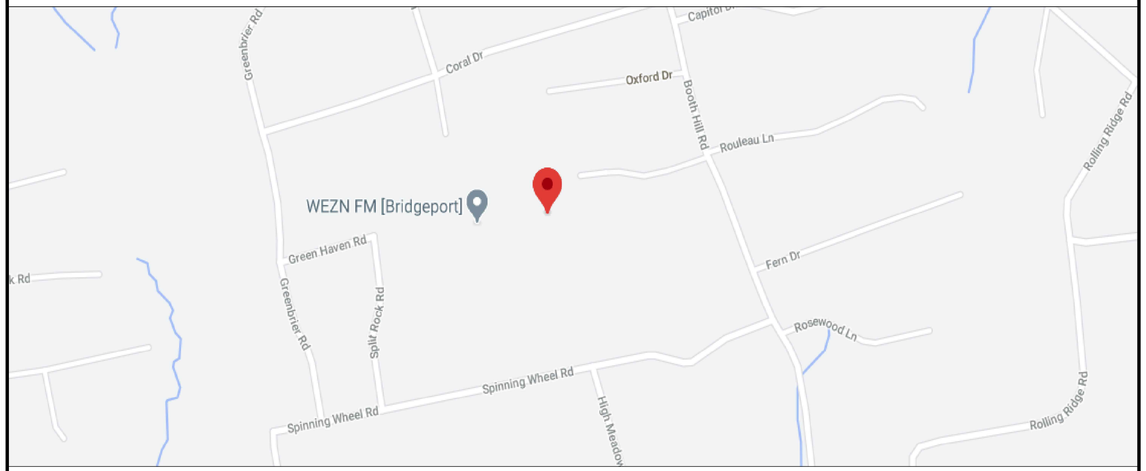
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (3) ANTENNAS
- REMOVE (3) TMAs
- REMOVE (3) DIPLEXERS
- REMOVE (1) COAX CABLES
- INSTALL (6) ANTENNAS
- INSTALL (3) RRHs
- INSTALL (3) DIPLEXERS
- INSTALL (1) HYBRID CABLE

GROUND SCOPE OF WORK:
- REMOVE (1) EXISTING RBS 3106 CABINET
- INSTALL (1) 6160 & (1) B160 BATTERY CABINETS
- INSTALL (1) iXRe ROUTER IN (P) CABINET
- INSTALL (1) PSU4813 BOOSTER IN (P) CABINET
- INSTALL (1) BB6630 IN (P) CABINET
- INSTALL (1) BB6648 IN (P) CABINET

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

LOCATION MAP



NO SCALE

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
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: DATED:	BY OTHERS
MOUNT ANALYSIS: DATED:	INFINIGY ENGINEERING 10/27/20
AC ELECTRICAL POWER DESIGN: DATED:	BY OTHERS
RFDS REVISION: DATED:	5 9/23/2020
ORDER ID:	529714
REVISION:	0

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS BEFORE YOU DIG!

APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

INFINIGY
FROM ZERO TO INFINIGY
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1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

T-MOBILE SITE NUMBER:
CT11203B

BU #: **873128**
TRUMBULL

800 BOOTH HILL ROAD
SHELTON, CT 06484

EXISTING 458'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/02/20	MAP	FINAL	SS

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
10/2/20
LICENSED PROFESSIONAL ENGINEER

SHEET NUMBER: T-1
REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. 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.
2. "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 FUNCTIONAL USE OF THE SAFETY CLIMB OR 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.
3. 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.
4. 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).
5. 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."
6. 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.
7. 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.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. 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.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. 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.
13. 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.
14. 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.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. 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.
18. 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.
19. 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.
20. 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.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. 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.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. 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.
11. 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.
12. 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.
13. 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.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. 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.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. 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°f AT TIME OF PLACEMENT.
4. 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.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) 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
6. 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"
7. 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.

GREENFIELD GROUNDING NOTES:

1. 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.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. 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.
20. 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).
21. 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).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. 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. VERYIFY 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.
5. 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.
6. 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).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. 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).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. 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
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

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

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

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
RET	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

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T-MOBILE SITE NUMBER:
CT11203B

BU #: **873128**
TRUMBULL

800 BOOTH HILL ROAD
SHELTON, CT 06484

EXISTING 458'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/02/20	MAP	FINAL	SS

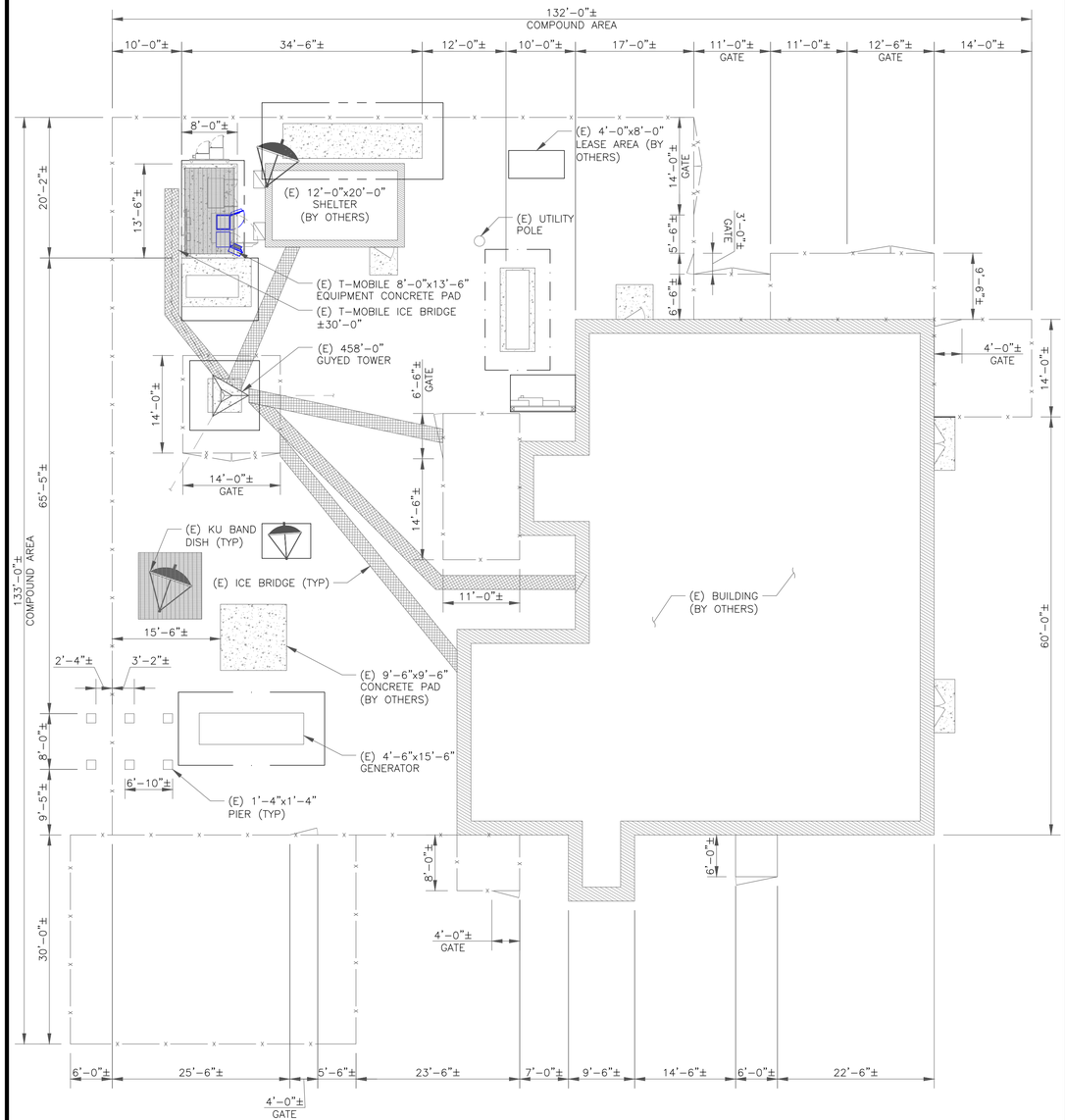
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: **T-2**

REVISION: **0**

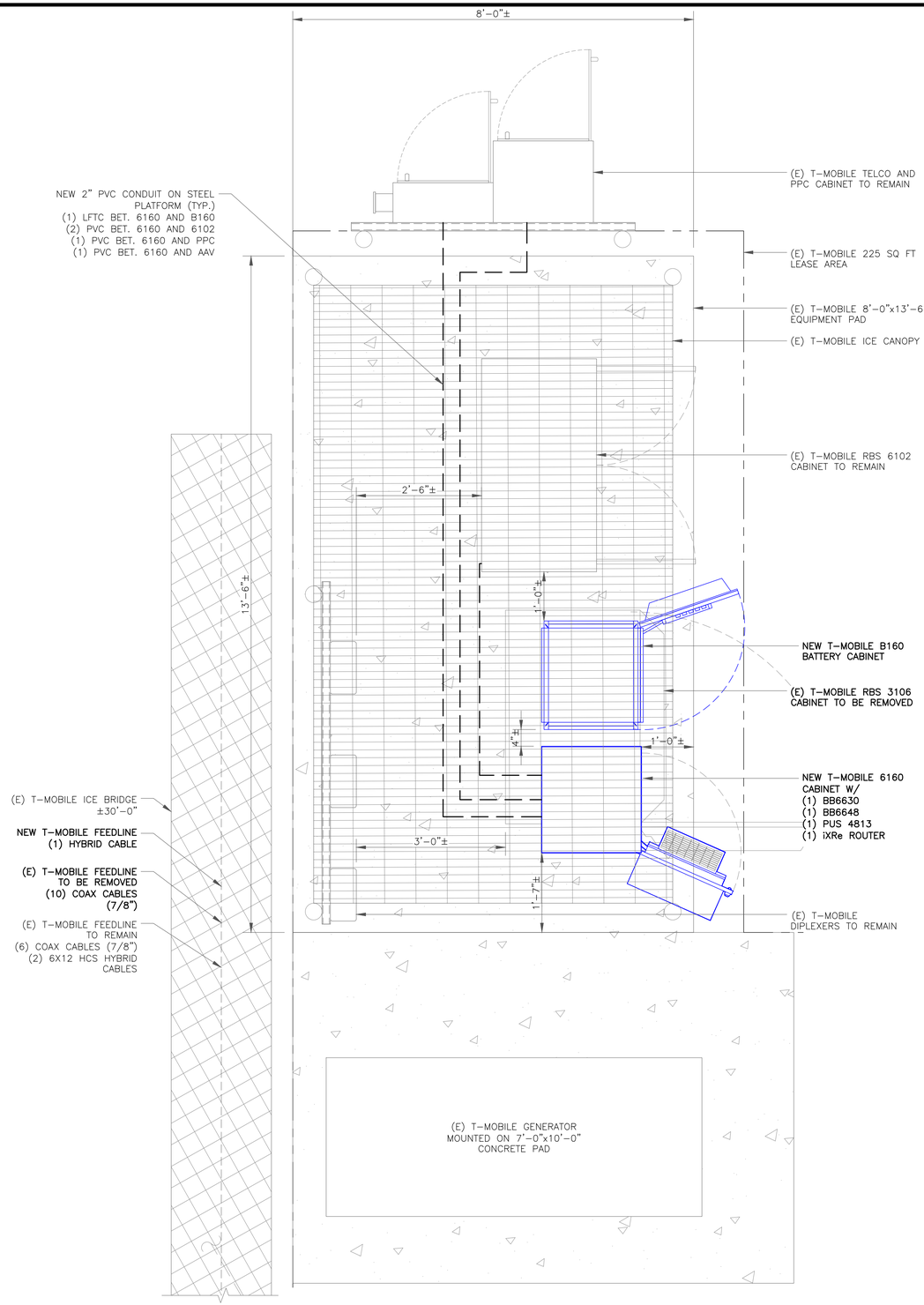
NOTE:

1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T–MOBILE EQUIPMENT.



1 SITE PLAN
SCALE: 8' 4' 0 8' 3/32"=1'–0" (FULL SIZE) 3/64"=1'–0" (11x17)

N



2 ENLARGED SITE PLAN
SCALE: 1' 6" 0 1' 3/4"=1'–0" (FULL SIZE) 3/8"=1'–0" (11x17)

N

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T-MOBILE SITE NUMBER:
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BU #: **873128**
TRUMBULL

800 BOOTH HILL ROAD
SHELTON, CT 06484

EXISTING 458'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/02/20	MAP	FINAL	SS

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
12/2/20
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-1

REVISION: 0

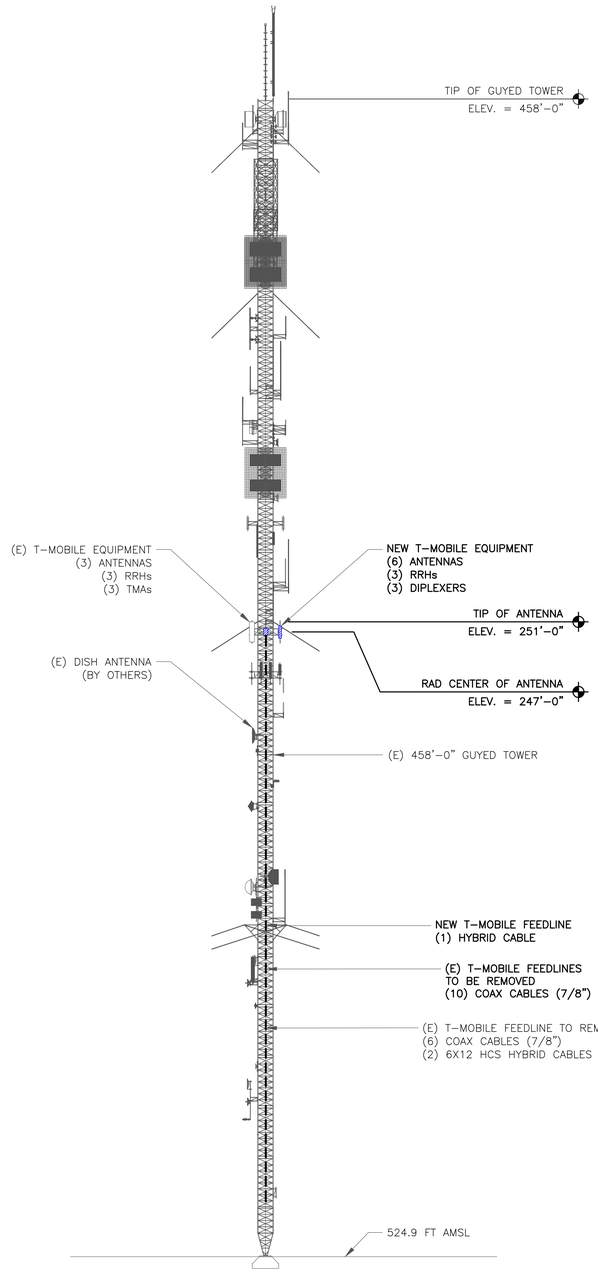
NOTES:

1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

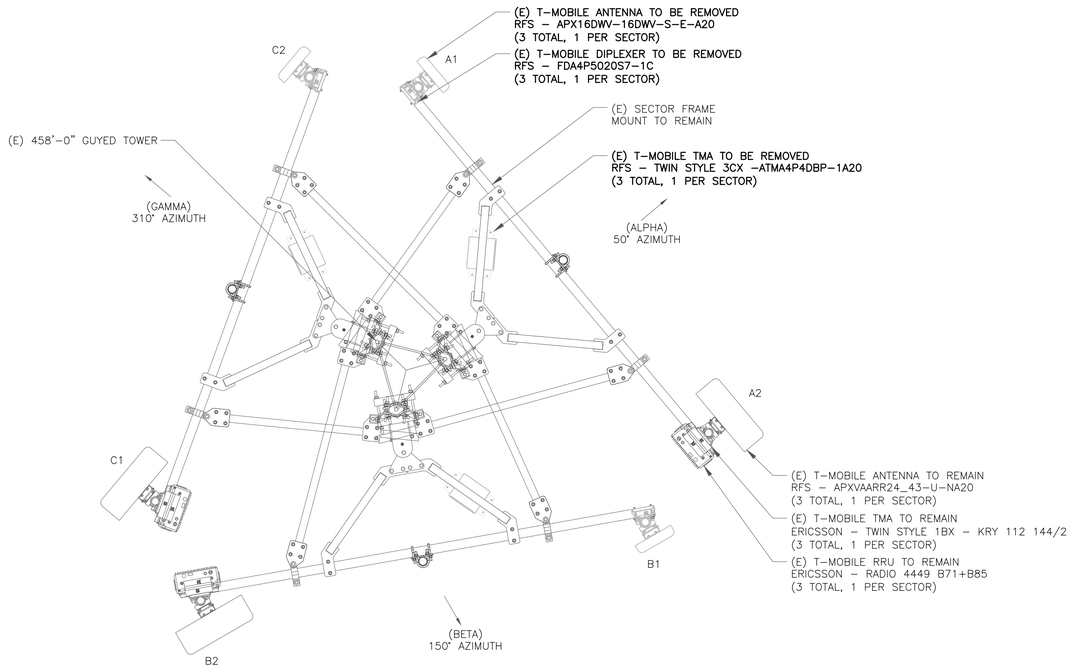
T-MOBILE EQUIPMENT

ANTENNA CL: 247'-0"
MOUNT CL: 247'-0"

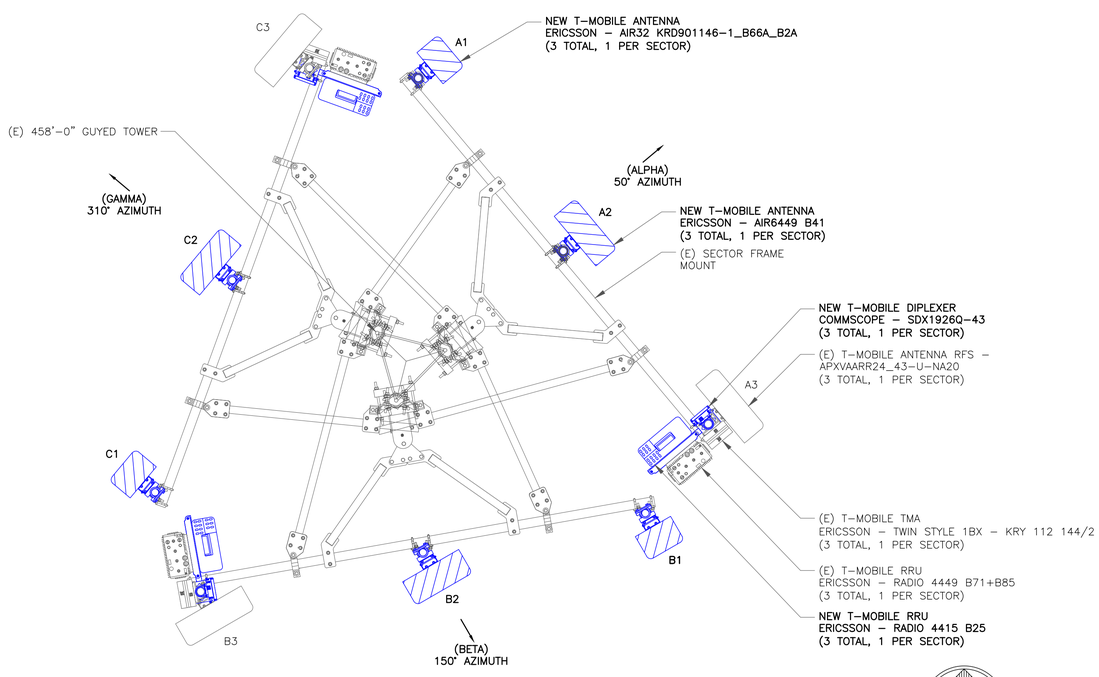
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CT11203B

BU #: **873128**
TRUMBULL

800 BOOTH HILL ROAD
SHELTON, CT 06484

EXISTING 458'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/02/20	MAP	FINAL	SS

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
12/2/20
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-2

REVISION: 0

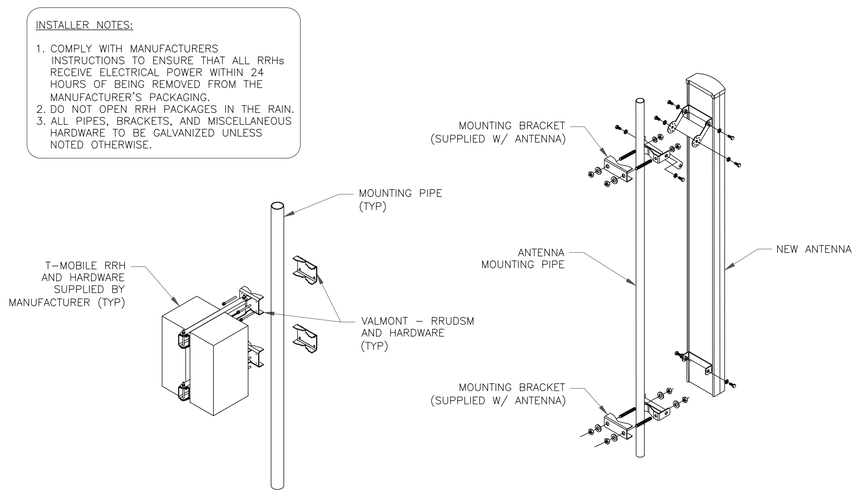
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	**A1**	**L2100, L1900**	**247'-0"**	**50°**	**ERICSSON**	**AIR32 KRD901146-1_B66A_B2A**	**0°**	**–**	**–**	(1) 6X12 HCS HYBRID (SHARED)
ALPHA	**A2**	**L2500, N2500**	**247'-0"**	**50°**	**ERICSSON**	**AIR6449 B41**	**0°**	**–**	**–**	**(1) 6X12 HCS HYBRID (SHARED)**
ALPHA	A3	L600, L700, N600, L2100, **U2100**	247'-0"	50°	RFS	APXVAARR24_43-U-NA20	0°	–	(1) ERICSSON – RADIO 4449 B71+B85 **(1) ERICSSON – RADIO 4415 B25** (1) ERICSSON – KRY 112 144/2 **(1) COMMSCOPE – SDX1926Q-43**	(2) 7/8" COAX (1) 6X12 HCS HYBRID (SHARED)
BETA	**B1**	**L2100, L1900**	**247'-0"**	**150°**	**ERICSSON**	**AIR32 KRD901146-1_B66A_B2A**	**0°**	**–**	**–**	(1) 6X12 HCS HYBRID (SHARED)
BETA	**B2**	**L2500, N2500**	**247'-0"**	**150°**	**ERICSSON**	**AIR6449 B41**	**0°**	**–**	**–**	**(1) 6X12 HCS HYBRID (SHARED)**
BETA	B3	L600, L700, N600, L2100, **U2100**	247'-0"	150°	RFS	APXVAARR24_43-U-NA20	0°	–	(1) ERICSSON – RADIO 4449 B71+B85 **(1) ERICSSON – RADIO 4415 B25** (1) ERICSSON – KRY 112 144/2 **(1) COMMSCOPE – SDX1926Q-43**	(2) 7/8" COAX (1) 6X12 HCS HYBRID (SHARED)
GAMMA	**C1**	**L2100, L1900**	**247'-0"**	**310°**	**ERICSSON**	**AIR32 KRD901146-1_B66A_B2A**	**0°**	**–**	**–**	(1) 6X12 HCS HYBRID (SHARED)
GAMMA	**C2**	**L2500, N2500**	**247'-0"**	**310°**	**ERICSSON**	**AIR6449 B41**	**0°**	**–**	**–**	**(1) 6X12 HCS HYBRID (SHARED)**
GAMMA	C3	L600, L700, N600, L2100, **U2100**	247'-0"	310°	RFS	APXVAARR24_43-U-NA20	0°	–	(1) ERICSSON – RADIO 4449 B71+B85 **(1) ERICSSON – RADIO 4415 B25** (1) ERICSSON – KRY 112 144/2 **(1) COMMSCOPE – SDX1926Q-43**	(2) 7/8" COAX (1) 6X12 HCS HYBRID (SHARED)

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

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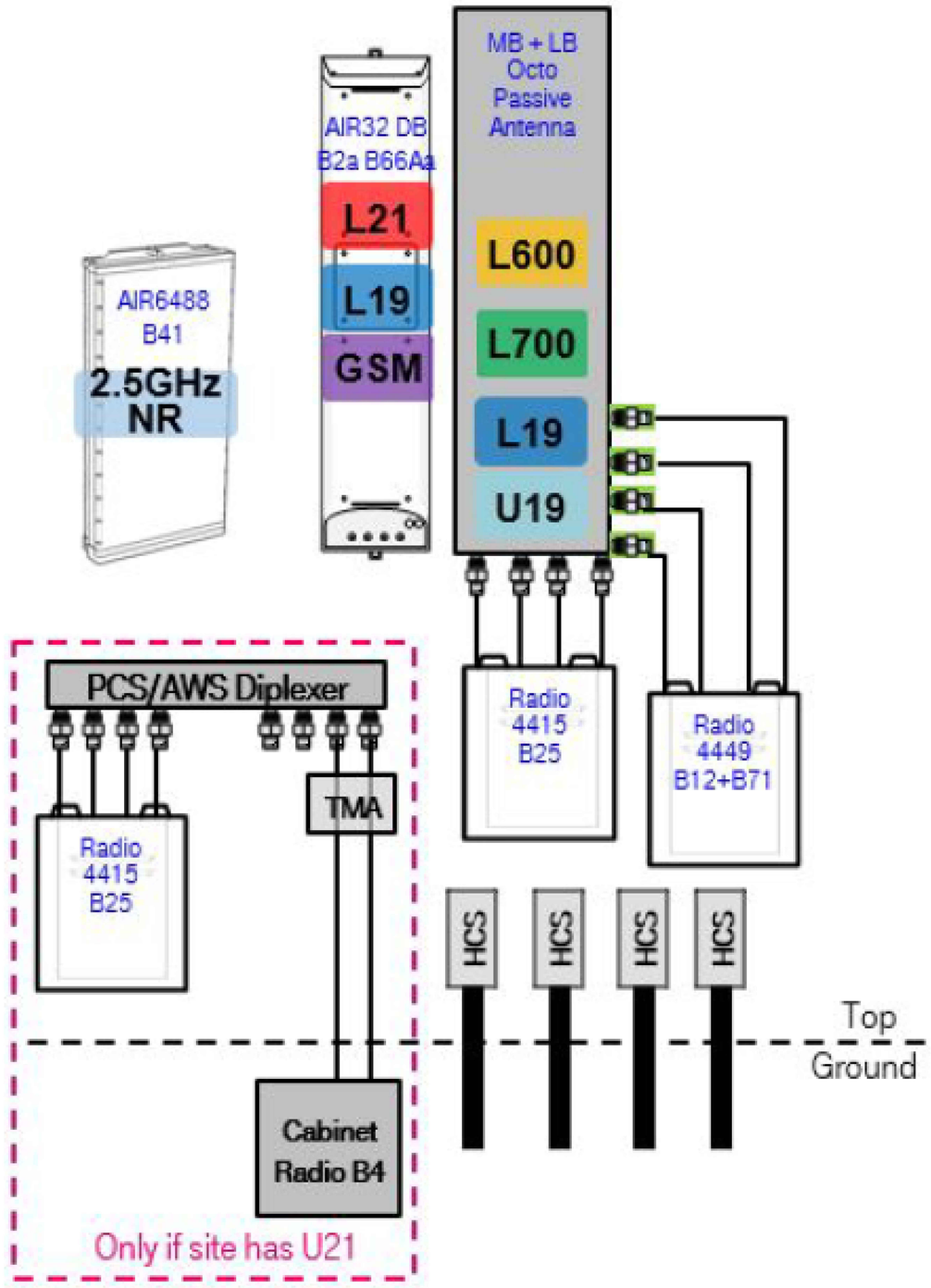
SHEET NUMBER: C-3

REVISION: 0



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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BU #: **873128**
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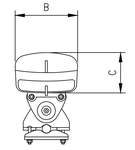
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
12/2/20
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-4

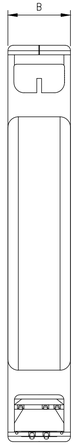
REVISION: 0

MANUFACTURER:		ERICSSON	
MODEL NO.:		AIR 32 KRD901146-1 B66A B2A(OCTO)	
DIMENSIONS:		WEIGHT WITHOUT INSTALLATION KIT:	WEIGHT WITH SINGLE POLE CLAMP AND WITHOUT INSULATION KIT:
A	59.25"	99 LBS	131 LBS
B	12.87"		
C	8.67"		

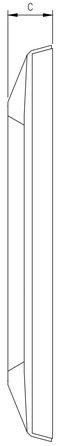


TOP VIEW

FRONT VIEW



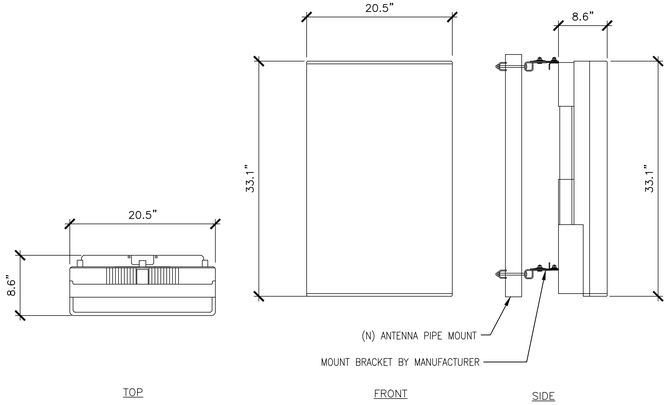
BACK VIEW



SIDE VIEW

1 (N) AIR32 ANTENNA SPEC
SCALE: NOT TO SCALE

MANUFACTURER: ERICSSON
MODEL: AIR6449 B41
WEIGHT: 104 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 33.1"H. X 20.5"W. X 8.6"D.
FREQUENCY: REFER TO RF DATA SHEET

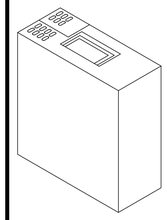


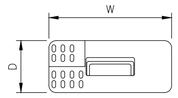
TOP FRONT SIDE

2 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

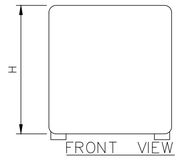
ERICSSON RADIO-4415 B25

DIMENSIONS, WxDxH:	13.2"x5.4"x14.9"
POWER CONSUMPTION:	660 WATTS
TOTAL WEIGHT:	46.3 lbs
TEMPERATURE:	-40° TO 55° C

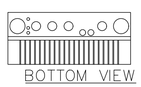




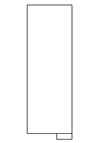
TOP VIEW



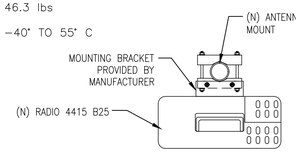
FRONT VIEW



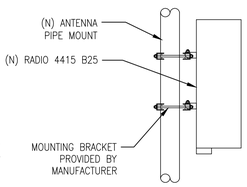
BOTTOM VIEW



SIDE VIEW



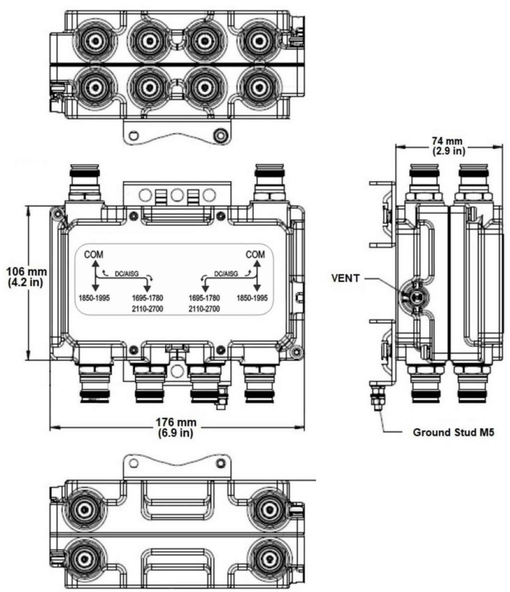
PLAN VIEW



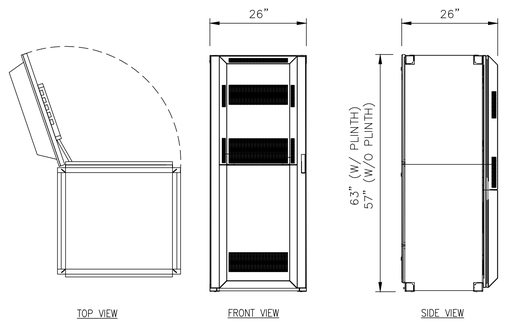
SIDE VIEW

3 (N) RADIO 4415 B25 SPEC
SCALE: NOT TO SCALE

MANUFACTURER: COMMSCOPE
MODEL: SDX1926Q-43
WEIGHT: 6.17 LBS
DIMENSIONS: 6.9" X 4.2" X 2.9"
FREQUENCY: REFER TO RF DATA SHEET



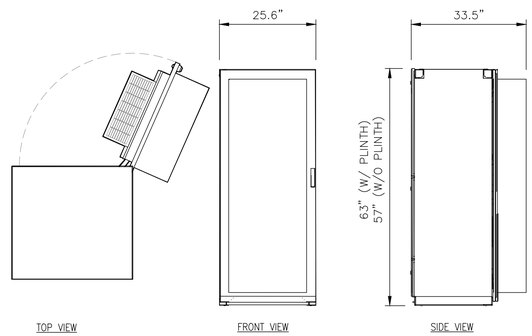
4 (N) DIPLEX SDX1926Q-43 SPEC
SCALE: NOT TO SCALE



TOP VIEW FRONT VIEW SIDE VIEW

ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

5 B160 CABINET DETAIL
SCALE: NOT TO SCALE



TOP VIEW FRONT VIEW SIDE VIEW

ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

6 6160 CABINET DETAIL
SCALE: NOT TO SCALE

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BU #: **873128**
TRUMBULL

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STATE OF CONNECTICUT
CHRISTOPHER T. WARREN
No. 27644
12/3/20
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-5

REVISION: 0

T-MOBILE PANEL SCHEDULE

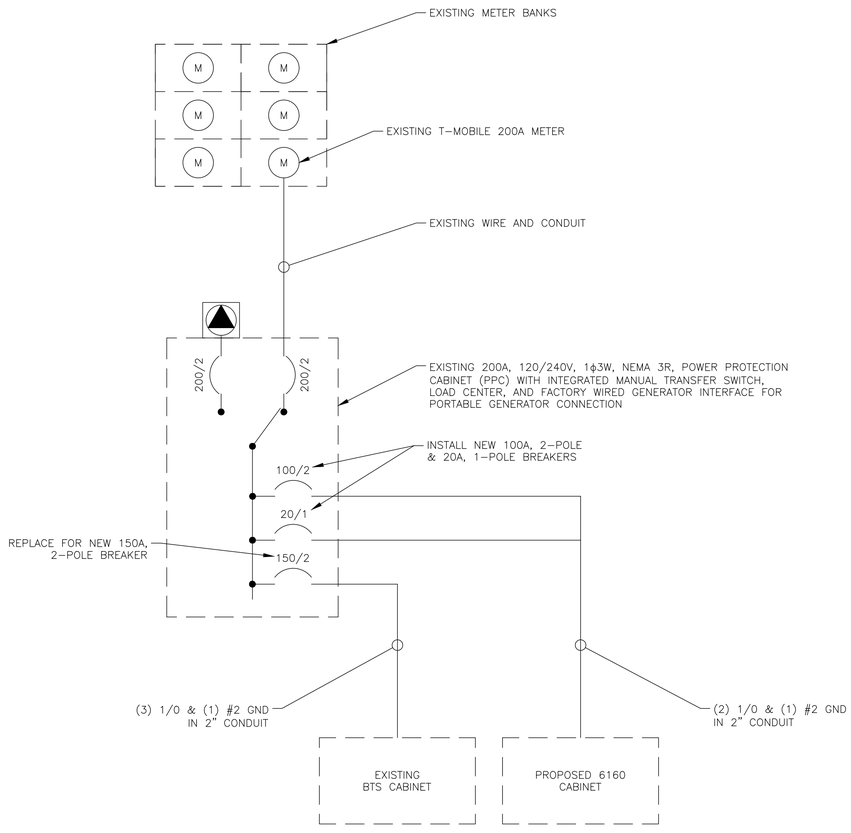
MAIN: 200A MAIN BREAKER			**VOTAGE/PHASE:** 120/240V, 1-PHASE, 3-WIRE						**SHORT CIRCUIT CURRENT RATING:** --		
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE:** NEMA 3R						**SURGE PROTECTION DEVICE:** YES		
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
TELCO GFI	180	NC	20	1	11680		**2**	**150**	**C**	**11500**	**RBS6102**
PDU	200	C	20	3		11700	**4**		**C**	**11500**	
UMTS*	0	NC	50	5	200		6	20	NC	200	LED FLOOD LIGHT
	0	NC		7		0	8				
6160**	**2000**	**C**	**150**	**9**	2000		10				
	2000	**C**		**11**		2000	12				
6160 GFCI**	**180**	**NC**	**20**	**13**	180		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					14060	13700					
25% OF CONTINUOUS LOAD (VA) =					3375	3425					
TOTAL LOAD (VA) =					17435	17125					
TOTAL LOAD (A) =					146	143					

C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD
* REMOVE WIRE TO EXISTING BREAKER AND MARK AS SPARE
**INDICATES NEW LOAD. ALL OTHER LOADS ARE EXISTING.
NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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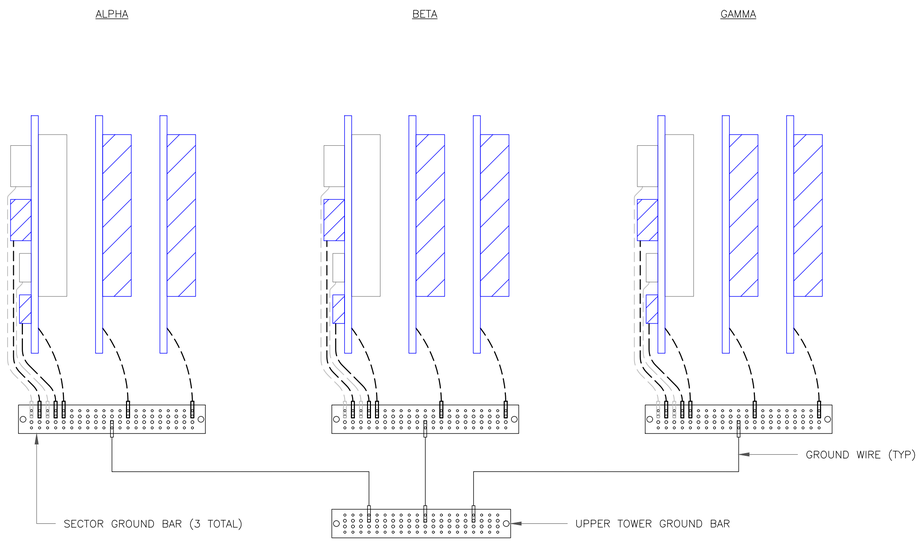
SHEET NUMBER: E-1
REVISION: 0



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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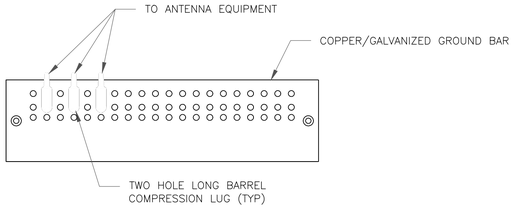
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
12/2/20
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: G-1

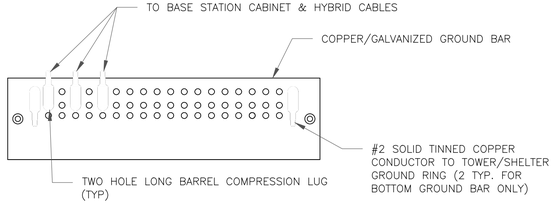
REVISION: 0



NOTES:

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

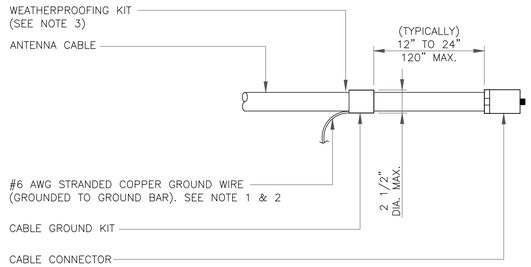
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

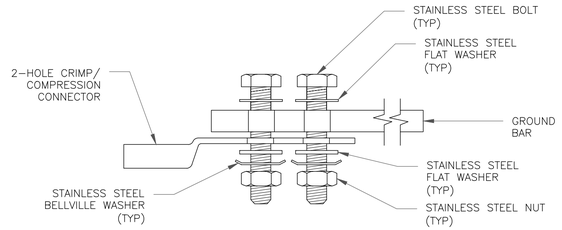
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



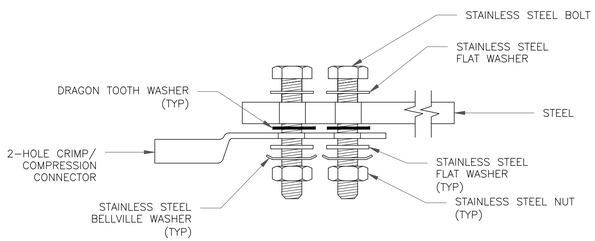
NOTES:

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.

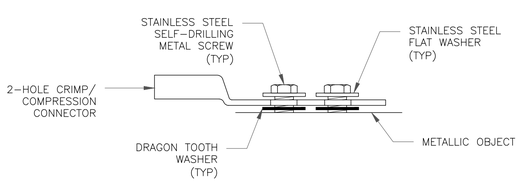
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

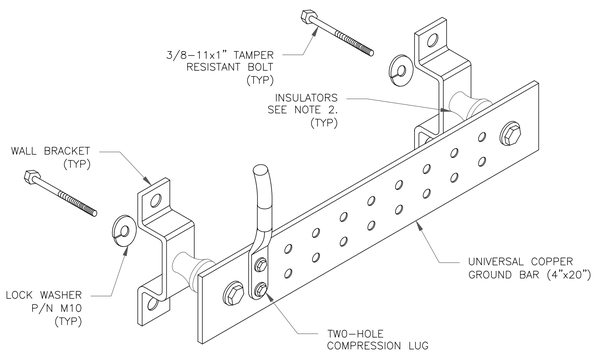


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
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 QAS-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.

5 GROUND BAR DETAIL
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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BU #: **873128**
TRUMBULL

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SHELTON, CT 06484

EXISTING 458'-0" GUYED TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/02/20	MAP	FINAL	SS

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23644
12/3/20
LICENSED PROFESSIONAL ENGINEER

SHEET NUMBER: G-2

REVISION: 0

Exhibit D

Structural Analysis Report

Date: **October 30, 2020**

Angela Harris
Crown Castle
8000 Avalon Blvd, Suite 700
Alpharetta, GA 30009

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11203B
	Carrier Site Name:	Trumbull/Rt 108
Crown Castle Designation:	**Crown Castle BU Number:**	873128
	Crown Castle Site Name:	Trumbull
	Crown Castle JDE Job Number:	620151
	Crown Castle Work Order Number:	1890097
	Crown Castle Order Number:	529714 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1890097
Site Data:	**800 Booth Hill Rd., Trumbull, Fairfield County, CT** **Latitude *41° 16' 44.26"*, Longitude *-73° 11' 6.4"*** **457 Foot - Guyed Tower**	

Dear Angela Harris,

Crown Castle 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 -95.3%**

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: Clinton Crouch / MAA

Respectfully submitted by:

Terry P Styran
2020.10.30
10:53:48 -04'00'

Terry P. Styran, P.E.
Senior Project Engineer

TABLE OF CONTENTS

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

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
247.0	247.0	3	commscope	SDX1926Q-43	6 3	7/8 1-5/8
		3	ericsson	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/2		
		3	ericsson	RADIO 4449 B12/B71		
		3	ericsson	RRUS 4415 B25_CCIV2		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 503-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
458.0	477.0	1	RFS/Celwave	SAA18-04A-J480-ET5R-21	1	4-1/16
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 mountss	Side Arm Mount [SO 308-1]		
420.0	420.0	1	eri	ERI 1183-3CP	3	3
393.0	393.0	1	shively labs	6014-2	1 1	1-5/8 4
388.0	388.0	1	shively labs	6828-2	1	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)
367.0	367.0	1	shively labs	6828-2	1	4
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	445-6	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		
	342.0	1	tower mounts	Side Arm Mount [SO 303-1]		
		1	tower mounts	Side Arm Mount [SO 601-1]		
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	1-1/4 1-5/8
	330.0	1	tower mounts	Side Arm Mount [SO 601-1]		
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	SRL310C-4HD	1 1	1-1/4 1/2
	322.0	1	Radiowaves	SPD3-5.8		
		1	tower mounts	Pipe Mount [PM 601-1]		
		1	tower mounts	Side Arm Mount [SO 308-1]		
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]		
230.0	232.0	3	alcatel lucent	B13 RRH 4X30	2 18	1-5/8 7/8
		3	alcatel lucent	B25 RRH4X30		
		3	alcatel lucent	B4 RRH2X60-4R		
		1	andrew_cfd	LNX-6514DS-VTM w/ Mount Pipe		
		2	andrew_cfd	LNX-8513DS-VTM w/ Mount Pipe		
		3	andrew_cfd	SBNHH-1D65B w/ Mount Pipe		
		3	commscope_cfd	HBXX-6516DS-VTM w/ Mount Pipe		
		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

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
200.0	200.0	1	gabriel electronics	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
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		
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 202-1]		
		1	tower mounts	Side Arm Mount [SO 601-1]		
117.0	117.0	1	Mark	P-9A48GN-U	1	7/8
109.0	113.0	1	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	Radiowaves	SPD2-5.8	1	7/8
		1	ligowave	PTP 900-13 w/ Mount Pipe	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	1418454	CCISites
POST-MODIFICATION INSPECTION	Pinnacle Towers	1956007	CCISites
POST-MODIFICATION INSPECTION	TEP	2438393	CCISites
POST-MODIFICATION INSPECTION	TEP	3417531	CCISites
POST-MODIFICATION INSPECTION	TEP	3442609	CCISites
TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	TEP	1520339	CCISites
TOWER MANUFACTURER DRAWINGS	Pinnacle Towers	1327906	CCISites

Document	Remarks	Reference	Source
TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP	2407618	CCISites
TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP	2633757	CCISites
TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP	2755396	CCISites
TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP	3006419	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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

3.2) Assumptions

1) 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 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	457 - 436	Leg	3	3	-31658	156820	20.2	Pass
T2	436 - 421	Leg	2 3/4	45	-51747	128255	40.3	Pass
T3	421 - 401	Leg	2 3/4	75	-100977	128255	78.7	Pass
T4	401 - 396	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	108	-116477	243950	47.7	Pass
T5	396 - 391	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	117	-133423	243950	54.7	Pass
T6	391 - 386	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	126	-152848	243950	62.7	Pass
T7	386 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	138	-175708	243950	72.0 81.5 (b)	Pass
T8	381 - 376	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	150	-184807	280611	65.9	Pass
T9	376 - 371	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	159	-175150	280611	62.4	Pass
T10	371 - 366	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	168	-166981	280611	59.5	Pass
T11	366 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	180	-158939	280611	56.6	Pass
T12	361 - 341	Leg	3	192	-151237	204054	74.1	Pass
T13	341 - 321	Leg	3	236	-126799	161863	78.3	Pass
T14	321 - 301	Leg	3	270	-111541	161863	68.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T15	301 - 281	Leg	3	302	-122142	161863	75.5	Pass
T16	281 - 276	Leg	3	335	-126473	161863	78.1	Pass
T17	276 - 271	Leg	3	344	-130897	161863	80.9	Pass
T18	271 - 266	Leg	3	353	-136680	161863	84.4	Pass
T19	266 - 261	Leg	3	365	-141531	161863	87.4	Pass
T20	261 - 256	Leg	3	377	-152160	161863	94.0	Pass
T21	256 - 251	Leg	3	386	-155580	204054	76.2	Pass
T22	251 - 246	Leg	3	398	-125271	161863	77.4	Pass
T23	246 - 241	Leg	3	410	-112498	204054	55.1	Pass
T24	241 - 221	Leg	3	427	-114691	161863	70.9	Pass
T25	221 - 201	Leg	3 1/4	458	-145947	198845	73.4	Pass
T26	201 - 181	Leg	3 1/4	491	-161663	198845	81.3	Pass
T27	181 - 161	Leg	3 1/4	524	-164506	198845	82.7	Pass
T28	161 - 141	Leg	3 1/2	558	-159679	239126	66.8	Pass
T29	141 - 121	Leg	3 1/2	592	-141996	239126	59.4	Pass
T30	121 - 101	Leg	3 1/2	624	-190855	239126	79.8	Pass
T31	101 - 81	Leg	3 1/2	657	-207811	239126	86.9	Pass
T32	81 - 61	Leg	3 1/2	690	-210196	239126	87.9	Pass
T33	61 - 41	Leg	3 1/2	723	-204413	239126	85.5	Pass
T34	41 - 20	Leg	3 1/2	757	-186804	233628	80.0	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-186273	209100	89.1	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-190658	245056	77.8	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	14	-3500	24604	14.2 35.0 (b)	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	51	-4917	19146	25.7 29.7 (b)	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	83	-7401	19146	38.7 48.9 (b)	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	110	-7888	19146	41.2 51.8 (b)	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	119	-8571	19146	44.8 57.3 (b)	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	131	-10970	19146	57.3 65.4 (b)	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	143	-10399	19146	54.3 77.8 (b)	Pass
T8	381 - 376	Diagonal	L2 1/2x2x3/16	157	-7194	19146	37.6 56.9 (b)	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	166	-8450	19146	44.1 49.5 (b)	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	178	-7352	19146	38.4 49.8 (b)	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	187	-7038	19146	36.8 46.5 (b)	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	229	-6541	19146	34.2 42.4 (b)	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	265	-4812	19146	25.1 32.2 (b)	Pass
T14	321 - 301	Diagonal	L2 1/2x2x3/16	283	-3049	19146	15.9 26.3 (b)	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	316	-4885	19146	25.5 42.1 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T16	281 - 276	Diagonal	L2 1/2x2x3/16	343	-5226	19146	27.3 35.4 (b)	Pass
T17	276 - 271	Diagonal	L2 1/2x2x3/16	349	-5857	19146	30.6 38.2 (b)	Pass
T18	271 - 266	Diagonal	L2 1/2x2x3/16	361	-5654	19146	29.5 45.1 (b)	Pass
T19	266 - 261	Diagonal	L2 1/2x2x3/16	373	-7120	19146	37.2 42.5 (b)	Pass
T20	261 - 256	Diagonal	L3x3x1/4	383	11990	43976	27.3 64.6 (b)	Pass
T21	256 - 251	Diagonal	L3x3x1/4	389	17691	43976	40.2 95.3 (b)	Pass
T22	251 - 246	Diagonal	L3x3x1/4	405	-12734	42355	30.1 68.6 (b)	Pass
T23	246 - 241	Diagonal	L3x3x1/4	416	11147	43976	25.3 60.1 (b)	Pass
T24	241 - 221	Diagonal	L3x3x1/4	453	-10172	42355	24.0 54.8 (b)	Pass
T25	221 - 201	Diagonal	L2 1/2x2x3/16	486	-6818	19146	35.6 58.8 (b)	Pass
T26	201 - 181	Diagonal	L2 1/2x2x3/16	519	-4066	19146	21.2 35.1 (b)	Pass
T27	181 - 161	Diagonal	L2 1/2x2x3/16	536	-2584	19146	13.5 22.3 (b)	Pass
T28	161 - 141	Diagonal	L3x3x1/4	568	-5719	42423	13.5 24.6 (b)	Pass
T29	141 - 121	Diagonal	L3x3x1/4	613	-8027	42423	18.9 34.7 (b)	Pass
T30	121 - 101	Diagonal	L2 1/2x2x3/16	654	-5730	19146	29.9 36.9 (b)	Pass
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3330	19146	17.4 28.7 (b)	Pass
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-2366	19146	12.4 20.4 (b)	Pass
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-4443	19146	23.2 38.3 (b)	Pass
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-6597	18871	35.0 56.9 (b)	Pass
T35	20 - 6.70833	Diagonal	L2x2x3/16	792	-2162	18534	11.7 18.6 (b)	Pass
T36	6.70833 - 0	Diagonal	L2x2x3/16	813	-4178	22580	18.5 36.0 (b)	Pass
T1	457 - 436	Horizontal	L2 1/2x2x1/4	35	-1158	16395	7.1 10.0 (b)	Pass
T2	436 - 421	Horizontal	L2 1/2x2x1/4	58	1463	32027	4.6 12.6 (b)	Pass
T12	361 - 341	Secondary Horizontal	L2x2x1/4	206	-2620	23775	11.0 25.8 (b)	Pass
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	395	25246	154196	16.4 68.0 (b)	Pass
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1949	154196	1.3 5.3 (b)	Pass
T1	457 - 436	Top Girt	C8x13.75	7	-1	68630	0.2	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	8	1124	32027	3.5 9.7 (b)	Pass
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	794	32027	2.5 6.8 (b)	Pass
T4	401 - 396	Top Girt	L2 1/2x2x1/4	79	-486	16654	2.9 5.1 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T6	391 - 386	Top Girt	L2 1/2x2x1/4	128	772	33056	2.3	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	857	33056	2.6	Pass
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	632	32027	2.0 5.5 (b)	Pass
T13	341 - 321	Top Girt	L2 1/2x2x1/4	196	423	32027	1.3 3.6 (b)	Pass
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	465	32027	1.5 4.0 (b)	Pass
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	450	24516	1.8 3.9 (b)	Pass
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	391	32027	1.2 3.4 (b)	Pass
T18	271 - 266	Top Girt	L2 1/2x2x1/4	357	-840	16395	5.1 7.2 (b)	Pass
T20	261 - 256	Top Girt	L2 1/2x2x3/16	369	-5827	12631	46.1 50.2 (b)	Pass
T22	251 - 246	Top Girt	L2 1/2x2x3/16	402	-6250	12631	49.5 53.9 (b)	Pass
T24	241 - 221	Top Girt	L2 1/2x2x3/16	414	-733	12631	5.8 6.3 (b)	Pass
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	679	24516	2.8 5.9 (b)	Pass
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	715	24516	2.9 6.2 (b)	Pass
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	950	73267	1.3 4.1 (b)	Pass
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	881	24516	3.6 7.6 (b)	Pass
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1573	24516	6.4 13.6 (b)	Pass
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7256	12763	56.9 62.6 (b)	Pass
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	958	24516	3.9 8.3 (b)	Pass
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	1045	24516	4.3 9.0 (b)	Pass
T33	61 - 41	Top Girt	L2 1/2x2x3/16	694	1070	24516	4.4 9.2 (b)	Pass
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	911	24516	3.7 7.9 (b)	Pass
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	17244	49003	35.2 58.0 (b)	Pass
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	11	4210	32027	13.1 36.3 (b)	Pass
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	82	-195	16310	1.2 2.6 (b)	Pass
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	409	32027	1.3 3.5 (b)	Pass
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	244	376	32027	1.2 3.2 (b)	Pass
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	548	32027	1.7 4.7 (b)	Pass
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	372	24516	1.5 3.2 (b)	Pass
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	634	24516	2.6 5.5 (b)	Pass
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	664	24516	2.7 5.7 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	736	24516	3.0 6.3 (b)	Pass
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	745	24516	3.0 6.4 (b)	Pass
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	882	24516	3.6 7.6 (b)	Pass
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	597	-8330	12763	65.3 81.9 (b)	Pass
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	630	595	23349	2.5 5.1 (b)	Pass
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	1027	24516	4.2 8.9 (b)	Pass
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	696	1037	24516	4.2 8.9 (b)	Pass
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	963	24516	3.9 8.3 (b)	Pass
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1398	24516	5.7 12.1 (b)	Pass
T1	457 - 436	Guy A@446.5	9/16	826	13285	22050	60.3	Pass
T8	381 - 376	Guy A@381	1 3/8	829	67287	146157	46.0	Pass
T21	256 - 251	Guy A@254.5	1 1/4	832	64998	120958	53.7	Pass
T29	141 - 121	Guy A@131	11/16	845	22115	31499	70.2	Pass
T1	457 - 436	Guy B@446.5	9/16	825	13352	22050	60.6	Pass
T8	381 - 376	Guy B@381	1 3/8	828	68884	146157	47.1	Pass
T21	256 - 251	Guy B@254.5	1 1/4	831	66945	120958	55.3	Pass
T29	141 - 121	Guy B@131	11/16	840	22378	31499	71.0	Pass
T1	457 - 436	Guy C@446.5	9/16	824	13357	22050	60.6	Pass
T8	381 - 376	Guy C@381	1 3/8	827	68025	146157	46.5	Pass
T21	256 - 251	Guy C@254.5	1 1/4	830	66169	120958	54.7	Pass
T29	141 - 121	Guy C@131	11/16	833	21995	31499	69.8	Pass
T8	381 - 376	Top Guy Pull-Off@381	2L3x2x1/4x3/8	141	21272	73267	29.0 91.7 (b)	Pass
T29	141 - 121	Torque Arm Top@131	L3x3x3/8 (TA - BU#873128)	847	20102	61040	32.9 56.6 (b)	Pass
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-24370	33027	73.8	Pass
							Summary	
						Leg (T20)	94.0	Pass
						Diagonal (T21)	95.3	Pass
						Horizontal (T2)	12.6	Pass
						Secondary Horizontal (T21)	68.0	Pass
						Top Girt (T30)	62.6	Pass
						Mid Girt (T29)	81.9	Pass
						Guy A (T29)	70.2	Pass
						Guy B (T29)	71.0	Pass
						Guy C (T29)	69.8	Pass
						Top Guy Pull-	91.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
						Off (T8)		
						Torque Arm Top (T29)	56.6	Pass
						Torque Arm Bottom (T29)	73.8	Pass
						Bolt Checks	95.3	Pass
						Rating =	95.3	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation (Structure)	0	37.2	Pass
1	Base Foundation (Soil Interaction)	0	52.2	Pass
1	Guy Anchor Foundation - A	0	23.5	Pass
1	Guy Anchor Foundation - B	0	37.0	Pass
1	Guy Anchor Foundation - C	0	73.5	Pass

Structure Rating (max from all components) =	95.3%

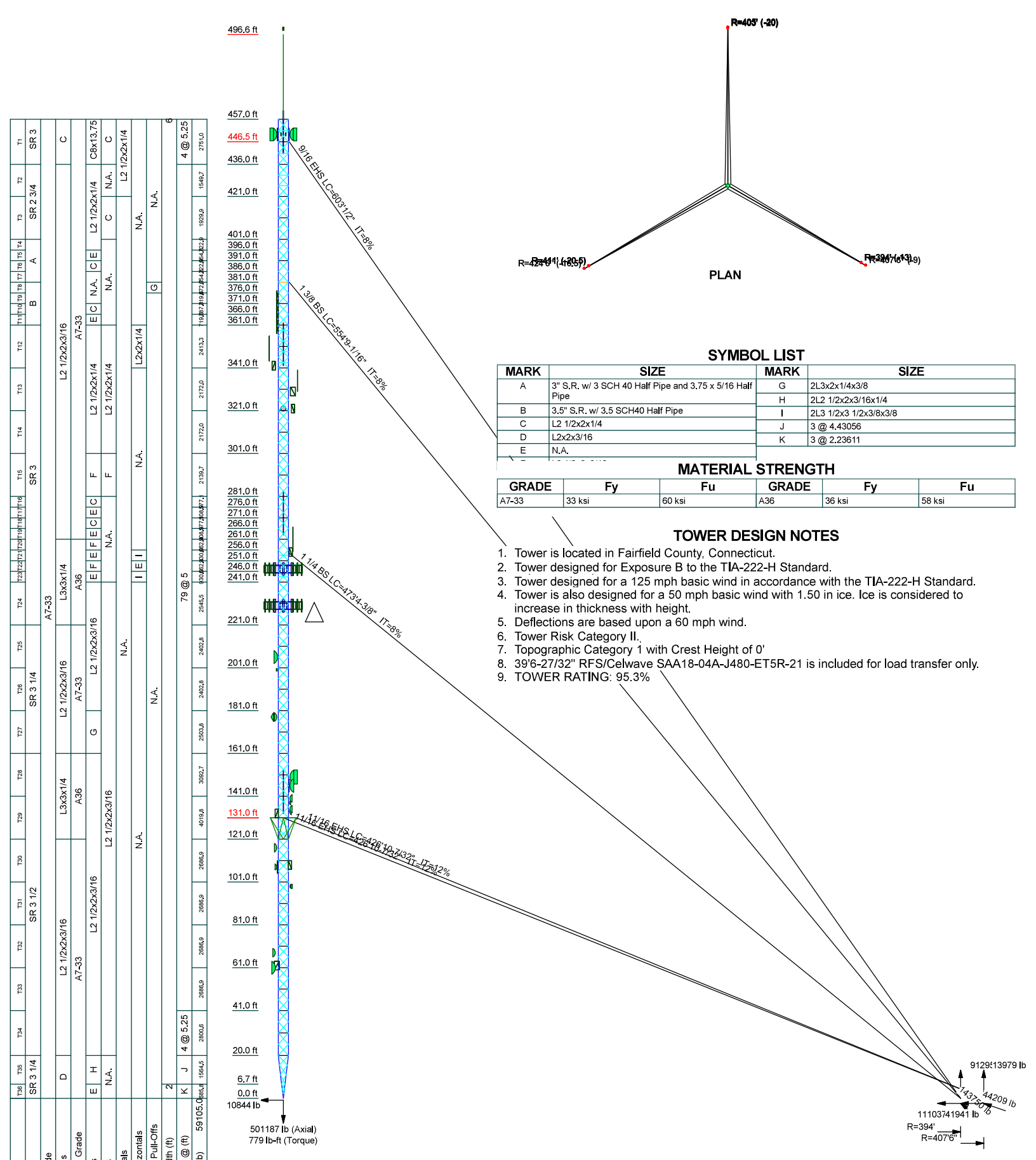
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity listed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



Section	T36	T35	T34	T33	T32	T31	T30	T29	T28	T27	T26	T25	T24	T23	T22	T21	T20	T19	T18	T17	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 3 1/4				SR 3 1/2						SR 3 1/4										SR 3						B			A			SR 2 3/4		SR 3
Leg Grade													A7-33																						
Diagonals		D			L2 1/2x2x3/16			L3x3x1/4		L2 1/2x2x3/16													L2 1/2x2x3/16													C
Diagonal Grade					A7-33			A36		A7-33																									
Top Girts		E	H				L2 1/2x2x3/16			G		L2 1/2x2x3/16		E	F	E	F	E	C	E	F		L2 1/2x2x1/4		E	C	N.A.	C	E			L2 1/2x2x1/4		C8x13.75
Mid Girts		N.A.					L2 1/2x2x3/16									N.A.							L2 1/2x2x1/4					N.A.				C	N.A.	C
Horizontals								N.A.						I	E	I								L2x2x1/4										L2 1/2x2x1/4
Sec. Horizontals								N.A.														N.A.											N.A.		
Top Guy Pull-Offs											N.A.										G													N.A.	
Face Width (ft)		2											79 @ 5																						4 @ 5.25
# Panels @ (ft)		K	J	4 @ 5.25																															
Weight (lb)	59105.0	1564.5	2800.8	2686.9	2686.9	2686.9	2686.9	4019.8	3092.7	2503.8	2402.8	2402.8	2545.5	3301.2	2402.8	2402.8	2402.8	2402.8	2402.8	2402.8	2139.7	2172.0	2172.0	2413.3	1182.7	1182.7	1182.7	1182.7	1182.7	1182.7	1182.7	1182.7	1939.9	1549.7	2751.0

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	G	2L3x2x1/4x3/8
		H	2L2 1/2x2x3/16x1/4
B	3.5" S.R. w/ 3.5 SCH40 Half Pipe	I	2L3 1/2x3 1/2x3/8x3/8
C	L2 1/2x2x1/4	J	3 @ 4.43056
D	L2x2x3/16	K	3 @ 2.23611
E	N.A.		

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: 95.3%

ALL REACTIONS ARE FACTORED

CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX:

Job: *BU# 873128*			
Project:			
Client: Crown Castle	Drawn by: ccrouch	App'd:	
Code: TIA-222-H	Date: 10/30/20	Scale: NTS	
Path: C:\Users\ccrouch\Desktop\Work Area\Production\873128\WO 1890097 - SA\Prod\873128_RPAxml		Dwg No. E-1	

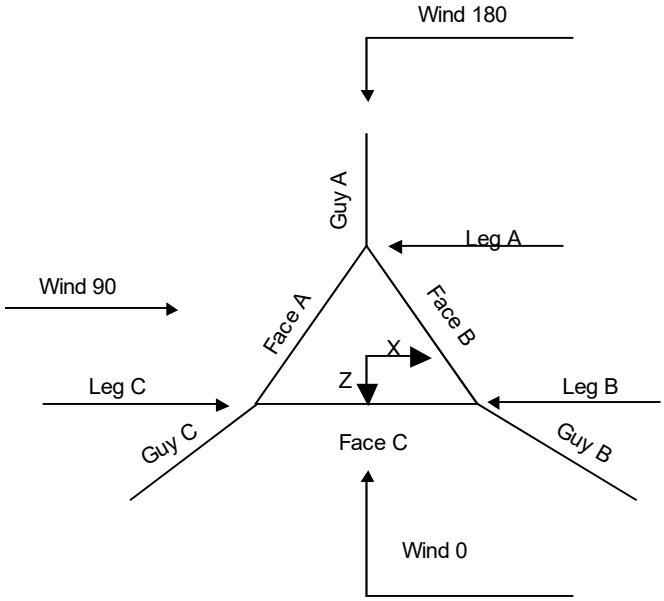
Tower Input Data

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:

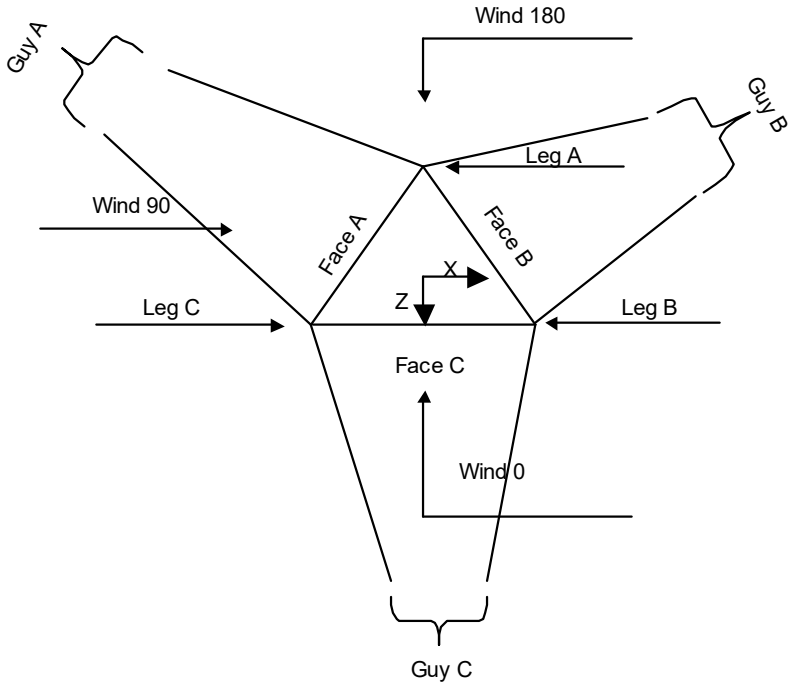
3) Tower is located in Fairfield County, Connecticut.
4) Tower base elevation above sea level: 520'.
5) Basic wind speed of 125 mph.
6) Risk Category II.
7) Exposure Category B.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: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

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Corner & Starmount Guyed Tower



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'
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'

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
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 ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset 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
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 ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade

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

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T34 41'-20'	Solid Round	3 1/2	(33 ksi) A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33 (33 ksi)
T35 20'-6'8-17/32''	Solid Round	3 1/4	A7-33 (33 ksi)	Single Angle	L2x2x3/16	A7-33 (33 ksi)
T36 6'8-17/32''-0'	Solid Round	3 1/4	A7-33 (33 ksi)	Single Angle	L2x2x3/16	A7-33 (33 ksi)

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		A7-33 (33 ksi)
T6 391'-386'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T7 386'-381'	Single Angle		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		A7-33 (33 ksi)
T10 371'-366'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T11 366'-361'	Single Angle		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 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T14 321'-301'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T15 301'-281'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T16 281'-276'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T18 271'-266'	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T19 266'-261'	Single Angle		A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T20 261'-256'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T22 251'-246'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T23 246'-241'	Single Angle		A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T24 241'-221'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T25 221'-201'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T26 201'-181'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T27 181'-161'	Double Angle	2L3x2x1/4x3/8	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T28 161'-141'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T29 141'-121'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T30 121'-101'	Single Angle	L2 1/2x2x3/16	A7-33	Single Angle	L2 1/2x2x3/16	A7-33

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T31 101'-81'	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33 (33 ksi)
T32 81'-61'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T33 61'-41'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T34 41'-20'	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)
T35 20'-6'8-17/32"	Double Angle	2L2 1/2x2x3/16x1/4	A7-33 (33 ksi)	Single Angle		A7-33 (33 ksi)

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	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T2 436'-421'	None	Single Angle		A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T3 421'-401'	1	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Solid Round		A36 (36 ksi)
T12 361'-341'	1	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)	Single Angle		A36 (36 ksi)
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^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 457'-436'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
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

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
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 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T32 81'-61'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T33 61'-41'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T34 41'-20'	0.00	0.38	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T35 20'-6'8-17/32"	0.00	0.25	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00
T36 6'8-17/32"-0'	0.00	0.25	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft																	
T1 457'-436'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 436'-421'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 421'-401'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 401'-396'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 396'-391'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 391'-386'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 386'-381'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 381'-376'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 376'-371'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 371'-366'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 366'-361'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T12 361'-341'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T13 341'-321'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T14 321'-301'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T15 301'-281'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T16 281'-276'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T17 276'-271'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T18 271'-266'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T19 266'-261'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T20 261'-256'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T21 256'-251'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T22 251'-246'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T23 246'-241'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T24 241'-221'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T25 221'-201'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T26 201'-181'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T27 181'-161'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T28 161'-141'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T29 141'-121'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T30 121'-101'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T31 101'-81'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T32 81'-61'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T33 61'-41'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T34 41'-20'	Yes	No	1	1	1	1	1	1	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	1	1	1	1	1	1
T36 6'8-17/32"-0'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*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 Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal 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
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

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
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 20'-6'8-17/32"	0.00	1	0.00	0.75	0.00	0.75	0.00	1	0.00	1	0.00	1	0.00	0.75
T36 6'8-17/32"-0'	0.00	1	0.00	0.75	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	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
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

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
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 20'-6'8-17/32''	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
T36 6'8-17/32''-0'	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A325X	0
T2 436'-421'	Flange	0.88 A307	8	0.50 A325X	2	0.50 A307	2	0.50 A307	2	0.50 A307	0	0.50 A307	2	0.00 A325X	0
T3 421'-401'	Flange	0.88 A307	8	0.50 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T4 401'-396'	Flange	0.88 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T5 396'-391'	Flange	0.88 A307	0	0.50 A325N	2	0.00 A307	0	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T6 391'-386'	Flange	0.88 A307	0	0.50 A325X	2	0.00 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.50 A325X	0
T7 386'-381'	Flange	0.88 A307	8	0.50 A325X	2	0.00 A307	0	0.50 A307	2	0.50 A307	0	0.00 A307	0	0.50 A325X	0
T8 381'-376'	Flange	0.88 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T9 376'-371'	Flange	0.88 A307	0	0.50 A325N	2	0.00 A307	0	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T10 371'-366'	Flange	0.88 A307	0	0.50 A325N	2	0.00 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T11 366'-361'	Flange	0.88 A307	8	0.50 A325N	2	0.00 A307	0	0.50 A307	2	0.50 A307	0	0.00 A307	0	0.00 A325X	0
T12 361'-341'	Flange	0.88 A307	8	0.50 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.50 A325X	1
T13 341'-321'	Flange	0.88 A307	8	0.50 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T14 321'-301'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T15 301'-281'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T16 281'-276'	Flange	0.88 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T17 276'-271'	Flange	0.88 A307	0	0.50 A325N	2	0.00 A307	0	0.00 A307	0	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T18 271'-266'	Flange	0.88 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T19 266'-261'	Flange	0.88 A307	8	0.50 A325N	2	0.00 A307	0	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0

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.
T20 261'-256'	Flange	0.63 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.50 A325N	0
T21 256'-251'	Flange	0.63 A307	0	0.50 A325N	2	0.00 A307	0	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.50 A325N	2
T22 251'-246'	Flange	0.63 A307	0	0.50 A325N	2	0.50 A307	2	0.00 A307	0	0.50 A307	0	0.00 A307	0	0.50 A325N	0
T23 246'-241'	Flange	0.63 A307	8	0.50 A325N	2	0.00 A307	0	0.50 A307	2	0.50 A307	0	0.00 A307	0	0.50 A325N	2
T24 241'-221'	Flange	0.63 A307	8	0.50 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T25 221'-201'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T26 201'-181'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T27 181'-161'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T28 161'-141'	Flange	0.63 A307	8	0.63 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T29 141'-121'	Flange	0.63 A307	8	0.63 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A325N	2	0.00 A307	0	0.00 A325X	0
T30 121'-101'	Flange	0.88 A307	8	0.50 A325N	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T31 101'-81'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T32 81'-61'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T33 61'-41'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.00 A325X	0
T34 41'-20'	Flange	0.88 A307	8	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.50 A307	2	0.00 A307	0	0.63 A325X	0
T35 20'-6'8-17/32"	Flange	0.88 A307	8	0.50 A307	2	0.50 A325N	2	0.50 A307	0	0.50 A307	0	0.00 A307	0	0.63 A325X	0
T36 6'8-17/32"-0'	Flange	0.88 A307	0	0.50 A307	2	0.50 A307	0	0.50 A307	0	0.50 A307	0	0.00 A307	0	0.00 A325X	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
446.5	EHS	A	9/16	2800	8%	21000	1	615'3-3/8"	405'	0.0000	-20'	100%
		B	9/16	2800	8%	21000	1	602'9-	394'	0.0000	-13'	100%
		C	9/16	2800	8%	21000	1	19/32" 619'7-3/32"	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-	405'	0.0000	-20'	100%
		B	1 1/4	15360	8%	24000	3	13/32"	394'	0.0000	-13'	100%
		C	1 1/4	15360	8%	24000	3	473'1-29/32" 491'5-9/32"	411'	0.0000	-20'6"	100%
131	EHS	A	11/16	6000	12%	20000	1	425'11-7/8"	403'	0.0000	-20'	100%
		B	11/16	6000	12%	20000	1	426'5-5/8"	407'6"	0.0000	-9'	100%
		C	11/16	6000	12%	20000	1	444'11-3/4"	424'6"	0.0000	-16'6"	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
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 ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
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	

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 A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
446.5	413	404	416		43'1/4" 11.3 sec/pulse	41'3-31/32" 11.1 sec/pulse	43'7-9/16" 11.4 sec/pulse	
381	2252	2201	2270		33'15/32" 9.9 sec/pulse	31'7-3/16" 9.7 sec/pulse	33'6-31/32" 10.0 sec/pulse	
254.5	1595	1552	1612		24'6-19/32" 8.6 sec/pulse	23'3-1/4" 8.3 sec/pulse	25'31/32" 8.6 sec/pulse	
131	416	416	434		14'7-3/32" 6.6 sec/pulse	14'7-11/16" 6.6 sec/pulse	15'11-5/32" 6.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
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 A325N	0	0.00	1	0.00 A325N	0	0.00	1	0.63 A325N	0	0.00	0.75
381	0.63 A325N	0	0.00	0.75	0.50 A307	2	0.00	0.75	0.63 A325N	0	0.00	0.75
254.5	0.63 A325N	0	0.00	0.75	0.00 A325N	0	0.00	1	0.63 A325N	0	0.00	0.75
131	0.75 A325N	2	0.00	0.75	0.00 A325N	0	0.00	1	0.63 A325N	0	0.00	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
446.5	A	213'3"	39	6	1.54
	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
	C	180'3"	37	6	1.51
254.5	A	117'3"	33	5	1.45
	B	120'9"	33	5	1.45
	C	117'	33	5	1.45
131	A	55'6"	26	4	1.34
	B	61'	27	4	1.36
	C	57'3"	27	4	1.35

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
446.5	A	49.2801	3113 2800	0	2446	-1925	-8474	0	0
	B	49.6383	3108 2800	1654	2452	955	4248	0	-7357
	C	48.8898	3113 2800	-1680	2435	970	4217	0	7304
			Sum:	-27	7333	0	-10	0	-53
381	A	44.9617	20151 18560	0	14799	-13676	-51266	0	0
	B	45.2530	20123 18560	11776	14834	6799	25693	0	-44501
	C	44.5725	20153 18560	-11924	14716	6884	25488	0	44147
			Sum:	-148	44349	7	-85	0	-354
254.5	A	34.3575	16260 15360	0	9717	-13037	-33661	0	0
	B	34.4094	16237 15360	11276	9701	6510	16803	0	-29104
	C	34.0110	16261 15360	-11337	9647	6545	16709	0	28941
			Sum:	-61	29065	19	-149	0	-163
131	A	20.7413	6147	-107	2358	-5676	-10212	43031	-17687

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
			6000						
	A	20.7413	6147	107	2358	-5676	-10212	-43031	17687
			6000						
	B	19.1464	6136	5014	2198	2772	19034	43424	0
			6000						
	B	19.1464	6136	4908	2198	2956	-9517	-43424	-16484
			6000						
	C	19.3407	6144	-4907	2228	2951	-9646	43378	16707
			6000						
	C	19.3407	6144	-5009	2228	2774	19291	-43378	0
			6000						
			Sum:	**6**	13568	**102**	**-1261**	0	**222**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
446.5	A	49.2801	10559	0	8596	-6132	-29779	0	0
			8412						
	B	49.6383	10436	5212	8527	3009	14768	0	-25580
			8316						
	C	48.8898	10624	-5388	8612	3111	14916	0	25835
			8475						
			Sum:	**-176**	25734	**-12**	**-94**	0	**255**
381	A	44.9617	35961	0	26720	-24067	-92561	0	0
			32236						
	B	45.2530	35758	20633	26665	11912	46185	0	-79995
			32092						
	C	44.5725	36061	-21043	26645	12149	46151	0	79935
			32331						
			Sum:	**-410**	80030	**-5**	**-225**	0	**-60**
254.5	A	34.3575	29743	0	18111	-23593	-62738	0	0
			27536						
	B	34.4094	29577	20321	18006	11732	31187	0	-54017
			27420						
	C	34.0110	29832	-20578	18037	11881	31241	0	54111
			27621						
			Sum:	**-257**	54154	**20**	**-310**	0	**94**
131	A	20.7413	12256	-209	5139	-11124	-22253	84339	-38544
			11607						
	A	20.7413	12256	209	5139	-11124	-22253	-84339	38544
			11607						
	B	19.1464	12349	9929	4876	5489	42231	85989	0
			11740						
	B	19.1464	12349	9718	4876	5854	-21116	-85989	-36574
			11740						
	C	19.3407	12505	-9825	4994	5909	-21627	86857	37459
			11869						
	C	19.3407	12505	-10029	4994	5554	43254	-86857	0
			11869						
			Sum:	**-207**	30020	**557**	**-1764**	0	**885**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
446.5	A	49.2801	3113 2800	0	2446	-1925	-8474	0	0
	B	49.6383	3108 2800	1654	2452	955	4248	0	-7357
	C	48.8898	3113 2800	-1680	2435	970	4217	0	7304
			Sum:	-27	7333	0	-10	0	-53
381	A	44.9617	20151 18560	0	14799	-13676	-51266	0	0
	B	45.2530	20123 18560	11776	14834	6799	25693	0	-44501
	C	44.5725	20153 18560	-11924	14716	6884	25488	0	44147
			Sum:	-148	44349	7	-85	0	-354
254.5	A	34.3575	16260 15360	0	9717	-13037	-33661	0	0
	B	34.4094	16237 15360	11276	9701	6510	16803	0	-29104
	C	34.0110	16261 15360	-11337	9647	6545	16709	0	28941
			Sum:	-61	29065	19	-149	0	-163
131	A	20.7413	6147 6000	-107	2358	-5676	-10212	43031	-17687
	A	20.7413	6147 6000	107	2358	-5676	-10212	-43031	17687
	B	19.1464	6136 6000	5014	2198	2772	19034	43424	0
	B	19.1464	6136 6000	4908	2198	2956	-9517	-43424	-16484
	C	19.3407	6144 6000	-4907	2228	2951	-9646	43378	16707
	C	19.3407	6144 6000	-5009	2228	2774	19291	-43378	0
			Sum:	6	13568	102	-1261	0	222

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
446.5	A	401.54	466.50	3176	38.15	3044	39.73	2919	41.36	2800	43.02	2682	44.83	2578	46.55	2480	48.29
	B	390.54	459.50	3179	36.60	3046	38.13	2920	39.71	2800	41.33	2680	43.09	2574	44.77	2475	46.46
	C	407.54	467.00	3177	38.67	3044	40.28	2919	41.93	2800	43.63	2682	45.46	2578	47.20	2480	48.96
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	7593	11.56	7039	12.46	6507	13.47	6000	14.59	5523	15.84	5080	17.21	4675	18.68
	B	403.24	140.00	7619	11.55	7056	12.47	6514	13.49	6000	14.64	5517	15.91	5070	17.30	4661	18.80
	C	420.24	147.50	7587	12.62	7033	13.61	6503	14.71	6000	15.93	5529	17.27	5093	18.74	4695	20.31

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

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
HB158-1-08U8-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	6	6	1.00 0.50	1.09		0
HB158-1-08U8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	247' - 10'	0.00	0.29	3	3	0.50	1.98		1
LDF4-50A(1/2")	A	No	No	Ar (CaAa)	450' - 10'	0.00	0.21	6	4	0.50 0.25	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 0.25	0.33		0
EW63(ELLIPTICAL)	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
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(ELLIPTICAL)	B	No	No	Ar (CaAa)	146' - 10'	0.00	-0.23	1	1	2.01	2.01		1
EW52(ELLIPTICAL)**	B	No	No	Ar (CaAa)	146' - 10'	2.00	-0.23	1	1	0.50	2.25		1

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
AVA5-50(7/8")	C	No	No	Ar (CaAa)	230' - 10'	-1.00	-0.4	6	6	0.50	1.10		0
HCC312-50J(3-1/2")	C	No	No	Ar (CaAa)	457' - 10'	-6.00	-0.05	1	1	3.53	3.53		2
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
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	C	No	No	Af (CaAa)	457' - 10'	-9.00	0	1	1	2.00	2.00		4
Safety Line 3/8 ***	C	No	No	Ar (CaAa)	457' - 10'	-9.00	0	1	1	0.38	0.38		0

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
**								
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	457'-436'	A	0.000	0.000	12.180	0.000	33
		B	0.000	0.000	1.250	0.000	5
		C	0.000	0.000	15.022	0.000	135
T2	436'-421'	A	0.000	0.000	12.300	0.000	31
		B	0.000	0.000	5.160	0.000	23
		C	0.000	0.000	10.757	0.000	96
T3	421'-401'	A	0.000	0.000	16.400	0.000	41
		B	0.000	0.000	24.037	0.000	132
		C	0.000	0.000	14.380	0.000	129
T4	401'-396'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	6.235	0.000	34
		C	0.000	0.000	3.602	0.000	32
T5	396'-391'	A	0.000	0.000	4.100	0.000	10

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	6.861	0.000	39
		C	0.000	0.000	4.001	0.000	34
T6	391'-386'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.801	0.000	47
		C	0.000	0.000	5.068	0.000	39
T7	386'-381'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.804	0.000	47
		C	0.000	0.000	5.775	0.000	42
T8	381'-376'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.807	0.000	47
		C	0.000	0.000	5.778	0.000	42
T9	376'-371'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.810	0.000	47
		C	0.000	0.000	5.781	0.000	42
T10	371'-366'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.813	0.000	47
		C	0.000	0.000	6.100	0.000	45
T11	366'-361'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	7.816	0.000	47
		C	0.000	0.000	7.368	0.000	55
T12	361'-341'	A	0.000	0.000	16.400	0.000	41
		B	0.000	0.000	31.358	0.000	188
		C	0.000	0.000	29.537	0.000	219
T13	341'-321'	A	0.000	0.000	16.400	0.000	41
		B	0.000	0.000	36.624	0.000	208
		C	0.000	0.000	29.644	0.000	219
T14	321'-301'	A	0.000	0.000	16.400	0.000	41
		B	0.000	0.000	48.968	0.000	257
		C	0.000	0.000	29.758	0.000	219
T15	301'-281'	A	0.000	0.000	16.400	0.000	41
		B	0.000	0.000	51.208	0.000	266
		C	0.000	0.000	29.882	0.000	219
T16	281'-276'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	13.010	0.000	67
		C	0.000	0.000	7.491	0.000	55
T17	276'-271'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	13.806	0.000	71
		C	0.000	0.000	7.500	0.000	55
T18	271'-266'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	13.811	0.000	71
		C	0.000	0.000	7.508	0.000	55
T19	266'-261'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	14.409	0.000	73
		C	0.000	0.000	7.517	0.000	55
T20	261'-256'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	14.810	0.000	75
		C	0.000	0.000	7.526	0.000	55
T21	256'-251'	A	0.000	0.000	4.100	0.000	10
		B	0.000	0.000	14.814	0.000	75
		C	0.000	0.000	8.155	0.000	57
T22	251'-246'	A	0.000	0.000	5.348	0.000	16
		B	0.000	0.000	14.819	0.000	75
		C	0.000	0.000	8.320	0.000	58
T23	246'-241'	A	0.000	0.000	10.340	0.000	40
		B	0.000	0.000	14.824	0.000	75
		C	0.000	0.000	8.330	0.000	58
T24	241'-221'	A	0.000	0.000	54.131	0.000	204
		B	0.000	0.000	59.347	0.000	299
		C	0.000	0.000	42.934	0.000	272
T25	221'-201'	A	0.000	0.000	70.285	0.000	260
		B	0.000	0.000	59.434	0.000	299
		C	0.000	0.000	54.739	0.000	321
T26	201'-181'	A	0.000	0.000	71.920	0.000	265
		B	0.000	0.000	59.532	0.000	299
		C	0.000	0.000	55.410	0.000	323
T27	181'-161'	A	0.000	0.000	71.920	0.000	265
		B	0.000	0.000	60.714	0.000	302
		C	0.000	0.000	55.656	0.000	323
T28	161'-141'	A	0.000	0.000	75.538	0.000	274

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	63.159	0.000	308
		C	0.000	0.000	55.800	0.000	323
T29	141'-121'	A	0.000	0.000	82.360	0.000	290
		B	0.000	0.000	71.760	0.000	330
		C	0.000	0.000	57.255	0.000	327
T30	121'-101'	A	0.000	0.000	82.960	0.000	291
		B	0.000	0.000	73.311	0.000	334
		C	0.000	0.000	61.681	0.000	339
T31	101'-81'	A	0.000	0.000	82.960	0.000	291
		B	0.000	0.000	73.977	0.000	335
		C	0.000	0.000	67.019	0.000	355
T32	81'-61'	A	0.000	0.000	82.960	0.000	291
		B	0.000	0.000	74.305	0.000	336
		C	0.000	0.000	67.843	0.000	357
T33	61'-41'	A	0.000	0.000	82.960	0.000	291
		B	0.000	0.000	74.320	0.000	336
		C	0.000	0.000	74.071	0.000	375
T34	41'-20'	A	0.000	0.000	87.108	0.000	306
		B	0.000	0.000	78.036	0.000	352
		C	0.000	0.000	77.774	0.000	394
T35	20'-6'8-17/32''	A	0.000	0.000	41.480	0.000	146
		B	0.000	0.000	37.160	0.000	168
		C	0.000	0.000	37.035	0.000	188
T36	6'8-17/32''-0'	A	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/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	457'-436'	A	1.654	0.000	0.000	46.292	0.000	471
		B		0.000	0.000	3.897	0.000	57
		C		0.000	0.000	43.782	0.000	720
T2	436'-421'	A	1.648	0.000	0.000	46.239	0.000	458
		B		0.000	0.000	15.046	0.000	227
		C		0.000	0.000	31.191	0.000	512
T3	421'-401'	A	1.641	0.000	0.000	61.481	0.000	607
		B		0.000	0.000	54.974	0.000	800
		C		0.000	0.000	41.479	0.000	679
T4	401'-396'	A	1.636	0.000	0.000	15.338	0.000	151
		B		0.000	0.000	14.185	0.000	206
		C		0.000	0.000	10.349	0.000	169
T5	396'-391'	A	1.634	0.000	0.000	15.326	0.000	151
		B		0.000	0.000	15.631	0.000	233
		C		0.000	0.000	11.391	0.000	185
T6	391'-386'	A	1.632	0.000	0.000	15.312	0.000	151
		B		0.000	0.000	17.801	0.000	274
		C		0.000	0.000	14.077	0.000	227
T7	386'-381'	A	1.629	0.000	0.000	15.299	0.000	150
		B		0.000	0.000	17.792	0.000	274
		C		0.000	0.000	15.748	0.000	254
T8	381'-376'	A	1.627	0.000	0.000	15.286	0.000	150
		B		0.000	0.000	17.782	0.000	273
		C		0.000	0.000	15.735	0.000	254
T9	376'-371'	A	1.625	0.000	0.000	15.272	0.000	150
		B		0.000	0.000	17.772	0.000	273
		C		0.000	0.000	15.722	0.000	253
T10	371'-366'	A	1.623	0.000	0.000	15.259	0.000	150
		B		0.000	0.000	17.761	0.000	273
		C		0.000	0.000	16.434	0.000	266
T11	366'-361'	A	1.621	0.000	0.000	15.245	0.000	149
		B		0.000	0.000	17.751	0.000	272
		C		0.000	0.000	19.317	0.000	321
T12	361'-341'	A	1.615	0.000	0.000	60.837	0.000	594

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	71.284	0.000	1090
		C		0.000	0.000	77.108	0.000	1277
T13	341'-321'	A	1.606	0.000	0.000	60.601	0.000	590
		B		0.000	0.000	90.127	0.000	1341
		C		0.000	0.000	76.844	0.000	1268
T14	321'-301'	A	1.596	0.000	0.000	60.351	0.000	585
		B		0.000	0.000	129.266	0.000	1885
		C		0.000	0.000	76.565	0.000	1259
T15	301'-281'	A	1.585	0.000	0.000	60.086	0.000	580
		B		0.000	0.000	134.461	0.000	1955
		C		0.000	0.000	76.269	0.000	1249
T16	281'-276'	A	1.578	0.000	0.000	14.978	0.000	144
		B		0.000	0.000	34.048	0.000	494
		C		0.000	0.000	19.019	0.000	311
T17	276'-271'	A	1.575	0.000	0.000	14.960	0.000	144
		B		0.000	0.000	36.066	0.000	524
		C		0.000	0.000	18.999	0.000	310
T18	271'-266'	A	1.572	0.000	0.000	14.942	0.000	143
		B		0.000	0.000	36.029	0.000	522
		C		0.000	0.000	18.978	0.000	309
T19	266'-261'	A	1.569	0.000	0.000	14.924	0.000	143
		B		0.000	0.000	37.528	0.000	544
		C		0.000	0.000	18.958	0.000	309
T20	261'-256'	A	1.566	0.000	0.000	14.905	0.000	143
		B		0.000	0.000	38.510	0.000	558
		C		0.000	0.000	18.937	0.000	308
T21	256'-251'	A	1.563	0.000	0.000	14.886	0.000	142
		B		0.000	0.000	38.469	0.000	557
		C		0.000	0.000	20.786	0.000	334
T22	251'-246'	A	1.560	0.000	0.000	18.183	0.000	182
		B		0.000	0.000	38.426	0.000	555
		C		0.000	0.000	21.229	0.000	339
T23	246'-241'	A	1.557	0.000	0.000	31.419	0.000	343
		B		0.000	0.000	38.383	0.000	554
		C		0.000	0.000	21.203	0.000	339
T24	241'-221'	A	1.549	0.000	0.000	156.919	0.000	1750
		B		0.000	0.000	153.084	0.000	2203
		C		0.000	0.000	109.320	0.000	1625
T25	221'-201'	A	1.535	0.000	0.000	195.602	0.000	2211
		B		0.000	0.000	152.321	0.000	2179
		C		0.000	0.000	138.961	0.000	1947
T26	201'-181'	A	1.520	0.000	0.000	197.539	0.000	2225
		B		0.000	0.000	151.490	0.000	2154
		C		0.000	0.000	144.522	0.000	1989
T27	181'-161'	A	1.503	0.000	0.000	196.550	0.000	2200
		B		0.000	0.000	156.799	0.000	2149
		C		0.000	0.000	144.028	0.000	1968
T28	161'-141'	A	1.484	0.000	0.000	205.568	0.000	2294
		B		0.000	0.000	161.925	0.000	2193
		C		0.000	0.000	143.112	0.000	1941
T29	141'-121'	A	1.463	0.000	0.000	233.568	0.000	2549
		B		0.000	0.000	182.609	0.000	2413
		C		0.000	0.000	146.901	0.000	1969
T30	121'-101'	A	1.439	0.000	0.000	235.626	0.000	2532
		B		0.000	0.000	185.466	0.000	2398
		C		0.000	0.000	162.098	0.000	2081
T31	101'-81'	A	1.411	0.000	0.000	233.443	0.000	2477
		B		0.000	0.000	189.053	0.000	2398
		C		0.000	0.000	174.347	0.000	2198
T32	81'-61'	A	1.377	0.000	0.000	230.779	0.000	2412
		B		0.000	0.000	187.155	0.000	2336
		C		0.000	0.000	172.529	0.000	2147
T33	61'-41'	A	1.332	0.000	0.000	227.330	0.000	2328
		B		0.000	0.000	183.902	0.000	2250
		C		0.000	0.000	172.492	0.000	2155
T34	41'-20'	A	1.265	0.000	0.000	233.306	0.000	2316
		B		0.000	0.000	188.009	0.000	2231
		C		0.000	0.000	176.618	0.000	2143
T35	20'-6'8-17/32"	A	1.165	0.000	0.000	107.247	0.000	1014

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	85.889	0.000	971
		C		0.000	0.000	80.887	0.000	938
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_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	457'-436'	-0.94	-0.10	-2.73	-0.45
T2	436'-421'	-0.94	-2.37	-2.65	-3.57
T3	421'-401'	1.25	-2.01	-0.84	-3.40
T4	401'-396'	1.25	-1.83	-0.64	-2.97
T5	396'-391'	1.74	-1.72	-0.55	-3.06
T6	391'-386'	2.25	-0.93	0.12	-1.78
T7	386'-381'	2.91	-0.59	0.72	-1.53
T8	381'-376'	2.57	-0.52	0.60	-1.28
T9	376'-371'	2.90	-0.58	0.71	-1.51
T10	371'-366'	2.15	-0.24	0.30	-1.10
T11	366'-361'	0.42	0.93	-1.00	-0.39
T12	361'-341'	0.39	0.87	-0.80	-0.31
T13	341'-321'	0.86	0.42	0.22	-0.89
T14	321'-301'	1.40	-1.27	1.20	-3.39
T15	301'-281'	1.59	-1.36	1.47	-3.50
T16	281'-276'	1.64	-1.25	1.53	-3.22
T17	276'-271'	2.29	-1.13	2.36	-3.24
T18	271'-266'	2.10	-1.04	2.13	-2.94
T19	266'-261'	2.54	-1.06	2.69	-3.13
T20	261'-256'	2.39	-0.91	2.53	-2.70
T21	256'-251'	2.22	-0.63	2.31	-2.24
T22	251'-246'	2.12	-1.30	2.21	-2.89
T23	246'-241'	1.59	-3.82	1.71	-5.29
T24	241'-221'	1.39	-3.64	1.39	-5.14
T25	221'-201'	1.08	-3.27	0.93	-4.61
T26	201'-181'	0.93	-3.08	0.54	-4.24
T27	181'-161'	0.95	-3.11	0.58	-4.31
T28	161'-141'	0.59	-3.08	0.26	-4.31
T29	141'-121'	0.06	-3.51	-0.72	-4.62
T30	121'-101'	-0.26	-3.43	-1.23	-4.36
T31	101'-81'	-0.56	-2.89	-1.20	-3.94
T32	81'-61'	-0.61	-2.80	-1.17	-3.94
T33	61'-41'	-0.62	-2.45	-1.15	-3.77
T34	41'-20'	-0.69	-2.70	-1.13	-3.80
T35	20'-6'8-17/32"	-0.51	-2.07	-0.75	-2.84
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_a No Ice	K_a Ice
T1	5	LDF4-50A(1/2")	436.00 - 450.00	0.6000	0.5177
T1	6	CAT6(1/4)	436.00 - 450.00	0.6000	0.5177
T1	7	760178129(1/4)	436.00 - 450.00	0.6000	0.5177

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	11	1" Rigid Conduit	436.00 - 457.00	0.6000	0.5177
T1	12	3/8" Cable (Lights)	436.00 - 457.00	0.6000	0.5177
T1	22	LDF5-50A(7/8")	436.00 - 441.00	0.6000	0.5177
T1	23	LDF12-50A(2-1/4")	436.00 - 439.00	0.6000	0.5177
T1	48	HCC312-50J(3-1/2")	436.00 - 457.00	1.0000	0.5177
T1	72	Thin Flat Climbing Ladder	436.00 - 457.00	0.6000	0.5177
T1	73	Safety Line 3/8	436.00 - 457.00	0.6000	0.5177
T2	5	LDF4-50A(1/2")	421.00 - 436.00	0.6000	0.5326
T2	6	CAT6(1/4)	421.00 - 436.00	0.6000	0.5326
T2	7	760178129(1/4)	421.00 - 436.00	0.6000	0.5326
T2	11	1" Rigid Conduit	421.00 - 436.00	0.6000	0.5326
T2	12	3/8" Cable (Lights)	421.00 - 436.00	0.6000	0.5326
T2	22	LDF5-50A(7/8")	421.00 - 436.00	0.6000	0.5326
T2	23	LDF12-50A(2-1/4")	421.00 - 436.00	0.6000	0.5326
T2	48	HCC312-50J(3-1/2")	421.00 - 436.00	1.0000	0.5326
T2	72	Thin Flat Climbing Ladder	421.00 - 436.00	0.6000	0.5326
T2	73	Safety Line 3/8	421.00 - 436.00	0.6000	0.5326
T3	5	LDF4-50A(1/2")	401.00 - 421.00	0.6000	0.5769
T3	6	CAT6(1/4)	401.00 - 421.00	0.6000	0.5769
T3	7	760178129(1/4)	401.00 - 421.00	0.6000	0.5769
T3	11	1" Rigid Conduit	401.00 - 421.00	0.6000	0.5769
T3	12	3/8" Cable (Lights)	401.00 - 421.00	0.6000	0.5769
T3	22	LDF5-50A(7/8")	401.00 - 421.00	0.6000	0.5769
T3	23	LDF12-50A(2-1/4")	401.00 - 421.00	0.6000	0.5769
T3	24	HJ8-50B(3")	401.00 - 420.00	0.6000	0.5769
T3	48	HCC312-50J(3-1/2")	401.00 - 421.00	1.0000	0.5769
T3	72	Thin Flat Climbing Ladder	401.00 - 421.00	0.6000	0.5769
T3	73	Safety Line 3/8	401.00 - 421.00	0.6000	0.5769
T4	5	LDF4-50A(1/2")	396.00 - 401.00	0.6000	0.5150
T4	6	CAT6(1/4)	396.00 - 401.00	0.6000	0.5150
T4	7	760178129(1/4)	396.00 - 401.00	0.6000	0.5150
T4	11	1" Rigid Conduit	396.00 - 401.00	0.6000	0.5150
T4	12	3/8" Cable (Lights)	396.00 - 401.00	0.6000	0.5150
T4	22	LDF5-50A(7/8")	396.00 - 401.00	0.6000	0.5150
T4	23	LDF12-50A(2-1/4")	396.00 -	0.6000	0.5150

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	24	HJ8-50B(3")	401.00 396.00 -	0.6000	0.5150
T4	48	HCC312-50J(3-1/2")	401.00 396.00 -	1.0000	0.5150
T4	72	Thin Flat Climbing Ladder	401.00 396.00 -	0.6000	0.5150
T4	73	Safety Line 3/8	401.00 396.00 -	0.6000	0.5150
T5	5	LDF4-50A(1/2")	401.00 391.00 -	0.6000	0.5996
T5	6	CAT6(1/4)	396.00 391.00 -	0.6000	0.5996
T5	7	760178129(1/4)	396.00 391.00 -	0.6000	0.5996
T5	11	1" Rigid Conduit	396.00 391.00 -	0.6000	0.5996
T5	12	3/8" Cable (Lights)	396.00 391.00 -	0.6000	0.5996
T5	22	LDF5-50A(7/8")	396.00 391.00 -	0.6000	0.5996
T5	23	LDF12-50A(2-1/4")	396.00 391.00 -	0.6000	0.5996
T5	24	HJ8-50B(3")	396.00 391.00 -	0.6000	0.5996
T5	29	HJ11-50(4")	396.00 391.00 -	1.0000	0.5996
T5	48	HCC312-50J(3-1/2")	393.00 391.00 -	1.0000	0.5996
T5	70	LDF7-50A(1-5/8")	396.00 391.00 -	0.6000	0.5996
T5	72	Thin Flat Climbing Ladder	393.00 391.00 -	0.6000	0.5996
T5	73	Safety Line 3/8	396.00 391.00 -	0.6000	0.5996
T6	5	LDF4-50A(1/2")	396.00 386.00 -	0.6000	0.5156
T6	6	CAT6(1/4)	391.00 386.00 -	0.6000	0.5156
T6	7	760178129(1/4)	391.00 386.00 -	0.6000	0.5156
T6	11	1" Rigid Conduit	391.00 386.00 -	0.6000	0.5156
T6	12	3/8" Cable (Lights)	391.00 386.00 -	0.6000	0.5156
T6	22	LDF5-50A(7/8")	391.00 386.00 -	0.6000	0.5156
T6	23	LDF12-50A(2-1/4")	391.00 386.00 -	0.6000	0.5156
T6	24	HJ8-50B(3")	391.00 386.00 -	0.6000	0.5156
T6	29	HJ11-50(4")	391.00 386.00 -	1.0000	0.5156
T6	48	HCC312-50J(3-1/2")	391.00 386.00 -	1.0000	0.5156
T6	50	LDF12-50(2-1/4")	391.00 386.00 -	0.6000	0.5156
T6	70	LDF7-50A(1-5/8")	388.00 386.00 -	0.6000	0.5156
T6	72	Thin Flat Climbing Ladder	391.00 386.00 -	0.6000	0.5156
T6	73	Safety Line 3/8	391.00 386.00 -	0.6000	0.5156
T7	5	LDF4-50A(1/2")	391.00 381.00 -	0.6000	0.6000
T7	6	CAT6(1/4)	386.00 381.00 -	0.6000	0.6000
T7	7	760178129(1/4)	386.00 381.00 -	0.6000	0.6000
			386.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	11	1" Rigid Conduit	381.00 - 386.00	0.6000	0.6000
T7	12	3/8" Cable (Lights)	381.00 - 386.00	0.6000	0.6000
T7	22	LDF5-50A(7/8")	381.00 - 386.00	0.6000	0.6000
T7	23	LDF12-50A(2-1/4")	381.00 - 386.00	0.6000	0.6000
T7	24	HJ8-50B(3")	381.00 - 386.00	0.6000	0.6000
T7	29	HJ11-50(4")	381.00 - 386.00	1.0000	0.6000
T7	48	HCC312-50J(3-1/2")	381.00 - 386.00	1.0000	0.6000
T7	50	LDF12-50(2-1/4")	381.00 - 386.00	0.6000	0.6000
T7	70	LDF7-50A(1-5/8")	381.00 - 386.00	0.6000	0.6000
T7	72	Thin Flat Climbing Ladder	381.00 - 386.00	0.6000	0.6000
T7	73	Safety Line 3/8	381.00 - 386.00	0.6000	0.6000
T8	5	LDF4-50A(1/2")	376.00 - 381.00	0.6000	0.5034
T8	6	CAT6(1/4)	376.00 - 381.00	0.6000	0.5034
T8	7	760178129(1/4)	376.00 - 381.00	0.6000	0.5034
T8	11	1" Rigid Conduit	376.00 - 381.00	0.6000	0.5034
T8	12	3/8" Cable (Lights)	376.00 - 381.00	0.6000	0.5034
T8	22	LDF5-50A(7/8")	376.00 - 381.00	0.6000	0.5034
T8	23	LDF12-50A(2-1/4")	376.00 - 381.00	0.6000	0.5034
T8	24	HJ8-50B(3")	376.00 - 381.00	0.6000	0.5034
T8	29	HJ11-50(4")	376.00 - 381.00	1.0000	0.5034
T8	48	HCC312-50J(3-1/2")	376.00 - 381.00	1.0000	0.5034
T8	50	LDF12-50(2-1/4")	376.00 - 381.00	0.6000	0.5034
T8	70	LDF7-50A(1-5/8")	376.00 - 381.00	0.6000	0.5034
T8	72	Thin Flat Climbing Ladder	376.00 - 381.00	0.6000	0.5034
T8	73	Safety Line 3/8	376.00 - 381.00	0.6000	0.5034
T9	5	LDF4-50A(1/2")	371.00 - 376.00	0.6000	0.5948
T9	6	CAT6(1/4)	371.00 - 376.00	0.6000	0.5948
T9	7	760178129(1/4)	371.00 - 376.00	0.6000	0.5948
T9	11	1" Rigid Conduit	371.00 - 376.00	0.6000	0.5948
T9	12	3/8" Cable (Lights)	371.00 - 376.00	0.6000	0.5948
T9	22	LDF5-50A(7/8")	371.00 - 376.00	0.6000	0.5948
T9	23	LDF12-50A(2-1/4")	371.00 - 376.00	0.6000	0.5948
T9	24	HJ8-50B(3")	371.00 - 376.00	0.6000	0.5948
T9	29	HJ11-50(4")	371.00 - 376.00	1.0000	0.5948
T9	48	HCC312-50J(3-1/2")	371.00 -	1.0000	0.5948

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	50	LDF12-50(2-1/4")	376.00 371.00 - 376.00	0.6000	0.5948
T9	70	LDF7-50A(1-5/8")	371.00 - 376.00	0.6000	0.5948
T9	72	Thin Flat Climbing Ladder	371.00 - 376.00	0.6000	0.5948
T9	73	Safety Line 3/8	371.00 - 376.00	0.6000	0.5948
T10	5	LDF4-50A(1/2")	366.00 - 371.00	0.6000	0.5114
T10	6	CAT6(1/4)	366.00 - 371.00	0.6000	0.5114
T10	7	760178129(1/4)	366.00 - 371.00	0.6000	0.5114
T10	11	1" Rigid Conduit	366.00 - 371.00	0.6000	0.5114
T10	12	3/8" Cable (Lights)	366.00 - 371.00	0.6000	0.5114
T10	22	LDF5-50A(7/8")	366.00 - 371.00	0.6000	0.5114
T10	23	LDF12-50A(2-1/4")	366.00 - 371.00	0.6000	0.5114
T10	24	HJ8-50B(3")	366.00 - 371.00	0.6000	0.5114
T10	29	HJ11-50(4")	366.00 - 371.00	1.0000	0.5114
T10	48	HCC312-50J(3-1/2")	366.00 - 371.00	1.0000	0.5114
T10	50	LDF12-50(2-1/4")	366.00 - 371.00	0.6000	0.5114
T10	54	HJ11-50(4)	366.00 - 367.00	1.0000	0.5114
T10	70	LDF7-50A(1-5/8")	366.00 - 371.00	0.6000	0.5114
T10	72	Thin Flat Climbing Ladder	366.00 - 371.00	0.6000	0.5114
T10	73	Safety Line 3/8	366.00 - 371.00	0.6000	0.5114
T11	5	LDF4-50A(1/2")	361.00 - 366.00	0.6000	0.5953
T11	6	CAT6(1/4)	361.00 - 366.00	0.6000	0.5953
T11	7	760178129(1/4)	361.00 - 366.00	0.6000	0.5953
T11	11	1" Rigid Conduit	361.00 - 366.00	0.6000	0.5953
T11	12	3/8" Cable (Lights)	361.00 - 366.00	0.6000	0.5953
T11	22	LDF5-50A(7/8")	361.00 - 366.00	0.6000	0.5953
T11	23	LDF12-50A(2-1/4")	361.00 - 366.00	0.6000	0.5953
T11	24	HJ8-50B(3")	361.00 - 366.00	0.6000	0.5953
T11	29	HJ11-50(4")	361.00 - 366.00	1.0000	0.5953
T11	48	HCC312-50J(3-1/2")	361.00 - 366.00	1.0000	0.5953
T11	50	LDF12-50(2-1/4")	361.00 - 366.00	0.6000	0.5953
T11	54	HJ11-50(4)	361.00 - 366.00	1.0000	0.5953
T11	70	LDF7-50A(1-5/8")	361.00 - 366.00	0.6000	0.5953
T11	72	Thin Flat Climbing Ladder	361.00 - 366.00	0.6000	0.5953
T11	73	Safety Line 3/8	361.00 - 366.00	0.6000	0.5953

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	5	LDF4-50A(1/2")	341.00 - 361.00	0.6000	0.4977
T12	6	CAT6(1/4)	341.00 - 361.00	0.6000	0.4977
T12	7	760178129(1/4)	341.00 - 361.00	0.6000	0.4977
T12	11	1" Rigid Conduit	341.00 - 361.00	0.6000	0.4977
T12	12	3/8" Cable (Lights)	341.00 - 361.00	0.6000	0.4977
T12	22	LDF5-50A(7/8")	341.00 - 361.00	0.6000	0.4977
T12	23	LDF12-50A(2-1/4")	341.00 - 361.00	0.6000	0.4977
T12	24	HJ8-50B(3")	341.00 - 361.00	0.6000	0.4977
T12	29	HJ11-50(4")	341.00 - 361.00	1.0000	0.4977
T12	41	LDF4-50A(1/2")	341.00 - 342.00	0.6000	0.4977
T12	48	HCC312-50J(3-1/2")	341.00 - 361.00	1.0000	0.4977
T12	50	LDF12-50(2-1/4")	341.00 - 361.00	0.6000	0.4977
T12	54	HJ11-50(4)	341.00 - 361.00	1.0000	0.4977
T12	70	LDF7-50A(1-5/8")	341.00 - 361.00	0.6000	0.4977
T12	72	Thin Flat Climbing Ladder	341.00 - 361.00	0.6000	0.4977
T12	73	Safety Line 3/8	341.00 - 361.00	0.6000	0.4977
T13	5	LDF4-50A(1/2")	321.00 - 341.00	0.6000	0.5767
T13	6	CAT6(1/4)	321.00 - 341.00	0.6000	0.5767
T13	7	760178129(1/4)	321.00 - 341.00	0.6000	0.5767
T13	11	1" Rigid Conduit	321.00 - 341.00	0.6000	0.5767
T13	12	3/8" Cable (Lights)	321.00 - 341.00	0.6000	0.5767
T13	22	LDF5-50A(7/8")	321.00 - 341.00	0.6000	0.5767
T13	23	LDF12-50A(2-1/4")	321.00 - 341.00	0.6000	0.5767
T13	24	HJ8-50B(3")	321.00 - 341.00	0.6000	0.5767
T13	26	LDF6-50A(1 1/4")	321.00 - 330.00	0.6000	0.5767
T13	29	HJ11-50(4")	321.00 - 341.00	1.0000	0.5767
T13	35	LDF6-50A(1-1/4")	321.00 - 322.00	0.6000	0.5767
T13	36	LDF6-50A(1-1/4")	321.00 - 325.00	0.6000	0.5767
T13	37	LDF7-50A(1-5/8")	321.00 - 330.00	0.6000	0.5767
T13	40	LDF4P-50A(1/2")	321.00 - 322.00	0.6000	0.5767
T13	41	LDF4-50A(1/2")	321.00 - 341.00	0.6000	0.5767
T13	48	HCC312-50J(3-1/2")	321.00 - 341.00	1.0000	0.5767
T13	50	LDF12-50(2-1/4")	321.00 - 341.00	0.6000	0.5767
T13	54	HJ11-50(4)	321.00 - 341.00	1.0000	0.5767
T13	70	LDF7-50A(1-5/8")	321.00 -	0.6000	0.5767

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	72	Thin Flat Climbing Ladder	341.00 321.00 -	0.6000	0.5767
T13	73	Safety Line 3/8	341.00 321.00 -	0.6000	0.5767
T14	5	LDF4-50A(1/2")	341.00 301.00 -	0.6000	0.5780
T14	6	CAT6(1/4)	321.00 301.00 -	0.6000	0.5780
T14	7	760178129(1/4)	321.00 301.00 -	0.6000	0.5780
T14	11	1" Rigid Conduit	321.00 301.00 -	0.6000	0.5780
T14	12	3/8" Cable (Lights)	321.00 301.00 -	0.6000	0.5780
T14	22	LDF5-50A(7/8")	321.00 301.00 -	0.6000	0.5780
T14	23	LDF12-50A(2-1/4")	321.00 301.00 -	0.6000	0.5780
T14	24	HJ8-50B(3")	321.00 301.00 -	0.6000	0.5780
T14	26	LDF6-50A(1 1/4")	321.00 301.00 -	0.6000	0.5780
T14	29	HJ11-50(4")	321.00 301.00 -	1.0000	0.5780
T14	31	LDF7-50A(1-5/8")	321.00 301.00 -	0.6000	0.5780
T14	35	LDF6-50A(1-1/4")	310.00 301.00 -	0.6000	0.5780
T14	36	LDF6-50A(1-1/4")	321.00 301.00 -	0.6000	0.5780
T14	37	LDF7-50A(1-5/8")	321.00 301.00 -	0.6000	0.5780
T14	40	LDF4P-50A(1/2")	321.00 301.00 -	0.6000	0.5780
T14	41	LDF4-50A(1/2")	321.00 301.00 -	0.6000	0.5780
T14	48	HCC312-50J(3-1/2")	321.00 301.00 -	1.0000	0.5780
T14	50	LDF12-50(2-1/4")	321.00 301.00 -	0.6000	0.5780
T14	54	HJ11-50(4)	321.00 301.00 -	1.0000	0.5780
T14	70	LDF7-50A(1-5/8")	321.00 301.00 -	0.6000	0.5780
T14	72	Thin Flat Climbing Ladder	321.00 301.00 -	0.6000	0.5780
T14	73	Safety Line 3/8	321.00 301.00 -	0.6000	0.5780
T15	5	LDF4-50A(1/2")	321.00 281.00 -	0.6000	0.5794
T15	6	CAT6(1/4)	301.00 281.00 -	0.6000	0.5794
T15	7	760178129(1/4)	301.00 281.00 -	0.6000	0.5794
T15	11	1" Rigid Conduit	301.00 281.00 -	0.6000	0.5794
T15	12	3/8" Cable (Lights)	301.00 281.00 -	0.6000	0.5794
T15	22	LDF5-50A(7/8")	301.00 281.00 -	0.6000	0.5794
T15	23	LDF12-50A(2-1/4")	301.00 281.00 -	0.6000	0.5794
T15	24	HJ8-50B(3")	301.00 281.00 -	0.6000	0.5794
T15	26	LDF6-50A(1 1/4")	301.00 281.00 -	0.6000	0.5794
T15	29	HJ11-50(4")	301.00 281.00 -	1.0000	0.5794
			301.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	31	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	40	LDF4P-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	41	LDF4-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	48	HCC312-50J(3-1/2")	281.00 - 301.00	1.0000	0.5794
T15	50	LDF12-50(2-1/4")	281.00 - 301.00	0.6000	0.5794
T15	54	HJ11-50(4)	281.00 - 301.00	1.0000	0.5794
T15	70	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	72	Thin Flat Climbing Ladder	281.00 - 301.00	0.6000	0.5794
T15	73	Safety Line 3/8	281.00 - 301.00	0.6000	0.5794
T16	5	LDF4-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	6	CAT6(1/4)	276.00 - 281.00	0.6000	0.5381
T16	7	760178129(1/4)	276.00 - 281.00	0.6000	0.5381
T16	11	1" Rigid Conduit	276.00 - 281.00	0.6000	0.5381
T16	12	3/8" Cable (Lights)	276.00 - 281.00	0.6000	0.5381
T16	22	LDF5-50A(7/8")	276.00 - 281.00	0.6000	0.5381
T16	23	LDF12-50A(2-1/4")	276.00 - 281.00	0.6000	0.5381
T16	24	HJ8-50B(3")	276.00 - 281.00	0.6000	0.5381
T16	26	LDF6-50A(1 1/4")	276.00 - 281.00	0.6000	0.5381
T16	29	HJ11-50(4")	276.00 - 281.00	1.0000	0.5381
T16	31	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	32	LDF7-50A(1-5/8")	276.00 - 277.00	0.6000	0.5381
T16	35	LDF6-50A(1-1/4")	276.00 - 281.00	0.6000	0.5381
T16	36	LDF6-50A(1-1/4")	276.00 - 281.00	0.6000	0.5381
T16	37	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	40	LDF4P-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	41	LDF4-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	48	HCC312-50J(3-1/2")	276.00 - 281.00	1.0000	0.5381
T16	50	LDF12-50(2-1/4")	276.00 - 281.00	0.6000	0.5381
T16	54	HJ11-50(4)	276.00 - 281.00	1.0000	0.5381
T16	70	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	72	Thin Flat Climbing Ladder	276.00 - 281.00	0.6000	0.5381
T16	73	Safety Line 3/8	276.00 -	0.6000	0.5381

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			281.00		
T17	5	LDF4-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	6	CAT6(1/4)	271.00 - 276.00	0.6000	0.6000
T17	7	760178129(1/4)	271.00 - 276.00	0.6000	0.6000
T17	11	1" Rigid Conduit	271.00 - 276.00	0.6000	0.6000
T17	12	3/8" Cable (Lights)	271.00 - 276.00	0.6000	0.6000
T17	22	LDF5-50A(7/8")	271.00 - 276.00	0.6000	0.6000
T17	23	LDF12-50A(2-1/4")	271.00 - 276.00	0.6000	0.6000
T17	24	HJ8-50B(3")	271.00 - 276.00	0.6000	0.6000
T17	26	LDF6-50A(1 1/4")	271.00 - 276.00	0.6000	0.6000
T17	29	HJ11-50(4")	271.00 - 276.00	1.0000	0.6000
T17	31	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	32	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	40	LDF4P-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	41	LDF4-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	48	HCC312-50J(3-1/2")	271.00 - 276.00	1.0000	0.6000
T17	50	LDF12-50(2-1/4")	271.00 - 276.00	0.6000	0.6000
T17	54	HJ11-50(4)	271.00 - 276.00	1.0000	0.6000
T17	70	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	72	Thin Flat Climbing Ladder	271.00 - 276.00	0.6000	0.6000
T17	73	Safety Line 3/8	271.00 - 276.00	0.6000	0.6000
T18	5	LDF4-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	6	CAT6(1/4)	266.00 - 271.00	0.6000	0.5390
T18	7	760178129(1/4)	266.00 - 271.00	0.6000	0.5390
T18	11	1" Rigid Conduit	266.00 - 271.00	0.6000	0.5390
T18	12	3/8" Cable (Lights)	266.00 - 271.00	0.6000	0.5390
T18	22	LDF5-50A(7/8")	266.00 - 271.00	0.6000	0.5390
T18	23	LDF12-50A(2-1/4")	266.00 - 271.00	0.6000	0.5390
T18	24	HJ8-50B(3")	266.00 - 271.00	0.6000	0.5390
T18	26	LDF6-50A(1 1/4")	266.00 - 271.00	0.6000	0.5390
T18	29	HJ11-50(4")	266.00 - 271.00	1.0000	0.5390
T18	31	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T18	32	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	40	LDF4P-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	41	LDF4-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	48	HCC312-50J(3-1/2")	266.00 - 271.00	1.0000	0.5390
T18	50	LDF12-50(2-1/4")	266.00 - 271.00	0.6000	0.5390
T18	54	HJ11-50(4)	266.00 - 271.00	1.0000	0.5390
T18	70	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	72	Thin Flat Climbing Ladder	266.00 - 271.00	0.6000	0.5390
T18	73	Safety Line 3/8	266.00 - 271.00	0.6000	0.5390
T19	5	LDF4-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	6	CAT6(1/4)	261.00 - 266.00	0.6000	0.6000
T19	7	760178129(1/4)	261.00 - 266.00	0.6000	0.6000
T19	11	1" Rigid Conduit	261.00 - 266.00	0.6000	0.6000
T19	12	3/8" Cable (Lights)	261.00 - 266.00	0.6000	0.6000
T19	22	LDF5-50A(7/8")	261.00 - 266.00	0.6000	0.6000
T19	23	LDF12-50A(2-1/4")	261.00 - 266.00	0.6000	0.6000
T19	24	HJ8-50B(3")	261.00 - 266.00	0.6000	0.6000
T19	26	LDF6-50A(1 1/4")	261.00 - 266.00	0.6000	0.6000
T19	29	HJ11-50(4")	261.00 - 266.00	1.0000	0.6000
T19	30	LDF7-50A(1-5/8")	261.00 - 264.00	0.6000	0.6000
T19	31	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	32	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	40	LDF4P-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	41	LDF4-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	48	HCC312-50J(3-1/2")	261.00 - 266.00	1.0000	0.6000
T19	50	LDF12-50(2-1/4")	261.00 - 266.00	0.6000	0.6000
T19	54	HJ11-50(4)	261.00 - 266.00	1.0000	0.6000
T19	70	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	72	Thin Flat Climbing Ladder	261.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T19	73	Safety Line 3/8	266.00 261.00 - 266.00	0.6000	0.6000
T20	5	LDF4-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	6	CAT6(1/4)	256.00 - 261.00	0.6000	0.5201
T20	7	760178129(1/4)	256.00 - 261.00	0.6000	0.5201
T20	11	1" Rigid Conduit	256.00 - 261.00	0.6000	0.5201
T20	12	3/8" Cable (Lights)	256.00 - 261.00	0.6000	0.5201
T20	22	LDF5-50A(7/8")	256.00 - 261.00	0.6000	0.5201
T20	23	LDF12-50A(2-1/4")	256.00 - 261.00	0.6000	0.5201
T20	24	HJ8-50B(3")	256.00 - 261.00	0.6000	0.5201
T20	26	LDF6-50A(1 1/4")	256.00 - 261.00	0.6000	0.5201
T20	29	HJ11-50(4")	256.00 - 261.00	1.0000	0.5201
T20	30	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	31	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	32	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	40	LDF4P-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	41	LDF4-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	48	HCC312-50J(3-1/2")	256.00 - 261.00	1.0000	0.5201
T20	50	LDF12-50(2-1/4")	256.00 - 261.00	0.6000	0.5201
T20	54	HJ11-50(4)	256.00 - 261.00	1.0000	0.5201
T20	70	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	72	Thin Flat Climbing Ladder	256.00 - 261.00	0.6000	0.5201
T20	73	Safety Line 3/8	256.00 - 261.00	0.6000	0.5201
T21	5	LDF4-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	6	CAT6(1/4)	251.00 - 256.00	0.6000	0.5054
T21	7	760178129(1/4)	251.00 - 256.00	0.6000	0.5054
T21	11	1" Rigid Conduit	251.00 - 256.00	0.6000	0.5054
T21	12	3/8" Cable (Lights)	251.00 - 256.00	0.6000	0.5054
T21	22	LDF5-50A(7/8")	251.00 - 256.00	0.6000	0.5054
T21	23	LDF12-50A(2-1/4")	251.00 - 256.00	0.6000	0.5054
T21	24	HJ8-50B(3")	251.00 - 256.00	0.6000	0.5054
T21	26	LDF6-50A(1 1/4")	251.00 - 256.00	0.6000	0.5054

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T21	29	HJ11-50(4")	251.00 - 256.00	1.0000	0.5054
T21	30	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	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	35	LDF6-50A(1-1/4")	251.00 - 256.00	0.6000	0.5054
T21	36	LDF6-50A(1-1/4")	251.00 - 256.00	0.6000	0.5054
T21	37	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	40	LDF4P-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	41	LDF4-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	48	HCC312-50J(3-1/2")	251.00 - 256.00	1.0000	0.5054
T21	50	LDF12-50(2-1/4")	251.00 - 256.00	0.6000	0.5054
T21	54	HJ11-50(4)	251.00 - 256.00	1.0000	0.5054
T21	60	LDF6-50A(1-1/4")	251.00 - 255.00	0.6000	0.5054
T21	70	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	72	Thin Flat Climbing Ladder	251.00 - 256.00	0.6000	0.5054
T21	73	Safety Line 3/8	251.00 - 256.00	0.6000	0.5054
T22	3	LDF5-50A(7/8")	246.00 - 247.00	0.6000	0.5210
T22	4	HB158-1-08U8-S8J18(1-5/8)	246.00 - 247.00	0.6000	0.5210
T22	5	LDF4-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	6	CAT6(1/4)	246.00 - 251.00	0.6000	0.5210
T22	7	760178129(1/4)	246.00 - 251.00	0.6000	0.5210
T22	11	1" Rigid Conduit	246.00 - 251.00	0.6000	0.5210
T22	12	3/8" Cable (Lights)	246.00 - 251.00	0.6000	0.5210
T22	22	LDF5-50A(7/8")	246.00 - 251.00	0.6000	0.5210
T22	23	LDF12-50A(2-1/4")	246.00 - 251.00	0.6000	0.5210
T22	24	HJ8-50B(3")	246.00 - 251.00	0.6000	0.5210
T22	26	LDF6-50A(1 1/4")	246.00 - 251.00	0.6000	0.5210
T22	29	HJ11-50(4")	246.00 - 251.00	1.0000	0.5210
T22	30	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	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	35	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	36	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	37	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	40	LDF4P-50A(1/2")	246.00 -	0.6000	0.5210

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T22	41	LDF4-50A(1/2")	251.00 246.00 - 251.00	0.6000	0.5210
T22	48	HCC312-50J(3-1/2")	246.00 - 251.00	1.0000	0.5210
T22	50	LDF12-50(2-1/4")	246.00 - 251.00	0.6000	0.5210
T22	54	HJ11-50(4)	246.00 - 251.00	1.0000	0.5210
T22	60	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	70	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	72	Thin Flat Climbing Ladder	246.00 - 251.00	0.6000	0.5210
T22	73	Safety Line 3/8	246.00 - 251.00	0.6000	0.5210
T23	3	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	4	HB158-1-08U8-S8J18(1-5/8)	241.00 - 246.00	0.6000	0.5063
T23	5	LDF4-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	6	CAT6(1/4)	241.00 - 246.00	0.6000	0.5063
T23	7	760178129(1/4)	241.00 - 246.00	0.6000	0.5063
T23	11	1" Rigid Conduit	241.00 - 246.00	0.6000	0.5063
T23	12	3/8" Cable (Lights)	241.00 - 246.00	0.6000	0.5063
T23	22	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	23	LDF12-50A(2-1/4")	241.00 - 246.00	0.6000	0.5063
T23	24	HJ8-50B(3")	241.00 - 246.00	0.6000	0.5063
T23	26	LDF6-50A(1 1/4")	241.00 - 246.00	0.6000	0.5063
T23	29	HJ11-50(4")	241.00 - 246.00	1.0000	0.5063
T23	30	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	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 - 246.00	0.6000	0.5063
T23	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	40	LDF4P-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	41	LDF4-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	48	HCC312-50J(3-1/2")	241.00 - 246.00	1.0000	0.5063
T23	50	LDF12-50(2-1/4")	241.00 - 246.00	0.6000	0.5063
T23	54	HJ11-50(4)	241.00 - 246.00	1.0000	0.5063
T23	60	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	70	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	72	Thin Flat Climbing Ladder	241.00 - 246.00	0.6000	0.5063

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T23	73	Safety Line 3/8	241.00 - 246.00	0.6000	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	HB158-1-08U8-S8J18(1-5/8)	221.00 - 241.00	0.6000	0.5644
T24	5	LDF4-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	6	CAT6(1/4)	221.00 - 241.00	0.6000	0.5644
T24	7	760178129(1/4)	221.00 - 241.00	0.6000	0.5644
T24	10	LCF78-50A(7/8")	221.00 - 230.00	0.6000	0.5644
T24	11	1" Rigid Conduit	221.00 - 241.00	0.6000	0.5644
T24	12	3/8" Cable (Lights)	221.00 - 241.00	0.6000	0.5644
T24	17	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	18	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	22	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	23	LDF12-50A(2-1/4")	221.00 - 241.00	0.6000	0.5644
T24	24	HJ8-50B(3")	221.00 - 241.00	0.6000	0.5644
T24	26	LDF6-50A(1 1/4")	221.00 - 241.00	0.6000	0.5644
T24	29	HJ11-50(4")	221.00 - 241.00	1.0000	0.5644
T24	30	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	40	LDF4P-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	41	LDF4-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	45	AVA5-50(7/8")	221.00 - 230.00	0.6000	0.5644
T24	48	HCC312-50J(3-1/2")	221.00 - 241.00	1.0000	0.5644
T24	50	LDF12-50(2-1/4")	221.00 - 241.00	0.6000	0.5644
T24	54	HJ11-50(4)	221.00 - 241.00	1.0000	0.5644
T24	60	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	70	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	72	Thin Flat Climbing Ladder	221.00 - 241.00	0.6000	0.5644
T24	73	Safety Line 3/8	221.00 - 241.00	0.6000	0.5644
T25	1	HB158-1-08U8-S8J18(1-	201.00 -	0.6000	0.5811

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		5/8)	221.00		
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	HB158-1-08U8-S8J18(1-5/8)	201.00 - 221.00	0.6000	0.5811
T25	5	LDF4-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	6	CAT6(1/4)	201.00 - 221.00	0.6000	0.5811
T25	7	760178129(1/4)	201.00 - 221.00	0.6000	0.5811
T25	9	LCF78-50A(7/8")	201.00 - 206.00	0.6000	0.5811
T25	10	LCF78-50A(7/8")	206.00 - 221.00	0.6000	0.5811
T25	11	1" Rigid Conduit	201.00 - 221.00	0.6000	0.5811
T25	12	3/8" Cable (Lights)	201.00 - 221.00	0.6000	0.5811
T25	17	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5811
T25	18	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5811
T25	22	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5811
T25	23	LDF12-50A(2-1/4")	201.00 - 221.00	0.6000	0.5811
T25	24	HJ8-50B(3")	201.00 - 221.00	0.6000	0.5811
T25	26	LDF6-50A(1 1/4")	201.00 - 221.00	0.6000	0.5811
T25	29	HJ11-50(4")	201.00 - 221.00	1.0000	0.5811
T25	30	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	40	LDF4P-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	41	LDF4-50A(1/2")	201.00 - 221.00	0.6000	0.5811
T25	45	AVA5-50(7/8")	201.00 - 221.00	0.6000	0.5811
T25	48	HCC312-50J(3-1/2")	201.00 - 221.00	1.0000	0.5811
T25	50	LDF12-50(2-1/4")	201.00 - 221.00	0.6000	0.5811
T25	54	HJ11-50(4)	201.00 - 221.00	1.0000	0.5811
T25	60	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5811
T25	70	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5811
T25	72	Thin Flat Climbing Ladder	201.00 - 221.00	0.6000	0.5811
T25	73	Safety Line 3/8	201.00 - 221.00	0.6000	0.5811
T26	1	HB158-1-08U8-S8J18(1-5/8)	181.00 - 201.00	0.6000	0.5831

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
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	HB158-1-08U8-S8J18(1-5/8)	181.00 - 201.00	0.6000	0.5831
T26	5	LDF4-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	6	CAT6(1/4)	181.00 - 201.00	0.6000	0.5831
T26	7	760178129(1/4)	181.00 - 201.00	0.6000	0.5831
T26	9	LCF78-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	11	1" Rigid Conduit	181.00 - 201.00	0.6000	0.5831
T26	12	3/8" Cable (Lights)	181.00 - 201.00	0.6000	0.5831
T26	14	1/4 Coax	181.00 - 200.00	0.6000	0.5831
T26	17	Banjo (6" dia, 36" step)	181.00 - 201.00	0.6000	0.5831
T26	18	Banjo (6" dia, 36" step)	181.00 - 201.00	0.6000	0.5831
T26	22	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	23	LDF12-50A(2-1/4")	181.00 - 201.00	0.6000	0.5831
T26	24	HJ8-50B(3")	181.00 - 201.00	0.6000	0.5831
T26	26	LDF6-50A(1 1/4")	181.00 - 201.00	0.6000	0.5831
T26	29	HJ11-50(4")	181.00 - 201.00	1.0000	0.5831
T26	30	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	40	LDF4P-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	41	LDF4-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	45	AVA5-50(7/8")	181.00 - 201.00	0.6000	0.5831
T26	48	HCC312-50J(3-1/2")	181.00 - 201.00	1.0000	0.5831
T26	50	LDF12-50(2-1/4")	181.00 - 201.00	0.6000	0.5831
T26	54	HJ11-50(4)	181.00 - 201.00	1.0000	0.5831
T26	60	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	70	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	72	Thin Flat Climbing Ladder	181.00 - 201.00	0.6000	0.5831
T26	73	Safety Line 3/8	181.00 - 201.00	0.6000	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 -	0.6000	0.5834

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T27	3	LDF5-50A(7/8")	181.00 161.00 - 181.00	0.6000	0.5834
T27	4	HB158-1-08U8-S8J18(1-5/8)	161.00 - 181.00	0.6000	0.5834
T27	5	LDF4-50A(1/2")	161.00 - 181.00	0.6000	0.5834
T27	6	CAT6(1/4)	161.00 - 181.00	0.6000	0.5834
T27	7	760178129(1/4)	161.00 - 181.00	0.6000	0.5834
T27	9	LCF78-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	11	1" Rigid Conduit	161.00 - 181.00	0.6000	0.5834
T27	12	3/8" Cable (Lights)	161.00 - 181.00	0.6000	0.5834
T27	14	1/4 Coax	161.00 - 181.00	0.6000	0.5834
T27	17	Banjo (6" dia, 36" step)	161.00 - 181.00	0.6000	0.5834
T27	18	Banjo (6" dia, 36" step)	161.00 - 181.00	0.6000	0.5834
T27	22	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	23	LDF12-50A(2-1/4")	161.00 - 181.00	0.6000	0.5834
T27	24	HJ8-50B(3")	161.00 - 181.00	0.6000	0.5834
T27	26	LDF6-50A(1 1/4")	161.00 - 181.00	0.6000	0.5834
T27	29	HJ11-50(4")	161.00 - 181.00	1.0000	0.5834
T27	30	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	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	35	LDF6-50A(1-1/4")	161.00 - 181.00	0.6000	0.5834
T27	36	LDF6-50A(1-1/4")	161.00 - 181.00	0.6000	0.5834
T27	37	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	39	LDF4P-50A(1/2")	161.00 - 178.00	0.6000	0.5834
T27	40	LDF4P-50A(1/2")	178.00 - 181.00	0.6000	0.5834
T27	41	LDF4-50A(1/2")	161.00 - 181.00	0.6000	0.5834
T27	45	AVA5-50(7/8")	161.00 - 181.00	0.6000	0.5834
T27	48	HCC312-50J(3-1/2")	161.00 - 181.00	1.0000	0.5834
T27	50	LDF12-50(2-1/4")	161.00 - 181.00	0.6000	0.5834
T27	54	HJ11-50(4)	161.00 - 181.00	1.0000	0.5834
T27	60	LDF6-50A(1-1/4")	161.00 - 181.00	0.6000	0.5834
T27	70	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	72	Thin Flat Climbing Ladder	161.00 - 181.00	0.6000	0.5834
T27	73	Safety Line 3/8	161.00 - 181.00	0.6000	0.5834
T28	1	HB158-1-08U8-S8J18(1-5/8)	141.00 - 161.00	0.6000	0.5632

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T28	2	LCF78-50A(7/8")	141.00 - 161.00	0.6000	0.5632
T28	3	LDF5-50A(7/8")	141.00 - 161.00	0.6000	0.5632
T28	4	HB158-1-08U8-S8J18(1-5/8)	141.00 - 161.00	0.6000	0.5632
T28	5	LDF4-50A(1/2")	141.00 - 161.00	0.6000	0.5632
T28	6	CAT6(1/4)	141.00 - 161.00	0.6000	0.5632
T28	7	760178129(1/4)	141.00 - 161.00	0.6000	0.5632
T28	8	EW63(ELLIPTICAL)	141.00 - 150.00	0.6000	0.5632
T28	9	LCF78-50A(7/8")	141.00 - 161.00	0.6000	0.5632
T28	11	1" Rigid Conduit	141.00 - 161.00	0.6000	0.5632
T28	12	3/8" Cable (Lights)	141.00 - 161.00	0.6000	0.5632
T28	14	1/4 Coax	141.00 - 161.00	0.6000	0.5632
T28	17	Banjo (6" dia, 36" step)	141.00 - 161.00	0.6000	0.5632
T28	18	Banjo (6" dia, 36" step)	141.00 - 161.00	0.6000	0.5632
T28	22	LDF5-50A(7/8")	141.00 - 161.00	0.6000	0.5632
T28	23	LDF12-50A(2-1/4")	141.00 - 161.00	0.6000	0.5632
T28	24	HJ8-50B(3")	141.00 - 161.00	0.6000	0.5632
T28	26	LDF6-50A(1 1/4")	141.00 - 161.00	0.6000	0.5632
T28	29	HJ11-50(4")	141.00 - 161.00	1.0000	0.5632
T28	30	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5632
T28	31	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5632
T28	32	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5632
T28	35	LDF6-50A(1-1/4")	141.00 - 161.00	0.6000	0.5632
T28	36	LDF6-50A(1-1/4")	141.00 - 161.00	0.6000	0.5632
T28	37	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5632
T28	39	LDF4P-50A(1/2")	141.00 - 161.00	0.6000	0.5632
T28	41	LDF4-50A(1/2")	141.00 - 161.00	0.6000	0.5632
T28	42	EW63(ELLIPTICAL)	141.00 - 146.00	0.6000	0.5632
T28	43	EW52(ELLIPTICAL)	141.00 - 146.00	0.6000	0.5632
T28	45	AVA5-50(7/8")	141.00 - 161.00	0.6000	0.5632
T28	48	HCC312-50J(3-1/2")	141.00 - 161.00	1.0000	0.5632
T28	50	LDF12-50(2-1/4")	141.00 - 161.00	0.6000	0.5632
T28	54	HJ11-50(4)	141.00 - 161.00	1.0000	0.5632
T28	60	LDF6-50A(1-1/4")	141.00 - 161.00	0.6000	0.5632
T28	70	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5632
T28	72	Thin Flat Climbing Ladder	141.00 -	0.6000	0.5632

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T28	73	Safety Line 3/8	161.00 141.00 - 161.00	0.6000	0.5632
T29	1	HB158-1-08U8-S8J18(1-5/8)	121.00 - 141.00	0.6000	0.5659
T29	2	LCF78-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	3	LDF5-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	4	HB158-1-08U8-S8J18(1-5/8)	121.00 - 141.00	0.6000	0.5659
T29	5	LDF4-50A(1/2")	121.00 - 141.00	0.6000	0.5659
T29	6	CAT6(1/4)	121.00 - 141.00	0.6000	0.5659
T29	7	760178129(1/4)	121.00 - 141.00	0.6000	0.5659
T29	8	EW63(ELLIPTICAL)	121.00 - 141.00	0.6000	0.5659
T29	9	LCF78-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	11	1" Rigid Conduit	121.00 - 141.00	0.6000	0.5659
T29	12	3/8" Cable (Lights)	121.00 - 141.00	0.6000	0.5659
T29	14	1/4 Coax	121.00 - 141.00	0.6000	0.5659
T29	15	3/8" Coax	121.00 - 136.00	0.6000	0.5659
T29	16	3/8" Coax	121.00 - 140.00	0.6000	0.5659
T29	17	Banjo (6" dia, 36" step)	121.00 - 141.00	0.6000	0.5659
T29	18	Banjo (6" dia, 36" step)	121.00 - 141.00	0.6000	0.5659
T29	21	LDF5-50A(7/8")	121.00 - 133.00	0.6000	0.5659
T29	22	LDF5-50A(7/8")	133.00 - 141.00	0.6000	0.5659
T29	23	LDF12-50A(2-1/4")	121.00 - 141.00	0.6000	0.5659
T29	24	HJ8-50B(3")	121.00 - 141.00	0.6000	0.5659
T29	26	LDF6-50A(1 1/4")	121.00 - 141.00	0.6000	0.5659
T29	29	HJ11-50(4")	121.00 - 141.00	1.0000	0.5659
T29	30	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	31	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	32	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	35	LDF6-50A(1-1/4")	121.00 - 141.00	0.6000	0.5659
T29	36	LDF6-50A(1-1/4")	121.00 - 141.00	0.6000	0.5659
T29	37	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	38	LDF4P-50A(1/2")	121.00 - 133.00	0.6000	0.5659
T29	39	LDF4P-50A(1/2")	133.00 - 141.00	0.6000	0.5659
T29	41	LDF4-50A(1/2")	121.00 - 141.00	0.6000	0.5659
T29	42	EW63(ELLIPTICAL)	121.00 - 141.00	0.6000	0.5659
T29	43	EW52(ELLIPTICAL)	121.00 - 141.00	0.6000	0.5659

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T29	45	AVA5-50(7/8")	121.00 - 141.00	0.6000	0.5659
T29	48	HCC312-50J(3-1/2")	121.00 - 141.00	1.0000	0.5659
T29	50	LDF12-50(2-1/4")	121.00 - 141.00	0.6000	0.5659
T29	54	HJ11-50(4)	121.00 - 141.00	1.0000	0.5659
T29	60	LDF6-50A(1-1/4")	121.00 - 141.00	0.6000	0.5659
T29	65	LDF5-50A(7/8")	121.00 - 133.00	0.6000	0.5659
T29	70	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	72	Thin Flat Climbing Ladder	121.00 - 141.00	0.6000	0.5659
T29	73	Safety Line 3/8	121.00 - 141.00	0.6000	0.5659
T30	1	HB158-1-08U8-S8J18(1-5/8)	101.00 - 121.00	0.6000	0.5888
T30	2	LCF78-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	3	LDF5-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	4	HB158-1-08U8-S8J18(1-5/8)	101.00 - 121.00	0.6000	0.5888
T30	5	LDF4-50A(1/2")	101.00 - 121.00	0.6000	0.5888
T30	6	CAT6(1/4)	101.00 - 121.00	0.6000	0.5888
T30	7	760178129(1/4)	101.00 - 121.00	0.6000	0.5888
T30	8	EW63(ELLIPTICAL)	101.00 - 121.00	0.6000	0.5888
T30	9	LCF78-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	11	1" Rigid Conduit	101.00 - 121.00	0.6000	0.5888
T30	12	3/8" Cable (Lights)	101.00 - 121.00	0.6000	0.5888
T30	14	1/4 Coax	101.00 - 121.00	0.6000	0.5888
T30	15	3/8" Coax	101.00 - 121.00	0.6000	0.5888
T30	16	3/8" Coax	101.00 - 121.00	0.6000	0.5888
T30	17	Banjo (6" dia, 36" step)	101.00 - 121.00	0.6000	0.5888
T30	18	Banjo (6" dia, 36" step)	101.00 - 121.00	0.6000	0.5888
T30	21	LDF5-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	23	LDF12-50A(2-1/4")	101.00 - 121.00	0.6000	0.5888
T30	24	HJ8-50B(3")	101.00 - 121.00	0.6000	0.5888
T30	26	LDF6-50A(1 1/4")	101.00 - 121.00	0.6000	0.5888
T30	29	HJ11-50(4")	101.00 - 121.00	1.0000	0.5888
T30	30	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	31	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	32	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	35	LDF6-50A(1-1/4")	101.00 - 121.00	0.6000	0.5888
T30	36	LDF6-50A(1-1/4")	101.00 -	0.6000	0.5888

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T30	37	LDF7-50A(1-5/8")	121.00 101.00 -	0.6000	0.5888
T30	38	LDF4P-50A(1/2")	121.00 101.00 -	0.6000	0.5888
T30	41	LDF4-50A(1/2")	121.00 101.00 -	0.6000	0.5888
T30	42	EW63(ELLIPTICAL)	121.00 101.00 -	0.6000	0.5888
T30	43	EW52(ELLIPTICAL)	121.00 101.00 -	0.6000	0.5888
T30	45	AVA5-50(7/8")	121.00 101.00 -	0.6000	0.5888
T30	48	HCC312-50J(3-1/2")	121.00 101.00 -	1.0000	0.5888
T30	50	LDF12-50(2-1/4")	121.00 101.00 -	0.6000	0.5888
T30	52	LDF5-50A(7/8")	121.00 101.00 -	0.6000	0.5888
T30	54	HJ11-50(4)	109.00 101.00 -	1.0000	0.5888
T30	60	LDF6-50A(1-1/4")	121.00 101.00 -	0.6000	0.5888
T30	65	LDF5-50A(7/8")	121.00 117.00 -	0.6000	0.5888
T30	66	LDF5-50A(7/8")	121.00 101.00 -	0.6000	0.5888
T30	69	LDF5-50A(7/8")	117.00 101.00 -	0.6000	0.5888
T30	70	LDF7-50A(1-5/8")	108.00 101.00 -	0.6000	0.5888
T30	72	Thin Flat Climbing Ladder	121.00 101.00 -	0.6000	0.5888
T30	73	Safety Line 3/8	121.00 101.00 -	0.6000	0.5888
T31	1	HB158-1-08U8-S8J18(1-5/8)	121.00 81.00 -	0.6000	0.5925
T31	2	LCF78-50A(7/8")	101.00 81.00 -	0.6000	0.5925
T31	3	LDF5-50A(7/8")	101.00 81.00 -	0.6000	0.5925
T31	4	HB158-1-08U8-S8J18(1-5/8)	101.00 81.00 -	0.6000	0.5925
T31	5	LDF4-50A(1/2")	101.00 81.00 -	0.6000	0.5925
T31	6	CAT6(1/4)	101.00 81.00 -	0.6000	0.5925
T31	7	760178129(1/4)	101.00 81.00 -	0.6000	0.5925
T31	8	EW63(ELLIPTICAL)	101.00 81.00 -	0.6000	0.5925
T31	9	LCF78-50A(7/8")	101.00 81.00 -	0.6000	0.5925
T31	11	1" Rigid Conduit	101.00 81.00 -	0.6000	0.5925
T31	12	3/8" Cable (Lights)	101.00 81.00 -	0.6000	0.5925
T31	13	1/4 Coax	101.00 81.00 -	0.6000	0.5925
T31	14	1/4 Coax	99.00 81.00 -	0.6000	0.5925
T31	15	3/8" Coax	101.00 81.00 -	0.6000	0.5925
T31	16	3/8" Coax	101.00 81.00 -	0.6000	0.5925
T31	17	Banjo (6" dia, 36" step)	101.00 81.00 -	0.6000	0.5925
T31	18	Banjo (6" dia, 36" step)	101.00 81.00 -	0.6000	0.5925
			101.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T31	21	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	23	LDF12-50A(2-1/4")	81.00 - 101.00	0.6000	0.5925
T31	24	HJ8-50B(3")	81.00 - 101.00	0.6000	0.5925
T31	26	LDF6-50A(1 1/4")	81.00 - 101.00	0.6000	0.5925
T31	29	HJ11-50(4")	81.00 - 101.00	1.0000	0.5925
T31	30	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	38	LDF4P-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	41	LDF4-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	42	EW63(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	43	EW52(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	45	AVA5-50(7/8")	81.00 - 101.00	0.6000	0.5925
T31	48	HCC312-50J(3-1/2")	81.00 - 101.00	1.0000	0.5925
T31	50	LDF12-50(2-1/4")	81.00 - 101.00	0.6000	0.5925
T31	52	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	54	HJ11-50(4)	81.00 - 101.00	1.0000	0.5925
T31	60	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	66	LDF5-50A(7/8")	99.00 - 101.00	0.6000	0.5925
T31	67	LDF5-50A(7/8")	81.00 - 99.00	0.6000	0.5925
T31	69	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	70	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	72	Thin Flat Climbing Ladder	81.00 - 101.00	0.6000	0.5925
T31	73	Safety Line 3/8	81.00 - 101.00	0.6000	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	HB158-1-08U8-S8J18(1-5/8)	61.00 - 81.00	0.6000	0.5971
T32	5	LDF4-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	6	CAT6(1/4)	61.00 - 81.00	0.6000	0.5971
T32	7	760178129(1/4)	61.00 - 81.00	0.6000	0.5971
T32	8	EW63(ELLIPTICAL)	61.00 -	0.6000	0.5971

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T32	9	LCF78-50A(7/8")	81.00 61.00 - 81.00	0.6000	0.5971
T32	11	1" Rigid Conduit	61.00 - 81.00	0.6000	0.5971
T32	12	3/8" Cable (Lights)	61.00 - 81.00	0.6000	0.5971
T32	13	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	14	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	15	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	16	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	17	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	18	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	21	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	23	LDF12-50A(2-1/4")	61.00 - 81.00	0.6000	0.5971
T32	24	HJ8-50B(3")	61.00 - 81.00	0.6000	0.5971
T32	26	LDF6-50A(1 1/4")	61.00 - 81.00	0.6000	0.5971
T32	29	HJ11-50(4")	61.00 - 81.00	1.0000	0.5971
T32	30	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	38	LDF4P-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	41	LDF4-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	42	EW63(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	43	EW52(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	45	AVA5-50(7/8")	61.00 - 81.00	0.6000	0.5971
T32	48	HCC312-50J(3-1/2")	61.00 - 81.00	1.0000	0.5971
T32	50	LDF12-50(2-1/4")	61.00 - 81.00	0.6000	0.5971
T32	52	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	54	HJ11-50(4)	61.00 - 81.00	1.0000	0.5971
T32	60	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	67	LDF5-50A(7/8")	62.00 - 81.00	0.6000	0.5971
T32	68	LDF5-50A(7/8")	61.00 - 62.00	0.6000	0.5971
T32	69	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	70	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T32	72	Thin Flat Climbing Ladder	61.00 - 81.00	0.6000	0.5971
T32	73	Safety Line 3/8	61.00 - 81.00	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	HB158-1-08U8-S8J18(1-5/8)	41.00 - 61.00	0.6000	0.6000
T33	5	LDF4-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	6	CAT6(1/4)	41.00 - 61.00	0.6000	0.6000
T33	7	760178129(1/4)	41.00 - 61.00	0.6000	0.6000
T33	8	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	9	LCF78-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	11	1" Rigid Conduit	41.00 - 61.00	0.6000	0.6000
T33	12	3/8" Cable (Lights)	41.00 - 61.00	0.6000	0.6000
T33	13	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	14	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	15	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	16	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	17	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	18	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	21	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	23	LDF12-50A(2-1/4")	41.00 - 61.00	0.6000	0.6000
T33	24	HJ8-50B(3")	41.00 - 61.00	0.6000	0.6000
T33	26	LDF6-50A(1 1/4")	41.00 - 61.00	0.6000	0.6000
T33	29	HJ11-50(4")	41.00 - 61.00	1.0000	0.6000
T33	30	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	31	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	32	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	38	LDF4P-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	41	LDF4-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	42	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	43	EW52(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	45	AVA5-50(7/8")	41.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T33	48	HCC312-50J(3-1/2")	61.00 41.00 - 61.00	1.0000	0.6000
T33	50	LDF12-50(2-1/4")	41.00 - 61.00	0.6000	0.6000
T33	52	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	54	HJ11-50(4)	41.00 - 61.00	1.0000	0.6000
T33	60	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	68	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	69	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	70	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	72	Thin Flat Climbing Ladder	41.00 - 61.00	0.6000	0.6000
T33	73	Safety Line 3/8	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	HB158-1-08U8-S8J18(1-5/8)	20.00 - 41.00	0.6000	0.6000
T34	5	LDF4-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	6	CAT6(1/4)	20.00 - 41.00	0.6000	0.6000
T34	7	760178129(1/4)	20.00 - 41.00	0.6000	0.6000
T34	8	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	9	LCF78-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	11	1" Rigid Conduit	20.00 - 41.00	0.6000	0.6000
T34	12	3/8" Cable (Lights)	20.00 - 41.00	0.6000	0.6000
T34	13	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	14	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	15	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	16	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	17	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	18	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	21	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	23	LDF12-50A(2-1/4")	20.00 - 41.00	0.6000	0.6000
T34	24	HJ8-50B(3")	20.00 - 41.00	0.6000	0.6000
T34	26	LDF6-50A(1 1/4")	20.00 - 41.00	0.6000	0.6000
T34	29	HJ11-50(4")	20.00 - 41.00	1.0000	0.6000
T34	30	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	31	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T34	32	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	38	LDF4P-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	41	LDF4-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	42	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	43	EW52(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	45	AVA5-50(7/8")	20.00 - 41.00	0.6000	0.6000
T34	48	HCC312-50J(3-1/2")	20.00 - 41.00	0.6000	0.6000
T34	50	LDF12-50(2-1/4")	20.00 - 41.00	0.6000	0.6000
T34	52	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	54	HJ11-50(4)	20.00 - 41.00	1.0000	0.6000
T34	60	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	68	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	69	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	70	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	72	Thin Flat Climbing Ladder	20.00 - 41.00	0.6000	0.6000
T34	73	Safety Line 3/8	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	HB158-1-08U8-S8J18(1-5/8)	10.00 - 20.00	0.6000	0.5399
T35	5	LDF4-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	6	CAT6(1/4)	10.00 - 20.00	0.6000	0.5399
T35	7	760178129(1/4)	10.00 - 20.00	0.6000	0.5399
T35	8	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	9	LCF78-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	11	1" Rigid Conduit	10.00 - 20.00	0.6000	0.5399
T35	12	3/8" Cable (Lights)	10.00 - 20.00	0.6000	0.5399
T35	13	1/4 Coax	10.00 - 20.00	0.6000	0.5399
T35	14	1/4 Coax	10.00 - 20.00	0.6000	0.5399
T35	15	3/8" Coax	10.00 - 20.00	0.6000	0.5399
T35	16	3/8" Coax	10.00 - 20.00	0.6000	0.5399
T35	17	Banjo (6" dia, 36" step)	10.00 -	0.6000	0.5399

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T35	18	Banjo (6" dia, 36" step)	20.00 10.00 - 20.00	0.6000	0.5399
T35	21	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	23	LDF12-50A(2-1/4")	10.00 - 20.00	0.6000	0.5399
T35	24	HJ8-50B(3")	10.00 - 20.00	0.6000	0.5399
T35	26	LDF6-50A(1 1/4")	10.00 - 20.00	0.6000	0.5399
T35	29	HJ11-50(4")	10.00 - 20.00	1.0000	0.5399
T35	30	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	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	35	LDF6-50A(1-1/4")	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	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	38	LDF4P-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	41	LDF4-50A(1/2")	10.00 - 20.00	0.6000	0.5399
T35	42	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	43	EW52(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5399
T35	45	AVA5-50(7/8")	10.00 - 20.00	0.6000	0.5399
T35	48	HCC312-50J(3-1/2")	10.00 - 20.00	0.6000	0.5399
T35	50	LDF12-50(2-1/4")	10.00 - 20.00	0.6000	0.5399
T35	52	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	54	HJ11-50(4)	10.00 - 20.00	1.0000	0.5399
T35	60	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5399
T35	68	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	69	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5399
T35	70	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5399
T35	72	Thin Flat Climbing Ladder	10.00 - 20.00	0.6000	0.5399
T35	73	Safety Line 3/8	10.00 - 20.00	0.6000	0.5399

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

Length of Pole	Ix	Iy	Modulus E	Antenna Pole C_AA_A	Antenna Pole Weight	Length of Beacon	Beacon C_AA_A	Beacon Weight
ft	in^4	in^4	ksi	ft^2/ft	plf	ft	ft^2	lb

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

Discrete Tower Loads

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

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
***									
(2) MXM REPEATER MK2	B	From Leg	1.00 0' 0'	-29.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	1.57 1.73 1.90 2.26	0.75 0.88 1.01 1.29	18 30 44 80
(2) MXM REPEATER MK2	C	From Leg	1.00 0' 0'	30.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	1.57 1.73 1.90 2.26	0.75 0.88 1.01 1.29	18 30 44 80
(2) 1.9" x 8' Pipe (Horizontal)	A	From Face	1.00 0' 0'	0.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	1.52 2.07 2.62 3.75	0.03 0.05 0.09 0.17	20 35 57 121
1.9" x 8' Pipe (Horizontal)	B	From Face	1.00 0' 0'	0.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	1.52 2.07 2.62 3.75	0.03 0.05 0.09 0.17	20 35 57 121
1.9" x 8' Pipe (Horizontal)	C	From Face	1.00 0' 0'	0.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	1.52 2.07 2.62 3.75	0.03 0.05 0.09 0.17	20 35 57 121
Pipe Mount [PM 601-1]	B	From Leg	0.50 0' 0'	-29.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 3.74 4.48 5.96	0.90 1.12 1.34 1.78	65 79 93 122
Pipe Mount [PM 601-1]	C	From Leg	0.50 0' 0'	30.0000	450'	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 3.74 4.48 5.96	0.90 1.12 1.34 1.78	65 79 93 122
***									
***									
SRL-235-2	A	From Leg	6.00 0' 10'	80.0000	441'	No Ice 1/2" Ice 1" Ice 2" Ice	6.15 9.04 11.09 15.25	6.15 9.04 11.09 15.25	76 125 187 351
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	80.0000	441'	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	3.03 5.22 7.41 11.79	53 79 105 156
***									
***									
ERI 1183-3CP	C	None		0.0000	435' - 405'	No Ice 1/2" Ice 1" Ice 2" Ice	119.38 167.05 169.13 173.32	119.38 167.05 169.13 173.32	4350 6270 8216 12193
***									
6014-2	A	None		0.0000	393'	No Ice 1/2" Ice 1" Ice 2" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
6014-2	C	None		0.0000	388'	No Ice 1/2" Ice 1" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						2" Ice			
***									
6828-2	C	From Leg	1.00 0' 0'	-20.0000	367'	No Ice 1/2" Ice 1" Ice 2" Ice	12.50 14.98 17.46 22.42	11.70 14.02 16.34 20.98	240 369 498 756
***									
***									
***									
BCD-87077	C	From Leg	6.00 0' 8'	0.0000	342'	No Ice 1/2" Ice 1" Ice 2" Ice	3.06 4.27 5.49 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'	0.0000	342'	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 3.19 4.14 6.04	5.32 7.69 10.06 14.80	115 159 202 290
455-6	A	From Leg	4.00 0' 10'	-60.0000	342'	No Ice 1/2" Ice 1" Ice 2" Ice	2.80 4.82 6.86 10.98	2.80 4.82 6.86 10.98	25 48 84 194
Side Arm Mount [SO 601-1]	A	From Leg	2.00 0' 0'	-60.0000	342'	No Ice 1/2" Ice 1" Ice 2" Ice	1.22 1.85 2.48 3.74	6.30 8.61 10.92 15.54	159 197 234 310
***									
***									
PG1N0F-0090-310	B	From Leg	6.00 0' 5'	-60.0000	330'	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 4.03 5.03 6.26	3.00 4.03 5.03 6.26	28 50 78 155
Side Arm Mount [SO 601-1]	B	From Leg	3.00 0' 0'	-60.0000	330'	No Ice 1/2" Ice 1" Ice 2" Ice	1.22 1.85 2.48 3.74	6.30 8.61 10.92 15.54	159 197 234 310
***									
***									
***									
DB201-A	A	From Leg	6.00 0' 3'	0.0000	326'	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.98 2.86 4.62	1.10 1.98 2.86 4.62	25 33 40 55
Side Arm Mount [SO 602-1]	A	From Leg	3.00 0' 0'	0.0000	326'	No Ice 1/2" Ice 1" Ice 2" Ice	2.72 4.11 5.50 8.28	12.93 17.82 22.71 32.49	146 223 301 456
***									
DB408	A	From Leg	6.00 0' 0'	0.0000	325'	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 3.42 4.94 7.98	1.90 3.42 4.94 7.98	17 22 27 37
Side Arm Mount [SO 303-1]	A	From Leg	3.00 0' 0'	0.0000	325'	No Ice 1/2" Ice 1" Ice	2.24 3.19 4.14 6.04	5.32 7.69 10.06 14.80	115 159 202 290

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						2" Ice			
***									
SRL310C-4HD	B	From Leg	6.00 0' 5'	0.0000	322'	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 2.09 3.04 4.94	1.14 2.09 3.04 4.94	15 25 35 55
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0' 0'	0.0000	322'	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	3.03 5.22 7.41 11.79	53 79 105 156
Pipe Mount [PM 601-1]	A	From Leg	0.50 0' 0'	0.0000	322'	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 3.74 4.48 5.96	0.90 1.12 1.34 1.78	65 79 93 122
***									
6014-2	A	None		0.0000	316'	No Ice 1/2" Ice 1" Ice 2" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
6014-2	A	None		0.0000	306'	No Ice 1/2" Ice 1" Ice 2" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
*** ***									
BMR10-A-B1	B	From Leg	1.00 0' 6'	-30.0000	277'	No Ice 1/2" Ice 1" Ice 2" Ice	8.60 9.90 11.20 13.80	8.60 9.90 11.20 13.80	55 113 180 340
***									
ANT150F6	A	From Leg	6.00 0' 9'	0.0000	264'	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 6.83 8.87 13.01	4.80 6.83 8.87 13.01	30 66 114 249
Side Arm Mount [SO 303-1]	A	From Leg	3.00 0' 0'	0.0000	264'	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 3.19 4.14 6.04	5.32 7.69 10.06 14.80	115 159 202 290
***									
DB809KT3E-Y	B	From Leg	3.00 0' 6'	-60.0000	255'	No Ice 1/2" Ice 1" Ice 2" Ice	3.39 4.55 5.73 7.38	3.39 4.55 5.73 7.38	30 55 86 173
Side Arm Mount [SO 203-1]	B	From Leg	1.50 0' 0'	-60.0000	255'	No Ice 1/2" Ice 1" Ice 2" Ice	2.96 4.10 5.24 7.52	3.36 4.68 6.00 8.64	125 154 182 239
***									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	186 315 458 788
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0'	0.0000	247'	No Ice 1/2"	14.69 15.46	6.87 7.55	186 315

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0'			Ice	16.23	8.25	458
						1" Ice	17.82	9.67	788
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	186 315 458 788
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	5.87 6.23 6.61 7.38	3.27 3.73 4.20 5.20	128 177 232 359
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	5.87 6.23 6.61 7.38	3.27 3.73 4.20 5.20	128 177 232 359
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	5.87 6.23 6.61 7.38	3.27 3.73 4.20 5.20	128 177 232 359
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.39 7.25 7.99 9.53	194 257 328 493
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.39 7.25 7.99 9.53	194 257 328 493
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.39 7.25 7.99 9.53	194 257 328 493
RADIO 4449 B12/B71	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	74 90 109 155
RADIO 4449 B12/B71	B	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	74 90 109 155
RADIO 4449 B12/B71	C	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	74 90 109 155
KRY 112 144/2	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.48 0.57 0.66 0.88	0.23 0.30 0.38 0.55	10 14 19 35
KRY 112 144/2	B	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.48 0.57 0.66 0.88	0.23 0.30 0.38 0.55	10 14 19 35
KRY 112 144/2	C	From Leg	4.00 0'	0.0000	247'	No Ice 1/2"	0.48 0.57	0.23 0.30	10 14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0'			Ice	0.66	0.38	19
						1" Ice	0.88	0.55	35
						2" Ice			
RRUS 4415 B25_CCIV2	A	From Leg	4.00	0.0000	247'	No Ice	1.84	0.82	46
			0'			1/2"	2.01	0.94	60
			0'			Ice	2.19	1.07	77
						1" Ice	2.57	1.37	118
						2" Ice			
RRUS 4415 B25_CCIV2	B	From Leg	4.00	0.0000	247'	No Ice	1.84	0.82	46
			0'			1/2"	2.01	0.94	60
			0'			Ice	2.19	1.07	77
						1" Ice	2.57	1.37	118
						2" Ice			
RRUS 4415 B25_CCIV2	C	From Leg	4.00	0.0000	247'	No Ice	1.84	0.82	46
			0'			1/2"	2.01	0.94	60
			0'			Ice	2.19	1.07	77
						1" Ice	2.57	1.37	118
						2" Ice			
SDX1926Q-43	A	From Leg	4.00	0.0000	247'	No Ice	0.24	0.10	6
			0'			1/2"	0.31	0.14	9
			0'			Ice	0.38	0.19	12
						1" Ice	0.55	0.32	23
						2" Ice			
SDX1926Q-43	B	From Leg	4.00	0.0000	247'	No Ice	0.24	0.10	6
			0'			1/2"	0.31	0.14	9
			0'			Ice	0.38	0.19	12
						1" Ice	0.55	0.32	23
						2" Ice			
SDX1926Q-43	C	From Leg	4.00	0.0000	247'	No Ice	0.24	0.10	6
			0'			1/2"	0.31	0.14	9
			0'			Ice	0.38	0.19	12
						1" Ice	0.55	0.32	23
						2" Ice			
Sector Mount [SM 503-3]	C	None		0.0000	247'	No Ice	30.43	30.43	1691
						1/2"	43.02	43.02	2296
						Ice	55.43	55.43	3097
						1" Ice	79.89	79.89	5269
						2" Ice			
***									
HBXX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2"	5.70	4.47	94
			2'			Ice	6.24	4.98	147
						1" Ice	7.36	6.06	280
						2" Ice			
HBXX-6516DS-VTM w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2"	5.70	4.47	94
			2'			Ice	6.24	4.98	147
						1" Ice	7.36	6.06	280
						2" Ice			
HBXX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.00	-30.0000	230'	No Ice	5.18	3.97	50
			-6'			1/2"	5.70	4.47	94
			2'			Ice	6.24	4.98	147
						1" Ice	7.36	6.06	280
						2" Ice			
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66
			-2'			1/2"	4.49	3.68	130
			2'			Ice	4.89	4.07	204
						1" Ice	5.72	4.87	386
						2" Ice			
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66
			-2'			1/2"	4.49	3.68	130
			2'			Ice	4.89	4.07	204
						1" Ice	5.72	4.87	386
						2" Ice			
SBNHH-1D65B w/ Mount	C	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	66

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pipe			-2'			1/2"	4.49	3.68	130
			2'			Ice	4.89	4.07	204
						1" Ice	5.72	4.87	386
						2" Ice			
LNX-8513DS-VTM w/ Mount Pipe	A	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2"	4.49	3.68	128
			2'			Ice	4.89	4.06	202
						1" Ice	5.71	4.87	384
						2" Ice			
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2"	4.49	3.68	128
			2'			Ice	4.89	4.06	202
						1" Ice	5.71	4.87	383
						2" Ice			
LNX-8513DS-VTM w/ Mount Pipe	B	From Leg	4.00	-30.0000	230'	No Ice	4.09	3.30	65
			2'			1/2"	4.49	3.68	128
			2'			Ice	4.89	4.06	202
						1" Ice	5.71	4.87	384
						2" Ice			
B4 RRH2X60-4R	A	From Leg	4.00	-30.0000	230'	No Ice	3.36	2.00	55
			-6'			1/2"	3.61	2.24	78
			2'			Ice	3.88	2.48	105
						1" Ice	4.42	2.97	170
						2" Ice			
B4 RRH2X60-4R	B	From Leg	4.00	-30.0000	230'	No Ice	3.36	2.00	55
			-6'			1/2"	3.61	2.24	78
			2'			Ice	3.88	2.48	105
						1" Ice	4.42	2.97	170
						2" Ice			
B4 RRH2X60-4R	C	From Leg	4.00	-30.0000	230'	No Ice	3.36	2.00	55
			-6'			1/2"	3.61	2.24	78
			2'			Ice	3.88	2.48	105
						1" Ice	4.42	2.97	170
						2" Ice			
B25 RRH4X30	A	From Leg	4.00	-30.0000	230'	No Ice	2.20	1.74	55
			-2'			1/2"	2.39	1.92	75
			2'			Ice	2.59	2.11	99
						1" Ice	3.01	2.50	156
						2" Ice			
B25 RRH4X30	B	From Leg	4.00	-30.0000	230'	No Ice	2.20	1.74	55
			-2'			1/2"	2.39	1.92	75
			2'			Ice	2.59	2.11	99
						1" Ice	3.01	2.50	156
						2" Ice			
B25 RRH4X30	C	From Leg	4.00	-30.0000	230'	No Ice	2.20	1.74	55
			-2'			1/2"	2.39	1.92	75
			2'			Ice	2.59	2.11	99
						1" Ice	3.01	2.50	156
						2" Ice			
B13 RRH 4X30	A	From Leg	4.00	-30.0000	230'	No Ice	2.06	1.32	56
			2'			1/2"	2.24	1.48	73
			2'			Ice	2.43	1.64	93
						1" Ice	2.84	2.00	142
						2" Ice			
B13 RRH 4X30	B	From Leg	4.00	-30.0000	230'	No Ice	2.06	1.32	56
			2'			1/2"	2.24	1.48	73
			2'			Ice	2.43	1.64	93
						1" Ice	2.84	2.00	142
						2" Ice			
B13 RRH 4X30	C	From Leg	4.00	-30.0000	230'	No Ice	2.06	1.32	56
			2'			1/2"	2.24	1.48	73
			2'			Ice	2.43	1.64	93
						1" Ice	2.84	2.00	142
						2" Ice			
(2) RRFDC-3315-PF-48	B	From Leg	4.00	-30.0000	230'	No Ice	3.36	2.19	32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			-2'			1/2"	3.60	2.39	61
			2'			Ice	3.84	2.61	93
						1" Ice	4.34	3.05	168
						2" Ice			
Sector Mount [SM 407-3]	C	None		0.0000	230'	No Ice	20.49	20.49	956
						1/2" Ice	30.39	30.39	1376
						1" Ice	40.29	40.29	1797
						2" Ice	60.09	60.09	2638
***									
***									
***									
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
***									
***									
***									
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	3.00	0.90	65
			0'			1/2" Ice	3.74	1.12	79
			0'			1" Ice	4.48	1.34	93
						2" Ice	5.96	1.78	122
***									
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	1.22	6.30	159
			0'			1/2" Ice	1.85	8.61	197
			0'			1" Ice	2.48	10.92	234
						2" Ice	3.74	15.54	310
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	2.96	2.53	110
			0'			1/2"	4.10	3.51	134

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0'			Ice	5.24	4.49	157
						1" Ice	7.52	6.45	204
						2" Ice			
***									
***									
PD1132-D	B	From Leg	2.00 0' 4'	80.0000	109'	No Ice 1/2" Ice 1" Ice 2" Ice	24.89 25.85 26.81 28.75	24.89 25.85 26.81 28.75	105 276 459 862
Side Arm Mount [SO 202-1]	B	From Leg	1.00 0' 0'	80.0000	109'	No Ice 1/2" Ice 1" Ice 2" Ice	2.96 4.10 5.24 7.52	2.53 3.51 4.49 6.45	110 134 157 204
***									
2.4" Dia x 4-ft Mount Pipe	C	From Leg	0.50 0' 0'	0.0000	108'	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.12 1.37 1.91	0.87 1.12 1.37 1.91	15 22 32 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	1.22 1.85 2.48 3.74	6.30 8.61 10.92 15.54	159 197 234 310
***									
(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^2	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' 0'	60.0000		206'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.05 35.50 48.40	112 261 410 709
SPD4-5.2	C	Paraboloid w/Radome	From Leg	1.00 0' 0'	50.0000		178'	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.57 13.10 13.62 14.68	0 0 0 0
HPX6-65-P3A	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	0.0000		150'	6.46	No Ice 1/2" Ice 1" Ice 2" Ice	32.76 33.61 34.46 36.16	359 532 704 1049
PL6-65-PXA	B	Paraboloid w/o Radome	From Leg	1.00 0' 0'	-50.0000		146'	6.36	No Ice 1/2" Ice 1" Ice 2" Ice	31.75 32.59 33.43 35.10	161 300 500 800
CM 4228HD	B	Grid	From Leg	1.00 0' 0'	-20.0000		140'	3.55	No Ice 1/2" Ice 1" Ice 2" Ice	9.90 10.37 10.84 11.78	40 93 56 63
CM 4228HD	B	Grid	From Leg	1.00 0' -1'	10.0000		136'	3.55	No Ice 1/2" Ice 1" Ice 2" Ice	9.90 10.37 10.84 11.78	40 93 56 63
MGA2-16N	B	Grid	From Leg	0.67 0' 2'	0.0000		136'	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.68 4.21	20 38 55 90
MGAR3-23N	B	Grid	From Leg	0.67 0' -2'	20.0000		136'	3.38	No Ice 1/2" Ice 1" Ice 2" Ice	9.00 9.45 9.90 10.79	30 79 127 224
P-9A48GN-U	C	Grid	From Leg	1.00 0' 0'	-60.0000		117'	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.10 13.09 16.08 22.06	112 179 246 381
SSH-9A72GN	C	Grid	From Leg	1.00 0' 0'	0.0000		108'	2.84	No Ice 1/2" Ice 1" Ice 2" Ice	6.35 6.73 7.11 7.86	38 128 219 400
SPD2-5.8	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	0.0000		99'	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.68 4.21	22 40 60 90
P-9A48GN-U	C	Grid	From Leg	2.00 0' 6'	-20.0000		62'	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.10 13.09 16.08 22.06	112 179 246 381
SSH-9A72GN	C	Grid	From Leg	2.00 0' -1'	-60.0000		62'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.07 29.86 31.44	112 261 410 709

Load Combinations

Comb. No.	Description
1	Dead Only
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

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	16656	-762	-229
			Max. Compression	15	-31658	687	220
			Max. Mx	33	10339	1361	190
			Max. My	3	-19202	-7	1014
			Max. Vy	12	-1288	-1348	53
			Max. Vx	36	724	759	596
		Diagonal	Max Tension	29	4057	0	0
			Max. Compression	30	-3500	0	0
			Max. Mx	43	398	38	-1
			Max. My	32	-2307	8	6
			Max. Vy	48	-31	38	1
			Max. Vx	32	-2	0	0
		Horizontal	Max Tension	33	743	0	0
			Max. Compression	39	-1158	0	0
			Max. Mx	38	603	-65	0
			Max. My	5	-196	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	38	0	169	0
			Max. My	5	1	0	0
			Max. Vy	38	-113	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	39	4210	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	3306	-65	0
			Max. My	5	2082	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
		Guy A	Bottom Tension	45	12163		
			Top Tension	20	13285		
			Top Cable Vert	45	10862		
			Top Cable Norm	45	7650		
			Top Cable Tan	45	1		
			Bot Cable Vert	20	-8887		
			Bot Cable Norm	20	8304		
			Bot Cable Tan	20	0		
		Guy B	Bottom Tension	49	12780		
			Top Tension	32	13352		
			Top Cable Vert	49	10944		
			Top Cable Norm	49	7648		
			Top Cable Tan	49	1		
			Bot Cable Vert	32	-9410		
			Bot Cable Norm	32	8648		
			Bot Cable Tan	32	5		
		Guy C	Bottom Tension	41	12628		
			Top Tension	8	13357		
			Top Cable Vert	41	10871		
			Top Cable Norm	41	7762		
			Top Cable Tan	41	1		
			Bot Cable Vert	8	-9179		
			Bot Cable Norm	8	8673		
			Bot Cable Tan	8	5		
		Pole Antenna	Max Tension	8	0	-7	4
			Max. Compression	43	-6561	-8212	-4689
			Max. Mx	29	-5471	56223	104
			Max. My	20	-5476	-305	-56014
			Max. Vy	29	-2842	56223	104
			Max. Vx	20	2831	-305	-56014
			Max. Torque	5			0
T2	436 - 421	Leg	Max Tension	33	35700	1136	469
			Max. Compression	15	-51747	1008	432
			Max. Mx	14	-51086	-1255	-578
			Max. My	2	-45777	-17	1236
			Max. Vy	14	-617	-1255	-578
			Max. Vx	2	630	-17	1236
		Diagonal	Max Tension	32	4418	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	14	-4917	0	0
			Max. Mx	48	-181	28	0
			Max. My	33	-3765	-7	4
			Max. Vy	48	-27	28	0
			Max. Vx	33	-1	0	0
		Horizontal	Max Tension	33	1463	0	0
			Max. Compression	15	-438	0	0
			Max. Mx	38	1142	-64	0
			Max. My	5	227	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
		Top Girt	Max Tension	39	1124	0	0
			Max. Compression	15	-84	0	0
			Max. Mx	38	1049	-64	0
			Max. My	5	305	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
T3	421 - 401	Leg	Max Tension	32	75683	1779	854
			Max. Compression	14	-100977	1229	599
			Max. Mx	14	-86496	-2011	-1043
			Max. My	2	-78258	-9	2108
			Max. Vy	14	-908	-2011	-1043
			Max. Vx	2	968	-9	2108
		Diagonal	Max Tension	29	7271	0	0
			Max. Compression	29	-7401	0	0
			Max. Mx	14	5279	53	-2
			Max. My	11	-6854	-28	-10
			Max. Vy	49	-32	45	0
			Max. Vx	11	-3	0	0
		Top Girt	Max Tension	33	794	0	0
			Max. Compression	15	-270	0	0
			Max. Mx	38	600	-64	0
			Max. My	5	131	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	33	304	0	0
			Max. Compression	15	-195	0	0
			Max. Mx	38	156	-64	0
			Max. My	5	27	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
T4	401 - 396	Leg	Max Tension	32	90100	-2841	162
			Max. Compression	14	-116477	-2202	85
			Max. Mx	14	-116258	3024	-119
			Max. My	35	-25377	307	848
			Max. Vy	26	1088	3023	122
			Max. Vx	5	-256	303	-843
		Diagonal	Max Tension	29	7704	0	0
			Max. Compression	29	-7888	0	0
			Max. Mx	29	3517	33	0
			Max. My	32	-6949	-9	8
			Max. Vy	48	-26	23	0
			Max. Vx	32	2	0	0
		Top Girt	Max Tension	32	592	0	0
			Max. Compression	14	-486	0	0
			Max. Mx	38	166	-64	0
			Max. My	5	31	0	0
			Max. Vy	38	43	0	0
			Max. Vx	5	0	0	0
T5	396 - 391	Leg	Max Tension	32	105306	-2473	162
			Max. Compression	14	-133423	-1422	117
			Max. Mx	26	-131805	2499	135
			Max. My	35	-27029	143	1527
			Max. Vy	32	-1182	-2473	162
			Max. Vx	5	-777	148	-1519
		Diagonal	Max Tension	29	8525	0	0
			Max. Compression	29	-8571	0	0
			Max. Mx	14	6360	41	-2
			Max. My	35	-7097	-20	9

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	48	-30	37	0
			Max. Vx	35	2	-20	9
T6	391 - 386	Leg	Max Tension	32	123913	-4037	121
			Max. Compression	14	-152848	-3259	65
			Max. Mx	32	123913	-4037	121
			Max. My	5	-28265	174	-1423
			Max. Vy	26	1836	3986	91
			Max. Vx	5	-747	174	-1423
		Diagonal	Max Tension	29	9732	0	0
			Max. Compression	29	-10970	0	0
			Max. Mx	29	4225	52	0
			Max. My	11	-10908	-19	-13
			Max. Vy	49	-27	28	1
			Max. Vx	11	4	0	0
		Top Girt	Max Tension	39	772	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	496	-64	0
			Max. My	5	381	0	0
			Max. Vy	38	-43	0	0
			Max. Vx	5	0	0	0
T7	386 - 381	Leg	Max Tension	32	142231	-2402	168
			Max. Compression	14	-175708	-1028	90
			Max. Mx	26	-174627	3277	151
			Max. My	5	-31731	551	-2005
			Max. Vy	26	905	3277	151
			Max. Vx	5	-555	551	-2005
		Diagonal	Max Tension	29	11565	0	0
			Max. Compression	29	-10399	0	0
			Max. Mx	29	-3457	-54	7
			Max. My	5	-8885	-33	-16
			Max. Vy	48	-28	33	0
			Max. Vx	5	4	-33	-16
T8	381 - 376	Leg	Max Tension	32	100626	-1564	100
			Max. Compression	14	-184807	1005	23
			Max. Mx	27	-144284	2066	-15
			Max. My	12	-46257	251	1386
			Max. Vy	27	-510	2066	-15
			Max. Vx	12	-363	251	1386
		Diagonal	Max Tension	6	8468	0	0
			Max. Compression	6	-7194	0	0
			Max. Mx	11	-3193	48	-10
			Max. My	12	-6454	22	-11
			Max. Vy	48	-31	41	-1
			Max. Vx	12	-3	0	0
		Guy A	Bottom Tension	25	65705		
			Top Tension	25	67287		
			Top Cable Vert	25	48426		
			Top Cable Norm	25	46715		
			Top Cable Tan	25	310		
			Bot Cable Vert	25	-45333		
			Bot Cable Norm	25	47556		
			Bot Cable Tan	25	661		
		Guy B	Bottom Tension	31	67330		
			Top Tension	31	68884		
			Top Cable Vert	31	49773		
			Top Cable Norm	31	47620		
			Top Cable Tan	31	295		
			Bot Cable Vert	31	-46742		
			Bot Cable Norm	31	48456		
			Bot Cable Tan	31	663		
		Guy C	Bottom Tension	13	66441		
			Top Tension	13	68025		
			Top Cable Vert	13	48631		
			Top Cable Norm	13	47564		
			Top Cable Tan	13	311		
			Bot Cable Vert	13	-45517		
			Bot Cable Norm	13	48395		
			Bot Cable Tan	13	664		
		Top Guy Pull-Off	Max Tension	28	21272	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	1	0	0	0
			Max. Mx	38	11408	118	0
			Max. My	5	12158	0	0
			Max. Vy	38	-78	0	0
			Max. Vx	5	0	0	0
T9	376 - 371	Leg	Max Tension	32	93714	1582	104
			Max. Compression	14	-175150	1907	61
			Max. Mx	27	-127153	-2898	113
			Max. My	12	-45452	1	666
			Max. Vy	27	-1186	2818	-85
			Max. Vx	12	-260	1	666
		Diagonal	Max Tension	6	7360	0	0
			Max. Compression	6	-8450	0	0
			Max. Mx	14	-4668	50	-7
			Max. My	36	-8215	25	10
			Max. Vy	49	-31	44	0
			Max. Vx	36	-3	25	10
T10	371 - 366	Leg	Max Tension	32	84024	934	69
			Max. Compression	14	-166981	1098	0
			Max. Mx	9	42679	-2067	30
			Max. My	12	-46764	-195	1107
			Max. Vy	9	949	-2067	30
			Max. Vx	18	619	-261	-938
		Diagonal	Max Tension	6	7403	0	0
			Max. Compression	6	-7352	0	0
			Max. Mx	14	3742	-42	1
			Max. My	11	-3830	13	-6
			Max. Vy	49	-26	23	1
			Max. Vx	11	-2	0	0
		Top Girt	Max Tension	29	857	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	587	-63	0
			Max. My	5	446	0	0
			Max. Vy	38	42	0	0
			Max. Vx	5	0	0	0
T11	366 - 361	Leg	Max Tension	32	76062	892	162
			Max. Compression	14	-158939	1573	112
			Max. Mx	27	-98504	2661	-100
			Max. My	12	-47313	-31	902
			Max. Vy	27	-1028	2661	-100
			Max. Vx	12	-309	-31	902
		Diagonal	Max Tension	36	6911	0	0
			Max. Compression	36	-7038	0	0
			Max. Mx	14	-3906	50	-6
			Max. My	36	-7015	26	8
			Max. Vy	49	-32	48	1
			Max. Vx	36	-2	26	8
T12	361 - 341	Leg	Max Tension	32	68343	-586	-406
			Max. Compression	14	-151237	-173	-150
			Max. Mx	27	-73089	-1946	1262
			Max. My	3	-62682	-45	-2208
			Max. Vy	27	-959	410	-244
			Max. Vx	3	-1068	0	419
		Diagonal	Max Tension	36	6313	-31	0
			Max. Compression	36	-6541	0	0
			Max. Mx	26	-3686	68	10
			Max. My	14	-3789	68	-11
			Max. Vy	39	-36	63	-2
			Max. Vx	14	3	68	-11
		Secondary Horizontal	Max Tension	14	2620	0	0
			Max. Compression	14	-2620	22	-6
			Max. Mx	42	1123	33	-4
			Max. My	14	-2620	-6	-9
			Max. Vy	42	30	33	-4
			Max. Vx	14	3	0	0
		Top Girt	Max Tension	32	632	0	0
			Max. Compression	14	-316	0	0
			Max. Mx	38	277	-63	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	5	137	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	32	409	0	0
			Max. Compression	14	-188	0	0
			Max. Mx	38	216	-63	0
			Max. My	5	107	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	5	0	0	0
T13	341 - 321	Leg	Max Tension	32	43020	-611	-479
			Max. Compression	26	-126799	546	-339
			Max. Mx	27	-36757	1036	-633
			Max. My	3	-27742	156	1151
			Max. Vy	31	701	-152	-122
			Max. Vx	3	-492	156	1151
		Diagonal	Max Tension	36	4795	0	0
			Max. Compression	36	-4812	0	0
			Max. Mx	39	136	72	1
			Max. My	35	-3009	48	9
			Max. Vy	39	-39	72	1
			Max. Vx	35	-2	48	9
		Top Girt	Max Tension	32	423	0	0
			Max. Compression	14	-129	0	0
			Max. Mx	38	269	-63	0
			Max. My	5	124	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	32	376	0	0
			Max. Compression	26	-128	0	0
			Max. Mx	38	219	-63	0
			Max. My	5	91	0	0
			Max. Vy	38	-42	0	0
			Max. Vx	5	0	0	0
T14	321 - 301	Leg	Max Tension	32	25791	-353	-190
			Max. Compression	14	-111541	-152	-75
			Max. Mx	10	-48104	892	-554
			Max. My	22	-48544	-33	1064
			Max. Vy	31	1125	693	480
			Max. Vx	22	-1222	25	-931
		Diagonal	Max Tension	25	2912	0	0
			Max. Compression	28	-3049	0	0
			Max. Mx	39	253	77	0
			Max. My	36	-1809	0	5
			Max. Vy	39	-40	77	0
			Max. Vx	35	-1	46	5
		Top Girt	Max Tension	32	465	0	0
			Max. Compression	14	-172	0	0
			Max. Mx	38	223	-63	0
			Max. My	23	193	0	0
			Max. Vy	38	42	0	0
			Max. Vx	23	0	0	0
		Mid Girt	Max Tension	32	548	0	0
			Max. Compression	14	-229	0	0
			Max. Mx	38	262	-63	0
			Max. My	23	191	0	0
			Max. Vy	38	42	0	0
			Max. Vx	23	0	0	0
T15	301 - 281	Leg	Max Tension	32	29884	539	287
			Max. Compression	26	-122142	-173	90
			Max. Mx	10	-17017	-1338	809
			Max. My	22	-17312	14	-1561
			Max. Vy	10	-547	-1338	809
			Max. Vx	22	-640	14	-1561
		Diagonal	Max Tension	25	4770	0	0
			Max. Compression	25	-4885	0	0
			Max. Mx	39	101	74	0
			Max. My	5	-1226	16	-5
			Max. Vy	39	-39	74	0
			Max. Vx	5	1	16	-5

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	32	450	0	0
			Max. Compression	14	-134	0	0
			Max. Mx	38	282	-57	0
			Max. My	48	264	0	0
			Max. Vy	38	-38	0	0
			Max. Vx	48	0	0	0
		Mid Girt	Max Tension	32	372	0	0
			Max. Compression	14	-81	0	0
			Max. Mx	38	256	-57	0
			Max. My	48	240	0	0
			Max. Vy	38	38	0	0
			Max. Vx	48	0	0	0
T16	281 - 276	Leg	Max Tension	32	32886	427	268
			Max. Compression	26	-126473	-603	363
			Max. Mx	28	-69000	1614	-968
			Max. My	4	-64868	32	1833
			Max. Vy	28	673	1614	-968
			Max. Vx	4	758	32	1833
		Diagonal	Max Tension	25	5266	0	0
			Max. Compression	25	-5226	0	0
			Max. Mx	26	-1649	-59	-3
			Max. My	8	-1672	-15	-5
			Max. Vy	49	-30	0	0
			Max. Vx	8	1	-15	-5
		Top Girt	Max Tension	32	391	0	0
			Max. Compression	26	-179	0	0
			Max. Mx	38	229	-62	0
			Max. My	48	210	0	0
			Max. Vy	38	41	0	0
			Max. Vx	48	0	0	0
T17	276 - 271	Leg	Max Tension	32	36711	663	373
			Max. Compression	26	-130897	-414	202
			Max. Mx	10	4653	-1648	916
			Max. My	22	4234	-61	-1873
			Max. Vy	10	-634	-1648	916
			Max. Vx	22	-722	-61	-1873
		Diagonal	Max Tension	19	5688	0	0
			Max. Compression	19	-5857	0	0
			Max. Mx	49	66	76	-1
			Max. My	5	-1645	15	-7
			Max. Vy	49	-39	76	-1
			Max. Vx	5	2	15	-7
T18	271 - 266	Leg	Max Tension	32	40207	562	342
			Max. Compression	26	-136680	-640	301
			Max. Mx	28	-95478	1979	-1149
			Max. My	4	-90755	48	2232
			Max. Vy	28	752	1979	-1149
			Max. Vx	4	844	48	2232
		Diagonal	Max Tension	19	6704	0	0
			Max. Compression	19	-5654	0	0
			Max. Mx	26	-1664	-68	-2
			Max. My	8	-1776	-20	-5
			Max. Vy	48	-32	0	0
			Max. Vx	8	1	-20	-5
		Top Girt	Max Tension	32	311	0	0
			Max. Compression	26	-840	0	0
			Max. Mx	38	-96	-62	0
			Max. My	48	-140	0	0
			Max. Vy	38	41	0	0
			Max. Vx	48	0	0	0
T19	266 - 261	Leg	Max Tension	32	45787	724	436
			Max. Compression	26	-141531	-827	413
			Max. Mx	28	-108983	-2020	1139
			Max. My	4	-104299	-48	-2266
			Max. Vy	28	737	1562	-1030
			Max. Vx	4	896	63	1806
		Diagonal	Max Tension	19	6326	0	0
			Max. Compression	19	-7120	0	0
			Max. Mx	48	1573	87	-2

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	5	-2298	21	-5
			Max. Vy	47	-42	87	-1
			Max. Vx	5	1	21	-5
T20	261 - 256	Leg	Max Tension	32	46392	866	630
			Max. Compression	26	-152160	-581	372
			Max. Mx	31	21625	-5501	-3188
			Max. My	25	16021	-170	6191
			Max. Vy	31	1671	2070	808
			Max. Vx	22	-1892	-49	-2546
		Diagonal	Max Tension	19	11990	-107	-5
			Max. Compression	16	-4267	-85	-3
			Max. Mx	26	-225	-241	3
			Max. My	13	-2989	-106	21
			Max. Vy	47	-82	0	0
			Max. Vx	13	-6	-106	21
		Top Girt	Max Tension	1	0	0	0
			Max. Compression	28	-5827	0	0
			Max. Mx	38	-2265	-57	0
			Max. My	5	-2580	0	0
			Max. Vy	38	38	0	0
			Max. Vx	5	0	0	0
T21	256 - 251	Leg	Max Tension	34	52568	-2747	-1437
			Max. Compression	26	-155580	406	-224
			Max. Mx	31	-6615	20269	-6621
			Max. My	19	-9536	-75	-22872
			Max. Vy	31	31528	-11264	-6621
			Max. Vx	19	-35580	-75	12713
		Diagonal	Max Tension	31	17691	-37	50
			Max. Compression	29	-12705	0	0
			Max. Mx	28	4373	268	50
			Max. My	13	7766	-15	108
			Max. Vy	47	-97	267	31
			Max. Vx	13	29	-15	108
		Secondary Horizontal	Max Tension	31	25246	0	0
			Max. Compression	26	-2695	0	0
			Max. Mx	28	21539	-939	-84
			Max. My	31	-2201	-655	138
			Max. Vy	28	-345	-939	-84
			Max. Vx	31	-46	-655	138
		Guy A	Bottom Tension	19	64104		
			Top Tension	19	64998		
			Top Cable Vert	19	37364		
			Top Cable Norm	19	53185		
			Top Cable Tan	19	94		
			Bot Cable Vert	19	-35292		
			Bot Cable Norm	19	53512		
			Bot Cable Tan	19	498		
		Guy B	Bottom Tension	31	66074		
			Top Tension	31	66945		
			Top Cable Vert	31	38487		
			Top Cable Norm	31	54776		
			Top Cable Tan	31	75		
			Bot Cable Vert	31	-36466		
			Bot Cable Norm	31	55097		
			Bot Cable Tan	31	506		
		Guy C	Bottom Tension	13	65273		
			Top Tension	13	66169		
			Top Cable Vert	13	37701		
			Top Cable Norm	13	54378		
			Top Cable Tan	13	91		
			Bot Cable Vert	13	-35611		
			Bot Cable Norm	13	54700		
			Bot Cable Tan	13	504		
T22	251 - 246	Leg	Max Tension	1	0	0	0
			Max. Compression	26	-125271	3046	-1750
			Max. Mx	14	-120700	3323	1853
			Max. My	2	-116166	42	-3676
			Max. Vy	29	-2062	2975	-785

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	2	-2290	-34	3452
		Diagonal	Max Tension	29	11489	0	0
			Max. Compression	29	-12734	22	-10
			Max. Mx	47	1772	-176	1
			Max. My	6	-11392	3	-20
			Max. Vy	47	-73	0	0
			Max. Vx	6	5	3	-20
		Top Girt	Max Tension	10	167	0	0
			Max. Compression	28	-6250	0	0
			Max. Mx	42	-1553	-56	0
			Max. My	5	-2496	0	0
			Max. Vy	42	38	0	0
			Max. Vx	5	0	0	0
T23	246 - 241	Leg	Max Tension	1	0	0	0
			Max. Compression	47	-112498	380	-220
			Max. Mx	14	-100054	-3058	-1703
			Max. My	2	-96413	-42	3364
			Max. Vy	14	1135	-3058	-1703
			Max. Vx	2	-1255	-42	3364
		Diagonal	Max Tension	29	11147	0	0
			Max. Compression	29	-10098	0	0
			Max. Mx	50	1732	212	32
			Max. My	13	4505	158	41
			Max. Vy	50	-82	212	32
			Max. Vx	13	-11	158	41
		Secondary Horizontal	Max Tension	47	1949	-569	50
			Max. Compression	47	-1949	0	0
			Max. Mx	47	-1949	-570	51
			Max. My	49	-1918	-560	53
			Max. Vy	47	248	-570	51
			Max. Vx	49	-18	0	0
T24	241 - 221	Leg	Max Tension	1	0	0	0
			Max. Compression	47	-114691	130	212
			Max. Mx	14	-57806	-2945	-1621
			Max. My	2	-55949	-28	3228
			Max. Vy	14	1159	-2945	-1621
			Max. Vx	2	-1278	-28	3228
		Diagonal	Max Tension	29	9834	0	0
			Max. Compression	29	-10172	17	-7
			Max. Mx	47	47	211	-2
			Max. My	15	-7361	-22	20
			Max. Vy	47	-82	211	-2
			Max. Vx	15	-5	-22	20
		Top Girt	Max Tension	10	412	0	0
			Max. Compression	28	-733	0	0
			Max. Mx	45	-18	-56	0
			Max. My	5	-141	0	0
			Max. Vy	45	37	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	15	634	0	0
			Max. Compression	33	-124	0	0
			Max. Mx	42	289	-56	0
			Max. My	5	181	0	0
			Max. Vy	42	37	0	0
			Max. Vx	5	0	0	0
T25	221 - 201	Leg	Max Tension	15	35233	1341	593
			Max. Compression	12	-145947	-545	-207
			Max. Mx	32	-109320	-2008	-974
			Max. My	20	-107248	-97	2132
			Max. Vy	32	-775	1781	858
			Max. Vx	20	830	89	-1886
		Diagonal	Max Tension	29	6632	0	0
			Max. Compression	29	-6818	0	0
			Max. Mx	48	-48	89	-3
			Max. My	31	-5320	-12	-11
			Max. Vy	48	-42	89	-3
			Max. Vx	31	3	-12	-11
		Top Girt	Max Tension	15	679	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	32	-4	0	0
			Max. Mx	45	473	-56	0
			Max. My	5	250	0	0
			Max. Vy	45	-37	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	15	664	0	0
			Max. Compression	20	-16	0	0
			Max. Mx	45	463	-56	0
			Max. My	5	243	0	0
			Max. Vy	45	-37	0	0
			Max. Vx	5	0	0	0
T26	201 - 181	Leg	Max Tension	15	52824	642	184
			Max. Compression	12	-161663	75	-525
			Max. Mx	29	-148440	-1251	-498
			Max. My	20	-142677	-63	1314
			Max. Vy	32	-476	1031	473
			Max. Vx	20	509	58	-1090
		Diagonal	Max Tension	29	3833	0	0
			Max. Compression	29	-4066	0	0
			Max. Mx	48	-536	93	-3
			Max. My	31	-2548	-18	-11
			Max. Vy	48	-43	93	-3
			Max. Vx	31	3	-18	-11
		Top Girt	Max Tension	15	715	0	0
			Max. Compression	8	-74	0	0
			Max. Mx	44	492	-55	0
			Max. My	5	248	0	0
			Max. Vy	44	37	0	0
			Max. Vx	5	0	0	0
		Mid Girt	Max Tension	15	736	0	0
			Max. Compression	32	-134	0	0
			Max. Mx	47	511	-55	0
			Max. My	7	-28	0	0
			Max. Vy	47	37	0	0
			Max. Vx	7	0	0	0
T27	181 - 161	Leg	Max Tension	15	53603	51	-88
			Max. Compression	11	-164506	378	-542
			Max. Mx	6	-149458	892	-318
			Max. My	18	-154006	-82	1017
			Max. Vy	6	-358	-808	91
			Max. Vx	21	-392	-80	-825
		Diagonal	Max Tension	34	2447	0	0
			Max. Compression	34	-2584	0	0
			Max. Mx	46	-224	94	1
			Max. My	31	-1319	-20	-10
			Max. Vy	46	-43	94	1
			Max. Vx	31	3	-20	-10
		Top Girt	Max Tension	15	950	0	0
			Max. Compression	32	-211	0	0
			Max. Mx	47	649	111	0
			Max. My	7	300	0	0
			Max. Vy	47	74	0	0
			Max. Vx	7	0	0	0
		Mid Girt	Max Tension	15	745	0	0
			Max. Compression	32	-139	0	0
			Max. Mx	38	436	-54	0
			Max. My	7	244	0	0
			Max. Vy	38	-36	0	0
			Max. Vx	7	0	0	0
T28	161 - 141	Leg	Max Tension	14	47858	-461	-407
			Max. Compression	29	-159678	-320	91
			Max. Mx	9	-122098	-1629	803
			Max. My	21	-119979	-328	-1822
			Max. Vy	33	1460	1617	1120
			Max. Vx	21	-1039	-328	-1822
		Diagonal	Max Tension	21	5596	0	0
			Max. Compression	21	-5719	0	0
			Max. Mx	48	-1295	187	-9
			Max. My	23	-3957	80	34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	48	-75	187	-9
			Max. Vx	23	-9	80	34
		Top Girt	Max Tension	14	881	0	0
			Max. Compression	32	-148	0	0
			Max. Mx	38	516	-54	0
			Max. My	6	267	0	0
			Max. Vy	38	36	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	14	882	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	607	-54	0
			Max. My	6	317	0	0
			Max. Vy	38	36	0	0
			Max. Vx	6	0	0	0
T29	141 - 121	Leg	Max Tension	14	18601	-1228	-872
			Max. Compression	45	-141996	42	426
			Max. Mx	27	969	-2362	1128
			Max. My	21	-95752	-272	-2604
			Max. Vy	30	942	2168	97
			Max. Vx	21	-939	-272	-2604
		Diagonal	Max Tension	3	7895	0	0
			Max. Compression	21	-8027	0	0
			Max. Mx	14	-528	223	3
			Max. My	21	-7925	145	77
			Max. Vy	47	-80	208	0
			Max. Vx	21	-21	145	77
		Top Girt	Max Tension	34	1573	0	0
			Max. Compression	28	-341	0	0
			Max. Mx	38	747	-53	0
			Max. My	6	331	0	0
			Max. Vy	38	35	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	33	12180	0	0
			Max. Compression	28	-8330	0	0
			Max. Mx	38	1519	-53	0
			Max. My	6	345	0	0
			Max. Vy	38	35	0	0
			Max. Vx	6	0	0	0
		Guy A	Bottom Tension	18	21969		
			Top Tension	18	22115		
			Top Cable Vert	18	8042		
			Top Cable Norm	18	20601		
			Top Cable Tan	18	27		
			Bot Cable Vert	18	-7516		
			Bot Cable Norm	18	20643		
			Bot Cable Tan	18	156		
		Guy B	Bottom Tension	31	22242		
			Top Tension	31	22378		
			Top Cable Vert	31	7556		
			Top Cable Norm	31	21063		
			Top Cable Tan	31	35		
			Bot Cable Vert	31	-7035		
			Bot Cable Norm	31	21100		
			Bot Cable Tan	31	171		
		Guy C	Bottom Tension	13	21853		
			Top Tension	13	21995		
			Top Cable Vert	13	7512		
			Top Cable Norm	13	20673		
			Top Cable Tan	13	41		
			Bot Cable Vert	13	-6968		
			Bot Cable Norm	13	20711		
			Bot Cable Tan	13	169		
		Torque Arm Top	Max Tension	21	20102	0	0
			Max. Compression	37	-1351	0	0
			Max. Mx	47	12071	169	0
			Max. My	6	18628	0	0
			Max. Vy	47	-90	0	0
			Max. Vx	6	0	0	0
		Torque Arm	Max Tension	16	14255	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Bottom					
			Max. Compression	19	-24370	0	0
			Max. Mx	48	-9080	285	0
			Max. My	6	7964	0	-1
			Max. Vy	48	91	0	0
			Max. Vx	6	0	0	0
T30	121 - 101	Leg	Max Tension	14	55687	1160	626
			Max. Compression	29	-190855	259	-109
			Max. Mx	37	-153185	2093	574
			Max. My	22	-143233	43	-2264
			Max. Vy	37	-842	2093	574
			Max. Vx	22	914	43	-2264
		Diagonal	Max Tension	4	5487	0	0
			Max. Compression	22	-5730	0	0
			Max. Mx	46	685	96	1
			Max. My	15	-4405	-34	17
			Max. Vy	46	-43	96	1
			Max. Vx	15	5	-34	17
		Top Girt	Max Tension	33	5856	0	0
			Max. Compression	16	-7256	0	0
			Max. Mx	38	365	-52	0
			Max. My	6	834	0	0
			Max. Vy	38	-35	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	50	617	0	0
			Max. Compression	1	0	0	0
			Max. Mx	38	595	-52	0
			Max. My	6	364	0	0
			Max. Vy	38	-35	0	0
			Max. Vx	6	0	0	0
T31	101 - 81	Leg	Max Tension	14	68079	535	251
			Max. Compression	32	-207811	-366	-252
			Max. Mx	34	-183208	-1403	-801
			Max. My	22	-181914	-98	1620
			Max. Vy	37	-549	1221	321
			Max. Vx	22	620	94	-1302
		Diagonal	Max Tension	22	3126	0	0
			Max. Compression	22	-3330	0	0
			Max. Mx	46	-196	100	2
			Max. My	2	-2739	-46	-9
			Max. Vy	46	-44	100	2
			Max. Vx	2	-2	-46	-9
		Top Girt	Max Tension	14	958	0	0
			Max. Compression	32	-144	0	0
			Max. Mx	38	621	-51	0
			Max. My	6	333	0	0
			Max. Vy	38	-34	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	14	1027	0	0
			Max. Compression	20	-220	0	0
			Max. Mx	38	627	-51	0
			Max. My	6	337	0	0
			Max. Vy	38	-34	0	0
			Max. Vx	6	0	0	0
T32	81 - 61	Leg	Max Tension	14	67751	-52	-90
			Max. Compression	32	-210196	-659	-436
			Max. Mx	8	-205509	1037	-534
			Max. My	20	-206755	69	1140
			Max. Vy	2	-436	942	-342
			Max. Vx	14	424	802	-624
		Diagonal	Max Tension	2	2049	0	0
			Max. Compression	2	-2366	0	0
			Max. Mx	46	-484	101	2
			Max. My	17	-1160	33	8
			Max. Vy	46	-44	101	2
			Max. Vx	17	2	33	8
		Top Girt	Max Tension	14	1045	0	0
			Max. Compression	20	-251	0	0
			Max. Mx	38	634	-50	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	6	342	0	0
			Max. Vy	38	-34	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	26	1037	0	0
			Max. Compression	20	-254	0	0
			Max. Mx	47	788	-50	0
			Max. My	6	347	0	0
			Max. Vy	47	-34	0	0
			Max. Vx	6	0	0	0
T33	61 - 41	Leg	Max Tension	14	53113	-822	-476
			Max. Compression	32	-204413	-258	-94
			Max. Mx	11	-186395	1618	-752
			Max. My	20	-186354	13	1843
			Max. Vy	32	594	1280	723
			Max. Vx	20	-683	-14	-1472
		Diagonal	Max Tension	11	4124	0	0
			Max. Compression	11	-4443	0	0
			Max. Mx	46	-629	101	1
			Max. My	26	-2538	31	6
			Max. Vy	46	-43	101	1
			Max. Vx	26	-2	0	0
		Top Girt	Max Tension	14	1070	0	0
			Max. Compression	20	-301	0	0
			Max. Mx	47	796	-49	0
			Max. My	6	331	0	0
			Max. Vy	47	-33	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	14	963	0	0
			Max. Compression	20	-174	0	0
			Max. Mx	47	787	-49	0
			Max. My	6	358	0	0
			Max. Vy	47	-33	0	0
			Max. Vx	6	0	0	0
T34	41 - 20	Leg	Max Tension	14	16726	-1421	-815
			Max. Compression	45	-186804	-2	-510
			Max. Mx	14	-9048	2263	1291
			Max. My	2	-9194	3	-2563
			Max. Vy	14	-782	-1752	-1009
			Max. Vx	2	890	3	1991
		Diagonal	Max Tension	17	6473	0	0
			Max. Compression	11	-6597	0	0
			Max. Mx	46	-823	101	1
			Max. My	26	-4655	25	6
			Max. Vy	46	-42	101	1
			Max. Vx	26	-2	0	0
		Top Girt	Max Tension	14	911	0	0
			Max. Compression	20	-73	0	0
			Max. Mx	47	823	-47	0
			Max. My	6	390	0	0
			Max. Vy	47	31	0	0
			Max. Vx	6	0	0	0
		Mid Girt	Max Tension	47	1398	0	0
			Max. Compression	1	0	0	0
			Max. Mx	47	1398	-47	0
			Max. My	5	732	0	0
			Max. Vy	47	31	0	0
			Max. Vx	5	0	0	0
T35	20 - 6.70833	Leg	Max Tension	1	0	0	0
			Max. Compression	45	-186273	-68	-5
			Max. Mx	15	-30957	2592	10
			Max. My	15	-137286	-1222	1732
			Max. Vy	15	-582	104	-6
			Max. Vx	12	-332	338	328
		Diagonal	Max Tension	25	1652	-12	2
			Max. Compression	48	-2162	0	0
			Max. Mx	46	-2030	-140	-6
			Max. My	6	-1334	-132	14
			Max. Vy	46	-83	0	0
			Max. Vx	6	8	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	47	17243	0	0
			Max. Compression	1	0	0	0
			Max. Mx	47	17243	72	0
			Max. My	48	15585	0	6
			Max. Vy	47	-48	0	0
			Max. Vx	48	4	0	0
T36	6.70833 - 0	Leg	Max Tension	1	0	0	0
			Max. Compression	45	-190658	-752	-6
			Max. Mx	15	-30261	2427	3
			Max. My	15	-142540	-1497	1682
			Max. Vy	47	1650	-1890	323
			Max. Vx	5	-1153	-985	1299
		Diagonal	Max Tension	48	2638	-134	-7
			Max. Compression	5	-4178	83	-34
			Max. Mx	45	-2960	-412	-1
			Max. My	5	-4178	83	-34
			Max. Vy	45	-505	0	0
			Max. Vx	5	-41	0	0

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	47	501187	1016	-713
	Max. H_x	29	288711	10591	-38
	Max. H_z	2	296313	13	10824
	Max. M_x	1	0	-18	-8
	Max. M_z	1	0	-18	-8
	Max. Torsion	23	708	5047	-8761
	Min. Vert	1	192876	-18	-8
	Min. H_x	11	285947	-10657	-96
	Min. H_z	20	264702	25	-10574
	Min. M_x	1	0	-18	-8
	Min. M_z	1	0	-18	-8
	Min. Torsion	5	-779	-5103	8829
Guy C @ 411 ft Elev -20.5 ft Azimuth 240 deg	Max. Vert	28	-2410	-2895	1671
	Max. H_x	28	-2410	-2895	1671
	Max. H_z	7	-86843	-92642	55093
	Min. Vert	13	-89006	-96493	54057
	Min. H_x	13	-89006	-96493	54057
	Min. H_z	28	-2410	-2895	1671
Guy B @ 394 ft Elev -13 ft Azimuth 120 deg	Max. Vert	16	-2275	2605	1504
	Max. H_x	31	-91295	96876	54280
	Max. H_z	37	-88293	92452	54979
	Min. Vert	31	-91295	96876	54280
	Min. H_x	16	-2275	2605	1504
	Min. H_z	16	-2275	2605	1504
Guy A @ 405 ft Elev -20 ft Azimuth 0 deg	Max. Vert	4	-2437	0	-3271
	Max. H_x	31	-48251	2948	-58890
	Max. H_z	4	-2437	0	-3271
	Min. Vert	25	-88136	1412	-107983
	Min. H_x	13	-48074	-2951	-58635
	Min. H_z	25	-88136	1412	-107983
Guy C @ 424.5 ft Elev -16.5 ft Azimuth 240 deg	Max. Vert	28	-356	-1722	994
	Max. H_x	28	-356	-1722	994

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_z	13	-13793	-35680	20233
	Min. Vert	13	-13793	-35680	20233
	Min. H_x	13	-13793	-35680	20233
	Min. H_z	28	-356	-1722	994
Guy B @ 407.5 ft Elev -9 ft Azimuth 120 deg	Max. Vert	16	-314	1602	925
	Max. H_x	30	-13979	36484	20690
	Max. H_z	36	-13831	35789	21031
	Min. Vert	30	-13979	36484	20690
	Min. H_x	16	-314	1602	925
	Min. H_z	16	-314	1602	925
Guy A @ 403 ft Elev -20 ft Azimuth 0 deg	Max. Vert	3	-363	0	-1791
	Max. H_x	31	-7869	769	-21904
	Max. H_z	3	-363	0	-1791
	Min. Vert	18	-14998	-326	-41177
	Min. H_x	13	-7790	-772	-21693
	Min. H_z	18	-14998	-326	-41177

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	192876	18	8	0	0	0
1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy	296313	-13	-10824	0	0	89
1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy	303174	-16	-9704	0	0	90
1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy	312436	-19	-9303	0	0	91
1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy	279808	5103	-8829	0	0	779
1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy	285659	4805	-7931	0	0	738
1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy	293058	4741	-7619	0	0	652
1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy	263920	9139	-5223	0	0	204
1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy	266692	8514	-4869	0	0	125
1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy	269610	8403	-4794	0	0	33
1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy	285947	10657	96	0	0	-350
1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy	292075	9696	-116	0	0	-430
1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy	298218	9404	-224	0	0	-476
1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy	300552	9379	5442	0	0	-91
1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy	307656	8384	4863	0	0	-158
1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy	315697	8036	4676	0	0	-199
1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy	284505	5498	9304	0	0	260
1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy	290111	4873	8611	0	0	215
1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy	296209	4633	8435	0	0	176
1.2D+1.0W (pattern 1) 180	264702	-25	10574	0	0	-319

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg - No Ice+1.0 Guy						
1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy	267394	-19	9873	0	0	-332
1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy	270740	-14	9749	0	0	-330
1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy	285437	-5047	8761	0	0	-708
1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy	291402	-4397	8042	0	0	-659
1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy	297865	-4156	7864	0	0	-618
1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy	303389	-9211	5302	0	0	-41
1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy	310818	-8190	4707	0	0	26
1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy	319190	-7843	4517	0	0	68
1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy	288711	-10591	38	0	0	269
1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy	294824	-9635	-178	0	0	350
1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy	301056	-9347	-287	0	0	395
1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy	266776	-9211	-5230	0	0	-189
1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy	269444	-8604	-4894	0	0	-100
1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy	272323	-8494	-4826	0	0	-12
1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy	281450	-5401	-9390	0	0	-408
1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy	286938	-5117	-8529	0	0	-373
1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy	294002	-5058	-8221	0	0	-287
1.2 Dead+1.0 Ice+1.0 Temp+Guy	489570	81	103	0	0	0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	499275	80	-1289	0	0	-121
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	496496	935	-1172	0	0	-68
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	494356	1456	-827	0	0	-267
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	496287	1522	-89	0	0	-349
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	498745	1201	740	0	0	-154
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	496664	687	1478	0	0	108
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	495341	79	1764	0	0	88
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	498120	-509	1454	0	0	7
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	501187	-1016	713	0	0	205
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	498655	-1359	-94	0	0	346
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0	496158	-1336	-820	0	0	69

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Guy 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	497417	-784	-1208	0	0	-169
Dead+Wind 0 deg - Service+Guy	199460	5	-2474	0	0	33
Dead+Wind 30 deg - Service+Guy	197535	1225	-2001	0	0	191
Dead+Wind 60 deg - Service+Guy	196381	2137	-1200	0	0	17
Dead+Wind 90 deg - Service+Guy	197664	2492	-10	0	0	-119
Dead+Wind 120 deg - Service+Guy	199293	2188	1269	0	0	-48
Dead+Wind 150 deg - Service+Guy	197763	1259	2193	0	0	59
Dead+Wind 180 deg - Service+Guy	196975	13	2466	0	0	-58
Dead+Wind 210 deg - Service+Guy	198692	-1133	2059	0	0	-177
Dead+Wind 240 deg - Service+Guy	200966	-2135	1235	0	0	1
Dead+Wind 270 deg - Service+Guy	199227	-2466	-25	0	0	98
Dead+Wind 300 deg - Service+Guy	197532	-2140	-1216	0	0	-17
Dead+Wind 330 deg - Service+Guy	198153	-1288	-2141	0	0	-92

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0	-113956	0	2	113956	0	0.001%
2	-649	-134567	-127198	649	134567	127191	0.004%
3	-646	-134567	-133789	646	134567	133782	0.004%
4	-625	-134567	-138836	625	134567	138828	0.004%
5	62354	-133698	-105167	-62355	133698	105161	0.004%
6	65651	-133698	-110762	-65652	133698	110755	0.004%
7	67525	-133698	-115229	-67526	133698	115222	0.004%
8	108410	-132824	-60739	-108408	132824	60742	0.002%
9	114035	-132824	-63916	-114033	132824	63919	0.002%
10	117605	-132824	-66518	-117601	132824	66524	0.004%
11	127610	-133737	585	-127604	133736	-580	0.004%
12	134251	-133737	597	-134245	133737	-593	0.004%
13	138562	-133737	586	-138556	133736	-582	0.004%
14	113004	-134635	64261	-112998	134635	-64257	0.004%
15	118828	-134635	67569	-118821	134635	-67564	0.004%
16	122474	-134635	70193	-122466	134635	-70189	0.004%
17	64384	-133736	107373	-64378	133736	-107370	0.004%
18	67507	-133736	112673	-67501	133736	-112670	0.004%
19	69274	-133736	116982	-69267	133736	-116979	0.004%
20	-337	-132829	122381	329	132829	-122382	0.005%
21	-340	-132829	128537	333	132829	-128537	0.004%
22	-354	-132829	133366	345	132829	-133366	0.005%
23	-63128	-133698	105286	63123	133697	-105284	0.003%
24	-66441	-133698	110909	66436	133697	-110906	0.003%
25	-68321	-133698	115378	68315	133697	-115375	0.003%
26	-113597	-134572	63230	113591	134571	-63226	0.004%
27	-119635	-134572	66665	119629	134571	-66661	0.004%
28	-123392	-134572	69377	123385	134571	-69373	0.004%
29	-128265	-133659	-17	128260	133659	21	0.004%
30	-134906	-133659	2	134901	133659	2	0.004%
31	-139217	-133659	15	139211	133659	-11	0.004%
32	-109584	-132761	-60954	109582	132761	60957	0.002%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
33	-114995	-132761	-64003	114992	132761	64008	0.003%
34	-118454	-132761	-66520	118451	132761	66525	0.003%
35	-64861	-133659	-107260	64862	133659	107253	0.004%
36	-67967	-133659	-112531	67968	133659	112524	0.004%
37	-69734	-133659	-116834	69735	133659	116827	0.004%
38	0	-360266	0	-5	360266	3	0.002%
39	-229	-360833	-47763	229	360833	47761	0.001%
40	23790	-360266	-41079	-23791	360266	41076	0.001%
41	41637	-359696	-23674	-41634	359696	23673	0.001%
42	48000	-360290	193	-47997	360290	-191	0.001%
43	41864	-360876	23942	-41862	360876	-23941	0.001%
44	24206	-360290	40844	-24203	360290	-40843	0.001%
45	271	-359699	47268	-272	359699	-47266	0.000%
46	-24031	-360266	40872	24028	360266	-40871	0.001%
47	-42060	-360837	23659	42057	360837	-23657	0.001%
48	-48050	-360243	-174	48047	360243	176	0.001%
49	-41554	-359657	-23884	41550	359657	23885	0.001%
50	-24106	-360243	-41042	24107	360243	41039	0.001%
51	-158	-114167	-34563	158	114167	34561	0.002%
52	16949	-113956	-28650	-16949	113956	28649	0.001%
53	29423	-113744	-16524	-29423	113744	16527	0.002%
54	34631	-113965	146	-34630	113965	-145	0.001%
55	30647	-114183	17448	-30646	114183	-17447	0.001%
56	17383	-113965	29082	-17382	113965	-29082	0.001%
57	-81	-113745	33191	80	113745	-33193	0.002%
58	-17141	-113956	28686	17139	113956	-28686	0.001%
59	-30866	-114168	17240	30865	114168	-17239	0.001%
60	-34790	-113946	-1	34789	113946	2	0.001%
61	-29632	-113728	-16534	29632	113728	16535	0.001%
62	-17494	-113946	-29048	17495	113946	29047	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00002822
2	Yes	20	0.00006473	0.00007080
3	Yes	20	0.00005843	0.00006584
4	Yes	20	0.00005714	0.00007213
5	Yes	20	0.00007743	0.00006924
6	Yes	20	0.00006660	0.00006100
7	Yes	20	0.00006367	0.00006725
8	Yes	19	0.00007095	0.00003811
9	Yes	19	0.00006545	0.00002070
10	Yes	18	0.00008757	0.00001670
11	Yes	20	0.00007793	0.00007020
12	Yes	20	0.00006857	0.00006427
13	Yes	20	0.00006754	0.00007071
14	Yes	20	0.00006884	0.00007537
15	Yes	20	0.00006285	0.00007143
16	Yes	20	0.00006113	0.00007647
17	Yes	20	0.00007368	0.00006185
18	Yes	20	0.00006463	0.00005637
19	Yes	20	0.00006725	0.00006604
20	Yes	15	0.00009686	0.00009878
21	Yes	16	0.00008943	0.00008617
22	Yes	16	0.00009543	0.00008674
23	Yes	20	0.00006322	0.00006016
24	Yes	20	0.00005516	0.00005383
25	Yes	20	0.00005745	0.00006332
26	Yes	20	0.00006300	0.00007318
27	Yes	20	0.00005704	0.00006862
28	Yes	20	0.00005589	0.00007401
29	Yes	20	0.00007219	0.00006749
30	Yes	20	0.00006317	0.00006122

31	Yes	20	0.00006240	0.00006747
32	Yes	19	0.00006971	0.00002529
33	Yes	19	0.00007374	0.00001571
34	Yes	19	0.00006862	0.00002472
35	Yes	20	0.00008481	0.00006912
36	Yes	20	0.00007257	0.00006075
37	Yes	20	0.00006944	0.00006718
38	Yes	11	0.00010000	0.00006964
39	Yes	18	0.00000001	0.00001515
40	Yes	17	0.00007742	0.00001943
41	Yes	14	0.00008493	0.00004432
42	Yes	17	0.00007164	0.00001672
43	Yes	18	0.00000001	0.00001268
44	Yes	17	0.00006855	0.00001603
45	Yes	15	0.00000001	0.00002013
46	Yes	17	0.00008297	0.00002164
47	Yes	18	0.00005431	0.00001657
48	Yes	17	0.00008369	0.00002107
49	Yes	14	0.00007851	0.00003751
50	Yes	17	0.00007381	0.00001759
51	Yes	16	0.00009182	0.00004061
52	Yes	16	0.00000001	0.00002290
53	Yes	12	0.00000001	0.00004152
54	Yes	16	0.00000001	0.00002725
55	Yes	17	0.00000001	0.00002157
56	Yes	16	0.00000001	0.00002323
57	Yes	12	0.00000001	0.00002043
58	Yes	16	0.00000001	0.00003044
59	Yes	17	0.00000001	0.00002637
60	Yes	16	0.00000001	0.00003111
61	Yes	13	0.00000001	0.00002506
62	Yes	16	0.00000001	0.00001992

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	496.57 - 457	7.8558	61	0.1603	0.2159
Antenna					
T1	457 - 436	6.6959	59	0.1551	0.2157
T2	436 - 421	6.3339	59	0.1486	0.2111
T3	421 - 401	6.0916	59	0.1386	0.2057
T4	401 - 396	5.8060	59	0.1115	0.1986
T5	396 - 391	5.7460	59	0.1053	0.1967
T6	391 - 386	5.6915	59	0.0981	0.1948
T7	386 - 381	5.6393	59	0.0896	0.1927
T8	381 - 376	5.5967	59	0.0799	0.1906
T9	376 - 371	5.5771	59	0.0728	0.1889
T10	371 - 366	5.5652	59	0.0665	0.1870
T11	366 - 361	5.5555	59	0.0612	0.1852
T12	361 - 341	5.5492	59	0.0567	0.1836
T13	341 - 321	5.5426	59	0.0388	0.1769
T14	321 - 301	5.5295	59	0.0331	0.1726
T15	301 - 281	5.4691	59	0.0323	0.1681
T16	281 - 276	5.3704	59	0.0264	0.1627
T17	276 - 271	5.3451	59	0.0237	0.1610
T18	271 - 266	5.3215	59	0.0203	0.1588
T19	266 - 261	5.3003	59	0.0157	0.1565
T20	261 - 256	5.2833	59	0.0102	0.1545
T21	256 - 251	5.2753	59	0.0099	0.1535
T22	251 - 246	5.2808	59	0.0164	0.1523
T23	246 - 241	5.2952	59	0.0203	0.1510
T24	241 - 221	5.3099	59	0.0222	0.1497
T25	221 - 201	5.3560	59	0.0189	0.1437
T26	201 - 181	5.3383	59	0.0212	0.1310
T27	181 - 161	5.2112	59	0.0494	0.1183
T28	161 - 141	4.9646	59	0.0770	0.1050

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T29	141 - 121	4.6275	59	0.0942	0.0945
T30	121 - 101	4.2535	59	0.1005	0.0863
T31	101 - 81	3.8628	59	0.1217	0.0864
T32	81 - 61	3.3605	59	0.1514	0.0821
T33	61 - 41	2.7288	59	0.1837	0.0779
T34	41 - 20	1.9695	59	0.2124	0.0766
T35	20 - 6.70833	1.0573	59	0.2338	0.0751
T36	6.70833 - 0	0.4308	59	0.2876	0.0820

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	6.6959	0.1551	0.2157	62513
450'	USX6-6W-6GR	59	6.5706	0.1534	0.2146	84099
446'6"	Guy	59	6.5101	0.1523	0.2139	106865
441'	SRL-235-2	59	6.4170	0.1505	0.2125	169350
435'	ERI 1183-3CP	59	6.3173	0.1481	0.2107	246345
430'	ERI 1183-3CP	59	6.2354	0.1457	0.2090	161524
425'	ERI 1183-3CP	59	6.1547	0.1423	0.2072	101610
420'	ERI 1183-3CP	59	6.0761	0.1375	0.2054	76255
415'	ERI 1183-3CP	59	5.9999	0.1313	0.2036	64549
410'	ERI 1183-3CP	59	5.9270	0.1242	0.2019	56339
405'	ERI 1183-3CP	59	5.8580	0.1169	0.2001	49965
393'	6014-2	59	5.7129	0.1011	0.1955	71227
388'	6014-2	59	5.6598	0.0932	0.1936	49077
381'	Guy	59	5.5967	0.0799	0.1906	12496
367'	6828-2	59	5.5572	0.0622	0.1855	62788
342'	BCD-87077	59	5.5427	0.0395	0.1772	132329
333'	3" x 6" SideLight	59	5.5410	0.0351	0.1749	122629
330'	PG1N0F-0090-310	59	5.5395	0.0343	0.1743	104657
326'	DB201-A	59	5.5362	0.0336	0.1735	87548
325'	DB408	59	5.5351	0.0335	0.1733	84139
322'	SPD3-5.8	59	5.5311	0.0332	0.1727	76730
316'	6014-2	59	5.5193	0.0329	0.1715	76443
306'	6014-2	59	5.4890	0.0326	0.1693	85233
277'	BMR10-A-B1	59	5.3500	0.0242	0.1614	70285
264'	ANT150F6	59	5.2928	0.0138	0.1556	39723
258'6"	(2) PL6" x 0.5"	59	5.2777	0.0066	0.1540	22946
255'	DB809KT3E-Y	59	5.2753	0.0114	0.1533	20110
254'6"	Guy	59	5.2755	0.0121	0.1532	20533
247'	APXVAARR24_43-U-NA20 w/ Mount Pipe	59	5.2921	0.0197	0.1513	91010
230'	HBXX-6516DS-VTM w/ Mount Pipe	59	5.3395	0.0235	0.1470	120925
215'	3" x 6" SideLight	59	5.3599	0.0132	0.1404	56513
206'	P-9A72GN-U	59	5.3517	0.0145	0.1344	44347
200'	DFPD1-52 w/ Mount Pipe	59	5.3348	0.0227	0.1303	39735
178'	SPD4-5.2	59	5.1815	0.0538	0.1163	38029
150'	HPX6-65-P3A	59	4.7873	0.0884	0.0990	76374
146'	PL6-65-PXA	59	4.7175	0.0914	0.0970	93992
140'	CM 4228HD	59	4.6092	0.0946	0.0940	142630
138'	MGA2-16N	59	4.5724	0.0953	0.0930	171094
136'	CSI-AY/809-960/11	59	4.5353	0.0959	0.0920	213207
135'	CM 4228HD	59	4.5166	0.0961	0.0915	243070
134'	MGAR3-23N	59	4.4979	0.0963	0.0910	282661
133'	220-5	59	4.4792	0.0965	0.0905	337660
131'	Guy	59	4.4416	0.0970	0.0896	552766
117'	P-9A48GN-U	59	4.1789	0.1033	0.0859	374854
112'	3" x 6" SideLight	59	4.0848	0.1080	0.0860	91654
109'	PD1132-D	59	4.0269	0.1113	0.0861	63031
108'	SSH-9A72GN	59	4.0073	0.1125	0.0862	57088
99'	SPD2-5.8	59	3.8187	0.1245	0.0862	35015
68'	P-9A48GN-U	59	2.9639	0.1717	0.0783	39318

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
62'	CSI-AY/809-960/11	59	2.7633	0.1819	0.0778	39810
61'	SSH-9A72GN	59	2.7288	0.1837	0.0779	39581

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	496.57 - 457	49.7965	26	1.0135	0.8453
Antenna					
T1	457 - 436	41.4863	26	0.9913	0.8407
T2	436 - 421	37.5836	26	0.9618	0.8224
T3	421 - 401	34.8932	26	0.9124	0.8024
T4	401 - 396	31.8763	28	0.7797	0.7755
T5	396 - 391	31.7150	28	0.7496	0.7682
T6	391 - 386	31.5716	28	0.7149	0.7608
T7	386 - 381	31.4344	28	0.6746	0.7530
T8	381 - 376	31.3309	28	0.6282	0.7450
T9	376 - 371	31.3168	28	0.5918	0.7401
T10	371 - 366	31.3292	28	0.5575	0.7350
T11	366 - 361	31.3486	28	0.5256	0.7297
T12	361 - 341	31.3778	28	0.4957	0.7248
T13	341 - 321	31.5308	28	0.3427	0.7034
T14	321 - 301	31.5948	28	0.2332	0.6853
T15	301 - 281	31.4237	28	0.1405	0.6650
T16	281 - 276	31.1580	16	0.1113	0.6408
T17	276 - 271	31.0988	16	0.1020	0.6339
T18	271 - 266	31.0474	16	0.1010	0.6255
T19	266 - 261	31.0057	16	0.1329	0.6167
T20	261 - 256	30.9817	16	0.1670	0.6085
T21	256 - 251	30.9959	16	0.2030	0.6040
T22	251 - 246	31.0687	16	0.2345	0.5999
T23	246 - 241	31.1795	16	0.2542	0.5959
T24	241 - 221	31.2894	16	0.2650	0.5918
T25	221 - 201	31.6422	16	0.2421	0.5717
T26	201 - 181	31.6444	16	0.1608	0.5280
T27	181 - 161	31.0448	16	0.2568	0.4840
T28	161 - 141	29.7589	16	0.4207	0.4374
T29	141 - 121	27.8886	16	0.5437	0.3990
T30	121 - 101	25.6519	16	0.6233	0.3677
T31	101 - 81	23.1680	15	0.7638	0.3674
T32	81 - 61	20.0270	15	0.9348	0.3487
T33	61 - 41	16.1601	15	1.1099	0.3303
T34	41 - 20	11.6025	15	1.2664	0.3243
T35	20 - 6.70833	6.2036	15	1.3805	0.3171
T36	6.70833 - 0	2.5176	15	1.6881	0.3458

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	41.4863	0.9913	0.8407	10549
450'	USX6-6W-6GR	26	40.1523	0.9840	0.8361	14530
446'6"	Guy	26	39.5013	0.9795	0.8333	18911
441'	SRL-235-2	26	38.4924	0.9712	0.8280	30075
435'	ERI 1183-3CP	26	37.4021	0.9597	0.8212	31956
430'	ERI 1183-3CP	26	36.4971	0.9474	0.8147	21421
425'	ERI 1183-3CP	26	35.6004	0.9306	0.8079	15576
420'	ERI 1183-3CP	26	34.7182	0.9071	0.8010	12645
415'	ERI 1183-3CP	26	33.8560	0.8763	0.7944	11601

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
410'	ERI 1183-3CP	26	33.0170	0.8414	0.7878	10877
405'	ERI 1183-3CP	26	32.2042	0.8060	0.7811	10128
393'	6014-2	28	31.6277	0.7294	0.7638	13923
388'	6014-2	28	31.4881	0.6917	0.7562	9559
381'	Guy	28	31.3309	0.6282	0.7450	3123
367'	6828-2	28	31.3439	0.5317	0.7307	9391
342'	BCD-87077	28	31.5237	0.3497	0.7044	9019
333'	3" x 6" SideLight	28	31.5778	0.2934	0.6959	10307
330'	PG1N0F-0090-310	28	31.5892	0.2772	0.6932	10922
326'	DB201-A	28	31.5976	0.2570	0.6897	11867
325'	DB408	28	31.5983	0.2521	0.6889	12127
322'	SPD3-5.8	28	31.5967	0.2378	0.6862	12840
316'	6014-2	28	31.5753	0.2100	0.6806	13064
306'	6014-2	28	31.4886	0.1641	0.6705	12609
277'	BMR10-A-B1	16	31.1102	0.1042	0.6354	8111
264'	ANT150F6	16	30.9931	0.1462	0.6131	7973
258'6"	(2) PL6" x 0.5"	16	30.9823	0.1850	0.6060	5183
255'	DB809KT3E-Y	16	31.0058	0.2100	0.6032	4578
254'6"	Guy	16	31.0118	0.2134	0.6028	4678
247'	APXVAARR24_43-U-NA20 w/ Mount Pipe	16	31.1565	0.2511	0.5967	18627
230'	HBXX-6516DS-VTM w/ Mount Pipe	16	31.5091	0.2604	0.5828	17724
215'	3" x 6" SideLight	16	31.6929	0.2250	0.5604	9800
206'	P-9A72GN-U	16	31.6924	0.1888	0.5398	7872
200'	DFPD1-52 w/ Mount Pipe	16	31.6302	0.1544	0.5257	7092
178'	SPD4-5.2	16	30.8950	0.2816	0.4770	6453
150'	HPX6-65-P3A	16	28.7900	0.4962	0.4158	8775
146'	PL6-65-PXA	16	28.4000	0.5191	0.4084	9540
140'	CM 4228HD	16	27.7834	0.5480	0.3971	10971
138'	MGA2-16N	16	27.5704	0.5562	0.3932	11544
136'	CSI-AY/809-960/11	16	27.3541	0.5639	0.3894	12179
135'	CM 4228HD	16	27.2448	0.5676	0.3875	12523
134'	MGAR3-23N	16	27.1348	0.5713	0.3856	12887
133'	220-5	16	27.0240	0.5749	0.3838	13273
131'	Guy	16	26.8005	0.5820	0.3802	14119
117'	P-9A48GN-U	16	25.1813	0.6453	0.3661	13564
112'	3" x 6" SideLight	15	24.5792	0.6778	0.3662	9485
109'	PD1132-D	15	24.2121	0.6995	0.3668	8033
108'	SSH-9A72GN	15	24.0871	0.7071	0.3670	7643
99'	SPD2-5.8	15	22.8888	0.7810	0.3668	5793
68'	P-9A48GN-U	15	17.5903	1.0354	0.3323	6856
62'	CSI-AY/809-960/11	15	16.3692	1.0976	0.3301	7123
61'	SSH-9A72GN	15	16.1601	1.1099	0.3303	7105

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	2082	20778	0.100	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2029	5522	0.367	1.05	Bolt Shear
		Horizontal	A307	0.50	2	579	5522	0.105	1.05	Bolt Shear
		Top Girt	A307	0.50	2	0	5522	0.000	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	2105	5522	0.381	1.05	Bolt Shear
T2	436	Leg	A307	0.88	8	4462	20778	0.215	1.05	Bolt Tension
		Diagonal	A325X	0.50	2	2209	7082	0.312	1.05	Member Block Shear
		Horizontal	A307	0.50	2	731	5522	0.132	1.05	Bolt Shear
		Top Girt	A307	0.50	2	562	5522	0.102	1.05	Bolt Shear
T3	421	Leg	A307	0.88	8	9460	20778	0.455	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3636	7082	0.513	1.05	Member Block Shear
		Top Girt	A307	0.50	2	397	5522	0.072	1.05	Bolt Shear

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
		Mid Girt	A307	0.50	2	152	5522	0.028	1.05	Bolt Shear
T4	401	Diagonal	A325N	0.50	2	3852	7082	0.544	1.05	Member Block Shear
		Top Girt	A307	0.50	2	296	5522	0.054	1.05	Bolt Shear
T5	396	Diagonal	A325N	0.50	2	4262	7082	0.602	1.05	Member Block Shear
T6	391	Diagonal	A325X	0.50	2	4866	7082	0.687	1.05	Member Block Shear
T7	386	Leg	A307	0.88	8	17779	20778	0.856	1.05	Bolt Tension
		Diagonal	A325X	0.50	2	5782	7082	0.816	1.05	Member Block Shear
T8	381	Diagonal	A325N	0.50	2	4234	7082	0.598	1.05	Member Block Shear
		Top Guy Pull-Off@381	A307	0.50	2	10636	11045	0.963	1.05	Bolt Shear
T9	376	Diagonal	A325N	0.50	2	3680	7082	0.520	1.05	Member Block Shear
T10	371	Diagonal	A325N	0.50	2	3702	7082	0.523	1.05	Member Block Shear
T11	366	Leg	A307	0.88	8	9508	20778	0.458	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3455	7082	0.488	1.05	Member Block Shear
T12	361	Leg	A307	0.88	8	6066	20778	0.292	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3156	7082	0.446	1.05	Member Block Shear
		Secondary Horizontal	A325X	0.50	1	2620	9661	0.271	1.05	Member Block Shear
		Top Girt	A307	0.50	2	316	5522	0.057	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	204	5522	0.037	1.05	Bolt Shear
T13	341	Leg	A307	0.88	8	4768	20778	0.229	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	2398	7082	0.339	1.05	Member Block Shear
		Top Girt	A307	0.50	2	211	5522	0.038	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	188	5522	0.034	1.05	Bolt Shear
T14	321	Leg	A307	0.88	8	4633	20778	0.223	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1524	5522	0.276	1.05	Bolt Shear
		Top Girt	A307	0.50	2	233	5522	0.042	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	274	5522	0.050	1.05	Bolt Shear
T15	301	Leg	A307	0.88	8	5089	20778	0.245	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2443	5522	0.442	1.05	Bolt Shear
		Top Girt	A307	0.50	2	225	5522	0.041	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	186	5522	0.034	1.05	Bolt Shear
T16	281	Diagonal	A325N	0.50	2	2633	7082	0.372	1.05	Member Block Shear
		Top Girt	A307	0.50	2	195	5522	0.035	1.05	Bolt Shear
T17	276	Diagonal	A325N	0.50	2	2844	7082	0.402	1.05	Member Block Shear
T18	271	Diagonal	A325N	0.50	2	3352	7082	0.473	1.05	Member Block Shear
		Top Girt	A307	0.50	2	420	5522	0.076	1.05	Bolt Shear
T19	266	Leg	A307	0.88	8	5897	20778	0.284	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	3163	7082	0.447	1.05	Member Block Shear
T20	261	Diagonal	A325N	0.50	2	5995	8836	0.678	1.05	Bolt Shear
		Top Girt	A307	0.50	2	2913	5522	0.528	1.05	Bolt Shear
T21	256	Diagonal	A325N	0.50	2	8846	8836	1.001	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.50	2	12623	17672	0.714	1.05	Bolt Shear
T22	251	Diagonal	A325N	0.50	2	6367	8836	0.721	1.05	Bolt Shear
		Top Girt	A307	0.50	2	3125	5522	0.566	1.05	Bolt Shear
T23	246	Leg	A307	0.63	8	4678	10170	0.460	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	5573	8836	0.631	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.50	2	974	17672	0.055	1.05	Bolt Shear
T24	241	Leg	A307	0.63	8	4779	10170	0.470	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	5086	8836	0.576	1.05	Bolt Shear
		Top Girt	A307	0.50	2	367	5522	0.066	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	317	5522	0.057	1.05	Bolt Shear

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
T25	221	Leg	A307	0.88	8	6081	20778	0.293	1.05	Bolt Tension
		Diagonal	A307	0.50	2	3409	5522	0.617	1.05	Bolt Shear
		Top Girt	A307	0.50	2	339	5522	0.061	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	332	5522	0.060	1.05	Bolt Shear
T26	201	Leg	A307	0.88	8	6736	20778	0.324	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2033	5522	0.368	1.05	Bolt Shear
		Top Girt	A307	0.50	2	357	5522	0.065	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	368	5522	0.067	1.05	Bolt Shear
T27	181	Leg	A307	0.88	8	6769	20778	0.326	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1292	5522	0.234	1.05	Bolt Shear
		Top Girt	A307	0.50	2	475	11045	0.043	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	372	5522	0.067	1.05	Bolt Shear
T28	161	Leg	A307	0.63	8	5998	10170	0.590	1.05	Bolt Tension
		Diagonal	A325N	0.63	2	2798	10833	0.258	1.05	Member Block Shear
		Top Girt	A307	0.50	2	441	5522	0.080	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	441	5522	0.080	1.05	Bolt Shear
T29	141	Leg	A307	0.63	8	5916	10170	0.582	1.05	Bolt Tension
		Diagonal	A325N	0.63	2	3948	10833	0.364	1.05	Member Block Shear
		Top Girt	A307	0.50	2	787	5522	0.142	1.05	Bolt Shear
		Mid Girt	A325N	0.50	2	6090	7082	0.860	1.05	Member Block Shear
		Torque Arm Top@131	A325N	0.75	2	10051	16924	0.594	1.05	Member Block Shear
		Torque Arm Bottom@131	A325N	0.75	2	7127	16924	0.421	1.05	Member Block Shear
T30	121	Leg	A307	0.88	8	7952	20778	0.383	1.05	Bolt Tension
		Diagonal	A325N	0.50	2	2743	7082	0.387	1.05	Member Block Shear
		Top Girt	A307	0.50	2	3628	5522	0.657	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	298	5522	0.054	1	Bolt Shear
T31	101	Leg	A307	0.88	8	8659	20778	0.417	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1665	5522	0.302	1.05	Bolt Shear
		Top Girt	A307	0.50	2	479	5522	0.087	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	513	5522	0.093	1.05	Bolt Shear
T32	81	Leg	A307	0.88	8	8655	20778	0.417	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1183	5522	0.214	1.05	Bolt Shear
		Top Girt	A307	0.50	2	522	5522	0.095	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	518	5522	0.094	1.05	Bolt Shear
T33	61	Leg	A307	0.88	8	7844	20778	0.378	1.05	Bolt Tension
		Diagonal	A307	0.50	2	2221	5522	0.402	1.05	Bolt Shear
		Top Girt	A307	0.50	2	535	5522	0.097	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	482	5522	0.087	1.05	Bolt Shear
T34	41	Leg	A307	0.88	8	7590	20778	0.365	1.05	Bolt Tension
		Diagonal	A307	0.50	2	3299	5522	0.597	1.05	Bolt Shear
		Top Girt	A307	0.50	2	455	5522	0.082	1.05	Bolt Shear
		Mid Girt	A307	0.50	2	699	5522	0.127	1.05	Bolt Shear
T35	20	Leg	A307	0.88	8	7624	20778	0.367	1.05	Bolt Tension
		Diagonal	A307	0.50	2	1081	5522	0.196	1.05	Bolt Shear
		Top Girt	A325N	0.50	2	8622	14165	0.609	1.05	Member Block Shear
T36	6.70833	Diagonal	A307	0.50	2	2089	5522	0.378	1.05	Bolt Shear

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	446'6" (A) (826)	9/16 EHS	2800	35000	13285	22050	0.952	1.581
	446'6" (B) (825)	9/16 EHS	2800	35000	13352	22050	0.952	1.573

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
	446'6" (C) (824)	9/16 EHS	2800	35000	13357	22050	0.952	1.572
T8	381' (A) (829)	1 3/8 BS	18560	232000	67287	146157	0.952	2.069
	381' (B) (828)	1 3/8 BS	18560	232000	68884	146157	0.952	2.021
	381' (C) (827)	1 3/8 BS	18560	232000	68025	146157	0.952	2.046
T21	254'6" (A) (832)	1 1/4 BS	15360	192000	64998	120958	0.952	1.772
	254'6" (B) (831)	1 1/4 BS	15360	192000	66945	120958	0.952	1.721
	254'6" (C) (830)	1 1/4 BS	15360	192000	66169	120958	0.952	1.741
T29	131' (A) (845)	11/16 EHS	6000	50000	22115	31499	0.952	1.357
	131' (A) (846)	11/16 EHS	6000	50000	22008	31499	0.952	1.363
	131' (B) (839)	11/16 EHS	6000	50000	22145	31499	0.952	1.355
	131' (B) (840)	11/16 EHS	6000	50000	22378	31499	0.952	1.341
	131' (C) (833)	11/16 EHS	6000	50000	21995	31499	0.952	1.364
	131' (C) (834)	11/16 EHS	6000	50000	21605	31499	0.952	1.389

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0 K=1.00	7.07	-31658	149352	0.212 [1]
T2	436 - 421	2 3/4	15'	5'	87.3 K=1.00	5.94	-51747	122148	0.424 [1]
T3	421 - 401	2 3/4	20'	5'	87.3 K=1.00	5.94	-100977	122148	0.827 [1]
T4	401 - 396	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.79	-116477	232333	0.501 [1]
T5	396 - 391	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.79	-133423	232333	0.574 [1]
T6	391 - 386	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.79	-152848	232333	0.658 [1]
T7	386 - 381	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.79	-175708	232333	0.756 [1]
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5 K=1.00	11.00	-184807	267249	0.692 [1]
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5 K=1.00	11.00	-175150	267249	0.655 [1]
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5 K=1.00	11.00	-166981	267249	0.625 [1]
T11	366 - 361	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5 K=1.00	11.00	-158939	267249	0.595 [1]
T12	361 - 341	3	20'	2'6"	40.0 K=1.00	7.07	-151237	194337	0.778 [1]
T13	341 - 321	3	20'	5'	80.0 K=1.00	7.07	-126799	154155	0.823 [1]
T14	321 - 301	3	20'	5'	80.0 K=1.00	7.07	-111541	154155	0.724 [1]
T15	301 - 281	3	20'	5'	80.0 K=1.00	7.07	-122142	154155	0.792 [1]
T16	281 - 276	3	5'	5'	80.0 K=1.00	7.07	-126473	154155	0.820 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T17	276 - 271	3	5'	5'	80.0 K=1.00	7.07	-130897	154155	0.849 [1]
T18	271 - 266	3	5'	5'	80.0 K=1.00	7.07	-136680	154155	0.887 [1]
T19	266 - 261	3	5'	5'	80.0 K=1.00	7.07	-141531	154155	0.918 [1]
T20	261 - 256	3	5'	5'	80.0 K=1.00	7.07	-152160	154155	0.987 [1]
T21	256 - 251	3	5'	2'6"	40.0 K=1.00	7.07	-155580	194337	0.801 [1]
T22	251 - 246	3	5'	5'	80.0 K=1.00	7.07	-125271	154155	0.813 [1]
T23	246 - 241	3	5'	2'6"	40.0 K=1.00	7.07	-112498	194337	0.579 [1]
T24	241 - 221	3	20'	5'	80.0 K=1.00	7.07	-114691	154155	0.744 [1]
T25	221 - 201	3 1/4	20'	5'	73.8 K=1.00	8.30	-145947	189376	0.771 [1]
T26	201 - 181	3 1/4	20'	5'	73.8 K=1.00	8.30	-161663	189376	0.854 [1]
T27	181 - 161	3 1/4	20'	5'	73.8 K=1.00	8.30	-164506	189376	0.869 [1]
T28	161 - 141	3 1/2	20'	5'	68.6 K=1.00	9.62	-159679	227739	0.701 [1]
T29	141 - 121	3 1/2	20'	5'	68.6 K=1.00	9.62	-141996	227739	0.624 [1]
T30	121 - 101	3 1/2	20'	5'	68.6 K=1.00	9.62	-190855	227739	0.838 [1]
T31	101 - 81	3 1/2	20'	5'	68.6 K=1.00	9.62	-207811	227739	0.912 [1]
T32	81 - 61	3 1/2	20'	5'	68.6 K=1.00	9.62	-210196	227739	0.923 [1]
T33	61 - 41	3 1/2	20'	5'	68.6 K=1.00	9.62	-204413	227739	0.898 [1]
T34	41 - 20	3 1/2	21'	5'3"	72.0 K=1.00	9.62	-186804	222503	0.840 [1]
T35	20 - 6.70833	3 1/4	13'5-7/8"	4'6"	66.4 K=1.00	8.30	-186273	199143	0.935 [1]
T36	6.70833 - 0	3 1/4	6'9-23/32"	2'3-1/4"	33.5 K=1.00	8.30	-190658	233387	0.817 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	457 - 436	L2 1/2x2x1/4	7'7-13/16"	3'7-9/16"	107.0 K=1.04	1.06	-3500	23433	0.149 [1]
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4917	18234	0.270 [1]
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7401	18234	0.406 [1]
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7888	18234	0.433 [1]
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-8571	18234	0.470 [1]
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-10970	18234	0.602 [1]
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-10399	18234	0.570 [1]
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7194	18234	0.395 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-8450	18234	0.463 [1]
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7352	18234	0.403 [1]
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7038	18234	0.386 [1]
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-6541	18234	0.359 [1]
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4812	18234	0.264 [1]
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-3049	18234	0.167 [1]
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4885	18234	0.268 [1]
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5226	18234	0.287 [1]
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5857	18234	0.321 [1]
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5654	18234	0.310 [1]
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-7120	18234	0.390 [1]
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-4267	40338	0.106 [1]
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-12705	40338	0.315 [1]
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-12734	40338	0.316 [1]
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-10098	40338	0.250 [1]
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.44	-10172	40338	0.252 [1]
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-6818	18234	0.374 [1]
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4066	18234	0.223 [1]
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-2584	18234	0.142 [1]
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.44	-5719	40403	0.142 [1]
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.44	-8027	40403	0.199 [1]
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-5730	18234	0.314 [1]
T31	101 - 81	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-3330	18234	0.183 [1]
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-2366	18234	0.130 [1]
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.81	-4443	18234	0.244 [1]
T34	41 - 20	L2 1/2x2x3/16	7'7-13/16"	3'7-9/16"	106.5 K=1.04	0.81	-6597	17973	0.367 [1]
T35	20 - 6.70833	L2x2x3/16	4'9-1/8"	2'9-3/8"	93.5 K=1.10	0.71	-2162	17651	0.122 [1]
T36	6.70833 - 0	L2x2x3/16	2'5-17/32"	1'1-5/16"	55.4 K=1.63	0.71	-4178	21505	0.194 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-1158	15614	0.074 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.06	-438	15533	0.028 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-2620	22643	0.116 [1]
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	30.4 K=1.00	4.97	-2695	164583	0.016 [1]
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	30.4 K=1.00	4.97	-1949	164583	0.012 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.06	-84	15533	0.005 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.06	-270	15533	0.017 [1]
T4	401 - 396	L2 1/2x2x1/4	6'	5'3-15/32"	138.3 K=0.92	1.06	-486	15861	0.031 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-316	15614	0.020 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-129	15614	0.008 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-172	15614	0.011 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-134	12030	0.011 [1]
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-179	15614	0.011 [1]
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-840	15614	0.054 [1]
T20	261 - 256	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-5827	12030	0.484 [1]
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-6250	12030	0.520 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-733	12030	0.061 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-4	12092	0.000 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-74	12092	0.006 [1]
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	87.0 K=1.00	2.38	-211	58654	0.004 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-148	12156	0.012 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-341	12156	0.028 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-7256	12156	0.597 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-144	12156	0.012 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-251	12156	0.021 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-301	12156	0.025 [1]
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-73	12156	0.006 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-195	15533	0.013 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-188	15614	0.012 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-128	15614	0.008 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.06	-229	15614	0.015 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-81	12030	0.007 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.81	-124	12030	0.010 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-16	12092	0.001 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-134	12092	0.011 [1]
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.81	-139	12092	0.011 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-8330	12156	0.685 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-220	12156	0.018 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-254	12156	0.021 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.81	-174	12156	0.014 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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"	138.4 K=0.90	2.11	-460	31544	0.015 [1]
T29	141 - 121 (836)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	138.4 K=0.90	2.11	-214	31544	0.007 [1]
T29	141 - 121 (841)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	138.4 K=0.90	2.11	-747	31544	0.024 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (842)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	138.4 K=0.90	2.11	-1069	31544	0.034 [1]
T29	141 - 121 (847)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	138.4 K=0.90	2.11	-1351	31544	0.043 [1]
T29	141 - 121 (848)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	138.4 K=0.90	2.11	-909	31544	0.029 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	-22793	31454	0.725 [1]
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.18	-23425	31454	0.745 [1]
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.18	-24244	31454	0.771 [1]
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.18	-24308	31454	0.773 [1]
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.18	-23773	31454	0.756 [1]
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.18	-24370	31454	0.775 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0	7.07	16656	209937	0.079 [1]
T2	436 - 421	2 3/4	15'	5'	87.3	5.94	35700	176405	0.202 [1]
T3	421 - 401	2 3/4	20'	5'	87.3	5.94	75683	176405	0.429 [1]
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	90100	290763	0.310 [1]
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	105306	290763	0.362 [1]
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	123913	290763	0.426 [1]
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	142231	290763	0.489 [1]
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	100626	326700	0.308 [1]
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	93714	326700	0.287 [1]
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.5	11.00	84024	326700	0.257 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	11.00	76062	326700	0.233 [1]
T12	361 - 341	3	20'	2'6"	40.0	7.07	68343	209937	0.326 [1]
T13	341 - 321	3	20'	5'	80.0	7.07	43020	209937	0.205 [1]
T14	321 - 301	3	20'	5'	80.0	7.07	25791	209937	0.123 [1]
T15	301 - 281	3	20'	5'	80.0	7.07	29884	209937	0.142 [1]
T16	281 - 276	3	5'	5'	80.0	7.07	32887	209937	0.157 [1]
T17	276 - 271	3	5'	5'	80.0	7.07	36711	209937	0.175 [1]
T18	271 - 266	3	5'	5'	80.0	7.07	40208	209937	0.192 [1]
T19	266 - 261	3	5'	5'	80.0	7.07	45787	209937	0.218 [1]
T20	261 - 256	3	5'	5'	80.0	7.07	46392	209937	0.221 [1]
T21	256 - 251	3	5'	2'6"	40.0	7.07	52568	209937	0.250 [1]
T25	221 - 201	3 1/4	20'	5'	73.8	8.30	35240	246384	0.143 [1]
T26	201 - 181	3 1/4	20'	5'	73.8	8.30	52824	246384	0.214 [1]
T27	181 - 161	3 1/4	20'	5'	73.8	8.30	53603	246384	0.218 [1]
T28	161 - 141	3 1/2	20'	5'	68.6	9.62	47858	285748	0.167 [1]
T29	141 - 121	3 1/2	20'	5'	68.6	9.62	18602	285748	0.065 [1]
T30	121 - 101	3 1/2	20'	5'	68.6	9.62	55687	285748	0.195 [1]
T31	101 - 81	3 1/2	20'	5'	68.6	9.62	68079	285748	0.238 [1]
T32	81 - 61	3 1/2	20'	5'	68.6	9.62	67751	285748	0.237 [1]
T33	61 - 41	3 1/2	20'	5'	68.6	9.62	53113	285748	0.186 [1]
T34	41 - 20	3 1/2	21'	5'3"	72.0	9.62	16726	285748	0.059 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	4057	30502	0.133 [1]
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	4418	23349	0.189 [1]
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	7271	23349	0.311 [1]
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	7704	23349	0.330 [1]
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	8525	23349	0.365 [1]
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	9732	23349	0.417 [1]
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	11565	23349	0.495 [1]
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	8468	23349	0.363 [1]
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	7360	23349	0.315 [1]
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	7403	23349	0.317 [1]
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	6911	23349	0.296 [1]
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	6313	23349	0.270 [1]
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	4795	23349	0.205 [1]
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	2912	23349	0.125 [1]
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	4770	23349	0.204 [1]
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	5266	23349	0.226 [1]
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	5688	23349	0.244 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	6704	23349	0.287 [1]
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	6326	23349	0.271 [1]
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.96	11990	41882	0.286 [1]
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.96	17691	41882	0.422 [1]
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.96	11489	41882	0.274 [1]
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.96	11147	41882	0.266 [1]
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.96	9834	41882	0.235 [1]
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	6632	23349	0.284 [1]
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	3833	23349	0.164 [1]
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	2447	23349	0.105 [1]
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/32"	48.4	0.94	5596	40863	0.137 [1]
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/32"	48.4	0.94	7895	40863	0.193 [1]
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	5487	23349	0.235 [1]
T31	101 - 81	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	3126	23349	0.134 [1]
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	2049	23349	0.088 [1]
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.52	4124	23349	0.177 [1]
T34	41 - 20	L2 1/2x2x3/16	7'7-13/16"	3'7-9/16"	76.6	0.52	6473	23349	0.277 [1]
T35	20 - 6.70833	L2x2x3/16	5'7-7/16"	3'31/32''	63.8	0.45	1652	20176	0.082 [1]
T36	6.70833 - 0	L2x2x3/16	2'9-19/32"	1'1-13/16"	26.3	0.45	2638	20176	0.131 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	743	30502	0.024 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	1463	30502	0.048 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2x2x1/4	6'	2'9-1/8"	113.3	0.59	2620	25505	0.103 [1]
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-	42.9	3.38	25246	146853	0.172 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	17/32" 2'8-17/32"	42.9	3.38	1949	146853	0.013 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	457 - 436	C8x13.75	6'	5'9"	112.2	4.04	1	119988	0.000 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	1124	30502	0.037 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	794	30502	0.026 [1]
T4	401 - 396	L2 1/2x2x1/4	6'	5'3-15/32"	115.2	0.68	592	30502	0.019 [1]
T6	391 - 386	L2 1/2x2x1/4	6'	5'8-9/32"	115.2	1.06	772	31482	0.025 [1]
T10	371 - 366	L2 1/2x2x1/4	6'	5'8-1/32"	114.8	1.06	857	31482	0.027 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	632	30502	0.021 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	423	30502	0.014 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	465	30502	0.015 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	450	23349	0.019 [1]
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	391	30502	0.013 [1]
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	311	30502	0.010 [1]
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	167	23349	0.007 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	412	23349	0.018 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	679	23349	0.029 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	715	23349	0.031 [1]
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	77.2	1.55	950	69778	0.014 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	881	23349	0.038 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1573	23349	0.067 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	5856	23349	0.251 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	958	23349	0.041 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1045	23349	0.045 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1070	23349	0.046 [1]
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	911	23349	0.039 [1]
T35	20 - 6.70833	2L2 1/2x2x3/16x1/4	6'	5'3-31/32"	86.7	1.04	17244	46670	0.369 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	4210	30502	0.138 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.68	304	30502	0.010 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	409	30502	0.013 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	376	30502	0.012 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.68	548	30502	0.018 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	372	23349	0.016 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.52	634	23349	0.027 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	664	23349	0.028 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	736	23349	0.032 [1]
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.52	745	23349	0.032 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	882	23349	0.038 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	12181	23349	0.522 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	595	23349	0.025 [*1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1027	23349	0.044 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1037	23349	0.044 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	963	23349	0.041 [1]
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.52	1398	23349	0.060 [1]

[*] DL controls
[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	381 - 376	2L3x2x1/4x3/8	6'	5'8-1/32"	76.3	1.55	21272	69778	0.305 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121	L3x3x3/8 (TA -	7'6-	7'4-	152.9	1.34	18759	58134	0.323 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	(835)	BU#873128)	19/32"	13/16"					
T29	141 - 121 (836)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	19182	58134	0.330 [1]
T29	141 - 121 (841)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	19500	58134	0.335 [1]
T29	141 - 121 (842)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	19086	58134	0.328 [1]
T29	141 - 121 (847)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	20102	58134	0.346 [1]
T29	141 - 121 (848)	L3x3x3/8 (TA - BU#873128)	7'6-19/32"	7'4-13/16"	152.9	1.34	19883	58134	0.342 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n 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	13611	60417	0.225 [1]
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	13812	60417	0.229 [1]
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	13903	60417	0.230 [1]
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	14255	60417	0.236 [1]
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	13653	60417	0.226 [1]
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	1.39	13467	60417	0.223 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	457 - 436	Leg	3	3	-31658	156820	20.2	Pass
T2	436 - 421	Leg	2 3/4	45	-51747	128255	40.3	Pass
T3	421 - 401	Leg	2 3/4	75	-100977	128255	78.7	Pass
T4	401 - 396	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	108	-116477	243950	47.7	Pass
T5	396 - 391	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	117	-133423	243950	54.7	Pass
T6	391 - 386	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	126	-152848	243950	62.7	Pass
T7	386 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	138	-175708	243950	72.0 81.5 (b)	Pass
T8	381 - 376	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	150	-184807	280611	65.9	Pass
T9	376 - 371	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	159	-175150	280611	62.4	Pass
T10	371 - 366	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	168	-166981	280611	59.5	Pass
T11	366 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half	180	-158939	280611	56.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
			Pipe					
T12	361 - 341	Leg	3	192	-151237	204054	74.1	Pass
T13	341 - 321	Leg	3	236	-126799	161863	78.3	Pass
T14	321 - 301	Leg	3	270	-111541	161863	68.9	Pass
T15	301 - 281	Leg	3	302	-122142	161863	75.5	Pass
T16	281 - 276	Leg	3	335	-126473	161863	78.1	Pass
T17	276 - 271	Leg	3	344	-130897	161863	80.9	Pass
T18	271 - 266	Leg	3	353	-136680	161863	84.4	Pass
T19	266 - 261	Leg	3	365	-141531	161863	87.4	Pass
T20	261 - 256	Leg	3	377	-152160	161863	94.0	Pass
T21	256 - 251	Leg	3	386	-155580	204054	76.2	Pass
T22	251 - 246	Leg	3	398	-125271	161863	77.4	Pass
T23	246 - 241	Leg	3	410	-112498	204054	55.1	Pass
T24	241 - 221	Leg	3	427	-114691	161863	70.9	Pass
T25	221 - 201	Leg	3 1/4	458	-145947	198845	73.4	Pass
T26	201 - 181	Leg	3 1/4	491	-161663	198845	81.3	Pass
T27	181 - 161	Leg	3 1/4	524	-164506	198845	82.7	Pass
T28	161 - 141	Leg	3 1/2	558	-159679	239126	66.8	Pass
T29	141 - 121	Leg	3 1/2	592	-141996	239126	59.4	Pass
T30	121 - 101	Leg	3 1/2	624	-190855	239126	79.8	Pass
T31	101 - 81	Leg	3 1/2	657	-207811	239126	86.9	Pass
T32	81 - 61	Leg	3 1/2	690	-210196	239126	87.9	Pass
T33	61 - 41	Leg	3 1/2	723	-204413	239126	85.5	Pass
T34	41 - 20	Leg	3 1/2	757	-186804	233628	80.0	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-186273	209100	89.1	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-190658	245056	77.8	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	14	-3500	24604	14.2 35.0 (b)	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	51	-4917	19146	25.7 29.7 (b)	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	83	-7401	19146	38.7 48.9 (b)	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	110	-7888	19146	41.2 51.8 (b)	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	119	-8571	19146	44.8 57.3 (b)	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	131	-10970	19146	57.3 65.4 (b)	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	143	-10399	19146	54.3 77.8 (b)	Pass
T8	381 - 376	Diagonal	L2 1/2x2x3/16	157	-7194	19146	37.6 56.9 (b)	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	166	-8450	19146	44.1 49.5 (b)	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	178	-7352	19146	38.4 49.8 (b)	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	187	-7038	19146	36.8 46.5 (b)	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	229	-6541	19146	34.2 42.4 (b)	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	265	-4812	19146	25.1 32.2 (b)	Pass
T14	321 - 301	Diagonal	L2 1/2x2x3/16	283	-3049	19146	15.9 26.3 (b)	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	316	-4885	19146	25.5 42.1 (b)	Pass
T16	281 - 276	Diagonal	L2 1/2x2x3/16	343	-5226	19146	27.3 35.4 (b)	Pass
T17	276 - 271	Diagonal	L2 1/2x2x3/16	349	-5857	19146	30.6 38.2 (b)	Pass
T18	271 - 266	Diagonal	L2 1/2x2x3/16	361	-5654	19146	29.5 45.1 (b)	Pass
T19	266 - 261	Diagonal	L2 1/2x2x3/16	373	-7120	19146	37.2 42.5 (b)	Pass
T20	261 - 256	Diagonal	L3x3x1/4	383	11990	43976	27.3 64.6 (b)	Pass
T21	256 - 251	Diagonal	L3x3x1/4	389	17691	43976	40.2 95.3 (b)	Pass
T22	251 - 246	Diagonal	L3x3x1/4	405	-12734	42355	30.1 68.6 (b)	Pass

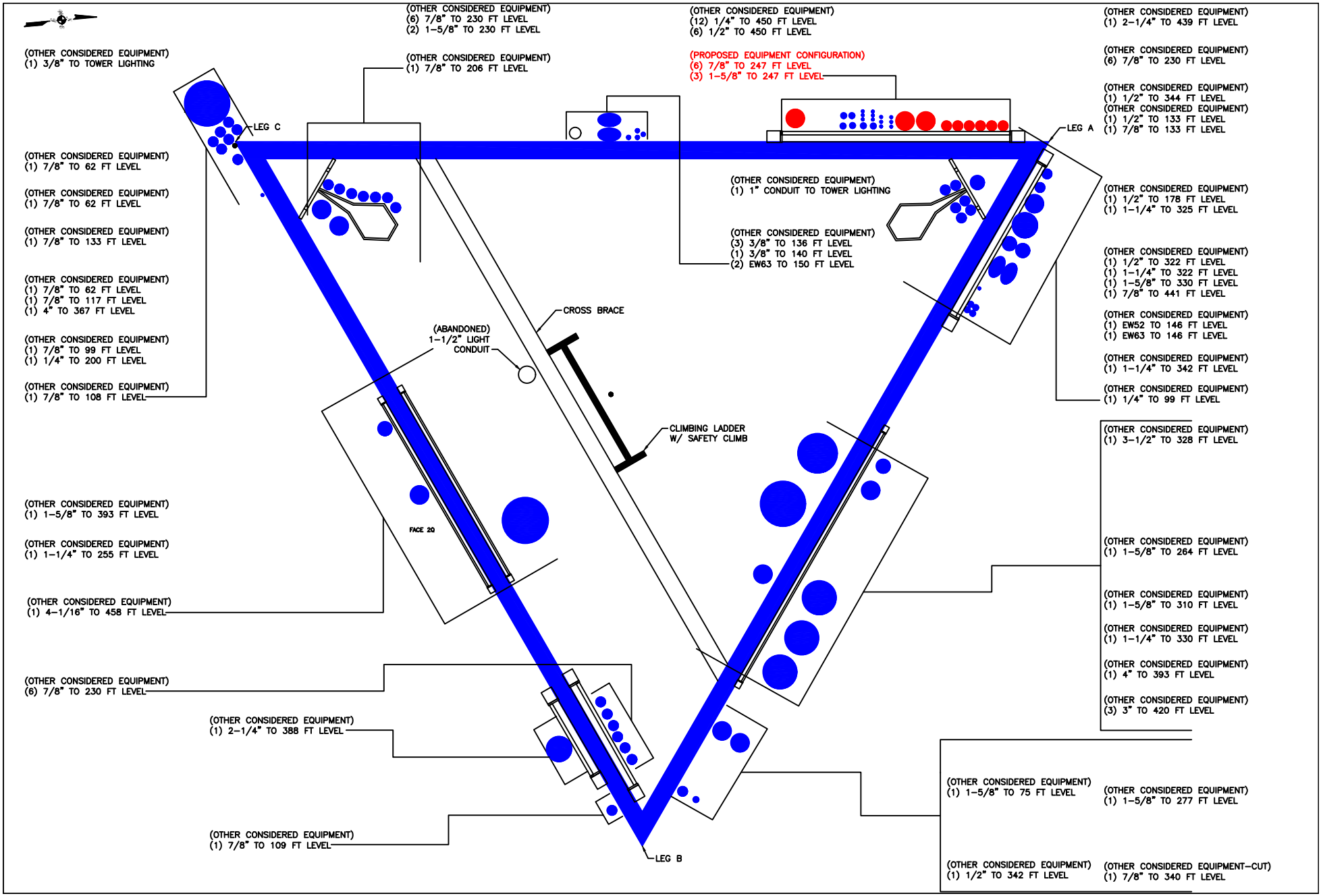
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T23	246 - 241	Diagonal	L3x3x1/4	416	11147	43976	25.3 60.1 (b)	Pass
T24	241 - 221	Diagonal	L3x3x1/4	453	-10172	42355	24.0 54.8 (b)	Pass
T25	221 - 201	Diagonal	L2 1/2x2x3/16	486	-6818	19146	35.6 58.8 (b)	Pass
T26	201 - 181	Diagonal	L2 1/2x2x3/16	519	-4066	19146	21.2 35.1 (b)	Pass
T27	181 - 161	Diagonal	L2 1/2x2x3/16	536	-2584	19146	13.5 22.3 (b)	Pass
T28	161 - 141	Diagonal	L3x3x1/4	568	-5719	42423	13.5 24.6 (b)	Pass
T29	141 - 121	Diagonal	L3x3x1/4	613	-8027	42423	18.9 34.7 (b)	Pass
T30	121 - 101	Diagonal	L2 1/2x2x3/16	654	-5730	19146	29.9 36.9 (b)	Pass
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3330	19146	17.4 28.7 (b)	Pass
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-2366	19146	12.4 20.4 (b)	Pass
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-4443	19146	23.2 38.3 (b)	Pass
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-6597	18871	35.0 56.9 (b)	Pass
T35	20 - 6.70833	Diagonal	L2x2x3/16	792	-2162	18534	11.7 18.6 (b)	Pass
T36	6.70833 - 0	Diagonal	L2x2x3/16	813	-4178	22580	18.5 36.0 (b)	Pass
T1	457 - 436	Horizontal	L2 1/2x2x1/4	35	-1158	16395	7.1 10.0 (b)	Pass
T2	436 - 421	Horizontal	L2 1/2x2x1/4	58	1463	32027	4.6 12.6 (b)	Pass
T12	361 - 341	Secondary Horizontal	L2x2x1/4	206	-2620	23775	11.0 25.8 (b)	Pass
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	395	25246	154196	16.4 68.0 (b)	Pass
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1949	154196	1.3 5.3 (b)	Pass
T1	457 - 436	Top Girt	C8x13.75	7	-1	68630	0.2	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	8	1124	32027	3.5 9.7 (b)	Pass
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	794	32027	2.5 6.8 (b)	Pass
T4	401 - 396	Top Girt	L2 1/2x2x1/4	79	-486	16654	2.9 5.1 (b)	Pass
T6	391 - 386	Top Girt	L2 1/2x2x1/4	128	772	33056	2.3	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	857	33056	2.6	Pass
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	632	32027	2.0 5.5 (b)	Pass
T13	341 - 321	Top Girt	L2 1/2x2x1/4	196	423	32027	1.3 3.6 (b)	Pass
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	465	32027	1.5 4.0 (b)	Pass
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	450	24516	1.8 3.9 (b)	Pass
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	391	32027	1.2 3.4 (b)	Pass
T18	271 - 266	Top Girt	L2 1/2x2x1/4	357	-840	16395	5.1 7.2 (b)	Pass
T20	261 - 256	Top Girt	L2 1/2x2x3/16	369	-5827	12631	46.1 50.2 (b)	Pass
T22	251 - 246	Top Girt	L2 1/2x2x3/16	402	-6250	12631	49.5 53.9 (b)	Pass
T24	241 - 221	Top Girt	L2 1/2x2x3/16	414	-733	12631	5.8 6.3 (b)	Pass
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	679	24516	2.8 5.9 (b)	Pass
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	715	24516	2.9 6.2 (b)	Pass
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	950	73267	1.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							4.1 (b)	
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	881	24516	3.6	Pass
							7.6 (b)	
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1573	24516	6.4	Pass
							13.6 (b)	
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7256	12763	56.9	Pass
							62.6 (b)	
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	958	24516	3.9	Pass
							8.3 (b)	
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	1045	24516	4.3	Pass
							9.0 (b)	
T33	61 - 41	Top Girt	L2 1/2x2x3/16	694	1070	24516	4.4	Pass
							9.2 (b)	
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	911	24516	3.7	Pass
							7.9 (b)	
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	17244	49003	35.2	Pass
							58.0 (b)	
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	11	4210	32027	13.1	Pass
							36.3 (b)	
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	82	-195	16310	1.2	Pass
							2.6 (b)	
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	409	32027	1.3	Pass
							3.5 (b)	
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	244	376	32027	1.2	Pass
							3.2 (b)	
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	548	32027	1.7	Pass
							4.7 (b)	
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	372	24516	1.5	Pass
							3.2 (b)	
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	634	24516	2.6	Pass
							5.5 (b)	
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	664	24516	2.7	Pass
							5.7 (b)	
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	736	24516	3.0	Pass
							6.3 (b)	
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	745	24516	3.0	Pass
							6.4 (b)	
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	882	24516	3.6	Pass
							7.6 (b)	
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	597	-8330	12763	65.3	Pass
							81.9 (b)	
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	630	595	23349	2.5	Pass
							5.1 (b)	
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	1027	24516	4.2	Pass
							8.9 (b)	
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	696	1037	24516	4.2	Pass
							8.9 (b)	
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	963	24516	3.9	Pass
							8.3 (b)	
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1398	24516	5.7	Pass
							12.1 (b)	
T1	457 - 436	Guy A@446.5	9/16	826	13285	22050	60.3	Pass
T8	381 - 376	Guy A@381	1 3/8	829	67287	146157	46.0	Pass
T21	256 - 251	Guy A@254.5	1 1/4	832	64998	120958	53.7	Pass
T29	141 - 121	Guy A@131	11/16	845	22115	31499	70.2	Pass
T1	457 - 436	Guy B@446.5	9/16	825	13352	22050	60.6	Pass
T8	381 - 376	Guy B@381	1 3/8	828	68884	146157	47.1	Pass
T21	256 - 251	Guy B@254.5	1 1/4	831	66945	120958	55.3	Pass
T29	141 - 121	Guy B@131	11/16	840	22378	31499	71.0	Pass
T1	457 - 436	Guy C@446.5	9/16	824	13357	22050	60.6	Pass
T8	381 - 376	Guy C@381	1 3/8	827	68025	146157	46.5	Pass
T21	256 - 251	Guy C@254.5	1 1/4	830	66169	120958	54.7	Pass
T29	141 - 121	Guy C@131	11/16	833	21995	31499	69.8	Pass
T8	381 - 376	Top Guy Pull-Off@381	2L3x2x1/4x3/8	141	21272	73267	29.0	Pass
							91.7 (b)	
T29	141 - 121	Torque Arm Top@131	L3x3x3/8 (TA - BU#873128)	847	20102	61040	32.9	Pass
							56.6 (b)	
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-24370	33027	73.8	Pass
							Summary	

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Leg (T20)	94.0	Pass
						Diagonal (T21)	95.3	Pass
						Horizontal (T2)	12.6	Pass
						Secondary Horizontal (T21)	68.0	Pass
						Top Girt (T30)	62.6	Pass
						Mid Girt (T29)	81.9	Pass
						Guy A (T29)	70.2	Pass
						Guy B (T29)	71.0	Pass
						Guy C (T29)	69.8	Pass
						Top Guy Pull-Off (T8)	91.7	Pass
						Torque Arm Top (T29)	56.6	Pass
						Torque Arm Bottom (T29)	73.8	Pass
						Bolt Checks	95.3	Pass
						RATING =	**95.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 230 FT LEVEL
(2) 1-5/8" TO 230 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 206 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 1/4" TO 450 FT LEVEL
(6) 1/2" TO 450 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(6) 7/8" TO 247 FT LEVEL
(3) 1-5/8" TO 247 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 2-1/4" TO 439 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 230 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 344 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 133 FT LEVEL
(1) 7/8" TO 133 FT LEVEL
LEG C
LEG A
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 62 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 62 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 133 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 62 FT LEVEL
(1) 7/8" TO 117 FT LEVEL
(1) 4" TO 367 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 99 FT LEVEL
(1) 1/4" TO 200 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 108 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1" CONDUIT TO TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(3) 3/8" TO 136 FT LEVEL
(1) 3/8" TO 140 FT LEVEL
(2) EW63 TO 150 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 178 FT LEVEL
(1) 1-1/4" TO 325 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 322 FT LEVEL
(1) 1-1/4" TO 322 FT LEVEL
(1) 1-5/8" TO 330 FT LEVEL
(1) 7/8" TO 441 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) EW52 TO 146 FT LEVEL
(1) EW63 TO 146 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 342 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/4" TO 99 FT LEVEL
CROSS BRACE
(ABANDONED)
1-1/2" LIGHT
CONDUIT
CLIMBING LADDER
W/ SAFETY CLIMB
FACE 2Q
(OTHER CONSIDERED EQUIPMENT)
(1) 3-1/2" TO 328 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 393 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 255 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 4-1/16" TO 458 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 264 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 310 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 330 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 4" TO 393 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(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
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 277 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 109 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 342 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-CUT)
(1) 7/8" TO 340 FT LEVEL
LEG B

APPENDIX C

ADDITIONAL CALCULATIONS

Built-Up Leg Reinforcement Tool

Site Data	
BU#:	873128
Site Name:	Trumbull
Order #:	529714 Rev. 0
Section:	366ft - 361ft

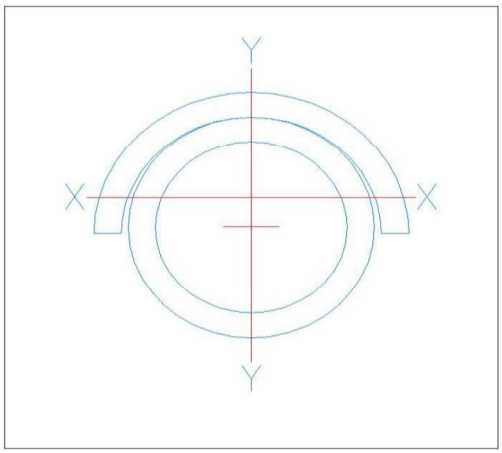
Leg Axial Load		
Compression, Pu:	158.9	kips

Reinforcement Type
Split Pipe

Ratings (per TIA-222-H Section 15.5)		
Spacing Req.:	O.K.	
Reinforced Leg:	52.9%	Pass
Leg Crushing:	49.9%	Pass

Connection and Analysis Options		
TIA-222 Revision:	H	
Tower Type:	Guyed	
Consider Leg Load at Time of Modification:	No	
End Connections:	Fixed	
Leg Crushing Check:	Yes	
Applied Load:	Axial	
Slenderness Ratio:	KL/r Modified	
Intermediate Connection:	Welded	
Intermediate Spacing:	6	in

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐



Leg Data		
Diameter:	3.5	in
Thickness:	1.75	in
Yield (Fy):	35	ksi
Unbraced Length:	60	in

Split Pipe Data		
Outside Diameter:	3.5	in
Thickness:	0.23	in
Yield (Fy):	35	ksi

TNX K Factor Adjustment	1.000

Built-Up Section Properties					
Area:	10.8025	in^2	Polar Moment of Inertia, J:	14.7324	in^4
Moment of Intertia, I_{xx}:	11.5067	in^4	Moment of Intertia, I_{yy}:	8.9531	in^4
Eccentricty, e:	0.2089	in	Plastic Neutral Axis:	1.0544	in

Built-Up Leg Reinforcement Tool

Site Data	
BU#:	873128
Site Name:	Trumbull
Order #:	529714 Rev. 0
Section:	386ft - 381ft

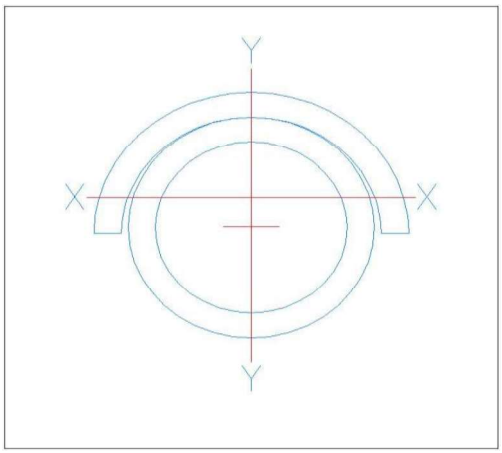
Leg Axial Load		
Compression, Pu:	175.7	kips

Reinforcement Type
Split Pipe

Ratings (per TIA-222-H Section 15.5)		
Spacing Req.:	O.K.	
Reinforced Leg:	86.3%	Pass
Leg Crushing:	75.2%	Pass

Connection and Analysis Options		
TIA-222 Revision:	H	
Tower Type:	Guyed	
Consider Leg Load at Time of Modification:	No	
End Connections:	Fixed	
Leg Crushing Check:	Yes	
Applied Load:	Axial	
Slenderness Ratio:	KL/r Modified	
Intermediate Connection:	Welded	
Intermediate Spacing:	6	in

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐



Leg Data		
Diameter:	3	in
Thickness:	1.5	in
Yield (Fy):	35	ksi
Unbraced Length:	60	in

Split Pipe Data		
Outside Diameter:	3.5	in
Thickness:	0.22	in
Yield (Fy):	35	ksi

TNX K Factor Adjustment	1.000

Built-Up Section Properties					
Area:	8.2021	in^2	Polar Moment of Inertia, J:	7.9522	in^4
Moment of Intertia, I_{xx}:	5.2756	in^4	Moment of Intertia, I_{yy}:	5.5072	in^4
Eccentricty, e:	0.1404	in	Plastic Neutral Axis:	1.0544	in

Pier and Pad Foundation

BU # :	873128
Site Name:	Trumbull
App. Number:	529714 Rev. 0

TIA-222 Revision:	H
Tower Type:	Guyed

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	501.187	kips
Base Shear, Vu_comp:	10.8	kips
Moment, M_u:	0	ft-kips
Tower Height, **H**:	457	ft
BP Dist. Above Fdn, bp_{dist}:	3	in
Bolt Circle / Bearing Plate Width, **BC**:		in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	4.5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	7	
Pier Rebar Quantity, **mc**:	7	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	4.5	ft
Pad Width, **W**:	10	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom), **Sp**:	7	
Pad Rebar Quantity (Bottom), **mp**:	10	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	115	pcf
Ultimate Gross Bearing, Qult:	18.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.4	
Neglected Depth, **N**:	0.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	154.97	10.80	**6.6%**	**Pass**
Bearing Pressure (ksf)	10.80	5.92	**52.2%**	**Pass**
*Overturning (kip*ft)*	1153.40	56.70	**4.9%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1204.83	32.40	**2.6%**	**Pass**
Pier Compression (kip)	7592.08	509.78	**6.4%**	**Pass**
*Pad Flexure (kip*ft)*	515.68	201.19	**37.2%**	**Pass**
Pad Shear - 1-way (kips)	194.10	59.30	**29.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.060	**35.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1031.36	19.44	**1.8%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**52.2%**
Structural Rating*:	**37.2%**

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	873128
Site Name:	Trumbull
Order Number:	529714 Rev. 0
Location:	A

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	107.98	kips
Uplift, **Ua**:	88.14	kips
Resultant Force, **Rf**:	139.4	kips
Tower Height, **H**:	457.00	ft
Guy Anchor Radius, **R**:	405.00	ft
Resultant Angle to Horizontal, **θ**:	39.2	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6.8	ft
Anchor Width, **Wa**:	18.5	ft
Anchor Thickness, **Ta**:	3.3	ft
Anchor Length, **La**:	23	ft
Concrete Volume, **Vc**:	52.0	yd^3
Toe Width, **toe**:		ft

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf

Design Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral Capacity (kips):	438.30	107.98	**23.5%**	**Pass**
Uplift Capacity (kips):	486.19	88.14	**17.3%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating:	**23.5%**
Structural Rating:	**N/A**
Anchor Shaft Rating:	**N/A**

Neglect Depth, **Neg**:	0	ft
Groundwater Level, **gw**:	8.5	ft

Soil Properties:	**No. of Soil Layers?**			4		
Layer	**φ, deg**	**cu, ksf**	**δ, pcf**	**d, ft**	**Ultimate fs (ksf)**	**N (blows/ft)**
1	0		110	1.50		
2	0		115	4.83		
3	34		115	5.00		
4	0	5.000	135	6.80		

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Version 3.4.0

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	873128
Site Name:	Trumbull
Order Number:	529714 Rev. 0
Location:	B

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	111.04	kips
Uplift, **Ua**:	91.30	kips
Resultant Force, **Rf**:	143.8	kips
Tower Height, **H**:	457.00	ft
Guy Anchor Radius, **R**:	394.00	ft
Resultant Angle to Horizontal, **θ**:	39.4	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	9.8	ft
Anchor Width, **Wa**:	7	ft
Anchor Thickness, **Ta**:	5.5	ft
Anchor Length, **La**:	6	ft
Concrete Volume, **Vc**:	8.6	yd^3
Toe Width, **toe**:		ft

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.135	kcf

Design Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral Capacity (kips):	417.96	111.04	**25.3%**	**Pass**
Uplift Capacity (kips):	234.80	91.30	**37.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating:	**37.0%**
Structural Rating:	**N/A**
Anchor Shaft Rating:	**N/A**

Neglect Depth, **Neg**:	0	ft
Groundwater Level, **gw**:	8.5	ft

Soil Properties:	**No. of Soil Layers?**			5		
Layer	**φ, deg**	**cu, ksf**	**δ, pcf**	**d, ft**	**Ultimate fs (ksf)**	**N (blows/ft)**
1	0	0.000	115	2.30		
2	34	0.000	115	3.50		
3	0	5.000	135	4.30	2.320	
4	0	5.000	135	8.50	2.320	
5	0	5.000	72.6	9.80	2.320	

*key: *φ = Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = Buoyant Soil Unit Weight
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	873128
Site Name:	Trumbull
Order Number:	529714 Rev. 0
Location:	C

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	110.60	kips
Uplift, **Ua**:	89.01	kips
Resultant Force, **Rf**:	142.0	kips
Tower Height, **H**:	457.00	ft
Guy Anchor Radius, **R**:	411.00	ft
Resultant Angle to Horizontal, **θ**:	38.8	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	9.8	ft
Anchor Width, **Wa**:	7	ft
Anchor Thickness, **Ta**:	5.5	ft
Anchor Length, **La**:	6	ft
Concrete Volume, **Vc**:	8.6	yd^3
Toe Width, **toe**:		ft

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.135	kcf

Design Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral Capacity (kips):	147.68	110.60	**71.3%**	**Pass**
Uplift Capacity (kips):	115.36	89.01	**73.5%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating:	**73.5%**
Structural Rating:	**N/A**
Anchor Shaft Rating:	**N/A**

Neglect Depth, **Neg**:	0	ft
Groundwater Level, **gw**:	8.5	ft

Soil Properties:	**No. of Soil Layers?**			5		
Layer	**φ, deg**	**cu, ksf**	**δ, pcf**	**d, ft**	**Ultimate fs (ksf)**	**N (blows/ft)**
1	0	0.000	115	2.30		
2	34	0.000	115	4.00		
3	39	0.000	120	8.50	0.840	
4	39	0.000	57.6	9.00	1.090	
5	43	0.000	62.6	9.80	1.240	

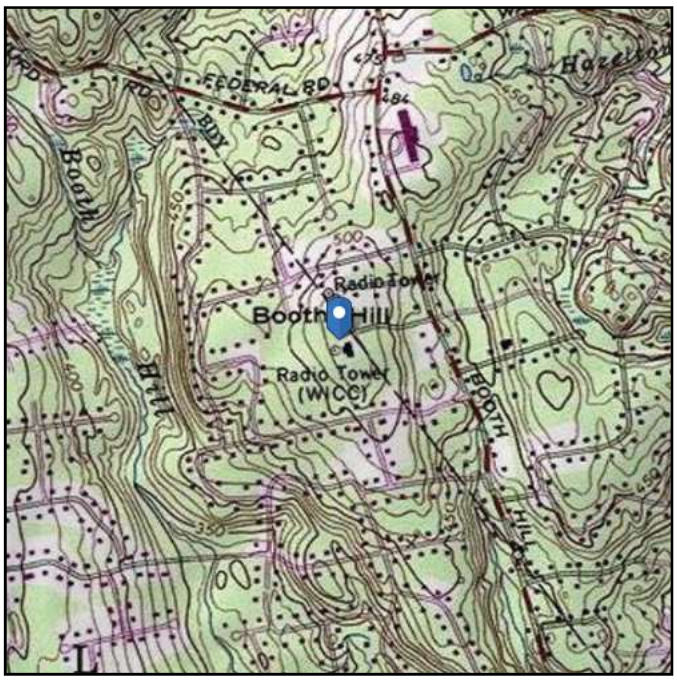
*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = Buoyant Soil Unit Weight
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

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	Connecticut State Building Code Wind speed: 125mph
10-year MRI	76 Vmph	
25-year MRI	86 Vmph	
50-year MRI	92 Vmph	
100-year MRI	99 Vmph	

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

Date Accessed: Fri 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.

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:	Mon Sep 28 2020

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.

BU:	873128	Structure:	A
WO:	1890097		
Order:		Rev:	

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.278961	+	41	16	44.26
Long:	-73.185111	-	73	11	6.40

Code and Site Parameters

Seismic Design Code:	ASCE 7-10	
Site Soil:	D	Stiff Soil (Default)
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.2070	g
	S_1:	0.0650	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1	
Acceleration-based site coefficient, F_a:	1.6000	
Velocity-based site coefficient, F_v:	2.4000	
Design spectral response acceleration short period, S_{DS}:	0.2208	g
Design spectral response acceleration 1 s period, S_{D1}:	0.1040	g
Seismic Design Category Based on S_{DS}:	B	
Seismic Design Category Based on S_{D1}:	B	
Seismic Design Category Based on S_1:	N/A	
Controlling Seismic Design Category:	B	

Exhibit E

Mount Analysis

Date: **October 27, 2020**

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Anchor**	
	Carrier Site Number:	CT11203B
	Carrier Site Name:	Trumbull/Rt 108
Crown Castle Designation:	**Crown Castle BU Number:**	873128
	Crown Castle Site Name:	Trumbull
	Crown Castle JDE Job Number:	620151
	Crown Castle Order Number:	529714 Rev. 0
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**800 Booth Hill Road**, **Trumbull**, **Fairfield County**, **CT**, **06611** **Latitude 41°16'44.26", Longitude -73°11'6.40"**	
Structure Information:	**Tower Height & Type:**	**457.0 ft Guyed**
	Mount Elevation:	**247.0 ft**
	Mount Type:	**12.5 ft Sector Frame**

Dear Darcy Tarr,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. 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:

Sector Frame **Sufficient - 72.1%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code and Appendix N based upon an ultimate 3-second gust wind speed of 125 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jacques S. Grimaldi, M.S., P.E.

Respectfully Submitted by:
John S. Stevens, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. PEN.0024705

10-27-2020

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 12.5 ft Sector Frame, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code and Appendix N
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.207
Seismic S_1:	0.065
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
247.0	247.0	3	Ericsson	AIR 32 B2A B66AA_ T-MOBILE	12.5 ft Sector Frame
		3	Ericsson	AIR6449 B41_T-MOBILE	
		3	RFS/Celwave	APXVAARR24_43-U-NA20	
		3	Commscope	SDX1926Q-43	
		3	Ericsson	KRY 112 144/2	
		3	Ericsson	RADIO 4449 B12/B71	
		3	Ericsson	RRUS 4415 B25_CCIV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	529714 Rev. 0	CCI Sites
Loading Document	T-Mobile	RFDS Version: 5	TSA
Mount Manufacturer Drawings	Commscope	Part No. SFG23-12-3-96	Infinigy

3.1) Analysis Method

RISA-3D (Version 18.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.4, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

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

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Threaded Rods	ASTM A307

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP3	247.0	37.0	Pass
	Horizontal(s)	M2		72.1	Pass
	Sidearm(s)	M15		31.3	Pass
	Support Pipe(s)	M7		63.2	Pass
	Mount Connection(s)	-		69.6	Pass

Structure Rating (max from all components) =	72.1%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D - Additional Calculations” for detailed mount connection calculations.
3) All sectors are typical.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)	Notes
N47	Existing	981.1	Leg	3” S.R.	8,093.2	1, 2
N49	Existing	1,107.3	Leg	3” S.R.	8,093.2	

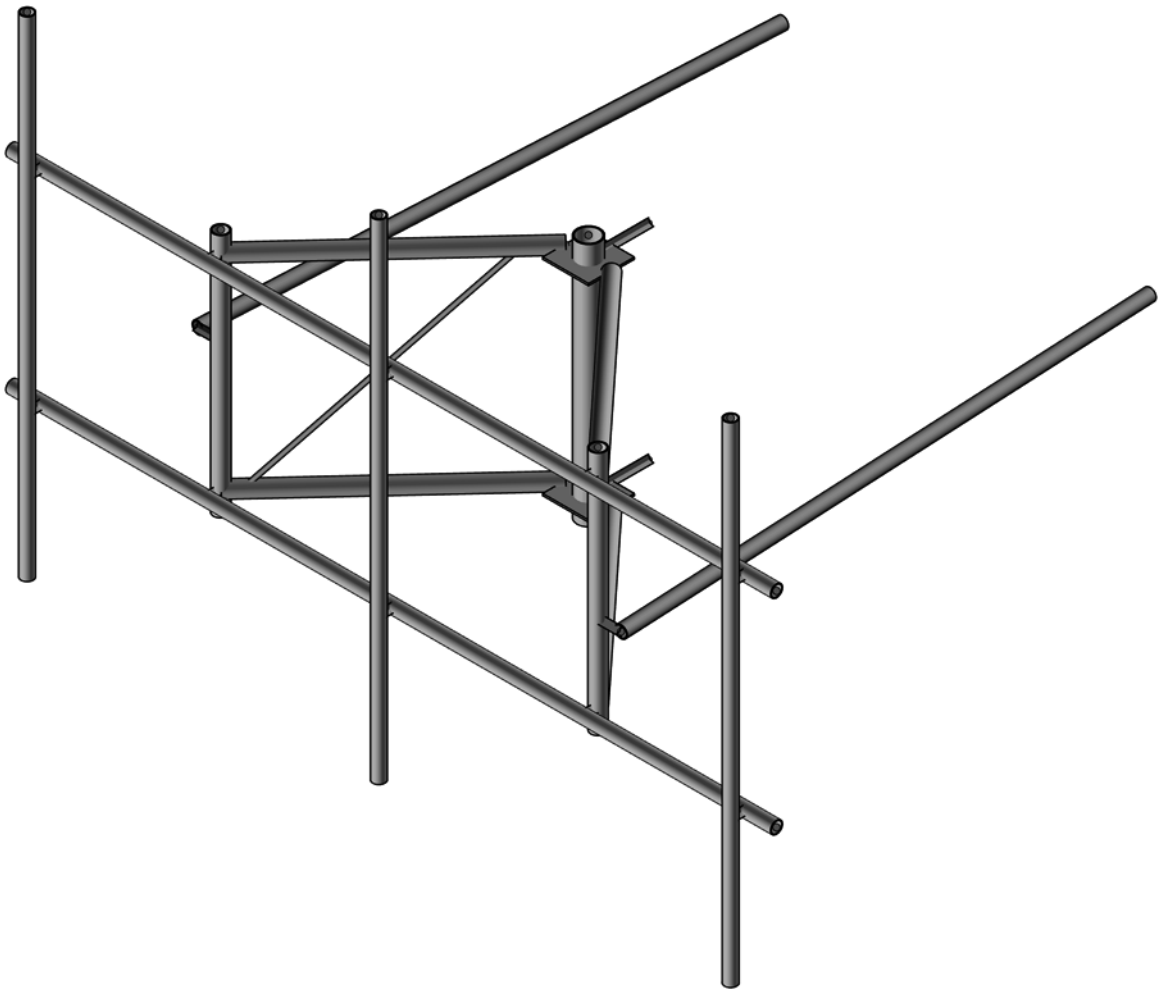
Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

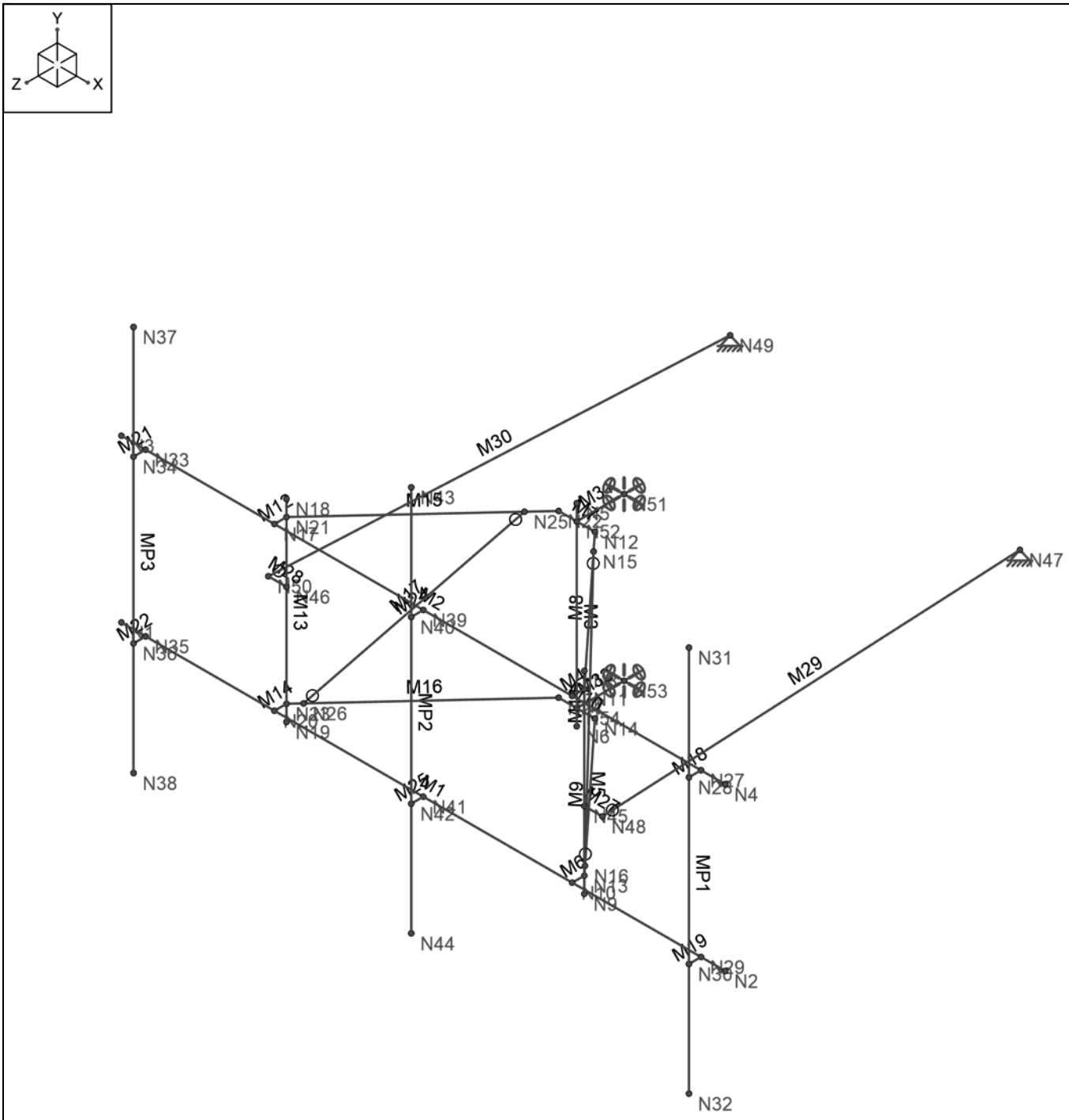
The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Infinigy Engineering, PLLC	873128	Render
JG		Oct 27, 2020
1039-Z0001-B		873128_loaded.r3d



Infinigy Engineering, PLLC	873128	Wireframe
JG		Oct 27, 2020
1039-Z0001-B		873128_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	T-Mobile
Engineer:	Jacques Grimaldi

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	519.67	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	247.0	ft
Tower Height AGL:	457.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	0.98	*Rev H Only
Rooftop Speed-Up (K_s):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	125	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	95.43	psf
Round Pressure:	57.26	psf
Ice Wind Pressure:	9.16	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.207	g
1-Second Accel. (S_1):	0.065	g
Short-Period Design (S_{DS}):	0.22	
1-Second Design (S_{D1}):	0.10	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	

INFINIGY
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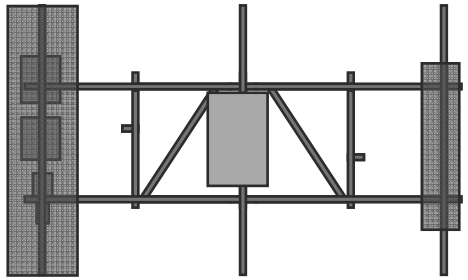
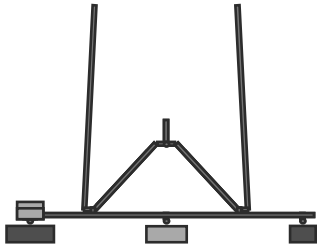
Infinigy Load Calculator V2.1.4

Program Inputs

ELEVATION VIEW



PLAN VIEW



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APPURTENANCE INFORMATION

Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
ERICSSON AIR 32 B2A B66AA_T-MOBILE	247.0	3	0.90	47.72	6.85	4.98	294.16	213.93	171.96	18.98	MP1
ERICSSON AIR6449 B41_T-MOBILE	247.0	3	0.90	47.72	5.66	2.48	243.03	106.35	114.63	12.66	MP2
RFS/CELWAVE APXVAARR24_43-U-NA20	247.0	3	0.90	47.72	14.69	6.87	631.01	295.18	128.00	14.13	MP3
COMMSCOPE SDX1926Q-43	247.0	3	0.90	47.72	0.24	0.17	10.34	7.22	6.17	0.68	MP3
ERICSSON KRY 112 144/2	247.0	3	0.90	47.72	0.48	0.23	20.59	9.95	9.70	1.07	MP3
ERICSSON RADIO 4449 B12/B71	247.0	3	0.90	47.72	1.64	1.15	70.57	49.49	75.00	8.28	MP3
ERICSSON TME-RRUS 4415 B25_CCIV2	247.0	3	0.90	47.72	1.84	0.82	79.13	35.22	46.00	5.08	MP3

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2		Horizontal	Beam	Pipe	A53 Gr.B	Typical
2	M2	N3	N4		Horizontal	Beam	Pipe	A53 Gr.B	Typical
3	M3	N5	N6		Support Pipe	Column	Pipe	A53 Gr.B	Typical
4	M4	N7	N11		RIGID	None	None	RIGID	Typical
5	M5	N8	N9		Sidearm Vert	Column	Pipe	A53 Gr.B	Typical
6	M6	N10	N13		RIGID	None	None	RIGID	Typical
7	M7	N22	N12	90	Pipe Gusset	Beam	RECT	A36 Gr.36	Typical
8	M8	N11	N12		Sidearm Hor	Beam	Pipe	A53 Gr.B	Typical
9	M9	N13	N14		Sidearm Hor	Beam	Pipe	A53 Gr.B	Typical
10	M10	N24	N14	90	Pipe Gusset	Beam	RECT	A36 Gr.36	Typical
11	M11	N15	N16		Sidearm Diag	VBrace	BAR	A36 Gr.36	Typical
12	M12	N17	N21		RIGID	None	None	RIGID	Typical
13	M13	N18	N19		Sidearm Vert	Column	Pipe	A53 Gr.B	Typical
14	M14	N20	N23		RIGID	None	None	RIGID	Typical
15	M15	N21	N22		Sidearm Hor	Beam	Pipe	A53 Gr.B	Typical
16	M16	N23	N24		Sidearm Hor	Beam	Pipe	A53 Gr.B	Typical
17	M17	N25	N26		Sidearm Diag	VBrace	BAR	A36 Gr.36	Typical
18	M18	N27	N28		RIGID	None	None	RIGID	Typical
19	M19	N29	N30		RIGID	None	None	RIGID	Typical
20	MP1	N31	N32		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
21	M21	N33	N34		RIGID	None	None	RIGID	Typical
22	M22	N35	N36		RIGID	None	None	RIGID	Typical
23	MP3	N37	N38		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
24	M24	N39	N40		RIGID	None	None	RIGID	Typical
25	M25	N41	N42		RIGID	None	None	RIGID	Typical
26	MP2	N43	N44		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
27	M27	N45	N48		RIGID	None	None	RIGID	Typical
28	M28	N46	N50		RIGID	None	None	RIGID	Typical
29	M29	N47	N48		Tieback	Beam	Pipe	A53 Gr.B	Typical
30	M30	N49	N50		Tieback	Beam	Pipe	A53 Gr.B	Typical
31	M31	N51	N52		RIGID	None	None	RIGID	Typical
32	M32	N53	N54		RIGID	None	None	RIGID	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		14	62.5	0
3	Total General		14	62.5	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	0.75 SR	2	111.8	14.005
7	A36 Gr.36	9x0.375	2	18	17.227
8	A53 Gr.B	PIPE_2.0	7	806.7	233.337
9	A53 Gr.B	PIPE_2.5	6	287.4	131.217
10	A53 Gr.B	PIPE_4.0	1	48	40.289
11	Total HR Steel		18	1271.9	436.075

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	Self Weight	DL		-1			14	
2	Wind Load AZI 0	WLZ					28	
3	Wind Load AZI 30	None					28	
4	Wind Load AZI 60	None					28	
5	Wind Load AZI 90	WLX					28	
6	Wind Load AZI 120	None					28	
7	Wind Load AZI 150	None					28	
8	Wind Load AZI 180	None					28	
9	Wind Load AZI 210	None					28	
10	Wind Load AZI 240	None					28	
11	Wind Load AZI 270	None					28	
12	Wind Load AZI 300	None					28	
13	Wind Load AZI 330	None					28	
14	Distr. Wind Load Z	WLZ						32
15	Distr. Wind Load X	WLX						32
16	Ice Weight	OL1					14	32
17	Ice Wind Load AZI 0	OL2					28	
18	Ice Wind Load AZI 30	None					28	
19	Ice Wind Load AZI 60	None					28	
20	Ice Wind Load AZI 90	OL3					28	
21	Ice Wind Load AZI 120	None					28	
22	Ice Wind Load AZI 150	None					28	
23	Ice Wind Load AZI 180	None					28	
24	Ice Wind Load AZI 210	None					28	
25	Ice Wind Load AZI 240	None					28	
26	Ice Wind Load AZI 270	None					28	
27	Ice Wind Load AZI 300	None					28	
28	Ice Wind Load AZI 330	None					28	
29	Distr. Ice Wind Load Z	OL2						32
30	Distr. Ice Wind Load X	OL3						32
31	Seismic Load Z	ELZ			-0.11		14	
32	Seismic Load X	ELX	-0.11				14	
33	Service Live Loads	LL				1		
34	Maintenance Load 1	LL				2		
35	Maintenance Load 2	LL				2		
36	Maintenance Load 3	LL				2		

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.244	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.244	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.244	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.244	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.244	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.244	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.244	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.244	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.244	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.244	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.244	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.244	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.856	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.856	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.856	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.856	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.856	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.856	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.856	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.856	31	-0.866	32	-0.5				

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.856	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.856	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.856	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.856	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.23	14	0.23	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.23	14	0.2	15	0.115	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.23	14	0.115	15	0.2	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.23	14		15	0.23	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.23	14	-0.115	15	0.2	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.23	14	-0.2	15	0.115	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.23	14	-0.23	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.23	14	-0.2	15	-0.115	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.23	14	-0.115	15	-0.2	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.23	14		15	-0.23	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.23	14	0.115	15	-0.2	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.23	14	0.2	15	-0.115	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.058	14	0.058	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.058	14	0.05	15	0.029
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.058	14	0.029	15	0.05
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.058	14		15	0.058
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.058	14	-0.029	15	0.05
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.058	14	-0.05	15	0.029
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.058	14	-0.058	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.058	14	-0.05	15	-0.029
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.058	14	-0.029	15	-0.05
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.058	14		15	-0.058
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.058	14	0.029	15	-0.05
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.058	14	0.05	15	-0.029
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.058	14	0.058	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.058	14	0.05	15	0.029
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.058	14	0.029	15	0.05
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.058	14		15	0.058
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.058	14	-0.029	15	0.05
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.058	14	-0.05	15	0.029
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.058	14	-0.058	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.058	14	-0.05	15	-0.029
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.058	14	-0.029	15	-0.05
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.058	14		15	-0.058
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.058	14	0.029	15	-0.05
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.058	14	0.05	15	-0.029
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.058	14	0.058	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.058	14	0.05	15	0.029
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.058	14	0.029	15	0.05
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.058	14		15	0.058
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.058	14	-0.029	15	0.05
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.058	14	-0.05	15	0.029
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.058	14	-0.058	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.058	14	-0.05	15	-0.029

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.058	14	-0.029	15	-0.05
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.058	14		15	-0.058
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.058	14	0.029	15	-0.05

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N53	max	710.242	79	98.248	32	3086.236	27	-25.839	88	0	110	619.436	85
2		min	-903.472	97	-0.79	88	-309.031	20	-150.746	33	0	1	-884.173	91
3	N51	max	903.804	91	3018.74	38	285.845	14	-791.15	56	0	110	843.087	83
4		min	-710.629	85	786.994	56	-2795.578	33	-3037.441	27	0	1	-1200.505	89
5	N47	max	15.405	20	62.116	30	853.793	22	0	110	0	110	0	110
6		min	-21.881	2	13.535	60	-981.102	4	0	1	0	1	0	1
7	N49	max	31.388	8	62.368	35	976.408	16	0	110	0	110	0	110
8		min	-25.053	14	13.533	54	-1107.242	10	0	1	0	1	0	1
9	Totals:	max	1576.366	17	3236.214	34	2285.906	14						
10		min	-1576.368	11	845.169	53	-2285.907	8						

Envelope AISC 15th (360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M2	PIPE_2.0	0.721	37.5	8	0.197	37.5		8	6295.422	32130	1871.625	1871.625	1.454	H1-1b
2	M1	PIPE_2.0	0.666	37.5	2	0.148	37.5		8	6295.422	32130	1871.625	1871.625	1.403	H1-1b
3	M7	9x0.375	0.632	4.5	30	0.122	4.5	y	31	75995.598	109350	854.297	20503.125	1.468	H1-1b
4	MP3	PIPE_2.0	0.37	28	92	0.05	28		64	14916.096	32130	1871.625	1871.625	3	H1-1b
5	MP1	PIPE_2.0	0.332	28	85	0.042	68		79	14916.096	32130	1871.625	1871.625	3	H1-1b
6	M15	PIPE_2.5	0.313	41.872	31	0.174	47.854		35	44526.329	50715	3596.25	3596.25	1.754	H1-1b
7	M17	0.75 SR	0.309	27.949	37	0.017	55.899		30	2291.678	14313.882	178.924	178.924	1.136	H1-1a
8	M13	PIPE_2.5	0.235	44	36	0.129	18.5		9	44490.956	50715	3596.25	3596.25	2.131	H1-1b
9	M8	PIPE_2.5	0.228	41.872	83	0.123	47.854		77	44526.329	50715	3596.25	3596.25	1.908	H1-1b
10	M5	PIPE_2.5	0.215	44	78	0.105	44		4	44490.956	50715	3596.25	3596.25	2.072	H1-1b
11	M16	PIPE_2.5	0.199	0	2	0.147	2.991		35	44526.329	50715	3596.25	3596.25	1.601	H1-1b
12	M11	0.75 SR	0.166	27.949	29	0.012	55.899		10	2291.678	14313.882	178.924	178.924	1.136	H1-1b
13	M9	PIPE_2.5	0.111	0	2	0.116	2.991		80	44526.329	50715	3596.25	3596.25	3	H1-1b
14	MP2	PIPE_2.0	0.105	68	90	0.038	68		90	14916.096	32130	1871.625	1871.625	3	H1-1b
15	M30	PIPE_2.0	0.102	54.684	5	0.007	109.367		30	11842.219	32130	1871.625	1871.625	1.136	H1-1b
16	M29	PIPE_2.0	0.1	54.684	11	0.007	109.367		36	11842.219	32130	1871.625	1871.625	1.136	H1-1b
17	M10	9x0.375	0.097	4.5	36	0.11	4.5	y	37	75995.598	109350	854.297	20503.125	1.465	H1-1b
18	M3	PIPE_4.0	0.078	44	90	0.068	44		90	88587.957	93240	10631.25	10631.25	2.05	H1-1b

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.4

PROJECT DATA	
Site Name:	Trumbull
Site Number:	873128
Job Code:	1039-Z0001-B
Connection Description:	Sector Frame to Tower Leg

APPLIED LOADS		
Bolt Tension:	10470.64	lbs
Bolt Shear:	2853.21	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.75	in
Bolt Grade:	A307	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

BOLT CHECK		
Tensile Strength	15050.70	
Shear Strength	9940.20	
Tensile Usage	69.6%	
Shear Usage	28.7%	
Interaction Check	0.57	***≤1.05***
Result	Pass	

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11203B

Trumbull/Rt 108
800 Booth Hill Road
Shelton, Connecticut 06484

November 6, 2020

EBI Project Number: 6220005796

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**30.74%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

November 6, 2020

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

Emissions Analysis for Site: CT11203B - Trumbull/Rt 108

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **800 Booth Hill Road** in **Shelton, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 800 Booth Hill Road in Shelton, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

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

11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value

is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antenna mounting height centerline of the proposed antennas is 247 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	247 feet	Height (AGL):	247 feet	Height (AGL):	247 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	**0.76%**	Antenna B1 MPE %:	**0.76%**	Antenna C1 MPE %:	**0.76%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	247 feet	Height (AGL):	247 feet	Height (AGL):	247 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A2 MPE %:	**2.27%**	Antenna B2 MPE %:	**2.27%**	Antenna C2 MPE %:	**2.27%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	247 feet	Height (AGL):	247 feet	Height (AGL):	247 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A3 MPE %:	**0.98%**	Antenna B3 MPE %:	**0.98%**	Antenna C3 MPE %:	**0.98%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	4.01%
Dish	0.1%
Various	25.4%
Verizon	0.69%
Marcus	0.14%
Light Squared Inc.	0.4%
Site Total MPE % :	30.74%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	4.01%
T-Mobile Sector B Total:	4.01%
T-Mobile Sector C Total:	4.01%
Site Total MPE % :	30.74%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	247.0	2.42	1900 MHz GSM	1000	0.24%
T-Mobile 1900 MHz LTE	2	2056.61	247.0	2.42	1900 MHz LTE	1000	0.24%
T-Mobile 2100 MHz LTE	2	2307.55	247.0	2.72	2100 MHz LTE	1000	0.27%
T-Mobile 2500 MHz LTE	1	19238.94	247.0	11.34	2500 MHz LTE	1000	1.13%
T-Mobile 2500 MHz NR	1	19238.94	247.0	11.34	2500 MHz NR	1000	1.13%
T-Mobile 600 MHz LTE	2	591.73	247.0	0.70	600 MHz LTE	400	0.17%
T-Mobile 600 MHz NR	1	1577.94	247.0	0.93	600 MHz NR	400	0.23%
T-Mobile 700 MHz LTE	2	648.82	247.0	0.76	700 MHz LTE	467	0.16%
T-Mobile 1900 MHz LTE	2	2203.69	247.0	2.60	1900 MHz LTE	1000	0.26%
T-Mobile 2100 MHz UMTS	2	1294.56	247.0	1.53	2100 MHz UMTS	1000	0.15%
						Total:	**4.01%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	4.01%
Sector B:	4.01%
Sector C:	4.01%
T-Mobile Maximum MPE % (Sector A):	4.01%
Site Total:	30.74%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **30.74%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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