February 17th , 2023

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

Re:	**Notice of Exempt Modification – Antenna Swap**
Property Address:	**880 POST ROAD EAST WESTPORT, CT 06880**
Applicant:	**AT&T Mobility, LLC**

Dear Ms. Bachman:

On behalf of AT&T, please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b) (2).

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 133-feet on an existing 180 –self-support tower, owned by the STATE OF CONNECTICUT DEPARTMENT OF PUBLIC SAFETY. AT&T now intends to INSTALL (12) NEW ANTENNAS(2 per sector on one mount) TO REPLACE (9) EXISTING ANTENNAS (3) NEW RRUS-4478-B14 UNITS (3) NEW RRUS 4449-B5/B12 UNITS RMOVE(3) RRUS 11 B12 (1) NEW RAYCAP UNIT (1) FIBER CABLE AND (3) DC POWER CABLES.

This facility was approved by the Connecticut Siting Council, Docket No. 123 on March 9 ,1990. There were no conditions that could feasibly be violated by this modification, including the total facility height or mounting restrictions. This modification therefore complies with the approval.

The following is a list of subsequent decisions by the Connecticut Siting Council:

EM-AT&T-158-991101 - AT&T Wireless PCS notice of intent to modify an existing telecommunications facility located at 880 Post Road East in **Westport**.

EM-CING-015-018-034-057-097-103-144-158-020913 - Southwestern Bell Mobile Systems, LLC notice of intent to modify existing telecommunications facilities located in Bridgeport, Brookfield, Danbury, Greenwich, Newtown, Norwalk, Trumbull, and **Westport**, Connecticut.

EM-CING-015-034-035-051-057-085-103-117-126-135-138-157-158-161-020917 - Southwestern Bell Mobile Systems, LLC notice of intent to modify existing telecommunications facilities located in Bridgeport, Danbury, Darien, Fairfield, Greenwich, Monroe, Newtown, Norwalk, Redding, Shelton, Stamford, Stratford, Weston, **Westport**, and Wilton, Connecticut.

EM-CING-158-021223 - Southwestern Bell Mobile Systems, LLC a/k/a Cingular Wireless notice of intent to modify an existing telecommunications facility located at 880 Post Road, **Westport**, Connecticut.

EM-CING-158-110620 - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 880 Post Road East, **Westport**, Connecticut.

EM-CING-158-130326 - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 880 Post Road East, **Westport**, Connecticut.

EM-CING-158-140501 – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 880 Post Road East, **Westport**, Connecticut. Decision. Completion Letter.

EM-CING-158-170724 – AT&T notice of intent to modify an existing telecommunications facility located at 880 Post Road East, **Westport**, Connecticut. Decision

EM-AT&T-158-171019 – AT&T Wireless notice of intent to modify an existing telecommunications facility located at 880 Post Road East, **Westport**, Connecticut. Decision

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Ms. Jennifer Tooker, First Select woman of the Town of Westport, Steven Palmer the Westport Planning and Zoning Director and State of CT Department of Public Safety, tower owner.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 133-foot level of the 180-foot self-support tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

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

Sincerely,

David Barbagallo

CC w/enclosures:
Mr. Jennifer Tooker First Select woman of the Town of Westport
Westport Planning and Zoning Director Steven Palmer
Tower Owner, State of CT Department of Public Safety

David S Barbagallo

Real Estate Specialist III

85 Rangeway Road
Bldg. 3, Suite 102
Billerica, MA 01862 David S Barbagallo
Real Estate Sepecialist III
David.Barbagallo@Smartlinkgroup.com
C 860-681-7708
www.smartlinkgroup.com

[redacted]

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TRACKING ID

771339594924

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Dave Barbagallo
265 Lincoln St Jennifer Tooker
KENSINGTON, CT US 06037
8606817708

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WINDSOR LOCKS, CT
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2/21/2023 8:03 AM

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STAMFORD, CT
2/21/2023 9:06 AM

DELIVERED
Jennifer Tooker
Westport Select Office
310 Mytle Ave room 310
WESTPORT, CT US 06880
2033411111

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KENSINGTON, CT US 06037
8606817708

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WINDSOR LOCKS, CT
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STAMFORD, CT
2/21/2023 9:07 AM

DELIVERED
Steve Palmer
westport Planning abd Zonning Depar
110 Myrtle Avenue room 203
WESTPORT, CT US 06880
2033411030

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FROM
Smartlink LLC
Dave Barbagallo
265 Lincoln St
KENSINGTON, CT US 06037
8606817708

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2/17/2023 1:08 PM

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2/17/2023 4:16 PM

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WINDSOR LOCKS, CT
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WINDSOR LOCKS, CT
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P.O.Box 2794
Department of Public Safetey
CT State Police Telecommunications
MIDDLETOWN, CT US 06457
8606858080

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Property Location 880 POST RD E
Vision ID 10252 Account # 14500 Map ID F09/ / 064/000 / Bldg # 2 Bldg Name Sec # 1 of 1 Card # 2 of 2 State Use 320 Print Date 12/2/2022 8:30:01 PM

CURRENT OWNER

WESTPORT DRUG ASSOC LLC

18 EAST 50TH STREET 10TH FL

NEW YORK NY 10022

TOPO	UTILITIES	STRT / ROAD	LOCATION
1 Level	1 All Public	1 Public	4 Bus. District

SUPPLEMENTAL DATA

Alt Prcl ID	5318431	Lift Hse	
Historic ID		Asking $	
Census	506		
WestportC	I50		
Survey Ma	9550		
Survey Ma			
GIS ID	F09064000	Assoc Pid#	

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
COM LAND	2-1	4,380,750	3,066,500
COM BLDG	2-2	5,348,050	3,743,500
COM OUTBL	2-5	128,100	89,800
	Total	9,856,900	6,899,800

6158

WESTPORT, CT

VISION

RECORD OF OWNERSHIP

WESTPORT DRUG ASSOC LLC
880 POST RD EAST LLC
CONNECTICUT STATE OF

VOL/PAGE		SALE	Q/U	V/I	PRICE	VC
2662	0036	03-28-2006	Q	I	12,750,000	00
1747	0159	12-29-1999	U	I	0	29
1611	0315	07-10-1998	U	V	0	29

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Assessed	Year	Assessed
2021	2-1	3,066,500	2020	3,066,500	2020	3,066,500
	2-2	3,743,500		3,743,500		3,743,500
	2-5	89,800		89,800		89,800
	Total	6,899,800	Total	6,899,800	Total	6,899,800

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	5,315,650
Appraised Xf (B) Value (Bldg)	32,400
Appraised Ob (B) Value (Bldg)	128,100
Appraised Land Value (Bldg)	4,380,750
Special Land Value	0
Total Appraised Parcel Value	9,856,900
Valuation Method	I
Total Appraised Parcel Value	9,856,900

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	B	Tracing	Batch
0001				

NOTES

CITIBANK

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Amount	Insp Date	% Comp	Date Comp	Comments

Permit Id	Comments

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land	Land Units		Unit Price	I. Factor	Site Index	Cond.	Nbhd.	Nhbd Adj	Notes	Location Adjustment		Adj Unit Pric	Land Value
2	320	Retail			0	SF	0.00	1.00000		1.00		1.000			0		0
				Total Card Land Units	0.000	AC	Parcel Total Land Area:	1.770								Total Land Value	4,380,750

Property Location 880 POST RD E | Map ID F09/ / 064/000 / | Bldg Name | State Use 320
Vision ID 10252 | Account # 14500 | Bldg # 2 | Sec # 1 of 1 | Card # 2 of 2 | Print Date 12/2/2022 8:30:02 PM

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	31	Bank
Model	96	Commercial
Grade	06	Good
Stories:	2	
Occupancy	1.00	
Exterior Wall 1	20	Brick/Masonry
Exterior Wall 2		
Roof Structure	01	Flat
Roof Cover	04	T&G/Rubber
Interior Wall 1	05	Drywall
Interior Wall 2		
Interior Floor 1	14	Carpet
Interior Floor 2		
Heating Fuel	03	Gas
Heating Type	04	Forced Air
AC Type	03	Central
Bldg Use	320	Retail
Income Adj		
Heat/AC	01	Heat/AC Pkgs
Frame Type	03	Masonry
Baths/Plumbing	02	Average
Ceiling/Walls	05	Sus-Ceil & WL
Rooms/Prtns	02	Average
Wall Height	10.00	
% Comn Wall		
1st Floor Use:		

CONSTRUCTION DETAIL (CONTINUED)

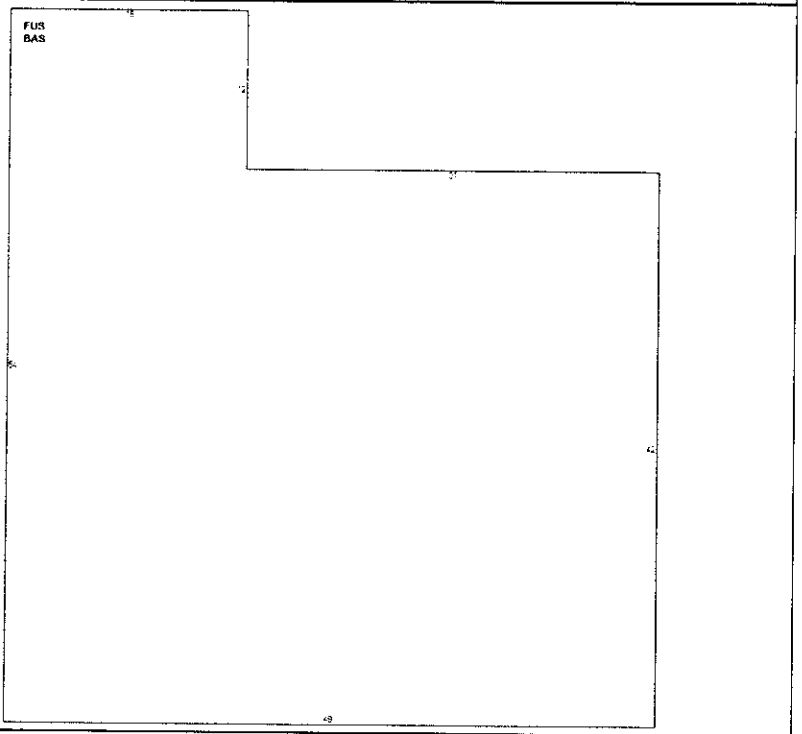
Element	Cd	Description

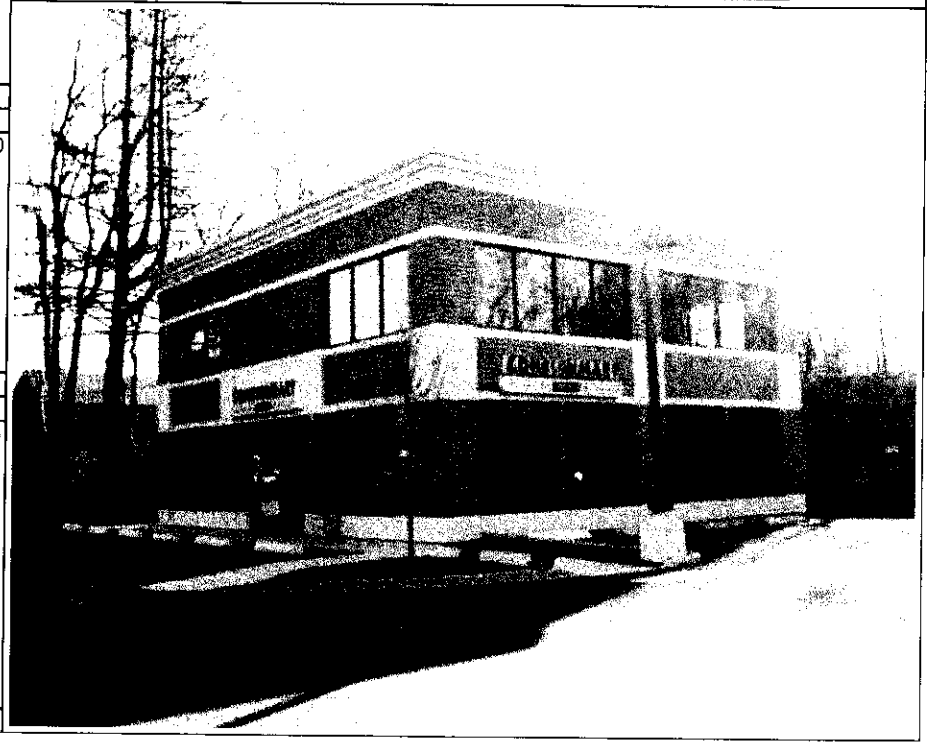
MIXED USE

Code	Description	Percentage
320	Retail	100
		0
		0

COST / MARKET VALUATION

RCN	1,671,557
Year Built	2004
Effective Year Built	
Depreciation Code	A
Remodel Rating	
Year Remodeled	
Depreciation %	12
Functional Obsol	
External Obsol	
Trend Factor	1
Condition	
Condition %	
Percent Good	88
Cns Sect RcnId	1,471,000
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	





OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Code	Description	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Good	Grade	Grade Adj	Appr. Value
SPR	Sprinklers	B	4,548	2.50	2008		88		0.00	10,000

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
BAS	First Floor	2,274	2,274		363.04	825,546
FUS	Upper Story, Finished	2,274	2,274		363.04	825,546
	Ttl Gross Liv / Lease Area	4,548	4,548			1,651,092

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING LATTICE TOWER:
- INSTALL AT&T SECTOR FRAME SITEPRO #VFA14-H10-2120 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: QD6616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T (1) DC9-48-60-24-8C-EV SQUID
- NEW AT&T (3) Y-CABLES, (3) 6 AWG DC TRUNKS, (1) 24 PAIR FIBER

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- INSTALL (1) 6630 + IDLE CABLE IN EXISTING RACK
- INSTALL (1) 6648 FHG+XCEDE CABLE.
- INSTALL (1) DC12 IN RACK
- INSTALL (3) RECTIFIERS IN EXISTING POWER PLANT.
- NEW AT&T RRUS 2012 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T SURGES ARRESTORS (APTDC-BDFDM-DB) (TYP. OF 2 PER SECTOR, TOTAL OF 6)
- FINAL BBU CONFIG=5216-XMU/6630+IDLE/6648+XCEDE.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: (P65-16-XLH-RR) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T ANTENNAS: (QS86512-6) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T ANTENNAS: (HPA-65R-BUU-H6) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T RRUS 11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T DIPLEXERS: DBC0061F1V51-2 (TOTAL OF 6)

ITEMS TO REMAIN:
(9) RRUS, (6) LINES OF 1-5/8" COAX CABLES, (2) SQUIDS, (4) DC POWER & (2) FIBER.

RFDS:	FINAL APPROVED V6 RFDS 02/22/22
SITE ADDRESS:	880 POST ROAD EAST WESTPORT, CT 06880
LATITUDE:	41.137463° N, 41° 8' 14.87" N
LONGITUDE:	-73.334360° W, 73° 20' 3.69" W
TYPE OF SITE:	LATTICE TOWER / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	180'-0"±
RAD CENTER:	133'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	3
GN-1	GENERAL NOTES	3
A-1	COMPOUND & EQUIPMENT PLAN	3
A-2	ANTENNA PLANS & ELEVATION	3
A-3	DETAILS	3
A-4	DETAILS	3
G-1	GROUNDING DETAILS	3
RF-1	RF PLUMBING DIAGRAM	3

SITE NUMBER: CTL02147
SITE NAME: WESTPORT SP TOWER
FA CODE: 10035298
PACE ID: MRCTB053103, MRCTB052360, MRCTB051540, MRCTB051449, MRCTB051488, MRCTB051252, MRCTB051299
PROJECT: LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1 2021 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:
START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST.MERGE ONTO CT-8 S VIA EXIT 52 TOWARD BRIDGEPORT.RGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST. MERGE ONTO CT-8 S VIA EXIT 52 TOWARD BRIDGEPORT. MERGE ONTO I-95 S TOWARD NY CITY. TAKE THE SHERWOOD ISLAND CONNECTOR EXIT, EXIT 18. KEEP RIGHT TO TAKE THE RAMP TOWARD WESTPORT COUNTRY PLAYHOUSE/RR STATION/WESTPORT. MERGE ONTO SHERWOOD ISLAND CONNECTOR. TURN RIGHT ONTO POST RD/US-1 N. 880 POST RD E, WESTPORT, CT 06880-5223, 880 POST RD E.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

STATE OF CONNECTICUT · DANIEL P. HAYNES · No. 24178 · LICENSED PROFESSIONAL ENGINEER

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL02147
SITE NAME: WESTPORT SP TOWER

880 POST ROAD EAST
WESTPORT, CT 06880
FAIRFEILD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	AT	APP'D
3	04/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
2	03/04/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/02/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	02/04/22	ISSUED FOR REVIEW	VS	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: VS | DRAWN BY: VS

AT&T

TITLE SHEET
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	T-1	3

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. 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.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. 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.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR 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 CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

    FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD CL	RADIATION CENTER LINE OF ANTENNA	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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ANNAPOLIS, MD 21401

SITE NUMBER: CTL02147
SITE NAME: WESTPORT SP TOWER

880 POST ROAD EAST
WESTPORT, CT 06880
FAIRFEILD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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1	03/02/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	02/04/22	ISSUED FOR REVIEW	VS	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: VS | DRAWN BY: VS

STATE OF CONNECTICUT DANIEL P. HAMM No. 24178 LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	GN-1	3

NOTE:

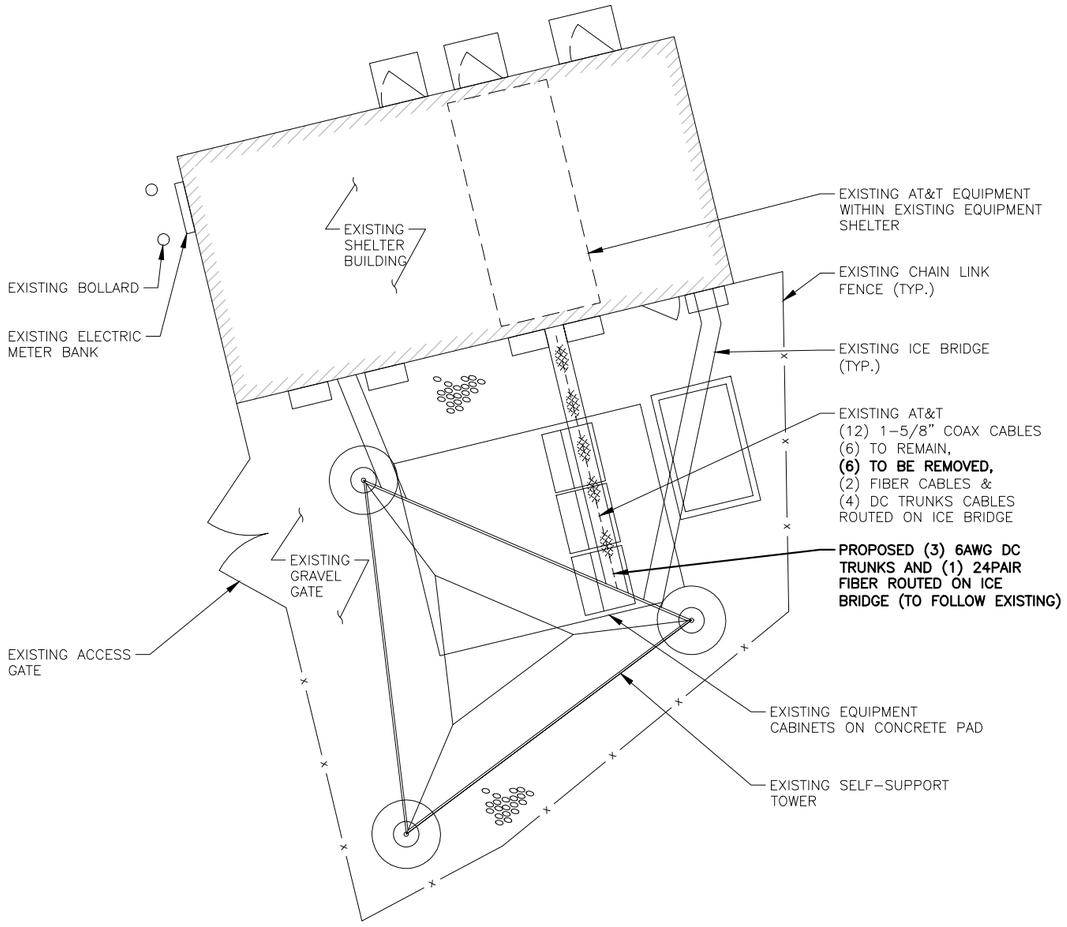
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

REFER TO FINAL APPROVED V6 RFDS 02/22/22

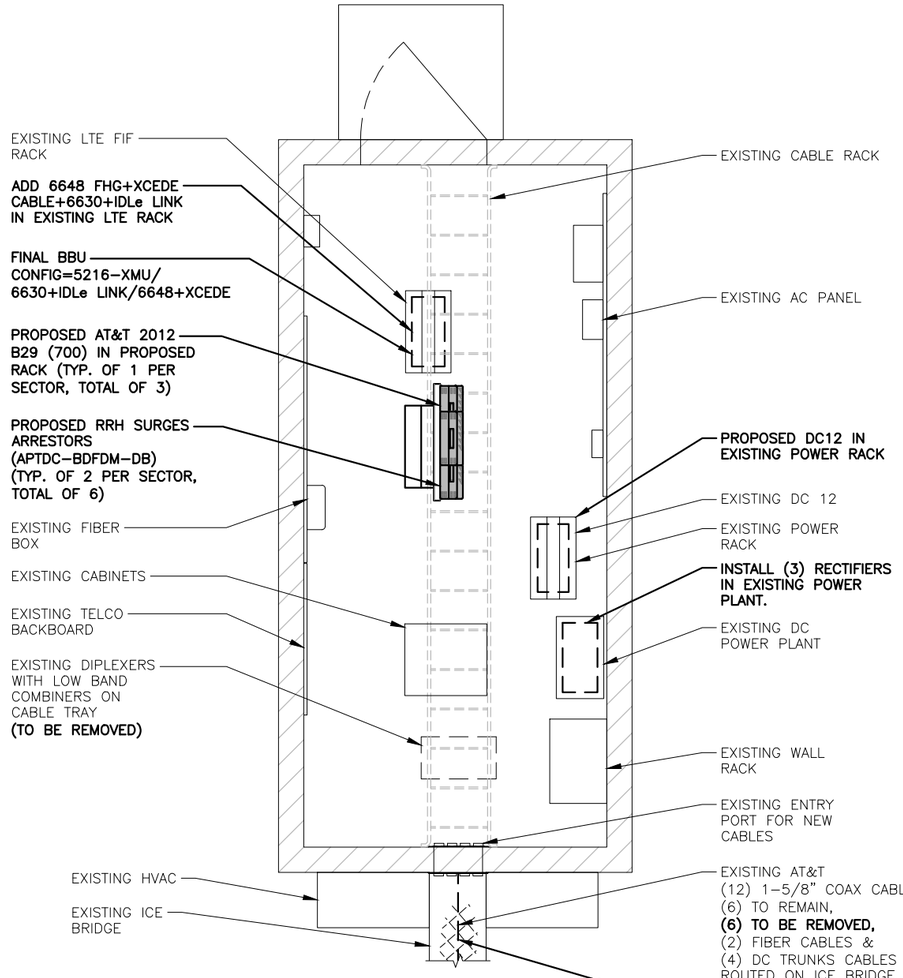
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 11, 2022 (REV. 1)



COMPOUND PLAN (1 / A–1)
22x34 SCALE: 3/8"=1'–0"
11x17 SCALE: 3/16"=1'–0"

0 1'–4" 2'–8" 5'–4" 8'–0"



EQUIPMENT PLAN (1 / A–1)
22x34 SCALE: 1/2"=1'–0"
11x17 SCALE: 1/4"=1'–0"

0 1'–0" 2'–0" 4'–0" 6'–0"

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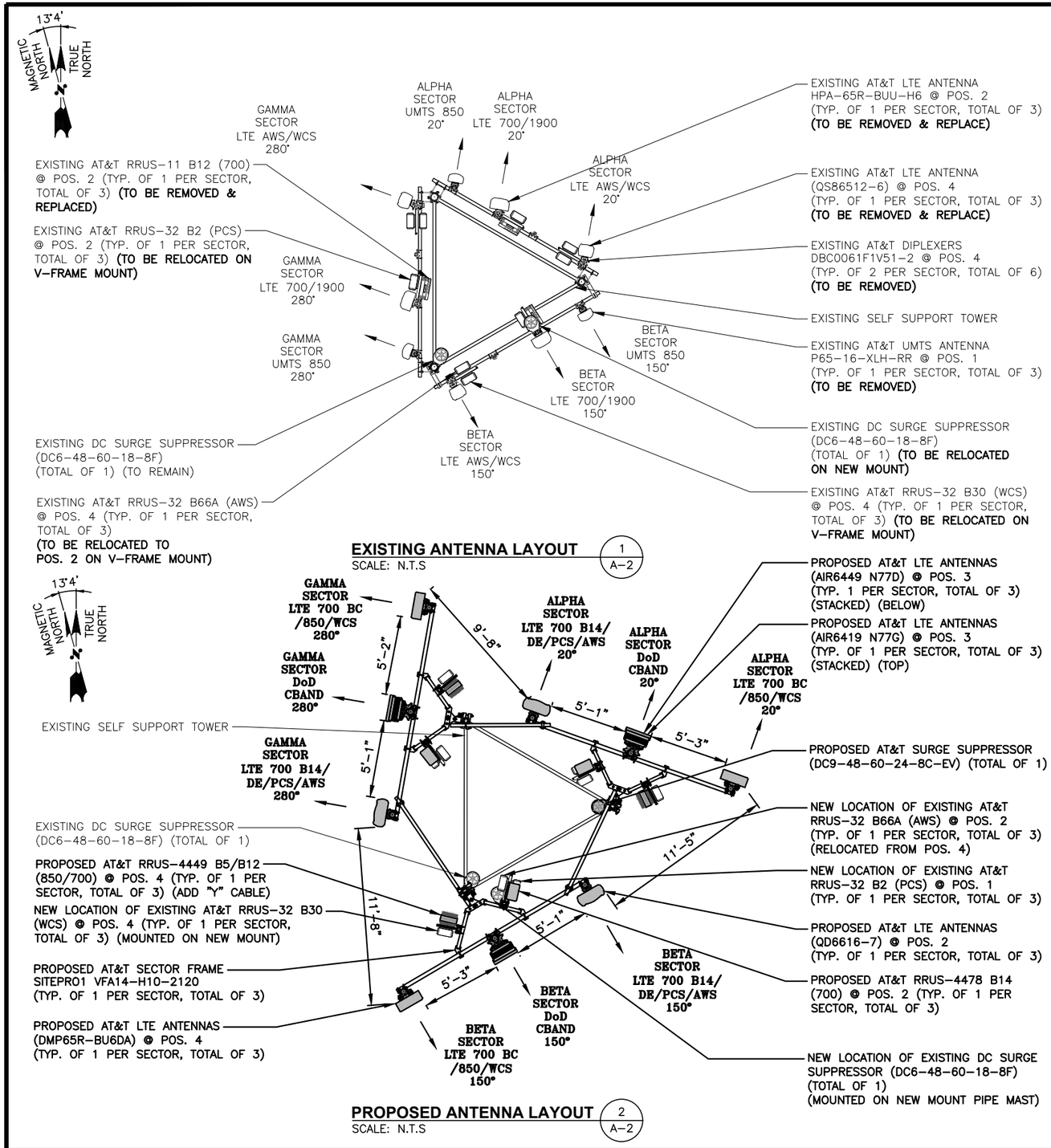
STATE OF CONNECTICUT
DANIELO P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR–1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	A–1	3



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:
ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OF PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

NOTE:
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NOTE:
REFER TO FINAL APPROVED V6 RFDS 02/22/22

NOTE:
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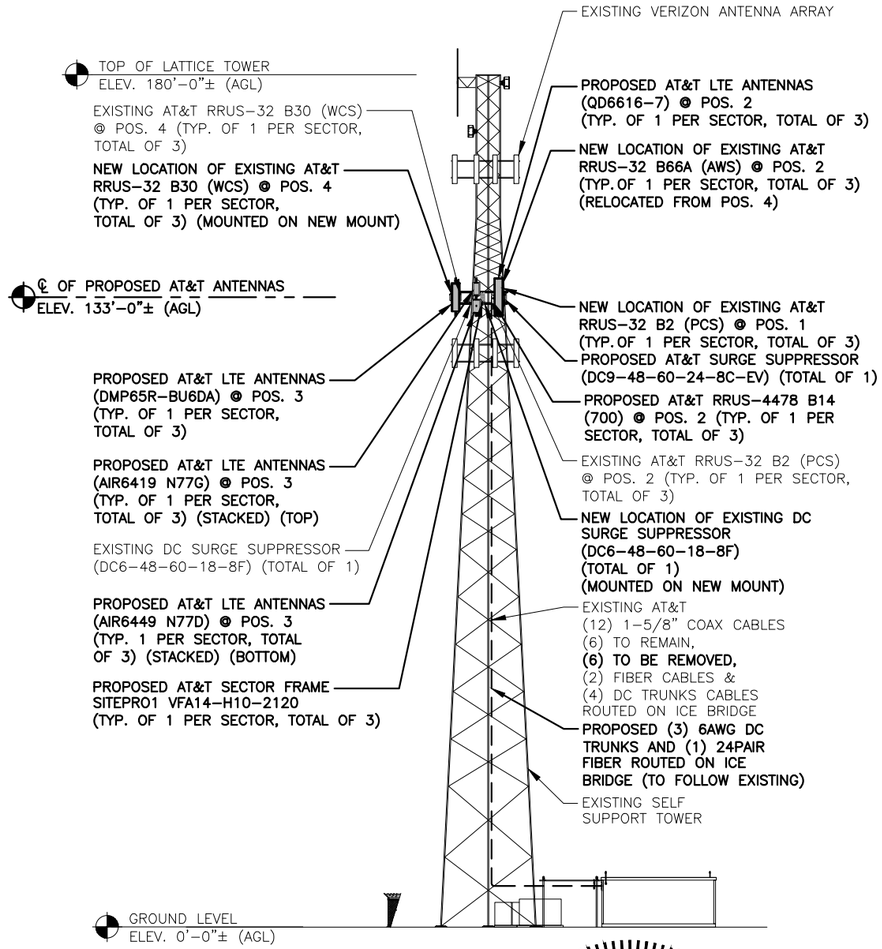

ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

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ANTENNA PLANS & ELEVATION
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	A-2	3

ANTENNA SCHEDULE

FINAL APPROVED V6 RFDS 02/22/22

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
A2	PROPOSED	LTE 700 B14/ DE/PCS/AWS	QD6616-7	72"X22"X9.6"	133'-0"±	20°	–	(1)(P) 4478 B14 (700) (1)(P)(G) RRUS 2012 B29 (700) (1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B66A (AWS)	18.1"X13.4"X8.3" 20.4"x18.5"x7.5" – –	(2)(E) DC (1)(E) FIBER (2)(E)1-5/8 COAX	
A3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	133'-0"±	20°	–	–	–	–	
A4	PROPOSED	LTE 700 BC /850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	133'-0"±	20°	–	(1)(P) 4449 B5/B12 (850/700) (1)(E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1)(P) Y CABLE –	
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	PROPOSED	LTE 700 B14/ DE/PCS/AWS	QD6616-7	72"X22"X9.6"	133'-0"±	150°	–	(1)(P) 4478 B14 (700) (1)(P)(G) RRUS 2012 B29 (700) (1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B66A (AWS)	18.1"X13.4"X8.3" 20.4"x18.5"x7.5" – –	(2)(E) DC (1)(E) FIBER (2)(E)1-5/8 COAX	
B3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	133'-0"±	150°	–	–	–	–	
B4	PROPOSED	LTE 700 BC /850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	133'-0"±	150°	–	(1)(P) 4449 B5/B12 (850/700) (1)(E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1)(P) Y CABLE –	
C1	–	–	–	–	–	–	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
C2	PROPOSED	LTE 700 B14/ DE/PCS/AWS	QD6616-7	72"X22"X9.6"	133'-0"±	280°	–	(1)(P) 4478 B14 (700) (1)(P)(G) RRUS 2012 B29 (700) (1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B66A (AWS)	18.1"X13.4"X8.3" 20.4"x18.5"x7.5" – –	(2)(E) DC (1)(E) FIBER (2)(E)1-5/8 COAX	
C3	PROPOSED	DOD C-BAND	AIR 6419 N77G AIR 6449 N77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	133'-0"±	280°	–	–	–	(3)(P) #6AWG DC TRUNKS (1)(P) 24 PAIR FIBER (APPROX. 155'±)	
C4	PROPOSED	LTE 700 BC /850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	133'-0"±	280°	–	(1)(P) 4449 B5/B12 (850/700) (1)(E) RRUS-32 B30 (WCS)	17.9"x13.2"x10.4" –	(1)(P) Y CABLE –	

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

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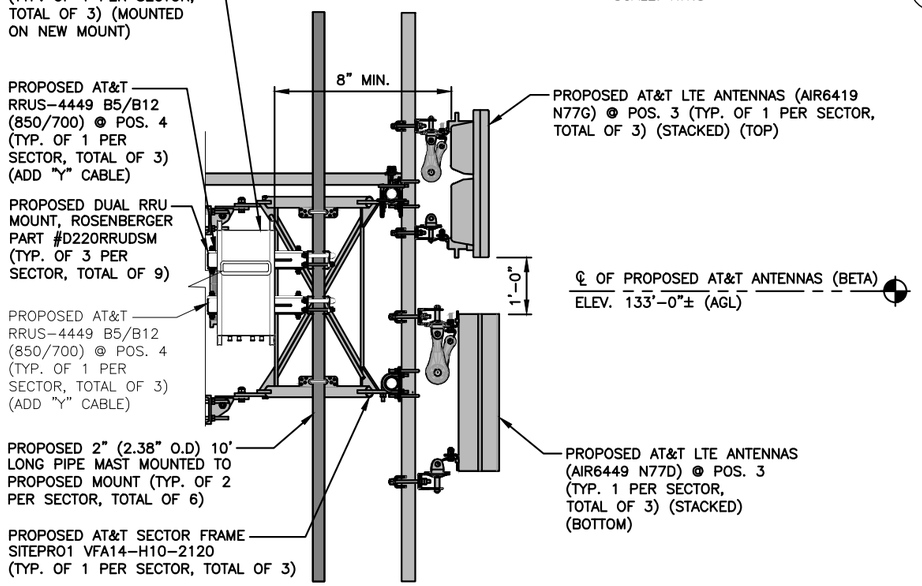
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 11, 2022 (REV. 1)

NOTE:

REFER TO FINAL APPROVED V6 RFDS 02/22/22

FINAL ANTENNA SCHEDULE (1 / A-3)

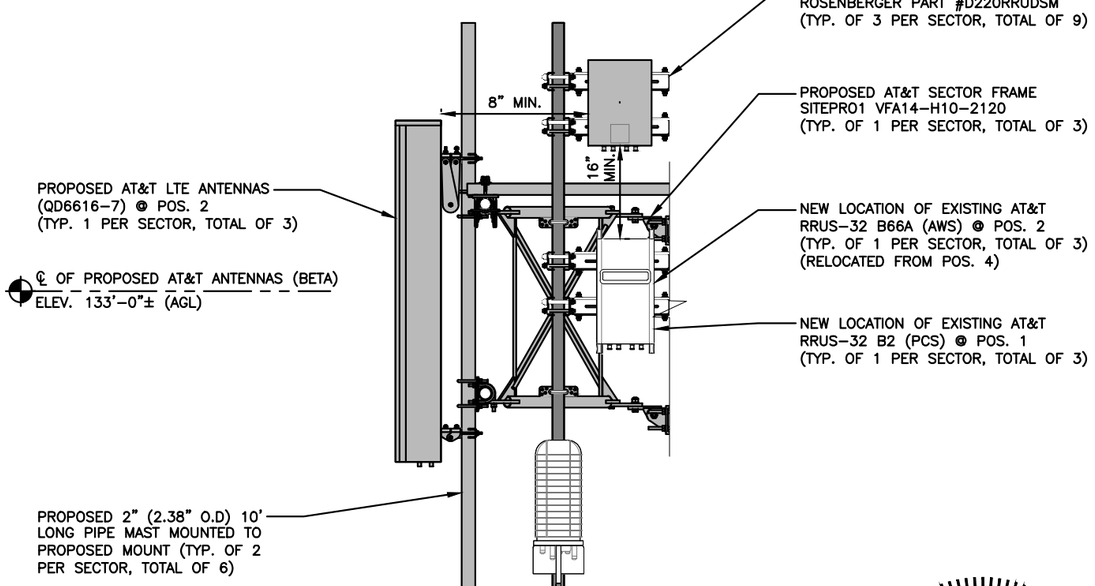
SCALE: N.T.S



PROPOSED DoD + C BAND ANTENNA MOUNTING DETAIL (2 / A-3)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED LTE ANTENNAS MOUNTING DETAIL (3 / A-3)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"

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SCALE: AS SHOWN | DESIGNED BY: VS | DRAWN BY: VS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

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DETAILS
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	A-3	3

NOTE:

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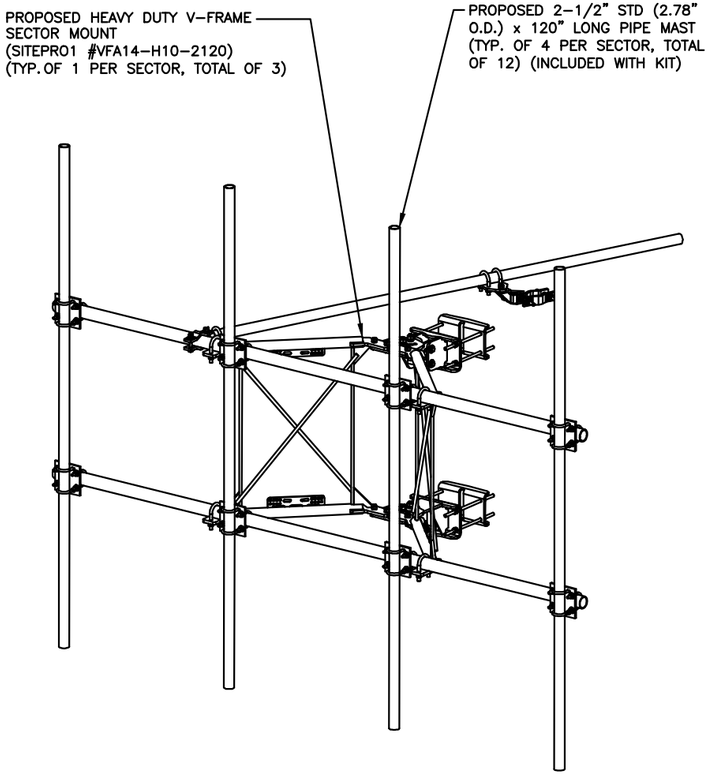
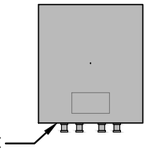


PROPOSED MOUNT (SITEPRO1 #VFA14-H10-2120) DETAIL (1 / A-4)
SCALE: N.T.S

RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
3(P)	**4449 B5/B12 (700)**	**17.9"x13.2"x10.4"**
3(P)	**4478 B14 (700)**	**18.1"X13.4"X8.3"**
3(P)(G)	**RRUS 2012 B29 (700)**	**20.4"x18.5"x7.5"**
3(E)	RRUS-32 B2 (PCS)	27.2"X12.1X7.0"
3(E)	RRUS-32 B66A (AWS)	27.2"X12.1X7.0"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1X7.0"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS		

NOTE:

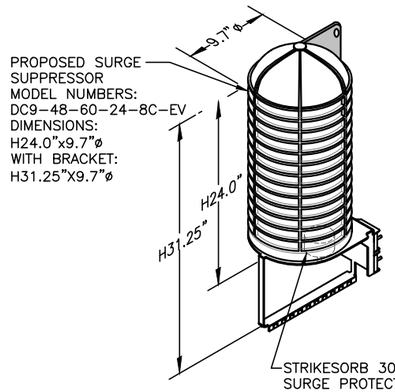
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

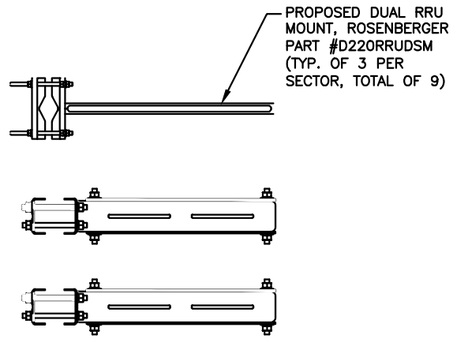
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-4)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-4)
SCALE: N.T.S



BACK TO BACK RRU MOUNT DETAIL (4 / A-4)
SCALE: N.T.S

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DETAILS

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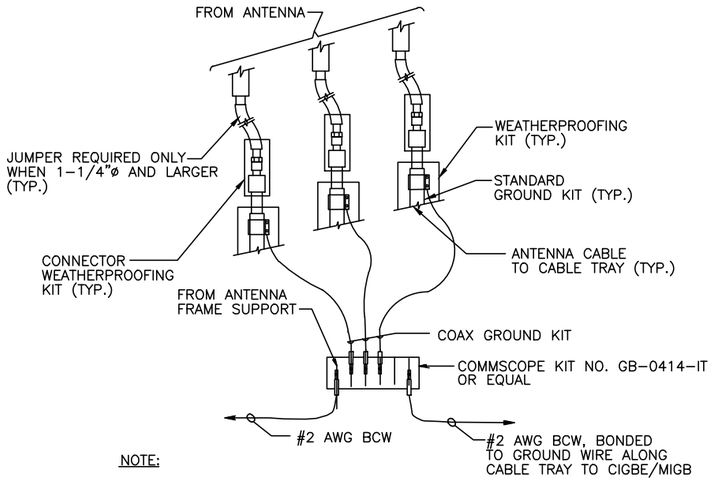
SITE NUMBER	DRAWING NUMBER	REV
CTL02147	A-4	3



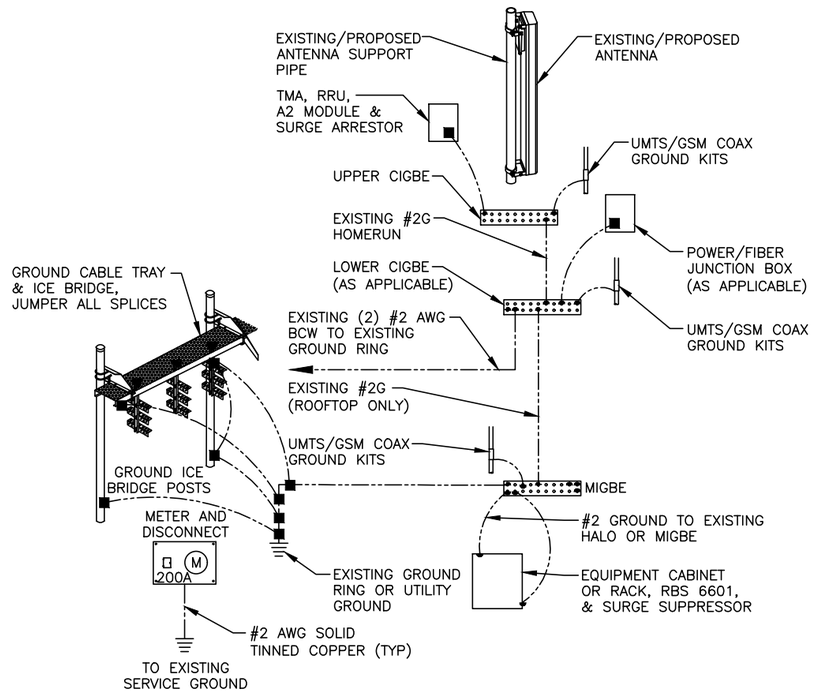
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

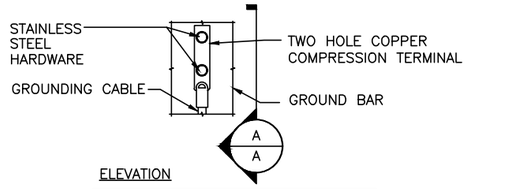
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

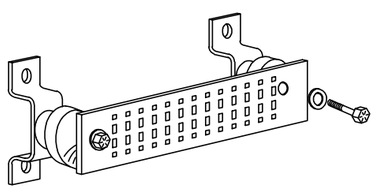
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL02147
SITE NAME: WESTPORT SP TOWER

880 POST ROAD EAST
WESTPORT, CT 06880
FAIRFEILD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	AT	APP'D
3	04/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
2	03/04/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/02/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	02/04/22	ISSUED FOR REVIEW	VS	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: VS | DRAWN BY: VS

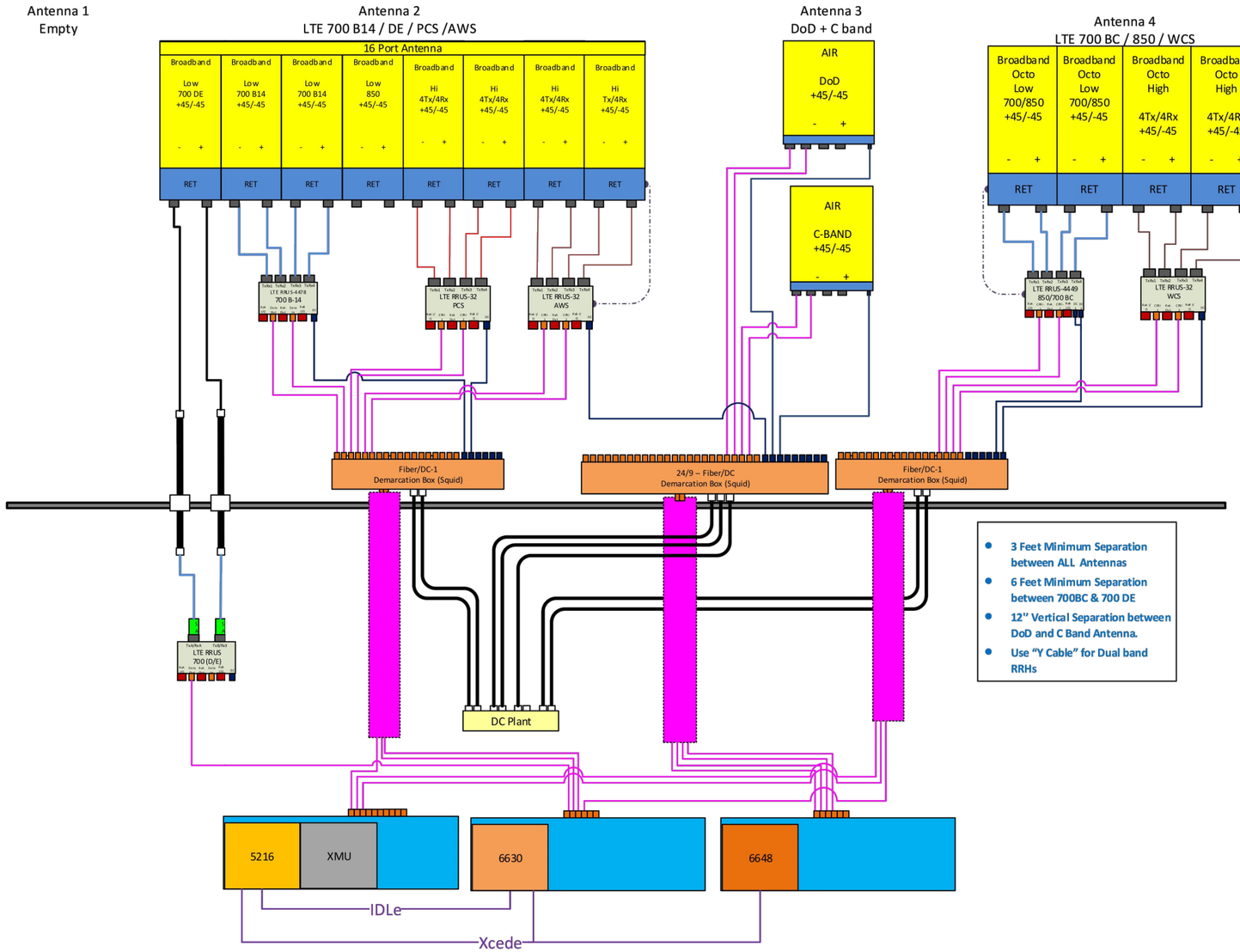
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR-1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	G-1	3

FINAL APPROVED V6 RFDS 02/22/22



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO FINAL APPROVED V6 RFDS 02/22/22

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink
SMARTLINK
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL02147
SITE NAME: WESTPORT SP TOWER

880 POST ROAD EAST
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FAIRFEILD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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NO.	DATE	REVISIONS	BY	AT	APP'D
3	04/18/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
2	03/04/22	ISSUED FOR CONSTRUCTION	MB	AT	DPH
1	03/02/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	02/04/22	ISSUED FOR REVIEW	VS	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: VS | DRAWN BY: VS

AT&T

RF PLUMBING DIAGRAM
LTE 6C, 5G NR RADIO, 5G NR 1SR CBAND, BBU ADD, LTE 5C, 4TX4RX, 5G NR 1DR–1

SITE NUMBER	DRAWING NUMBER	REV
CTL02147	RF–1	3

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

180' Existing Lattice Tower

AT&T Site Ref: CT2147

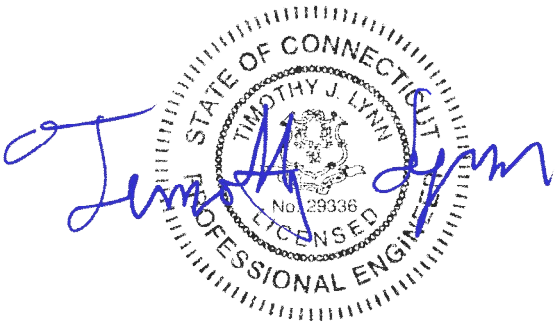
CSP Tower Ref: #32

880 Post Road East
Westport, CT

CENTEK Project No. 22089.02

Date: July 26, 2022

Max Stress Ratio = 82%



Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade by AT&T on the existing lattice tower located in Westport, Connecticut.

The host tower is a 180-ft, three legged, lattice tower originally designed and manufactured by Rohn Industries. File no. 26263DL dated February 1, 1991. The tower geometry, structure member sizes and foundation information were taken from a previous structural analysis report prepared by Centek job no. 22027.01 dated April 5, 2022. The tower has been previously reinforced. All previous reinforcements are assumed to be installed. See Primary Assumptions Section below for detailed reinforcement reference reports.

Antenna and appurtenance inventory was taken from the aforementioned structural analysis and information provided by AT&T.

The tower consists of nine (9) vertical sections consisting of steel pipe legs conforming to ASTM A572-50 and steel pipe lateral bracing. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 8.5-ft at the top and 27.7-ft at the bottom.

Antenna and Appurtenance Summary

The existing and proposed loads considered in the analysis consist of the following:

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) Telewave ANT490Y10-WR Yagi	D&K-51 CSP-1 (existing)	Leg Mounted	187’	(1) LDF5-50A
(1) Telewave ANT490Y10-WR Yagi	CSP-22 (existing)	Leg Mounted	181’	(1) LDF5-50A
(1) Celwave PA6-65 Dish	D&K-52 CSP-42 (existing)	Pipe Mounted to tower Leg	177’	(1) EW-63
(3) RFI BPA7496-180-14 Panel Antennas (1) Bird TTA unit	CSP-47,80-82 (existing)	(1) USF12-396 Sector Frame	170’	(3) AVA7-50A (1) LDF4-50A
(1) 3-ft Yagi	CSP (existing)	Pipe Mounted to tower Leg	169’	(1) LDF5-50A

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(4) MX06FRO640-02 (3) MT6407-77A (4) JAHH-65B-R3B (3) XXDWMM-12.5-65-8T (3) B2/B66A RRHs (3) B5/B13 RRHs (3) RT4401-48A RRHs (1) 4439d-25A RRH (1) 4440d-13A RRH (2) CBC78T-DS-43 (2) OVP Units	VZW (existing)	(3) 15-ft Gate Booms	160’	(6) 1 5/8” Coax Cables (2) 12x24 Hybrid Cable
(9) RRUS-32 RRH Units (2) DC6-48-60-18-8F	AT&T (existing to remain)	(3) 15-ft T-Frames	133’	(6) 1 1/4” Coax Cables (2) Fiber Cables (4) DC Cables
(3) QS86512-6 (3) P65-16-XLH-RR (3) HPA-65R-BUU-H6 (3) RRUS-11 RRH Units (6) DBS0061F1V51-2	**AT&T (existing to remove)**	**(3) 15-ft T-Frames**	**133’**	**(6) 1 1/4” Coax Cables**
(3) QD6616-7 (3) DMP65R-BU6DA (3) AIR6419 (3) AIR6449 (3) 4478 B14 RRH Units (3) 4449 B5/12 RRH Units (1) DC9	**AT&T (proposed)**	**(3) 14-ft V Frames (p/n VFA14-H10-2120)**	**133’**	**(1) Fiber Cables (3) DC Cables**
(3) Ericsson AIR32 (3) Ericsson AIR21 (3) RFS APXVAARR24_43 (3) 4449 RRHS (3) TMAs	T-Mobile (existing)	(3) 12-ft T-Frames	125’	(6) 1 5/8” Coax Cables (3) 6x12 Hybrid Cables
(1) Telewave ANT150D Dipole	CSP (existing)	Pipe Mounted to tower Leg	113’	(1) LDF4-50A

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) GPS Antenna	D&K-1 CSP-43 (existing)	Leg Mounted	61’	(1) LDF4-50A

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables should be routed as specified in section 3 of this report.
- **All previous reinforcements per the below listed structural analysis and modification reports are assumed to be installed.**
  - **Structural report prepared by AECOM Corp for AT&T project no. SMK-004 / 60581632 dated 7/13/18.**
  - **Structural report prepared by AECOM Corp for Verizon project no. VZ5-224 / 60620140 dated 7/10/20.**

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-H entitled "Structural Standard for Antenna Support Structures, Antennas and Small Wind Turbine Support Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-H Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-H, gravity loads of the tower structure and its components, and the application of 1.0" radial ice on the tower structure and its components.

Load Cases:	Load Case 1; 130 mph (Risk Cat III) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2018 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 1.00" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-H]*
	Load Case 3; 90 mph wind speed w/ 0.5" radial ice plus gravity load – used in calculation of tower twist and sway.	*[TIA-222-F used for calculation of tower twist and sway per the requirements of the CSP]*

[1] The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses **were found to be within allowable limits**.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T12)	20.0' - 30.0'	62.9%	**PASS**
Diagonal (T12)	20.0' - 30.0'	81.9%	**PASS**
Horizontal (T11)	30.0' - 40.0'	75.2%	**PASS**

- The tower combined deflection **was found to be within allowable limits**.

Deflection Criteria	Proposed (degrees)	Allowable (degrees)	Result
Sway (Tilt)	0.3933	n/a	**n/a**
Twist	0.2840	n/a	**n/a**
Combined	0.6773	0.75	**PASS**

TIA-222-F standard used for calculation of tower twist and sway per the requirements of the CSP.

Foundation and Anchors

The existing foundation consists of three (3) 4.5-ft diameter x 27-ft long reinforced concrete caissons. The base of the tower is connected to the foundation by means of (10) 1.00"∅ anchor bolts per leg embedded into the concrete foundation structure.

- The tower reactions developed from the governing Load Case were used in the verification of the foundation and anchor bolts:

Load Effect	Proposed Tower Reactions
Leg Shear	50 kips
Leg Compression	353 kips
Leg Tension	310 kips
Base Moment	7,954 ft-kips
Base Shear	85 kips

- The anchor bolts **were found** to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Combined Compression and Shear	47.9%	**PASS**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	(percentage of capacity)	Result
(3) Reinforced Concrete Caisson	Uplift	35%	**PASS**
	Bearing	46%	**PASS**

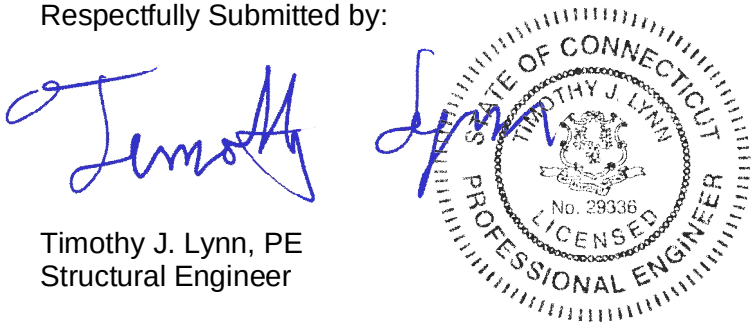
Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T and the CSP. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

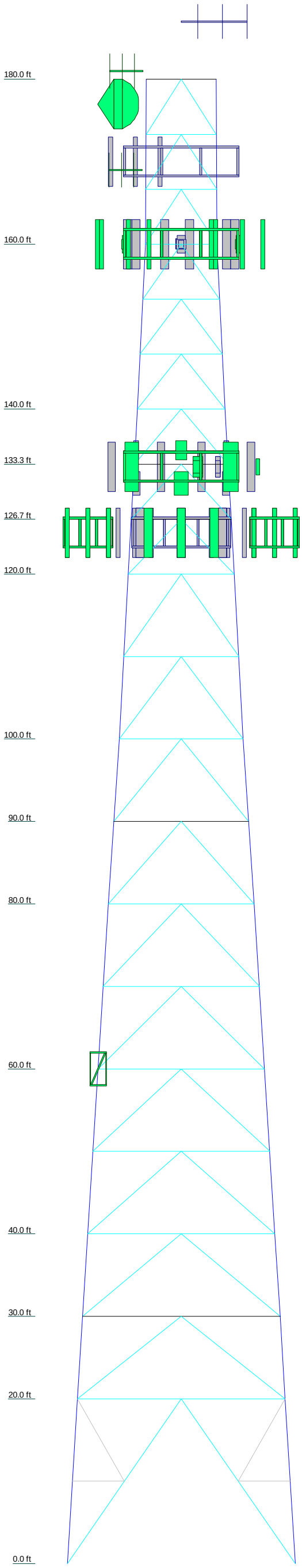
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13
Legs	ROHN 3 STD	ROHN 4 STD	ROHN 5 EH	ROHN 2 XXS		ROHN 6 EHS	ROHN 6 EH		120deg_9.6250x0.375 BU on ROHN 8 EHS	ROHN 8 EHS Leg Pipe	1/3 9.6250x0.375 on ROHN 8 EH		1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe
Leg Grade	A572-50										A572-42		
Diagonals	ROHN 2 STD	ROHN 2 EH		Pipe 2.5 XXS			ROHN 3 STD				ROHN 3 EH		
Diagonal Grade							A572-50						
Top Girts	ROHN 1.5 STD	N.A.		ROHN 2 STD		N.A.		ROHN 2 STD	N.A.			ROHN 2.5 EH	N.A.
Horizontals	ROHN 1.5 STD		ROHN 2 STD	N.A.		ROHN 2 STD		N.A.		ROHN 2.5 STD		N.A.	P3.5x.226
Red. Horizontals	N.A.					N.A.							ROHN 1.5 STD
Red. Diagonals	N.A.					N.A.							ROHN 2 STD
Red. Hips	N.A.					N.A.							ROHN 2.5 STD
Inner Bracing	L2x2x1/8					L2 1/2x2 1/2x3/16			L3x3x3/16	L3 1/2x3 1/2x1/4			ROHN 2 STD
Face Width (ft)	8.542	8.625	10.709	11.4033	12.0977	12.792	15.042	16.3595	17.677	20.177	22.677	23.927	25.177
# Panels @ (ft)	9 @ 6.66667					10 @ 10							1 @ 20
Weight (lb)	1250.4	1495.6	825.9	842.2	1080.4	3821.3	1682.8	1722.7	4897.5	5700.5	2942.5	3139.0	6187.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ANT940Y10-WR (CSP)	187	AIR6419 (ATI - Proposed)	133
ANT940Y10-WR (CSP - Yagi Antenna)	181	AIR6449 (ATI - Proposed)	133
PA6-65AC (DNK-52 / CSP-42)	177	DMP65R-BU6D (ATI - Proposed)	133
RFI BPS7496-180-14 Panel Antenna (CSP-80)	170	RRUS-32 B66 (ATI)	133
RFI BPS7496-180-14 Panel Antenna (CSP-81)	170	RRUS-32 (ATI)	133
RFI BPS7496-180-14 Panel Antenna (CSP-82)	170	RRUS-32 (ATI)	133
SitePro1 USF12-396-U Mount Assembly w/ (3) 96" Mount Pipes (CSP 47, 80, 81, 82)	170	RRUS-32 B66 (ATI)	133
		RRUS-32 (ATI)	133
432E-83I-01T TTA Unit (Re-Located TMA (CSP))	170	RRUS-32 (ATI)	133
3' Yagi (CSP)	169	RRUS-32 B66 (ATI)	133
B2/B66A RRH (Verizon)	160	RRUS-32 (ATI)	133
B5/B13 RRH (Verizon)	160	RRUS-32 (ATI)	133
CBRS RRH-RT4401-48A (Verizon)	160	4478 B14 (ATI - Proposed)	133
RF4439d-25A (B2/B66A RRH) (Verizon)	160	4478 B14 (ATI - Proposed)	133
RF4440d-13A (B5/B13 RRH) (Verizon)	160	4478 B14 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
MT6407-77A (Verizon)	160	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
CBC78T-DS-43-2X Diplexer (Verizon)	160	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
B2/B66A RRH (Verizon)	160	DC9 (ATI - Proposed)	133
B5/B13 RRH (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
CBRS RRH-RT4401-48A (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
MT6407-77A (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
CBC78T-DS-43-2X Diplexer (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
B2/B66A RRH (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
B5/B13 RRH (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
CBRS RRH-RT4401-48A (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
DB-T1-6Z-8AB-0Z Distribution Box (Verizon)	160		
DB-T1-6Z-8AB-0Z Distribution Box (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
ROHN 6'x15' Boom Gate (1) (Verizon)	160		
ROHN 6'x15' Boom Gate (1) (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
MX06FRO640-02 (Verizon)	160		
MX06FRO640-02 (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
MT6407-77A (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
MX06FRO640-02 (Verizon)	160	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
MX06FRO640-02 (Verizon)	160		
ROHN 6'x15' Boom Gate (1) (Verizon)	160	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
QD6616-7 (ATI - Proposed)	133		
AIR6419 (ATI - Proposed)	133	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
AIR6449 (ATI - Proposed)	133		
DMP65R-BU6D (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
QD6616-7 (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
AIR6419 (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
AIR6449 (ATI - Proposed)	133	ANT150D (CSP - 1-Bay Dipole)	113
DMP65R-BU6D (ATI - Proposed)	133	4' Standoff (DNK-1 / GPS)	60
QD6616-7 (ATI - Proposed)	133	GPS (DNK-1 / GPS)	60

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A572-42	42 ksi	60 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category IV.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. P-Delta for analysis does not apply for this case - TIA-222-H Section 3.5
8. TOWER RATING: 81.9%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 352989 lb
SHEAR: 49324 lb

UPLIFT: -309627 lb
SHEAR: 44923 lb

AXIAL 138492 lb
SHEAR 24409 lb *MOMENT 2285 kip-ft*
TORQUE 21 kip-ft
50 mph WIND - 1.0000 in ICE

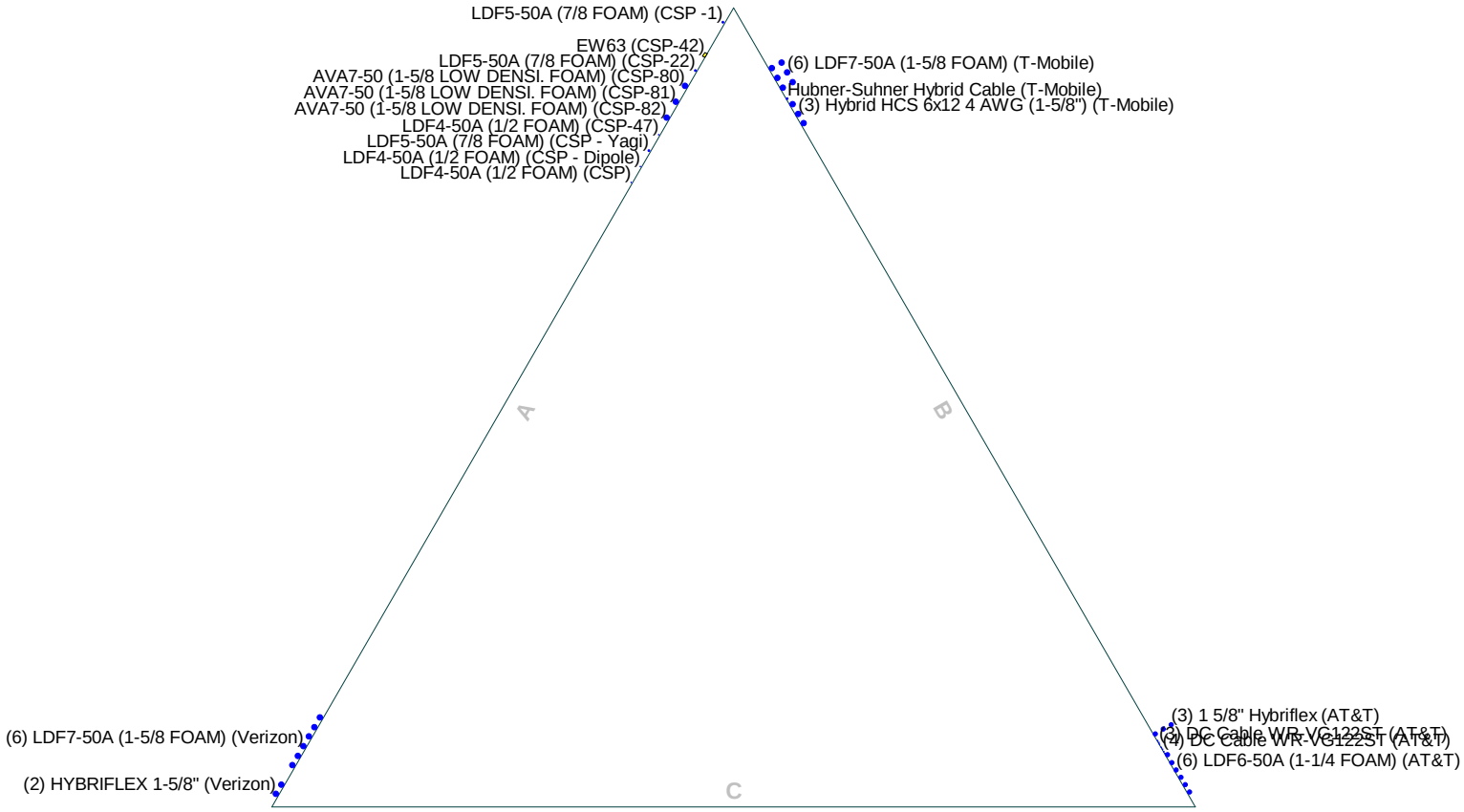
AXIAL 63417 lb
SHEAR 84807 lb *MOMENT 7954 kip-ft*
TORQUE 79 kip-ft
REACTIONS - 130 mph WIND

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **22089.02 - Westport**		
Project: **180-ft Lattice Tower (CSP #32)**		
Client: AT&T	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 07/26/22	Scale: NTS
Path: J:\Jobs\2208900.WI\02_CTL\02147\05_Structural\Backup Documentation\Tnotown\20200708_VZW_MOD\Ecation_H_180' SST (1).eri		Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face



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Client: AT&T	Drawn by: TJL	App'd:	
Code: TIA-222-H	Date: 07/26/22	Scale: NTS	
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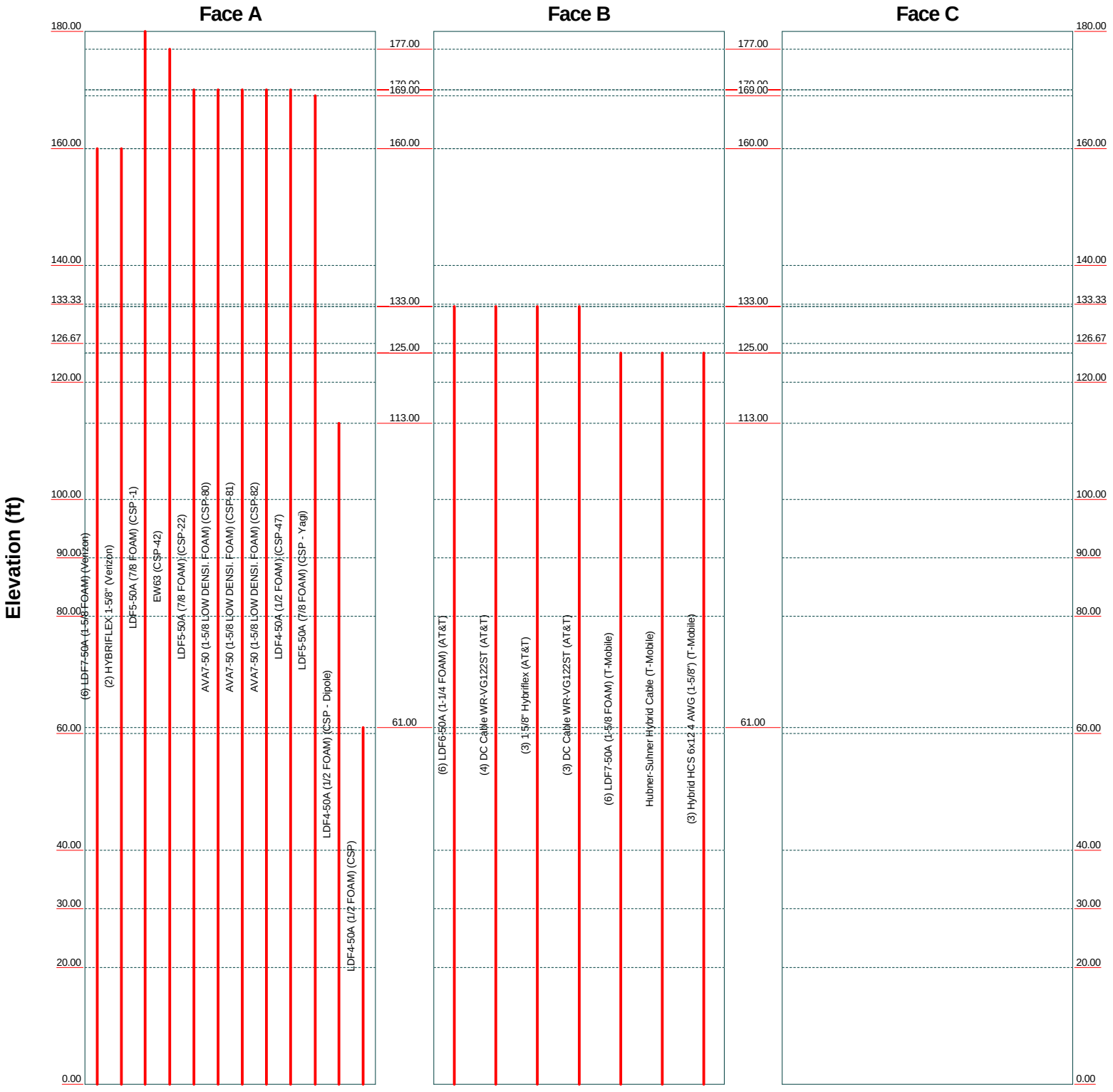
Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



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Job: ***22089.02 - Westport***		
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Client: AT&T	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 07/26/22	Scale: NTS
Path: J:\Jobs\2208900.WI\02_CTL\0214705_Structural\Backup Documentation\Tnxtower\20200708_VZW_MODification_H_180' SST (1).eri		Dwg No. E-7

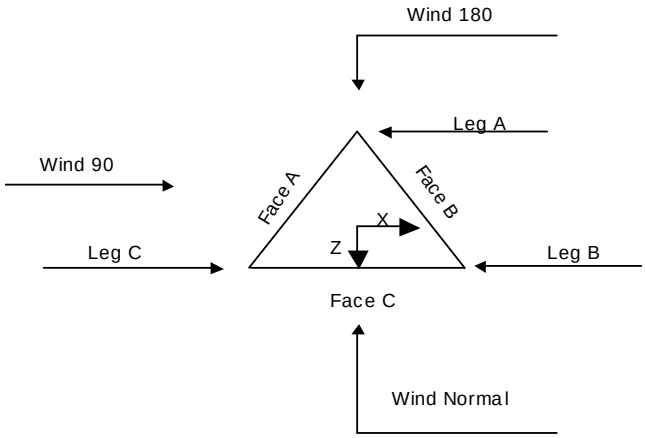
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.54 ft at the top and 27.68 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.
Basic wind speed of 130 mph.
Risk Category IV.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
P-Delta for analysis does not apply for this case - TIA-222-H Section 3.5.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-160.00			8.54	1	20.00
T2	160.00-140.00			8.63	1	20.00
T3	140.00-133.33			10.71	1	6.67
T4	133.33-126.67			11.40	1	6.67
T5	126.67-120.00			12.10	1	6.67
T6	120.00-100.00			12.79	1	20.00
T7	100.00-90.00			15.04	1	10.00
T8	90.00-80.00			16.36	1	10.00
T9	80.00-60.00			17.68	1	20.00
T10	60.00-40.00			20.18	1	20.00
T11	40.00-30.00			22.68	1	10.00
T12	30.00-20.00			23.93	1	10.00
T13	20.00-0.00			25.18	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-160.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T2	160.00-140.00	6.67	K Brace Down	No	Yes	0.0000	0.0000

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
T3	140.00-133.33	6.67	K Brace Down	No	Yes	0.0000	0.0000
T4	133.33-126.67	6.67	K Brace Down	No	Yes	0.0000	0.0000
T5	126.67-120.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T6	120.00-100.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T7	100.00-90.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T8	90.00-80.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T9	80.00-60.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T10	60.00-40.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T11	40.00-30.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T12	30.00-20.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T13	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 4 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140.00-133.33	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T4 133.33-126.67	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T5 126.67-120.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 XXS	A572-50 (50 ksi)
T6 120.00-100.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	Pipe 2.5 XXS	A572-50 (50 ksi)
T7 100.00-90.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T8 90.00-80.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 80.00-60.00	Arbitrary Shape	120deg_9.6250x0.375 BU on ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T10 60.00-40.00	Arbitrary Shape	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	A572-42 (42 ksi)	Pipe	ROHN 3 EH	A572-50 (50 ksi)
T11 40.00-30.00	Arbitrary Shape	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	A572-42 (42 ksi)	Pipe	ROHN 3 EH	A572-50 (50 ksi)
T12 30.00-20.00	Arbitrary Shape	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	A572-42 (42 ksi)	Pipe	ROHN 3 EH	A572-50 (50 ksi)
T13 20.00-0.00	Arbitrary Shape	1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	A572-42 (42 ksi)	Pipe	ROHN 3 EH	A572-50 (50 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
T4 133.33-126.67	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T5 126.67-120.00	Pipe	ROHN 2 STD	A572-50	Solid Round		A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T8 90.00-80.00	Pipe	ROHN 2 STD	(50 ksi) A572-50 (50 ksi)	Single Angle		(36 ksi) A36 (36 ksi)
T12 30.00-20.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle		A36 (36 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 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 140.00-133.33	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 133.33-126.67	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 126.67-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 120.00-100.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T7 100.00-90.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T8 90.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T9 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 60.00-40.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T11 40.00-30.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T12 30.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T13 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	P3.5x.226	A572-50 (50 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
T1 180.00-160.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 160.00-140.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 140.00-133.33	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 133.33-126.67	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 126.67-120.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T6 120.00-100.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 100.00-90.00	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 90.00-80.00	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 80.00-60.00	Solid Round		A36 (36 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T10 60.00-40.00	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T11 40.00-30.00	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T12 30.00-20.00	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T13 20.00-0.00	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T13 20.00-0.00	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 2.5 STD	1

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 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 140.00-133.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 133.33-126.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 126.67-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
T8 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T13 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

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
T1	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
140.00-133.33				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
133.33-126.67				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
126.67-120.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
100.00-90.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	0.5	1	1	1	1	1
20.00-0.00				1	0.5	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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-133.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 133.33-126.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 126.67-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-133.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 133.33-126.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 126.67-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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 180.00-160.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 160.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 140.00-133.33	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 133.33-126.67	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 126.67-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 120.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 60.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T11 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 20.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

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 180.00-160.00	Flange	0.8750 A325N	0	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T2 160.00-140.00	Flange	0.8750 A325N	4	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T3 140.00-133.33	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T4 133.33-126.67	Flange	0.7500 A325N	0	0.6250 A325N	3	0.6250 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T5 126.67-120.00	Flange	0.7500 A325N	0	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T6 120.00-100.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T7 100.00-90.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T8 90.00-80.00	Flange	1.0000 A325N	0	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T9 80.00-60.00	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T10 60.00-40.00	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T11 40.00-30.00	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T12 30.00-20.00	Flange	1.0000 A325N	0	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T13 20.00-0.00	Flange	1.0000 A325N	8	0.6250 A325X	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0

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
*													
LDF6-50A (1-1/4 FOAM) (AT&T)	B	No	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.46	6	6	1.5500	1.5500		0.66
DC Cable WR-VG122ST (AT&T)	B	No	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.43	4	4	0.4000	0.4000		0.25
1 5/8" Hybriflex (AT&T)	B	No	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.41	3	1	1.6250	1.6250		1.13
DC Cable WR-VG122ST (AT&T)	B	No	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.42	3	3	0.4000	0.4000		0.25
*													
LDF7-50A (1-5/8 FOAM) (T-Mobile)	B	No	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.41	6	3	1.9800	1.9800		0.82
Hubner-Suhner Hybrid Cable (T-Mobile)	B	No	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.385	1	1	0.7087	0.7087		0.48
Hybrid HCS 6x12 4 AWG (1-5/8") (T-Mobile)	B	No	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.365	3	3	1.9900	1.9900		1.90
*													
LDF7-50A (1-5/8 FOAM) (Verizon)	A	No	No	Ar (CaAa)	160.00 - 0.00	0.0000	-0.42	6	6	1.9800	1.9800		0.82
HYBRIFLEX 1-5/8" (Verizon)	A	No	No	Ar (CaAa)	160.00 - 0.00	0.0000	-0.48	2	2	1.9800	1.9800		1.90
*													
LDF5-50A	A	No	No	Ar (CaAa)	180.00 -	0.0000	0.48	1	1	1.0900	1.0900		0.33

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
(7/8 FOAM) (CSP -1)					0.00								
EW63 (CSP-42)	A	No	No	Af (CaAa)	177.00 - 0.00	0.0000	0.44	1	1	1.5742	1.5742		0.51
LDF5-50A (7/8 FOAM) (CSP-22)	A	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.42	1	1	1.0900	1.0900		0.33
AVA7-50 (1-5/8 LOW DENSI. FOAM) (CSP-80)	A	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.4	1	1	1.9800	1.9800		0.72
AVA7-50 (1-5/8 LOW DENSI. FOAM) (CSP-81)	A	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.38	1	1	1.9800	1.9800		0.72
AVA7-50 (1-5/8 LOW DENSI. FOAM) (CSP-82)	A	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.36	1	1	1.9800	1.9800		0.72
LDF4-50A (1/2 FOAM) (CSP-47)	A	No	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.34	1	1	0.6300	0.6300		0.15
LDF5-50A (7/8 FOAM) (CSP - Yagi)	A	No	No	Ar (CaAa)	169.00 - 0.00	0.0000	0.32	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM) (CSP - Dipole)	A	No	No	Ar (CaAa)	113.00 - 0.00	0.0000	0.3	1	1	0.6300	0.6300		0.15
LDF4-50A (1/2 FOAM) (CSP)	A	No	No	Ar (CaAa)	61.00 - 0.00	0.0000	0.28	1	1	0.6300	0.6300		0.15

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	180.00-160.00	A	0.000	0.000	15.281	0.000	44.64
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.000	0.000	56.607	0.000	250.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-133.33	A	0.000	0.000	18.869	0.000	83.53
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T4	133.33-126.67	A	0.000	0.000	18.869	0.000	83.53
		B	0.000	0.000	10.751	0.000	57.63
		C	0.000	0.000	0.000	0.000	0.00
T5	126.67-120.00	A	0.000	0.000	18.869	0.000	83.53
		B	0.000	0.000	20.596	0.000	116.17
		C	0.000	0.000	0.000	0.000	0.00
T6	120.00-100.00	A	0.000	0.000	57.426	0.000	252.55

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	71.067	0.000	404.02
		C	0.000	0.000	0.000	0.000	0.00
T7	100.00-90.00	A	0.000	0.000	28.934	0.000	126.80
		B	0.000	0.000	35.534	0.000	202.01
		C	0.000	0.000	0.000	0.000	0.00
T8	90.00-80.00	A	0.000	0.000	28.934	0.000	126.80
		B	0.000	0.000	35.534	0.000	202.01
		C	0.000	0.000	0.000	0.000	0.00
T9	80.00-60.00	A	0.000	0.000	57.930	0.000	253.75
		B	0.000	0.000	71.067	0.000	404.02
		C	0.000	0.000	0.000	0.000	0.00
T10	60.00-40.00	A	0.000	0.000	59.127	0.000	256.60
		B	0.000	0.000	71.067	0.000	404.02
		C	0.000	0.000	0.000	0.000	0.00
T11	40.00-30.00	A	0.000	0.000	29.564	0.000	128.30
		B	0.000	0.000	35.534	0.000	202.01
		C	0.000	0.000	0.000	0.000	0.00
T12	30.00-20.00	A	0.000	0.000	29.564	0.000	128.30
		B	0.000	0.000	35.534	0.000	202.01
		C	0.000	0.000	0.000	0.000	0.00
T13	20.00-0.00	A	0.000	0.000	59.127	0.000	256.60
		B	0.000	0.000	71.067	0.000	404.02
		C	0.000	0.000	0.000	0.000	0.00

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	180.00-160.00	A	1.473	0.000	0.000	43.556	0.000	552.25
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	1.454	0.000	0.000	159.660	0.000	2085.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-133.33	A	1.441	0.000	0.000	53.019	0.000	688.56
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T4	133.33-126.67	A	1.434	0.000	0.000	52.912	0.000	685.06
		B		0.000	0.000	35.372	0.000	409.25
		C		0.000	0.000	0.000	0.000	0.00
T5	126.67-120.00	A	1.426	0.000	0.000	52.800	0.000	681.39
		B		0.000	0.000	57.184	0.000	767.60
		C		0.000	0.000	0.000	0.000	0.00
T6	120.00-100.00	A	1.410	0.000	0.000	162.161	0.000	2068.23
		B		0.000	0.000	190.860	0.000	2617.10
		C		0.000	0.000	0.000	0.000	0.00
T7	100.00-90.00	A	1.389	0.000	0.000	81.789	0.000	1031.26
		B		0.000	0.000	94.983	0.000	1292.97
		C		0.000	0.000	0.000	0.000	0.00
T8	90.00-80.00	A	1.374	0.000	0.000	81.415	0.000	1019.60
		B		0.000	0.000	94.648	0.000	1281.36
		C		0.000	0.000	0.000	0.000	0.00
T9	80.00-60.00	A	1.348	0.000	0.000	161.878	0.000	2002.79
		B		0.000	0.000	188.144	0.000	2523.06
		C		0.000	0.000	0.000	0.000	0.00
T10	60.00-40.00	A	1.303	0.000	0.000	165.850	0.000	1997.61
		B		0.000	0.000	186.203	0.000	2456.81

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
		C		0.000	0.000	0.000	0.000	0.00
T11	40.00-30.00	A	1.257	0.000	0.000	81.724	0.000	963.64
		B		0.000	0.000	92.109	0.000	1194.94
		C		0.000	0.000	0.000	0.000	0.00
T12	30.00-20.00	A	1.216	0.000	0.000	80.630	0.000	932.13
		B		0.000	0.000	91.207	0.000	1164.85
		C		0.000	0.000	0.000	0.000	0.00
T13	20.00-0.00	A	1.109	0.000	0.000	155.667	0.000	1707.74
		B		0.000	0.000	177.803	0.000	2179.17
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-160.00	-1.5005	-14.6984	-2.0239	-19.4249
T2	160.00-140.00	-19.2261	-5.8802	-22.3942	-7.1105
T3	140.00-133.33	-20.7297	-6.3241	-24.4956	-7.6882
T4	133.33-126.67	-0.9036	2.5057	1.9677	3.9670
T5	126.67-120.00	1.5324	-9.6574	4.0657	-6.3514
T6	120.00-100.00	2.0337	-14.5413	4.5461	-10.8315
T7	100.00-90.00	2.1232	-15.9677	4.8507	-12.1711
T8	90.00-80.00	2.2425	-17.0783	5.1685	-12.9726
T9	80.00-60.00	1.8231	-14.9342	5.0631	-13.1694
T10	60.00-40.00	1.8395	-16.8823	5.1371	-15.4002
T11	40.00-30.00	1.9445	-18.0377	5.4400	-16.2315
T12	30.00-20.00	2.0137	-18.7967	5.6193	-16.6767
T13	20.00-0.00	2.1560	-20.3079	5.8896	-17.1895

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	17	LDF5-50A (7/8 FOAM)	160.00 - 180.00	1.0000	1.0000
T1	19	EW63	160.00 - 177.00	1.0000	1.0000
T1	20	LDF5-50A (7/8 FOAM)	160.00 - 170.00	1.0000	1.0000
T1	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	160.00 - 170.00	1.0000	1.0000
T1	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	160.00 - 170.00	1.0000	1.0000
T1	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	160.00 - 170.00	1.0000	1.0000
T1	24	LDF4-50A (1/2 FOAM)	160.00 - 170.00	1.0000	1.0000
T1	25	LDF5-50A (7/8 FOAM)	160.00 - 169.00	1.0000	1.0000
T2	14	LDF7-50A (1-5/8 FOAM)	140.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			160.00		
T2	15	HYBRIFLEX 1-5/8"	140.00 - 160.00	1.0000	1.0000
T2	17	LDF5-50A (7/8 FOAM)	140.00 - 160.00	1.0000	1.0000
T2	19	EW63	140.00 - 160.00	1.0000	1.0000
T2	20	LDF5-50A (7/8 FOAM)	140.00 - 160.00	1.0000	1.0000
T2	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	140.00 - 160.00	1.0000	1.0000
T2	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	140.00 - 160.00	1.0000	1.0000
T2	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	140.00 - 160.00	1.0000	1.0000
T2	24	LDF4-50A (1/2 FOAM)	140.00 - 160.00	1.0000	1.0000
T2	25	LDF5-50A (7/8 FOAM)	140.00 - 160.00	1.0000	1.0000
T3	14	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	1.0000	1.0000
T3	15	HYBRIFLEX 1-5/8"	133.33 - 140.00	1.0000	1.0000
T3	17	LDF5-50A (7/8 FOAM)	133.33 - 140.00	1.0000	1.0000
T3	19	EW63	133.33 - 140.00	1.0000	1.0000
T3	20	LDF5-50A (7/8 FOAM)	133.33 - 140.00	1.0000	1.0000
T3	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	133.33 - 140.00	1.0000	1.0000
T3	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	133.33 - 140.00	1.0000	1.0000
T3	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	133.33 - 140.00	1.0000	1.0000
T3	24	LDF4-50A (1/2 FOAM)	133.33 - 140.00	1.0000	1.0000
T3	25	LDF5-50A (7/8 FOAM)	133.33 - 140.00	1.0000	1.0000
T4	2	LDF6-50A (1-1/4 FOAM)	126.67 - 133.00	1.0000	1.0000
T4	3	DC Cable WR-VG122ST	126.67 - 133.00	1.0000	1.0000
T4	4	1 5/8" Hybriflex	126.67 - 133.00	1.0000	1.0000
T4	6	DC Cable WR-VG122ST	126.67 - 133.00	1.0000	1.0000
T4	14	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	1.0000	1.0000
T4	15	HYBRIFLEX 1-5/8"	126.67 - 133.33	1.0000	1.0000
T4	17	LDF5-50A (7/8 FOAM)	126.67 - 133.33	1.0000	1.0000
T4	19	EW63	126.67 - 133.33	1.0000	1.0000
T4	20	LDF5-50A (7/8 FOAM)	126.67 - 133.33	1.0000	1.0000
T4	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	126.67 - 133.33	1.0000	1.0000
T4	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	126.67 - 133.33	1.0000	1.0000
T4	23	AVA7-50 (1-5/8 LOW	126.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		DENSI. FOAM)	133.33		
T4	24	LDF4-50A (1/2 FOAM)	126.67 - 133.33	1.0000	1.0000
T4	25	LDF5-50A (7/8 FOAM)	126.67 - 133.33	1.0000	1.0000
T5	2	LDF6-50A (1-1/4 FOAM)	120.00 - 126.67	1.0000	1.0000
T5	3	DC Cable WR-VG122ST	120.00 - 126.67	1.0000	1.0000
T5	4	1 5/8" Hybriflex	120.00 - 126.67	1.0000	1.0000
T5	6	DC Cable WR-VG122ST	120.00 - 126.67	1.0000	1.0000
T5	10	LDF7-50A (1-5/8 FOAM)	120.00 - 125.00	1.0000	1.0000
T5	11	Hubner-Suhner Hybrid Cable	120.00 - 125.00	1.0000	1.0000
T5	12	Hybrid HCS 6x12 4 AWG (1-5/8")	120.00 - 125.00	1.0000	1.0000
T5	14	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	1.0000	1.0000
T5	15	HYBRIFLEX 1-5/8"	120.00 - 126.67	1.0000	1.0000
T5	17	LDF5-50A (7/8 FOAM)	120.00 - 126.67	1.0000	1.0000
T5	19	EW63	120.00 - 126.67	1.0000	1.0000
T5	20	LDF5-50A (7/8 FOAM)	120.00 - 126.67	1.0000	1.0000
T5	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	120.00 - 126.67	1.0000	1.0000
T5	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	120.00 - 126.67	1.0000	1.0000
T5	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	120.00 - 126.67	1.0000	1.0000
T5	24	LDF4-50A (1/2 FOAM)	120.00 - 126.67	1.0000	1.0000
T5	25	LDF5-50A (7/8 FOAM)	120.00 - 126.67	1.0000	1.0000
T6	2	LDF6-50A (1-1/4 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	3	DC Cable WR-VG122ST	100.00 - 120.00	1.0000	1.0000
T6	4	1 5/8" Hybriflex	100.00 - 120.00	1.0000	1.0000
T6	6	DC Cable WR-VG122ST	100.00 - 120.00	1.0000	1.0000
T6	10	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	11	Hubner-Suhner Hybrid Cable	100.00 - 120.00	1.0000	1.0000
T6	12	Hybrid HCS 6x12 4 AWG (1-5/8")	100.00 - 120.00	1.0000	1.0000
T6	14	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	15	HYBRIFLEX 1-5/8"	100.00 - 120.00	1.0000	1.0000
T6	17	LDF5-50A (7/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	19	EW63	100.00 - 120.00	1.0000	1.0000
T6	20	LDF5-50A (7/8 FOAM)	100.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T6	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	100.00 - 120.00	1.0000	1.0000
T6	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	100.00 - 120.00	1.0000	1.0000
T6	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	100.00 - 120.00	1.0000	1.0000
T6	24	LDF4-50A (1/2 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	25	LDF5-50A (7/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T6	26	LDF4-50A (1/2 FOAM)	100.00 - 113.00	1.0000	1.0000
T7	2	LDF6-50A (1-1/4 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	3	DC Cable WR-VG122ST	90.00 - 100.00	1.0000	1.0000
T7	4	1 5/8" Hybriflex	90.00 - 100.00	1.0000	1.0000
T7	6	DC Cable WR-VG122ST	90.00 - 100.00	1.0000	1.0000
T7	10	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	11	Hubner-Suhner Hybrid Cable	90.00 - 100.00	1.0000	1.0000
T7	12	Hybrid HCS 6x12 4 AWG (1-5/8")	90.00 - 100.00	1.0000	1.0000
T7	14	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	15	HYBRIFLEX 1-5/8"	90.00 - 100.00	1.0000	1.0000
T7	17	LDF5-50A (7/8 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	19	EW63	90.00 - 100.00	1.0000	1.0000
T7	20	LDF5-50A (7/8 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	90.00 - 100.00	1.0000	1.0000
T7	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	90.00 - 100.00	1.0000	1.0000
T7	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	90.00 - 100.00	1.0000	1.0000
T7	24	LDF4-50A (1/2 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	25	LDF5-50A (7/8 FOAM)	90.00 - 100.00	1.0000	1.0000
T7	26	LDF4-50A (1/2 FOAM)	90.00 - 100.00	1.0000	1.0000
T8	2	LDF6-50A (1-1/4 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	3	DC Cable WR-VG122ST	80.00 - 90.00	1.0000	1.0000
T8	4	1 5/8" Hybriflex	80.00 - 90.00	1.0000	1.0000
T8	6	DC Cable WR-VG122ST	80.00 - 90.00	1.0000	1.0000
T8	10	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	11	Hubner-Suhner Hybrid Cable	80.00 - 90.00	1.0000	1.0000
T8	12	Hybrid HCS 6x12 4 AWG (1-5/8")	80.00 - 90.00	1.0000	1.0000
T8	14	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	15	HYBRIFLEX 1-5/8"	80.00 - 90.00	1.0000	1.0000
T8	17	LDF5-50A (7/8 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	19	EW63	80.00 - 90.00	1.0000	1.0000
T8	20	LDF5-50A (7/8 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	80.00 - 90.00	1.0000	1.0000
T8	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	80.00 - 90.00	1.0000	1.0000
T8	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	80.00 - 90.00	1.0000	1.0000
T8	24	LDF4-50A (1/2 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	25	LDF5-50A (7/8 FOAM)	80.00 - 90.00	1.0000	1.0000
T8	26	LDF4-50A (1/2 FOAM)	80.00 - 90.00	1.0000	1.0000
T9	2	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	3	DC Cable WR-VG122ST	60.00 - 80.00	1.0000	1.0000
T9	4	1 5/8" Hybriflex	60.00 - 80.00	1.0000	1.0000
T9	6	DC Cable WR-VG122ST	60.00 - 80.00	1.0000	1.0000
T9	10	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	11	Hubner-Suhner Hybrid Cable	60.00 - 80.00	1.0000	1.0000
T9	12	Hybrid HCS 6x12 4 AWG (1-5/8")	60.00 - 80.00	1.0000	1.0000
T9	14	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	15	HYBRIFLEX 1-5/8"	60.00 - 80.00	1.0000	1.0000
T9	17	LDF5-50A (7/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	19	EW63	60.00 - 80.00	1.0000	1.0000
T9	20	LDF5-50A (7/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	60.00 - 80.00	1.0000	1.0000
T9	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	60.00 - 80.00	1.0000	1.0000
T9	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	60.00 - 80.00	1.0000	1.0000
T9	24	LDF4-50A (1/2 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	25	LDF5-50A (7/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	26	LDF4-50A (1/2 FOAM)	60.00 - 80.00	1.0000	1.0000
T9	27	LDF4-50A (1/2 FOAM)	60.00 - 61.00	1.0000	1.0000
T10	2	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	3	DC Cable WR-VG122ST	40.00 - 60.00	1.0000	1.0000
T10	4	1 5/8" Hybriflex	40.00 - 60.00	1.0000	1.0000
T10	6	DC Cable WR-VG122ST	40.00 - 60.00	1.0000	1.0000
T10	10	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	11	Hubner-Suhner Hybrid Cable	40.00 - 60.00	1.0000	1.0000
T10	12	Hybrid HCS 6x12 4 AWG (1-5/8")	40.00 - 60.00	1.0000	1.0000
T10	14	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	15	HYBRIFLEX 1-5/8"	40.00 - 60.00	1.0000	1.0000
T10	17	LDF5-50A (7/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	19	EW63	40.00 - 60.00	1.0000	1.0000
T10	20	LDF5-50A (7/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	40.00 - 60.00	1.0000	1.0000
T10	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	40.00 - 60.00	1.0000	1.0000
T10	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	40.00 - 60.00	1.0000	1.0000
T10	24	LDF4-50A (1/2 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	25	LDF5-50A (7/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	26	LDF4-50A (1/2 FOAM)	40.00 - 60.00	1.0000	1.0000
T10	27	LDF4-50A (1/2 FOAM)	40.00 - 60.00	1.0000	1.0000
T11	2	LDF6-50A (1-1/4 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	3	DC Cable WR-VG122ST	30.00 - 40.00	1.0000	1.0000
T11	4	1 5/8" Hybriflex	30.00 - 40.00	1.0000	1.0000
T11	6	DC Cable WR-VG122ST	30.00 - 40.00	1.0000	1.0000
T11	10	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	11	Hubner-Suhner Hybrid Cable	30.00 - 40.00	1.0000	1.0000
T11	12	Hybrid HCS 6x12 4 AWG (1-5/8")	30.00 - 40.00	1.0000	1.0000
T11	14	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	15	HYBRIFLEX 1-5/8"	30.00 - 40.00	1.0000	1.0000
T11	17	LDF5-50A (7/8 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	19	EW63	30.00 - 40.00	1.0000	1.0000
T11	20	LDF5-50A (7/8 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	30.00 - 40.00	1.0000	1.0000
T11	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	30.00 - 40.00	1.0000	1.0000
T11	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	30.00 - 40.00	1.0000	1.0000
T11	24	LDF4-50A (1/2 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	25	LDF5-50A (7/8 FOAM)	30.00 - 40.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	26	LDF4-50A (1/2 FOAM)	30.00 - 40.00	1.0000	1.0000
T11	27	LDF4-50A (1/2 FOAM)	30.00 - 40.00	1.0000	1.0000
T12	2	LDF6-50A (1-1/4 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	3	DC Cable WR-VG122ST	20.00 - 30.00	1.0000	1.0000
T12	4	1 5/8" Hybriflex	20.00 - 30.00	1.0000	1.0000
T12	6	DC Cable WR-VG122ST	20.00 - 30.00	1.0000	1.0000
T12	10	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	11	Hubner-Suhner Hybrid Cable	20.00 - 30.00	1.0000	1.0000
T12	12	Hybrid HCS 6x12 4 AWG (1-5/8")	20.00 - 30.00	1.0000	1.0000
T12	14	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	15	HYBRIFLEX 1-5/8"	20.00 - 30.00	1.0000	1.0000
T12	17	LDF5-50A (7/8 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	19	EW63	20.00 - 30.00	1.0000	1.0000
T12	20	LDF5-50A (7/8 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	20.00 - 30.00	1.0000	1.0000
T12	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	20.00 - 30.00	1.0000	1.0000
T12	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	20.00 - 30.00	1.0000	1.0000
T12	24	LDF4-50A (1/2 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	25	LDF5-50A (7/8 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	26	LDF4-50A (1/2 FOAM)	20.00 - 30.00	1.0000	1.0000
T12	27	LDF4-50A (1/2 FOAM)	20.00 - 30.00	1.0000	1.0000
T13	2	LDF6-50A (1-1/4 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	3	DC Cable WR-VG122ST	0.00 - 20.00	1.0000	1.0000
T13	4	1 5/8" Hybriflex	0.00 - 20.00	1.0000	1.0000
T13	6	DC Cable WR-VG122ST	0.00 - 20.00	1.0000	1.0000
T13	10	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	11	Hubner-Suhner Hybrid Cable	0.00 - 20.00	1.0000	1.0000
T13	12	Hybrid HCS 6x12 4 AWG (1-5/8")	0.00 - 20.00	1.0000	1.0000
T13	14	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	15	HYBRIFLEX 1-5/8"	0.00 - 20.00	1.0000	1.0000
T13	17	LDF5-50A (7/8 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	19	EW63	0.00 - 20.00	1.0000	1.0000
T13	20	LDF5-50A (7/8 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	21	AVA7-50 (1-5/8 LOW DENSI. FOAM)	0.00 - 20.00	1.0000	1.0000
T13	22	AVA7-50 (1-5/8 LOW DENSI. FOAM)	0.00 - 20.00	1.0000	1.0000
T13	23	AVA7-50 (1-5/8 LOW DENSI. FOAM)	0.00 - 20.00	1.0000	1.0000
T13	24	LDF4-50A (1/2 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	25	LDF5-50A (7/8 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	26	LDF4-50A (1/2 FOAM)	0.00 - 20.00	1.0000	1.0000
T13	27	LDF4-50A (1/2 FOAM)	0.00 - 20.00	1.0000	1.0000

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
*									
ROHN 6'x15' Boom Gate (1)	A	None		0.0000	160.00	No Ice	17.75	17.75	600.00
(Verizon)						1/2" Ice	21.10	21.10	75.00
						1" Ice	24.50	24.50	890.00
ROHN 6'x15' Boom Gate (1)	B	None		0.0000	160.00	No Ice	17.75	17.75	600.00
(Verizon)						1/2" Ice	21.10	21.10	75.00
						1" Ice	24.50	24.50	890.00
ROHN 6'x15' Boom Gate (1)	C	None		0.0000	160.00	No Ice	17.75	17.75	600.00
(Verizon)						1/2" Ice	21.10	21.10	75.00
						1" Ice	24.50	24.50	890.00
MX06FRO640-02	A	From Leg	3.00	0.0000	160.00	No Ice	12.38	7.43	70.00
(Verizon)			6.50			1/2" Ice	12.88	7.88	151.39
			0.00			1" Ice	13.38	8.33	239.61
MX06FRO640-02	A	From Leg	3.00	0.0000	160.00	No Ice	12.38	7.43	70.00
(Verizon)			5.50			1/2" Ice	12.88	7.88	151.39
			0.00			1" Ice	13.38	8.33	239.61
XXDWMM-12.5-65-8T-CBR	A	From Leg	3.00	0.0000	160.00	No Ice	4.80	2.40	20.00
S Panel			1.00			1/2" Ice	5.07	2.60	59.31
(Verizon)			0.00			1" Ice	5.35	2.81	102.70
MT6407-77A	A	From Leg	3.00	0.0000	160.00	No Ice	4.71	1.84	87.00
(Verizon)			-2.00			1/2" Ice	5.00	2.06	116.31
			0.00			1" Ice	5.29	2.29	149.49
MX06FRO640-02	A	From Leg	3.00	0.0000	160.00	No Ice	12.38	7.43	70.00
(Verizon)			-6.50			1/2" Ice	12.88	7.88	151.39
			0.00			1" Ice	13.38	8.33	239.61
MX06FRO640-02	A	From Leg	3.00	0.0000	160.00	No Ice	12.38	7.43	70.00
(Verizon)			-5.50			1/2" Ice	12.88	7.88	151.39
			0.00			1" Ice	13.38	8.33	239.61
B2/B66A RRH	A	From Leg	3.00	0.0000	160.00	No Ice	2.54	1.61	60.00
(Verizon)			0.00			1/2" Ice	2.75	1.79	80.12
			0.00			1" Ice	2.97	1.98	103.35
B5/B13 RRH	A	From Leg	3.00	0.0000	160.00	No Ice	1.87	1.02	70.00
(Verizon)			0.00			1/2" Ice	2.03	1.15	86.42
			0.00			1" Ice	2.21	1.29	105.50
CBRS RRH-RT4401-48A	A	From Leg	3.00	0.0000	160.00	No Ice	0.86	0.42	20.00
(Verizon)			0.00			1/2" Ice	0.98	0.51	26.90
			0.00			1" Ice	1.10	0.61	35.60
RF4439d-25A (B2/B66A	A	From Leg	3.00	0.0000	160.00	No Ice	1.88	1.25	75.00
RRH)			0.00			1/2" Ice	2.05	1.39	93.34
(Verizon)			0.00			1" Ice	2.22	1.54	114.47
RF4440d-13A (B5/B13 RRH)	A	From Leg	3.00	0.0000	160.00	No Ice	1.88	1.13	75.00
(Verizon)			0.00			1/2" Ice	2.05	1.26	92.34
			0.00			1" Ice	2.22	1.41	112.40
JAHH-65B-R3B Panel	B	From Leg	3.00	0.0000	160.00	No Ice	9.66	7.71	130.00
Antenna			6.50			1/2" Ice	10.22	8.53	204.15
(Verizon)			0.00			1" Ice	10.79	9.37	289.72
JAHH-65B-R3B Panel	B	From Leg	3.00	0.0000	160.00	No Ice	9.66	7.71	130.00
Antenna			5.50			1/2" Ice	10.22	8.53	204.15
(Verizon)			0.00			1" Ice	10.79	9.37	289.72
XXDWMM-12.5-65-8T-CBR	B	From Leg	3.00	0.0000	160.00	No Ice	4.80	2.40	20.00
S Panel			-1.00			1/2" Ice	5.07	2.60	59.31
(Verizon)			0.00			1" Ice	5.35	2.81	102.70
MT6407-77A	B	From Leg	3.00	0.0000	160.00	No Ice	4.71	1.84	87.00
(Verizon)			-6.00			1/2" Ice	5.00	2.06	116.31
			0.00			1" Ice	5.29	2.29	149.49
CBC78T-DS-43-2X Diplexer	B	From Leg	3.00	0.0000	160.00	No Ice	0.37	0.51	22.00
(Verizon)			0.00			1/2" Ice	0.45	0.60	28.34

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1" Ice	0.53	0.70	36.37
B2/B66A RRH	B	From Leg	3.00		0.0000	160.00	No Ice	2.54	1.61	60.00
(Verizon)			0.00				1/2" Ice	2.75	1.79	80.12
			0.00				1" Ice	2.97	1.98	103.35
B5/B13 RRH	B	From Leg	3.00		0.0000	160.00	No Ice	1.87	1.02	70.00
(Verizon)			0.00				1/2" Ice	2.03	1.15	86.42
			0.00				1" Ice	2.21	1.29	105.50
CBRS RRH-RT4401-48A	B	From Leg	3.00		0.0000	160.00	No Ice	0.86	0.42	20.00
(Verizon)			0.00				1/2" Ice	0.98	0.51	26.90
			0.00				1" Ice	1.10	0.61	35.60
JAHH-65B-R3B Panel	C	From Leg	3.00		0.0000	160.00	No Ice	9.66	7.71	130.00
Antenna			6.50				1/2" Ice	10.22	8.53	204.15
(Verizon)			0.00				1" Ice	10.79	9.37	289.72
JAHH-65B-R3B Panel	C	From Leg	3.00		0.0000	160.00	No Ice	9.66	7.71	130.00
Antenna			5.50				1/2" Ice	10.22	8.53	204.15
(Verizon)			0.00				1" Ice	10.79	9.37	289.72
XXDWMM-12.5-65-8T-CBR	C	From Leg	3.00		0.0000	160.00	No Ice	4.80	2.40	20.00
S Panel			-1.00				1/2" Ice	5.07	2.60	59.31
(Verizon)			0.00				1" Ice	5.35	2.81	102.70
MT6407-77A	C	From Leg	3.00		0.0000	160.00	No Ice	4.71	1.84	87.00
(Verizon)			-6.00				1/2" Ice	5.00	2.06	116.31
			0.00				1" Ice	5.29	2.29	149.49
CBC78T-DS-43-2X Diplexer	C	From Leg	3.00		0.0000	160.00	No Ice	0.37	0.51	22.00
(Verizon)			0.00				1/2" Ice	0.45	0.60	28.34
			0.00				1" Ice	0.53	0.70	36.37
B2/B66A RRH	C	From Leg	3.00		0.0000	160.00	No Ice	2.54	1.61	60.00
(Verizon)			0.00				1/2" Ice	2.75	1.79	80.12
			0.00				1" Ice	2.97	1.98	103.35
B5/B13 RRH	C	From Leg	3.00		0.0000	160.00	No Ice	1.87	1.02	70.00
(Verizon)			0.00				1/2" Ice	2.03	1.15	86.42
			0.00				1" Ice	2.21	1.29	105.50
CBRS RRH-RT4401-48A	C	From Leg	3.00		0.0000	160.00	No Ice	0.86	0.42	20.00
(Verizon)			0.00				1/2" Ice	0.98	0.51	26.90
			0.00				1" Ice	1.10	0.61	35.60
DB-T1-6Z-8AB-0Z	A	From Leg	3.00		0.0000	160.00	No Ice	5.60	2.33	50.00
Distribution Box			0.00				1/2" Ice	5.92	2.56	81.13
(Verizon)			0.00				1" Ice	6.24	2.79	121.22
DB-T1-6Z-8AB-0Z	B	From Leg	3.00		0.0000	160.00	No Ice	5.60	2.33	50.00
Distribution Box			0.00				1/2" Ice	5.92	2.56	81.13
(Verizon)			0.00				1" Ice	6.24	2.79	121.22
LTF12=372 Sector Mount (1)	A	None			0.0000	125.00	No Ice	13.60	13.60	465.00
(T-Mobile)							1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
LTF12=372 Sector Mount (1)	B	None			0.0000	125.00	No Ice	13.60	13.60	465.00
(T-Mobile)							1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
LTF12=372 Sector Mount (1)	C	None			0.0000	125.00	No Ice	13.60	13.60	465.00
(T-Mobile)							1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
Ericsson AIR32 B66A/B2A	A	From Face	3.00		0.0000	125.00	No Ice	6.51	4.71	132.20
Panel Antenna			-4.00				1/2" Ice	6.89	5.07	178.02
(T-Mobile)			0.00				1" Ice	7.27	5.43	229.11
Ericsson AIR32 B66A/B2A	B	From Face	3.00		0.0000	125.00	No Ice	6.51	4.71	132.20
Panel Antenna			-4.00				1/2" Ice	6.89	5.07	178.02
(T-Mobile)			0.00				1" Ice	7.27	5.43	229.11
Ericsson AIR32 B66A/B2A	C	From Face	3.00		0.0000	125.00	No Ice	6.51	4.71	132.20
Panel Antenna			-4.00				1/2" Ice	6.89	5.07	178.02

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
(T-Mobile)			0.00			1" Ice	7.27	5.43	229.11
Generic Twin TMA unit	A	From Face	3.00	0.0000	125.00	No Ice	0.37	0.96	25.00
(T-Mobile)			0.00			1/2" Ice	0.46	1.09	32.19
			0.00			1" Ice	0.55	1.22	41.21
Generic Twin TMA unit	B	From Face	3.00	0.0000	125.00	No Ice	0.37	0.96	25.00
(T-Mobile)			0.00			1/2" Ice	0.46	1.09	32.19
			0.00			1" Ice	0.55	1.22	41.21
Generic Twin TMA unit	C	From Face	3.00	0.0000	125.00	No Ice	0.37	0.96	25.00
(T-Mobile)			0.00			1/2" Ice	0.46	1.09	32.19
			0.00			1" Ice	0.55	1.22	41.21
Ericsson AIR21 B2A|B4P	A	From Face	3.00	0.0000	125.00	No Ice	6.51	4.71	105.80
Panel			0.00			1/2" Ice	6.89	5.07	151.62
(T-Mobile)			0.00			1" Ice	7.27	5.43	202.71
Ericsson AIR21 B2A|B4P	B	From Face	3.00	0.0000	125.00	No Ice	6.51	4.71	105.80
Panel			0.00			1/2" Ice	6.89	5.07	151.62
(T-Mobile)			0.00			1" Ice	7.27	5.43	202.71
Ericsson AIR21 B2A|B4P	C	From Face	3.00	0.0000	125.00	No Ice	6.51	4.71	105.80
Panel			0.00			1/2" Ice	6.89	5.07	151.62
(T-Mobile)			0.00			1" Ice	7.27	5.43	202.71
APXVARR24_43-C-NA20	A	From Face	3.00	0.0000	125.00	No Ice	17.15	11.04	179.72
Panel Antenna w/ 96" Pipe			4.00			1/2" Ice	17.77	12.47	301.81
(T-Mobile)			0.00			1" Ice	18.40	13.57	435.25
APXVARR24_43-C-NA20	B	From Face	3.00	0.0000	125.00	No Ice	17.15	11.04	179.72
Panel Antenna w/ 96" Pipe			4.00			1/2" Ice	17.77	12.47	301.81
(T-Mobile)			0.00			1" Ice	18.40	13.57	435.25
APXVARR24_43-C-NA20	C	From Face	3.00	0.0000	125.00	No Ice	17.15	11.04	179.72
Panel Antenna w/ 96" Pipe			4.00			1/2" Ice	17.77	12.47	301.81
(T-Mobile)			0.00			1" Ice	18.40	13.57	435.25
Ericsson 4449 B71 + B12	A	From Face	3.00	0.0000	125.00	No Ice	1.66	1.16	80.00
Radio Unit			0.00			1/2" Ice	1.82	1.29	96.16
(T-Mobile)			0.00			1" Ice	1.98	1.44	114.94
Ericsson 4449 B71 + B12	B	From Face	3.00	0.0000	125.00	No Ice	1.66	1.16	80.00
Radio Unit			0.00			1/2" Ice	1.82	1.29	96.16
(T-Mobile)			0.00			1" Ice	1.98	1.44	114.94
Ericsson 4449 B71 + B12	C	From Face	3.00	0.0000	125.00	No Ice	1.66	1.16	80.00
Radio Unit			0.00			1/2" Ice	1.82	1.29	96.16
(T-Mobile)			0.00			1" Ice	1.98	1.44	114.94
QD6616-7	A	From Face	3.00	0.0000	133.00	No Ice	13.58	6.80	130.00
(AT&T - Proposed)			-6.00			1/2" Ice	14.08	7.27	213.97
			0.00			1" Ice	14.60	7.72	304.84
AIR6419	A	From Face	3.00	0.0000	133.00	No Ice	3.66	1.66	66.00
(AT&T - Proposed)			0.00			1/2" Ice	3.91	1.85	91.40
			2.00			1" Ice	4.16	2.05	120.26
AIR6449	A	From Face	3.00	0.0000	133.00	No Ice	5.65	2.42	103.00
(AT&T - Proposed)			0.00			1/2" Ice	5.96	2.64	141.45
			-2.00			1" Ice	6.26	2.87	184.10
DMP65R-BU6D	A	From Face	3.00	0.0000	133.00	No Ice	12.71	5.62	96.00
(AT&T - Proposed)			6.00			1/2" Ice	13.21	6.07	169.96
			0.00			1" Ice	13.71	6.53	250.56
QD6616-7	B	From Face	3.00	0.0000	133.00	No Ice	13.58	6.80	130.00
(AT&T - Proposed)			-6.00			1/2" Ice	14.08	7.27	213.97
			0.00			1" Ice	14.60	7.72	304.84
AIR6419	B	From Face	3.00	0.0000	133.00	No Ice	3.66	1.66	66.00
(AT&T - Proposed)			0.00			1/2" Ice	3.91	1.85	91.40
			2.00			1" Ice	4.16	2.05	120.26
AIR6449	B	From Face	3.00	0.0000	133.00	No Ice	5.65	2.42	103.00
(AT&T - Proposed)			0.00			1/2" Ice	5.96	2.64	141.45

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			-2.00			1" Ice	6.26	2.87	184.10
DMP65R-BU6D	B	From Face	3.00	0.0000	133.00	No Ice	12.71	5.62	96.00
(AT&T - Proposed)			6.00			1/2" Ice	13.21	6.07	169.96
			0.00			1" Ice	13.71	6.53	250.56
QD6616-7	C	From Face	3.00	0.0000	133.00	No Ice	13.58	6.80	130.00
(AT&T - Proposed)			-6.00			1/2" Ice	14.08	7.27	213.97
			0.00			1" Ice	14.60	7.72	304.84
AIR6419	C	From Face	3.00	0.0000	133.00	No Ice	3.66	1.66	66.00
(AT&T - Proposed)			0.00			1/2" Ice	3.91	1.85	91.40
			2.00			1" Ice	4.16	2.05	120.26
AIR6449	C	From Face	3.00	0.0000	133.00	No Ice	5.65	2.42	103.00
(AT&T - Proposed)			0.00			1/2" Ice	5.96	2.64	141.45
			-2.00			1" Ice	6.26	2.87	184.10
DMP65R-BU6D	C	From Face	3.00	0.0000	133.00	No Ice	12.71	5.62	96.00
(AT&T - Proposed)			6.00			1/2" Ice	13.21	6.07	169.96
			0.00			1" Ice	13.71	6.53	250.56
RRUS-32 B66	A	From Face	3.00	0.0000	133.00	No Ice	3.20	1.85	60.00
(AT&T)			6.00			1/2" Ice	3.46	2.08	81.11
			0.00			1" Ice	3.73	2.31	105.42
RRUS-32	A	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32	A	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32 B66	B	From Face	3.00	0.0000	133.00	No Ice	3.20	1.85	60.00
(AT&T)			6.00			1/2" Ice	3.46	2.08	81.11
			0.00			1" Ice	3.73	2.31	105.42
RRUS-32	B	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32	B	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32 B66	C	From Face	3.00	0.0000	133.00	No Ice	3.20	1.85	60.00
(AT&T)			6.00			1/2" Ice	3.46	2.08	81.11
			0.00			1" Ice	3.73	2.31	105.42
RRUS-32	C	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32	C	From Face	3.00	0.0000	133.00	No Ice	3.31	2.42	77.00
(AT&T)			-2.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
4478 B14	A	From Face	3.00	0.0000	133.00	No Ice	1.84	1.06	60.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
4478 B14	B	From Face	3.00	0.0000	133.00	No Ice	1.84	1.06	60.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
4478 B14	C	From Face	3.00	0.0000	133.00	No Ice	1.84	1.06	60.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
4449 B5/B12	A	From Face	3.00	0.0000	133.00	No Ice	1.97	1.41	71.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.14	1.56	89.51
			0.00			1" Ice	2.33	1.73	110.84
4449 B5/B12	B	From Face	3.00	0.0000	133.00	No Ice	1.97	1.41	71.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.14	1.56	89.51

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
			0.00			1" Ice	2.33	1.73	110.84
4449 B5/B12	C	From Face	3.00	0.0000	133.00	No Ice	1.97	1.41	71.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.14	1.56	89.51
			0.00			1" Ice	2.33	1.73	110.84
DC6-48-60-18-8F (Squid)	C	From Face	3.00	0.0000	133.00	No Ice	1.27	1.27	20.00
Suppressor			0.00			1/2" Ice	1.46	1.46	35.12
(AT&T)			0.00			1" Ice	1.66	1.66	52.57
DC6-48-60-18-8F (Squid)	A	From Face	3.00	0.0000	133.00	No Ice	1.27	1.27	20.00
Suppressor			0.00			1/2" Ice	1.46	1.46	35.12
(AT&T)			0.00			1" Ice	1.66	1.66	52.57
DC9	B	From Leg	3.00	0.0000	133.00	No Ice	1.91	1.91	20.00
(AT&T - Proposed)			-2.00			1/2" Ice	2.10	2.10	39.36
			0.00			1" Ice	2.29	2.29	61.70
SitePro VFA14-10	A	None		0.0000	133.00	No Ice	30.00	30.00	950.00
(AT&T - Proposed)						1/2" Ice	35.00	35.00	1400.00
						1" Ice	40.00	40.00	1850.00
SitePro VFA14-10	B	None		0.0000	133.00	No Ice	30.00	30.00	950.00
(AT&T - Proposed)						1/2" Ice	35.00	35.00	1400.00
						1" Ice	40.00	40.00	1850.00
SitePro VFA14-10	C	None		0.0000	133.00	No Ice	30.00	30.00	950.00
(AT&T - Proposed)						1/2" Ice	35.00	35.00	1400.00
						1" Ice	40.00	40.00	1850.00
* CSP									
ANT940Y10-WR	A	From Leg	0.00	0.0000	187.00	No Ice	0.19	0.19	2.50
(CSP)			0.00			1/2" Ice	0.34	0.34	3.25
			0.00			1" Ice	0.49	0.49	4.00
ANT940Y10-WR	C	From Leg	0.50	0.0000	181.00	No Ice	0.19	0.19	2.50
(CSP - Yagi Antenna)			0.00			1/2" Ice	0.34	0.34	3.25
			0.00			1" Ice	0.49	0.49	4.00
RFI BPS7496-180-14 Panel	A	From Face	4.00	0.0000	170.00	No Ice	5.83	3.75	20.00
Antenna			-6.00			1/2" Ice	6.21	4.13	56.42
(CSP-80)			0.00			1" Ice	6.60	4.51	97.99
RFI BPS7496-180-14 Panel	A	From Face	4.00	0.0000	170.00	No Ice	5.83	3.75	20.00
Antenna			0.00			1/2" Ice	6.21	4.13	56.42
(CSP-81)			0.00			1" Ice	6.60	4.51	97.99
RFI BPS7496-180-14 Panel	A	From Face	4.00	0.0000	170.00	No Ice	5.83	3.75	20.00
Antenna			6.00			1/2" Ice	6.21	4.13	56.42
(CSP-82)			0.00			1" Ice	6.60	4.51	97.99
SitePro1 USF12-396-U	A	From Leg	0.00	0.0000	170.00	No Ice	16.23	9.80	491.09
Mount Assembly w/ (3) 96"			0.00			1/2" Ice	22.18	13.27	630.09
Mount Pipes			0.00			1" Ice	28.15	16.68	815.09
(CSP 47, 80, 81, 82)									
432E-83I-01T TTA Unit	A	From Leg	4.00	0.0000	170.00	No Ice	2.85	0.97	25.00
(Re-Located TMA (CSP))			0.00			1/2" Ice	3.06	1.11	44.70
			0.00			1" Ice	3.28	1.26	67.39
3' Yagi	C	From Leg	0.50	0.0000	169.00	No Ice	2.08	2.08	30.95
(CSP)			0.00			1/2" Ice	3.79	3.79	52.87
			0.00			1" Ice	5.52	5.52	85.27
ANT150D	A	From Leg	0.00	0.0000	113.00	No Ice	0.80	0.80	5.50
(CSP - 1-Bay Dipole)			0.00			1/2" Ice	1.44	1.44	7.15
			0.00			1" Ice	2.08	2.08	8.80
GPS	C	From Leg	4.00	0.0000	60.00	No Ice	1.00	1.00	10.00
(DNK-1 / GPS)			0.00			1/2" Ice	1.50	1.50	15.00
			2.00			1" Ice	2.00	2.00	20.00
4' Standoff	C	From Leg	0.00	0.0000	60.00	No Ice	3.42	3.42	110.00
(DNK-1 / GPS)			0.00			1/2" Ice	3.67	3.67	147.19
			0.00			1" Ice	3.92	3.92	187.07

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
PA6-65AC (DNK-52 / CSP-42)	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	-55.0000		177.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.05 29.83	90.00 240.00 390.00

222-H Verification Constants

Constant	Value
K_d	0.85
Ice Thickness Importance Factor	1.25
Z_g	900
α	9.5
K_{zmin}	0.85
K_c	n/a
K_t	1
f	1
K_e	1

222-H Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
T1 180.00-160.00	1	ROHN 3 STD	45.107	31.948	C	0.139	0.285	5.833	10.742	3.165	6.384
	1	ROHN 3 STD	45.107	31.948	A	0.139	0.285	5.833	10.742	3.165	6.384
	2	ROHN 3 STD	45.107	31.948	C	0.139	0.285	5.833	10.742	3.165	6.384
	2	ROHN 3 STD	45.107	31.948	B	0.139	0.285	5.833	10.742	3.165	6.384
	3	ROHN 3 STD	45.107	31.948	B	0.139	0.285	5.833	10.742	3.165	6.384
	3	ROHN 3 STD	45.107	31.948	A	0.139	0.285	5.833	10.742	3.165	6.384
	4	ROHN 1.5 STD	24.486	24.017	C	0.139	0.285	1.306	3.331	0.740	1.980
	5	ROHN 1.5 STD	24.486	24.017	B	0.139	0.285	1.306	3.331	0.740	1.980
	6	ROHN 1.5 STD	24.486	24.017	A	0.139	0.285	1.306	3.331	0.740	1.980
	7	ROHN 1.5 STD	24.486	24.017	C	0.139	0.285	1.315	3.354	0.745	1.993
	8	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.518	3.401	0.860	2.021
	9	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.518	3.401	0.860	2.021
	10	ROHN 1.5 STD	24.486	24.017	B	0.139	0.285	1.315	3.354	0.745	1.993
	11	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.518	3.401	0.860	2.021
	12	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.518	3.401	0.860	2.021
	13	ROHN 1.5 STD	24.486	24.017	A	0.139	0.285	1.315	3.354	0.745	1.993
	14	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.518	3.401	0.860	2.021
	15	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.518	3.401	0.860	2.021
	19	ROHN 1.5 STD	24.486	24.017	C	0.139	0.285	1.311	3.342	0.743	1.986
	20	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.517	3.398	0.859	2.019

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	21	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.517	3.398	0.859	2.019
	22	ROHN 1.5 STD	24.486	24.017	B	0.139	0.285	1.311	3.342	0.743	1.986
	23	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.517	3.398	0.859	2.019
	24	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.517	3.398	0.859	2.019
	25	ROHN 1.5 STD	24.486	24.017	A	0.139	0.285	1.311	3.342	0.743	1.986
	26	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.517	3.398	0.859	2.019
	27	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.517	3.398	0.859	2.019
	31	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.515	3.394	0.858	2.017
	32	ROHN 2 STD	30.608	26.372	C	0.139	0.285	1.515	3.394	0.858	2.017
	33	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.515	3.394	0.858	2.017
	34	ROHN 2 STD	30.608	26.372	B	0.139	0.285	1.515	3.394	0.858	2.017
	35	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.515	3.394	0.858	2.017
	36	ROHN 2 STD	30.608	26.372	A	0.139	0.285	1.515	3.394	0.858	2.017
					A		Sum:	24.699	51.898	13.713	30.840
					B			24.699	51.898	13.713	30.840
					C			24.699	51.898	13.713	30.840
T2	40	ROHN 4 STD	57.235	36.242	C	0.143	0.276	7.514	12.370	3.727	7.320
160.00-140.00											
	40	ROHN 4 STD	57.235	36.242	A	0.143	0.276	7.514	12.370	3.727	7.320
	41	ROHN 4 STD	57.235	36.242	C	0.143	0.276	7.514	12.370	3.727	7.320
	41	ROHN 4 STD	57.235	36.242	B	0.143	0.276	7.514	12.370	3.727	7.320
	42	ROHN 4 STD	57.235	36.242	B	0.143	0.276	7.514	12.370	3.727	7.320
	42	ROHN 4 STD	57.235	36.242	A	0.143	0.276	7.514	12.370	3.727	7.320
	43	ROHN 1.5 STD	24.166	23.524	C	0.143	0.276	1.526	3.863	0.865	2.286
	44	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.634	3.634	0.926	2.150
	45	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.634	3.634	0.926	2.150
	46	ROHN 1.5 STD	24.166	23.524	B	0.143	0.276	1.526	3.863	0.865	2.286
	47	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.634	3.634	0.926	2.150
	48	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.634	3.634	0.926	2.150
	49	ROHN 1.5 STD	24.166	23.524	A	0.143	0.276	1.526	3.863	0.865	2.286
	50	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.634	3.634	0.926	2.150
	51	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.634	3.634	0.926	2.150
	55	ROHN 1.5 STD	24.166	23.524	C	0.143	0.276	1.416	3.584	0.803	2.121
	56	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.589	3.535	0.901	2.092
	57	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.589	3.535	0.901	2.092
	58	ROHN 1.5 STD	24.166	23.524	B	0.143	0.276	1.416	3.584	0.803	2.121
	59	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.589	3.535	0.901	2.092
	60	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.589	3.535	0.901	2.092
	61	ROHN 1.5 STD	24.166	23.524	A	0.143	0.276	1.416	3.584	0.803	2.121
	62	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.589	3.535	0.901	2.092
	63	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.589	3.535	0.901	2.092
	67	ROHN 1.5 STD	24.166	23.524	C	0.143	0.276	1.306	3.306	0.741	1.956
	68	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.546	3.438	0.876	2.035
	69	ROHN 2 STD	30.207	25.847	C	0.143	0.276	1.546	3.438	0.876	2.035
	70	ROHN 1.5 STD	24.166	23.524	B	0.143	0.276	1.306	3.306	0.741	1.956
	71	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.546	3.438	0.876	2.035
	72	ROHN 2 STD	30.207	25.847	B	0.143	0.276	1.546	3.438	0.876	2.035
	73	ROHN 1.5 STD	24.166	23.524	A	0.143	0.276	1.306	3.306	0.741	1.956
	74	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.546	3.438	0.876	2.035
	75	ROHN 2 STD	30.207	25.847	A	0.143	0.276	1.546	3.438	0.876	2.035
					A		Sum:	28.812	56.708	15.269	33.556
					B			28.812	56.708	15.269	33.556
					C			28.812	56.708	15.269	33.556
T3	79	ROHN 5 EH	70.065	40.908	C	0.151	0.271	3.096	4.700	1.391	2.775
140.00-133.33											
	79	ROHN 5 EH	70.065	40.908	A	0.151	0.271	3.096	4.700	1.391	2.775
	80	ROHN 5 EH	70.065	40.908	C	0.151	0.271	3.096	4.700	1.391	2.775
	80	ROHN 5 EH	70.065	40.908	B	0.151	0.271	3.096	4.700	1.391	2.775
	81	ROHN 5 EH	70.065	40.908	B	0.151	0.271	3.096	4.700	1.391	2.775
	81	ROHN 5 EH	70.065	40.908	A	0.151	0.271	3.096	4.700	1.391	2.775

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	82	ROHN 2 STD	29.913	25.465	C	0.151	0.271	2.028	4.488	1.151	2.650
	83	ROHN 2 EH	29.976	25.489	C	0.151	0.271	1.670	3.691	0.948	2.180
	84	ROHN 2 EH	29.976	25.489	C	0.151	0.271	1.670	3.691	0.948	2.180
	85	ROHN 2 STD	29.913	25.465	B	0.151	0.271	2.028	4.488	1.151	2.650
	86	ROHN 2 EH	29.976	25.489	B	0.151	0.271	1.670	3.691	0.948	2.180
	87	ROHN 2 EH	29.976	25.489	B	0.151	0.271	1.670	3.691	0.948	2.180
	88	ROHN 2 STD	29.913	25.465	A	0.151	0.271	2.028	4.488	1.151	2.650
	89	ROHN 2 EH	29.976	25.489	A	0.151	0.271	1.670	3.691	0.948	2.180
	90	ROHN 2 EH	29.976	25.489	A	0.151	0.271	1.670	3.691	0.948	2.180
					A		Sum:	11.559	21.270	5.828	12.561
					B			11.559	21.270	5.828	12.561
					C			11.559	21.270	5.828	12.561
T4	94	ROHN 5 EH	69.697	40.624	C	0.145	0.262	3.096	4.692	1.388	2.759
133.33-126.67											
	94	ROHN 5 EH	69.697	40.624	A	0.145	0.262	3.096	4.692	1.388	2.759
	95	ROHN 5 EH	69.697	40.624	C	0.145	0.262	3.096	4.692	1.388	2.759
	95	ROHN 5 EH	69.697	40.624	B	0.145	0.262	3.096	4.692	1.388	2.759
	96	ROHN 5 EH	69.697	40.624	B	0.145	0.262	3.096	4.692	1.388	2.759
	96	ROHN 5 EH	69.697	40.624	A	0.145	0.262	3.096	4.692	1.388	2.759
	97	ROHN 2 STD	29.756	25.262	C	0.145	0.262	2.165	4.779	1.228	2.810
	98	ROHN 2 STD	29.756	25.262	B	0.145	0.262	2.165	4.779	1.228	2.810
	99	ROHN 2 STD	29.756	25.262	A	0.145	0.262	2.165	4.779	1.228	2.810
	100	ROHN 2 EH	29.818	25.286	C	0.145	0.262	1.717	3.787	0.974	2.226
	101	ROHN 2 EH	29.818	25.286	C	0.145	0.262	1.717	3.787	0.974	2.226
	102	ROHN 2 EH	29.818	25.286	B	0.145	0.262	1.717	3.787	0.974	2.226
	103	ROHN 2 EH	29.818	25.286	B	0.145	0.262	1.717	3.787	0.974	2.226
	104	ROHN 2 EH	29.818	25.286	A	0.145	0.262	1.717	3.787	0.974	2.226
	105	ROHN 2 EH	29.818	25.286	A	0.145	0.262	1.717	3.787	0.974	2.226
					A		Sum:	11.792	21.736	5.951	12.781
					B			11.792	21.736	5.951	12.781
					C			11.792	21.736	5.951	12.781
T5	109	ROHN 5 EH	69.312	40.327	C	0.14	0.253	3.096	4.684	1.386	2.744
126.67-120.00											
	109	ROHN 5 EH	69.312	40.327	A	0.14	0.253	3.096	4.684	1.386	2.744
	110	ROHN 5 EH	69.312	40.327	C	0.14	0.253	3.096	4.684	1.386	2.744
	110	ROHN 5 EH	69.312	40.327	B	0.14	0.253	3.096	4.684	1.386	2.744
	111	ROHN 5 EH	69.312	40.327	B	0.14	0.253	3.096	4.684	1.386	2.744
	111	ROHN 5 EH	69.312	40.327	A	0.14	0.253	3.096	4.684	1.386	2.744
	112	ROHN 2 STD	29.591	25.05	C	0.14	0.253	2.303	5.068	1.305	2.969
	113	ROHN 2 STD	29.591	25.05	B	0.14	0.253	2.303	5.068	1.305	2.969
	114	ROHN 2 STD	29.591	25.05	A	0.14	0.253	2.303	5.068	1.305	2.969
	115	ROHN 2 XXS	29.591	25.05	C	0.14	0.253	1.763	3.880	0.999	2.273
	116	ROHN 2 XXS	29.591	25.05	C	0.14	0.253	1.763	3.880	0.999	2.273
	117	ROHN 2 XXS	29.591	25.05	B	0.14	0.253	1.763	3.880	0.999	2.273
	118	ROHN 2 XXS	29.591	25.05	B	0.14	0.253	1.763	3.880	0.999	2.273
	119	ROHN 2 XXS	29.591	25.05	A	0.14	0.253	1.763	3.880	0.999	2.273
	120	ROHN 2 XXS	29.591	25.05	A	0.14	0.253	1.763	3.880	0.999	2.273
					A		Sum:	12.020	22.194	6.074	13.001
					B			12.020	22.194	6.074	13.001
					C			12.020	22.194	6.074	13.001
T6	124	ROHN 6 EHS	81.556	44.719	C	0.133	0.222	11.065	15.775	4.541	9.127
120.00-100.00											
	124	ROHN 6 EHS	81.556	44.719	A	0.133	0.222	11.065	15.775	4.541	9.127
	125	ROHN 6 EHS	81.556	44.719	C	0.133	0.222	11.065	15.775	4.541	9.127
	125	ROHN 6 EHS	81.556	44.719	B	0.133	0.222	11.065	15.775	4.541	9.127
	126	ROHN 6 EHS	81.556	44.719	B	0.133	0.222	11.065	15.775	4.541	9.127
	126	ROHN 6 EHS	81.556	44.719	A	0.133	0.222	11.065	15.775	4.541	9.127
	127	ROHN 2 STD	29.237	24.596	C	0.133	0.222	2.645	5.786	1.497	3.348
	128	Pipe 2.5 XXS	35.392	26.964	C	0.133	0.222	2.889	5.722	1.635	3.311
	129	Pipe 2.5 XXS	35.392	26.964	C	0.133	0.222	2.889	5.722	1.635	3.311

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	130	ROHN 2 STD	29.237	24.596	B	0.133	0.222	2.645	5.786	1.497	3.348
	131	Pipe 2.5 XXS	35.392	26.964	B	0.133	0.222	2.889	5.722	1.635	3.311
	132	Pipe 2.5 XXS	35.392	26.964	B	0.133	0.222	2.889	5.722	1.635	3.311
	133	ROHN 2 STD	29.237	24.596	A	0.133	0.222	2.645	5.786	1.497	3.348
	134	Pipe 2.5 XXS	35.392	26.964	A	0.133	0.222	2.889	5.722	1.635	3.311
	135	Pipe 2.5 XXS	35.392	26.964	A	0.133	0.222	2.889	5.722	1.635	3.311
	139	ROHN 2 STD	29.237	24.596	C	0.133	0.222	2.422	5.299	1.371	3.066
	140	Pipe 2.5 XXS	35.392	26.964	C	0.133	0.222	2.804	5.554	1.587	3.214
	141	Pipe 2.5 XXS	35.392	26.964	C	0.133	0.222	2.804	5.554	1.587	3.214
	142	ROHN 2 STD	29.237	24.596	B	0.133	0.222	2.422	5.299	1.371	3.066
	143	Pipe 2.5 XXS	35.392	26.964	B	0.133	0.222	2.804	5.554	1.587	3.214
	144	Pipe 2.5 XXS	35.392	26.964	B	0.133	0.222	2.804	5.554	1.587	3.214
	145	ROHN 2 STD	29.237	24.596	A	0.133	0.222	2.422	5.299	1.371	3.066
	146	Pipe 2.5 XXS	35.392	26.964	A	0.133	0.222	2.804	5.554	1.587	3.214
	147	Pipe 2.5 XXS	35.392	26.964	A	0.133	0.222	2.804	5.554	1.587	3.214
					A		Sum:	38.583	65.187	18.396	37.718
					B			38.583	65.187	18.396	37.718
					C			38.583	65.187	18.396	37.718
T7 100.00-90.00	151	ROHN 6 EH	80.307	43.843	C	0.131	0.212	5.537	7.859	2.265	4.533
	151	ROHN 6 EH	80.307	43.843	A	0.131	0.212	5.537	7.859	2.265	4.533
	152	ROHN 6 EH	80.307	43.843	C	0.131	0.212	5.537	7.859	2.265	4.533
	152	ROHN 6 EH	80.307	43.843	B	0.131	0.212	5.537	7.859	2.265	4.533
	153	ROHN 6 EH	80.307	43.843	B	0.131	0.212	5.537	7.859	2.265	4.533
	153	ROHN 6 EH	80.307	43.843	A	0.131	0.212	5.537	7.859	2.265	4.533
	154	ROHN 2 STD	28.789	24.028	C	0.131	0.212	2.868	6.223	1.623	3.589
	155	ROHN 3 STD	42.426	29.273	C	0.131	0.212	3.643	6.535	2.011	3.769
	156	ROHN 3 STD	42.426	29.273	C	0.131	0.212	3.643	6.535	2.011	3.769
	157	ROHN 2 STD	28.789	24.028	B	0.131	0.212	2.868	6.223	1.623	3.589
	158	ROHN 3 STD	42.426	29.273	B	0.131	0.212	3.643	6.535	2.011	3.769
	159	ROHN 3 STD	42.426	29.273	B	0.131	0.212	3.643	6.535	2.011	3.769
	160	ROHN 2 STD	28.789	24.028	A	0.131	0.212	2.868	6.223	1.623	3.589
	161	ROHN 3 STD	42.426	29.273	A	0.131	0.212	3.643	6.535	2.011	3.769
	162	ROHN 3 STD	42.426	29.273	A	0.131	0.212	3.643	6.535	2.011	3.769
					A		Sum:	21.227	35.011	10.175	20.193
					B			21.227	35.011	10.175	20.193
					C			21.227	35.011	10.175	20.193
T8 90.00-80.00	166	ROHN 6 EH	79.372	43.191	C	0.124	0.202	5.537	7.833	2.247	4.502
	166	ROHN 6 EH	79.372	43.191	A	0.124	0.202	5.537	7.833	2.247	4.502
	167	ROHN 6 EH	79.372	43.191	C	0.124	0.202	5.537	7.833	2.247	4.502
	167	ROHN 6 EH	79.372	43.191	B	0.124	0.202	5.537	7.833	2.247	4.502
	168	ROHN 6 EH	79.372	43.191	B	0.124	0.202	5.537	7.833	2.247	4.502
	168	ROHN 6 EH	79.372	43.191	A	0.124	0.202	5.537	7.833	2.247	4.502
	169	ROHN 2 STD	28.454	23.607	C	0.124	0.202	3.129	6.749	1.769	3.879
	170	ROHN 2 STD	28.454	23.607	B	0.124	0.202	3.129	6.749	1.769	3.879
	171	ROHN 2 STD	28.454	23.607	A	0.124	0.202	3.129	6.749	1.769	3.879
	172	ROHN 3 STD	41.933	28.791	C	0.124	0.202	3.773	6.735	2.088	3.871
	173	ROHN 3 STD	41.933	28.791	C	0.124	0.202	3.773	6.735	2.088	3.871
	174	ROHN 3 STD	41.933	28.791	B	0.124	0.202	3.773	6.735	2.088	3.871
	175	ROHN 3 STD	41.933	28.791	B	0.124	0.202	3.773	6.735	2.088	3.871
	176	ROHN 3 STD	41.933	28.791	A	0.124	0.202	3.773	6.735	2.088	3.871
	177	ROHN 3 STD	41.933	28.791	A	0.124	0.202	3.773	6.735	2.088	3.871
					A		Sum:	21.747	35.885	10.439	20.625
					B			21.747	35.885	10.439	20.625
					C			21.747	35.885	10.439	20.625
T9 80.00-60.00	184	ROHN 2.5 STD	33.748	25.148	C	0.14	0.204	4.360	8.447	2.470	4.859
	185	ROHN 3 STD	41.084	27.97	C	0.14	0.204	3.995	7.071	2.231	4.067
	186	ROHN 3 STD	41.084	27.97	C	0.14	0.204	3.995	7.071	2.231	4.067
	187	ROHN 2.5 STD	33.748	25.148	B	0.14	0.204	4.360	8.447	2.470	4.859
	188	ROHN 3 STD	41.084	27.97	B	0.14	0.204	3.995	7.071	2.231	4.067
	189	ROHN 3 STD	41.084	27.97	B	0.14	0.204	3.995	7.071	2.231	4.067

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	190	ROHN 2.5 STD	33.748	25.148	A	0.14	0.204	4.360	8.447	2.470	4.859
	191	ROHN 3 STD	41.084	27.97	A	0.14	0.204	3.995	7.071	2.231	4.067
	192	ROHN 3 STD	41.084	27.97	A	0.14	0.204	3.995	7.071	2.231	4.067
	196	ROHN 2.5 STD	33.748	25.148	C	0.14	0.204	4.060	7.867	2.301	4.525
	197	ROHN 3 STD	41.084	27.97	C	0.14	0.204	3.862	6.837	2.157	3.932
	198	ROHN 3 STD	41.084	27.97	C	0.14	0.204	3.862	6.837	2.157	3.932
	199	ROHN 2.5 STD	33.748	25.148	B	0.14	0.204	4.060	7.867	2.301	4.525
	200	ROHN 3 STD	41.084	27.97	B	0.14	0.204	3.862	6.837	2.157	3.932
	201	ROHN 3 STD	41.084	27.97	B	0.14	0.204	3.862	6.837	2.157	3.932
	202	ROHN 2.5 STD	33.748	25.148	A	0.14	0.204	4.060	7.867	2.301	4.525
	203	ROHN 3 STD	41.084	27.97	A	0.14	0.204	3.862	6.837	2.157	3.932
	204	ROHN 3 STD	41.084	27.97	A	0.14	0.204	3.862	6.837	2.157	3.932
					A		Sum:	24.135	44.130	13.546	25.382
					B			24.135	44.130	13.546	25.382
					C			24.135	44.130	13.546	25.382
T10 60.00-40.00	211	ROHN 2.5 STD	32.573	23.885	C	0.129	0.189	4.959	9.454	2.805	5.413
	212	ROHN 3 EH	39.655	26.608	C	0.129	0.189	4.269	7.448	2.404	4.264
	213	ROHN 3 EH	39.655	26.608	C	0.129	0.189	4.269	7.448	2.404	4.264
	214	ROHN 2.5 STD	32.573	23.885	B	0.129	0.189	4.959	9.454	2.805	5.413
	215	ROHN 3 EH	39.655	26.608	B	0.129	0.189	4.269	7.448	2.404	4.264
	216	ROHN 3 EH	39.655	26.608	B	0.129	0.189	4.269	7.448	2.404	4.264
	217	ROHN 2.5 STD	32.573	23.885	A	0.129	0.189	4.959	9.454	2.805	5.413
	218	ROHN 3 EH	39.655	26.608	A	0.129	0.189	4.269	7.448	2.404	4.264
	219	ROHN 3 EH	39.655	26.608	A	0.129	0.189	4.269	7.448	2.404	4.264
	223	ROHN 2.5 STD	32.573	23.885	C	0.129	0.189	4.659	8.883	2.636	5.086
	224	ROHN 3 EH	39.655	26.608	C	0.129	0.189	4.130	7.206	2.326	4.126
	225	ROHN 3 EH	39.655	26.608	C	0.129	0.189	4.130	7.206	2.326	4.126
	226	ROHN 2.5 STD	32.573	23.885	B	0.129	0.189	4.659	8.883	2.636	5.086
	227	ROHN 3 EH	39.655	26.608	B	0.129	0.189	4.130	7.206	2.326	4.126
	228	ROHN 3 EH	39.655	26.608	B	0.129	0.189	4.130	7.206	2.326	4.126
	229	ROHN 2.5 STD	32.573	23.885	A	0.129	0.189	4.659	8.883	2.636	5.086
	230	ROHN 3 EH	39.655	26.608	A	0.129	0.189	4.130	7.206	2.326	4.126
	231	ROHN 3 EH	39.655	26.608	A	0.129	0.189	4.130	7.206	2.326	4.126
					A		Sum:	26.417	47.644	14.901	27.279
					B			26.417	47.644	14.901	27.279
					C			26.417	47.644	14.901	27.279
T11 40.00-30.00	238	ROHN 2.5 STD	31.373	22.621	C	0.123	0.178	5.258	9.858	2.973	5.629
	239	ROHN 3 EH	38.193	25.244	C	0.123	0.178	4.410	7.579	2.493	4.328
	240	ROHN 3 EH	38.193	25.244	C	0.123	0.178	4.410	7.579	2.493	4.328
	241	ROHN 2.5 STD	31.373	22.621	B	0.123	0.178	5.258	9.858	2.973	5.629
	242	ROHN 3 EH	38.193	25.244	B	0.123	0.178	4.410	7.579	2.493	4.328
	243	ROHN 3 EH	38.193	25.244	B	0.123	0.178	4.410	7.579	2.493	4.328
	244	ROHN 2.5 STD	31.373	22.621	A	0.123	0.178	5.258	9.858	2.973	5.629
	245	ROHN 3 EH	38.193	25.244	A	0.123	0.178	4.410	7.579	2.493	4.328
	246	ROHN 3 EH	38.193	25.244	A	0.123	0.178	4.410	7.579	2.493	4.328
					A		Sum:	14.079	25.017	7.959	14.285
					B			14.079	25.017	7.959	14.285
					C			14.079	25.017	7.959	14.285
T12 30.00-20.00	253	ROHN 2.5 EH	30.281	21.497	C	0.119	0.172	5.558	10.258	3.141	5.849
	254	ROHN 2.5 EH	30.281	21.497	B	0.119	0.172	5.558	10.258	3.141	5.849
	255	ROHN 2.5 EH	30.281	21.497	A	0.119	0.172	5.558	10.258	3.141	5.849
	256	ROHN 3 EH	36.864	24.029	C	0.119	0.172	4.555	7.719	2.574	4.401
	257	ROHN 3 EH	36.864	24.029	C	0.119	0.172	4.555	7.719	2.574	4.401
	258	ROHN 3 EH	36.864	24.029	B	0.119	0.172	4.555	7.719	2.574	4.401
	259	ROHN 3 EH	36.864	24.029	B	0.119	0.172	4.555	7.719	2.574	4.401
	260	ROHN 3 EH	36.864	24.029	A	0.119	0.172	4.555	7.719	2.574	4.401
	261	ROHN 3 EH	36.864	24.029	A	0.119	0.172	4.555	7.719	2.574	4.401
					A		Sum:	14.667	25.696	8.288	14.650
					B			14.667	25.696	8.288	14.650
					C			14.667	25.696	8.288	14.650

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
T13 20.00-0.00	268	P3.5x.226	39.951	23.889	C	0.108	0.152	8.153	12.675	4.570	7.195
	269	ROHN 3 EH	34.957	21.968	C	0.108	0.152	6.913	11.295	3.903	6.412
	270	ROHN 1.5 STD	18.977	15.822	C	0.108	0.152	0.940	2.037	0.531	1.156
	271	ROHN 2 STD	23.721	17.646	C	0.108	0.152	2.132	4.124	1.204	2.341
	272	ROHN 3 EH	34.957	21.968	C	0.108	0.152	6.913	11.295	3.903	6.412
	273	ROHN 1.5 STD	18.977	15.822	C	0.108	0.152	0.940	2.037	0.531	1.156
	274	ROHN 2 STD	23.721	17.646	C	0.108	0.152	2.132	4.124	1.204	2.341
	275	P3.5x.226	39.951	23.889	B	0.108	0.152	8.153	12.675	4.570	7.195
	276	ROHN 3 EH	34.957	21.968	B	0.108	0.152	6.913	11.295	3.903	6.412
	277	ROHN 1.5 STD	18.977	15.822	B	0.108	0.152	0.940	2.037	0.531	1.156
	278	ROHN 2 STD	23.721	17.646	B	0.108	0.152	2.132	4.124	1.204	2.341
	279	ROHN 3 EH	34.957	21.968	B	0.108	0.152	6.913	11.295	3.903	6.412
	280	ROHN 1.5 STD	18.977	15.822	B	0.108	0.152	0.940	2.037	0.531	1.156
	281	ROHN 2 STD	23.721	17.646	B	0.108	0.152	2.132	4.124	1.204	2.341
	283	P3.5x.226	39.951	23.889	A	0.108	0.152	8.153	12.675	4.570	7.195
	284	ROHN 3 EH	34.957	21.968	A	0.108	0.152	6.913	11.295	3.903	6.412
	285	ROHN 1.5 STD	18.977	15.822	A	0.108	0.152	0.940	2.037	0.531	1.156
	286	ROHN 2 STD	23.721	17.646	A	0.108	0.152	2.132	4.124	1.204	2.341
	287	ROHN 3 EH	34.957	21.968	A	0.108	0.152	6.913	11.295	3.903	6.412
	288	ROHN 1.5 STD	18.977	15.822	A	0.108	0.152	0.940	2.037	0.531	1.156
	289	ROHN 2 STD	23.721	17.646	A	0.108	0.152	2.132	4.124	1.204	2.341
					A		Sum:	28.122	47.586	15.844	27.015
					B			28.122	47.586	15.844	27.015
					C			28.122	47.586	15.844	27.015

222-H Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft^2
T1 180.00-160.00	170.00		1.415	1	1		52	A	0.139	13.713
								B	0.139	13.713
								C	0.139	13.713
T2 160.00-140.00	150.00		1.378	1	1		51	A	0.143	15.269
								B	0.143	15.269
								C	0.143	15.269
T3 140.00-133.33	136.67		1.352	1	1		50	A	0.151	5.828
								B	0.151	5.828
								C	0.151	5.828
T4 133.33-126.67	130.00		1.337	1	1		49	A	0.145	5.951
								B	0.145	5.951
								C	0.145	5.951
T5 126.67-120.00	123.33		1.323	1	1		49	A	0.14	6.074
								B	0.14	6.074
								C	0.14	6.074
T6 120.00-100.00	110.00		1.291	1	1		47	A	0.133	18.396
								B	0.133	18.396
								C	0.133	18.396
T7 100.00-90.00	95.00		1.252	1	1		46	A	0.131	10.175
								B	0.131	10.175
								C	0.131	10.175
T8 90.00-80.00	85.00		1.223	1	1		45	A	0.124	10.439

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face e	e	A_rR_r ft^2
								B	0.124	10.439
								C	0.124	10.439
T9 80.00-60.00	70.00		1.174	1	1		43	A	0.14	13.546
								B	0.14	13.546
								C	0.14	13.546
T10 60.00-40.00	50.00		1.094	1	1		40	A	0.129	14.901
								B	0.129	14.901
								C	0.129	14.901
T11 40.00-30.00	35.00		1.015	1	1		37	A	0.123	7.959
								B	0.123	7.959
								C	0.123	7.959
T12 30.00-20.00	25.00		0.945	1	1		35	A	0.119	8.288
								B	0.119	8.288
								C	0.119	8.288
T13 20.00-0.00	10.00		0.85	1	1		31	A	0.108	15.844
								B	0.108	15.844
								C	0.108	15.844

222-H Section Verification Tables - Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face e	e	A_rR_r ft^2
T1 180.00-160.00	170.00	170.00	1.415	1	1	1.4727	8	A	0.285	30.840
								B	0.285	30.840
								C	0.285	30.840
T2 160.00-140.00	150.00	150.00	1.378	1	1	1.4543	7	A	0.276	33.556
								B	0.276	33.556
								C	0.276	33.556
T3 140.00-133.33	136.67	136.67	1.352	1	1	1.4409	7	A	0.271	12.561
								B	0.271	12.561
								C	0.271	12.561
T4 133.33-126.67	130.00	130.00	1.337	1	1	1.4337	7	A	0.262	12.781
								B	0.262	12.781
								C	0.262	12.781
T5 126.67-120.00	123.33	123.33	1.323	1	1	1.4262	7	A	0.253	13.001
								B	0.253	13.001
								C	0.253	13.001
T6 120.00-100.00	110.00	110.00	1.291	1	1	1.4099	7	A	0.222	37.718
								B	0.222	37.718
								C	0.222	37.718
T7 100.00-90.00	95.00	95.00	1.252	1	1	1.3894	7	A	0.212	20.193
								B	0.212	20.193
								C	0.212	20.193
T8 90.00-80.00	85.00	85.00	1.223	1	1	1.3740	7	A	0.202	20.625
								B	0.202	20.625
								C	0.202	20.625
T9 80.00-60.00	70.00	70.00	1.174	1	1	1.3476	6	A	0.204	25.382
								B	0.204	25.382
								C	0.204	25.382
T10 60.00-40.00	50.00	50.00	1.094	1	1	1.3030	6	A	0.189	27.279
								B	0.189	27.279
								C	0.189	27.279
T11 40.00-30.00	35.00	35.00	1.015	1	1	1.2574	6	A	0.178	14.285
								B	0.178	14.285
								C	0.178	14.285

Section Elevation	z_{wind}	z_{ice}	K_z	K_h	K_{zt}	t_z	q_z	Face	e	A_rR_r
ft	ft	ft				in	psf			ft^2
T12 30.00-20.00	25.00	25.00	0.945	1	1	1.2158	5	A	0.172	14.650
								B	0.172	14.650
								C	0.172	14.650
T13 20.00-0.00	10.00	10.00	0.85	1	1	1.1093	5	A	0.152	27.015
								B	0.152	27.015
								C	0.152	27.015

222-H Section Verification Tables - Service

Section Elevation	z_{wind}	z_{ice}	K_z	K_h	K_{zt}	t_z	q_z	Face	e	A_rR_r
ft	ft	ft				in	psf			ft^2
T1 180.00-160.00	170.00		1.415	1	1		11	A	0.139	13.993
								B	0.139	13.993
								C	0.139	13.993
T2 160.00-140.00	150.00		1.378	1	1		11	A	0.143	16.334
								B	0.143	16.334
								C	0.143	16.334
T3 140.00-133.33	136.67		1.352	1	1		11	A	0.151	6.561
								B	0.151	6.561
								C	0.151	6.561
T4 133.33-126.67	130.00		1.337	1	1		10	A	0.145	6.687
								B	0.145	6.687
								C	0.145	6.687
T5 126.67-120.00	123.33		1.323	1	1		10	A	0.14	6.810
								B	0.14	6.810
								C	0.14	6.810
T6 120.00-100.00	110.00		1.291	1	1		10	A	0.133	21.840
								B	0.133	21.840
								C	0.133	21.840
T7 100.00-90.00	95.00		1.252	1	1		10	A	0.131	12.011
								B	0.131	12.011
								C	0.131	12.011
T8 90.00-80.00	85.00		1.223	1	1		10	A	0.124	12.296
								B	0.124	12.296
								C	0.124	12.296
T9 80.00-60.00	70.00		1.174	1	1		9	A	0.14	13.674
								B	0.14	13.674
								C	0.14	13.674
T10 60.00-40.00	50.00		1.094	1	1		9	A	0.129	14.945
								B	0.129	14.945
								C	0.129	14.945
T11 40.00-30.00	35.00		1.015	1	1		8	A	0.123	7.959
								B	0.123	7.959
								C	0.123	7.959
T12 30.00-20.00	25.00		0.945	1	1		7	A	0.119	8.288
								B	0.119	8.288
								C	0.119	8.288
T13 20.00-0.00	10.00		0.85	1	1		7	A	0.108	15.877
								B	0.108	15.877
								C	0.108	15.877

Tower Pressures - No Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.415	52	177.503	A	0.000	24.699	11.667	47.24	15.281	0.000
180.00-160.00					B	0.000	24.699		47.24	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2	150.00	1.378	51	200.850	A	0.000	28.812	15.027	52.16	56.607	0.000
160.00-140.00					B	0.000	28.812		52.16	0.000	0.000
					C	0.000	28.812		52.16	0.000	0.000
T3	136.67	1.352	50	76.803	A	0.000	11.559	6.192	53.57	18.869	0.000
140.00-133.33					B	0.000	11.559		53.57	0.000	0.000
					C	0.000	11.559		53.57	0.000	0.000
T4	130.00	1.337	49	81.431	A	0.000	11.792	6.192	52.51	18.869	0.000
133.33-126.67					B	0.000	11.792		52.51	10.751	0.000
					C	0.000	11.792		52.51	0.000	0.000
T5	123.33	1.323	49	86.060	A	0.000	12.020	6.192	51.52	18.869	0.000
126.67-120.00					B	0.000	12.020		51.52	20.596	0.000
					C	0.000	12.020		51.52	0.000	0.000
T6	110.00	1.291	47	289.399	A	0.000	38.583	22.130	57.36	57.426	0.000
120.00-100.00					B	0.000	38.583		57.36	71.067	0.000
					C	0.000	38.583		57.36	0.000	0.000
T7	95.00	1.252	46	162.540	A	0.000	21.227	11.074	52.17	28.934	0.000
100.00-90.00					B	0.000	21.227		52.17	35.534	0.000
					C	0.000	21.227		52.17	0.000	0.000
T8 90.00-80.00	85.00	1.223	45	175.715	A	0.000	21.747	11.074	50.92	28.934	0.000
					B	0.000	21.747		50.92	35.534	0.000
					C	0.000	21.747		50.92	0.000	0.000
T9 80.00-60.00	70.00	1.174	43	390.971	A	30.496	24.135	30.496	55.82	57.930	0.000
					B	30.496	24.135		55.82	71.067	0.000
					C	30.496	24.135		55.82	0.000	0.000
T10	50.00	1.094	40	440.971	A	30.496	26.417	30.496	53.58	59.127	0.000
60.00-40.00					B	30.496	26.417		53.58	71.067	0.000
					C	30.496	26.417		53.58	0.000	0.000
T11	35.00	1.015	37	239.236	A	15.248	14.079	15.248	51.99	29.564	0.000
40.00-30.00					B	15.248	14.079		51.99	35.534	0.000
					C	15.248	14.079		51.99	0.000	0.000
T12	25.00	0.945	35	251.736	A	15.248	14.667	15.248	50.97	29.564	0.000
30.00-20.00					B	15.248	14.667		50.97	35.534	0.000
					C	15.248	14.667		50.97	0.000	0.000
T13 20.00-0.00	10.00	0.85	31	541.368	A	30.078	28.122	30.078	51.68	59.127	0.000
					B	30.078	28.122		51.68	71.067	0.000
					C	30.078	28.122		51.68	0.000	0.000

Tower Pressure - With Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.415	8	1.4727	182.412	A	0.000	51.898	21.484	41.40	43.556	0.000
180.00-160.00						B	0.000	51.898		41.40	0.000	0.000
						C	0.000	51.898		41.40	0.000	0.000
T2	150.00	1.378	7	1.4543	205.705	A	0.000	56.708	24.740	43.63	159.660	0.000
160.00-140.00						B	0.000	56.708		43.63	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	56.708		43.63	0.000	0.000
T3	136.67	1.352	7	1.4409	78.406	A	0.000	21.270	9.400	44.19	53.019	0.000
140.00-133.33						B	0.000	21.270		44.19	0.000	0.000
						C	0.000	21.270		44.19	0.000	0.000
T4	130.00	1.337	7	1.4337	83.027	A	0.000	21.736	9.384	43.17	52.912	0.000
133.33-126.67						B	0.000	21.736		43.17	35.372	0.000
						C	0.000	21.736		43.17	0.000	0.000
T5	123.33	1.323	7	1.4262	87.647	A	0.000	22.194	9.367	42.21	52.800	0.000
126.67-120.00						B	0.000	22.194		42.21	57.184	0.000
						C	0.000	22.194		42.21	0.000	0.000
T6	110.00	1.291	7	1.4099	294.106	A	0.000	65.187	31.549	48.40	162.161	0.000
120.00-100.00						B	0.000	65.187		48.40	190.860	0.000
						C	0.000	65.187		48.40	0.000	0.000
T7 100.00-90.00	95.00	1.252	7	1.3894	164.861	A	0.000	35.011	15.718	44.90	81.789	0.000
						B	0.000	35.011		44.90	94.983	0.000
						C	0.000	35.011		44.90	0.000	0.000
T8 90.00-80.00	85.00	1.223	7	1.3740	178.010	A	0.000	35.885	15.667	43.66	81.415	0.000
						B	0.000	35.885		43.66	94.648	0.000
						C	0.000	35.885		43.66	0.000	0.000
T9 80.00-60.00	70.00	1.174	6	1.3476	395.472	A	36.501	44.130	36.501	45.27	161.878	0.000
						B	36.501	44.130		45.27	188.144	0.000
						C	36.501	44.130		45.27	0.000	0.000
T10 60.00-40.00	50.00	1.094	6	1.3030	445.323	A	36.302	47.644	36.302	43.24	165.850	0.000
						B	36.302	47.644		43.24	186.203	0.000
						C	36.302	47.644		43.24	0.000	0.000
T11 40.00-30.00	35.00	1.015	6	1.2574	241.335	A	18.049	25.017	18.049	41.91	81.724	0.000
						B	18.049	25.017		41.91	92.109	0.000
						C	18.049	25.017		41.91	0.000	0.000
T12 30.00-20.00	25.00	0.945	5	1.2158	253.766	A	17.957	25.696	17.957	41.14	80.630	0.000
						B	17.957	25.696		41.14	91.207	0.000
						C	17.957	25.696		41.14	0.000	0.000
T13 20.00-0.00	10.00	0.85	5	1.1093	545.073	A	35.021	47.586	35.021	42.39	155.667	0.000
						B	35.021	47.586		42.39	177.803	0.000
						C	35.021	47.586		42.39	0.000	0.000

Tower Pressure - Service

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	170.00	1.415	11	177.503	A	0.000	24.699	11.667	47.24	15.281	0.000
180.00-160.00					B	0.000	24.699		47.24	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2	150.00	1.378	11	200.850	A	0.000	28.812	15.027	52.16	56.607	0.000
160.00-140.00					B	0.000	28.812		52.16	0.000	0.000
					C	0.000	28.812		52.16	0.000	0.000
T3	136.67	1.352	11	76.803	A	0.000	11.559	6.192	53.57	18.869	0.000
140.00-133.33					B	0.000	11.559		53.57	0.000	0.000
					C	0.000	11.559		53.57	0.000	0.000
T4	130.00	1.337	10	81.431	A	0.000	11.792	6.192	52.51	18.869	0.000
133.33-126.67					B	0.000	11.792		52.51	10.751	0.000
					C	0.000	11.792		52.51	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T5	123.33	1.323	10	86.060	A	0.000	12.020	6.192	51.52	18.869	0.000
126.67-120.00					B	0.000	12.020		51.52	20.596	0.000
					C	0.000	12.020		51.52	0.000	0.000
T6	110.00	1.291	10	289.399	A	0.000	38.583	22.130	57.36	57.426	0.000
120.00-100.00					B	0.000	38.583		57.36	71.067	0.000
					C	0.000	38.583		57.36	0.000	0.000
T7	95.00	1.252	10	162.540	A	0.000	21.227	11.074	52.17	28.934	0.000
100.00-90.00					B	0.000	21.227		52.17	35.534	0.000
					C	0.000	21.227		52.17	0.000	0.000
T8 90.00-80.00	85.00	1.223	10	175.715	A	0.000	21.747	11.074	50.92	28.934	0.000
					B	0.000	21.747		50.92	35.534	0.000
					C	0.000	21.747		50.92	0.000	0.000
T9 80.00-60.00	70.00	1.174	9	390.971	A	30.496	24.135	30.496	55.82	57.930	0.000
					B	30.496	24.135		55.82	71.067	0.000
					C	30.496	24.135		55.82	0.000	0.000
T10	50.00	1.094	9	440.971	A	30.496	26.417	30.496	53.58	59.127	0.000
60.00-40.00					B	30.496	26.417		53.58	71.067	0.000
					C	30.496	26.417		53.58	0.000	0.000
T11	35.00	1.015	8	239.236	A	15.248	14.079	15.248	51.99	29.564	0.000
40.00-30.00					B	15.248	14.079		51.99	35.534	0.000
					C	15.248	14.079		51.99	0.000	0.000
T12	25.00	0.945	7	251.736	A	15.248	14.667	15.248	50.97	29.564	0.000
30.00-20.00					B	15.248	14.667		50.97	35.534	0.000
					C	15.248	14.667		50.97	0.000	0.000
T13 20.00-0.00	10.00	0.85	7	541.368	A	30.078	28.122	30.078	51.68	59.127	0.000
					B	30.078	28.122		51.68	71.067	0.000
					C	30.078	28.122		51.68	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	52	1	1	13.713	2381.65	119.08	C
180.00-160.00			B	0.139	2.812		1	1	13.713			
			C	0.139	2.812		1	1	13.713			
T2	250.60	1495.62	A	0.143	2.796	51	1	1	15.269	4278.29	213.91	C
160.00-140.00			B	0.143	2.796		1	1	15.269			
			C	0.143	2.796		1	1	15.269			
T3	83.53	825.91	A	0.151	2.77	50	1	1	5.828	1479.17	221.88	C
140.00-133.33			B	0.151	2.77		1	1	5.828			
			C	0.151	2.77		1	1	5.828			
T4	141.17	842.18	A	0.145	2.791	49	1	1	5.951	1932.64	289.90	C
133.33-126.67			B	0.145	2.791		1	1	5.951			
			C	0.145	2.791		1	1	5.951			
T5	199.71	1080.40	A	0.14	2.81	49	1	1	6.074	2337.39	350.61	C
126.67-120.00			B	0.14	2.81		1	1	6.074			
			C	0.14	2.81		1	1	6.074			
T6	656.57	3821.31	A	0.133	2.834	47	1	1	18.396	7290.52	364.53	C
120.00-100.00			B	0.133	2.834		1	1	18.396			
			C	0.133	2.834		1	1	18.396			
T7	328.81	1682.80	A	0.131	2.844	46	1	1	10.175	3655.58	365.56	C
100.00-90.00			B	0.131	2.844		1	1	10.175			
			C	0.131	2.844		1	1	10.175			
T8	328.81	1722.73	A	0.124	2.87	45	1	1	10.439	3610.09	361.01	C
90.00-80.00			B	0.124	2.87		1	1	10.439			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.124	2.87		1	1	10.439			
T9	657.77	4897.54	A	0.14	2.81	43	1	1	44.041	9275.30	463.76	C
80.00-60.00			B	0.14	2.81		1	1	44.041			
			C	0.14	2.81		1	1	44.041			
T10	660.62	5700.46	A	0.129	2.85	40	1	1	45.397	8874.80	443.74	C
60.00-40.00			B	0.129	2.85		1	1	45.397			
			C	0.129	2.85		1	1	45.397			
T11	330.31	2942.46	A	0.123	2.875	37	1	1	23.207	4180.72	418.07	C
40.00-30.00			B	0.123	2.875		1	1	23.207			
			C	0.123	2.875		1	1	23.207			
T12	330.31	3139.03	A	0.119	2.889	35	1	1	23.536	3932.90	393.29	C
30.00-20.00			B	0.119	2.889		1	1	23.536			
			C	0.119	2.889		1	1	23.536			
T13	660.62	6187.56	A	0.108	2.934	31	1	1	45.922	7039.11	351.96	C
20.00-0.00			B	0.108	2.934		1	1	45.922			
			C	0.108	2.934		1	1	45.922			
Sum Weight:	4673.47	35588.43						OTM	4652.45 kip-ft	60268.17		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	52	0.825	1	13.713	2381.65	119.08	C
180.00-160.00			B	0.139	2.812		0.825	1	13.713			
			C	0.139	2.812		0.825	1	13.713			
T2	250.60	1495.62	A	0.143	2.796	51	0.825	1	15.269	4278.29	213.91	C
160.00-140.00			B	0.143	2.796		0.825	1	15.269			
			C	0.143	2.796		0.825	1	15.269			
T3	83.53	825.91	A	0.151	2.77	50	0.825	1	5.828	1479.17	221.88	C
140.00-133.33			B	0.151	2.77		0.825	1	5.828			
			C	0.151	2.77		0.825	1	5.828			
T4	141.17	842.18	A	0.145	2.791	49	0.825	1	5.951	1932.64	289.90	C
133.33-126.67			B	0.145	2.791		0.825	1	5.951			
			C	0.145	2.791		0.825	1	5.951			
T5	199.71	1080.40	A	0.14	2.81	49	0.825	1	6.074	2337.39	350.61	C
126.67-120.00			B	0.14	2.81		0.825	1	6.074			
			C	0.14	2.81		0.825	1	6.074			
T6	656.57	3821.31	A	0.133	2.834	47	0.825	1	18.396	7290.52	364.53	C
120.00-100.00			B	0.133	2.834		0.825	1	18.396			
			C	0.133	2.834		0.825	1	18.396			
T7	328.81	1682.80	A	0.131	2.844	46	0.825	1	10.175	3655.58	365.56	C
100.00-90.00			B	0.131	2.844		0.825	1	10.175			
			C	0.131	2.844		0.825	1	10.175			
T8	328.81	1722.73	A	0.124	2.87	45	0.825	1	10.439	3610.09	361.01	C
90.00-80.00			B	0.124	2.87		0.825	1	10.439			
			C	0.124	2.87		0.825	1	10.439			
T9	657.77	4897.54	A	0.14	2.81	43	0.825	1	38.705	8725.01	436.25	C
80.00-60.00			B	0.14	2.81		0.825	1	38.705			
			C	0.14	2.81		0.825	1	38.705			
T10	660.62	5700.46	A	0.129	2.85	40	0.825	1	40.060	8354.78	417.74	C
60.00-40.00			B	0.129	2.85		0.825	1	40.060			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.129	2.85		0.825	1	40.060			
T11	330.31	2942.46	A	0.123	2.875	37	0.825	1	20.539	3937.41	393.74	C
40.00-30.00			B	0.123	2.875		0.825	1	20.539			
			C	0.123	2.875		0.825	1	20.539			
T12	330.31	3139.03	A	0.119	2.889	35	0.825	1	20.868	3705.08	370.51	C
30.00-20.00			B	0.119	2.889		0.825	1	20.868			
			C	0.119	2.889		0.825	1	20.868			
T13	660.62	6187.56	A	0.108	2.934	31	0.825	1	40.659	6628.78	331.44	C
20.00-0.00			B	0.108	2.934		0.825	1	40.659			
			C	0.108	2.934		0.825	1	40.659			
Sum Weight:	4673.47	35588.43						OTM	4569.61 kip-ft	58316.41		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	52	0.8	1	13.713	2381.65	119.08	C
180.00-160.00			B	0.139	2.812		0.8	1	13.713			
			C	0.139	2.812		0.8	1	13.713			
T2	250.60	1495.62	A	0.143	2.796	51	0.8	1	15.269	4278.29	213.91	C
160.00-140.00			B	0.143	2.796		0.8	1	15.269			
			C	0.143	2.796		0.8	1	15.269			
T3	83.53	825.91	A	0.151	2.77	50	0.8	1	5.828	1479.17	221.88	C
140.00-133.33			B	0.151	2.77		0.8	1	5.828			
			C	0.151	2.77		0.8	1	5.828			
T4	141.17	842.18	A	0.145	2.791	49	0.8	1	5.951	1932.64	289.90	C
133.33-126.67			B	0.145	2.791		0.8	1	5.951			
			C	0.145	2.791		0.8	1	5.951			
T5	199.71	1080.40	A	0.14	2.81	49	0.8	1	6.074	2337.39	350.61	C
126.67-120.00			B	0.14	2.81		0.8	1	6.074			
			C	0.14	2.81		0.8	1	6.074			
T6	656.57	3821.31	A	0.133	2.834	47	0.8	1	18.396	7290.52	364.53	C
120.00-100.00			B	0.133	2.834		0.8	1	18.396			
			C	0.133	2.834		0.8	1	18.396			
T7	328.81	1682.80	A	0.131	2.844	46	0.8	1	10.175	3655.58	365.56	C
100.00-90.00			B	0.131	2.844		0.8	1	10.175			
			C	0.131	2.844		0.8	1	10.175			
T8	328.81	1722.73	A	0.124	2.87	45	0.8	1	10.439	3610.09	361.01	C
90.00-80.00			B	0.124	2.87		0.8	1	10.439			
			C	0.124	2.87		0.8	1	10.439			
T9	657.77	4897.54	A	0.14	2.81	43	0.8	1	37.942	8646.40	432.32	C
80.00-60.00			B	0.14	2.81		0.8	1	37.942			
			C	0.14	2.81		0.8	1	37.942			
T10	660.62	5700.46	A	0.129	2.85	40	0.8	1	39.297	8280.49	414.02	C
60.00-40.00			B	0.129	2.85		0.8	1	39.297			
			C	0.129	2.85		0.8	1	39.297			
T11	330.31	2942.46	A	0.123	2.875	37	0.8	1	20.158	3902.66	390.27	C
40.00-30.00			B	0.123	2.875		0.8	1	20.158			
			C	0.123	2.875		0.8	1	20.158			
T12	330.31	3139.03	A	0.119	2.889	35	0.8	1	20.487	3672.53	367.25	C
30.00-20.00			B	0.119	2.889		0.8	1	20.487			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.119	2.889		0.8	1	20.487			
T13	660.62	6187.56	A	0.108	2.934	31	0.8	1	39.907	6570.16	328.51	C
20.00-0.00			B	0.108	2.934		0.8	1	39.907			
			C	0.108	2.934		0.8	1	39.907			
Sum Weight:	4673.47	35588.43						OTM	4557.78 kip-ft	58037.59		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	52	0.85	1	13.713	2381.65	119.08	C
180.00-160.00			B	0.139	2.812		0.85	1	13.713			
			C	0.139	2.812		0.85	1	13.713			
T2	250.60	1495.62	A	0.143	2.796	51	0.85	1	15.269	4278.29	213.91	C
160.00-140.00			B	0.143	2.796		0.85	1	15.269			
			C	0.143	2.796		0.85	1	15.269			
T3	83.53	825.91	A	0.151	2.77	50	0.85	1	5.828	1479.17	221.88	C
140.00-133.33			B	0.151	2.77		0.85	1	5.828			
			C	0.151	2.77		0.85	1	5.828			
T4	141.17	842.18	A	0.145	2.791	49	0.85	1	5.951	1932.64	289.90	C
133.33-126.67			B	0.145	2.791		0.85	1	5.951			
			C	0.145	2.791		0.85	1	5.951			
T5	199.71	1080.40	A	0.14	2.81	49	0.85	1	6.074	2337.39	350.61	C
126.67-120.00			B	0.14	2.81		0.85	1	6.074			
			C	0.14	2.81		0.85	1	6.074			
T6	656.57	3821.31	A	0.133	2.834	47	0.85	1	18.396	7290.52	364.53	C
120.00-100.00			B	0.133	2.834		0.85	1	18.396			
			C	0.133	2.834		0.85	1	18.396			
T7	328.81	1682.80	A	0.131	2.844	46	0.85	1	10.175	3655.58	365.56	C
100.00-90.00			B	0.131	2.844		0.85	1	10.175			
			C	0.131	2.844		0.85	1	10.175			
T8	328.81	1722.73	A	0.124	2.87	45	0.85	1	10.439	3610.09	361.01	C
90.00-80.00			B	0.124	2.87		0.85	1	10.439			
			C	0.124	2.87		0.85	1	10.439			
T9	657.77	4897.54	A	0.14	2.81	43	0.85	1	39.467	8803.63	440.18	C
80.00-60.00			B	0.14	2.81		0.85	1	39.467			
			C	0.14	2.81		0.85	1	39.467			
T10	660.62	5700.46	A	0.129	2.85	40	0.85	1	40.822	8429.06	421.45	C
60.00-40.00			B	0.129	2.85		0.85	1	40.822			
			C	0.129	2.85		0.85	1	40.822			
T11	330.31	2942.46	A	0.123	2.875	37	0.85	1	20.920	3972.17	397.22	C
40.00-30.00			B	0.123	2.875		0.85	1	20.920			
			C	0.123	2.875		0.85	1	20.920			
T12	330.31	3139.03	A	0.119	2.889	35	0.85	1	21.249	3737.63	373.76	C
30.00-20.00			B	0.119	2.889		0.85	1	21.249			
			C	0.119	2.889		0.85	1	21.249			
T13	660.62	6187.56	A	0.108	2.934	31	0.85	1	41.411	6687.39	334.37	C
20.00-0.00			B	0.108	2.934		0.85	1	41.411			
			C	0.108	2.934		0.85	1	41.411			
Sum Weight:	4673.47	35588.43						OTM	4581.44 kip-ft	58595.23		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	552.25	3542.13	A	0.285	2.338	8	1	1	30.840	756.88	37.84	C
180.00-160.00			B	0.285	2.338		1	1	30.840			
			C	0.285	2.338		1	1	30.840			
T2	2085.47	3972.41	A	0.276	2.363	7	1	1	33.556	1522.96	76.15	C
160.00-140.00			B	0.276	2.363		1	1	33.556			
			C	0.276	2.363		1	1	33.556			
T3	688.56	1763.59	A	0.271	2.375	7	1	1	12.561	517.83	77.68	C
140.00-133.33			B	0.271	2.375		1	1	12.561			
			C	0.271	2.375		1	1	12.561			
T4	1094.31	1804.53	A	0.262	2.403	7	1	1	12.781	735.90	110.39	C
133.33-126.67			B	0.262	2.403		1	1	12.781			
			C	0.262	2.403		1	1	12.781			
T5	1448.99	2066.51	A	0.253	2.428	7	1	1	13.001	865.77	129.87	C
126.67-120.00			B	0.253	2.428		1	1	13.001			
			C	0.253	2.428		1	1	13.001			
T6	4685.33	6611.25	A	0.222	2.525	7	1	1	37.718	2676.54	133.83	C
120.00-100.00			B	0.222	2.525		1	1	37.718			
			C	0.222	2.525		1	1	37.718			
T7	2324.24	3212.73	A	0.212	2.555	7	1	1	20.193	1322.11	132.21	C
100.00-90.00			B	0.212	2.555		1	1	20.193			
			C	0.212	2.555		1	1	20.193			
T8	2300.96	3293.32	A	0.202	2.591	7	1	1	20.625	1297.89	129.79	C
90.00-80.00			B	0.202	2.591		1	1	20.625			
			C	0.202	2.591		1	1	20.625			
T9	4525.85	9216.41	A	0.204	2.583	6	1	1	61.883	2768.02	138.40	C
80.00-60.00			B	0.204	2.583		1	1	61.883			
			C	0.204	2.583		1	1	61.883			
T10	4454.43	10171.64	A	0.189	2.635	6	1	1	63.581	2627.83	131.39	C
60.00-40.00			B	0.189	2.635		1	1	63.581			
			C	0.189	2.635		1	1	63.581			
T11	2158.58	5180.35	A	0.178	2.67	6	1	1	32.335	1220.57	122.06	C
40.00-30.00			B	0.178	2.67		1	1	32.335			
			C	0.178	2.67		1	1	32.335			
T12	2096.98	5351.10	A	0.172	2.692	5	1	1	32.607	1134.77	113.48	C
30.00-20.00			B	0.172	2.692		1	1	32.607			
			C	0.172	2.692		1	1	32.607			
T13	3886.91	9751.96	A	0.152	2.766	5	1	1	62.036	1985.04	99.25	C
20.00-0.00			B	0.152	2.766		1	1	62.036			
			C	0.152	2.766		1	1	62.036			
Sum Weight:	32302.88	65937.92						OTM	1576.76 kip-ft	19432.13		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	552.25	3542.13	A	0.285	2.338	8	0.825	1	30.840	756.88	37.84	C
180.00-160.00			B	0.285	2.338		0.825	1	30.840			
			C	0.285	2.338		0.825	1	30.840			
T2	2085.47	3972.41	A	0.276	2.363	7	0.825	1	33.556	1522.96	76.15	C
160.00-140.00			B	0.276	2.363		0.825	1	33.556			
			C	0.276	2.363		0.825	1	33.556			
T3	688.56	1763.59	A	0.271	2.375	7	0.825	1	12.561	517.83	77.68	C
140.00-133.33			B	0.271	2.375		0.825	1	12.561			
			C	0.271	2.375		0.825	1	12.561			
T4	1094.31	1804.53	A	0.262	2.403	7	0.825	1	12.781	735.90	110.39	C
133.33-126.67			B	0.262	2.403		0.825	1	12.781			
			C	0.262	2.403		0.825	1	12.781			
T5	1448.99	2066.51	A	0.253	2.428	7	0.825	1	13.001	865.77	129.87	C
126.67-120.00			B	0.253	2.428		0.825	1	13.001			
			C	0.253	2.428		0.825	1	13.001			
T6	4685.33	6611.25	A	0.222	2.525	7	0.825	1	37.718	2676.54	133.83	C
120.00-100.00			B	0.222	2.525		0.825	1	37.718			
			C	0.222	2.525		0.825	1	37.718			
T7	2324.24	3212.73	A	0.212	2.555	7	0.825	1	20.193	1322.11	132.21	C
100.00-90.00			B	0.212	2.555		0.825	1	20.193			
			C	0.212	2.555		0.825	1	20.193			
T8	2300.96	3293.32	A	0.202	2.591	7	0.825	1	20.625	1297.89	129.79	C
90.00-80.00			B	0.202	2.591		0.825	1	20.625			
			C	0.202	2.591		0.825	1	20.625			
T9	4525.85	9216.41	A	0.204	2.583	6	0.825	1	55.495	2678.45	133.92	C
80.00-60.00			B	0.204	2.583		0.825	1	55.495			
			C	0.204	2.583		0.825	1	55.495			
T10	4454.43	10171.64	A	0.189	2.635	6	0.825	1	57.228	2543.17	127.16	C
60.00-40.00			B	0.189	2.635		0.825	1	57.228			
			C	0.189	2.635		0.825	1	57.228			
T11	2158.58	5180.35	A	0.178	2.67	6	0.825	1	29.176	1181.01	118.10	C
40.00-30.00			B	0.178	2.67		0.825	1	29.176			
			C	0.178	2.67		0.825	1	29.176			
T12	2096.98	5351.10	A	0.172	2.692	5	0.825	1	29.464	1097.79	109.78	C
30.00-20.00			B	0.172	2.692		0.825	1	29.464			
			C	0.172	2.692		0.825	1	29.464			
T13	3886.91	9751.96	A	0.152	2.766	5	0.825	1	55.907	1918.42	95.92	C
20.00-0.00			B	0.152	2.766		0.825	1	55.907			
			C	0.152	2.766		0.825	1	55.907			
Sum Weight:	32302.88	65937.92						OTM	1563.28 kip-ft	19114.73		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	552.25	3542.13	A	0.285	2.338	8	0.8	1	30.840	756.88	37.84	C
180.00-160.00			B	0.285	2.338		0.8	1	30.840			
			C	0.285	2.338		0.8	1	30.840			
T2	2085.47	3972.41	A	0.276	2.363	7	0.8	1	33.556	1522.96	76.15	C
160.00-140.00			B	0.276	2.363		0.8	1	33.556			
			C	0.276	2.363		0.8	1	33.556			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T3	688.56	1763.59	A	0.271	2.375	7	0.8	1	12.561	517.83	77.68	C
140.00-133.33			B	0.271	2.375		0.8	1	12.561			
			C	0.271	2.375		0.8	1	12.561			
T4	1094.31	1804.53	A	0.262	2.403	7	0.8	1	12.781	735.90	110.39	C
133.33-126.67			B	0.262	2.403		0.8	1	12.781			
			C	0.262	2.403		0.8	1	12.781			
T5	1448.99	2066.51	A	0.253	2.428	7	0.8	1	13.001	865.77	129.87	C
126.67-120.00			B	0.253	2.428		0.8	1	13.001			
			C	0.253	2.428		0.8	1	13.001			
T6	4685.33	6611.25	A	0.222	2.525	7	0.8	1	37.718	2676.54	133.83	C
120.00-100.00			B	0.222	2.525		0.8	1	37.718			
			C	0.222	2.525		0.8	1	37.718			
T7	2324.24	3212.73	A	0.212	2.555	7	0.8	1	20.193	1322.11	132.21	C
100.00-90.00			B	0.212	2.555		0.8	1	20.193			
			C	0.212	2.555		0.8	1	20.193			
T8	2300.96	3293.32	A	0.202	2.591	7	0.8	1	20.625	1297.89	129.79	C
90.00-80.00			B	0.202	2.591		0.8	1	20.625			
			C	0.202	2.591		0.8	1	20.625			
T9	4525.85	9216.41	A	0.204	2.583	6	0.8	1	54.583	2665.65	133.28	C
80.00-60.00			B	0.204	2.583		0.8	1	54.583			
			C	0.204	2.583		0.8	1	54.583			
T10	4454.43	10171.64	A	0.189	2.635	6	0.8	1	56.321	2531.08	126.55	C
60.00-40.00			B	0.189	2.635		0.8	1	56.321			
			C	0.189	2.635		0.8	1	56.321			
T11	2158.58	5180.35	A	0.178	2.67	6	0.8	1	28.725	1175.36	117.54	C
40.00-30.00			B	0.178	2.67		0.8	1	28.725			
			C	0.178	2.67		0.8	1	28.725			
T12	2096.98	5351.10	A	0.172	2.692	5	0.8	1	29.016	1092.51	109.25	C
30.00-20.00			B	0.172	2.692		0.8	1	29.016			
			C	0.172	2.692		0.8	1	29.016			
T13	3886.91	9751.96	A	0.152	2.766	5	0.8	1	55.032	1908.90	95.45	C
20.00-0.00			B	0.152	2.766		0.8	1	55.032			
			C	0.152	2.766		0.8	1	55.032			
Sum Weight:	32302.88	65937.92						OTM	1561.36 kip-ft	19069.39		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	552.25	3542.13	A	0.285	2.338	8	0.85	1	30.840	756.88	37.84	C
180.00-160.00			B	0.285	2.338		0.85	1	30.840			
			C	0.285	2.338		0.85	1	30.840			
T2	2085.47	3972.41	A	0.276	2.363	7	0.85	1	33.556	1522.96	76.15	C
160.00-140.00			B	0.276	2.363		0.85	1	33.556			
			C	0.276	2.363		0.85	1	33.556			
T3	688.56	1763.59	A	0.271	2.375	7	0.85	1	12.561	517.83	77.68	C
140.00-133.33			B	0.271	2.375		0.85	1	12.561			
			C	0.271	2.375		0.85	1	12.561			
T4	1094.31	1804.53	A	0.262	2.403	7	0.85	1	12.781	735.90	110.39	C
133.33-126.67			B	0.262	2.403		0.85	1	12.781			
			C	0.262	2.403		0.85	1	12.781			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T5	1448.99	2066.51	A	0.253	2.428	7	0.85	1	13.001	865.77	129.87	C
126.67-120.00			B	0.253	2.428		0.85	1	13.001			
			C	0.253	2.428		0.85	1	13.001			
T6	4685.33	6611.25	A	0.222	2.525	7	0.85	1	37.718	2676.54	133.83	C
120.00-100.00			B	0.222	2.525		0.85	1	37.718			
			C	0.222	2.525		0.85	1	37.718			
T7	2324.24	3212.73	A	0.212	2.555	7	0.85	1	20.193	1322.11	132.21	C
100.00-90.00			B	0.212	2.555		0.85	1	20.193			
			C	0.212	2.555		0.85	1	20.193			
T8	2300.96	3293.32	A	0.202	2.591	7	0.85	1	20.625	1297.89	129.79	C
90.00-80.00			B	0.202	2.591		0.85	1	20.625			
			C	0.202	2.591		0.85	1	20.625			
T9	4525.85	9216.41	A	0.204	2.583	6	0.85	1	56.408	2691.24	134.56	C
80.00-60.00			B	0.204	2.583		0.85	1	56.408			
			C	0.204	2.583		0.85	1	56.408			
T10	4454.43	10171.64	A	0.189	2.635	6	0.85	1	58.136	2555.27	127.76	C
60.00-40.00			B	0.189	2.635		0.85	1	58.136			
			C	0.189	2.635		0.85	1	58.136			
T11	2158.58	5180.35	A	0.178	2.67	6	0.85	1	29.627	1186.66	118.67	C
40.00-30.00			B	0.178	2.67		0.85	1	29.627			
			C	0.178	2.67		0.85	1	29.627			
T12	2096.98	5351.10	A	0.172	2.692	5	0.85	1	29.913	1103.07	110.31	C
30.00-20.00			B	0.172	2.692		0.85	1	29.913			
			C	0.172	2.692		0.85	1	29.913			
T13	3886.91	9751.96	A	0.152	2.766	5	0.85	1	56.783	1927.94	96.40	C
20.00-0.00			B	0.152	2.766		0.85	1	56.783			
			C	0.152	2.766		0.85	1	56.783			
Sum Weight:	32302.88	65937.92						OTM	1565.21 kip-ft	19160.08		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	11	1	1	13.993	514.75	25.74	C
180.00-160.00			B	0.139	2.812		1	1	13.993			
			C	0.139	2.812		1	1	13.993			
T2	250.60	1495.62	A	0.143	2.796	11	1	1	16.334	938.67	46.93	C
160.00-140.00			B	0.143	2.796		1	1	16.334			
			C	0.143	2.796		1	1	16.334			
T3	83.53	825.91	A	0.151	2.77	11	1	1	6.561	333.37	50.00	C
140.00-133.33			B	0.151	2.77		1	1	6.561			
			C	0.151	2.77		1	1	6.561			
T4	141.17	842.18	A	0.145	2.791	10	1	1	6.687	429.97	64.50	C
133.33-126.67			B	0.145	2.791		1	1	6.687			
			C	0.145	2.791		1	1	6.687			
T5	199.71	1080.40	A	0.14	2.81	10	1	1	6.810	516.14	77.42	C
126.67-120.00			B	0.14	2.81		1	1	6.810			
			C	0.14	2.81		1	1	6.810			
T6	656.57	3821.31	A	0.133	2.834	10	1	1	21.840	1636.93	81.85	C
120.00-100.00			B	0.133	2.834		1	1	21.840			
			C	0.133	2.834		1	1	21.840			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	328.81	1682.80	A	0.131	2.844	10	1	1	12.011	822.24	82.22	C
100.00-90.00			B	0.131	2.844		1	1	12.011			
			C	0.131	2.844		1	1	12.011			
T8	328.81	1722.73	A	0.124	2.87	10	1	1	12.296	812.43	81.24	C
90.00-80.00			B	0.124	2.87		1	1	12.296			
			C	0.124	2.87		1	1	12.296			
T9	657.77	4897.54	A	0.14	2.81	9	1	1	44.170	1978.63	98.93	C
80.00-60.00			B	0.14	2.81		1	1	44.170			
			C	0.14	2.81		1	1	44.170			
T10	660.62	5700.46	A	0.129	2.85	9	1	1	45.441	1891.41	94.57	C
60.00-40.00			B	0.129	2.85		1	1	45.441			
			C	0.129	2.85		1	1	45.441			
T11	330.31	2942.46	A	0.123	2.875	8	1	1	23.207	890.57	89.06	C
40.00-30.00			B	0.123	2.875		1	1	23.207			
			C	0.123	2.875		1	1	23.207			
T12	330.31	3139.03	A	0.119	2.889	7	1	1	23.536	837.78	83.78	C
30.00-20.00			B	0.119	2.889		1	1	23.536			
			C	0.119	2.889		1	1	23.536			
T13	660.62	6187.56	A	0.108	2.934	7	1	1	45.955	1500.00	75.00	C
20.00-0.00			B	0.108	2.934		1	1	45.955			
			C	0.108	2.934		1	1	45.955			
Sum Weight:	4673.47	35588.43						OTM	1020.84 kip-ft	13102.88		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	11	0.825	1	13.993	514.75	25.74	C
180.00-160.00			B	0.139	2.812		0.825	1	13.993			
			C	0.139	2.812		0.825	1	13.993			
T2	250.60	1495.62	A	0.143	2.796	11	0.825	1	16.334	938.67	46.93	C
160.00-140.00			B	0.143	2.796		0.825	1	16.334			
			C	0.143	2.796		0.825	1	16.334			
T3	83.53	825.91	A	0.151	2.77	11	0.825	1	6.561	333.37	50.00	C
140.00-133.33			B	0.151	2.77		0.825	1	6.561			
			C	0.151	2.77		0.825	1	6.561			
T4	141.17	842.18	A	0.145	2.791	10	0.825	1	6.687	429.97	64.50	C
133.33-126.67			B	0.145	2.791		0.825	1	6.687			
			C	0.145	2.791		0.825	1	6.687			
T5	199.71	1080.40	A	0.14	2.81	10	0.825	1	6.810	516.14	77.42	C
126.67-120.00			B	0.14	2.81		0.825	1	6.810			
			C	0.14	2.81		0.825	1	6.810			
T6	656.57	3821.31	A	0.133	2.834	10	0.825	1	21.840	1636.93	81.85	C
120.00-100.00			B	0.133	2.834		0.825	1	21.840			
			C	0.133	2.834		0.825	1	21.840			
T7	328.81	1682.80	A	0.131	2.844	10	0.825	1	12.011	822.24	82.22	C
100.00-90.00			B	0.131	2.844		0.825	1	12.011			
			C	0.131	2.844		0.825	1	12.011			
T8	328.81	1722.73	A	0.124	2.87	10	0.825	1	12.296	812.43	81.24	C
90.00-80.00			B	0.124	2.87		0.825	1	12.296			
			C	0.124	2.87		0.825	1	12.296			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T9	657.77	4897.54	A	0.14	2.81	9	0.825	1	38.833	1861.41	93.07	C
80.00-60.00			B	0.14	2.81		0.825	1	38.833			
			C	0.14	2.81		0.825	1	38.833			
T10	660.62	5700.46	A	0.129	2.85	9	0.825	1	40.104	1780.64	89.03	C
60.00-40.00			B	0.129	2.85		0.825	1	40.104			
			C	0.129	2.85		0.825	1	40.104			
T11	330.31	2942.46	A	0.123	2.875	8	0.825	1	20.539	838.74	83.87	C
40.00-30.00			B	0.123	2.875		0.825	1	20.539			
			C	0.123	2.875		0.825	1	20.539			
T12	330.31	3139.03	A	0.119	2.889	7	0.825	1	20.868	789.25	78.92	C
30.00-20.00			B	0.119	2.889		0.825	1	20.868			
			C	0.119	2.889		0.825	1	20.868			
T13	660.62	6187.56	A	0.108	2.934	7	0.825	1	40.692	1412.60	70.63	C
20.00-0.00			B	0.108	2.934		0.825	1	40.692			
			C	0.108	2.934		0.825	1	40.692			
Sum Weight:	4673.47	35588.43						OTM	1003.20 kip-ft	12687.12		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	11	0.8	1	13.993	514.75	25.74	C
180.00-160.00			B	0.139	2.812		0.8	1	13.993			
			C	0.139	2.812		0.8	1	13.993			
T2	250.60	1495.62	A	0.143	2.796	11	0.8	1	16.334	938.67	46.93	C
160.00-140.00			B	0.143	2.796		0.8	1	16.334			
			C	0.143	2.796		0.8	1	16.334			
T3	83.53	825.91	A	0.151	2.77	11	0.8	1	6.561	333.37	50.00	C
140.00-133.33			B	0.151	2.77		0.8	1	6.561			
			C	0.151	2.77		0.8	1	6.561			
T4	141.17	842.18	A	0.145	2.791	10	0.8	1	6.687	429.97	64.50	C
133.33-126.67			B	0.145	2.791		0.8	1	6.687			
			C	0.145	2.791		0.8	1	6.687			
T5	199.71	1080.40	A	0.14	2.81	10	0.8	1	6.810	516.14	77.42	C
126.67-120.00			B	0.14	2.81		0.8	1	6.810			
			C	0.14	2.81		0.8	1	6.810			
T6	656.57	3821.31	A	0.133	2.834	10	0.8	1	21.840	1636.93	81.85	C
120.00-100.00			B	0.133	2.834		0.8	1	21.840			
			C	0.133	2.834		0.8	1	21.840			
T7	328.81	1682.80	A	0.131	2.844	10	0.8	1	12.011	822.24	82.22	C
100.00-90.00			B	0.131	2.844		0.8	1	12.011			
			C	0.131	2.844		0.8	1	12.011			
T8	328.81	1722.73	A	0.124	2.87	10	0.8	1	12.296	812.43	81.24	C
90.00-80.00			B	0.124	2.87		0.8	1	12.296			
			C	0.124	2.87		0.8	1	12.296			
T9	657.77	4897.54	A	0.14	2.81	9	0.8	1	38.071	1844.66	92.23	C
80.00-60.00			B	0.14	2.81		0.8	1	38.071			
			C	0.14	2.81		0.8	1	38.071			
T10	660.62	5700.46	A	0.129	2.85	9	0.8	1	39.342	1764.81	88.24	C
60.00-40.00			B	0.129	2.85		0.8	1	39.342			
			C	0.129	2.85		0.8	1	39.342			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T11	330.31	2942.46	A	0.123	2.875	8	0.8	1	20.158	831.34	83.13	C
40.00-30.00			B	0.123	2.875		0.8	1	20.158			
			C	0.123	2.875		0.8	1	20.158			
T12	330.31	3139.03	A	0.119	2.889	7	0.8	1	20.487	782.32	78.23	C
30.00-20.00			B	0.119	2.889		0.8	1	20.487			
			C	0.119	2.889		0.8	1	20.487			
T13	660.62	6187.56	A	0.108	2.934	7	0.8	1	39.940	1400.11	70.01	C
20.00-0.00			B	0.108	2.934		0.8	1	39.940			
			C	0.108	2.934		0.8	1	39.940			
Sum Weight:	4673.47	35588.43						OTM	1000.68 kip-ft	12627.73		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	44.64	1250.43	A	0.139	2.812	11	0.85	1	13.993	514.75	25.74	C
180.00-160.00			B	0.139	2.812		0.85	1	13.993			
			C	0.139	2.812		0.85	1	13.993			
T2	250.60	1495.62	A	0.143	2.796	11	0.85	1	16.334	938.67	46.93	C
160.00-140.00			B	0.143	2.796		0.85	1	16.334			
			C	0.143	2.796		0.85	1	16.334			
T3	83.53	825.91	A	0.151	2.77	11	0.85	1	6.561	333.37	50.00	C
140.00-133.33			B	0.151	2.77		0.85	1	6.561			
			C	0.151	2.77		0.85	1	6.561			
T4	141.17	842.18	A	0.145	2.791	10	0.85	1	6.687	429.97	64.50	C
133.33-126.67			B	0.145	2.791		0.85	1	6.687			
			C	0.145	2.791		0.85	1	6.687			
T5	199.71	1080.40	A	0.14	2.81	10	0.85	1	6.810	516.14	77.42	C
126.67-120.00			B	0.14	2.81		0.85	1	6.810			
			C	0.14	2.81		0.85	1	6.810			
T6	656.57	3821.31	A	0.133	2.834	10	0.85	1	21.840	1636.93	81.85	C
120.00-100.00			B	0.133	2.834		0.85	1	21.840			
			C	0.133	2.834		0.85	1	21.840			
T7	328.81	1682.80	A	0.131	2.844	10	0.85	1	12.011	822.24	82.22	C
100.00-90.00			B	0.131	2.844		0.85	1	12.011			
			C	0.131	2.844		0.85	1	12.011			
T8	328.81	1722.73	A	0.124	2.87	10	0.85	1	12.296	812.43	81.24	C
90.00-80.00			B	0.124	2.87		0.85	1	12.296			
			C	0.124	2.87		0.85	1	12.296			
T9	657.77	4897.54	A	0.14	2.81	9	0.85	1	39.595	1878.15	93.91	C
80.00-60.00			B	0.14	2.81		0.85	1	39.595			
			C	0.14	2.81		0.85	1	39.595			
T10	660.62	5700.46	A	0.129	2.85	9	0.85	1	40.867	1796.46	89.82	C
60.00-40.00			B	0.129	2.85		0.85	1	40.867			
			C	0.129	2.85		0.85	1	40.867			
T11	330.31	2942.46	A	0.123	2.875	8	0.85	1	20.920	846.14	84.61	C
40.00-30.00			B	0.123	2.875		0.85	1	20.920			
			C	0.123	2.875		0.85	1	20.920			
T12	330.31	3139.03	A	0.119	2.889	7	0.85	1	21.249	796.18	79.62	C
30.00-20.00			B	0.119	2.889		0.85	1	21.249			
			C	0.119	2.889		0.85	1	21.249			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T13	660.62	6187.56	A	0.108	2.934	7	0.85	1	41.444	1425.08	71.25	C
20.00-0.00			B	0.108	2.934		0.85	1	41.444			
			C	0.108	2.934		0.85	1	41.444			
Sum Weight:	4673.47	35588.43						OTM	1005.72 kip-ft	12746.52		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	17198.81					
Bracing Weight	18389.62					
Total Member Self-Weight	35588.43			-10.77	2.61	
Total Weight	52847.59			-10.77	2.61	
Wind 0 deg - No Ice		-179.86	-84806.58	-8192.73	32.56	-14.56
Wind 30 deg - No Ice		40864.67	-71915.92	-7021.86	-3938.10	-52.62
Wind 45 deg - No Ice		57623.43	-58468.69	-5718.07	-5566.23	-66.31
Wind 60 deg - No Ice		70258.99	-41135.27	-4029.02	-6793.84	-75.58
Wind 90 deg - No Ice		81530.91	1.89	-12.32	-7840.42	-79.19
Wind 120 deg - No Ice		72110.00	42199.40	4042.48	-6859.65	-61.93
Wind 135 deg - No Ice		58352.19	59136.33	5705.91	-5586.43	-46.40
Wind 150 deg - No Ice		40959.64	71758.03	6970.48	-3951.64	-27.78
Wind 180 deg - No Ice		200.47	82340.41	8034.82	-30.99	13.75
Wind 210 deg - No Ice		-40709.28	71637.73	6951.08	3915.82	50.53
Wind 225 deg - No Ice		-57364.84	58169.86	5643.63	5525.67	64.25
Wind 240 deg - No Ice		-71934.60	41951.51	4001.87	6835.71	73.51
Wind 270 deg - No Ice		-81472.69	-328.15	-66.97	7835.34	77.43
Wind 300 deg - No Ice		-70302.93	-41411.52	-4074.65	6804.95	60.91
Wind 315 deg - No Ice		-57800.68	-58689.90	-5754.56	5600.15	45.33
Wind 330 deg - No Ice		-41133.60	-72087.29	-7050.31	3987.65	26.82
Member Ice	30349.49					
Total Weight Ice	127922.08			-78.11	9.69	
Wind 0 deg - Ice		-27.43	-24408.79	-2369.35	14.25	0.40
Wind 30 deg - Ice		11930.54	-20890.89	-2050.37	-1107.49	-10.42
Wind 45 deg - Ice		16844.40	-17017.16	-1685.74	-1569.46	-14.85
Wind 60 deg - Ice		20578.90	-11999.75	-1212.16	-1920.48	-18.29
Wind 90 deg - Ice		23828.22	-0.61	-78.51	-2218.35	-21.40
Wind 120 deg - Ice		20879.41	12171.48	1061.43	-1931.11	-18.83
Wind 135 deg - Ice		16961.92	17125.05	1530.96	-1572.59	-15.53
Wind 150 deg - Ice		11943.93	20865.10	1889.30	-1109.35	-11.17
Wind 180 deg - Ice		30.68	24008.93	2191.16	4.55	-0.53
Wind 210 deg - Ice		-11906.05	20847.05	1886.40	1122.53	10.09
Wind 225 deg - Ice		-16803.65	16970.07	1521.19	1581.62	14.53
Wind 240 deg - Ice		-20852.68	12133.99	1055.30	1946.05	17.96
Wind 270 deg - Ice		-23819.05	-50.80	-86.81	2236.10	21.13
Wind 300 deg - Ice		-20584.91	-12041.71	-1219.08	1940.63	18.67
Wind 315 deg - Ice		-16871.04	-17050.73	-1691.27	1593.14	15.36
Wind 330 deg - Ice		-11971.34	-20916.99	-2054.70	1133.58	11.02
Total Weight	52847.59			-10.77	2.61	
Wind 0 deg - Service		-38.31	-18330.00	-1775.78	9.33	-3.10
Wind 30 deg - Service		8837.25	-15548.60	-1522.37	-851.38	-11.21
Wind 45 deg - Service		12461.98	-12642.03	-1239.91	-1204.37	-14.13

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - Service		15195.64	-8894.89	-873.94	-1470.61	-16.10
Wind 90 deg - Service		17632.22	0.40	-3.42	-1697.54	-16.87
Wind 120 deg - Service		15589.94	9121.57	875.22	-1484.63	-13.19
Wind 135 deg - Service		12617.22	12784.25	1235.73	-1208.68	-9.88
Wind 150 deg - Service		8857.48	15514.96	1509.84	-854.27	-5.92
Wind 180 deg - Service		42.70	17804.66	1740.56	-4.20	2.93
Wind 210 deg - Service		-8804.14	15489.34	1505.71	851.43	10.76
Wind 225 deg - Service		-12406.89	12578.38	1222.47	1200.53	13.69
Wind 240 deg - Service		-15552.58	9068.76	866.57	1484.32	15.66
Wind 270 deg - Service		-17619.82	-69.90	-15.06	1701.25	16.49
Wind 300 deg - Service		-15205.00	-8953.73	-883.66	1477.77	12.97
Wind 315 deg - Service		-12499.74	-12689.16	-1247.68	1216.39	9.66
Wind 330 deg - Service		-8894.53	-15585.10	-1528.43	866.73	5.71

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice

Comb. No.	Description
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	31	2501.38	-0.27	-0.20
			Max. Compression	2	-4179.54	-0.09	0.02
			Max. Mx	12	-396.13	-0.52	-0.04
			Max. My	33	-144.55	-0.02	-0.92
			Max. Vy	3	326.71	0.52	0.30
			Max. Vx	32	-472.34	-0.02	0.75
		Diagonal	Max Tension	5	3954.82	0.00	0.00
			Max. Compression	4	-4022.17	0.00	0.00
			Max. Mx	34	-75.32	0.05	0.00
			Max. Vy	34	24.39	0.00	0.00
		Horizontal	Max Tension	4	2155.72	-0.01	-0.00
			Max. Compression	5	-2161.24	-0.01	-0.00
			Max. Mx	49	-149.07	-0.02	-0.00
			Max. My	3	-303.79	-0.00	0.00
			Max. Vy	49	25.79	-0.02	-0.00
			Max. Vx	3	-0.81	-0.00	0.00
		Top Girt	Max Tension	33	324.62	-0.01	0.00
			Max. Compression	2	-354.96	-0.01	-0.00
			Max. Mx	49	13.70	-0.02	-0.00
			Max. My	3	-50.47	-0.00	0.00
			Max. Vy	49	-24.91	-0.02	-0.00
			Max. Vx	3	-0.13	0.00	0.00
		Inner Bracing	Max Tension	3	1.86	0.00	0.00
			Max. Compression	18	-1.85	0.00	0.00
			Max. Mx	34	-0.11	-0.02	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	34	20.88	0.00	0.00
T2	160 - 140	Leg	Max Tension	19	24002.44	-0.10	-0.06
			Max. Compression	2	-30698.51	0.18	0.11
			Max. Mx	18	23098.58	-0.19	-0.11
			Max. My	2	10431.43	-0.10	0.34
			Max. Vy	18	-2767.36	0.10	-0.02
			Max. Vx	10	2801.24	0.02	-0.14
		Diagonal	Max Tension	5	9019.01	0.00	0.00
			Max. Compression	4	-9090.04	0.00	0.00
			Max. Mx	34	-209.59	0.06	0.00
			Max. Vy	34	-29.98	0.00	0.00
		Horizontal	Max Tension	4	5634.12	-0.01	-0.00
			Max. Compression	5	-5604.80	-0.01	-0.00
			Max. Mx	48	-78.60	-0.03	-0.00
			Max. My	2	2587.30	-0.01	0.01
			Max. Vy	48	-29.98	-0.03	-0.00
			Max. Vx	2	-2.66	-0.01	0.01
		Inner Bracing	Max Tension	3	5.24	0.00	0.00
			Max. Compression	18	-7.11	0.00	0.00
			Max. Mx	34	-3.45	-0.03	0.00
			Max. Vy	34	24.00	0.00	0.00
T3	140 - 133.333	Leg	Max Tension	19	33406.10	-0.19	-0.11
			Max. Compression	2	-40659.37	0.14	0.01
			Max. Mx	18	32528.85	-0.19	-0.11
			Max. My	2	15020.76	-0.10	0.34
			Max. Vy	8	-71.64	-0.18	0.11
			Max. Vx	18	-164.83	0.09	-0.34
		Diagonal	Max Tension	5	9118.07	0.00	0.00
			Max. Compression	4	-9227.94	0.00	0.00
			Max. Mx	34	-231.97	0.08	0.00
			Max. Vy	34	-36.43	0.00	0.00
		Horizontal	Max Tension	4	5958.94	-0.02	-0.00
			Max. Compression	5	-5929.49	-0.01	-0.00
			Max. Mx	48	-36.03	-0.05	-0.00
			Max. My	18	808.97	-0.03	-0.01
			Max. Vy	48	-38.48	-0.05	-0.00
			Max. Vx	18	-2.27	0.00	0.00
		Inner Bracing	Max Tension	3	3.88	0.00	0.00
			Max. Compression	18	-6.69	0.00	0.00
			Max. Mx	34	-4.04	-0.03	0.00
			Max. Vy	34	-25.42	0.00	0.00
T4	133.333 - 126.667	Leg	Max Tension	19	42457.70	-0.15	-0.01
			Max. Compression	2	-52557.87	1.32	0.05
			Max. Mx	18	39463.21	-1.41	-0.05
			Max. My	32	-4387.65	-0.05	1.41
			Max. Vy	28	-2744.92	-0.15	0.00
			Max. Vx	4	-2649.34	-0.02	-0.02
		Diagonal	Max Tension	5	12807.03	0.00	0.00
			Max. Compression	4	-12925.42	0.00	0.00
			Max. Mx	34	-229.15	0.09	0.00
			Max. Vy	34	-38.51	0.00	0.00
		Top Girt	Max Tension	7	8699.55	-0.01	0.01
			Max. Compression	4	-8658.26	-0.02	-0.00
			Max. Mx	48	-446.43	-0.05	-0.00
			Max. My	2	2767.43	-0.01	0.02
			Max. Vy	48	-40.98	-0.05	-0.00
			Max. Vx	2	3.74	0.00	0.00
		Inner Bracing	Max Tension	3	7.18	0.00	0.00
			Max. Compression	18	-10.15	0.00	0.00
			Max. Mx	34	-4.27	-0.04	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	34	-26.92	0.00	0.00
T5	126.667 - 120	Leg	Max Tension	19	54879.05	-1.40	-0.05
			Max. Compression	2	-68394.12	0.94	-0.01
			Max. Mx	18	53320.86	-1.41	-0.05
			Max. My	32	-4421.35	-0.05	1.41
			Max. Vy	18	-1455.61	-1.41	-0.05
			Max. Vx	10	1427.65	-0.05	1.38
		Diagonal	Max Tension	5	15077.79	0.00	0.00
			Max. Compression	4	-15262.12	0.00	0.00
			Max. Mx	34	-249.60	0.13	0.00
			Max. Vy	34	55.89	0.00	0.00
		Top Girt	Max Tension	5	10460.58	-0.02	-0.00
			Max. Compression	4	-10472.04	-0.02	-0.00
			Max. Mx	48	-354.30	-0.06	-0.01
			Max. My	3	2374.26	-0.00	0.02
			Max. Vy	48	43.25	-0.06	-0.01
			Max. Vx	3	-3.83	-0.00	0.02
		Inner Bracing	Max Tension	3	6.78	0.00	0.00
			Max. Compression	18	-11.21	0.00	0.00
			Max. Mx	34	-5.20	-0.04	0.00
			Max. Vy	34	-28.40	0.00	0.00
T6	120 - 100	Leg	Max Tension	19	94398.20	-0.54	0.02
			Max. Compression	2	-111493.66	0.31	-0.06
			Max. Mx	18	68546.05	-0.98	0.00
			Max. My	26	-9445.34	-0.02	-1.06
			Max. Vy	18	-157.51	-0.98	0.00
			Max. Vx	26	-235.59	-0.02	-1.06
		Diagonal	Max Tension	5	19201.60	0.00	0.00
			Max. Compression	4	-19496.68	0.00	0.00
			Max. Mx	34	-309.60	0.28	0.00
			Max. Vy	34	-89.70	0.00	0.00
		Horizontal	Max Tension	4	11447.86	-0.03	-0.00
			Max. Compression	5	-11345.05	-0.02	-0.00
			Max. Mx	48	-298.44	-0.08	-0.01
			Max. My	18	-1726.61	-0.05	-0.02
			Max. Vy	48	-49.47	-0.08	-0.01
			Max. Vx	18	-3.41	-0.05	-0.02
		Inner Bracing	Max Tension	3	3.97	0.00	0.00
			Max. Compression	18	-12.50	0.00	0.00
			Max. Mx	34	-8.94	-0.07	0.00
			Max. Vy	34	-42.45	0.00	0.00
T7	100 - 90	Leg	Max Tension	19	117461.62	-0.33	0.05
			Max. Compression	2	-136333.12	0.67	-0.02
			Max. Mx	18	114650.91	-0.71	0.02
			Max. My	11	-7741.52	-0.02	0.76
			Max. Vy	18	150.13	-0.71	0.02
			Max. Vx	10	-227.86	-0.02	0.76
		Diagonal	Max Tension	5	17418.01	0.00	0.00
			Max. Compression	4	-17637.10	0.00	0.00
			Max. Mx	34	-329.77	0.23	0.00
			Max. Vy	34	71.24	0.00	0.00
		Horizontal	Max Tension	5	11053.82	-0.03	-0.00
			Max. Compression	5	-11059.66	-0.03	-0.00
			Max. Mx	48	-573.64	-0.09	-0.01
			Max. My	18	-304.52	-0.05	-0.02
			Max. Vy	48	-52.09	-0.09	-0.01
			Max. Vx	18	2.55	-0.05	-0.02
		Inner Bracing	Max Tension	3	2.58	0.00	0.00
			Max. Compression	43	-10.86	0.00	0.00
			Max. Mx	34	-9.15	-0.09	0.00
			Max. Vy	34	-45.29	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	90 - 80	Leg	Max Tension	19	137964.48	-0.70	0.02
			Max. Compression	2	-158317.49	0.61	0.00
			Max. Mx	18	135321.37	-0.71	0.02
			Max. My	11	-8340.81	-0.02	0.85
			Max. Vy	18	-117.00	-0.71	0.02
			Max. Vx	10	-194.17	-0.03	0.85
		Diagonal	Max Tension	5	17295.17	0.00	0.00
			Max. Compression	4	-17532.60	0.00	0.00
			Max. Mx	34	-349.12	0.26	0.00
			Max. Vy	34	-76.44	0.00	0.00
		Top Girt	Max Tension	4	11529.13	-0.04	-0.00
			Max. Compression	5	-11458.29	-0.03	-0.00
			Max. Mx	48	-409.28	-0.10	-0.01
			Max. My	18	-11.54	-0.06	-0.02
			Max. Vy	48	-55.84	-0.10	-0.01
			Max. Vx	18	-2.17	-0.06	-0.02
		Inner Bracing	Max Tension	3	1.56	0.00	0.00
			Max. Compression	43	-11.10	0.00	0.00
			Max. Mx	34	-9.59	-0.10	0.00
			Max. Vy	34	48.77	0.00	0.00
T9	80 - 60	Leg	Max Tension	19	177409.48	-1.22	0.02
			Max. Compression	2	-201566.90	1.79	0.00
			Max. Mx	18	173702.63	-1.80	-0.00
			Max. My	11	-9955.85	-0.02	1.72
			Max. Vy	18	260.22	-1.80	-0.00
			Max. Vx	10	-339.58	-0.03	1.72
		Diagonal	Max Tension	5	18175.69	0.00	0.00
			Max. Compression	4	-18499.12	0.00	0.00
			Max. Mx	34	-429.19	0.31	0.00
			Max. Vy	34	-86.22	0.00	0.00
		Horizontal	Max Tension	4	13040.57	-0.08	-0.00
			Max. Compression	5	-12921.76	-0.06	-0.00
			Max. Mx	48	-418.48	-0.17	-0.01
			Max. My	3	1460.95	-0.03	0.03
			Max. Vy	48	-83.63	-0.17	-0.01
			Max. Vx	18	-2.84	-0.10	-0.03
		Inner Bracing	Max Tension	3	2.54	0.00	0.00
			Max. Compression	43	-13.01	0.00	0.00
			Max. Mx	34	-11.15	-0.15	0.00
			Max. Vy	34	64.61	0.00	0.00
T10	60 - 40	Leg	Max Tension	19	216685.32	-1.22	0.02
			Max. Compression	2	-245750.61	1.08	-0.02
			Max. Mx	18	193575.19	-1.80	-0.00
			Max. My	11	-10354.96	-0.02	1.72
			Max. Vy	8	-307.93	-1.76	0.20
			Max. Vx	10	341.35	-0.03	1.72
		Diagonal	Max Tension	5	19178.93	0.00	0.00
			Max. Compression	4	-19658.94	0.00	0.00
			Max. Mx	34	-538.44	0.43	0.00
			Max. Vy	34	-113.22	0.00	0.00
		Horizontal	Max Tension	4	14624.45	-0.10	-0.00
			Max. Compression	5	-14393.09	-0.08	-0.00
			Max. Mx	48	-368.06	-0.21	-0.01
			Max. My	3	486.61	-0.04	0.03
			Max. Vy	48	-92.25	-0.21	-0.01
			Max. Vx	3	-2.58	-0.04	0.03
		Inner Bracing	Max Tension	3	0.49	0.00	0.00
			Max. Compression	43	-15.43	0.00	0.00
			Max. Mx	34	-13.81	-0.24	0.00
			Max. Vy	34	90.29	0.00	0.00
T11	40 - 30	Leg	Max Tension	19	236116.04	-1.14	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-267981.61	2.50	-0.01
			Max. Mx	2	-267981.61	2.50	-0.01
			Max. My	11	-12286.76	-0.04	1.21
			Max. Vy	3	-305.18	2.48	-0.01
			Max. Vx	26	-261.42	-0.05	-1.21
		Diagonal	Max Tension	5	19511.98	0.00	0.00
			Max. Compression	4	-20027.60	0.00	0.00
			Max. Mx	34	-571.27	0.46	0.00
			Max. Vy	34	-117.43	0.00	0.00
		Horizontal	Max Tension	4	15231.80	-0.11	-0.00
			Max. Compression	5	-14990.35	-0.09	-0.00
			Max. Mx	48	-417.65	-0.23	-0.01
			Max. My	3	570.70	-0.06	0.03
			Max. Vy	48	-95.29	-0.23	-0.01
			Max. Vx	3	-2.22	-0.06	0.03
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	43	-15.67	0.00	0.00
			Max. Mx	34	-14.15	-0.26	0.00
			Max. Vy	34	-93.18	0.00	0.00
T12	30 - 20	Leg	Max Tension	19	255243.13	-2.32	0.01
			Max. Compression	2	-290062.81	-2.19	0.03
			Max. Mx	2	-289439.51	2.50	-0.01
			Max. My	11	-13741.92	-0.39	4.24
			Max. Vy	2	617.09	2.50	-0.01
			Max. Vx	11	-547.62	-0.39	4.24
		Diagonal	Max Tension	5	19931.51	0.00	0.00
			Max. Compression	4	-20532.21	0.00	0.00
			Max. Mx	34	-625.53	0.49	0.00
			Max. Vy	34	-121.65	0.00	0.00
		Top Girt	Max Tension	4	15975.31	-0.17	-0.00
			Max. Compression	5	-15599.23	-0.13	-0.00
			Max. Mx	48	-138.74	-0.29	-0.01
			Max. My	3	911.03	-0.10	0.02
			Max. Vy	48	-115.46	-0.29	-0.01
			Max. Vx	3	1.91	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	43	-16.49	0.00	0.00
			Max. Mx	34	-15.20	-0.29	0.00
			Max. Vy	34	96.06	0.00	0.00
T13	20 - 0	Leg	Max Tension	19	272548.40	1.33	-0.03
			Max. Compression	2	-311598.86	0.00	-0.00
			Max. Mx	2	-310855.53	7.32	-0.11
			Max. My	11	-14517.33	-0.39	4.24
			Max. Vy	2	-1076.94	7.32	-0.11
			Max. Vx	11	948.17	-0.39	4.24
		Diagonal	Max Tension	5	29170.00	-0.14	-0.03
			Max. Compression	4	-29905.93	0.00	0.00
			Max. Mx	6	17124.93	-0.23	0.03
			Max. My	2	-25901.12	-0.02	-0.05
			Max. Vy	50	-80.77	-0.20	0.00
			Max. Vx	2	-3.81	0.00	0.00
		Horizontal	Max Tension	6	16536.40	-0.20	0.01
			Max. Compression	5	-16428.95	-0.17	-0.00
			Max. Mx	48	192.74	-0.41	-0.01
			Max. My	3	1806.93	-0.07	0.05
			Max. Vy	48	145.22	-0.41	-0.01
			Max. Vx	3	4.07	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	4	1338.16	0.00	0.00
			Max. Compression	5	-1194.57	0.00	0.00
			Max. Mx	34	187.11	0.04	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	34	23.11	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	4	1275.64	0.00	0.00
			Max. Compression	5	-1127.58	0.00	0.00
			Max. Mx	34	111.17	0.07	0.00
			Max. Vy	34	25.88	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	3	2.17	0.00	0.00
			Max. Compression	18	-18.04	0.00	0.00
			Max. Mx	34	-14.26	0.06	0.00
			Max. Vy	34	38.89	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	43	-14.59	0.00	0.00
			Max. Mx	34	-12.94	0.18	0.00
			Max. Vy	34	-57.34	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	24	341529.51	41089.25	-25521.86
	Max. H_x	24	341529.51	41089.25	-25521.86
	Max. H_z	7	-295047.84	-35484.58	24689.21
	Min. Vert	9	-303867.25	-37614.77	23551.52
	Min. H_x	9	-303867.25	-37614.77	23551.52
	Min. H_z	22	329010.06	37981.80	-26095.69
Leg B	Max. Vert	12	343203.94	-41354.73	-25399.47
	Max. H_x	29	-305201.53	37860.70	23351.59
	Max. H_z	31	-297015.75	35846.63	24399.63
	Min. Vert	29	-305201.53	37860.70	23351.59
	Min. H_x	12	343203.94	-41354.73	-25399.47
	Min. H_z	14	332339.06	-38753.79	-26165.16
Leg A	Max. Vert	2	352989.21	-299.56	49323.31
	Max. H_x	27	18603.32	10281.32	1546.40
	Max. H_z	2	352989.21	-299.56	49323.31
	Min. Vert	19	-309627.23	277.44	-44922.22
	Min. H_x	10	21743.12	-10324.02	1785.47
	Min. H_z	19	-309627.23	277.44	-44922.22

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	52847.59	-0.00	-0.00	-10.77	2.61	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	63417.11	-179.86	-84806.58	-7954.11	33.08	-14.56
0.9 Dead+1.0 Wind 0 deg - No Ice	47562.83	-179.86	-84806.58	-7950.88	32.30	-14.56
1.2 Dead+1.0 Wind 30 deg - No Ice	63417.11	40864.67	-71915.92	-6819.62	-3819.57	-52.62
0.9 Dead+1.0 Wind 30 deg - No	47562.83	40864.67	-71915.92	-6816.39	-3820.36	-52.62

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Ice						
1.2 Dead+1.0 Wind 45 deg - No Ice	63417.11	57623.43	-58468.69	-5553.90	-5399.38	-66.31
0.9 Dead+1.0 Wind 45 deg - No Ice	47562.83	57623.43	-58468.69	-5550.67	-5400.16	-66.31
1.2 Dead+1.0 Wind 60 deg - No Ice	63417.11	70258.99	-41135.27	-3913.96	-6590.29	-75.58
0.9 Dead+1.0 Wind 60 deg - No Ice	47562.83	70258.99	-41135.27	-3910.72	-6591.07	-75.58
1.2 Dead+1.0 Wind 90 deg - No Ice	63417.11	81530.91	1.89	-14.48	-7603.89	-79.18
0.9 Dead+1.0 Wind 90 deg - No Ice	47562.83	81530.91	1.89	-11.25	-7604.67	-79.18
1.2 Dead+1.0 Wind 120 deg - No Ice	63417.11	72110.00	42199.40	3919.94	-6650.61	-61.93
0.9 Dead+1.0 Wind 120 deg - No Ice	47562.83	72110.00	42199.40	3923.17	-6651.39	-61.93
1.2 Dead+1.0 Wind 135 deg - No Ice	63417.11	58352.19	59136.33	5535.19	-5417.34	-46.40
0.9 Dead+1.0 Wind 135 deg - No Ice	47562.83	58352.19	59136.33	5538.42	-5418.12	-46.40
1.2 Dead+1.0 Wind 150 deg - No Ice	63417.11	40959.64	71758.03	6763.93	-3833.11	-27.78
0.9 Dead+1.0 Wind 150 deg - No Ice	47562.83	40959.64	71758.03	6767.16	-3833.90	-27.78
1.2 Dead+1.0 Wind 180 deg - No Ice	63417.11	200.47	82340.41	7798.23	-30.47	13.75
0.9 Dead+1.0 Wind 180 deg - No Ice	47562.83	200.47	82340.41	7801.46	-31.25	13.75
1.2 Dead+1.0 Wind 210 deg - No Ice	63417.11	-40709.28	71637.73	6744.53	3798.33	50.53
0.9 Dead+1.0 Wind 210 deg - No Ice	47562.83	-40709.28	71637.73	6747.76	3797.55	50.53
1.2 Dead+1.0 Wind 225 deg - No Ice	63417.11	-57364.84	58169.86	5475.15	5359.87	64.25
0.9 Dead+1.0 Wind 225 deg - No Ice	47562.83	-57364.84	58169.86	5478.38	5359.08	64.25
1.2 Dead+1.0 Wind 240 deg - No Ice	63417.11	-71934.60	41951.51	3879.33	6627.71	73.50
0.9 Dead+1.0 Wind 240 deg - No Ice	47562.83	-71934.60	41951.51	3882.57	6626.93	73.50
1.2 Dead+1.0 Wind 270 deg - No Ice	63417.11	-81472.69	-328.15	-69.12	7599.84	77.43
0.9 Dead+1.0 Wind 270 deg - No Ice	47562.83	-81472.69	-328.15	-65.89	7599.06	77.43
1.2 Dead+1.0 Wind 300 deg - No Ice	63417.11	-70302.93	-41411.52	-3959.59	6602.44	60.91
0.9 Dead+1.0 Wind 300 deg - No Ice	47562.83	-70302.93	-41411.52	-3956.35	6601.66	60.91
1.2 Dead+1.0 Wind 315 deg - No Ice	63417.11	-57800.68	-58689.90	-5590.39	5434.34	45.33
0.9 Dead+1.0 Wind 315 deg - No Ice	47562.83	-57800.68	-58689.90	-5587.15	5433.56	45.33
1.2 Dead+1.0 Wind 330 deg - No Ice	63417.11	-41133.60	-72087.29	-6848.07	3870.17	26.82
0.9 Dead+1.0 Wind 330 deg - No Ice	47562.83	-41133.60	-72087.29	-6844.83	3869.38	26.82
1.2 Dead+1.0 Ice	138491.60	-0.00	-0.00	-80.26	10.21	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	138491.60	-27.43	-24408.79	-2284.95	14.77	0.40
1.2 Dead+1.0 Wind 30 deg+1.0	138491.60	11930.54	-20890.89	-1978.38	-1064.16	-10.42

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Ice 1.2 Dead+1.0 Wind 45 deg+1.0 Ice	138491.60	16844.40	-17017.16	-1627.47	-1508.51	-14.85
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	138491.60	20578.90	-11999.75	-1171.66	-1846.09	-18.29
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	138491.60	23828.22	-0.61	-80.66	-2132.22	-21.40
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	138491.60	20879.41	12171.48	1016.01	-1855.64	-18.83
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	138491.60	16961.92	17125.05	1467.94	-1511.21	-15.53
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	138491.60	11943.93	20865.10	1813.01	-1066.03	-11.17
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	138491.60	30.68	24008.93	2103.71	5.07	-0.53
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	138491.60	-11906.05	20847.05	1810.10	1080.25	10.09
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	138491.60	-16803.65	16970.07	1458.62	1521.72	14.53
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	138491.60	-20852.68	12133.99	1009.88	1871.62	17.96
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	138491.60	-23819.05	-50.80	-88.96	2151.01	21.12
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	138491.60	-20584.91	-12041.71	-1178.58	1867.28	18.67
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	138491.60	-16871.04	-17050.73	-1633.00	1533.23	15.36
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	138491.60	-11971.34	-20916.99	-1982.71	1091.30	11.02
Dead+Wind 0 deg - Service	52847.59	-38.31	-18330.00	-1731.63	8.99	-3.10
Dead+Wind 30 deg - Service	52847.59	8837.25	-15548.60	-1486.05	-826.32	-11.21
Dead+Wind 45 deg - Service	52847.59	12461.98	-12642.03	-1211.78	-1168.90	-14.13
Dead+Wind 60 deg - Service	52847.59	15195.64	-8894.89	-856.38	-1427.23	-16.10
Dead+Wind 90 deg - Service	52847.59	17632.22	0.40	-11.10	-1647.07	-16.87
Dead+Wind 120 deg - Service	52847.59	15589.94	9121.57	841.62	-1440.08	-13.19
Dead+Wind 135 deg - Service	52847.59	12617.22	12784.25	1191.75	-1172.73	-9.88
Dead+Wind 150 deg - Service	52847.59	8857.48	15514.96	1458.14	-829.20	-5.92
Dead+Wind 180 deg - Service	52847.59	42.70	17804.66	1682.39	-4.55	2.93
Dead+Wind 210 deg - Service	52847.59	-8804.14	15489.34	1454.01	825.68	10.76
Dead+Wind 225 deg - Service	52847.59	-12406.89	12578.38	1178.96	1164.37	13.69
Dead+Wind 240 deg - Service	52847.59	-15552.58	9068.76	832.97	1439.09	15.66
Dead+Wind 270 deg - Service	52847.59	-17619.82	-69.90	-22.74	1650.09	16.49
Dead+Wind 300 deg - Service	52847.59	-15205.00	-8953.73	-866.10	1433.71	12.97
Dead+Wind 315 deg - Service	52847.59	-12499.74	-12689.16	-1219.55	1180.23	9.66
Dead+Wind 330 deg - Service	52847.59	-8894.53	-15585.10	-1492.10	840.98	5.71

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-52847.59	0.00	0.00	52847.59	0.00	0.000%
2	-179.86	-63417.11	-84806.58	179.86	63417.11	84806.58	0.000%
3	-179.86	-47562.83	-84806.58	179.86	47562.83	84806.58	0.000%
4	40864.67	-63417.11	-71915.92	-40864.67	63417.11	71915.92	0.000%
5	40864.67	-47562.83	-71915.92	-40864.67	47562.83	71915.92	0.000%
6	57623.43	-63417.11	-58468.69	-57623.43	63417.11	58468.69	0.000%
7	57623.43	-47562.83	-58468.69	-57623.43	47562.83	58468.69	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
8	70258.99	-63417.11	-41135.27	-70258.99	63417.11	41135.27	0.000%
9	70258.99	-47562.83	-41135.27	-70258.99	47562.83	41135.27	0.000%
10	81530.91	-63417.11	1.89	-81530.91	63417.11	-1.89	0.000%
11	81530.91	-47562.83	1.89	-81530.91	47562.83	-1.89	0.000%
12	72110.00	-63417.11	42199.40	-72110.00	63417.11	-42199.40	0.000%
13	72110.00	-47562.83	42199.40	-72110.00	47562.83	-42199.40	0.000%
14	58352.19	-63417.11	59136.33	-58352.19	63417.11	-59136.33	0.000%
15	58352.19	-47562.83	59136.33	-58352.19	47562.83	-59136.33	0.000%
16	40959.64	-63417.11	71758.03	-40959.64	63417.11	-71758.03	0.000%
17	40959.64	-47562.83	71758.03	-40959.64	47562.83	-71758.03	0.000%
18	200.47	-63417.11	82340.41	-200.47	63417.11	-82340.41	0.000%
19	200.47	-47562.83	82340.41	-200.47	47562.83	-82340.41	0.000%
20	-40709.28	-63417.11	71637.73	40709.28	63417.11	-71637.73	0.000%
21	-40709.28	-47562.83	71637.73	40709.28	47562.83	-71637.73	0.000%
22	-57364.84	-63417.11	58169.86	57364.84	63417.11	-58169.86	0.000%
23	-57364.84	-47562.83	58169.86	57364.84	47562.83	-58169.86	0.000%
24	-71934.60	-63417.11	41951.51	71934.60	63417.11	-41951.51	0.000%
25	-71934.60	-47562.83	41951.51	71934.60	47562.83	-41951.51	0.000%
26	-81472.69	-63417.11	-328.15	81472.69	63417.11	328.15	0.000%
27	-81472.69	-47562.83	-328.15	81472.69	47562.83	328.15	0.000%
28	-70302.93	-63417.11	-41411.52	70302.93	63417.11	41411.52	0.000%
29	-70302.93	-47562.83	-41411.52	70302.93	47562.83	41411.52	0.000%
30	-57800.68	-63417.11	-58689.90	57800.68	63417.11	58689.90	0.000%
31	-57800.68	-47562.83	-58689.90	57800.68	47562.83	58689.90	0.000%
32	-41133.60	-63417.11	-72087.29	41133.60	63417.11	72087.29	0.000%
33	-41133.60	-47562.83	-72087.29	41133.60	47562.83	72087.29	0.000%
34	0.00	-138491.60	0.00	0.00	138491.60	0.00	0.000%
35	-27.43	-138491.60	-24408.79	27.43	138491.60	24408.79	0.000%
36	11930.54	-138491.60	-20890.89	-11930.54	138491.60	20890.89	0.000%
37	16844.40	-138491.60	-17017.16	-16844.40	138491.60	17017.16	0.000%
38	20578.90	-138491.60	-11999.75	-20578.90	138491.60	11999.75	0.000%
39	23828.22	-138491.60	-0.61	-23828.22	138491.60	0.61	0.000%
40	20879.41	-138491.60	12171.48	-20879.41	138491.60	-12171.48	0.000%
41	16961.92	-138491.60	17125.05	-16961.92	138491.60	-17125.05	0.000%
42	11943.93	-138491.60	20865.10	-11943.93	138491.60	-20865.10	0.000%
43	30.68	-138491.60	24008.93	-30.68	138491.60	-24008.93	0.000%
44	-11906.05	-138491.60	20847.05	11906.05	138491.60	-20847.05	0.000%
45	-16803.65	-138491.60	16970.07	16803.65	138491.60	-16970.07	0.000%
46	-20852.68	-138491.60	12133.99	20852.68	138491.60	-12133.99	0.000%
47	-23819.05	-138491.60	-50.80	23819.05	138491.60	50.80	0.000%
48	-20584.91	-138491.60	-12041.71	20584.91	138491.60	12041.71	0.000%
49	-16871.04	-138491.60	-17050.73	16871.04	138491.60	17050.73	0.000%
50	-11971.34	-138491.60	-20916.99	11971.34	138491.60	20916.99	0.000%
51	-38.31	-52847.59	-18330.00	38.31	52847.59	18330.00	0.000%
52	8837.25	-52847.59	-15548.60	-8837.25	52847.59	15548.60	0.000%
53	12461.98	-52847.59	-12642.03	-12461.98	52847.59	12642.03	0.000%
54	15195.64	-52847.59	-8894.89	-15195.64	52847.59	8894.89	0.000%
55	17632.22	-52847.59	0.40	-17632.22	52847.59	-0.40	0.000%
56	15589.94	-52847.59	9121.57	-15589.94	52847.59	-9121.57	0.000%
57	12617.22	-52847.59	12784.25	-12617.22	52847.59	-12784.25	0.000%
58	8857.48	-52847.59	15514.96	-8857.48	52847.59	-15514.96	0.000%
59	42.70	-52847.59	17804.66	-42.70	52847.59	-17804.66	0.000%
60	-8804.14	-52847.59	15489.34	8804.14	52847.59	-15489.34	0.000%
61	-12406.89	-52847.59	12578.38	12406.89	52847.59	-12578.38	0.000%
62	-15552.58	-52847.59	9068.76	15552.58	52847.59	-9068.76	0.000%
63	-17619.82	-52847.59	-69.90	17619.82	52847.59	69.90	0.000%
64	-15205.00	-52847.59	-8953.73	15205.00	52847.59	8953.73	0.000%
65	-12499.74	-52847.59	-12689.16	12499.74	52847.59	12689.16	0.000%
66	-8894.53	-52847.59	-15585.10	8894.53	52847.59	15585.10	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	2.026	51	0.0875	0.0503
T2	160 - 140	1.655	51	0.0860	0.0441
T3	140 - 133.333	1.282	51	0.0781	0.0288
T4	133.333 - 126.667	1.169	51	0.0756	0.0257
T5	126.667 - 120	1.055	51	0.0727	0.0231
T6	120 - 100	0.948	51	0.0690	0.0214
T7	100 - 90	0.674	51	0.0550	0.0176
T8	90 - 80	0.554	51	0.0483	0.0150
T9	80 - 60	0.448	51	0.0410	0.0126
T10	60 - 40	0.267	51	0.0315	0.0087
T11	40 - 30	0.133	51	0.0209	0.0057
T12	30 - 20	0.081	51	0.0153	0.0042
T13	20 - 0	0.042	56	0.0095	0.0029

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	ANT940Y10-WR	51	2.026	0.0875	0.0503	411862
181.00	ANT940Y10-WR	51	2.026	0.0875	0.0503	411862
177.00	PA6-65AC	51	1.971	0.0876	0.0498	411862
170.00	RFI BPS7496-180-14 Panel Antenna	51	1.842	0.0875	0.0484	205931
169.00	3' Yagi	51	1.824	0.0874	0.0481	187210
160.00	ROHN 6'x15' Boom Gate (1)	51	1.655	0.0860	0.0441	123051
133.00	QD6616-7	51	1.163	0.0755	0.0256	171895
125.00	LTF12=372 Sector Mount (1)	51	1.027	0.0719	0.0226	59647
113.00	ANT150D	51	0.845	0.0643	0.0201	73310
60.00	GPS	51	0.267	0.0315	0.0087	96748

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	9.274	2	0.3950	0.2360
T2	160 - 140	7.596	2	0.3902	0.2072
T3	140 - 133.333	5.886	2	0.3575	0.1350
T4	133.333 - 126.667	5.367	2	0.3462	0.1206
T5	126.667 - 120	4.844	2	0.3332	0.1082
T6	120 - 100	4.352	2	0.3163	0.1005
T7	100 - 90	3.096	2	0.2523	0.0825
T8	90 - 80	2.543	2	0.2215	0.0704
T9	80 - 60	2.057	2	0.1880	0.0590
T10	60 - 40	1.231	2	0.1444	0.0406
T11	40 - 30	0.612	2	0.0957	0.0268

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T12	30 - 20	0.373	3	0.0700	0.0198
T13	20 - 0	0.196	3	0.0434	0.0137

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	ANT940Y10-WR	2	9.274	0.3950	0.2360	102337
181.00	ANT940Y10-WR	2	9.274	0.3950	0.2360	102337
177.00	PA6-65AC	2	9.026	0.3954	0.2339	102337
170.00	RFI BPS7496-180-14 Panel Antenna	2	8.445	0.3955	0.2271	51168
169.00	3' Yagi	2	8.361	0.3953	0.2258	46517
160.00	ROHN 6'x15' Boom Gate (1)	2	7.596	0.3902	0.2072	31114
133.00	QD6616-7	2	5.341	0.3456	0.1200	38129
125.00	LTF12=372 Sector Mount (1)	2	4.717	0.3294	0.1059	12953
113.00	ANT150D	2	3.881	0.2948	0.0944	15933
60.00	GPS	2	1.231	0.1444	0.0406	21218

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	180	Diagonal	A325N	0.6250	3	1340.72	13805.80	0.097 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	1080.62	13805.80	0.078 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	177.48	13805.80	0.013 ✔	1	Bolt Shear
T2	160	Leg	A325N	0.8750	4	1489.26	41556.00	0.036 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	3030.01	13805.80	0.219 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	2817.06	13805.80	0.204 ✔	1	Bolt Shear
T3	140	Leg	A325N	1.0000	4	8351.53	54517.00	0.153 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	3075.98	13805.80	0.223 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	2979.47	13805.80	0.216 ✔	1	Bolt Shear
T4	133.333	Diagonal	A325N	0.6250	3	4308.47	13805.80	0.312 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	4349.78	13805.80	0.315 ✔	1	Bolt Shear
T5	126.667	Diagonal	A325N	0.6250	3	5087.37	13805.80	0.368 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	5236.02	13805.80	0.379 ✔	1	Bolt Shear
T6	120	Leg	A325N	1.0000	6	11754.60	54517.00	0.216 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6498.89	13805.80	0.471 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	5723.93	13805.80	0.415 ✔	1	Bolt Shear
T7	100	Leg	A325N	1.0000	6	19576.90	54517.00	0.359 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	5879.03	13805.80	0.426 ✔	1	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
		Horizontal	A325N	0.6250	2	5529.83	13805.80	0.401 ✔	1	Bolt Shear
T8	90	Diagonal	A325N	0.6250	3	5844.20	13805.80	0.423 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	5764.57	13805.80	0.418 ✔	1	Bolt Shear
T9	80	Leg	A325N	1.0000	8	19714.20	54517.00	0.362 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6166.37	13805.80	0.447 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	6520.28	13805.80	0.472 ✔	1	Bolt Shear
T10	60	Leg	A325N	1.0000	8	24624.40	54517.00	0.452 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6552.98	13805.80	0.475 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	7312.22	13805.80	0.530 ✔	1	Bolt Shear
T11	40	Leg	A325N	1.0000	8	29514.50	54517.00	0.541 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6675.87	13805.80	0.484 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	7615.90	13805.80	0.552 ✔	1	Bolt Shear
T12	30	Diagonal	A325N	0.6250	3	6844.07	13805.80	0.496 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	7987.66	13805.80	0.579 ✔	1	Bolt Shear
T13	20	Leg	A325N	1.0000	8	34068.60	54517.00	0.625 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	3	9968.64	17257.30	0.578 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	8268.20	19880.40	0.416 ✔	1	Bolt Shear

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	180 - 160	ROHN 3 STD	20.00	6.67	68.8 K=1.00	2.2285	-4179.54	70976.40	0.059 [1] ✔
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1 K=1.00	3.1741	-30698.50	116229.00	0.264 [1] ✔
T3	140 - 133.333	ROHN 5 EH	6.68	6.68	43.6 K=1.00	6.1120	-40659.40	239378.00	0.170 [1] ✔
T4	133.333 - 126.667	ROHN 5 EH	6.68	6.68	43.6 K=1.00	6.1120	-52557.90	239378.00	0.220 [1] ✔
T5	126.667 - 120	ROHN 5 EH	6.68	6.68	43.6 K=1.00	6.1120	-68394.10	239378.00	0.286 [1] ✔
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0 K=1.00	6.7133	-111494.00	244017.00	0.457 [1] ✔
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8 K=1.00	8.4049	-136333.00	303585.00	0.449 [1] ✔
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8 K=1.00	8.4049	-158317.00	303585.00	0.521 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	80 - 60	120deg_9.6250x0.375 BU on ROHN 8 EHS	20.05	10.03	42.2 K=1.00	13.6005	-201567.00	537270.00	0.375 [1] ✔
T10	60 - 40	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	20.05	10.03	42.2 K=1.00	13.6005	-245751.00	460811.00	0.533 [1] ✔
T11	40 - 30	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	10.03	10.03	42.2 K=1.00	13.6005	-267982.00	460811.00	0.582 [1] ✔
T12	30 - 20	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	10.03	10.03	42.2 K=1.00	13.6005	-290063.00	460811.00	0.629 [1] ✔
T13	20 - 0	1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	20.05	10.03	42.9 K=1.00	16.6002	-311599.00	560408.00	0.556 [1] ✔

[1] P_u / ϕP_n controls

Diagonal 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	180 - 160	ROHN 2 STD	7.94	7.67	117.0 K=1.00	1.0745	-4022.17	17747.50	0.227 [1] ✔
T2	160 - 140	ROHN 2 STD	8.55	8.25	125.8 K=1.00	1.0745	-9032.06	15331.30	0.589 [1] ✔
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.5 K=1.00	1.4807	-9227.94	19347.50	0.477 [1] ✔
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.3 K=1.00	1.4807	-12925.40	18285.10	0.707 [1] ✔
T5	126.667 - 120	ROHN 2 XXS	9.24	8.91	152.1 K=1.00	2.6559	-15262.10	25935.80	0.588 [1] ✔
T6	120 - 100	Pipe 2.5 XXS	12.52	12.06	171.4 K=1.00	4.0285	-19208.80	30977.00	0.620 [1] ✔
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8 K=1.00	2.2285	-17637.10	30346.40	0.581 [1] ✔
T8	90 - 80	ROHN 3 STD	13.35	12.93	133.4 K=1.00	2.2285	-17532.60	28290.90	0.620 [1] ✔
T9	80 - 60	ROHN 3 STD	14.21	13.70	141.3 K=1.00	2.2285	-18499.10	25233.20	0.733 [1] ✔
T10	60 - 40	ROHN 3 EH	15.12	14.64	154.6 K=1.00	3.0159	-19658.90	28518.80	0.689 [1] ✔
T11	40 - 30	ROHN 3 EH	15.60	15.12	159.7 K=1.00	3.0159	-20027.60	26718.70	0.750 [1] ✔
T12	30 - 20	ROHN 3 EH	16.08	15.62	164.9 K=1.00	3.0159	-20532.20	25055.10	0.819 [1] ✔
T13	20 - 0	ROHN 3 EH	24.33	23.70	125.1 K=0.50	3.0159	-29905.90	43506.30	0.687 [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	
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0 K=1.00	0.7995	-2161.24	22519.90	0.096 [1] ✔
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9 K=1.00	0.7995	-5604.80	19142.00	0.293 [1] ✔
T3	140 - 133.333	ROHN 2 STD	10.71	5.12	78.1 K=1.00	1.0745	-5929.49	30956.80	0.192 [1] ✔
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9 K=1.00	1.0745	-11345.00	22639.20	0.501 [1] ✔
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5 K=1.00	1.0745	-11059.70	19817.20	0.558 [1] ✔
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.2 K=1.00	1.7040	-12921.80	28984.30	0.446 [1] ✔
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1 K=1.00	1.7040	-14393.10	22405.40	0.642 [1] ✔
T11	40 - 30	ROHN 2.5 STD	22.68	10.97	139.0 K=1.00	1.7040	-14990.30	19925.90	0.752 [1] ✔
T13	20 - 0	P3.5x.226	25.18	12.23	109.8 K=1.00	2.6795	-16428.90	49951.20	0.329 [1] ✔

[1] P_u / ϕP_n controls

Top Girt 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	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5 K=1.00	0.7995	-354.95	22660.50	0.016 [1] ✔
T4	133.333 - 126.667	ROHN 2 STD	11.40	5.47	83.4 K=1.00	1.0745	-8658.26	29081.40	0.298 [1] ✔
T5	126.667 - 120	ROHN 2 STD	12.10	5.82	88.7 K=1.00	1.0745	-10472.00	27207.90	0.385 [1] ✔
T8	90 - 80	ROHN 2 STD	16.36	7.90	120.5 K=1.00	1.0745	-11458.30	16719.60	0.685 [1] ✔
T12	30 - 20	ROHN 2.5 EH	23.93	11.60	150.6 K=1.00	2.2535	-15599.20	22438.80	0.695 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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 $\frac{P_u}{\phi P_n}$
T13	20 - 0	ROHN 1.5 STD	6.29	5.93	114.4 K=1.00	0.7995	-5407.57	13802.80	0.392 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T13	20 - 0	ROHN 2 STD	11.50	10.77	164.2 K=1.00	1.0745	-4940.37	8998.85	0.549 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T13	20 - 0	ROHN 2.5 STD	6.29	6.29	79.7 K=1.00	1.7040	-18.04	48180.50	0.000 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing 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	180 - 160	L2x2x1/8	4.30	4.30	129.8 K=1.00	0.4844	-1.85	8234.10	0.000 [1] ✔
T2	160 - 140	L2x2x1/8	4.31	4.31	130.2 K=1.00	0.4844	-7.11	8181.36	0.001 [1] ✔
T3	140 - 133.333	L2x2x1/8	5.35	5.35	161.6 K=1.00	0.4844	-6.69	5306.96	0.001 [1] ✔
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	172.1 K=1.00	0.4844	-10.15	4680.37	0.002 [1] ✔
T5	126.667 - 120	L2x2x1/8	6.05	6.05	182.6 K=1.00	0.4844	-11.21	4158.54	0.003 [1] ✔
T6	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	168.7 K=1.00	0.9020	-11.63	9072.37	0.001 [1] ✔
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	182.3 K=1.00	0.9020	-10.86	7766.06	0.001 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	198.3 K=1.00	0.9020	-11.10	6565.57	0.002 [1]
T9	80 - 60	L3x3x3/16	9.46	9.46	190.5 K=1.00	1.0900	-13.01	8593.12	0.002 [1]
T10	60 - 40	L3 1/2x3 1/2x1/4	10.71	10.71	185.2 K=1.00	1.6900	-15.43	14095.40	0.001 [1]
T11	40 - 30	L3 1/2x3 1/2x1/4	11.34	11.34	196.1 K=1.00	1.6900	-15.67	12584.30	0.001 [1]
T12	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	206.9 K=1.00	1.6900	-16.49	11303.80	0.001 [1]
T13	20 - 0	ROHN 2 STD	12.59	12.59	191.9 K=1.00	1.0745	-14.59	6590.81	0.002 [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	180 - 160	ROHN 3 STD	20.00	6.67	68.8	2.2285	2501.38	100281.00	0.025 [1]
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1	3.1741	24002.40	142832.00	0.168 [1]
T3	140 - 133.333	ROHN 5 EH	6.68	6.68	43.6	6.1120	33406.10	275039.00	0.121 [1]
T4	133.333 - 126.667	ROHN 5 EH	6.68	6.68	43.6	6.1120	42457.70	275039.00	0.154 [1]
T5	126.667 - 120	ROHN 5 EH	6.68	6.68	43.6	6.1120	54879.10	275039.00	0.200 [1]
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0	6.7133	94398.20	302097.00	0.312 [1]
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8	8.4049	117462.00	378222.00	0.311 [1]
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8	8.4049	137964.00	378222.00	0.365 [1]
T9	80 - 60	120deg_9.6250x0.375 BU on ROHN 8 EHS	20.05	10.03	42.2	13.6005	177409.00	612023.00	0.290 [1]
T10	60 - 40	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	20.05	10.03	42.2	13.6005	216685.00	514099.00	0.421 [1]
T11	40 - 30	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	10.03	10.03	42.2	13.6005	236116.00	514099.00	0.459 [1]
T12	30 - 20	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	10.03	10.03	42.2	13.6005	255243.00	514099.00	0.496 [1]
T13	20 - 0	1/3 9.6250x0.375 on ROHN	20.05	10.03	42.9	16.6002	272548.00	627488.00	0.434 [1]

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

[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	180 - 160	ROHN 2 STD	7.94	7.67	117.0	1.0745	3954.82	48353.90	0.082 [1] ✔
T2	160 - 140	ROHN 2 STD	8.34	8.04	122.6	1.0745	9019.01	48353.90	0.187 [1] ✔
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.5	1.4807	9118.07	66630.70	0.137 [1] ✔
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.3	1.4807	12807.00	66630.70	0.192 [1] ✔
T5	126.667 - 120	ROHN 2 XXS	9.24	8.91	152.1	2.6559	15077.80	119516.00	0.126 [1] ✔
T6	120 - 100	Pipe 2.5 XXS	12.19	11.73	166.7	4.0285	19201.60	181280.00	0.106 [1] ✔
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8	2.2285	17418.00	100281.00	0.174 [1] ✔
T8	90 - 80	ROHN 3 STD	13.35	12.93	133.4	2.2285	17295.20	100281.00	0.172 [1] ✔
T9	80 - 60	ROHN 3 STD	14.21	13.70	141.3	2.2285	18175.70	100281.00	0.181 [1] ✔
T10	60 - 40	ROHN 3 EH	15.12	14.64	154.6	3.0159	19178.90	135717.00	0.141 [1] ✔
T11	40 - 30	ROHN 3 EH	15.60	15.12	159.7	3.0159	19512.00	135717.00	0.144 [1] ✔
T12	30 - 20	ROHN 3 EH	16.08	15.62	164.9	3.0159	19931.50	135717.00	0.147 [1] ✔
T13	20 - 0	ROHN 3 EH	24.33	23.70	250.3	3.0159	29170.00	135717.00	0.215 [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	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0	0.7995	2155.72	35975.60	0.060 [1] ✔
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9	0.7995	5634.12	35975.60	0.157 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	140 - 133.333	ROHN 2 STD	10.71	5.12	78.1	1.0745	5958.94	48353.90	0.123 [1]
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9	1.0745	11447.90	48353.90	0.237 [1]
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5	1.0745	11053.80	48353.90	0.229 [1]
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.2	1.7040	13040.60	76682.30	0.170 [1]
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1	1.7040	14624.40	76682.30	0.191 [1]
T11	40 - 30	ROHN 2.5 STD	22.68	10.97	139.0	1.7040	15231.80	76682.30	0.199 [1]
T13	20 - 0	P3.5x.226	25.18	12.23	109.8	2.6795	16536.40	120579.00	0.137 [1]

[1] P_u / ϕP_n controls

Top 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	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5	0.7995	324.62	35975.60	0.009 [1]
T4	133.333 - 126.667	ROHN 2 STD	11.40	5.47	83.4	1.0745	8699.55	48353.90	0.180 [1]
T5	126.667 - 120	ROHN 2 STD	12.10	5.82	88.7	1.0745	10460.60	48353.90	0.216 [1]
T8	90 - 80	ROHN 2 STD	16.36	7.90	120.5	1.0745	11529.10	48353.90	0.238 [1]
T12	30 - 20	ROHN 2.5 EH	23.93	11.60	150.6	2.2535	15975.30	101409.00	0.158 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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 $\frac{P_u}{\phi P_n}$
T13	20 - 0	ROHN 1.5 STD	6.29	5.93	114.4	0.7995	5407.57	35975.60	0.150 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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	
T13	20 - 0	ROHN 2 STD	11.50	10.77	164.2	1.0745	4940.37	48353.90	0.102 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) 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	
T13	20 - 0	ROHN 2.5 STD	6.29	6.29	79.7	1.7040	2.17	76682.30	0.000 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing 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	180 - 160	L2x2x1/8	4.30	4.30	82.4	0.4844	1.86	15693.80	0.000 [1] ✔
T2	160 - 140	L2x2x1/8	4.31	4.31	82.6	0.4844	5.24	15693.80	0.000 [1] ✔
T3	140 - 133.333	L2x2x1/8	5.35	5.35	102.6	0.4844	3.88	15693.80	0.000 [1] ✔
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	109.3	0.4844	7.18	15693.80	0.000 [1] ✔
T5	126.667 - 120	L2x2x1/8	6.05	6.05	115.9	0.4844	6.78	15693.80	0.000 [1] ✔
T6	120 - 100	L2 1/2x2 1/2x3/16	6.40	6.40	98.7	0.9020	3.97	29224.80	0.000 [1] ✔
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	116.0	0.9020	2.58	29224.80	0.000 [1] ✔
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	126.2	0.9020	1.56	29224.80	0.000 [1] ✔
T9	80 - 60	L3x3x3/16	8.84	8.84	113.0	1.0900	2.54	35316.00	0.000 [1] ✔
T10	60 - 40	L3 1/2x3 1/2x1/4	10.09	10.09	111.1	1.6900	0.49	76050.00	0.000 [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	180 - 160	Leg	ROHN 3 STD	1	-2843.02	70976.40	4.0	Pass
		Leg	ROHN 3 STD	2	-2530.85	70976.40	3.6	Pass
		Leg	ROHN 3 STD	3	-4179.54	70976.40	5.9	Pass
T2	160 - 140	Leg	ROHN 4 STD	40	-26361.90	116229.00	22.7	Pass
		Leg	ROHN 4 STD	41	-26315.50	116229.00	22.6	Pass
		Leg	ROHN 4 STD	42	-30698.50	116229.00	26.4	Pass
T3	140 - 133.333	Leg	ROHN 5 EH	79	-35540.70	239378.00	14.8	Pass
		Leg	ROHN 5 EH	80	-35621.70	239378.00	14.9	Pass
		Leg	ROHN 5 EH	81	-40659.40	239378.00	17.0	Pass
T4	133.333 - 126.667	Leg	ROHN 5 EH	94	-46763.30	239378.00	19.5	Pass
		Leg	ROHN 5 EH	95	-47036.80	239378.00	19.6	Pass
		Leg	ROHN 5 EH	96	-52557.90	239378.00	22.0	Pass
T5	126.667 - 120	Leg	ROHN 5 EH	109	-61928.50	239378.00	25.9	Pass
		Leg	ROHN 5 EH	110	-62369.70	239378.00	26.1	Pass
		Leg	ROHN 5 EH	111	-68394.10	239378.00	28.6	Pass
T6	120 - 100	Leg	ROHN 6 EHS	124	-103597.00	244017.00	42.5	Pass
		Leg	ROHN 6 EHS	125	-104396.00	244017.00	42.8	Pass
		Leg	ROHN 6 EHS	126	-111494.00	244017.00	45.7	Pass
T7	100 - 90	Leg	ROHN 6 EH	151	-127762.00	303585.00	42.1	Pass
		Leg	ROHN 6 EH	152	-128731.00	303585.00	42.4	Pass
		Leg	ROHN 6 EH	153	-136333.00	303585.00	44.9	Pass
T8	90 - 80	Leg	ROHN 6 EH	166	-149278.00	303585.00	49.2	Pass
		Leg	ROHN 6 EH	167	-150380.00	303585.00	49.5	Pass
		Leg	ROHN 6 EH	168	-158317.00	303585.00	52.1	Pass
T9	80 - 60	Leg	120deg_9.6250x0.375 BU on ROHN 8 EHS	181	-191739.00	537270.00	35.7	Pass
		Leg	120deg_9.6250x0.375 BU on ROHN 8 EHS	182	-193059.00	537270.00	35.9	Pass
		Leg	120deg_9.6250x0.375 BU on ROHN 8 EHS	183	-201567.00	537270.00	37.5	Pass
T10	60 - 40	Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	208	-235404.00	460811.00	51.1	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	209	-236758.00	460811.00	51.4	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	210	-245751.00	460811.00	53.3	Pass
T11	40 - 30	Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	235	-257347.00	460811.00	55.8	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	236	-258782.00	460811.00	56.2	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	237	-267982.00	460811.00	58.2	Pass
T12	30 - 20	Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	250	-279172.00	460811.00	60.6	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	251	-280680.00	460811.00	60.9	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EHS Leg Pipe	252	-290063.00	460811.00	62.9	Pass
T13	20 - 0	Leg	1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	265	-300461.00	560408.00	53.6 61.2 (b)	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	266	-302042.00	560408.00	53.9 61.5 (b)	Pass
		Leg	1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	267	-311599.00	560408.00	55.6 62.5 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 160	Diagonal	ROHN 2 STD	8	-2224.67	17747.50	12.5	Pass
		Diagonal	ROHN 2 STD	9	-1974.58	17747.50	11.1	Pass
		Diagonal	ROHN 2 STD	11	-2197.82	17747.50	12.4	Pass
		Diagonal	ROHN 2 STD	12	-2304.46	17747.50	13.0	Pass
		Diagonal	ROHN 2 STD	14	-4022.17	17747.50	22.7	Pass
		Diagonal	ROHN 2 STD	15	-3587.31	17747.50	20.2	Pass
		Diagonal	ROHN 2 STD	20	-1748.30	17782.20	9.8	Pass
		Diagonal	ROHN 2 STD	21	-1437.44	17782.20	8.1	Pass
		Diagonal	ROHN 2 STD	23	-983.64	17782.20	5.5	Pass
		Diagonal	ROHN 2 STD	24	-1113.40	17782.20	6.3	Pass
		Diagonal	ROHN 2 STD	26	-2749.34	17782.20	15.5	Pass
		Diagonal	ROHN 2 STD	27	-2253.46	17782.20	12.7	Pass
		Diagonal	ROHN 2 STD	31	-513.67	17817.00	2.9	Pass
		Diagonal	ROHN 2 STD	32	-387.61	17817.00	2.2	Pass
		Diagonal	ROHN 2 STD	33	-162.05	17817.00	0.9	Pass
		Diagonal	ROHN 2 STD	34	-155.04	17817.00	0.9	Pass
		Diagonal	ROHN 2 STD	35	-616.91	17817.00	3.5	Pass
		Diagonal	ROHN 2 STD	36	-509.63	17817.00	2.9	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	44	-5545.12	15331.30	36.2	Pass
		Diagonal	ROHN 2 STD	45	-5440.81	15331.30	35.5	Pass
		Diagonal	ROHN 2 STD	47	-6481.04	15331.30	42.3	Pass
		Diagonal	ROHN 2 STD	48	-6471.37	15331.30	42.2	Pass
		Diagonal	ROHN 2 STD	50	-9032.06	15331.30	58.9	Pass
		Diagonal	ROHN 2 STD	51	-8754.22	15331.30	57.1	Pass
		Diagonal	ROHN 2 STD	56	-5452.43	16154.50	33.8	Pass
		Diagonal	ROHN 2 STD	57	-5330.89	16154.50	33.0	Pass
		Diagonal	ROHN 2 STD	59	-6597.65	16154.50	40.8	Pass
		Diagonal	ROHN 2 STD	60	-6586.80	16154.50	40.8	Pass
		Diagonal	ROHN 2 STD	62	-9090.04	16154.50	56.3	Pass
		Diagonal	ROHN 2 STD	63	-8781.15	16154.50	54.4	Pass
		Diagonal	ROHN 2 STD	68	-5259.54	17005.60	30.9	Pass
		Diagonal	ROHN 2 STD	69	-5113.17	17005.60	30.1	Pass
		Diagonal	ROHN 2 STD	71	-6632.43	17005.60	39.0	Pass
		Diagonal	ROHN 2 STD	72	-6623.93	17005.60	39.0	Pass
		Diagonal	ROHN 2 STD	74	-9002.28	17005.60	52.9	Pass
		Diagonal	ROHN 2 STD	75	-8649.08	17005.60	50.9	Pass
T3	140 - 133.333	Diagonal	ROHN 2 EH	83	-5765.29	19347.50	29.8	Pass
		Diagonal	ROHN 2 EH	84	-5676.65	19347.50	29.3	Pass
		Diagonal	ROHN 2 EH	86	-6538.94	19347.50	33.8	Pass
		Diagonal	ROHN 2 EH	87	-6523.66	19347.50	33.7	Pass
		Diagonal	ROHN 2 EH	89	-9227.94	19347.50	47.7	Pass
		Diagonal	ROHN 2 EH	90	-8974.19	19347.50	46.4	Pass
T4	133.333 - 126.667	Diagonal	ROHN 2 EH	100	-9731.08	18285.10	53.2	Pass
		Diagonal	ROHN 2 EH	101	-9649.61	18285.10	52.8	Pass
		Diagonal	ROHN 2 EH	102	-10253.10	18285.10	56.1	Pass
		Diagonal	ROHN 2 EH	103	-10244.50	18285.10	56.0	Pass
		Diagonal	ROHN 2 EH	104	-12925.40	18285.10	70.7	Pass
		Diagonal	ROHN 2 EH	105	-12694.50	18285.10	69.4	Pass
T5	126.667 - 120	Diagonal	ROHN 2 XXS	115	-12269.50	25935.80	47.3	Pass
		Diagonal	ROHN 2 XXS	116	-12193.10	25935.80	47.0	Pass
		Diagonal	ROHN 2 XXS	117	-12790.40	25935.80	49.3	Pass
		Diagonal	ROHN 2 XXS	118	-12777.50	25935.80	49.3	Pass
		Diagonal	ROHN 2 XXS	119	-15262.10	25935.80	58.8	Pass
		Diagonal	ROHN 2 XXS	120	-15048.50	25935.80	58.0	Pass
T6	120 - 100	Diagonal	Pipe 2.5 XXS	128	-15461.70	30977.00	49.9	Pass
		Diagonal	Pipe 2.5 XXS	129	-15384.60	30977.00	49.7	Pass
		Diagonal	Pipe 2.5 XXS	131	-16881.60	30977.00	54.5	Pass
		Diagonal	Pipe 2.5 XXS	132	-16853.30	30977.00	54.4	Pass
		Diagonal	Pipe 2.5 XXS	134	-19208.80	30977.00	62.0	Pass
		Diagonal	Pipe 2.5 XXS	135	-19009.70	30977.00	61.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	Pipe 2.5 XXS	140	-15747.00	32743.10	48.1	Pass
		Diagonal	Pipe 2.5 XXS	141	-15660.60	32743.10	47.8	Pass
		Diagonal	Pipe 2.5 XXS	143	-16750.70	32743.10	51.2	Pass
		Diagonal	Pipe 2.5 XXS	144	-16722.80	32743.10	51.1	Pass
		Diagonal	Pipe 2.5 XXS	146	-19496.70	32743.10	59.5	Pass
		Diagonal	Pipe 2.5 XXS	147	-19264.60	32743.10	58.8	Pass
T7	100 - 90	Diagonal	ROHN 3 STD	155	-14049.10	30346.40	46.3	Pass
		Diagonal	ROHN 3 STD	156	-13982.90	30346.40	46.1	Pass
		Diagonal	ROHN 3 STD	158	-15700.30	30346.40	51.7	Pass
		Diagonal	ROHN 3 STD	159	-15643.40	30346.40	51.5	Pass
		Diagonal	ROHN 3 STD	161	-17637.10	30346.40	58.1	Pass
		Diagonal	ROHN 3 STD	162	-17490.50	30346.40	57.6	Pass
T8	90 - 80	Diagonal	ROHN 3 STD	172	-14003.90	28290.90	49.5	Pass
		Diagonal	ROHN 3 STD	173	-13944.30	28290.90	49.3	Pass
		Diagonal	ROHN 3 STD	174	-15888.50	28290.90	56.2	Pass
		Diagonal	ROHN 3 STD	175	-15835.80	28290.90	56.0	Pass
		Diagonal	ROHN 3 STD	176	-17532.60	28290.90	62.0	Pass
		Diagonal	ROHN 3 STD	177	-17407.10	28290.90	61.5	Pass
T9	80 - 60	Diagonal	ROHN 3 STD	185	-15032.20	25233.20	59.6	Pass
		Diagonal	ROHN 3 STD	186	-14983.20	25233.20	59.4	Pass
		Diagonal	ROHN 3 STD	188	-17282.90	25233.20	68.5	Pass
		Diagonal	ROHN 3 STD	189	-17242.80	25233.20	68.3	Pass
		Diagonal	ROHN 3 STD	191	-18499.10	25233.20	73.3	Pass
		Diagonal	ROHN 3 STD	192	-18399.80	25233.20	72.9	Pass
		Diagonal	ROHN 3 STD	197	-14551.70	26922.60	54.1	Pass
		Diagonal	ROHN 3 STD	198	-14496.90	26922.60	53.8	Pass
		Diagonal	ROHN 3 STD	200	-16666.50	26922.60	61.9	Pass
		Diagonal	ROHN 3 STD	201	-16622.00	26922.60	61.7	Pass
		Diagonal	ROHN 3 STD	203	-18085.30	26922.60	67.2	Pass
		Diagonal	ROHN 3 STD	204	-17972.00	26922.60	66.8	Pass
T10	60 - 40	Diagonal	ROHN 3 EH	212	-16148.20	28518.80	56.6	Pass
		Diagonal	ROHN 3 EH	213	-16112.60	28518.80	56.5	Pass
		Diagonal	ROHN 3 EH	215	-18623.70	28518.80	65.3	Pass
		Diagonal	ROHN 3 EH	216	-18579.90	28518.80	65.1	Pass
		Diagonal	ROHN 3 EH	218	-19658.90	28518.80	68.9	Pass
		Diagonal	ROHN 3 EH	219	-19575.80	28518.80	68.6	Pass
		Diagonal	ROHN 3 EH	224	-15784.50	30411.50	51.9	Pass
		Diagonal	ROHN 3 EH	225	-15745.70	30411.50	51.8	Pass
		Diagonal	ROHN 3 EH	227	-18137.00	30411.50	59.6	Pass
		Diagonal	ROHN 3 EH	228	-18095.70	30411.50	59.5	Pass
		Diagonal	ROHN 3 EH	230	-19325.60	30411.50	63.5	Pass
		Diagonal	ROHN 3 EH	231	-19230.20	30411.50	63.2	Pass
T11	40 - 30	Diagonal	ROHN 3 EH	239	-16500.40	26718.70	61.8	Pass
		Diagonal	ROHN 3 EH	240	-16466.60	26718.70	61.6	Pass
		Diagonal	ROHN 3 EH	242	-19141.40	26718.70	71.6	Pass
		Diagonal	ROHN 3 EH	243	-19070.50	26718.70	71.4	Pass
		Diagonal	ROHN 3 EH	245	-20027.60	26718.70	75.0	Pass
		Diagonal	ROHN 3 EH	246	-19955.80	26718.70	74.7	Pass
T12	30 - 20	Diagonal	ROHN 3 EH	256	-17063.90	25055.10	68.1	Pass
		Diagonal	ROHN 3 EH	257	-17032.50	25055.10	68.0	Pass
		Diagonal	ROHN 3 EH	258	-19756.60	25055.10	78.9	Pass
		Diagonal	ROHN 3 EH	259	-19692.10	25055.10	78.6	Pass
		Diagonal	ROHN 3 EH	260	-20532.20	25055.10	81.9	Pass
		Diagonal	ROHN 3 EH	261	-20466.40	25055.10	81.7	Pass
T13	20 - 0	Diagonal	ROHN 3 EH	269	-24787.90	43506.30	57.0	Pass
		Diagonal	ROHN 3 EH	272	-24753.40	43506.30	56.9	Pass
		Diagonal	ROHN 3 EH	276	-29305.30	43506.30	67.4	Pass
		Diagonal	ROHN 3 EH	279	-28919.80	43506.30	66.5	Pass
		Diagonal	ROHN 3 EH	284	-29905.90	43506.30	68.7	Pass
		Diagonal	ROHN 3 EH	287	-29800.90	43506.30	68.5	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	7	-1270.00	22519.90	5.6	Pass

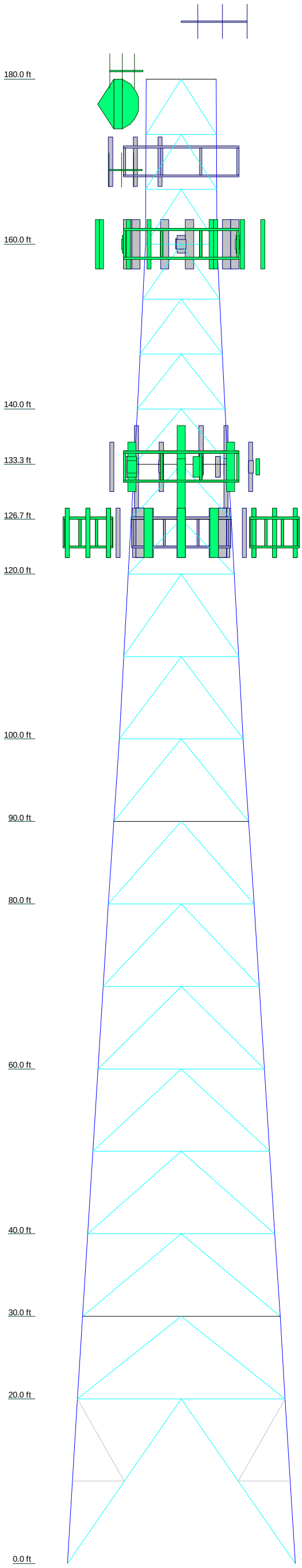
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Horizontal	ROHN 1.5 STD	10	-1297.58	22519.90	5.8	Pass
		Horizontal	ROHN 1.5 STD	13	-2161.24	22519.90	9.6	Pass
		Horizontal	ROHN 1.5 STD	19	-1061.48	22590.20	4.7	Pass
		Horizontal	ROHN 1.5 STD	22	-723.88	22590.20	3.2	Pass
		Horizontal	ROHN 1.5 STD	25	-1554.85	22590.20	6.9	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	43	-3471.54	19142.00	18.1	Pass
		Horizontal	ROHN 1.5 STD	46	-4064.15	19142.00	21.2	Pass
		Horizontal	ROHN 1.5 STD	49	-5604.80	19142.00	29.3	Pass
		Horizontal	ROHN 1.5 STD	55	-3311.53	20895.80	15.8	Pass
		Horizontal	ROHN 1.5 STD	58	-3990.78	20895.80	19.1	Pass
		Horizontal	ROHN 1.5 STD	61	-5417.82	20895.80	25.9	Pass
		Horizontal	ROHN 1.5 STD	67	-3893.76	22661.30	17.2	Pass
		Horizontal	ROHN 1.5 STD	70	-4409.34	22661.30	19.5	Pass
		Horizontal	ROHN 1.5 STD	73	-5326.77	22661.30	23.5	Pass
T3	140 - 133.333	Horizontal	ROHN 2 STD	82	-3778.16	30956.80	12.2	Pass
							14.0 (b)	
		Horizontal	ROHN 2 STD	85	-4257.45	30956.80	13.8	Pass
							15.5 (b)	
		Horizontal	ROHN 2 STD	88	-5929.49	30956.80	19.2	Pass
							21.6 (b)	
T6	120 - 100	Horizontal	ROHN 2 STD	127	-9092.47	22639.20	40.2	Pass
		Horizontal	ROHN 2 STD	130	-10050.20	22639.20	44.4	Pass
		Horizontal	ROHN 2 STD	133	-11345.00	22639.20	50.1	Pass
		Horizontal	ROHN 2 STD	139	-8834.08	25586.40	34.5	Pass
		Horizontal	ROHN 2 STD	142	-9537.09	25586.40	37.3	Pass
		Horizontal	ROHN 2 STD	145	-10981.10	25586.40	42.9	Pass
T7	100 - 90	Horizontal	ROHN 2 STD	154	-8772.33	19817.20	44.3	Pass
		Horizontal	ROHN 2 STD	157	-10040.30	19817.20	50.7	Pass
		Horizontal	ROHN 2 STD	160	-11059.70	19817.20	55.8	Pass
T9	80 - 60	Horizontal	ROHN 2.5 STD	184	-10457.40	28984.30	36.1	Pass
							38.3 (b)	
		Horizontal	ROHN 2.5 STD	187	-12230.60	28984.30	42.2	Pass
							44.4 (b)	
		Horizontal	ROHN 2.5 STD	190	-12921.80	28984.30	44.6	Pass
							47.2 (b)	
		Horizontal	ROHN 2.5 STD	196	-9799.58	33028.40	29.7	Pass
							35.9 (b)	
		Horizontal	ROHN 2.5 STD	199	-11338.10	33028.40	34.3	Pass
							41.4 (b)	
		Horizontal	ROHN 2.5 STD	202	-12221.80	33028.40	37.0	Pass
							44.7 (b)	
T10	60 - 40	Horizontal	ROHN 2.5 STD	211	-11759.80	22405.40	52.5	Pass
		Horizontal	ROHN 2.5 STD	214	-13815.80	22405.40	61.7	Pass
		Horizontal	ROHN 2.5 STD	217	-14393.10	22405.40	64.2	Pass
		Horizontal	ROHN 2.5 STD	223	-11247.10	25378.10	44.3	Pass
		Horizontal	ROHN 2.5 STD	226	-13187.00	25378.10	52.0	Pass
		Horizontal	ROHN 2.5 STD	229	-13836.40	25378.10	54.5	Pass
T11	40 - 30	Horizontal	ROHN 2.5 STD	238	-12281.10	19925.90	61.6	Pass
		Horizontal	ROHN 2.5 STD	241	-14529.20	19925.90	72.9	Pass
		Horizontal	ROHN 2.5 STD	244	-14990.30	19925.90	75.2	Pass
T13	20 - 0	Horizontal	P3.5x.226	268	-13490.80	49951.20	27.0	Pass
							34.2 (b)	
		Horizontal	P3.5x.226	275	-16258.30	49951.20	32.5	Pass
							40.9 (b)	
		Horizontal	P3.5x.226	283	-16428.90	49951.20	32.9	Pass
							41.6 (b)	
T1	180 - 160	Top Girt	ROHN 1.5 STD	4	-239.89	22660.50	1.1	Pass
							1.2 (b)	
		Top Girt	ROHN 1.5 STD	5	-126.93	22660.50	0.6	Pass
		Top Girt	ROHN 1.5 STD	6	-354.95	22660.50	1.6	Pass
T4	133.333 -	Top Girt	ROHN 2 STD	97	-6967.99	29081.40	24.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
	126.667						25.2 (b)	
		Top Girt	ROHN 2 STD	98	-7307.12	29081.40	25.1	Pass
							26.5 (b)	
		Top Girt	ROHN 2 STD	99	-8658.26	29081.40	29.8	Pass
							31.5 (b)	
T5	126.667 - 120	Top Girt	ROHN 2 STD	112	-8402.07	27207.90	30.9	Pass
		Top Girt	ROHN 2 STD	113	-9039.93	27207.90	33.2	Pass
		Top Girt	ROHN 2 STD	114	-10472.00	27207.90	38.5	Pass
T8	90 - 80	Top Girt	ROHN 2 STD	169	-9119.91	16719.60	54.5	Pass
		Top Girt	ROHN 2 STD	170	-10496.40	16719.60	62.8	Pass
		Top Girt	ROHN 2 STD	171	-11458.30	16719.60	68.5	Pass
T12	30 - 20	Top Girt	ROHN 2.5 EH	253	-12891.00	22438.80	57.4	Pass
		Top Girt	ROHN 2.5 EH	254	-15083.70	22438.80	67.2	Pass
		Top Girt	ROHN 2.5 EH	255	-15599.20	22438.80	69.5	Pass
T13	20 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	270	-5214.27	13802.80	37.8	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	273	-5241.71	13802.80	38.0	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	277	-5241.71	13802.80	38.0	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	280	-5407.57	13802.80	39.2	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	285	-5407.57	13802.80	39.2	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	288	-5214.27	13802.80	37.8	Pass
T13	20 - 0	Redund Diag 1 Bracing	ROHN 2 STD	271	-4763.78	8998.85	52.9	Pass
		Redund Diag 1 Bracing	ROHN 2 STD	274	-4788.84	8998.85	53.2	Pass
		Redund Diag 1 Bracing	ROHN 2 STD	278	-4788.84	8998.85	53.2	Pass
		Redund Diag 1 Bracing	ROHN 2 STD	281	-4940.37	8998.85	54.9	Pass
		Redund Diag 1 Bracing	ROHN 2 STD	286	-4940.37	8998.85	54.9	Pass
		Redund Diag 1 Bracing	ROHN 2 STD	289	-4763.78	8998.85	52.9	Pass
T13	20 - 0	Redund Hip 1 Bracing	ROHN 2.5 STD	282	-17.86	48180.50	0.2	Pass
		Redund Hip 1 Bracing	ROHN 2.5 STD	290	-18.04	48180.50	0.2	Pass
		Redund Hip 1 Bracing	ROHN 2.5 STD	291	-17.79	48180.50	0.2	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	16	-1.80	8234.10	0.4	Pass
		Inner Bracing	L2x2x1/8	17	-1.85	8234.10	0.4	Pass
		Inner Bracing	L2x2x1/8	18	-1.72	8234.10	0.4	Pass
		Inner Bracing	L2x2x1/8	28	-1.39	8287.35	0.4	Pass
		Inner Bracing	L2x2x1/8	29	-1.41	8287.35	0.4	Pass
		Inner Bracing	L2x2x1/8	30	-1.37	8287.35	0.4	Pass
		Inner Bracing	L2x2x1/8	37	-0.29	8341.12	0.4	Pass
		Inner Bracing	L2x2x1/8	38	-0.28	8341.12	0.4	Pass
		Inner Bracing	L2x2x1/8	39	-0.32	8341.12	0.4	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	52	-4.41	6068.75	0.5	Pass
		Inner Bracing	L2x2x1/8	53	-4.59	6068.75	0.5	Pass
		Inner Bracing	L2x2x1/8	54	-4.39	6068.75	0.5	Pass
		Inner Bracing	L2x2x1/8	64	-4.83	7007.17	0.5	Pass
		Inner Bracing	L2x2x1/8	65	-5.05	7007.17	0.5	Pass
		Inner Bracing	L2x2x1/8	66	-4.79	7007.17	0.5	Pass
		Inner Bracing	L2x2x1/8	76	-6.73	8181.36	0.4	Pass
		Inner Bracing	L2x2x1/8	77	-7.11	8181.36	0.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Inner Bracing	L2x2x1/8	78	-6.66	8181.36	0.4	Pass
T3	140 - 133.333	Inner Bracing	L2x2x1/8	91	-6.46	5306.96	0.5	Pass
		Inner Bracing	L2x2x1/8	92	-6.69	5306.96	0.5	Pass
		Inner Bracing	L2x2x1/8	93	-6.43	5306.96	0.5	Pass
T4	133.333 - 126.667	Inner Bracing	L2x2x1/8	106	-9.96	4680.37	0.6	Pass
		Inner Bracing	L2x2x1/8	107	-10.15	4680.37	0.6	Pass
		Inner Bracing	L2x2x1/8	108	-9.94	4680.37	0.6	Pass
T5	126.667 - 120	Inner Bracing	L2x2x1/8	121	-11.06	4158.54	0.6	Pass
		Inner Bracing	L2x2x1/8	122	-11.21	4158.54	0.6	Pass
		Inner Bracing	L2x2x1/8	123	-11.04	4158.54	0.6	Pass
T6	120 - 100	Inner Bracing	L2 1/2x2 1/2x3/16	136	-11.53	9072.37	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	137	-11.63	9072.37	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	138	-11.52	9072.37	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	148	-12.37	10738.30	0.4	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	149	-12.50	10738.30	0.4	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	150	-12.35	10738.30	0.4	Pass
T7	100 - 90	Inner Bracing	L2 1/2x2 1/2x3/16	163	-10.77	7766.06	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	164	-10.86	7766.06	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	165	-10.81	7766.06	0.5	Pass
T8	90 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	178	-11.01	6565.57	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	179	-11.10	6565.57	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	180	-11.04	6565.57	0.5	Pass
T9	80 - 60	Inner Bracing	L3x3x3/16	193	-12.92	8593.12	0.6	Pass
		Inner Bracing	L3x3x3/16	194	-13.01	8593.12	0.6	Pass
		Inner Bracing	L3x3x3/16	195	-12.94	8593.12	0.6	Pass
		Inner Bracing	L3x3x3/16	205	-12.47	9851.38	0.6	Pass
		Inner Bracing	L3x3x3/16	206	-12.57	9851.38	0.6	Pass
		Inner Bracing	L3x3x3/16	207	-12.50	9851.38	0.6	Pass
T10	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	220	-15.36	14095.40	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	221	-15.43	14095.40	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	222	-15.38	14095.40	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	232	-14.87	15896.00	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	233	-14.95	15896.00	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	234	-14.89	15896.00	0.4	Pass
T11	40 - 30	Inner Bracing	L3 1/2x3 1/2x1/4	247	-15.61	12584.30	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	248	-15.67	12584.30	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	249	-15.62	12584.30	0.4	Pass
T12	30 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	262	-16.43	11303.80	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	263	-16.49	11303.80	0.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	264	-16.44	11303.80	0.4	Pass
T13	20 - 0	Inner Bracing	ROHN 2 STD	292	-14.29	6590.81	0.4	Pass
		Inner Bracing	ROHN 2 STD	293	-14.59	6590.81	0.4	Pass
		Inner Bracing	ROHN 2 STD	294	-14.35	6590.81	0.4	Pass
							Summary	
						Leg (T12)	62.9	Pass
						Diagonal (T12)	81.9	Pass
						Horizontal (T11)	75.2	Pass
						Top Girt (T12)	69.5	Pass
						Redund Horz 1 Bracing (T13)	39.2	Pass
						Redund Diag 1 Bracing (T13)	54.9	Pass
						Redund Hip	0.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						1 Bracing (T13)		
						Inner Bracing (T9)	0.6	Pass
						Bolt Checks	62.5	Pass
						RATING =	**81.9**	**Pass**

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	
Legs	ROHN 3 STD	ROHN 4 STD	ROHN 5 EH	ROHN 2 XXS		ROHN 6 EHS	ROHN 6 EH		120deg_9.6250x0.375 BU on ROHN 8 EHS	ROHN 8 EHS Leg Pipe	1/3 9.6250x0.375 on ROHN 8 EH		1/3 9.6250x0.375 on ROHN 8 EH Leg Pipe	
Leg Grade	A572-50										A572-42			
Diagonals	ROHN 2 STD	ROHN 2 EH				Pipe 2.5 XXS					ROHN 3 EH			
Diagonal Grade														
Top Girts	ROHN 1.5 STD	N.A.		ROHN 2 STD			N.A.					N.A.		
Horizontals	ROHN 1.5 STD	ROHN 2 STD	ROHN 2 STD	N.A.			ROHN 2 STD	N.A.				ROHN 2 STD	P3.5x.226	
Red. Horizontals													ROHN 1.5 STD	
Red. Diagonals													ROHN 2 STD	
Red. Hips													ROHN 2.5 STD	
Inner Bracing	L2x2x1/8						L2 1/2x2 1/2x3/16		L3x3x3/16				ROHN 2 STD	L3 1/2x3 1/2x1/4
Face Width (ft)	8.542	8.625	10.709	11.4033	12.0977	12.792	15.042	16.3595	17.677	20.177	22.677	23.927	25.177	27.677
# Panels @ (ft)	9 @ 6.66667								10 @ 10				1 @ 20	
Weight (lb)	1250.4	1495.6	825.9	842.2	1080.4	3821.3	1682.8	1722.7	4897.5	5700.5	2942.5	3139.0	6187.6	35588.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ANT940Y10-WR (CSP)	187	AIR6419 (ATI - Proposed)	133
ANT940Y10-WR (CSP - Yagi Antenna)	181	AIR6449 (ATI - Proposed)	133
PA6-65AC (DNK-52 / CSP-42)	177	DMP65R-BU6D (ATI - Proposed)	133
RFI BPS7496-180-14 Panel Antenna (CSP-80)	170	RRUS-32 B66 (ATI)	133
RFI BPS7496-180-14 Panel Antenna (CSP-81)	170	RRUS-32 (ATI)	133
RFI BPS7496-180-14 Panel Antenna (CSP-82)	170	RRUS-32 (ATI)	133
SitePro1 USF12-396-U Mount Assembly w/ (3) 96" Mount Pipes (CSP 47, 80, 81, 82)	170	RRUS-32 B66 (ATI)	133
		RRUS-32 (ATI)	133
432E-83I-01T TTA Unit (Re-Located TMA (CSP))	170	RRUS-32 (ATI)	133
3' Yagi (CSP)	169	RRUS-32 B66 (ATI)	133
B2/B66A RRH (Verizon)	160	RRUS-32 (ATI)	133
B5/B13 RRH (Verizon)	160	RRUS-32 (ATI)	133
CBRS RRH-RT4401-48A (Verizon)	160	4478 B14 (ATI - Proposed)	133
RF4439d-25A (B2/B66A RRH) (Verizon)	160	4478 B14 (ATI - Proposed)	133
RF4440d-13A (B5/B13 RRH) (Verizon)	160	4478 B14 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	4449 B5/B12 (ATI - Proposed)	133
MT6407-77A (Verizon)	160	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
CBC78T-DS-43-2X Diplexer (Verizon)	160	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
B2/B66A RRH (Verizon)	160	DC9 (ATI - Proposed)	133
B5/B13 RRH (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
CBRS RRH-RT4401-48A (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	SitePro VFA14-10 (ATI - Proposed)	133
JAHH-65B-R3B Panel Antenna (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
MT6407-77A (Verizon)	160	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	125
CBC78T-DS-43-2X Diplexer (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
B2/B66A RRH (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
B5/B13 RRH (Verizon)	160	Ericsson AIR21 B2A|B4P Panel (T-Mobile)	125
CBRS RRH-RT4401-48A (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
DB-T1-6Z-8AB-0Z Distribution Box (Verizon)	160		
DB-T1-6Z-8AB-0Z Distribution Box (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
ROHN 6'x15' Boom Gate (1) (Verizon)	160		
ROHN 6'x15' Boom Gate (1) (Verizon)	160	APXVARR24_43-C-NA20 Panel Antenna w/ 96" Pipe (T-Mobile)	125
MX06FRO640-02 (Verizon)	160		
MX06FRO640-02 (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
XXDWMM-12.5-65-8T-CBRS Panel (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
MT6407-77A (Verizon)	160	LTF12=372 Sector Mount (1) (T-Mobile)	125
MX06FRO640-02 (Verizon)	160	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
MX06FRO640-02 (Verizon)	160	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
ROHN 6'x15' Boom Gate (1) (Verizon)	160		
QD6616-7 (ATI - Proposed)	133	Ericsson AIR32 B66A/B2A Panel Antenna (T-Mobile)	125
AIR6419 (ATI - Proposed)	133		
AIR6449 (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
DMP65R-BU6D (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
QD6616-7 (ATI - Proposed)	133	Generic Twin TMA unit (T-Mobile)	125
AIR6419 (ATI - Proposed)	133	ANT150D (CSP - 1-Bay Dipole)	113
AIR6449 (ATI - Proposed)	133	GPS (DNK-1 / GPS)	60
DMP65R-BU6D (ATI - Proposed)	133		
QD6616-7 (ATI - Proposed)	133		

MATERIAL STRENGTH

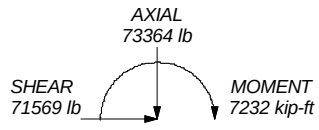
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A572-42	42 ksi	60 ksi

TOWER DESIGN NOTES

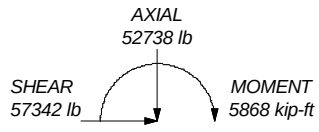
1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 90 mph wind.

MAX. CORNER REACTIONS AT BASE:
DOWN: 326158 lb
SHEAR: 42563 lb

UPLIFT: -268822 lb
SHEAR: 37250 lb



TORQUE 88 kip-ft
90 mph WIND - 0.5000 in ICE



TORQUE 49 kip-ft
REACTIONS - 90 mph WIND

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: ***22089.02 - Westport***		
Project: ***180-ft Lattice Tower (CSP #32)***		
Client: AT&T	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 07/26/22	Scale: NTS
Path: J:\Jobs\2200900.W\02_CTL\021407\05_Structural\Backup Documentation\Tnetower\Twist and Sway\180' SST.eri		Dwg No. E-1

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice
19	Dead+Wind 0 deg+Ice
20	Dead+Wind 30 deg+Ice
21	Dead+Wind 45 deg+Ice
22	Dead+Wind 60 deg+Ice
23	Dead+Wind 90 deg+Ice
24	Dead+Wind 120 deg+Ice
25	Dead+Wind 135 deg+Ice
26	Dead+Wind 150 deg+Ice
27	Dead+Wind 180 deg+Ice
28	Dead+Wind 210 deg+Ice
29	Dead+Wind 225 deg+Ice
30	Dead+Wind 240 deg+Ice
31	Dead+Wind 270 deg+Ice
32	Dead+Wind 300 deg+Ice
33	Dead+Wind 315 deg+Ice
34	Dead+Wind 330 deg+Ice
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	7.397	35	0.3256	0.2087
T2	160 - 140	6.013	35	0.3215	0.1812
T3	140 - 133.333	4.600	35	0.2933	0.1161
T4	133.333 - 126.667	4.174	35	0.2836	0.1007
T5	126.667 - 120	3.743	35	0.2724	0.0872
T6	120 - 100	3.341	35	0.2577	0.0789
T7	100 - 90	2.328	35	0.2027	0.0616
T8	90 - 80	1.891	35	0.1766	0.0515
T9	80 - 60	1.513	35	0.1485	0.0422
T10	60 - 40	0.881	35	0.1127	0.0279
T11	40 - 30	0.420	35	0.0738	0.0176
T12	30 - 20	0.248	35	0.0537	0.0127
T13	20 - 0	0.124	35	0.0332	0.0086

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	ANT940Y10-WR	35	7.397	0.3256	0.2087	117251
181.00	ANT940Y10-WR	35	7.397	0.3256	0.2087	117251
177.00	PA6-65AC	35	7.193	0.3259	0.2064	117251
170.00	RFI BPS7496-180-14 Panel Antenna	35	6.714	0.3260	0.1996	58625
169.00	3' Yagi	35	6.645	0.3259	0.1983	53296
160.00	ROHN 6'x15' Boom Gate (1)	35	6.013	0.3215	0.1812	35642
133.00	QD6616-7	35	4.153	0.2831	0.1000	41497
125.00	LTF12=372 Sector Mount (1)	35	3.639	0.2690	0.0846	14418
113.00	ANT150D	35	2.959	0.2391	0.0726	17983
60.00	GPS	35	0.881	0.1127	0.0279	25962

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	8.987	19	0.3933	0.2840
T2	160 - 140	7.315	19	0.3885	0.2550
T3	140 - 133.333	5.612	19	0.3545	0.1720
T4	133.333 - 126.667	5.097	19	0.3429	0.1508
T5	126.667 - 120	4.577	19	0.3294	0.1337
T6	120 - 100	4.091	19	0.3119	0.1233
T7	100 - 90	2.862	19	0.2462	0.0997
T8	90 - 80	2.330	19	0.2148	0.0841
T9	80 - 60	1.867	19	0.1812	0.0695
T10	60 - 40	1.090	19	0.1378	0.0471
T11	40 - 30	0.522	19	0.0904	0.0301
T12	30 - 20	0.310	19	0.0659	0.0222
T13	20 - 0	0.156	19	0.0407	0.0153

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	ANT940Y10-WR	19	8.987	0.3933	0.2840	99925
181.00	ANT940Y10-WR	19	8.987	0.3933	0.2840	99925
177.00	PA6-65AC	19	8.740	0.3938	0.2821	99925
170.00	RFI BPS7496-180-14 Panel Antenna	19	8.161	0.3939	0.2759	49962
169.00	3' Yagi	19	8.078	0.3938	0.2746	45420
160.00	ROHN 6'x15' Boom Gate (1)	19	7.315	0.3885	0.2550	30269
133.00	QD6616-7	19	5.071	0.3423	0.1498	39337
125.00	LTF12=372 Sector Mount (1)	19	4.451	0.3254	0.1305	12242
113.00	ANT150D	19	3.628	0.2897	0.1153	15183
60.00	GPS	19	1.090	0.1378	0.0471	21261

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Subject:	Anchor Bolt Analysis
Location:	180-ft Lattice Tower Westport, CT
Rev. 0: 7/26/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 22089.02

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 310·kips	(Input From tnxTower)
Compression Force =	Compression := 353·kips	(Input From tnxTower)
Shear Force =	Shear := 50·kips	(Input From tnxTower)

Anchor Bolt Data:

ASTMA354 Grade BC

Number of Anchor Bolts =	N := 10	(User Input)
Bolt Ultimate Strength =	F_u := 125·ksi	(User Input)
Bolt Yield Strength =	F_y := 109·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.00·in	(User Input)
Threads per Inch =	n := 8	(User Input)
Length from Top of Pier to Bottom of Leveling Nut =	L_{ar} := 0·in	(User Input)

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Elastic Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Plastic Section Modulus of Bolt = $Z_x := \frac{D_n^3}{6} = 0.113 \cdot in^3$

Anchor Bolt Design Strength:

Resistance Factor for Flexure = $\phi_f := 0.9$

Resistance Factor for Compression = $\phi_c := 0.9$

Resistance Factor for Tension = $\phi_t := 0.75$

Resistance Factor for Shear = $\phi_v := 0.75$

Design Tensile Strength = $\Phi R_{nt} := \phi_t \cdot F_u \cdot A_n = 56.8 \cdot k$

Design Compression Strength = $\Phi R_{nc} := \phi_c \cdot F_y \cdot A_g = 77 \cdot k$

Design Shear Strength (Tension) = $\Phi R_{nv} := \phi_v \cdot 0.5 F_u \cdot A_g = 36.8 \cdot k$

Design Shear Strength (Compression) = $\Phi R_{nvc} := \phi_c \cdot 0.6 F_y \cdot A_g \cdot 0.75 = 34.7 \cdot k$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $P_{ut} := \frac{Tension}{N} = 31 \cdot kips$

Maximum Compressive Force = $P_{uc} := \frac{Compression}{N} = 35.3 \cdot kips$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 5 \cdot kips$

Condition1 = $Condition1 := if\left[\left[\left(\frac{P_{ut}}{\Phi R_{nt}}\right)^2 + \left(\frac{V_u}{\Phi R_{nv}}\right)^2\right] \le 1.00, "OK", "Overstressed"\right]$

Condition1 = "OK"

Condition2 = $Condition2 := if\left[\left[\left(\frac{P_{uc}}{\Phi R_{nc}}\right) + \left(\frac{V_u}{\Phi R_{nvc}}\right)^2\right] \le 1.00, "OK", "Overstressed"\right]$

Condition2 = "OK"

Bolt % of Capacity = $\max\left[\left(\frac{P_{ut}}{\Phi R_{nt}}\right)^2 + \left(\frac{V_u}{\Phi R_{nv}}\right)^2, \left(\frac{P_{uc}}{\Phi R_{nc}}\right) + \left(\frac{V_u}{\Phi R_{nvc}}\right)^2\right] = 47.9 \cdot \%$

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Subject:	FOUNDATION ANALYSIS
Location:	180-ft Lattice Tower Westport, CT
Rev. 0: 7/26/22	Prepared by: T.J.L Checked by: C.F.C. Job no. 22089.02

Caisson Foundation:

Input Data:

Tower Data

Uplift =	$Uplift := 310 \cdot kips$	(User Input)
Compression =	$Comp := 353 \cdot kips$	(User Input)
Shear Force =	$Shear := 50 \cdot kips$	(User Input)
Tower Height =	$H_t := 180 \cdot ft$	(User Input)

Footing Data:

Length of Caisson =	$L_c := 27 \cdot ft$	(User Input)
Extension of Caisson Above Grade =	$L_{cag} := 1 \cdot ft$	(User Input)
Diameter of Caisson =	$d_c := 4.5 \cdot ft$	(User Input)
Length of Caisson Above Wate Table =	$L_{c.AWT} := 27 \cdot ft$	(User Input)
Length of Caisson Below Wate Table =	$L_{c.BWT} := 0 \cdot ft$	(User Input)

Material Properties:

Concrete Compressive Strength =	$f_c := 4000 \cdot psi$	(User Input)
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)
Ultimate Skin Friction (Above Water Table) =	$\mu_1 := 3.73 \cdot ksf$	(User Input)
Ultimate Skin Friction (Below Water Table) =	$\mu_2 := 3.73 \cdot ksf$	(User Input)
Ultimate Soil Bearing Capacity =	$q_u := 6000 \cdot psf$	(Assumed Conservative User Input)
Unit Weight of Soil =	$\gamma_{soil} := 120 \cdot pcf$	(User Input)
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)
Depth to Neglect =	$n := 5 \cdot ft$	(User Input)
Resistance Factor for Bearing =	$\Phi_{sBearing} := 0.75$	(TIA-222-H 9.7)
Resistance Factor for Friction =	$\Phi_{sFriction} := 0.75$	(TIA-222-H 9.7)

Calculated Properties:

Adjusted Concrete Unit Weight = $\gamma_c := \gamma_{conc} - 62.4pcf = 87.6 \cdot pcf$

Weight of Concrete Caisson (no water) = $WT_{c.comp} := \frac{\pi}{4} \cdot \left(d_c^2 L_c\right) \cdot \gamma_{conc} = 64.412 \cdot kip$

Weight of Concrete Caisson (water) = $WT_{c.uplift} := \frac{\pi}{4} \cdot \left[\left(d_c^2 L_{c.AWT}\right) \cdot \gamma_{conc} + \left(d_c^2 L_{c.BWT}\right) \cdot \gamma_c\right] = 64.412 \cdot kip$

Check Uplift:

Uplift Resistance from Concrete Weight = $Uplift_{conc} := \left(WT_{c.uplift}\right) \cdot 0.9 = 57.971 \cdot kips$

Uplift Resistance from Skin Friction = $Uplift_{SF} := \Phi_{sFriction} \cdot \pi \cdot d_c \cdot \left[\left(L_{c.AWT} - L_{cag} - n\right) \cdot \mu_1 + L_{c.BWT} \cdot \mu_2\right] = 831 \cdot kips$

Total Uplift Resistance = $Uplift_R := Uplift_{conc} + Uplift_{SF} = 888.494 \cdot kips$

Uplift Check = $\frac{Uplift}{Uplift_R} = 34.89 \cdot \%$

$Uplift\_Check := if\left(\frac{Uplift_R}{Uplift} \geq 1.0, "Okay", "No\ Good"\right)$

Uplift_Check = "Okay"

Check Compression:

Total Compression Force = $Comp_{tot} := WT_{c.comp} + Comp = 417 \cdot kips$

Compression Resistance from Bearing = $Comp_{bearing} := \Phi_{sBearing} \cdot \left(\frac{\pi}{4} \cdot d_c^2 \cdot q_u\right) = 72 \cdot kips$

Compression Resistance from Skin Friction = $Comp_{SF} := \Phi_{sFriction} \cdot \pi \cdot d_c \cdot \left[\left(L_{c.AWT} - L_{cag} - n\right) \cdot \mu_1 + L_{c.BWT} \cdot \mu_2\right] = 831 \cdot kips$

Total Compression Resistance = $Comp_R := Comp_{bearing} + Comp_{SF} = 902 \cdot kips$

Compression Check = $\frac{Comp_{tot}}{Comp_R} = 46.27 \cdot \%$

$Compression\_Check := if\left(\frac{Comp_R}{Comp_{tot}} \geq 1.0, "Okay", "No\ Good"\right)$

Compression_Check = "Okay"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTL02147	DATE:	03/02/2021	RF DESIGN ENG:	Parminder Singh
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	860-997-9698
REVISION:	Preliminary	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	SP656B@ATT.COM
INITIATIVE /PROJECT:	C-BAND & DOD add MRCTB051252 as there are not enough fields in PACE columns				

RF PERF ENG:		RFDS PROGRAM TYPE:	2021 5G NR Radio		
RF PERF PHONE:		RFDS TECHNOLOGY:	5G NR 1SR CBAND		
RF PERF EMAIL:		STATE/STATUS:	Final/Approved		
ADDITIONAL WORKFLOW NOTIFICATIONS:		RFDS ID:	4387624		
RFDS VERSION:	6.00	Created By:	sp656b	Updated By:	sp656b
UMTS FREQUENCY:		Date Created:	3/1/2021 10:02:12 AM	Date Updated:	2/22/2022 9:59:31 PM
LTE FREQUENCY:	700, 850, 1900, AWS, WCS	Estimated SQIN:	18,177	Expiration :	
5G FREQUENCY:	850	RER Initiative:		Calculation ID:	20220222215301863 4
I-PLAN JOB # 1:	ER_-RCTB-21-02521	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 6C		
I-PLAN JOB # 2:	ER_-RCTB-21-06951	IPLAN PRD GRP || SUB GRP #2:	5G NR Software Radio || 5G NR Activation		
I-PLAN JOB # 3:	ER_-RCTB-21-06950	IPLAN PRD GRP || SUB GRP #3:	5G NR Software Radio || 5G NR Activation		
I-PLAN JOB # 4:	ER_-RCTB-21-01923	IPLAN PRD GRP || SUB GRP #4:	5G NR Radio || 5G NR 1SR CBand		
I-PLAN JOB # 5:	ER_-RCTB-21-01236	IPLAN PRD GRP || SUB GRP #5:	Cell Site RF Modifications || BBU Add		
I-PLAN JOB # 6:	ER_-RCTB-21-00878	IPLAN PRD GRP || SUB GRP #6:	5G NR Radio || 5G NR 1SR CBand		
I-PLAN JOB # 7:	ER_-RCTB-21-00530	IPLAN PRD GRP || SUB GRP #7:	5G NR Radio || 5G NR 1DR-1		
I-PLAN JOB # 8:	ER_-RCTB-21-01038	IPLAN PRD GRP || SUB GRP #8:	Antenna Modifications || 4TX4RX Software Retrofit		
I-PLAN JOB # 9:	ER_-RCTB-21-00453	IPLAN PRD GRP || SUB GRP #8:	LTE Next Carrier || LTE 5C		
I-PLAN JOB # 10:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 11:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 12:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 13:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 14:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 15:		IPLAN PRD GRP || SUB GRP #8:			
I-PLAN JOB # 16:		IPLAN PRD GRP || SUB GRP #8:			

Section 2 - LOCATION INFORMATION

USID:	60430	FA LOCATION CODE:	10035298	LOCATION NAME:	WESTPORT SP TWR
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	880 POST ROAD EAST	CITY:	WESTPORT	STATE:	CT
ZIP CODE:	06880	COUNTY:	FAIRFIELD	LONG (DEC. DEG.):	-73.3343600
LATITUDE (D-M-S):	41d 8m14.87004s	LONGITUDE (D-M-S):	-73d -20m-3.696s	LAT (DEC. DEG.):	41.1374639
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	2147WESTPORT SP TWRI-95 NORTH TO EXIT 18 SHERWOOD ISLAND. AT THE END OF THE RAMP MAKE A LEFT AND DRIVE ABOUT 1.5 MILES TO THE CORNER OF POST ROAD EAST (RT. 1) AND SHERWOOD ISLAND ROAD. SITE WILL BE ON YOUR RIGHT SIDE AT THIS INTERSECTION A BRICK BUILDING. DRIVE AROUND BACK TO GATES. TELCO ROOM IS INSIDE BUILDING KEY IS NEEDED FOR FRONT DOOR. SITE IS OUTDOOR PEDESTAL.ADDRESS: 880 POST ROAD EAST, WESTPORT, CTACCESS DOOR CODE 3534CONTACT: BRIAN BENITO (860) 685-8280SECURITY: NO ISSUESPOWER COMPANY: UNITED ILLUMINATING (800) 722-5584FIRE: 203 341-5010POLICE: 203 341-6000T-1 CIRCUIT ID DHXV //294877 GSM DHPV//881107 TDMAUMTS T1 CIRCUIT ID HCGS //730792 & HCGS//730793SNET: (800) 448-1008 AND (203) 420-3131 (24-HR REPAIR)METER NO 88-688-509 OR 88-694-640				

ORACLE PTN # 1:	2051A11ATZ	PACE JOB # 1:	MRCTB053103		
ORACLE PTN # 2:		PACE JOB # 2:	MRCTB057669		
ORACLE PTN # 3:		PACE JOB # 3:	MRCTB057660		
ORACLE PTN # 4:	2051A1026A	PACE JOB # 4:	MRCTB052360		
ORACLE PTN # 5:	2051A0Z7E8	PACE JOB # 5:	MRCTB051540		
ORACLE PTN # 6:	2051A0Z7B7	PACE JOB # 6:	MRCTB051449		
ORACLE PTN # 7:	2051A0Z71V	PACE JOB # 7:	MRCTB051299		
ORACLE PTN # 8:	2051A0Z7Q1	PACE JOB # 8:	MRCTB051252		
ORACLE PTN # 9:	2051A0Z7V6	PACE JOB # 9:	MRCTB051488		
ORACLE PTN # 10:		PACE JOB # 10:			
ORACLE PTN # 11:		PACE JOB # 11:			
ORACLE PTN # 12:		PACE JOB # 12:			
ORACLE PTN # 13:		PACE JOB # 13:			
ORACLE PTN # 14:		PACE JOB # 14:			
ORACLE PTN # 15:		PACE JOB # 15:			
ORACLE PTN # 16:		PACE JOB # 16:			
BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:			
AM STUDY REQ'D (Y/N):	No	SEARCH_RING_ID:			
FREQ COORD:		BTA:		MSA / RSA:	
		LAC(UMTS):	05989		
RF DISTRICT:	TBD				
RF ZONE:	TBD	RNC(UMTS):	BRPTCT04CRBR06		
		MME POOL ID(LTE):	FF01		
PARENT NAME(UMTS):	BRIDGEPORT RNC06 ERICSSON 3820				

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:	

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	**GROUND ELEVATION (ft):**		**STRUCTURE TYPE:**	SELF SUPPORT	**MARKET LOCATION 700 MHz Band:**		
ADDITIONAL REGULATORY?:	Yes	**HEIGHT OVERALL (ft):**		**FCC ASR NUMBER:**		**MARKET LOCATION 850 MHz Band:**		
SUB-LEASE RIGHTS?:	No	**STRUCTURE HEIGHT (ft):**	183.00			**MARKET LOCATION 1900 MHz Band:**	On-Air	
LIGHTING TYPE:	NOT REQUIRED					**MARKET LOCATION AWS Band:**		
						MARKET LOCATION WCS Band:		
						MARKET LOCATION Future Band:		

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO		0				
SECTOR B				INTRADO		0				
SECTOR C				INTRADO		0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911	CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO		0				
SECTOR B				INTRADO		0				
SECTOR C				INTRADO		0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

SECTION 6/7 - BBU INFORMATION - existing

	BBU 1	BBU 2	BBU 3						
BBU RBS ID:	172644	222829	362955						
TECHNOLOGY:	UMTS	UMTS	LTE						
BBU NAME:	CTU2147	CTV2147	CTL02147						
BBU USID:	60430	60430	60430						
CELL ID / BCF:	CTU2147	CTU2147	CTL02147						
BTA/TID:	321V	321U	321L						
4-9 DIGIT SITE ID:	9147	2147	02147						
COW OR TOY?:	No	No	No						
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED						
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL						
BTS LOCATION ID:	INTERNAL	INTERNAL							
BASE STATION TYPE:	BASE	OVERLAY	BASE						
EQUIPMENT NAME:	WESTPORT SP TWR	WESTPORT SP TWR	WESTPORT SP TWR						
DISASTER PRIORITY:	2	0	3						
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON						
EQUIPMENT TYPE (Model):	3206 INDOOR	3206 INDOOR	6601 INDOOR MU						
BASEBAND CONFIGURATION:									
MARKET STATE CODE:			CT						
NODE B NUMBER:	0	0	2147						
SIDEHAUL SWITCH VENDOR:									
SIDEHAUL SWITCH MODEL:									
SIDEHAUL SWITCH NAME:									
CSS - CTS COMMON ID:	CTU2147	CTV2147	CTL02147						
CSS - SECONDARY FUNCTION ID:									

SECTION 6/7 - BBU INFORMATION - final

	BBU 1	BBU 2	BBU 3						
BBU RBS ID:	362955	RFDS_76546064	RFDS_65870739						
TECHNOLOGY:	LTE	5G	LTE,5G						
BBU NAME:	CTL02147	CTCN032147	CTL06147R,CTCN002147						
BBU USID:	60430	60430	60430						
CELL ID / BCF:	CTL02147	CTCN032147	CTCN002147						
BTA/TID:	321L	321L	321L						
4-9 DIGIT SITE ID:	02147	14032147	1406147						
COW OR TOY?:	No	No	No						
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED						
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL						
BTS LOCATION ID:									
BASE STATION TYPE:	BASE	OVERLAY	BASE						
EQUIPMENT NAME:	WESTPORT SP TWR	CTCN032147 Cband RBS	WESTPORT SP TWR						
DISASTER PRIORITY:	3	3	3						
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON						
EQUIPMENT TYPE (Model):	6601 RADIONODE 5216	BASEBAND 6648	BASEBAND 6630						
BASEBAND CONFIGURATION:	1x6601 / 1x5216 / 1xXMU03	xxxxx / 1x6648 / xxxxx + IDLe	xxxxx / 1x6630 Mixed-Mode / xxxxx + IDLe						
MARKET STATE CODE:	CT	CTC	CT,CTC						
NODE B NUMBER:	2147	32147	6147,2147						
SIDEHAUL SWITCH VENDOR:									
SIDEHAUL SWITCH MODEL:									
SIDEHAUL SWITCH NAME:									
CSS - CTS COMMON ID:	CTL02147								
CSS - SECONDARY FUNCTION ID:									

Section 8 - RBS/SECTOR ASSOCIATION - existing

	BBU 1	BBU 2	BBU 3																			
CTS Common ID	CTU2147	CTV2147	CTL02147																			
Soft Sector IDs	CTU21474	CTV21471	CTL02147_2A_2																			
	CTU21477	CTV2147A	CTL02147_2B_2																			
			CTL02147_2C_2																			
			CTL02147_3A_1																			
			CTL02147_3B_1																			
			CTL02147_3C_1																			
			CTL02147_7A_1																			
			CTL02147_7B_1																			
			CTL02147_7C_1																			
			CTL02147_9A_1																			
			CTL02147_9A_2																			
			CTL02147_9B_1																			
			CTL02147_9B_2																			
			CTL02147_9C_1																			
			CTL02147_9C_2																			

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1	BBU 2	BBU 3																			
CTS Common ID	CTL02147	CTCN032147	CTL06147R,CTCN002147																			
Soft Sector IDs	CTL02147_3A_1	CTCN032147_N077A_1	CTCN002147_N002A_1																			
	CTL02147_3B_1	CTCN032147_N077A_2	CTCN002147_N002B_1																			
	CTL02147_3C_1	CTCN032147_N077B_1	CTCN002147_N002C_1																			
	CTL02147_7A_1	CTCN032147_N077B_2	CTCN002147_N005A_1																			
	CTL02147_7A_2_E	CTCN032147_N077C_1	CTCN002147_N005B_1																			
	CTL02147_7A_3_F	CTCN032147_N077C_2	CTCN002147_N005C_1																			
	CTL02147_7B_1		CTCN002147_N066A_1																			
	CTL02147_7B_2_E		CTCN002147_N066B_1																			
	CTL02147_7B_3_F		CTCN002147_N066C_1																			
	CTL02147_7C_1		CTL06147_2A_2																			
	CTL02147_7C_2_E		CTL06147_2B_2																			
	CTL02147_7C_3_F		CTL06147_2C_2																			
			CTL06147_9A_1																			
			CTL06147_9A_2																			
			CTL06147_9B_1																			
			CTL06147_9B_2																			
			CTL06147_9C_1																			
			CTL06147_9C_2																			

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND								
USEID (excluding Hard Sector)	60430.850.3G.1	60430.1900.3G.1	60430.850.3G.2	60430.1900.3G.2																						
SECTOR A **SOFT SECTOR ID**	CTV21471	CTU21477	CTV2147A	CTU21474	CTL02147_7A_1	CTL02147_9A_1	CTL02147_2A_2	CTL02147_3A_1	CTL02147_9A_2																	
SECTOR B					CTL02147_7B_1	CTL02147_9B_1	CTL02147_2B_2	CTL02147_3B_1	CTL02147_9B_2																	
SECTOR C					CTL02147_7C_1	CTL02147_9C_1	CTL02147_2C_2	CTL02147_3C_1	CTL02147_9C_2																	
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND								
USEID (excluding Hard Sector)																										
SECTOR A **SOFT SECTOR ID**					CTL02147_7A_1	CTL06147_9A_1		CTL02147_3A_1		CTL02147_7A_2_E	CTL06147_9A_2	CTL06147_2A_2	CTL02147_7A_3_F	CTCN002147_N005A_1	CTCN002147_N002A_1	CTCN002147_N066A_1	CTCN032147_N077A_1	CTCN032147_N077A_2								
SECTOR B					CTL02147_7B_1	CTL06147_9B_1		CTL02147_3B_1		CTL02147_7B_2_E	CTL06147_9B_2	CTL06147_2B_2	CTL02147_7B_3_F	CTCN002147_N005B_1	CTCN002147_N002B_1	CTCN002147_N066B_1	CTCN032147_N077B_1	CTCN032147_N077B_2								
SECTOR C					CTL02147_7C_1	CTL06147_9C_1		CTL02147_3C_1		CTL02147_7C_2_E	CTL06147_9C_2	CTL06147_2C_2	CTL02147_7C_3_F	CTCN002147_N005C_1	CTCN002147_N002C_1	CTCN002147_N066C_1	CTCN032147_N077C_1	CTCN032147_N077C_2								
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND								
USEID (excluding Hard Sector)	60430.850.3G.1	60430.1900.3G.1	60430.850.3G.2	60430.1900.3G.2																						
SECTOR A CELL NUMBER					15	8	192	149	178																	
SECTOR B					16	9	193	150	179																	
SECTOR C					17	10	194	151	180																	
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND								
USEID (excluding Hard Sector)																										
SECTOR A CELL NUMBER					15	8		149		185	178	192	171	25	26	27	36	37								
SECTOR B					16	9		150		186	179	193	172	49	50	51	60	61								
SECTOR C					17	10		151		187	180	194	173	73	74	75	84	85								
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND									
SECTOR A CID/SAC	21471	21477	61471	21474																							
SECTOR B																											
SECTOR C																											
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 10 - CID/SAC - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 700	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND									
SECTOR A CID/SAC																											
SECTOR B																											
SECTOR C																											
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	P65-16-XLH-RR	HPA-65R-BUU-H6		QS86512-6			
ANTENNA VENDOR	Powerwave	CCI Products		Quintel			
ANTENNA SIZE (H x W x D)	72X12X6	72X14.8X9		96X12X9.6			
ANTENNA WEIGHT	55	51		127.5			
AZIMUTH	20	20		20			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	138	138		138			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2			2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 DBC0061F1V51-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 860-10006	RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)		1 DC6-48-60-18-8F		1 DC6-48-60-18-8F			
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-11 B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)				1 RRUS-32 B66A			
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1			CTV21471	CTV21471		UMTS 850	P65-16-XLH-RR_840MHz_07DT	15	20	7	None	Commscope 1-5/8	138						368.13		1	
ANTENNA POSITION 2	PORT 1			CTL02147_7A_1	CTL02147_7A_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	20	2	Top	FIBER	0						1475.7065		3	
	PORT 3			CTL02147_9A_1	CTL02147_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_03DT	17	20	3	Top	FIBER	0						4842.058		4	

	PORT 7			CTL02147_9A_2	CTL02147_9A_2		LTE 1900	HPA-65R-BUU-H6_1930MHz_03DT	17	20	3	Top	FIBER	0						4842.058		4	
ANTENNA POSITION 4	**PORT 3**			CTL02147_2A_2	CTL02147_2A_2		LTE AWS	QS86512-6_2133MHz_03DT	16	20	3	Top	FIBER	0						3837.0724		8	
	PORT 4			CTL02147_3A_1	CTL02147_3A_1		LTE WCS	QS86512-6_2355MHz_03DT	15.6	20	3	Top	FIBER	0						1285.2866		8	

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	P65-16-XLH-RR	HPA-65R-BUU-H6		QS86512-6			
ANTENNA VENDOR	Powerwave	CCI Products		Quintel			
ANTENNA SIZE (H x W x D)	72X12X6	72X14.8X9		96X12X9.6			
ANTENNA WEIGHT	64	51		127.5			
AZIMUTH	150	150		150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	133	133		133			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2			2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 DBC0061F1V51-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-11 B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)				1 RRUS-32 B66A			
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1					Decom	UMTS 850			150	0		Commscope 1-5/8	138									
ANTENNA POSITION 2	PORT 1			CTL02147_7B_1	CTL02147_7B_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.28	150	2	Top	FIBER	0						1475.7065		11	
	PORT 3			CTL02147_9B_1	CTL02147_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	150	4	Top	FIBER	0						4842.058		12	

	PORT 7			CTL02147_9B_2	CTL02147_9B_2		LTE 1900	HPA-65R-BUU-H6_1930MHz_04DT	17.15	150	4	Top	FIBER	0						4842.058		12	
ANTENNA POSITION 4	**PORT 3**			CTL02147_2B_2	CTL02147_2B_2		LTE AWS	QS86512-6_2133MHz_04DT	16.1	150	4	Top	FIBER	0						3837.0724		16	
	PORT 4			CTL02147_3B_1	CTL02147_3B_1		LTE WCS	QS86512-6_2355MHz_03DT	15.6	150	3	Top	FIBER	0						1285.2866		16	

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	P65-16-XLH-RR	HPA-65R-BUU-H6		QS86512-6			
ANTENNA VENDOR	Powerwave	CCI Products		Quintel			
ANTENNA SIZE (H x W x D)	72X12X6	72X14.8X9		96X12X9.6			
ANTENNA WEIGHT	64	51		127.5			
AZIMUTH	280	280		280			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	137	137		137			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0	2		0			
FEEDER AMOUNT	2			2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	Internal	Internal		Internal			
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)				2 DBC0061F1V51-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-11 B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)				1 RRUS-32 B66A			
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1					Decom	UMTS 850			280	0		Commscope 1-5/8	138									
ANTENNA POSITION 2	PORT 1			CTL02147_7C_1	CTL02147_7C_1		LTE 700	HPA-65R-BUU-H6_719MHz_08DT	13.97	280	8	Top	FIBER	0						1475.7065		19	
	PORT 3			CTL02147_9C_1	CTL02147_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_06DT	17.18	280	6	Top	FIBER	0						4842.058		20	

	PORT 7			CTL02147_9C_2	CTL02147_9C_2		LTE 1900	HPA-65R-BUU-H6_1930MHz_06DT	17.18	280	6	Top	FIBER	0						4842.058		20	
ANTENNA POSITION 4	**PORT 3**			CTL02147_2C_2	CTL02147_2C_2		LTE AWS	QS86512-6_2133MHz_06DT	16.1	280	6	Top	FIBER	0						3837.0724		24	
	PORT 4			CTL02147_3C_1	CTL02147_3C_1		LTE WCS	QS86512-6_2355MHz_03DT	15.6	280	3	Top	FIBER	0						1285.2866		24	

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		20	20	20			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		138	138	138			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)				1 DC9-48-60-24-8C-EV			
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1 4449 B5/B12			
RRH - 850 band (QTY/MODEL)				RRH is shared with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU/6630-IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1			CTL02147_7A_3_F	CTL02147_7A_3_F		LTE 700	QD6616-7_770MHz_02DT	13.7	20	2	Top	FIBER	0						2951.413		3	
	PORT 2			CTL02147_7A_2_E	CTL02147_7A_2_E		LTE 700	QD6616-	13.7	20	2	Bottom	FIBER	0						2951.413		3	

								7_725MHz_02DT															
	PORT 8			CTCN002147_N002A_1	CTCN002147_N002A_1		5G 1900	QD6616-7_1930MHz_03DT	16.9	20	3	Top	FIBER	0						3664.3757		4	
	PORT 11			CTCN002147_N066A_1	CTCN002147_N066A_1		5G AWS	QD6616-7_2130MHz_03DT	17.5	20	3	Top	FIBER	0						3837.0724		4	
ANTENNA POSITION 3	**PORT 3**			CTCN032147_N077A_1	CTCN032147_N077A_1		5G CBAND			20	0	TOP	FIBER	0									
	PORT 4			CTCN032147_N077A_2	CTCN032147_N077A_2		5G DoD			20	0	TOP	FIBER	0									
ANTENNA POSITION 4	**PORT 1**			CTL02147_7A_1	CTL02147_7A_1		LTE 700	DMP65R-BU6D_725MHz_02DT	13.2	20	2	Top	FIBER	0						1475.7065		7	
	PORT 2			CTCN002147_N005A_1	CTCN002147_N005A_1		5G 850	DMP65R-BU6D_850MHz_02DT	13.1	20	2	Top	FIBER	0						1000		7	

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		133	133	133			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1 4449 B5/B12			
RRH - 850 band (QTY/MODEL)				RRH is shared with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU/6630-IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1			CTL02147_7B_3_F	CTL02147_7B_3_F		LTE 700	QD6616-7_770MHz_02DT	13.7	150	2	Top	FIBER	0						2951.413		11	
	PORT 2			CTL02147_7B_2_E	CTL02147_7B_2_E		LTE 700	QD6616-	13.7	150	2	Bottom	FIBER	0						2951.413		11	

								7_725MHz_02DT															
	PORT 8			CTCN002147_N002B_1	CTCN002147_N002B_1		5G 1900	QD6616-7_1930MHz_04DT	17.1	150	4	Top	FIBER	0						3664.3757		12	
	PORT 11			CTCN002147_N066B_1	CTCN002147_N066B_1		5G AWS	QD6616-7_2130MHz_04DT	17.4	150	4	Top	FIBER	0						3837.0724		12	
ANTENNA POSITION 3	**PORT 3**			CTCN032147_N077B_1	CTCN032147_N077B_1		5G CBAND			150	0	TOP	FIBER	0									
	PORT 4			CTCN032147_N077B_2	CTCN032147_N077B_2		5G DoD			150	0	TOP	FIBER	0									
ANTENNA POSITION 4	**PORT 1**			CTL02147_7B_1	CTL02147_7B_1		LTE 700	DMP65R-BU6D_725MHz_02DT	13.2	150	2	Top	FIBER	0						1475.7065		15	
	PORT 2			CTCN002147_N005B_1	CTCN002147_N005B_1		5G 850	DMP65R-BU6D_850MHz_02DT	13.1	150	2	Top	FIBER	0						1000		15	

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		280	280	280			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		137	137	137			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT		0		2			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1	4449 B5/B12		
RRH - 850 band (QTY/MODEL)					RRH is shared with another band		
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU/6630-IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1			CTL02147_7C_3_F	CTL02147_7C_3_F		LTE 700	QD6616-7_770MHz_08DT	13.2	280	8	Top	FIBER	0						2951.413		19	
	PORT 2			CTL02147_7C_2_E	CTL02147_7C_2_E		LTE 700	QD6616-	13.2	280	8	Bottom	FIBER	0						2951.413		19	

								7_725MHz_08DT															
	PORT 8			CTCN002147_N002C_1	CTCN002147_N002C_1		5G 1900	QD6616-7_1930MHz_06DT	17.2	280	6	Top	FIBER	0						3664.3757		20	
	PORT 11			CTCN002147_N066C_1	CTCN002147_N066C_1		5G AWS	QD6616-7_2130MHz_06DT	17.4	280	6	Top	FIBER	0						3837.0724		20	
ANTENNA POSITION 3	**PORT 3**			CTCN032147_N077C_1	CTCN032147_N077C_1		5G CBAND			280	0	TOP	FIBER	0									
	PORT 4			CTCN032147_N077C_2	CTCN032147_N077C_2		5G DoD			280	0	TOP	FIBER	0									
ANTENNA POSITION 4	**PORT 1**			CTL02147_7C_1	CTL02147_7C_1		LTE 700	DMP65R-BU6D_725MHz_08DT	12.8	280	8	Top	FIBER	0						1475.7065		23	
	PORT 2			CTCN002147_N005C_1	CTCN002147_N005C_1		5G 850	DMP65R-BU6D_850MHz_08DT	13.4	280	8	Top	FIBER	0						1000		23	

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		20	20	20			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		138	138	138			
ANTENNA TIP HEIGHT		141		141			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)		2 DC6-48-60-18-8F		1 DC9-48-60-24-8C-EV			
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1 4449 B5/B12			
RRH - 850 band (QTY/MODEL)				RRH is shared with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66A					
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216 + XMU /6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1	60430.A.700.4G.tmp5		CTL02147_7A_3_F	CTL02147_7A_3_F		LTE 700	QD6616-7_770MHz_02DT	13.7	20	2	Top	FIBER	0						2951.413			
	PORT 2	60430.A.700.4G.tmp4		CTL02147_7A_2_E	CTL02147_7A_2_E		LTE 700	QD6616-7_725MHz_02DT	13.7	20	2	Bottom	Commscope 1-5/8	138						2951.413			

	PORT 3	60430.A.1900.4G.tmp1		CTL06147_9A_1	CTL06147_9A_1		LTE 1900	QD6616-7_1930MHz_03DT	16.9	20	3	Top	FIBER	0						4842.058			
	PORT 4	60430.A.1900.4G.tmp4		CTL06147_9A_2	CTL06147_9A_2		LTE 1900	QD6616-7_1930MHz_03DT	16.9	20	3	Top	FIBER	0						4842.058			
	PORT 7	60430.A.AWS.4G.tmp4		CTL06147_2A_2	CTL06147_2A_2		LTE AWS	QD6616-7_2170MHz_03DT	16.2	20	3	Top	FIBER	0						5070.2572			
	PORT 8	60430.A.1900.5G.tmp1		CTCN002147_N002A_1	CTCN002147_N002A_1		5G 1900	QD6616-7_1930MHz_03DT	16.9	20	3	Top	FIBER	0						3664.3757			
	PORT 11	60430.A.AWS.5G.tmp1		CTCN002147_N066A_1	CTCN002147_N066A_1		5G AWS	QD6616-7_2130MHz_03DT	17.5	20	3	Top	FIBER	0						3837.0724			
ANTENNA POSITION 3	**PORT 3**	60430.A.CBAND.5G.tmp1		CTCN032147_N077A_1	CTCN032147_N077A_1		5G CBAND			20	0	TOP	FIBER	0									
	PORT 4	60430.A.CBAND.5G.tmp2		CTCN032147_N077A_2	CTCN032147_N077A_2		5G DoD			20	0	TOP	FIBER	0									
ANTENNA POSITION 4	**PORT 1**	60430.A.700.4G.1		CTL02147_7A_1	CTL02147_7A_1		LTE 700	DMP65R-BU6D_725MHz_02DT	13.2	20	2	Top	FIBER	0						1475.7065			
	PORT 2	60430.A.850.5G.tmp1		CTCN002147_N005A_1	CTCN002147_N005A_1		5G 850	DMP65R-BU6D_850MHz_02DT	13.1	20	2	Top	FIBER	0						1000			
	PORT 3	60430.A.WCS.4G.1		CTL02147_3A_1	CTL02147_3A_1		LTE WCS	DMP65R-BU6D_2355MHz_02DT	16.8	20	2	Top	FIBER	0						1285.2866			

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		133	133	133			
ANTENNA TIP HEIGHT		136		136			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1 4449 B5/B12			
RRH - 850 band (QTY/MODEL)				RRH is shared with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66A					
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216 + XMU /6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1	60430.B.700.4G.tmp5		CTL02147_7B_3_F	CTL02147_7B_3_F		LTE 700	QD6616-7_770MHz_02DT	13.7	150	2	Top	FIBER	0						2951.413			
	PORT 2	60430.B.700.4G.tmp4		CTL02147_7B_2_E	CTL02147_7B_2_E		LTE 700	QD6616-7_725MHz_02DT	13.7	150	2	Bottom	Commscope 1-5/8	138						2951.413			

	PORT 3	60430.B.1900.4G.tmp1		CTL06147_9B_1	CTL06147_9B_1		LTE 1900	QD6616-7_1930MHz_04DT	17.1	150	4	Top	FIBER	0						4842.058			
	PORT 4	60430.B.1900.4G.tmp4		CTL06147_9B_2	CTL06147_9B_2		LTE 1900	QD6616-7_1930MHz_04DT	17.1	150	4	Top	FIBER	0						4842.058			
	PORT 7	60430.B.AWS.4G.tmp4		CTL06147_2B_2	CTL06147_2B_2		LTE AWS	QD6616-7_2170MHz_04DT	16.2	150	4	Top	FIBER	0						5070.2572			
	PORT 8	60430.B.1900.5G.tmp1		CTCN002147_N002B_1	CTCN002147_N002B_1		5G 1900	QD6616-7_1930MHz_04DT	17.1	150	4	Top	FIBER	0						3664.3757			
	PORT 11	60430.B.AWS.5G.tmp1		CTCN002147_N066B_1	CTCN002147_N066B_1		5G AWS	QD6616-7_2130MHz_04DT	17.4	150	4	Top	FIBER	0						3837.0724			
ANTENNA POSITION 3	**PORT 3**	60430.B.CBAND.5G.tmp1		CTCN032147_N077B_1	CTCN032147_N077B_1		5G CBAND			150	0	TOP	FIBER	0										
	PORT 4	60430.B.CBAND.5G.tmp2		CTCN032147_N077B_2	CTCN032147_N077B_2		5G DoD			150	0	TOP	FIBER	0										
ANTENNA POSITION 4	**PORT 1**	60430.B.700.4G.1		CTL02147_7B_1	CTL02147_7B_1		LTE 700	DMP65R-BU6D_725MHz_02DT	13.2	150	2	Top	FIBER	0						1475.7065			
	PORT 2	60430.B.850.5G.tmp1		CTCN002147_N005B_1	CTCN002147_N005B_1		5G 850	DMP65R-BU6D_850MHz_02DT	13.1	150	2	Top	FIBER	0						1000			
	PORT 3	60430.B.WCS.4G.1		CTL02147_3B_1	CTL02147_3B_1		LTE WCS	DMP65R-BU6D_2355MHz_02DT	16.8	150	2	Top	FIBER	0						1285.2866			

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL		QD6616-7	AIR6449 B77D+AIR6419 B77G STACKED	DMP65R-BU6DA			
ANTENNA VENDOR		Quintel	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		72X22X9.6	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		59.1	81.6	79.4			
AZIMUTH		280	280	280			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		137	137	137			
ANTENNA TIP HEIGHT		140		140			
MECHANICAL DOWNTILT		0		2			
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Internal	Internal	Internal			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 4478 B14		1 4449 B5/B12			
RRH - 850 band (QTY/MODEL)				RRH is shared with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66A					
RRH - WCS band (QTY/MODEL)				1 RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)		1 2012 B29	1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH 7B 1 (QTY/MODEL)							
RRH 7B 2 (QTY/MODEL)							
RRH 7B 3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)				1 Y-Cable			
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Arrange antenna and radio postions as per PD. Swap and add antennas. Swap and add LTE radios. Add surge arrestors.Add C-band and DoD antenna/radio. Add Y-Cable for dual band radios.Decomm UMTS. Add DC9 Fiber Squid. Add 6648+Xcede Cable. Add 6630+IDLe.						
Local Market Note 2							
Local Market Note 3	5216 + XMU /6630+IDLe / 6648+Xcede						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1	60430.C.700.4G.tmp5		CTL02147_7C_3_F	CTL02147_7C_3_F		LTE 700	QD6616-7_770MHz_08DT	13.2	280	8	Top	FIBER	0						2951.413			
	PORT 2	60430.C.700.4G.tmp4		CTL02147_7C_2_E	CTL02147_7C_2_E		LTE 700	QD6616-7_725MHz_08DT	13.2	280	8	Bottom	Commscope 1-5/8	138						2951.413			

	PORT 3	60430.C.1900.4G.tmp1		CTL06147_9C_1	CTL06147_9C_1		LTE 1900	QD6616-7_1930MHz_06DT	17.2	280	6	Top	FIBER	0						4842.058				
	PORT 4	60430.C.1900.4G.tmp4		CTL06147_9C_2	CTL06147_9C_2		LTE 1900	QD6616-7_1930MHz_06DT	17.2	280	6	Top	FIBER	0						4842.058				
	PORT 7	60430.C.AWS.4G.tmp4		CTL06147_2C_2	CTL06147_2C_2		LTE AWS	QD6616-7_2170MHz_06DT	16.2	280	6	Top	FIBER	0						5070.2572				
	PORT 8	60430.C.1900.5G.tmp1		CTCN002147_N002C_1	CTCN002147_N002C_1		5G 1900	QD6616-7_1930MHz_06DT	17.2	280	6	Top	FIBER	0						3664.3757				
	PORT 11	60430.C.AWS.5G.tmp1		CTCN002147_N066C_1	CTCN002147_N066C_1		5G AWS	QD6616-7_2130MHz_06DT	17.4	280	6	Top	FIBER	0						3837.0724				
ANTENNA POSITION 3	**PORT 3**	60430.C.CBAND.5G.tmp1		CTCN032147_N077C_1	CTCN032147_N077C_1		5G CBAND			280	0	TOP	FIBER	0										
	PORT 4	60430.C.CBAND.5G.tmp2		CTCN032147_N077C_2	CTCN032147_N077C_2		5G DoD			280	0	TOP	FIBER	0										
ANTENNA POSITION 4	**PORT 1**	60430.C.700.4G.1		CTL02147_7C_1	CTL02147_7C_1		LTE 700	DMP65R-BU6D_725MHz_08DT	12.8	280	8	Top	FIBER	0						1475.7065				
	PORT 2	60430.C.850.5G.tmp1		CTCN002147_N005C_1	CTCN002147_N005C_1		5G 850	DMP65R-BU6D_850MHz_08DT	13.4	280	8	Top	FIBER	0						1000				
	PORT 3	60430.C.WCS.4G.1		CTL02147_3C_1	CTL02147_3C_1		LTE WCS	DMP65R-BU6D_2355MHz_04DT	17.5	280	4	Top	FIBER	0						1285.2866				

Diagram - Sector	A	Diagram File Name - CT2147_ABC_C-band DOD DE_-1.vsd							
Atoll Site Name -	CTL02147	Location Name -	WESTPORT SP TWR		Market -	CONNECTICUT		Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"

Antenna 1
Empty

Antenna 2
LTE 700 B14 / DE / PCS /AWS

16 Port Antenna

Broadband	Broadband	Broadband	Broadband	Broadband	Broadband	Broadband	Broadband
Low 700 DE +45/-45	Low 700 B14 +45/-45	Low 700 B14 +45/-45	Low 850 +45/-45	Hi 4Tx/4Rx +45/-45	Hi 4Tx/4Rx +45/-45	Hi 4Tx/4Rx +45/-45	Hi Tx/4Rx +45/-45
- +	- +	- +	- +	- +	- +	- +	- +
RET	RET	RET	RET	RET	RET	RET	RET

LTE RRUS-4478 700 B-14

LTE RRUS-32 PCS

LTE RRUS-32 AWS

Antenna 3
DoD + C band

AIR
DoD
+45/-45
- +

AIR
C-BAND
+45/-45
- +

Antenna 4
LTE 700 BC / 850 / WCS

Broadband Octo Low 700/850 +45/-45	Broadband Octo Low 700/850 +45/-45	Broadband Octo High 4Tx/4Rx +45/-45	Broadband Octo High 4Tx/4Rx +45/-45
- +	- +	- +	- +
RET	RET	RET	RET

LTE RRUS-4449 850/700 BC

LTE RRUS-32 WCS

Fiber/DC-1
Demarcation Box (Squid)

24/9 – Fiber/DC
Demarcation Box (Squid)

Fiber/DC-1
Demarcation Box (Squid)

LTE RRUS 700 (D/E)

DC Plant

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

5216 XMU

6630

6648

IDLe

Xcede

Diagram - Sector	B	Diagram File Name - CT2147_ABC_C-band DOD DE_-1.vsd							
Atoll Site Name -	CTL02147	Location Name -	WESTPORT SP TWR		Market -	CONNECTICUT		Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"

Antenna 1
Empty

Antenna 2
LTE 700 B14 / DE / PCS /AWS

16 Port Antenna

Broadband Low 700 DE +45/-45 - +
Broadband Low 700 B14 +45/-45 - +
Broadband Low 700 B14 +45/-45 - +
Broadband Low 850 +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi Tx/4Rx +45/-45 - +

RET | RET | RET | RET | RET | RET | RET | RET

LTE RRUS-4478 700 B-14
LTE RRUS-32 PCS
LTE RRUS-32 AWS

Antenna 3
DoD + C band

AIR DoD +45/-45 - +

AIR C-BAND +45/-45 - +

Antenna 4
LTE 700 BC / 850 / WCS

Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +

RET | RET | RET | RET

LTE RRUS-4449 850/700 BC
LTE RRUS-32 WCS

LTE RRUS 700 (D/E)

Fiber/DC-1 Demarcation Box (Squid)
24/9 – Fiber/DC Demarcation Box (Squid)
Fiber/DC-1 Demarcation Box (Squid)

DC Plant

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

5216 | XMU | 6630 | 6648

IDLe

Xcede

Diagram - Sector	C	Diagram File Name - CT2147_ABC_C-band DOD DE_-1.vsd							
Atoll Site Name -	CTL02147	Location Name -	WESTPORT SP TWR		Market -	CONNECTICUT		Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"

Antenna 1
Empty

Antenna 2
LTE 700 B14 / DE / PCS /AWS

16 Port Antenna

Broadband Low 700 DE +45/-45 - +
Broadband Low 700 B14 +45/-45 - +
Broadband Low 700 B14 +45/-45 - +
Broadband Low 850 +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi 4Tx/4Rx +45/-45 - +
Broadband Hi Tx/4Rx +45/-45 - +

RET | RET | RET | RET | RET | RET | RET | RET

LTE RRUS-4478 700 B-14
LTE RRUS-32 PCS
LTE RRUS-32 AWS

Antenna 3
DoD + C band

AIR DoD +45/-45 - +

AIR C-BAND +45/-45 - +

Antenna 4
LTE 700 BC / 850 / WCS

Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo Low 700/850 +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +
Broadband Octo High 4Tx/4Rx +45/-45 - +

RET | RET | RET | RET

LTE RRUS-4449 850/700 BC
LTE RRUS-32 WCS

LTE RRUS 700 (D/E)

Fiber/DC-1 Demarcation Box (Squid)
24/9 – Fiber/DC Demarcation Box (Squid)
Fiber/DC-1 Demarcation Box (Squid)

DC Plant

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

5216 | XMU | 6630 | 6648

IDLe

Xcede

NOTES			
Date Time (Eastern)	Version	ATTUID	Note
8/4/2021 12:47:57 PM	2.00	sp656b	RFDS VERSION incremented.
8/30/2021 9:58:26 AM	3.00	sp656b	RFDS VERSION incremented.
8/30/2021 11:51:25 AM	3.00	sp656b	700 DE Added
8/30/2021 12:31:25 PM	3.00	sp656b	700 DE Added
12/14/2021 4:57:46 PM	4.00	sp656b	RFDS VERSION incremented.
12/30/2021 10:56:27 AM	5.00	mh705r	RFDS VERSION incremented.
2/2/2022 3:44:51 PM	6.00	dr701e	RFDS VERSION incremented.
2/2/2022 3:44:51 PM	6.00	dr701e	Updated as per demotion comments, no changes to A az as it iwas already 20 deg

WORKFLOW SUMMARY							
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments	PACE Status
04/27/2021	Preliminary In Progress	sp656b	Preliminary Submitted for Approval	KG0839	Promote	Prelim	ER_-RCTB-21-01236 PENDING 04/27/2021 12:08:22 PM ER_-RCTB-21-01038 PENDING 04/27/2021 12:08:22 PM ER_-RCTB-21-00530 MRCTB051299 SUCCESS 04/27/2021 12:08:22 PM ER_-RCTB-21-00878 MRCTB051449 SUCCESS 04/27/2021 12:08:22 PM ER_-RCTB-21-00453 MRCTB051488 SUCCESS 04/27/2021 12:08:22 PM
05/03/2021	Preliminary Submitted for Approval	KG0839	Preliminary Approved	KD602N	Promote	5/3/2021 - promoted without review	
05/07/2021	Preliminary Approved	KD602N	Preliminary In Progress	sp656b	Pull Back	pullback as per the direction of HQ	
08/07/2021	Preliminary In Progress	sp656b	Preliminary Submitted for Approval	KG0839	Promote	Prelim	ER_-RCTB-21-01923 MRCTB052360 SUCCESS 08/07/2021 6:43:05 PM ER_-RCTB-21-01236 FAILURE 08/07/2021 6:43:05 PM ER_-RCTB-21-00530 FAILURE 08/07/2021 6:43:05 PM ER_-RCTB-21-00878 FAILURE 08/07/2021 6:43:05 PM ER_-RCTB-21-01038 FAILURE 08/07/2021 6:43:05 PM ER_-RCTB-21-00453 FAILURE 08/07/2021 6:43:05 PM
08/17/2021	Preliminary Submitted for Approval	KG0839	Preliminary Approved	KD602N	Promote	8/17/21 - promoted without review	
08/30/2021	Preliminary Approved	KD602N	Preliminary In Progress	sp656b	Pull Back	DE Addition	
08/30/2021	Preliminary In Progress	sp656b	Preliminary Submitted for Approval	KG0839	Promote	Prelim	ER_-RCTB-21-01923 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-01236 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-00530 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-00878 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-01038 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-00453 PENDING 08/30/2021 12:42:10 PM ER_-RCTB-21-00878 PENDING 08/30/2021 12:42:10 PM
08/31/2021	Preliminary Submitted for Approval	KG0839	Preliminary Approved	KD602N	Promote	8/31/21 - promoted without review	
11/12/2021	Preliminary Approved	KD602N	Preliminary Modification Recommended	SP656B	Demote	-Per Mapping, Azimuths are 20/150/280 for Section 15, 16, 17 all sectors. -Per Mapping, Existing POS 4 Antenna should be a 12-Port Quintel for Section 15 all sectors. -Per Mapping, no existing Diplexers and Surge Arrestors in POS 1, please remove for Section 15 all sectors. -Remove duplicate CBAND Job from cover page.	
12/15/2021	Preliminary Modification Recommended	SP656B	Preliminary Submitted for Approval	KG0839	Promote	Revised as requested.	
12/16/2021	Preliminary Submitted for Approval	KG0839	Preliminary Approved	KD602N	Promote	12/16/21 - promoted without review	
12/27/2021	Preliminary Approved	KD602N	Preliminary Modification Recommended	DR701E	Demote	Section 16, Alpha and Gamma Sector Azimuths need to be revised to show 20 for Alpha and 280 for Gamma. RRU 2012 B29 Needs to be revised to say E@ B29, in Section 16 and 17 all sectors.Beta Sector POS 1 &2 should have a CL of 136’ and POS 3 a CL of 131’ Section 15 only. Section 16 and 17, new antennas should all have RAD of 133’.	
12/30/2021	Preliminary Modification Recommended	DR701E	Preliminary Modification Recommended	MH705R	Reassign	Successfully Reassigned	
12/30/2021	Preliminary Modification Recommended	MH705R	Preliminary Submitted for Approval	KG0839	Promote	Preliminary RFDS updated for demotion comments	
01/06/2022	Preliminary Submitted for Approval	KG0839	Preliminary Approved	KD602N	Promote	1/6/22 - promoted without review	
01/10/2022	Preliminary Approved	KD602N	Final RF Approval	DR701E	Promote	sending to final:	

01/12/2022	Final RF Approval	DR701E	Final Approved	KD602N	Promote	Promoting w/o any changes	ER_-RCTB-21-02521 MRCTB053103 SUCCESS 01/12/2022 10:08:36 AM ER_-RCTB-21-06950 PENDING 01/12/2022 10:08:36 AM ER_-RCTB-21-06951 MRCTB057669 SUCCESS 01/12/2022 10:08:36 AM ER_-RCTB-21-01923 MRCTB052360 SUCCESS 01/12/2022 10:08:36 AM ER_-RCTB-21-01236 PENDING 01/12/2022 10:08:36 AM ER_-RCTB-21-00878 PENDING 01/12/2022 10:08:36 AM ER_-RCTB-21-00453 MRCTB051488 SUCCESS 01/12/2022 10:08:36 AM ER_-RCTB-21-00530 PENDING 01/12/2022 10:08:36 AM
01/25/2022	Final Approved	KD602N	Final Modification Recommended	DR701E	Demote	add job to RFDS, MRCTB051252... not enough cells to accommodate all jobs	
01/26/2022	Final Modification Recommended	DR701E	Final Approved	KD602N	Promote	add missing PACE in Initiative section as no space in PACE field of RFDS	
02/02/2022	Final Approved	KD602N	Final Modification Recommended	DR701E	Demote	per the mapping pleas update all azmuiths to 20 for Alpha sector only in 15+16+17, as well as update the feeder length to 188’ A+B+G in 15+16+17, lastly Alpha RAD 138’, Beta 133’ and Gamma 137’ please update in 15+16+17	
02/02/2022	Final Modification Recommended	DR701E	Final Approved	KD602N	Promote	No changes to A az as it is already 20 deg, updated RC as per demotion	
02/16/2022	Final Approved	KD602N	Final Modification Recommended	DR701E	Demote	Per CD review the E2 B29 proposed RRUS need to be updated to the 2012 B29 model per RF, please update 16+17+PD	
02/22/2022	Final Modification Recommended	DR701E	Final Modification Recommended	SP656B	Reassign	Successfully Reassigned	
02/22/2022	Final Modification Recommended	SP656B	Final Approved	KD602N	Promote	Revised as per demotion comments.	

Radio Frequency Safety Survey Report Predictive (RFSSRP) Prepared For AT&T

Site Name:	WESTPORT SP TOWER
FA#	10035298
USID:	60430
Site ID:	CTL02147
Address:	880 POST ROAD EAST WESTPORT CT 06880
County:	FAIRFIELD
Latitude:	41.1374639
Longitude:	-73.3343600
Structure Type:	SELF-SUPPORT
Property Owner:	NA
Pace Job:	MRCTB053103
RFDS Technology:	5G NR 1SR CBAND

Report Information

Report Writer: Vishesh Kumar

Report Generated Date: 07-28-2022

Compliance Statement

AT&T Mobility Compliance Statement: Based on the information collected, AT&T Mobility will be Compliant when the remediation recommended in section 5 or appropriate remediation determined by AT&T is implemented

Table of Contents

1. Executive Summary

1.1 Site Summary

Max Predictive Spatial Average MPE% & Location on Site (General Public)	17167.10% on Antennas Centerline Level & at AT&T Sec-A antenna no. #A3-1
Max Predictive Spatial Average MPE% at Ground Level (General Public)	1.23%
AT&T Mobility Site Compliance	AT&T Mobility will be Compliant by implementing remediation recommended as per section 5 in this report.

TABLE 1: Site Summary

1.2 Signage Summary (Proposed)

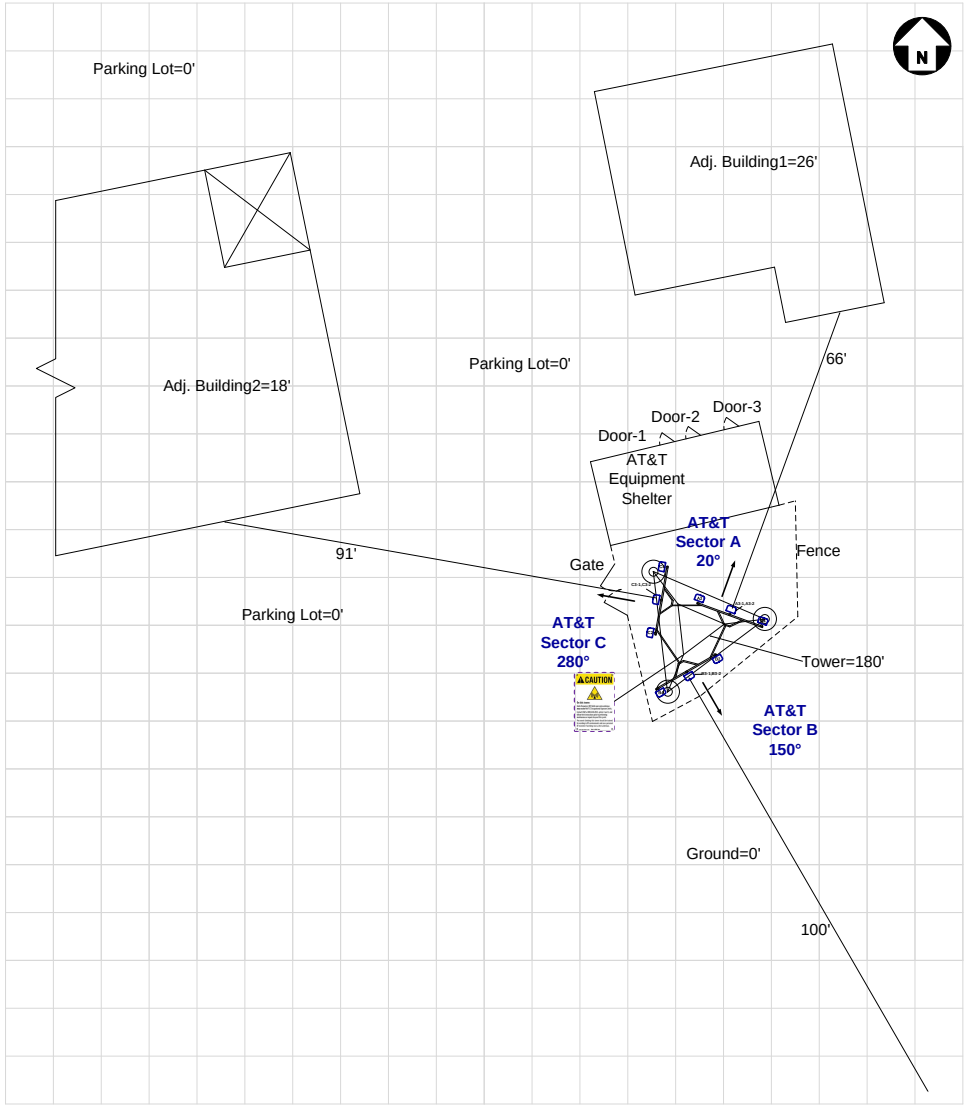
AT&T Signage Locations	Sign Type									
	Safety Instructions	Notice Sign 2	Caution Sign 2	Caution Sign 2B	Caution Sign 2C	Caution 7"x7"	Warning Sign 1B	RF Exposure Map	Lock	Barriers
Access Point(s)				1						
Alpha										
Beta										
Gamma										

TABLE 2: Signage Summary (Proposed)

1.3 List of Documents used to prepare this Report

- *10035298_AE201_220418_CTL02147_Rev3_LTE 6C_5G NR RADIO_5G NR 1SR CBAND_BBU ADD_LTE 5C_4TX4RX_5G NR 1DR-1 (1)*
- *NEW-ENGLAND_CONNECTICUT_CTL02147_2021-5G-NR-Radio_5G-NR-1SR-CBAND_sp656b_2051A11ATZ_10035298_60430_03-01-2021_Final-Approved_v6.00*

2. Site Scale Map



AT&T Antenna	Proposed	Proposed Signage									
Panel	Barrier	Safety Instructions	Notice 2	Caution 2	Caution 2B	Caution 2C	Caution 7"x7"	Warning 1B	RF Exposure Map	Lock	***Map Scale = 10 ft***
OMNI	Posts										

3. Antenna Inventory

Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (0)	HBW (0)	Antenna Gain (dBd)	Antenna Aperture (ft)	Transmitter Power (Watts)	Total Loss (dB)	Total ERP (Watts)	Total EIRP (Watts)
A2	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	20	71	12.05	6	120.00	0.5	1714.67	2813.07
A2	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	20	71	12.05	6	60.00	0.5	857.34	1406.54
A2	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	20	67	15.05	6	120.00	0.5	3421.22	5612.82
A2	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	20	62	15.55	6	120.00	0.5	3838.67	6297.69
A3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	20	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	20	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A4	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	20	74	11.85	6	120.00	0.5	1637.50	2686.47
A4	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	20	63	12.45	6	120.00	0.5	1880.10	3084.47
A4	AT&T	CCI	DMP65R-BU6D	Panel	2300	LTE	20	54	16.25	6	75.00	0.5	2818.78	4624.46
B2	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	150	71	12.05	6	120.00	0.5	1714.67	2813.07
B2	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	150	71	12.05	6	60.00	0.5	857.34	1406.54
B2	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	150	67	15.05	6	120.00	0.5	3421.22	5612.82
B2	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	150	62	15.55	6	120.00	0.5	3838.67	6297.69
B3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	150	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	150	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B4	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	150	74	11.85	6	120.00	0.5	1637.50	2686.47
B4	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	150	63	12.45	6	120.00	0.5	1880.10	3084.47
B4	AT&T	CCI	DMP65R-BU6D	Panel	2300	LTE	150	54	16.25	6	75.00	0.5	2818.78	4624.46

Table 3.1: Antenna Inventory Table

Note: **^ Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.**
* 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP

Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (0)	HBW (0)	Antenna Gain (dBd)	Antenna Aperture (ft)	Transmitter Power (Watts)	Total Loss (dB)	Total ERP (Watts)	Total EIRP (Watts)
C2	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	280	71	12.05	6	120.00	0.5	1714.67	2813.07
C2	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	280	71	12.05	6	60.00	0.5	857.34	1406.54
C2	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	280	67	15.05	6	120.00	0.5	3421.22	5612.82
C2	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	280	62	15.55	6	120.00	0.5	3838.67	6297.69
C3-1	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	280	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C3-2	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	280	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C4	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	280	74	11.85	6	120.00	0.5	1637.50	2686.47
C4	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	280	63	12.45	6	120.00	0.5	1880.10	3084.47
C4	AT&T	CCI	DMP65R-BU6D	Panel	2300	LTE	280	54	16.25	6	75.00	0.5	2818.78	4624.46

Table 3.2: Antenna Inventory Table

Note: **^ Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.**
* 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP

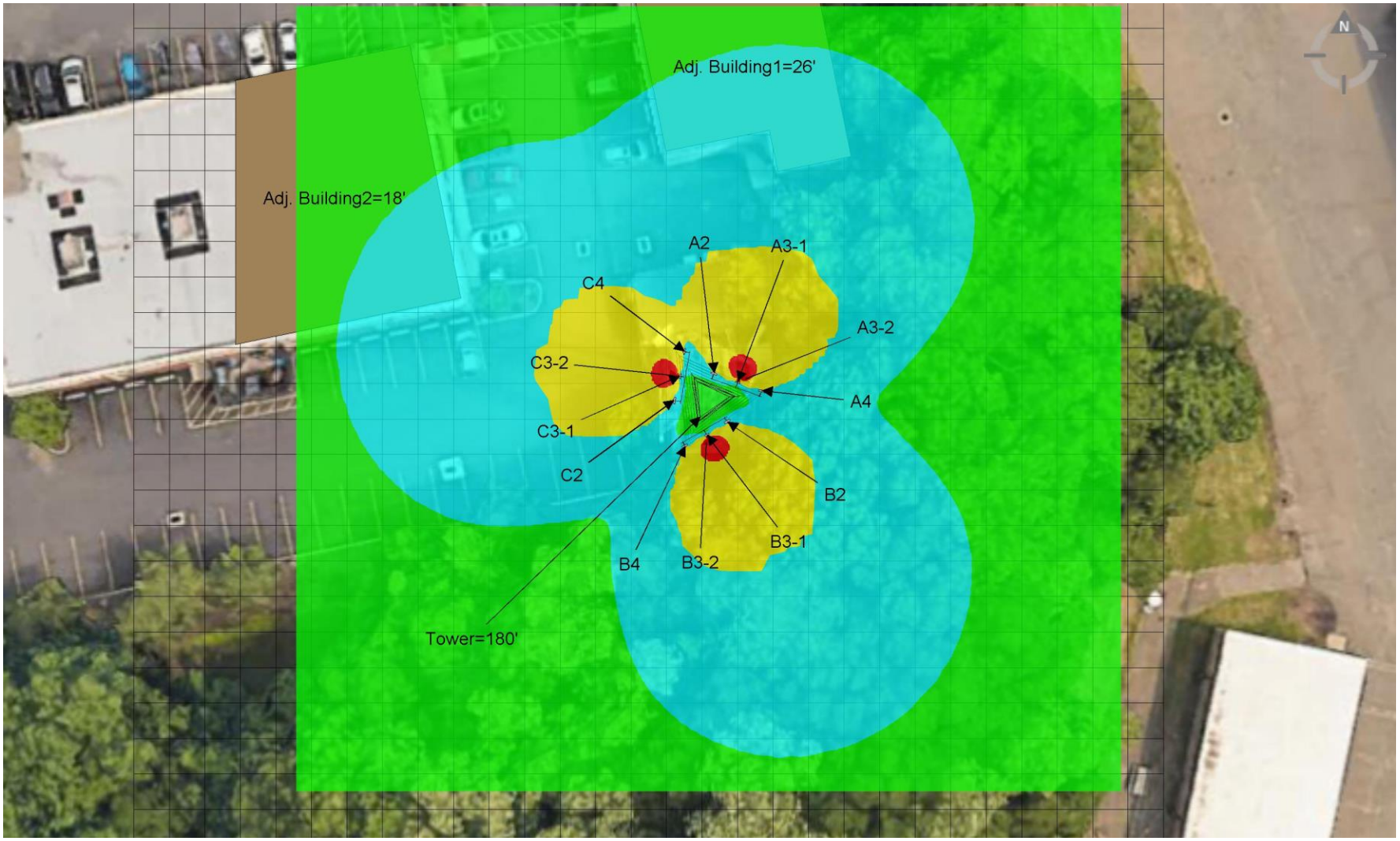
Antenna Heights (Z)

Ant ID	Operator	Antenna Radiation Centerline	Z-Height from Adj. Building1	Z-Height from Adj. Building2	Z-Height from Ground
A2	AT&T	133.00	104.00	112.00	130.00
A3-1	AT&T	134.78	107.50	115.50	133.50
A3-2	AT&T	131.23	103.95	111.95	129.95
A4	AT&T	133.00	104.00	112.00	130.00
B2	AT&T	133.00	104.00	112.00	130.00
B3-1	AT&T	134.78	107.50	115.50	133.50
B3-2	AT&T	131.23	103.95	111.95	129.95
B4	AT&T	133.00	104.00	112.00	130.00
C2	AT&T	133.00	104.00	112.00	130.00
C3-1	AT&T	134.78	107.50	115.50	133.50
C3-2	AT&T	131.23	103.95	111.95	129.95
C4	AT&T	133.00	104.00	112.00	130.00

Table 3.3: Antenna Height(s) Summary Table

4. Predicted Emission

4.1 Predictive Cumulative MPE Contribution from All Sources at Antennas Centerline Level (133 ft.)



Max. Predictive Spatial Average MPE% = **17167.10%**

Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

4.2 Predictive Cumulative MPE Contribution from All Sources at Adj. Building1 Level (26 ft.)

Max. Predictive Spatial Average MPE% = **1.92%**

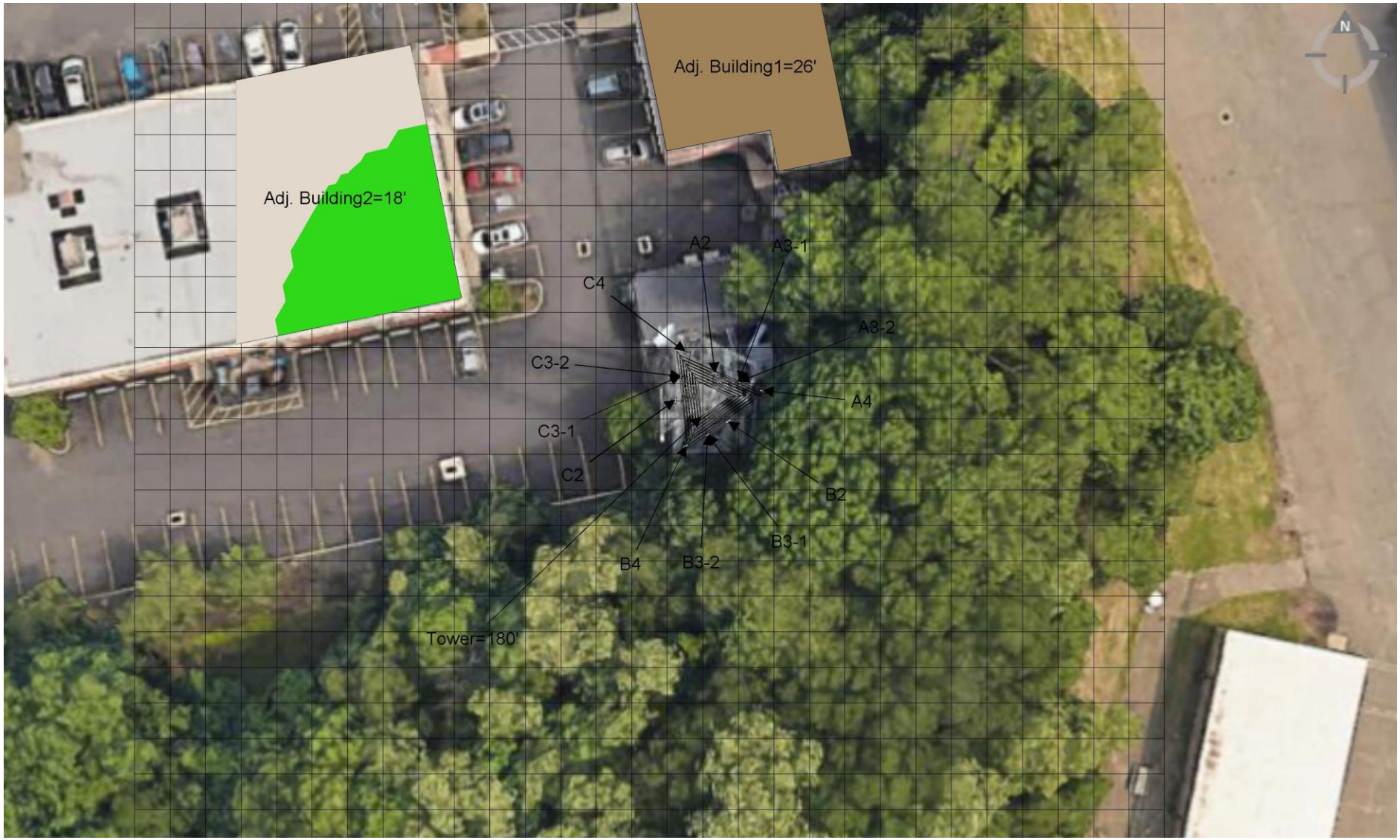
Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

4.3 Predictive Cumulative MPE Contribution from All Sources at Adj. Building2 Level (18 ft.)



Max. Predictive Spatial Average MPE% = **1.66%**

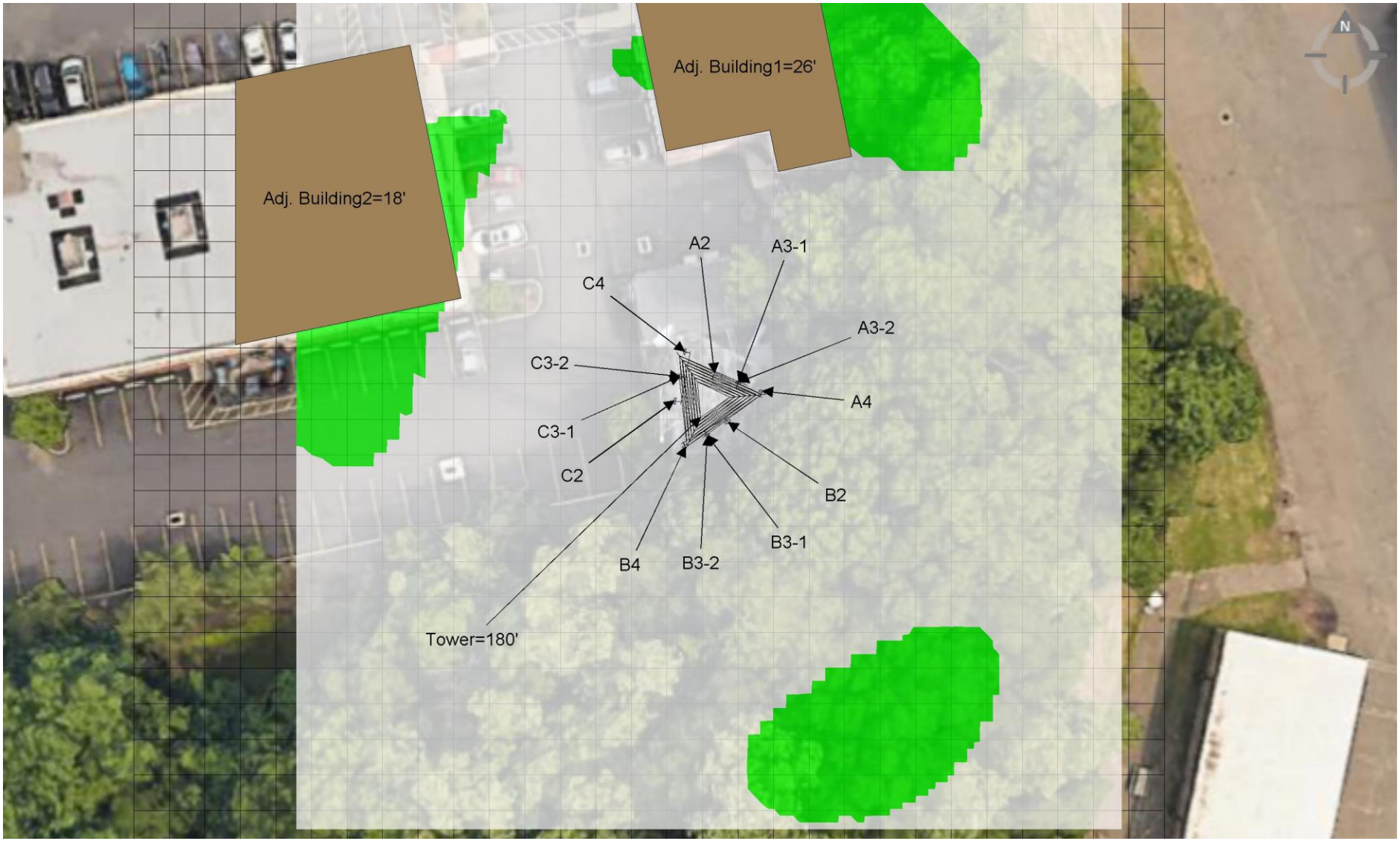
Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

4.4 Predictive Cumulative MPE Contribution from All Sources at Ground Level (0 ft.)



Max. Predictive Spatial Average MPE% = **1.23%**

Proposed Barrier
Proposed Posts

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

5. Statement of Compliance

5.1 Statement of AT&T Mobility Compliance

At the time of our Analysis, AT&T Mobility is required to take action to fulfill their Obligations to comply with the FCC's mandate as defined in OET-65

Recommendations

AT&T Alpha Sector:

- No action required.

AT&T Beta Sector:

- No action required.

AT&T Gamma Sector:

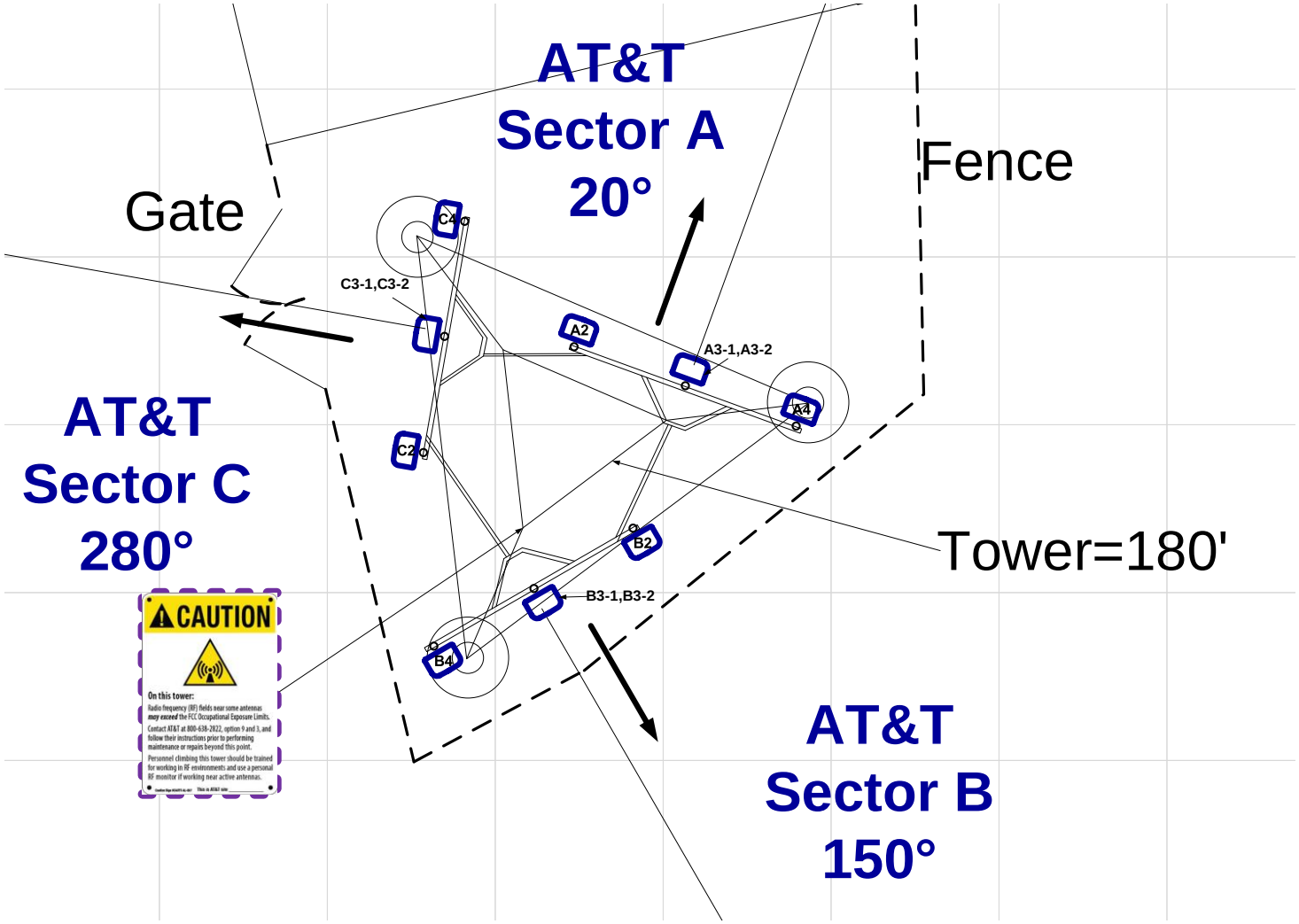
- No action required.

Tower:

- One Caution 2B Sign to be posted on Tower at climbing access, facing outwards so approaching people can see as shown in "Recommendations Map – Detailed View" on page 13. (1 Total Sign)

Recommendations Map – Detailed View

AT&T Alpha, Beta & Gamma Sectors



AT&T Antenna	Proposed	Proposed Signage									
Panel	Barrier	Safety Instructions	Notice 2	Caution 2	Caution 2B	Caution 2C	Caution 7"x7"	Warning 1B	RF Exposure Map	Lock	*Map Scale = 10 ft*
OMNI	Posts										

Appendix A – Statement of Limiting Conditions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at full power at all times. AT&T has further recommended to assume a 75% duty cycle of maximum radiated power for all LTE & 5G carriers (& consider 100% duty cycle for all UMTS carriers).

In this site compliance report, it is assumed that Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS^ antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.

AT&T recommended to consider - For C-BAND and/or DoD AAS^ antenna(s) 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor[1] are used to calculate Transmitter Power & ERP/EiRP.

AT&T recommended to use worst-case tilts for the simulations.

***Power Reduction Factor**: IEC Standard 62232: 2017 allows for a statistically conservative power density model to more realistically define the RF exposure area. AT&T recommends a "0.32" factor to calculate the "Actual Maximum" (time averaged) power value, which accounts for "Beam Scanning," "Scheduling," and "RBS Utilization" This recommended value is a conservative figure modelled and supported by other vendors and through measurements published in scientific articles and white papers by IEEE and others. Those publication are listed below:*

1. IEEE Access, Time-Averaged Realistic Maximum Power Levels for the Assessment of RF Exposure for 5G Radio Base Stations Using Massive MIMO (Published Sept. 18, 2017 / BJÖRN THORS, ANDERS FURUSKÄR, DAVIDE COLOMBI, AND CHRISTER TÖRNEVIK)
2. IEEE Explore, A Statistical Approach for RF Exposure Compliance Boundary Assessment in Massive MIMO Systems (Published Jan. 25, 2018 / Paolo Baracca, Andreas Weber, Thorsten Wild, Christophe Grangeat)
3. IEEE Access, In-situ Measurement Methodology for the Assessment of 5G NR Massive MIMO Base Station Exposure at Sub-6 GHz Frequencies (Published Dec. 20, 2019 / SAM AERTS, LEEN VERLOOCK, MATTHIAS VAN DEN BOSSCHE, DAVIDE COLOMBI, LUC MARTENS, CHRISTER TÖRNEVIK AND WOUT JOSEPH)
4. Applied Sciences, Analysis of the Actual Power and EMF Exposure from Base Stations in a Commercial 5G Network (Published July 30, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)
5. Ofcom Technical Report, Electromagnetic Field (EMF) measurements near 5G mobile phone base stations (Published Feb. 21, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)

MobileComm believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor). Thus, at any time, if power density measurements were made, we believe the real time measurements would indicate levels below those depicted in the RF emission diagram(s) in this report. By modelling in this way, MobileComm has conservatively shown exclusion areas – areas that should not be entered without the use of a personal monitor, carriers reducing power, or performing real-time measurements to indicate real-time exposure levels.

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Other Carrier" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, MobileComm uses the closest frequency in the antenna's range that corresponds to the highest Maximum Exposure Limit (MPE), resulting in a conservative analysis.

Appendix B – FCC Guidelines and Emissions Threshold Limits

All power density values used in this report were 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 (µW/cm2).The number of µW/cm2 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 public 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 public 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 (µW/cm2). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 µW/cm2 and 567 µW/cm2 respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 µW/cm2. 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, have been properly trained in RF safety 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, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

Appendix C – Rules & Regulations

Explanation of Applicable Rules and Regulations

FCC has set forth guidelines in OET Bulletin 65 for human exposure to radio frequency electromagnetic fields. Currently, there are two different levels of MPE - General Public MPE and Occupational MPE. An individual classified as Occupational can be defined as an individual who has received appropriate RF training and meets the conditions outlined below. General Public is defined as anyone who does not meet the conditions of being Occupational. FCC Rules and Regulations define compliance in terms of total exposure to total RF energy, regardless of location of or proximity to the sources of energy.

It is the responsibility of all licensees to ensure these guidelines are maintained at all times. It is the ongoing responsibility of all licensees composing the site to maintain ongoing compliance with FCC rules and regulations.

A building owner or site manager can use this report as part of an overall RF Health and Safety Policy. It is important for building owners/site managers to identify areas in excess of the General Population MPE and ensure that only persons qualified as Occupational are granted access to those areas.

Occupational Environment Explained

The FCC definition of Occupational exposure limits apply to persons who:

- *are exposed to RF energy as a consequence of their employment;*
- *have been made aware of the possibility of exposure; and*
- *can exercise control over their exposure.*

FCC guidelines go further to state that persons must complete RF Safety Awareness training and must be trained in the use of appropriate personal protective equipment.

In order to consider this site an Occupational Environment, the site must be controlled to prevent access by any individuals classified as the General Public. Compliance is also maintained when any non-occupational individuals (the General Public) are prevented from accessing areas indicated as Red or Yellow in the attached RF Emissions diagram. In addition, a person must be aware of the RF environment into which they are entering. This can be accomplished by an RF Safety Awareness class, and by appropriate written documentation such as this Site Compliance Report.

Appendix D – General Safety Recommendations

The following are general recommendations appropriate for any site with accessible areas in excess of 100% General Public MPE. These recommendations are not specific to this site. These are safety recommendations appropriate for typical site management, building management, and other tenant operations.

1. All individuals needing access to the main site should be instructed to read and obey all posted placards and signs.

2. The site should be routinely inspected and this or similar report updated with the addition of any antennas or upon any changes to the RF environment including:

- *adding new antennas that may have been located on the site*
- *removing of any existing antennas*
- *changes in the radiating power or number of RF emitters*

3. Post the appropriate SAFETY INSTRUCTIONS, NOTICE, CAUTION & WARNING sign at the main site access point(s) and other locations as required. Note: Please refer to RF Exposure Diagrams in the report section above, to inform everyone who has access to this site that beyond posted signs there may be levels in excess of the limits prescribed by the FCC. The signs below are examples of signs meeting FCC guidelines.

4. Ensure that the site door remains locked (or appropriately controlled) to deny access to the general public if deemed as policy by the building/site owner.

5. For a General Public environment the five color levels identified in measured RF emission diagram can be interpreted in the following manner:

- *White represents areas predicted to be greater than or equal to 0% and less than 1% of the MPE general public limits*
- *Green represents areas predicted to be greater than or equal to 1% and less than 100% of the MPE general public limits*
- *Blue represents areas predicted to be greater than or equal to 100% and lesser than 500% of the MPE general public limits.*
- *Yellow represents areas predicted to be greater than or equal to 500% and lesser than 5000% of the MPE general public limits.*
- *Red areas indicates predicted levels greater than or equal to 5000% of the MPE general public limits.*

Appendix E – References

1 - FCC Definition

FCC defines an Occupational or Controlled environment as one where persons are exposed to RF fields as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Typical criteria for an Occupational or Controlled environment is restricted access (i.e. locked doors, gates, etc.) to areas where antennas are located coupled with proper RF warning signage.

FCC defines a site as a General Public or Uncontrolled environment when human exposure to RF fields occurs to the general public or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over the exposure. Typical criteria for a General Public or Uncontrolled environment are unrestricted access (i.e. unlocked or no restrictions) to areas where antennas are located without proper RF warning signage being posted.

2 - Physical Testing measurement procedure and Tools

The Narda Broadband Field Meter NBM-550 can make rapid conformance measurements with evaluation in the time domain when used in conjunction EA5091 probe. This probe is a so-called Shaped Probe, i.e. it is frequency weighted so that it automatically takes account of the FCC Occupational limit values. To collect data, the probe is pointed towards the potential source(s) of EME radiation and moved slowly from ground level up to slightly above head height (approx. 6 ft).

Spatial Average Measurement A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.

3 - Site Safety Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: *Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.*

Training and Qualification Verification: *All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).*

Physical Access Control: *Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:*

- *Locked door or gate*
- *Alarmed door*
- *Locked ladder access*
- *Restrictive Barrier at antenna locations (e.g. Chain link with posted RF Sign)*

RF Signage: *Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.*

Assume all antennas are active: *Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.*

Maintain a 3 foot clearance from all antennas: *There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.*

Rooftop RF Emissions Diagram: *Section 4 of this report contains an RF Emissions Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas on the rooftop. This analysis is all theoretical and assumes a duty cycle of 75% for each transmitting antenna at full power. This analysis is a worst case scenario. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.*

4 - Definitions

Compliance- *The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.*

Decibel (dB) – *A unit for measuring power or strength of a signal.*

Duty Cycle – *The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 75% corresponds to continuous operation.*

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – *The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna, this product is divided by the cable losses*

Effective Radiated Power (ERP) – *In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.*

Gain (of an antenna in dbd) – *The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from a reference dipole. Gain is a measure of the relative efficiency of a directional antennas as compared to a reference dipole.*

General Population/Uncontrolled Environment – *Defined by the FCC, as an area where RFR exposure may occur to persons who are unaware of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.*

Generic Antenna – *For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.*

Isotropic Antenna – *An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.*

Maximum Measurement – *This measurement represents the single largest measurement recorded when performing a spatial average measurement.*

Maximum Exposure Limit (MPE) – *The RMS and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.*

Occupational/Controlled Environment – *Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are aware of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.*

Radio Frequency Radiation – *Electromagnetic waves that are propagated from antennas through space.*

Spatial Average Measurement – *A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.*

Transmitter Power Output (TPO) – *The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.*

Appendix F – Proprietary Statement

This report was prepared for the use of AT&T Mobility, LLC to meet requirements specified in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by MobileComm are based solely on the information provided by AT&T Mobility and all observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to MobileComm so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.