QC Development
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Storrs, CT 06268
860-670-9068
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July 21, 2017

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T)
880 Post Road East, Westport, CT 06880 – AT&T Site # CT2147
N 41-08-14.97
W 73-20-03.61

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 133-foot level of the existing 180-foot Self Support Tower at 880 Post Road East, Westport. The tower is owned by the Connecticut Department of Public Safety and the property is owned by the State of Connecticut. AT&T now intends to remove three (3) Powerwave antennas and install three (3) new CCI HPA-65R-BUU-H6 antennas. These antennas would be installed at the 133-foot level of the tower. AT&T also intends to remove three (3) Ericsson RRUS-11 and install three (3) Ericsson RRUS-32 B2 radio heads, also at the 133-foot level.

This facility was approved by the Connecticut Siting Council, Docket No. 123 on March 29, 1990. There were no conditions that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mr. James Marpe, First Selectman of the Town of Westport, the Westport Planning and Zoning Director and

the property and tower owner.

The planned modifications to the 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 structure.

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

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

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

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

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

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mr. James Marpe – First Selectman, Town of Westport
Mary Young – Westport Planning and Zoning Director
CT State Police - Tower and Property Owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							5.42%
AT&T UMTS	2	500	133	0.0223	880	0.5867	0.38%
AT&T UMTS	1	500	133	0.0111	1900	1.0000	0.11%
AT&T LTE	1	500	133	0.0111	700	0.4667	0.24%
AT&T LTE	1	500	133	0.0111	1900	1.0000	0.11%
AT&T LTE	1	500	133	0.0111	2300	1.0000	0.11%
Site Total							6.37%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							5.42%
AT&T UMTS	2	368	133	0.0164	880	0.5867	0.28%
AT&T UMTS	2	483	133	0.0215	1900	1.0000	0.22%
AT&T LTE	1	1476	133	0.0329	700	0.4667	0.71%
AT&T LTE	1	2421	133	0.0540	1900	1.0000	0.54%
Site Total							7.16%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (LTE BWE 2017 UPGRADE):
SITE ADDRESS:	880 POST ROAD EAST WESTPORT, CT 06880
LATITUDE:	41.137463° N, 41° 8' 14.84" N
LONGITUDE:	73.334360° W, 73° 20' 3.69" W
TYPE OF SITE:	LATTICE TOWER / INDOOR EQUIPMENT
TOWER HEIGHT:	180'
RAD CENTER:	133'±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2147

SITE NAME: WESTPORT SP TWR

PROJECT: LTE BWE 2017 UPGRADE

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.3 MI TURN LEFT ONTO WEST ST. 0.3 MI MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 29.1 MI MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TURNPIKE VIA THE EXIT ON THE LEFT TOWARD N.Y. CITY. 24.5 MI TAKE EXIT 19 TOWARD US-1/SOUTHPORT. 0.2 MI STAY STRAIGHT TO GO ONTO PEASE AVE. 0.1 MI TURN SLIGHT RIGHT ONTO POST RD E/US-1 S. 2.4 MI TURN LEFT ONTO SHERWOOD ISLAND CONNECTOR.

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.

72 HOURS

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

UNDERGROUND SERVICE ALERT

Hudson Design Group LLC
1600 OSGOOD STREET
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT — NOT FOR CONSTRUCTION UNLESS RELEASED — No. 23581 — LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	T-1	1

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) 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 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 AWS 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 – SAI
   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. TOUCHUP 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 & 2016 BUILDING CODE OF NEW YORK STATE
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    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-G, STRUCTURAL STANDARDS FOR STEEL

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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SALEM, NH 03079

SITE NUMBER: CT2147
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at&t
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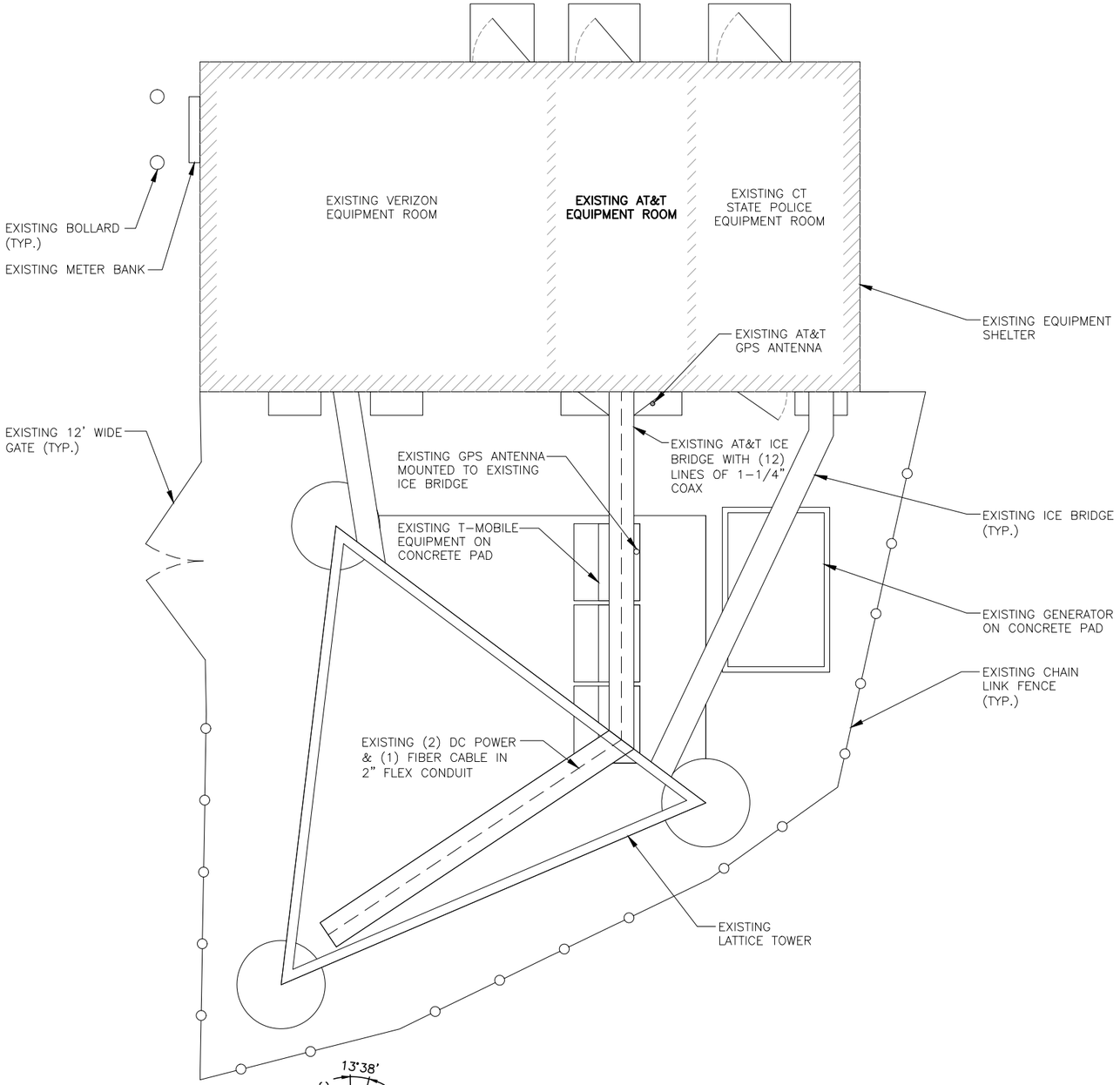
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT · DEREK J. CREASEY · 29295 · LICENSED PROFESSIONAL ENGINEER

AT&T

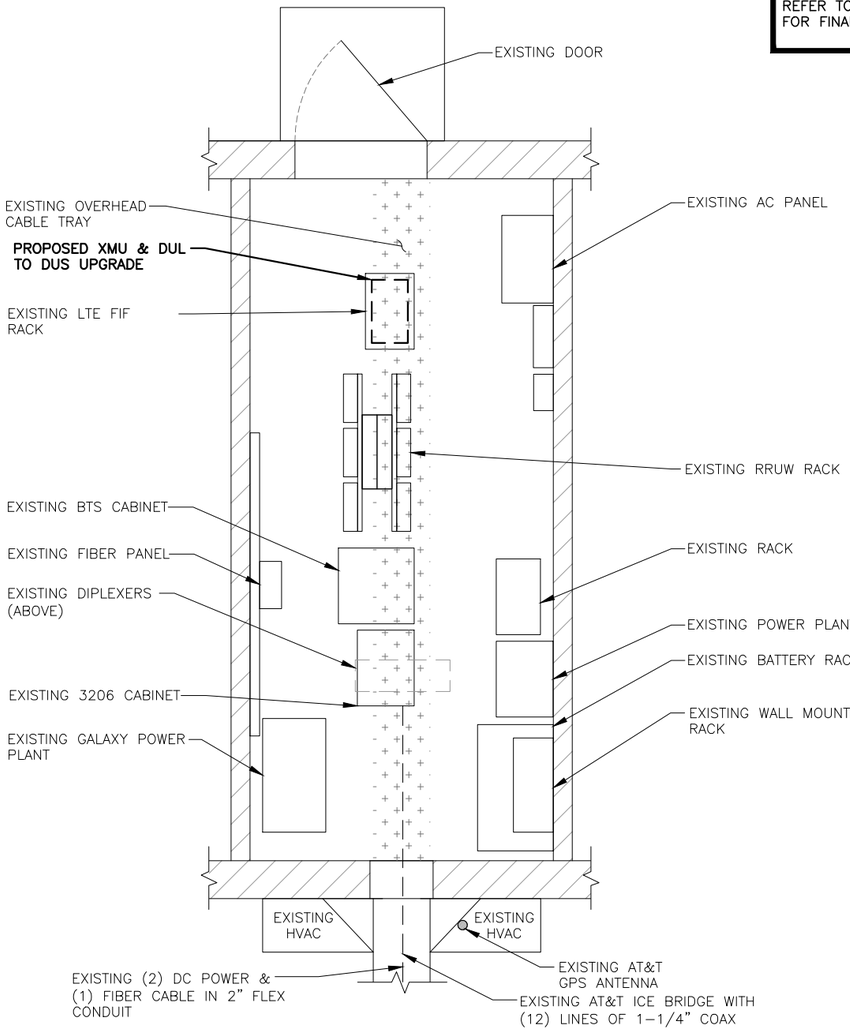
GENERAL NOTES
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	GN-1	1



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"



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

0 1'-0" 2'-0" 4'-0" 6'-0"

NOTE:

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

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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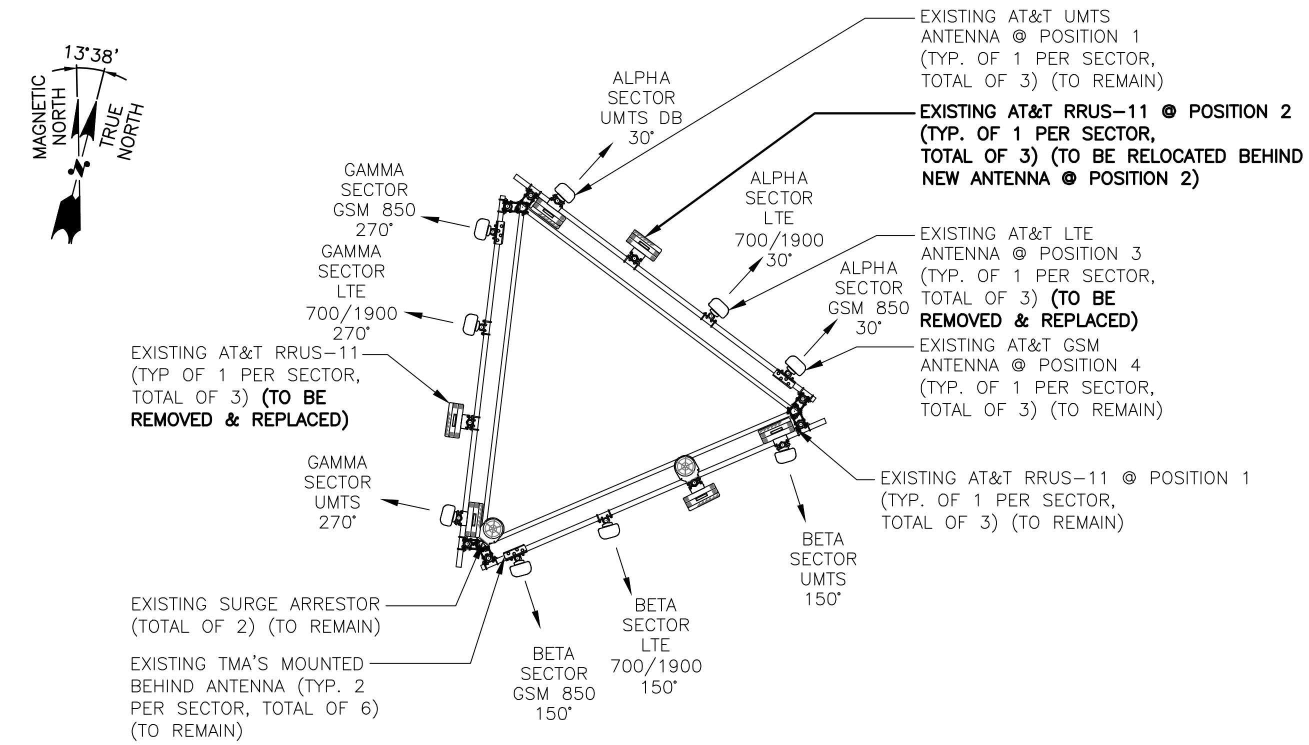
STATE OF CONNECTICUT
DEREK J. CREASEY
No. 23551
LICENSED PROFESSIONAL ENGINEER

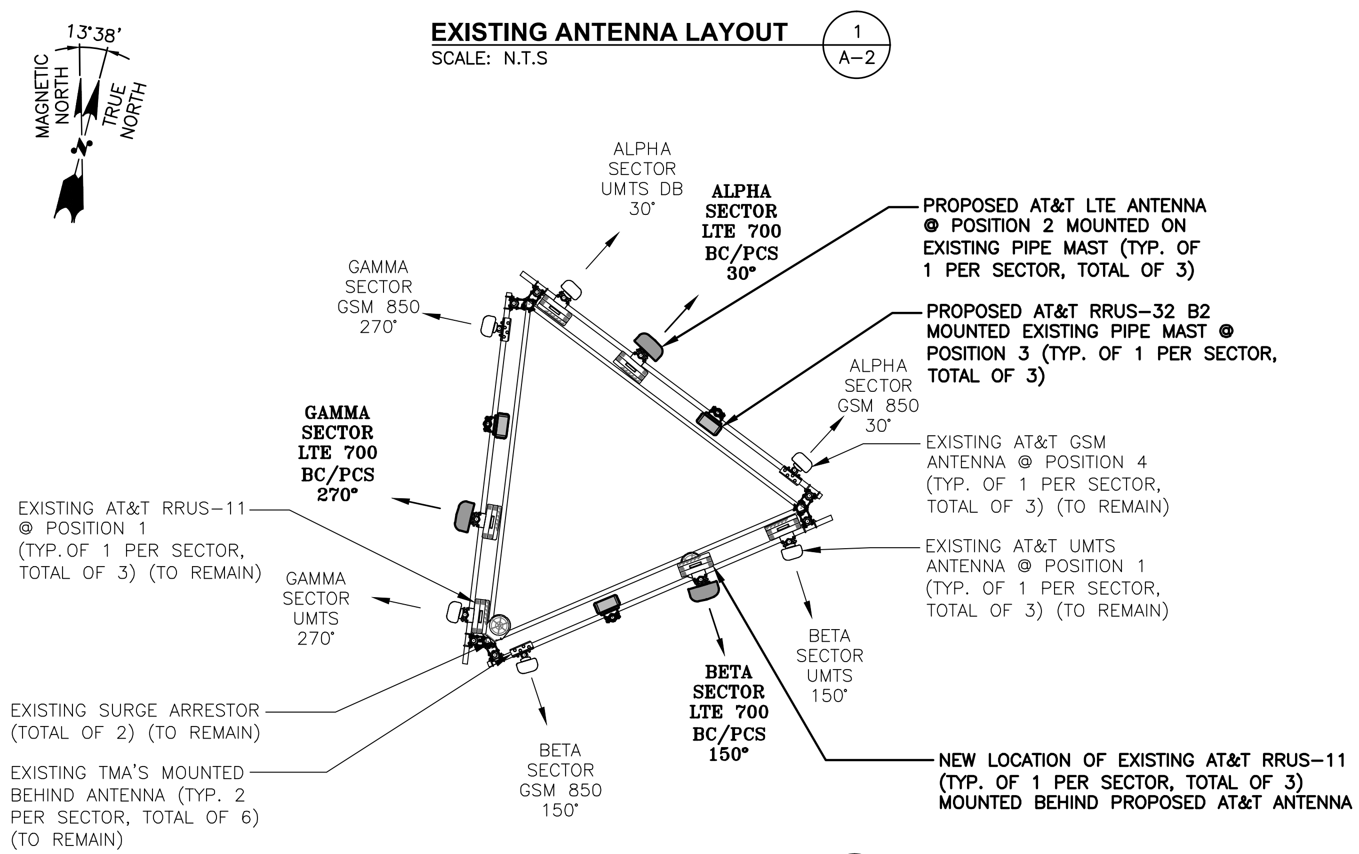
AT&T

COMPOUND & EQUIPMENT PLAN
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	A-1	1



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



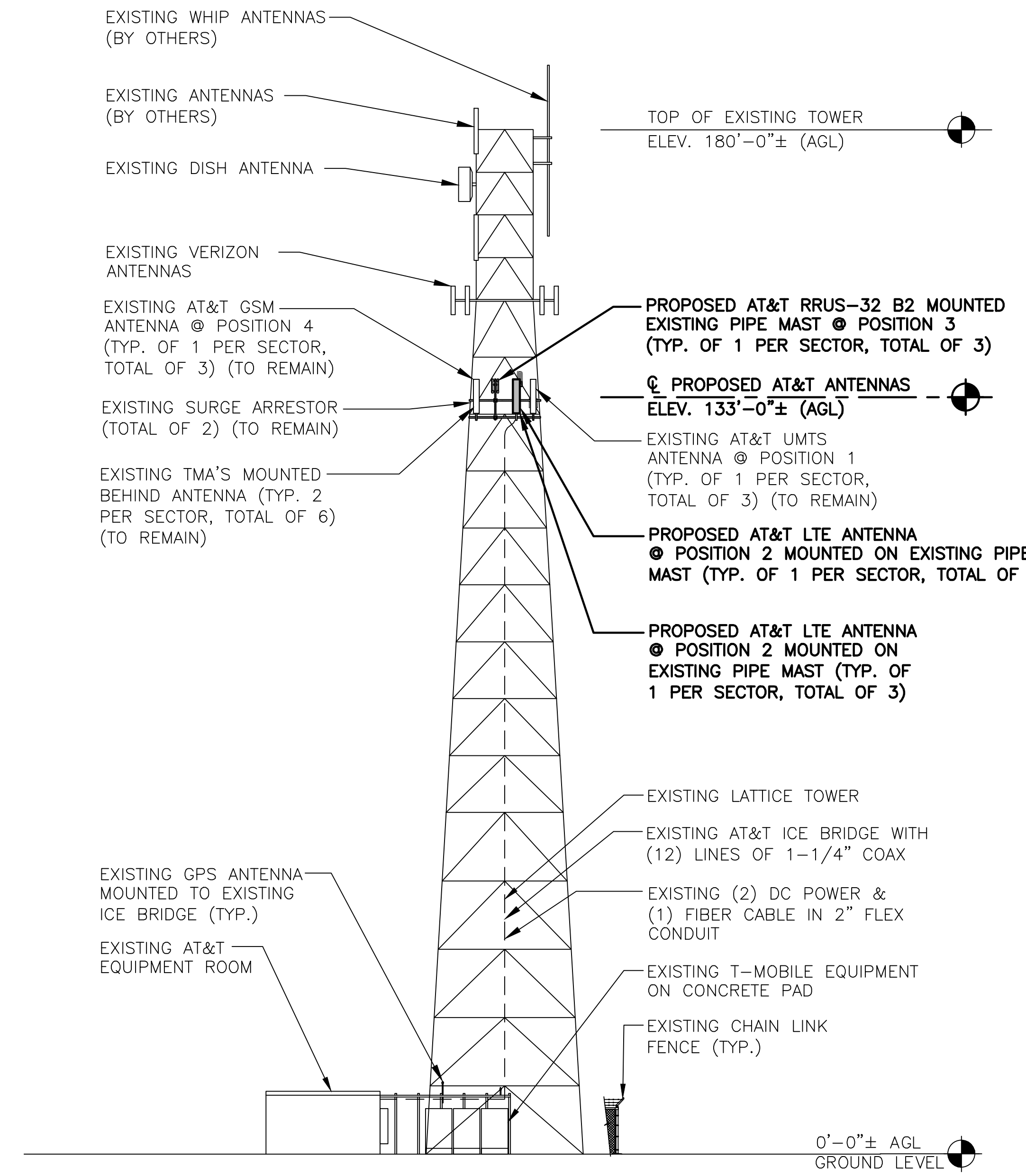
PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:

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

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



ELEVATION (3 / A-2)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"
0 8'-0" 16'-0" 32'-0" 48'-0"

STATE OF CONNECTICUT — DEREK CREASER — No. 28355 — LICENSED PROFESSIONAL ENGINEER

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AT&T
ANTENNA LAYOUTS & ELEVATION
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	A-2	1

EXISTING ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6
	POWERWAVE	P65-16-XLH-RR	72X12X6
BETA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6
	POWERWAVE	P65-16-XLH-RR	72X12X6
GAMMA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6
	POWERWAVE	P65-16-XLH-RR	72X12X6

PROPOSED ANTENNA SCHEDULE

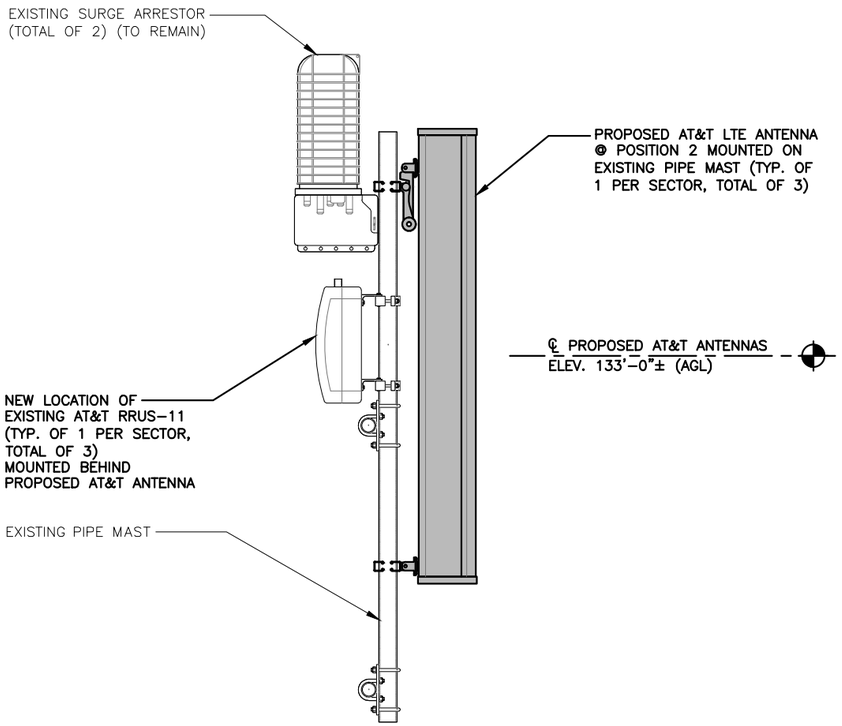
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	CCI	HPA-65R-BUU-H6	72X14.8X9
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6
BETA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	CCI	HPA-65R-BUU-H6	72X14.8X9
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6
GAMMA:	POWERWAVE	P65-16-XLH-RR	72X12X6
	CCI	HPA-65R-BUU-H6	72X14.8X9
	–	–	–
	POWERWAVE	P65-16-XLH-RR	72X12X6

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

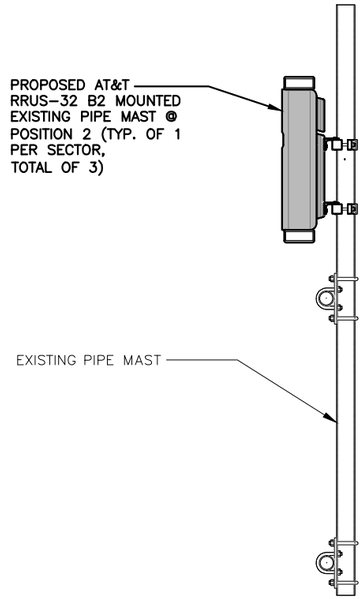
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



PROPOSED ANTENNA MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED RRU MOUNTING DETAIL (2 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

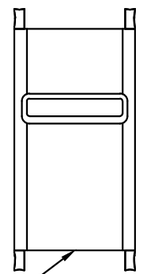
RRU CHART

QUANTITY	MODEL	L	W	D
6 (E)	RRUS-11	19.7"	17.0"	7.2"
–	RRUS-12	20.4"	18.5"	7.5"
3 (P)	RRUS-32	27.2"	12.1"	7.0"
–	RRUS-E2	20.4"	18.5"	7.5"
–	LTE-A2	16.4"	15.2"	3.4"

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.

RRU DETAIL (3 / A-3)
SCALE: N.T.S

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2147
SITE NAME: WESTPORT SP TWR
880 POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

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

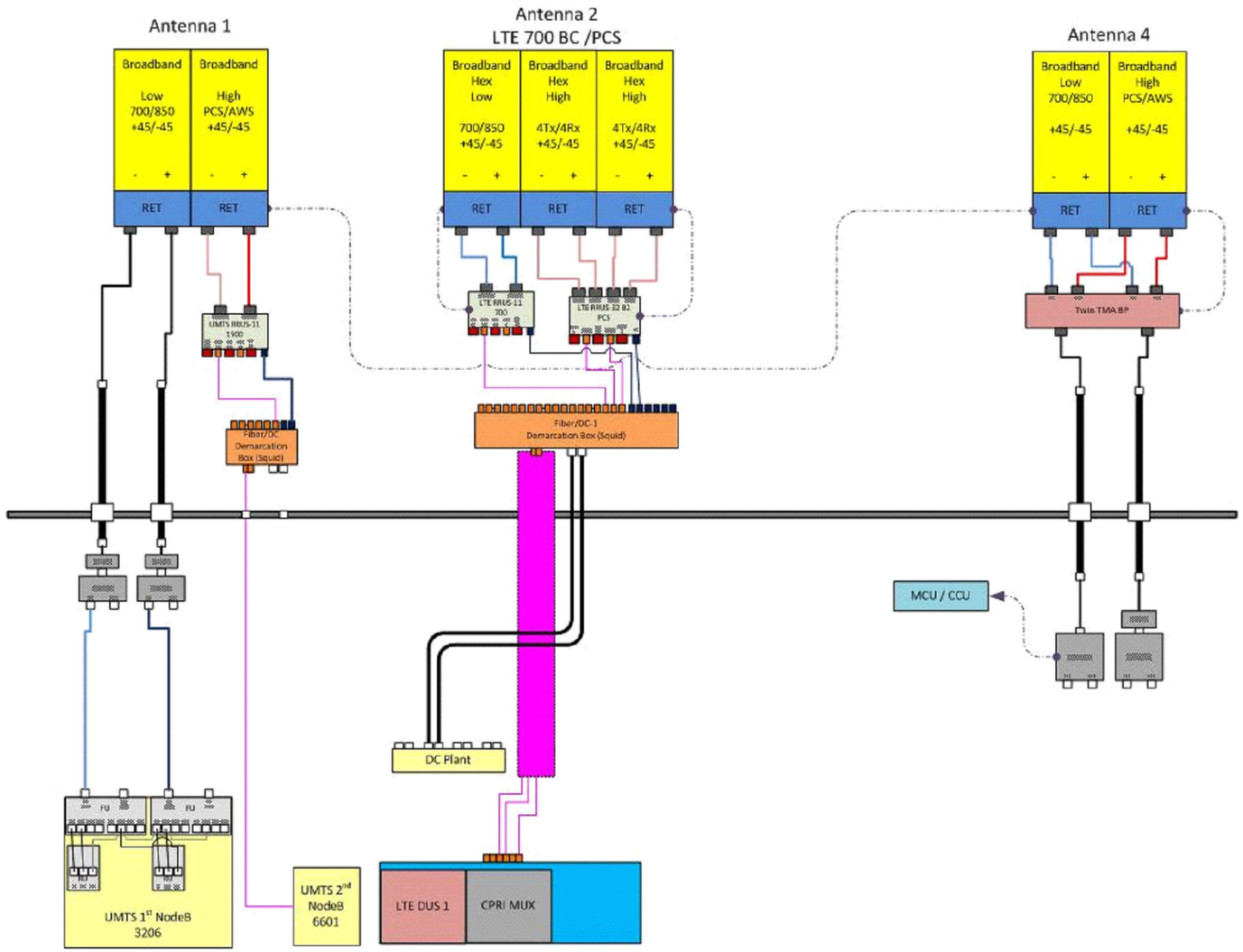
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/18/16	ISSUED FOR CONSTRUCTION	SG	AT	DJC
A	07/12/16	ISSUED FOR REVIEW	EB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT
DEREK J. CREASEY
26,295
LICENSED PROFESSIONAL ENGINEER

AT&T
DETAILS
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	A-3	1



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 THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
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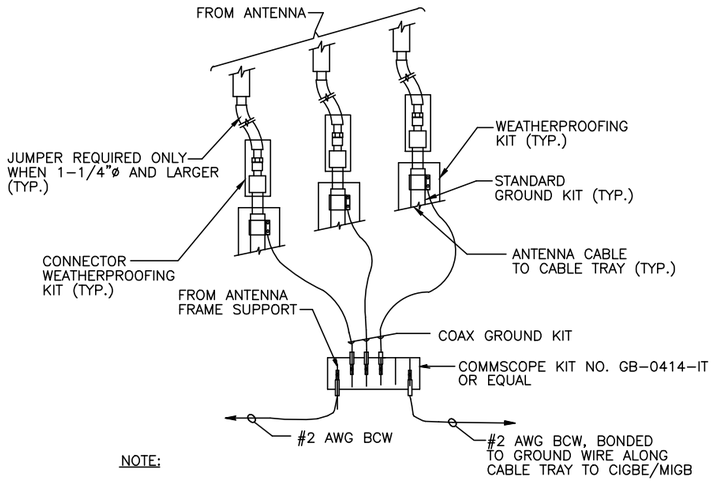
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT — DEREK J. CREASEY — No. 23567 — LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	RF–1	1



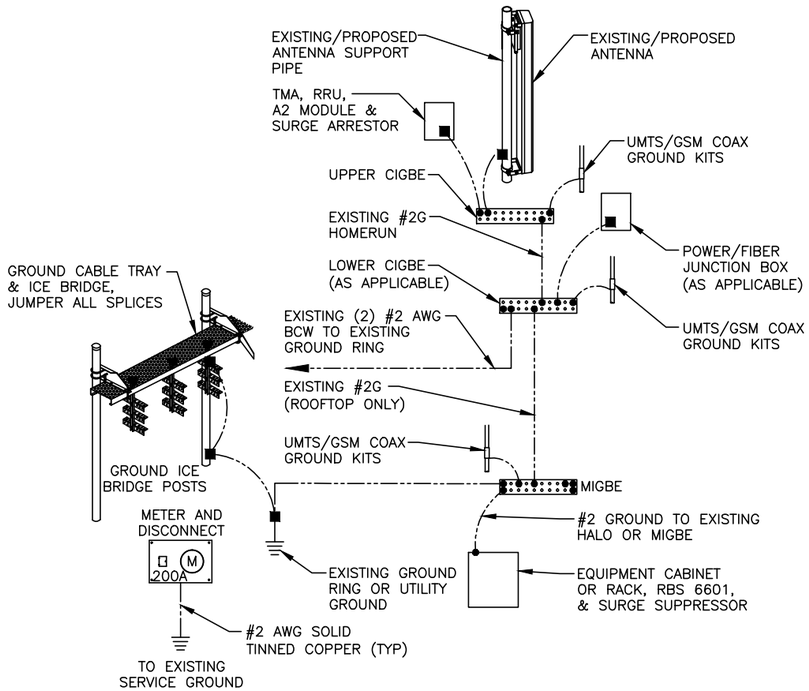
NOTE:

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

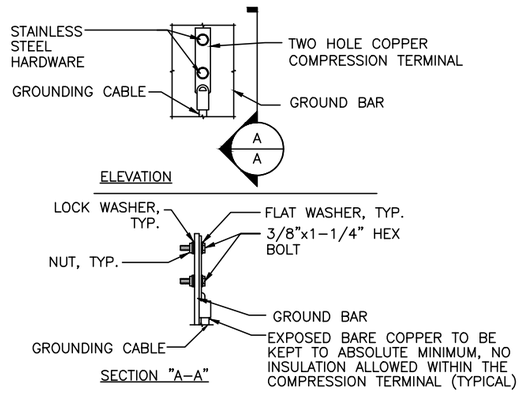
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTE:

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

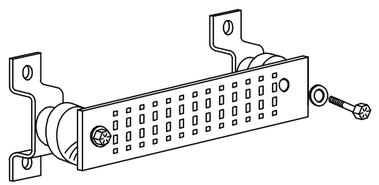
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: EB

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 23551
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE BWE)

SITE NUMBER	DRAWING NUMBER	REV
CT2147	G-1	1

AECOM

Submitted to
J.P Wireless Consulting, LLC
11 Par Circle
Albany, NY 12208

Verizon Wireless
99 East River Drive
East Hartford, CT 06108

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

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
June 5, 2017

DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

Site Name: CT25XC355
Site Address: 880 Post Road East
Westport, Connecticut
CSP Tower # 32

60504883 / JPW-001

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis with proposed modification of the 180' self-supporting lattice tower. The tower is located at 880 Post Road East in Westport, Connecticut.

The structural analysis was conducted in accordance with the 2016 Connecticut State Building Code which includes the TIA-222-G[1] Standard, 2012 International Building Code, the 2016 Connecticut State Building Code Amendments, the AISC[2] Load Resistance Factor Design (LRFD), the ASCE 7[3] design Code, and the Connecticut State Police Requirements which include the TIA/EIA-222-F[4].

The proposed tower modification design is included with this report.

The antenna loading considered in the analysis consists of all the existing antennas, transmission lines and ancillary items as outlined in the Introduction Section of this report.

The proposed Sprint/Clearwire, Verizon Wireless and AT&T antenna upgrades are listed below:

Antennas and other Appurtenances	Carrier	Antenna Center Elevation
Remove: **(3) SitePro1 2' Ultimate Universal Standoff Frames (Part# USF-2U) w/ Large Leg Adapter Kit (Part # TAM-LL) with (1) 8' 2-3/8" Antenna Pipe Mounted to Standoff Frame** **(3) RFS APXVSPP18-C-A20 Panel Antennas** **(3) Alcatel-Lucent 800 MHz RRH Units** **(3) Alcatel-Lucent 1900 MHz RRH Units** **(3) 1-1/4" Hybrid Coaxial Cables**	**Sprint (existing)**	**@ 75'**
(2) P65-15-XL-2 Panels (Alpha & Gamma Sectors – 700 MHz / LTE) **(1) LNX-6512DS-T4M Panel Antenna (Beta Sector – 700 MHz / LTE)** **(3) BXA-171063-12CF-EDIN-2 Panel Antennas (1900 MHz / PCS)** **(3) BXA-171063-12CF-EDIN-2 Panel Antennas (2100 MHz / AWS)** **(3) Alcatel Lucent 2x40-AWS RRH Units** **(6) Diplexer Units**	**VZW (existing)**	**@ 160'**
(3) P65-16-XLH-RR Panel Antennas **(3) RRUS-11 RRH Units**	**AT&T (existing)**	**@ 133'**

Antennas and other Appurtenances	Carrier	Antenna Center Elevation
Install: **(3) RFS APXVSPP18-C-A20 Panel Antennas** **(3) RFS APXVTM14-C-120 Panel Antennas** **(3) ALU Model 800 MHz RRH Units** **(3) ALU Model1900 MHz RRH Units** **(3) ALU TD-RRH8x20-25 (2500 MHz) RRH Units** **(3) ALU Model 800 External Notch Filters** **(9) RFS ACU-A20-N Tower Mount Switches** **(4) 1-1/4" Hybrid Coaxial Cables** **(1) NEMA 4X Enclosure Box** **(3) SitePro1 Antenna Mount Frames Part Number USF12-484-U**	**Sprint (Proposed)**	**@ 145'**
(1) Andrew VHLP800-11-DW1 Microwave Dish Antenna **(1) Andrew VHLP2-11 Microwave Dish Antenna** **(2) Dragonwave ODU Radio Units** **(2) 1/2" Coaxial Cables**	**Clearwire (Proposed)**	**@ 145'**
(3) Commscope SBNHH-1D65B Panel Antennas (700 MHz / LTE shared with 1900 MHz / PCS) **(3) Alcatel Lucent 2x60-700MHz RRH Units** **(1) DB-T1-6Z-8AB-0Z Distribution Box (700 MHz / LTE)** **(3) Alcatel Lucent 2x60-1900MHz RRH Units** **(3) Commscope SBNHH-1D65B Panel Antennas (2100 MHz / AWS)** **(3) Alcatel Lucent 2x60-AWS (2100 MHz) RRH Units** **(1) 1-5/8 Hybriflex Hybrid Coaxial Cable**	**VZW (Proposed)**	**@ 160'**
(3) CCI HPA-65R-BUU-6 Panel Antennas **(3) RRUS-32 RRH Units**	**AT&T (Proposed)**	**@ 133'**

1. TIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version G)
2. AISC = American Institute of Steel Construction (14th Edition)
3. ASCE 7 = American Society of Civil Engineers Standard 7 (2010 Edition)
4. TIA/EIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version F)

1. EXECUTIVE SUMMARY *(continued)*

The results of an initial analysis indicated the existing tower structure did not have enough capacity for the proposed antenna upgrades above. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load specification and with the existing and proposed antenna loading included herein.**

The results of the analysis indicate the modified tower's sway (deflection) is 0.5665 degrees and the modified tower's twist (rotation) is 0.0775 degrees. These figures combined are within the Connecticut State Police requirements of 0.75 degrees for combined twist (rotation) and sway (deflection) when applying the TIA/EIA-222-F design conditions.

This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Original tower report prepared by Rohn Industries, Inc., engineering file 26263DL and drawing C910693 dated February 1, 1991.
3) Soil investigation and foundation capacity report prepared by Dr. Clarence Welti, P.E., P.C., dated October 10, 2002.
4) Tower Mapping and Inventory by D&K Nationwide Communications Inc., performed on March 18, 2016.
5) Existing antenna inventory provided by Motorola / Connecticut State Police via e-mail dated June 22, 2016.
6) Proposed antenna inventory provided by Verizon Wireless via Radio Frequency Data Sheet (RFDS), dated April 19, 2016.
7) Proposed antenna inventory provided by AT&T via RFDS sheet, dated May 13, 2016, obtained via e-mail dated July 1, 2016.
8) Previous structural analysis and evaluation provided by AECOM on behalf of Motorola / Connecticut State Police, project PNS-606 / 60509756.06, signed and sealed on September 16, 2016.
9) Proposed antenna inventory, provided by Sprint and Clearwire, obtained via e-mail dated March 17, 2017.
10) Previous structural analysis and evaluation performed by AECOM on behalf of Sprint, project number 60542807 / JPW-002, signed and sealed on May 12, 2017.
11) Antenna and mount configuration as specified on the following page of this report.

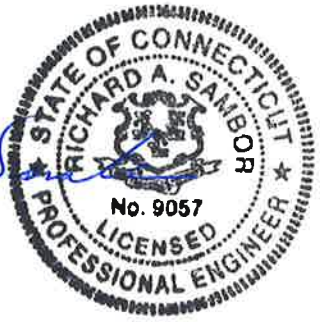
1. EXECUTIVE SUMMARY *(continued)*

This report is only valid as per the information and data provided by others for antenna inventory, mounts, tower structure, existing foundation and associated cables. The user of this report shall field verify the antenna, cabling and mount configuration used, as well as the physical condition of the tower members, connections and foundations. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

AECOM,



Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mcd

2. INTRODUCTION

The subject tower is located at 880 Post Road East in Westport, Connecticut. The structure is a 180' self-supporting lattice tower manufactured by Rohn Industries Incorporated.

The structural analysis was conducted in accordance with the following:

- TIA-222-G Standard for Standard for a wind velocity of range of 95 mph to 110 mph (3-second gust) and 50 mph (3-second gust) concurrent with 0.75" ice thickness, considered to increase in thickness with height
- 2012 International Building Code with 2016 Connecticut State Building Code Amendments for a wind speed of 101 mph (3-second gust) – increased to county maximum speed due to location within ASCE "Special Wind Region" → 110 mph
- 2010 AISC Load Resistance Factor Design (LRFD)
- 2010 ASCE 7 Minimum Design Loads for Buildings and Other Structures for the ice thickness referenced in the TIA-222-G Standard
- Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with 0.5" ice. Twist (rotation) and sway (deflection) were determined in accordance with Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) concurrent with 0.5" ice, analyzed under the TIA/EIA-222-F design Standard.

The inventory together with the proposed Sprint/Clearwire, Verizon Wireless and AT&T antenna arrangement is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) Decibel DB-536 Omni Antenna	D&K-53 CSP-45 (existing)	Mount shared with D&K #48	@ 178'	(1) LDF5-50A
(1) Sinclair SE419-SWBPALDF(D00) Panel Antenna (Troop G (RX))	CSP (existing)	4' Side Arm Mount	@ 175'	(1) LDF4-50A Jumper from below TTA (Tr. G)
(1) Celwave PA6-65 Dish with Radome	D&K-52 CSP-42 (existing)	Dish Standoff	@ 177'	(1) EW-63
(1) Scala AP11-850 antenna	D&K-49 CSP-46 (existing)	*Shared with above mount*	@ 175'	(1) LDF7-50A
(1) Amphenol WPA-700102-4CF-EDIN-9 Panel Antenna (Troop G (TX))	CSP (existing)	*Shared with below Mount*	@ 170'	(1) AVA7-50A
(1) Bird 432E-83I-01T TTA Unit (Troop G)	CSP (existing)	Existing Antenna Mount Frame	@ 170'	(1) AVA7-50A (1) LDF4-50A
(1) Sinclair SE419-SWBPALDF(D00) Panel Antenna	CSP (existing)	*Shared with above Mount*	@ 170'	(1) LDF4-50A Jumper from above TTA (Tr. G)
(1) 4' Yagi Antenna	D&K-51 CSP-1 (existing)	Pipe Mounted to Leg	@ 169'	(1) LDF5-50A
(1) (inverted) Scala OGT9-806 Omni Antenna	D&K-48 CSP-49 (existing)	4' Side Arm Mount	@ 164'	(1) LDF7-50A

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(3) Commscope SBNHH-1D65B Panel Antennas (700 MHz / LTE shared with 1900 MHz / PCS) (3) Alcatel Lucent 2x60-700MHz RRH Units (1) DB-T1-6Z-8AB-0Z Distribution Box (700 MHz / LTE) (3) Alcatel Lucent 2x60-1900MHz RRH Units (3) Commscope SBNHH-1D65B Panel Antennas (2100 MHz / AWS) (3) Alcatel Lucent 2x60-AWS (2100 MHz) RRH Units	**Verizon (Proposed)**	*See below Mount*	**@ 160'**	**(1) 1 5/8" Fiber Optic Cable**
(1) Amphenol BXA 70080-4CF Panel Antennas (Alpha Sector) (2) Amphenol 70063-4CF Panel Antennas (Beta and Gamma Sectors) (1) Raycap DB-T1-6Z-8AB-0Z Distribution Box	D&K-27 – 46 Verizon (existing)	(3) 15' T-Frames	@ 160'	(12) LDF7-50A (1) 1 5/8" Fiber
(1) (inverted) Scala OGT9-806 Omni Antenna	D&K-47 CSP-48 (existing)	3' Side Arm Mount	@ 159'	(1) LDF7-50A
(3) RFS APXVSPP18-C-A20 Panel Antennas (3) RFS APXVTM14-C-120 Panel Antennas (3) ALU Model 800 MHz RRH Units (3) ALU Model1900 MHz RRH Units (3) ALU TD-RRH8x20-25 (2500 MHz) RRH Units (3) ALU Model 800 External Notch Filters (9) RFS ACU-A20-N Tower Mount Switches (1) NEMA 4X Enclosure Box	**Sprint (Proposed)**	**(3) SitePro1 Antenna Mount Frames Part Number USF12-484-U**	**@ 145'**	**(4) 1-1/4" Hybrid Cables**

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) Andrew VHLP800-11-DW1 Microwave Dish Antenna (1) Andrew VHLP2-11 Microwave Dish Antenna (2) Dragonwave ODU Radio Units (2) 1/2" Coaxial Cables	**Clearwire (Proposed)**	*Shared with above Mount Frame*	**@ 145'**	**(2) LDF4-50A**
(3) CCI HPA-65R-BUU-6 Panel Antennas (3) RRUS-32 RRH Units	**AT&T (Proposed)**	*See Below Mounts*	**@ 133'**	*See Below Cables*
(6) P65-16-XLH-H-RR Panel Antennas (6) RRUS-11 Units (2) DC6-48-60-18-8F Distribution Box (3) TT19-08BP111-001 Twin TMA's	D&K-13 – 26 AT&T (existing)	(3) Existing Antenna Mount Frames	@ 133'	(12) LDF6-50A (2) Fiber Optic Cable (4) DC Cables
(9) TMAs (6) Ericsson Air 21 antennas (3) Commscope LNX-6515DS-VTM Panel Antennas (3) Ericsson RRUS-11 Remote Radio Units	D&K-2 – 12 T-Mobile (existing)	(3) Antenna Frame Mounts (Valmont Site Pro 1 part # LTF12-372)	@ 125'	(18) LDF7-50A (1) LDF4-50A (1) Huber Suhner Hybrid cable
(1) GPS Antenna	D&K-1 CSP-43 (existing)	Leg Mount	@ 61'	(1) LDF4-50A

NOTES: Antenna ID Numbering and elevations obtained from Tower Mapping and Existing inventory via tower climb performed by D&K Nationwide Communications, Inc. on March 18, 2016.

This structural analysis of the modified communications tower was performed by AECOM for Sprint/Clearwire, Verizon Wireless and AT&T. The purpose of this analysis was to assess the modified tower for its existing and proposed antenna loads. This analysis was conducted to evaluate twist (rotation), sway (deflection), stress on the tower, and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with, the TIA-222-G–Structural Standard for Antenna Towers and Antenna Supporting Structures and Antennas, the 2012 International Building Code with 2016 Connecticut State Building Code Amendments and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Load Resistance Factor Design (LRFD)

The structural analysis was conducted using TNX Tower version 7.0.7.0 and used the following conditions for this tower review (following the TIA/EIA-222-G Standard):

- Structure Class 3 – (Essential Communications)
  - NOTE: ASCE 7 and CT State Building Code Applied Risk Category 4 for design wind loads (see below)
- Topographic Category 1 – (No Abrupt Changes in General Topography)
- Exposure Class C – (Open Terrain with scattered obstructions)
- Load Conditions:
  - Two load conditions were evaluated as shown which were compared to design stresses according to AISC and TIA/EIA-222-G Standard.

Basic Wind Speed:

- TIA-222-G:
  - Fairfield County (Wind Speed Range): V = 90 mph - 110 mph (3-second gust) [Annex of TIA-222-G 2006]
- IBC 2012 w/ 2016 CT State Building Code Amendment:
  - (2012) IBC Section 1609.1.1 – Determination of Wind Loads – Exception 5 "Designs using TIA-222" applies for determination of Design Wind Load obtained as "V.ult" are to be converted to "V.asd" when applying the TIA-222-G design Standard (under Section 1609.3) for Basic Wind Speed.
  - (2016) CT State Building Code Amendment to the IBC Section 1609.3 wind loads are obtained from Appendix N of the State Building Code.
    - V.asd = 101 mph (3-Second Gust) Wind Design Parameter for the Town of Southbury, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police).
    - NOTE: Due to the location of the Tower and Risk Category for the structure, the wind speed shall be increased to the TIA-222-G maximum listed speed (indicated above) to address additional wind effects within the "Special Wind Region" designated by ASCE and indicated within the "Wind-Borne Debris Region" per the CT State Building Code.

LOAD CONDITION 1 = 110 MPH (3-SECOND GUST) WIND LOAD (WITHOUT ICE) + TOWER DEAD LOAD
Load Condition 2 = 50 mph (3-second gust) Wind Load (with ice) + Ice Load + Tower Dead Load

Ice thickness used for this analysis is **0.75 inch** (assumed to start at the base of the tower) and is considered to increase in thickness with height. The initial ice thickness for design is referenced in the Annex of TIA-222-G and follows the same design criteria as the ASCE 7 Standard.

The load condition below implements the design requirements of the Connecticut State Police for the tower structure's deflection limits with the allowable deflection limit of the combination of the tower's sway (deflection) and twist (rotation) under the TIA/EIA-222-F design Standard. This design limit required the design combined value of sway (deflection) and twist (rotation) to be under 0.75 degrees following the TIA/EIA-222-F design Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

Load Condition 3 = 90 mph (fastest mile) Wind Load (with Ice) + Ice Load + Dead Load

Seismic event consideration factors/values for design:

- S.s = 0.226 (2016 CT State Building Code – Location Specific Value)
- S.1 = 0.067 (2016 CT State Building Code – Location Specific Value)
- Site Classification = "D"
- Seismic Design Category = "A" – (2012 International Building Code)
- F.a = 1.6 (Obtained from TIA-222-G Table 2-12 Considering above conditions)
- F.v = 2.4 (Obtained from TIA-222-G Table 2-13 Considering above conditions)

Strength Limit State Load Combinations (TIA-222-G Section 2.3.2):

The structural analysis herein has considered the following load combinations within the analysis:

1. ***1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.6 Wind load without ice***
2. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Dead weight of ice due to factored ice thickness + 1.0 Concurrent wind load with factored ice thickness + 1.0 Load effects due to temperature
3. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Earthquake Load

NOTE 1: The above **bolded** load combination is considered to create the governing design loads per the results of the analysis.

NOTE 2: The above "Dead Load Guy Assemblies" are not considered as part of the analysis and are considered as a value of zero.

NOTE 3: The "Load effects due to temperature" do not apply for structures that are self-supporting (from the TIA-222-G Standard)

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the strength design in accordance with AISC (LRFD). The results of an initial analysis indicated that the existing tower did not have enough capacity to support the proposed loading conditions. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modification indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load specification and with the existing and proposed antenna loading included herein.**

The tower sway (deflection) is 0.5665 degrees and the tower twist (rotation) is 0.0775 degrees. These figures combined ARE within the Connecticut State Police specification of 0.75 degrees for sway (deflection) and twist (rotation).

Tower Base Reactions (TIA-222-G):

Description	Ultimate Reactions (Geotech 10/10/2002) (TIA-222-G)	Current (Factored) TIA-222-G	Stress (% capacity)	Pass/ Fail
Pier Compression (kips)	665	460	69.7	Pass
Pier Uplift (kips)	492	425	86.4	Pass
Overall Overturning (kip-ft)	---	10557	---	---
Overall Shear (kips)	---	109	---	---
Shear per Leg (kips)	---	63	---	---

Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Controlling Component/ Elevation	Stress (% capacity)	Pass/ Fail	Comments:
Tower Leg (T12)	ROHN 8 EHS (8.75x0.375) / 20' – 30'	97.2	Pass	
Diagonal (T13)	Pipe 3.5x0.226 / 0' – 20'	90.3	Pass	
Horizontal (T11)	ROHN 2.5 STD / 30'-40'	91.6	Pass	
Top Girt (T12)	ROHN 2.5 STD / 20'-30'	83.8	Pass	
Redund Horz 1 Bracing (T13)	ROHN 1.5 STD / 0'-20'	36.4	Pass	
Redund Diag 1 Bracing (T13)	Pipe 1.5x0.200 / 0'-20'	78.3	Pass	
Redund Hip 1 Bracing (T13)	ROHN 2.5 STD / 0'-20'	0.3	Pass	
Inner Bracing (T5)	L2x2x1/8 / 120'-126.667'	6.6	Pass	
Tower Bolt	(8) 1" Diameter Leg Flange Bolts (A325N) / 20'	88.8	Pass	See Tower Leg Section Above
Anchor Bolts – Uplift & Shear Capacity (TIA-222-G – 4.9.9)	1" Dia. / Tension	89.1	Pass	ASTM A 354 – Gr BC Bolts

4. FINDINGS AND EVALUATION (cont.)

Maximum Deformations – Proposed Condition

TIA-222-G Section 2.8.2 - Limit State Deformations

1. A rotation of 4 degrees about the vertical axis (twist) or any horizontal axis (sway) of the structure
2. A horizontal displacement (in feet) of 3% of the height of the structure.

Load Case Description	Current		Allowable	
	Sway (degree)	Displacement (Feet)	Sway (degree)	Displacement (Feet)
Service Wind Load	0.1152	0.2083	4.0	5.40

Tower Twist & Sway at Top (Connecticut State Police Requirements – TIA/EIA-222-F):

Description	Current	Total	Allowable
Tower Twist (degrees)	0.0775	0.6440	0.750
Tower Sway (degrees)	0.5665		

5. CONCLUSIONS

The results of an initial analysis indicated the existing tower structure did not have enough capacity for the proposed antenna upgrades above. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load specification and with the existing and proposed antenna loading included herein.**

The results of the analysis indicate the modified tower's sway (deflection) is 0.5665 degrees and the modified tower's twist (rotation) is 0.0775 degrees. These figures combined are within the Connecticut State Police requirements of 0.75 degrees for combined twist (rotation) and sway (deflection) when applying the TIA/EIA-222-F design conditions.

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.

AECOM is not responsible for any modifications completed prior to or hereafter in which AECOM is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

AECOM hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact AECOM. AECOM disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA-222-G Section 14.2 for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. It is also recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6. DRAWINGS AND DATA

REINFORCEMENT DRAWINGS SK-1 AND SK-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND NOTES IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION AND ELECTRICAL SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING OPERATING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE VARIOUS TELECOMMUNICATION CARRIERS AND THE TOWER OWNER. THERE SHALL BE NO INTERRUPTION OF OPERATION WITHOUT TIMELY COORDINATION WITH AND APPROVAL BY THE VARIOUS COMMUNICATIONS OPERATORS INCLUDING THE CONNECTICUT STATE POLICE.
8. THE REINFORCEMENT OF PORTIONS OF THIS TOWER STRUCTURE WILL AFFECT CRITICAL CONNECTICUT STATE POLICE ANTENNAS. NO MOVEMENT, ALTERATION, OR DISCONNECTION OF CONNECTICUT STATE POLICE ANTENNAS MAY OCCUR WITHOUT THE NOTIFICATION AND APPROVAL OF THE CONNECTICUT STATE POLICE. CONTACT THE NETWORK CONTROL CENTER AT 860-865-8008.
9. TOWER REINFORCING WORK AFFECTING CRITICAL CONNECTICUT STATE POLICE ANTENNAS MAY BE REQUIRED TO BE CONDUCTED AT TIMES AS DETERMINED BY THE REQUIREMENTS OF THE CONNECTICUT STATE POLICE.
10. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
12. SHOP DRAWINGS ARE REQUIRED. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS ON THE TOWER AND INCLUDE THE GATHERED INFORMATION ON THE SHOP DRAWINGS. NOTE ANY DISCREPANCIES ENCOUNTERED ON THE SHOP DRAWINGS. NO FABRICATION OR INSTALLATION OF STEEL SHALL OCCUR PRIOR TO THE RECEIPT AND APPROVAL OF SHOP DRAWINGS.
13. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
14. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURE AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
15. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
16. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
17. DIMENSIONS OF EXISTING TOWER ARE BASED ON MANUFACTURER'S DRAWINGS PREPARED BY ROHN INDUSTRIES. DATED FEBRUARY 1, 1991, AND ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENT ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.
18. TOWER INVENTORY IS BASED ON INFORMATION OBTAINED FROM MOTOROLA/CONNECTICUT STATE POLICE DATED JUNE 22, 2016. TOWER MAPPING AND EXISTING INVENTORY OBTAINED FROM D&K NATIONWIDE COMMUNICATIONS, INC. DATED MARCH 18, 2016.
19. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
20. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. NO MEMBER OF THE TOWER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM MEMBER REPLACEMENT IN A WIND.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL:

PIPE/TUBE LEG .....ASTM A572-50
PLATES & ANGLES .....ASTM, A36
BOLTS .....ASTM, A325N, 325X, A490X

STRUCTURAL STEEL SHALL CONFORM TO ALL THE REQUIREMENTS OF THE ASTM SPECIFICATION, AS REFERENCED IN THE CODE.

UNLESS OTHERWISE NOTED, ALL STEEL WILL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 AFTER FABRICATION. TOUCH UP ALL DAMAGED GALVANIZED STEEL WITH APPROVED COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 2 SETS OF PRINTS FOR THE ENGINEER REVIEW. REFER TO NOTE 12 ABOVE

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.

CONNECTIONS / FIELD ASSEMBLY:

BOLTED CONNECTIONS: UNLESS OTHERWISE NOTED, ALL JOINTS ARE SLIP CRITICAL TYPE, REQUIRING 5/8", 3/4", 7/8" & 1" DIA. A325N BOLTS, A563 NUTS AND F436 WASHERS, ALL GALVANIZED. BEVELED WASHERS SHALL BE USED ON BEAM FLANGES HAVING A SLOPE GREATER THAN 1:20.

STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.

COMMENCEMENT OF WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

INSPECTIONS:

SPECIAL INSPECTIONS ARE REQUIRED PER THE CODE FOR STRUCTURAL STEEL WORK.

OWNER WILL SUPPLY THE SERVICES OF A SPECIAL INSPECTOR AND TESTING AGENTS AS REQUIRED. CONTRACTOR SHALL COORDINATE INSPECTIONS OF FABRICATOR'S AND ERECTOR'S WORK AND MATERIALS TO MEET THE REQUIREMENTS OF THE STATEMENT OF SPECIAL INSPECTIONS FOR THIS PROJECT.

COPIES OF TESTING AND INSPECTION REPORTS WILL BE PROVIDED TO THE OWNER, BUILDING OFFICIAL, ENGINEER OF RECORD AND CONTRACTOR.

STATE OF CONNECTICUT
RICHARD A. SAMBOR
NO. 20057
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO. 60540833
Designed by: MCD
Drawn by: KAP
Checked by: KAB
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

verizon Sprint at&t

SITE ADDRESS: WESTPORT, CSP SITE #32
880 POST ROAD EAST
WESTPORT, CONNECTICUT

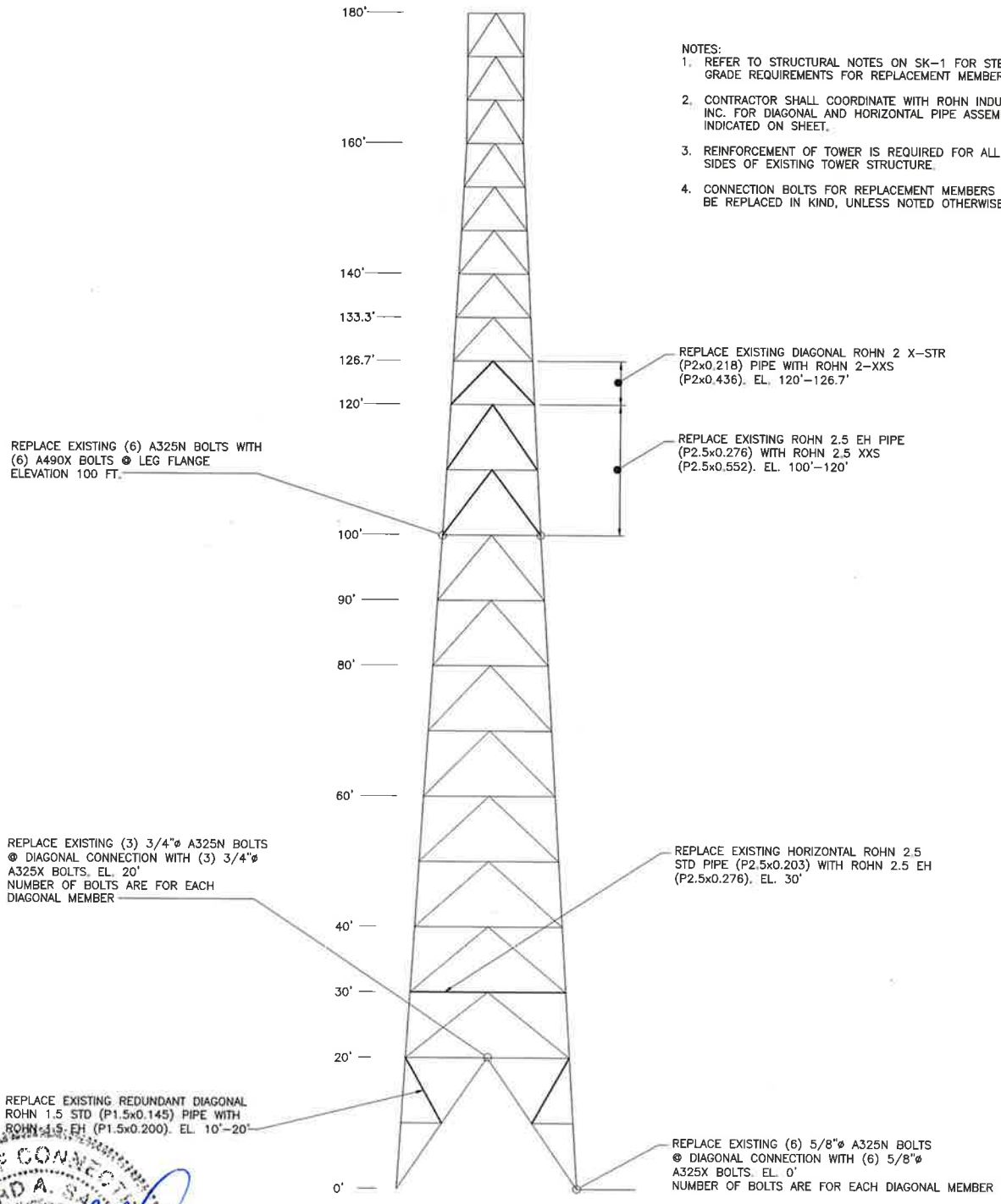
REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 06/05/17
Job No. JPW-001 | File No.

Dwg. No. SK-1
Dwg. 1 of 2

STRUCTURAL NOTES

SEE SHEET SK-1 FOR STRUCTURAL NOTES



NOTES:
1. REFER TO STRUCTURAL NOTES ON SK-1 FOR STEEL GRADE REQUIREMENTS FOR REPLACEMENT MEMBERS.
2. CONTRACTOR SHALL COORDINATE WITH ROHN INDUSTRIES INC. FOR DIAGONAL AND HORIZONTAL PIPE ASSEMBLIES INDICATED ON SHEET.
3. REINFORCEMENT OF TOWER IS REQUIRED FOR ALL 3 SIDES OF EXISTING TOWER STRUCTURE.
4. CONNECTION BOLTS FOR REPLACEMENT MEMBERS SHALL BE REPLACED IN KIND, UNLESS NOTED OTHERWISE.

1 / SK-2 TOWER ELEVATION

SCALE: 1" = 25'-0"

STATE OF CONNECTICUT
RICHARD A. SAUCIER
No. 9054
LICENSED PROFESSIONAL ENGINEER

PROJECT NO.	60540833
Designed by:	MCD
Drawn by:	KAP
Checked by:	KAB
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

verizon Sprint at&t

SITE ADDRESS: WESTPORT, CSP SITE #32
880 POST ROAD EAST
WESTPORT, CONNECTICUT

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 06/05/17

Job No. JPW-001 | File No.

Dwg. No. SK-2

Dwg. 2 of 2

SEISMIC BASE SHEAR ANALYSIS

AECOM

Seismic (Vs) Base Shear Implementing ANSI/TIA–222-G, IBC 2012 & Connecticut State Building Code of 2016

Calculation of Seismic Base Shear Implementing ANSI/TIA-222-G, IBC 2012 & & CT State Building Code 2016.

Location: Westport, CT -Site Class "D"

$S_{DS} = \frac{2}{3} F_A S_S$, where $S_S = 0.226$ and $F_A = 1.6$ $S_{DS} = \frac{2}{3} F_A S_S = \frac{2}{3} * 1.6 * 0.226 = 0.241$

$S_{D1} = \frac{2}{3} F_V S_1$, where $S_1 = 0.067$ and $F_V = 2.4$ $S_{D1} = \frac{2}{3} F_V S_1 = \frac{2}{3} * 2.4 * 0.067 = 0.107$

TIA-222-G SECTION 2.7 EARTHQUATE LOADS (PROCEDURES):

1. Importance Factor "I" (tables 2-3 TIA-222-G) = 1.5 (Structure Class 3)

ANSI/TIA-222-G 2.7.7.1 (TOTAL BASE SEISMIC SHEAR (Vs)

W=DL TOWER	= 32.102	Kips
W=Antennas/Mounts	= 11.36	Kips
W=Cables	= 7.275	Kips
	50.737 Kip	= WT Total = "W"

$$V_S = \frac{S_{DS} * W * I}{R} = \frac{0.241 * 50.737 kips * 1.5}{3.0} = 6.1138 \ kips,$$ where R = 3.0 for Lattice Tower

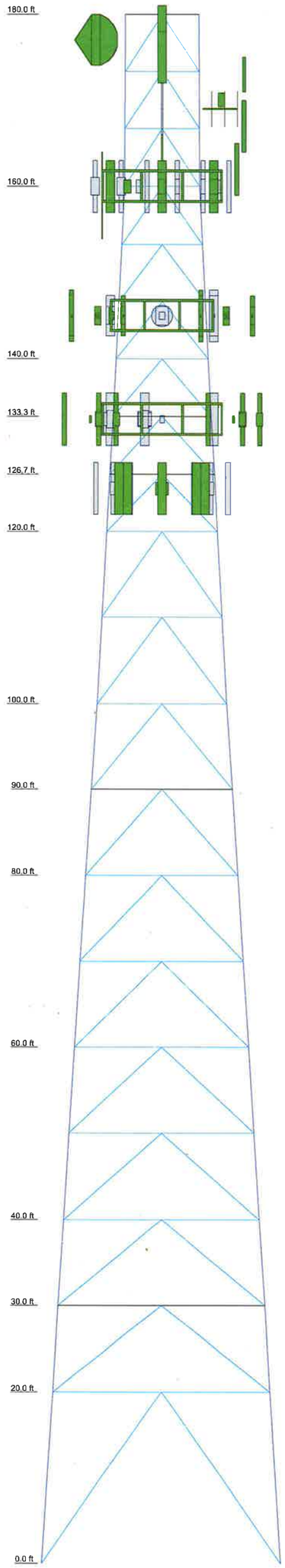
$$V_{S.min} = \frac{0.5 * S_{D1} * W * I}{R} = \frac{0.5 * 0.107 \ * \ 50.737 kips \ * \ 1.5}{3.0} = 1.3572 \ \ kips$$

*By visual inspection, the above "Base Shear" value when considering the following Load Combination is less that the base shear of wind on structure.

$1.2 * DL + 1.0\, E \ < 1.2\, DL + 1.6\, W,$ (63.0 Kips), therefore seismic effect on structure Does NOT control Design.

TNX TOWER INPUT / OUTPUT SUMMARY

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EH			ROHN 8 EHS (8.75 OD x 0.375(t))		ROHN 6 EH		ROHN 6 EHS	ROHN 5 EH (5.5 OD x 0.375)			ROHN 4 STD	ROHN 3 STD
Leg Grade						A572-50							
Diagonals			P3.5x.226			ROHN 3 STD		ROHN 2.5 XXS	ROHN 2 XXS	ROHN 2 EH		ROHN 2 STD	
Diagonal Grade						A572-50							
Top Girts	N.A.	ROHN 3 STD		N.A.		ROHN 2 STD		N.A.	N.A.	N.A.	ROHN 2 STD	N.A.	ROHN 1.5 STD
Horizontals	P3.5x.226	N.A.		ROHN 2.5 STD		N.A.		ROHN 2 STD				ROHN 1.5 STD	
Red. Horizontals	ROHN 1.5 STD							N.A.					
Red. Diagonals	ROHN 1.5 SCH XS (Extra Strong)							N.A.					
Red. Hips	ROHN 1.5 STD							N.A.					
Inner Bracing	ROHN 2 STD		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16				L2x2x1/8		
Face Width (ft)	27.677	25.177	22.677	20.177	17.677	16.3595	15.042	12.792	12.0977	11.4033	10.709	8.625	8.542
# Panels @ (ft)	1 @ 20				10 @ 10							9 @ 0.66667	
Weight (lb)	5431.3	2640.3	2453.2	47315	4132.2	1722.7	1662.8	3821.3	1675.3	837.1	830.9	1495.5	1256.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AP11-850/090/ADT w/Mount Pipe (DNK-54 / CSP-47)	178	TD-RRH8x20 (Sprint)	145
4'x4" Pipe Mount (DNK-52)	177	ALU Model 800 Notch Filter (Sprint)	145
PA6-65AC (DNK-52 / CSP-42)	177	RFS Switch # ACU-A20N (Sprint)	145
SE419-SWBPALDF Panel Antenna (Troop G SZ)	175	RFS Switch # ACU-A20N (Sprint)	145
2" Dia 10' Omni (DNK-48 / CSP-49)	171	RFS Switch # ACU-A20N (Sprint)	145
4' Standoff (DNK-48,53)	171	APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	145
2" Dia 10' Omni (DNK-53 / CSP-45)	171	APXVTM14-C-120 Panel Antenna (Sprint)	145
WPA-700102-4CF-EDIN-X w/ Mount Kit (Troop G TX)	170	800 RRH (800 MHz) Unit (Sprint)	145
432E-83I-01T TTA Unit (Troop G)	170	1900 RRH (1900 MHz) Unit (Sprint)	145
SE419-SWBPALDF(D00) (Troop G RX)	170	TD-RRH8x20 (Sprint)	145
6' Side-Arm (Troop G)	170	ALU Model 800 Notch Filter (Sprint)	145
3' Yagi (DNK-51 / CSP-1)	169	RFS Switch # ACU-A20N (Sprint)	145
AP11-850/090/ADT w/Mount Pipe (DNK-49 / CSP-46)	162	RFS Switch # ACU-A20N (Sprint)	145
5' Standoff (DNK-49 / CSP-46)	162	RFS Switch # ACU-A20N (Sprint)	145
8'x2 1/2" Pipe Mount (DNK-50 / CSP-60)	162	VHLP2-11 Dish Antenna (Clearwire)	145
Pirod 15' T-Frame Sector Mount (1) (Verizon)	160	VHLP800-11 6WH Dish Antenna (Clearwire)	145
Pirod 15' T-Frame Sector Mount (1) (Verizon)	160	RRUS-11 (ATI)	133
Pirod 15' T-Frame Sector Mount (1) (Verizon)	160	HPA-65R-BUU-H6 Panel (ATI - Proposed)	133
SBNHH-1D65B (Verizon - LTE ,PCS)	160	RRUS-32 (ATI - Proposed)	133
RH_2x60-07-L (700 MHz) (Verizon LTE)	160	RRUS-11 (ATI)	133
DB-T1-6Z-8AB-0Z Dist. Box (Verizon LTE)	160	TT19-08BP111-001 TMA's (ATI)	133
RRH_2x60_PCS (Verizon PCS)	160	P65-16-XLH-RR (ATI)	133
SBNHH-1D65B (Verizon AWS)	160	P65-16-XLH-RR (ATI)	133
RRH_2x60-AWS (Verizon AWS)	160	RRUS-11 (ATI)	133
DB-T1-6Z-8AB-0Z Dist. Box (Verizon AWS)	160	HPA-65R-BUU-H6 Panel (ATI - Proposed)	133
BXA-70080-4CF-EDIN Panel (Verizon 850 MHz)	160	RRUS-32 (ATI - Proposed)	133
SBNHH-1D65B (Verizon - LTE ,PCS)	160	RRUS-11 (ATI)	133
RH_2x60-07-L (700 MHz) (Verizon LTE)	160	TT19-08BP111-001 TMA's (ATI)	133
RRH_2x60_PCS (Verizon PCS)	160	Pirod 15' T-Frame Sector Mount (1) (ATI)	133
SBNHH-1D65B (Verizon AWS)	160	Pirod 15' T-Frame Sector Mount (1) (ATI)	133
RRH_2x60-AWS (Verizon AWS)	160	Pirod 15' T-Frame Sector Mount (1) (ATI)	133
BXA-70080-4CF-EDIN Panel (Verizon 850 MHz)	160	P65-16-XLH-RR (ATI)	133
SBNHH-1D65B (Verizon - LTE ,PCS)	160	P65-16-XLH-RR (ATI)	133
RH_2x60-07-L (700 MHz) (Verizon LTE)	160	RRUS-11 (ATI)	133
RRH_2x60_PCS (Verizon PCS)	160	HPA-65R-BUU-H6 Panel (ATI - Proposed)	133
SBNHH-1D65B (Verizon AWS)	160	RRUS-32 (ATI - Proposed)	133
RRH_2x60-AWS (Verizon AWS)	160	RRUS-11 (ATI)	133
BXA-70080-4CF-EDIN Panel (Verizon 850 MHz)	160	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
2" Dia 10' Omni (DNK-47 / CSP-48)	159	DC6-48-60-18-8F (Squid) Suppressor (ATI)	133
3' Side Arm (DNK-47 / CSP-48)	159	TT19-08BP111-001 TMA's (ATI)	133
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	145	P65-16-XLH-RR (ATI)	133
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	145	P65-16-XLH-RR (ATI)	133
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	145	AIR21 B2A/B4P (T-Mobile)	125
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	145	TMA (T-Mobile)	125
APXVTM14-C-120 Panel Antenna (Sprint)	145	AIR21 B2A/B4P (T-Mobile)	125
800 RRH (800 MHz) Unit (Sprint)	145	RRUS-11 (T-Mobile)	125
1900 RRH (1900 MHz) Unit (Sprint)	145	RRUS-11 (T-Mobile)	125
TD-RRH8x20 (Sprint)	145	RRUS-11 (T-Mobile)	125
ALU Model 800 Notch Filter (Sprint)	145	TMA (T-Mobile)	125
RFS Switch # ACU-A20N (Sprint)	145	TMA (T-Mobile)	125
RFS Switch # ACU-A20N (Sprint)	145	LNX-6515DS-VTM (T-Mobile)	125
RFS Switch # ACU-A20N (Sprint)	145	LTF12=372 Sector Mount (1) (T-Mobile)	125
NEMA Enclosure (Sprint)	145	LTF12=372 Sector Mount (1) (T-Mobile)	125
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	145	LTF12=372 Sector Mount (1) (T-Mobile)	125
APXVTM14-C-120 Panel Antenna (Sprint)	145	AIR21 B2A/B4P (T-Mobile)	125
800 RRH (800 MHz) Unit (Sprint)	145	AIR21 B2A/B4P (T-Mobile)	125
1900 RRH (1900 MHz) Unit (Sprint)	145	AIR21 B2A/B4P (T-Mobile)	125
		AIR21 B2A/B4P (T-Mobile)	125
		LNX-6515DS-VTM (T-Mobile)	125
		LNX-6515DS-VTM (T-Mobile)	125
		4' Standoff (DNK-1 / GPS)	60
		GPS (DNK-1 / GPS)	60

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 110 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 97.2%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 460082 lb
SHEAR: 62888 lb

UPLIFT: -425157 lb
SHEAR: 59865 lb

AXIAL
207678 lb

SHEAR 26348 lb — *MOMENT 2732 kip-ft*

TORQUE 6 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL
60885 lb

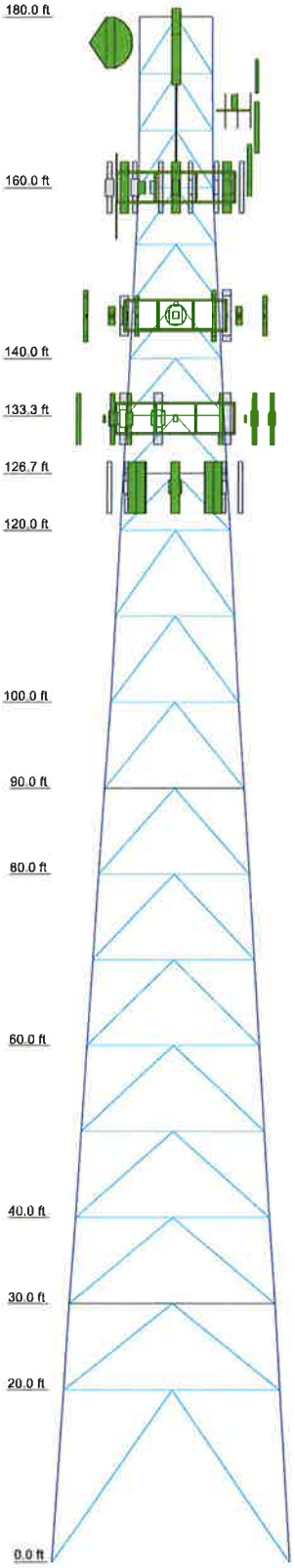
SHEAR 108493 lb — *MOMENT 10557 kip-ft*

TORQUE 36 kip-ft
REACTIONS - 110 mph WIND

AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: Sprint/Clearwire Upgrades - MODification Analysi			
Project: Westport, Connecticut			
Client: Sprint - JPW-001	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 05/30/17	Scale: NTS	
Path:		Dwg No. E-1	

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH	ROHN 8 EHS (8.75 OD x 0.375(t))				ROHN 6 EH	ROHN 6 EHS	ROHN 4 STD	ROHN 3 STD				
Leg Grade	A572-50												
Diagonals	P3.5x.226				ROHN 3 STD			ROHN 2.5 XXS	B	ROHN 2 EH		ROHN 2 STD	
Diagonal Grade	A572-50												
Top Girts	N.A.	ROHN 3 STD		N.A.		ROHN 2 STD	N.A.		ROHN 2 STD	N.A.		N.A.	ROHN 1.5 STD
Horizontals	P3.5x.226	N.A.		ROHN 2.5 STD		N.A.	ROHN 2 STD		N.A.	C		ROHN 1.5 STD	
Red. Horizontals	ROHN 1.5 STD				N.A.								
Red. Diagonals	D				N.A.								
Red. Hips	ROHN 1.5 STD				N.A.								
Inner Bracing	ROHN 2 STD		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16					L2x2x1/8	
Face Width (ft)	27.677	25.177	23.927	22.677	20.177	17.677	16.3595	15.042	12.792	12.0977	11.4033	10.709	8.625
# Panels @ (ft)	1 @ 20				10 @ 10							9 @ 6.66667	
Weight (lb)	32102.0	5437.5	2640.3	2453.2	4731.6	4133.2	1722.7	1682.8	3821.3	1075.3	837.1	820.9	1495.8



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 5 EH (5.5 OD x 0.375)	C	ROHN 2 STD
B	ROHN 2 XXS	D	ROHN 1.5 SCH XS (Extra Strong)

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

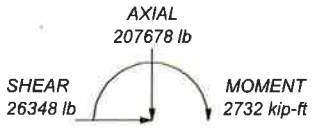
1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 110 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 97.2%

△

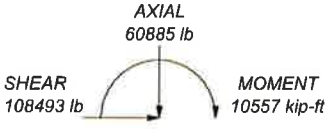
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 460082 lb
SHEAR: 62888 lb

UPLIFT: -425157 lb
SHEAR: 59865 lb



TORQUE 6 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 36 kip-ft
REACTIONS - 110 mph WIND

AECOM
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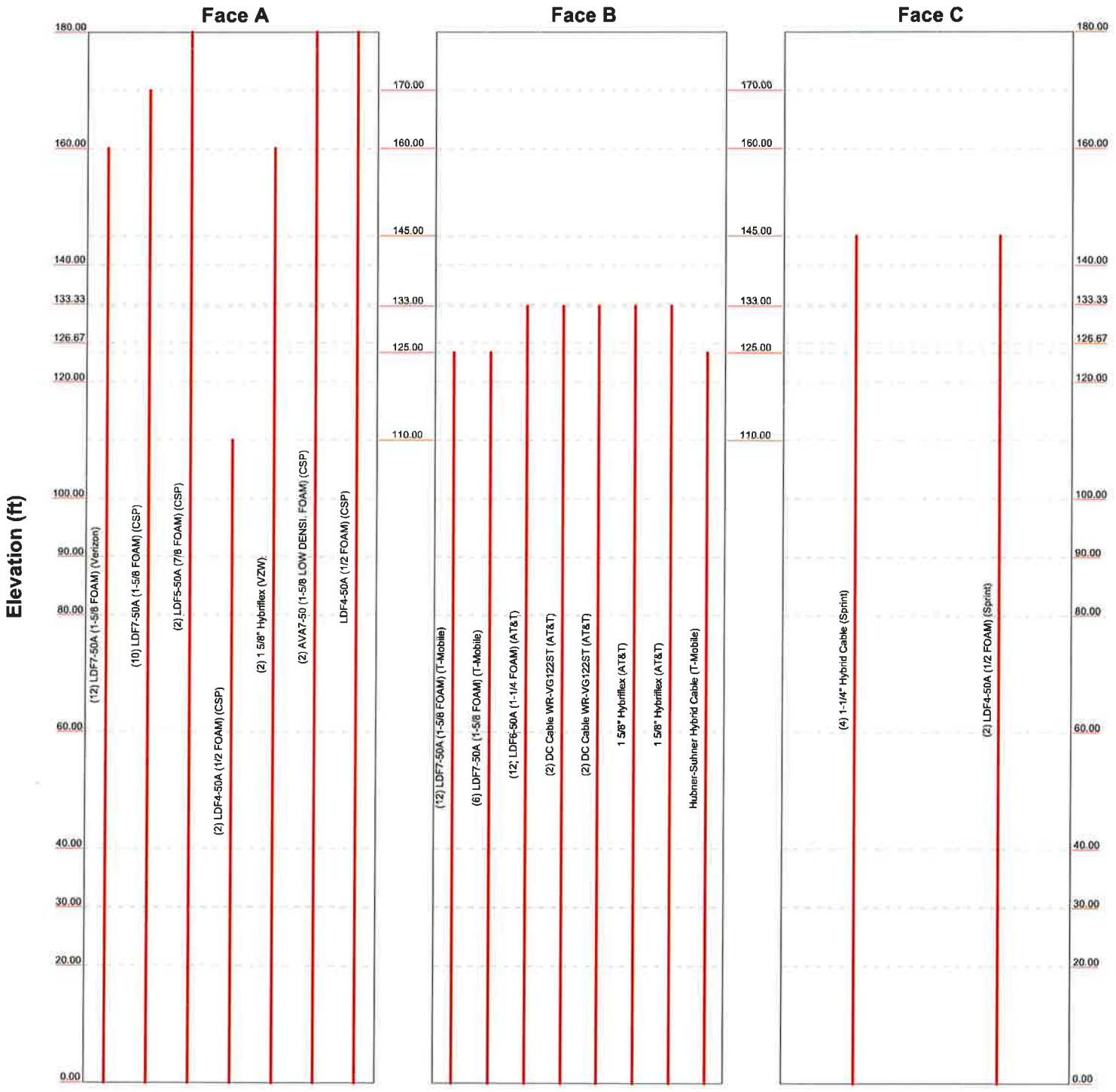
FAX: 860-529-3991

Job: *Sprint/Clearwire Upgrades - MODification Analysis*			
Project: *Westport, Connecticut*			
Client: Sprint - JPW-001	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 05/30/17	Scale: NTS	
Path:		Dwg No. E-1	

TNX TOWER FEEDLINE DISTRIBUTION

Feed Line Distribution Chart
0' - 180'

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



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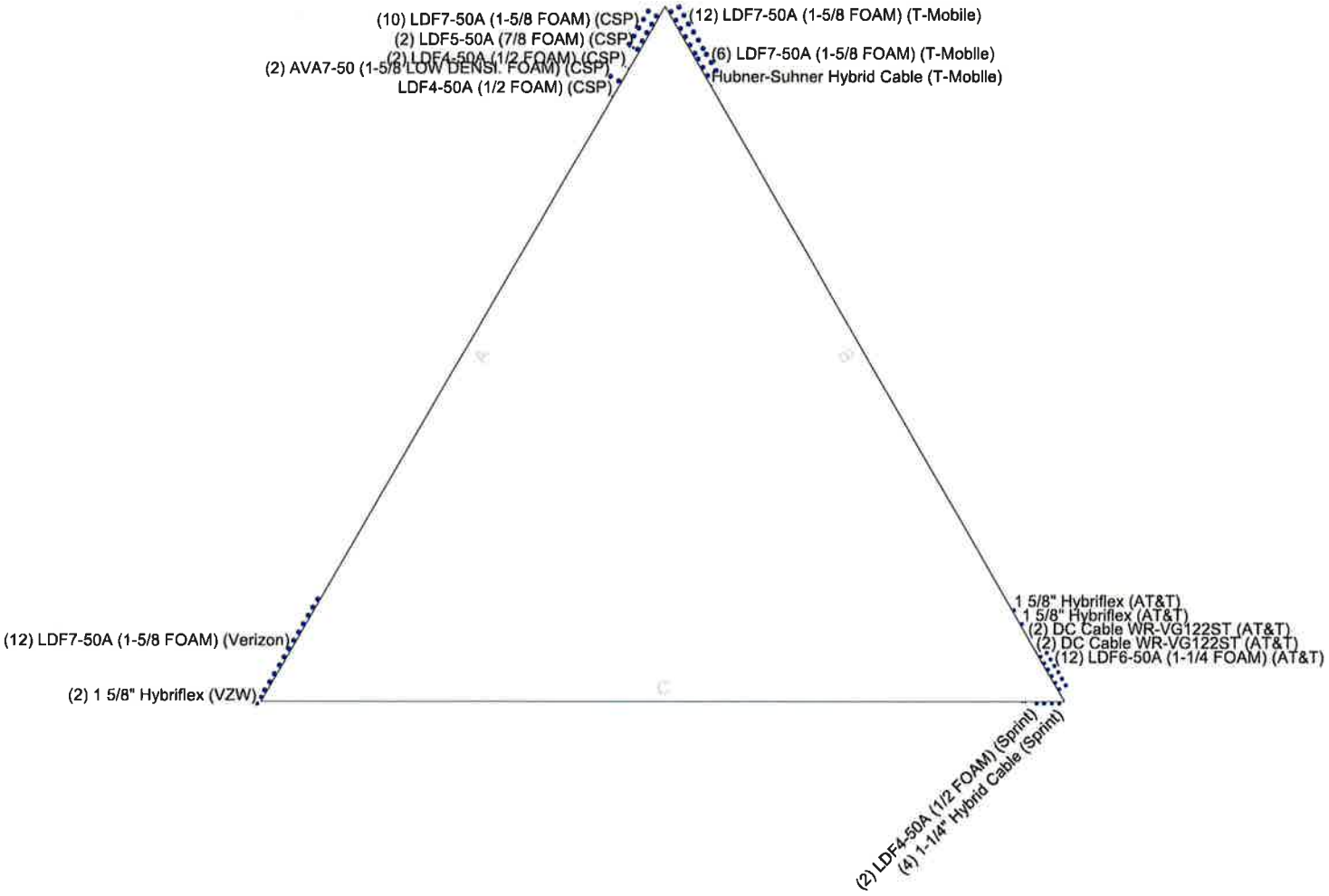
Project: ***Westport, Connecticut***			
Client: Sprint - JPW-001	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 05/30/17	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face



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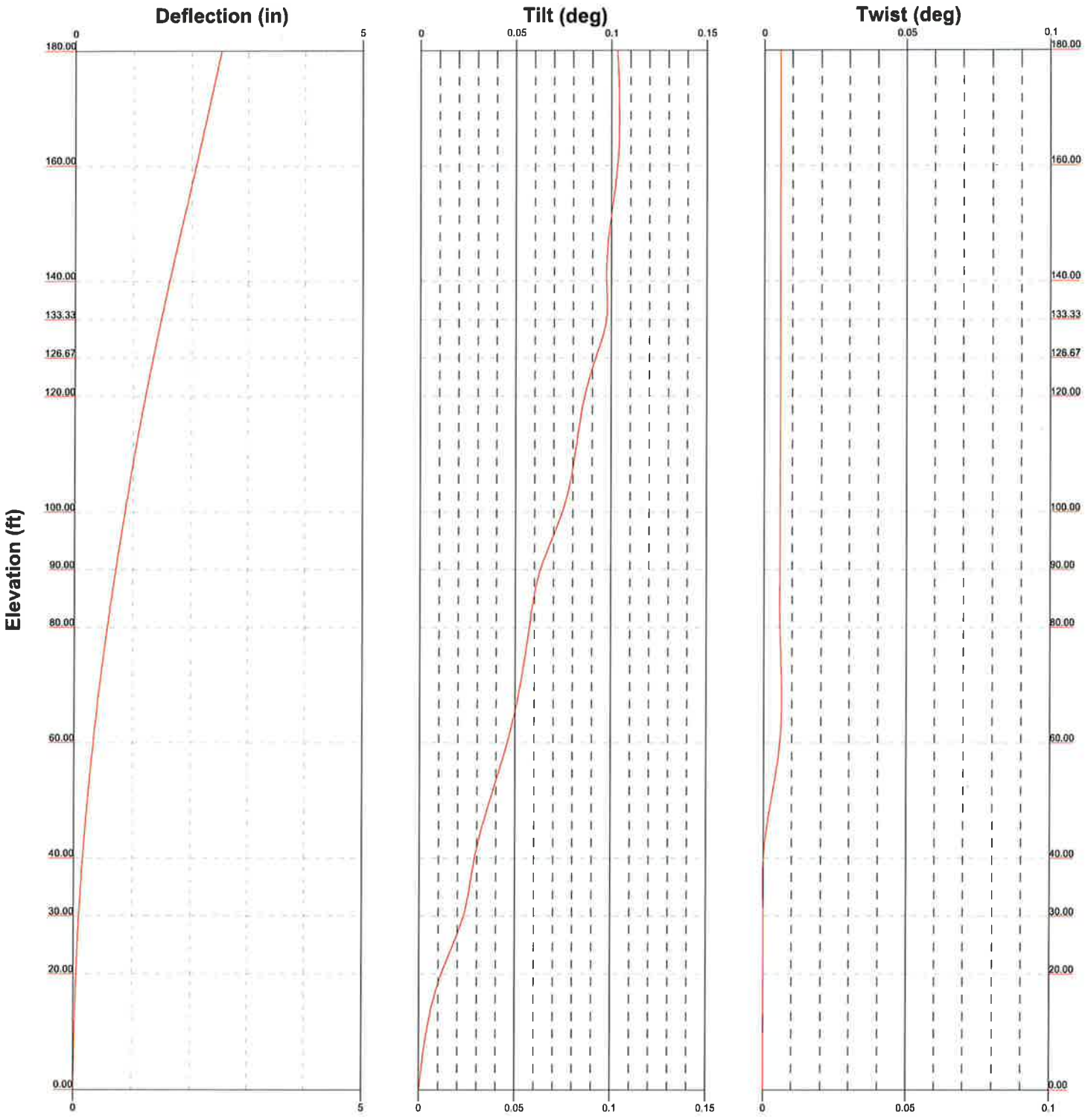
Job: Sprint/Clearwire Upgrades - MODification Analysis			
Project: Westport, Connecticut			
Client: Sprint - JPW-001	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 05/30/17	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA-222-G - Service - 60 mph

Maximum Values



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FAX: 860-529-3991

Job: Sprint/Clearwire Upgrades - MODification Analysi			
Project: Westport, Connecticut			
Client: Sprint - JPW-001	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 05/30/17	Scale: NTS	
Path:		Dwg No. E-5	

TNX DETAILED OUTPUT

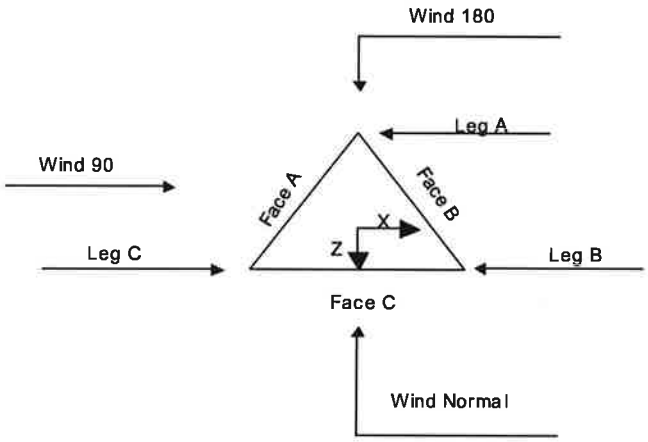
Tower Input Data

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-G standard.
The following design criteria apply:

Basic wind speed of 110 mph.
Structure Class III.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 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.
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-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G 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		



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 (5.5 OD x 0.375)	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T4 133.33-126.67	Pipe	ROHN 5 EH (5.5 OD x 0.375)	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T5 126.67-120.00	Pipe	ROHN 5 EH (5.5 OD x 0.375)	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	ROHN 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	Pipe	ROHN 8 EHS (8.75 OD x 0.375(t))	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T10 60.00-40.00	Pipe	ROHN 8 EHS (8.75 OD x 0.375(t))	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T11 40.00-30.00	Pipe	ROHN 8 EHS (8.75 OD x 0.375(t))	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T12 30.00-20.00	Pipe	ROHN 8 EHS (8.75 OD x 0.375(t))	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T13 20.00-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	P3.5x.226	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 3 STD	(50 ksi) A572-50 (50 ksi)	Single Angle		(36 ksi) 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	0.8
		Diagonal (1)	Pipe	ROHN 1.5 SCH XS (Extra	0.8
		Hip (1)	Pipe	Strong)	0.8
		Hip Diagonal (1)	Pipe	ROHN 1.5 STD 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

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
T7 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
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 180.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 160.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 140.00-133.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 133.33-126.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 126.67-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 120.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 100.00-90.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 90.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 60.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 40.00-30.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 30.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T13 20.00-0.00	Yes	Yes	1	1 1	0.5 0.5	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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 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

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
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	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
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	0.7500 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
T4 133.33-126.67	Flange	0.7500 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
T5 126.67-120.00	Flange	0.7500 A325N	6	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	0.7500 A325N	6	0.6250 A325N	3	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T7 100.00-90.00	Flange	0.7500 A490X	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
T8 90.00-80.00	Flange	1.0000 A325N	6	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	6	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	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
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	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A	A	No	Ar (CaAa)	160.00 - 0.00	0.0000	-0.42	12	12	1.9800	1.9800		0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(1-5/8 FOAM) (Verizon)												
LDF7-50A (1-5/8 FOAM) (T-Mobile)	B	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.46	12	6	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (T-Mobile)	B	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.41	6	3	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP)	A	No	Ar (CaAa)	170.00 - 0.00	0.0000	0.46	10	5	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM) (CSP)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0.435	2	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM) (CSP)	A	No	Ar (CaAa)	110.00 - 0.00	0.0000	0.41	2	1	0.6300	0.6300		0.15
1 5/8" Hybriflex (VZW)	A	No	Ar (CaAa)	160.00 - 0.00	0.0000	-0.5	2	2	1.6250	1.6250		0.21
LDF6-50A (1-1/4 FOAM) (AT&T)	B	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.46	12	6	1.5500	1.5500		0.66
DC Cable WR-VG122ST (AT&T)	B	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.43	2	2	0.4000	0.4000		0.25
DC Cable WR-VG122ST (AT&T)	B	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.41	2	2	0.4000	0.4000		0.25
1 5/8" Hybriflex (AT&T)	B	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.39	1	1	1.6250	1.6250		0.21
1 5/8" Hybriflex (AT&T)	B	No	Ar (CaAa)	133.00 - 0.00	0.0000	0.37	1	1	1.6250	1.6250		0.21
Hubner-Suhner Hybrid Cable (T-Mobile)	B	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.385	1	1	0.7087	0.7087		0.48
AVA7-50 (1-5/8 LOW DENSI. FOAM) (CSP)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0.39	2	1	1.9800	1.9800		0.72
LDF4-50A (1/2 FOAM) (CSP)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0.37	1	1	0.6300	0.6300		0.15
1-1/4" Hybrid Cable (Sprint)	C	No	Ar (CaAa)	145.00 - 0.00	0.0000	-0.48	4	4	1.5400	1.5400		1.05
LDF4-50A (1/2 FOAM) (Sprint)	C	No	Ar (CaAa)	145.00 - 0.00	0.0000	-0.45	2	2	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	33.340	0.000	127.00
		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	107.160	0.000	414.28
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.710	0.000	22.50
T3	140.00-133.33	A	0.000	0.000	35.720	0.000	138.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	4.947	0.000	30.00
T4	133.33-126.67	A	0.000	0.000	35.720	0.000	138.09
		B	0.000	0.000	14.852	0.000	59.18
		C	0.000	0.000	4.947	0.000	30.00
T5	126.67-120.00	A	0.000	0.000	35.720	0.000	138.09
		B	0.000	0.000	33.808	0.000	138.50
		C	0.000	0.000	4.947	0.000	30.00
T6	120.00-100.00	A	0.000	0.000	108.420	0.000	417.28
		B	0.000	0.000	119.597	0.000	491.70
		C	0.000	0.000	14.840	0.000	90.00
T7	100.00-90.00	A	0.000	0.000	54.840	0.000	210.14
		B	0.000	0.000	59.799	0.000	245.85
		C	0.000	0.000	7.420	0.000	45.00
T8	90.00-80.00	A	0.000	0.000	54.840	0.000	210.14
		B	0.000	0.000	59.799	0.000	245.85
		C	0.000	0.000	7.420	0.000	45.00
T9	80.00-60.00	A	0.000	0.000	109.680	0.000	420.28
		B	0.000	0.000	119.597	0.000	491.70
		C	0.000	0.000	14.840	0.000	90.00
T10	60.00-40.00	A	0.000	0.000	109.680	0.000	420.28
		B	0.000	0.000	119.597	0.000	491.70
		C	0.000	0.000	14.840	0.000	90.00
T11	40.00-30.00	A	0.000	0.000	54.840	0.000	210.14
		B	0.000	0.000	59.799	0.000	245.85
		C	0.000	0.000	7.420	0.000	45.00
T12	30.00-20.00	A	0.000	0.000	54.840	0.000	210.14
		B	0.000	0.000	59.799	0.000	245.85
		C	0.000	0.000	7.420	0.000	45.00
T13	20.00-0.00	A	0.000	0.000	109.680	0.000	420.28
		B	0.000	0.000	119.597	0.000	491.70
		C	0.000	0.000	14.840	0.000	90.00

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	2.209	0.000	0.000	94.841	0.000	1830.45
		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	2.182	0.000	0.000	278.117	0.000	5273.12
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	15.159	0.000	216.38
T3	140.00-133.33	A	2.161	0.000	0.000	92.456	0.000	1742.97
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.121	0.000	285.62
T4	133.33-126.67	A	2.151	0.000	0.000	92.323	0.000	1735.13
		B		0.000	0.000	37.292	0.000	684.46
		C		0.000	0.000	20.073	0.000	284.08
T5	126.67-120.00	A	2.139	0.000	0.000	92.184	0.000	1726.94

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	70.057	0.000	1489.26
		C		0.000	0.000	20.022	0.000	282.48
T6	120.00-100.00	A	2.115	0.000	0.000	285.421	0.000	5272.88
		B		0.000	0.000	239.961	0.000	5192.73
		C		0.000	0.000	59.738	0.000	837.12
T7	100.00-90.00	A	2.084	0.000	0.000	146.918	0.000	2672.01
		B		0.000	0.000	119.271	0.000	2566.50
		C		0.000	0.000	29.662	0.000	412.07
T8	90.00-80.00	A	2.061	0.000	0.000	146.411	0.000	2644.55
		B		0.000	0.000	118.740	0.000	2544.26
		C		0.000	0.000	29.506	0.000	407.24
T9	80.00-60.00	A	2.021	0.000	0.000	291.080	0.000	5195.33
		B		0.000	0.000	235.654	0.000	5012.52
		C		0.000	0.000	58.479	0.000	798.00
T10	60.00-40.00	A	1.955	0.000	0.000	288.142	0.000	5038.79
		B		0.000	0.000	232.574	0.000	4885.66
		C		0.000	0.000	57.579	0.000	770.54
T11	40.00-30.00	A	1.886	0.000	0.000	142.568	0.000	2440.39
		B		0.000	0.000	114.711	0.000	2378.79
		C		0.000	0.000	28.329	0.000	371.43
T12	30.00-20.00	A	1.824	0.000	0.000	141.200	0.000	2369.40
		B		0.000	0.000	113.275	0.000	2321.23
		C		0.000	0.000	27.911	0.000	359.02
T13	20.00-0.00	A	1.664	0.000	0.000	275.410	0.000	4384.15
		B		0.000	0.000	219.210	0.000	4354.84
		C		0.000	0.000	53.684	0.000	656.29

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	-0.7265	-7.1715	-0.7073	-6.0763
T2	160.00-140.00	-5.1638	-3.0701	-4.5696	-1.7793
T3	140.00-133.33	-4.1823	-2.4624	-3.8362	-1.3074
T4	133.33-126.67	0.1510	-0.2898	-1.1618	-0.1247
T5	126.67-120.00	0.6340	-4.2623	-0.7638	-2.1111
T6	120.00-100.00	0.7527	-5.8330	-0.7807	-3.1914
T7	100.00-90.00	0.8128	-6.5161	-0.8963	-3.7629
T8	90.00-80.00	0.8710	-7.0150	-0.9743	-4.0430
T9	80.00-60.00	0.9221	-7.4685	-1.0741	-4.3717
T10	60.00-40.00	1.0157	-8.2747	-1.2282	-4.8449
T11	40.00-30.00	1.0905	-8.9165	-1.3595	-5.1977
T12	30.00-20.00	1.1290	-9.2513	-1.4519	-5.3973
T13	20.00-0.00	1.2365	-10.1606	-1.6804	-5.8171

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	4	LDF7-50A (1-5/8 FOAM)	160.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			170.00		
T1	5	LDF5-50A (7/8 FOAM)	160.00 - 180.00	0.6000	0.6000
T1	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	160.00 - 180.00	0.6000	0.6000
T1	15	LDF4-50A (1/2 FOAM)	160.00 - 180.00	0.6000	0.6000
T2	1	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.6000
T2	4	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.6000
T2	5	LDF5-50A (7/8 FOAM)	140.00 - 160.00	0.6000	0.6000
T2	7	1 5/8" Hybriflex	140.00 - 160.00	0.6000	0.6000
T2	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	140.00 - 160.00	0.6000	0.6000
T2	15	LDF4-50A (1/2 FOAM)	140.00 - 160.00	0.6000	0.6000
T2	16	1-1/4" Hybrid Cable	140.00 - 145.00	0.6000	0.6000
T2	17	LDF4-50A (1/2 FOAM)	140.00 - 145.00	0.6000	0.6000
T3	1	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T3	4	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T3	5	LDF5-50A (7/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T3	7	1 5/8" Hybriflex	133.33 - 140.00	0.6000	0.6000
T3	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	133.33 - 140.00	0.6000	0.6000
T3	15	LDF4-50A (1/2 FOAM)	133.33 - 140.00	0.6000	0.6000
T3	16	1-1/4" Hybrid Cable	133.33 - 140.00	0.6000	0.6000
T3	17	LDF4-50A (1/2 FOAM)	133.33 - 140.00	0.6000	0.6000
T4	1	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T4	4	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T4	5	LDF5-50A (7/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T4	7	1 5/8" Hybriflex	126.67 - 133.33	0.6000	0.6000
T4	8	LDF6-50A (1-1/4 FOAM)	126.67 - 133.00	0.6000	0.6000
T4	9	DC Cable WR-VG122ST	126.67 - 133.00	0.6000	0.6000
T4	10	DC Cable WR-VG122ST	126.67 - 133.00	0.6000	0.6000
T4	11	1 5/8" Hybriflex	126.67 - 133.00	0.6000	0.6000
T4	12	1 5/8" Hybriflex	126.67 - 133.00	0.6000	0.6000
T4	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	126.67 - 133.33	0.6000	0.6000
T4	15	LDF4-50A (1/2 FOAM)	126.67 - 133.33	0.6000	0.6000
T4	16	1-1/4" Hybrid Cable	126.67 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	17	LDF4-50A (1/2 FOAM)	133.33 126.67 - 133.33	0.6000	0.6000
T5	1	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T5	2	LDF7-50A (1-5/8 FOAM)	120.00 - 125.00	0.6000	0.6000
T5	3	LDF7-50A (1-5/8 FOAM)	120.00 - 125.00	0.6000	0.6000
T5	4	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T5	5	LDF5-50A (7/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T5	7	1 5/8" Hybriflex	120.00 - 126.67	0.6000	0.6000
T5	8	LDF6-50A (1-1/4 FOAM)	120.00 - 126.67	0.6000	0.6000
T5	9	DC Cable WR-VG122ST	120.00 - 126.67	0.6000	0.6000
T5	10	DC Cable WR-VG122ST	120.00 - 126.67	0.6000	0.6000
T5	11	1 5/8" Hybriflex	120.00 - 126.67	0.6000	0.6000
T5	12	1 5/8" Hybriflex	120.00 - 126.67	0.6000	0.6000
T5	13	Hubner-Suhner Hybrid Cable	120.00 - 125.00	0.6000	0.6000
T5	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	120.00 - 126.67	0.6000	0.6000
T5	15	LDF4-50A (1/2 FOAM)	120.00 - 126.67	0.6000	0.6000
T5	16	1-1/4" Hybrid Cable	120.00 - 126.67	0.6000	0.6000
T5	17	LDF4-50A (1/2 FOAM)	120.00 - 126.67	0.6000	0.6000
T6	1	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	2	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	3	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	4	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	5	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	6	LDF4-50A (1/2 FOAM)	100.00 - 110.00	0.6000	0.6000
T6	7	1 5/8" Hybriflex	100.00 - 120.00	0.6000	0.6000
T6	8	LDF6-50A (1-1/4 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	9	DC Cable WR-VG122ST	100.00 - 120.00	0.6000	0.6000
T6	10	DC Cable WR-VG122ST	100.00 - 120.00	0.6000	0.6000
T6	11	1 5/8" Hybriflex	100.00 - 120.00	0.6000	0.6000
T6	12	1 5/8" Hybriflex	100.00 - 120.00	0.6000	0.6000
T6	13	Hubner-Suhner Hybrid Cable	100.00 - 120.00	0.6000	0.6000
T6	14	AVA7-50 (1-5/8 LOW	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		DENSI. FOAM)	120.00		
T6	15	LDF4-50A (1/2 FOAM)	100.00 - 120.00	0.6000	0.6000
T6	16	1-1/4" Hybrid Cable	100.00 - 120.00	0.6000	0.6000
T6	17	LDF4-50A (1/2 FOAM)	100.00 - 120.00	0.6000	0.6000
T7	1	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	2	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	3	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	4	LDF7-50A (1-5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	5	LDF5-50A (7/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	6	LDF4-50A (1/2 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	7	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T7	8	LDF6-50A (1-1/4 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	9	DC Cable WR-VG122ST	90.00 - 100.00	0.6000	0.6000
T7	10	DC Cable WR-VG122ST	90.00 - 100.00	0.6000	0.6000
T7	11	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T7	12	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T7	13	Hubner-Suhner Hybrid Cable	90.00 - 100.00	0.6000	0.6000
T7	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	90.00 - 100.00	0.6000	0.6000
T7	15	LDF4-50A (1/2 FOAM)	90.00 - 100.00	0.6000	0.6000
T7	16	1-1/4" Hybrid Cable	90.00 - 100.00	0.6000	0.6000
T7	17	LDF4-50A (1/2 FOAM)	90.00 - 100.00	0.6000	0.6000
T8	1	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	2	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	3	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	4	LDF7-50A (1-5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	5	LDF5-50A (7/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	6	LDF4-50A (1/2 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	7	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T8	8	LDF6-50A (1-1/4 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	9	DC Cable WR-VG122ST	80.00 - 90.00	0.6000	0.6000
T8	10	DC Cable WR-VG122ST	80.00 - 90.00	0.6000	0.6000
T8	11	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T8	12	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T8	13	Hubner-Suhner Hybrid Cable	80.00 - 90.00	0.6000	0.6000
T8	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	80.00 - 90.00	0.6000	0.6000
T8	15	LDF4-50A (1/2 FOAM)	80.00 - 90.00	0.6000	0.6000
T8	16	1-1/4" Hybrid Cable	80.00 - 90.00	0.6000	0.6000
T8	17	LDF4-50A (1/2 FOAM)	80.00 - 90.00	0.6000	0.6000
T9	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	2	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	3	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	4	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	5	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	6	LDF4-50A (1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	7	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T9	8	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	9	DC Cable WR-VG122ST	60.00 - 80.00	0.6000	0.6000
T9	10	DC Cable WR-VG122ST	60.00 - 80.00	0.6000	0.6000
T9	11	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T9	12	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T9	13	Hubner-Suhner Hybrid Cable	60.00 - 80.00	0.6000	0.6000
T9	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	60.00 - 80.00	0.6000	0.6000
T9	15	LDF4-50A (1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T9	16	1-1/4" Hybrid Cable	60.00 - 80.00	0.6000	0.6000
T9	17	LDF4-50A (1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T10	1	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	2	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	3	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	4	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	5	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	6	LDF4-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	7	1 5/8" Hybriflex	40.00 - 60.00	0.6000	0.6000
T10	8	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	9	DC Cable WR-VG122ST	40.00 - 60.00	0.6000	0.6000
T10	10	DC Cable WR-VG122ST	40.00 - 60.00	0.6000	0.6000
T10	11	1 5/8" Hybriflex	40.00 - 60.00	0.6000	0.6000
T10	12	1 5/8" Hybriflex	40.00 - 60.00	0.6000	0.6000
T10	13	Hubner-Suhner Hybrid Cable	40.00 - 60.00	0.6000	0.6000
T10	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	40.00 - 60.00	0.6000	0.6000
T10	15	LDF4-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T10	16	1-1/4" Hybrid Cable	40.00 - 60.00	0.6000	0.6000
T10	17	LDF4-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T11	1	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	2	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	3	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	4	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	5	LDF5-50A (7/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	6	LDF4-50A (1/2 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	7	1 5/8" Hybriflex	30.00 - 40.00	0.6000	0.6000
T11	8	LDF6-50A (1-1/4 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	9	DC Cable WR-VG122ST	30.00 - 40.00	0.6000	0.6000
T11	10	DC Cable WR-VG122ST	30.00 - 40.00	0.6000	0.6000
T11	11	1 5/8" Hybriflex	30.00 - 40.00	0.6000	0.6000
T11	12	1 5/8" Hybriflex	30.00 - 40.00	0.6000	0.6000
T11	13	Hubner-Suhner Hybrid Cable	30.00 - 40.00	0.6000	0.6000
T11	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	30.00 - 40.00	0.6000	0.6000
T11	15	LDF4-50A (1/2 FOAM)	30.00 - 40.00	0.6000	0.6000
T11	16	1-1/4" Hybrid Cable	30.00 - 40.00	0.6000	0.6000
T11	17	LDF4-50A (1/2 FOAM)	30.00 - 40.00	0.6000	0.6000
T12	1	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	2	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	3	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	4	LDF7-50A (1-5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	5	LDF5-50A (7/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	6	LDF4-50A (1/2 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	7	1 5/8" Hybriflex	20.00 - 30.00	0.6000	0.6000
T12	8	LDF6-50A (1-1/4 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	9	DC Cable WR-VG122ST	20.00 - 30.00	0.6000	0.6000
T12	10	DC Cable WR-VG122ST	20.00 - 30.00	0.6000	0.6000
T12	11	1 5/8" Hybriflex	20.00 - 30.00	0.6000	0.6000
T12	12	1 5/8" Hybriflex	20.00 - 30.00	0.6000	0.6000
T12	13	Hubner-Suhner Hybrid Cable	20.00 - 30.00	0.6000	0.6000
T12	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	20.00 - 30.00	0.6000	0.6000
T12	15	LDF4-50A (1/2 FOAM)	20.00 - 30.00	0.6000	0.6000
T12	16	1-1/4" Hybrid Cable	20.00 - 30.00	0.6000	0.6000
T12	17	LDF4-50A (1/2 FOAM)	20.00 - 30.00	0.6000	0.6000
T13	1	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	2	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	3	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	4	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	5	LDF5-50A (7/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	6	LDF4-50A (1/2 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	7	1 5/8" Hybriflex	0.00 - 20.00	0.6000	0.6000
T13	8	LDF6-50A (1-1/4 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	9	DC Cable WR-VG122ST	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	10	DC Cable WR-VG122ST	0.00 - 20.00	0.6000	0.6000
T13	11	1 5/8" Hybriflex	0.00 - 20.00	0.6000	0.6000
T13	12	1 5/8" Hybriflex	0.00 - 20.00	0.6000	0.6000
T13	13	Hubner-Suhner Hybrid Cable	0.00 - 20.00	0.6000	0.6000
T13	14	AVA7-50 (1-5/8 LOW DENSI. FOAM)	0.00 - 20.00	0.6000	0.6000
T13	15	LDF4-50A (1/2 FOAM)	0.00 - 20.00	0.6000	0.6000
T13	16	1-1/4" Hybrid Cable	0.00 - 20.00	0.6000	0.6000
T13	17	LDF4-50A (1/2 FOAM)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
AIR21 B2A/B4P (T-Mobile)	A	From Face	3.00 -4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27
AIR21 B2A/B4P (T-Mobile)	B	From Face	3.00 -4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27
AIR21 B2A/B4P (T-Mobile)	C	From Face	3.00 -4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27
TMA (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.06 1.21 1.37	0.45 0.57 0.71	20.00 26.53 34.91
TMA (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.06 1.21 1.37	0.45 0.57 0.71	20.00 26.53 34.91
TMA (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	1.06 1.21 1.37	0.45 0.57 0.71	20.00 26.53 34.91
LNX-6515DS-VTM (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	11.39 12.01 12.63	9.92 11.38 12.46	90.02 180.50 281.74
LNX-6515DS-VTM (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	11.39 12.01 12.63	9.92 11.38 12.46	90.02 180.50 281.74
LNX-6515DS-VTM (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	11.39 12.01 12.63	9.92 11.38 12.46	90.02 180.50 281.74
AIR21 B2A/B4P (T-Mobile)	A	From Face	3.00 4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27
AIR21 B2A/B4P (T-Mobile)	B	From Face	3.00 4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27
AIR21 B2A/B4P (T-Mobile)	C	From Face	3.00 4.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	6.05 6.42 6.80	5.54 6.19 6.85	110.02 166.56 230.27

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
LTF12=372 Sector Mount (1) (T-Mobile)	A	None		0.0000	125.00	No Ice	13.60	13.60	465.00
						1/2" Ice	18.40	18.40	600.00
						1" Ice	23.20	23.20	735.00
LTF12=372 Sector Mount (1) (T-Mobile)	B	None		0.0000	125.00	No Ice	13.60	13.60	465.00
						1/2" Ice	18.40	18.40	600.00
						1" Ice	23.20	23.20	735.00
LTF12=372 Sector Mount (1) (T-Mobile)	C	None		0.0000	125.00	No Ice	13.60	13.60	465.00
						1/2" Ice	18.40	18.40	600.00
						1" Ice	23.20	23.20	735.00
RRUS-11 (T-Mobile)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	2.57	1.07	50.00
						1/2" Ice	2.76	1.21	69.57
						1" Ice	2.97	1.36	92.08
RRUS-11 (T-Mobile)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	2.57	1.07	50.00
						1/2" Ice	2.76	1.21	69.57
						1" Ice	2.97	1.36	92.08
RRUS-11 (T-Mobile)	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	2.57	1.07	50.00
						1/2" Ice	2.76	1.21	69.57
						1" Ice	2.97	1.36	92.08
GPS (DNK-1 / GPS)	C	From Face	1.00 0.00 0.00	0.0000	60.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
4' Standoff (DNK-1 / GPS)	C	None		0.0000	60.00	No Ice	3.42	3.42	110.00
						1/2" Ice	3.67	3.67	147.19
						1" Ice	3.92	3.92	187.07
2" Dia 10' Omni (DNK-47 / CSP-48)	C	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice	2.00	2.00	10.00
						1/2" Ice	3.03	3.03	25.00
						1" Ice	4.06	4.06	40.00
3' Side Arm (DNK-47 / CSP-48)	C	None		0.0000	159.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
						1" Ice	7.10	7.10	128.00
2" Dia 10' Omni (DNK-48 / CSP-49)	A	From Leg	4.00 0.00 -3.00	0.0000	171.00	No Ice	2.00	2.00	10.00
						1/2" Ice	3.03	3.03	25.00
						1" Ice	4.06	4.06	40.00
4' Standoff (DNK-48,53)	A	None		0.0000	171.00	No Ice	3.42	3.42	110.00
						1/2" Ice	3.67	3.67	147.19
						1" Ice	3.92	3.92	187.07
2" Dia 10' Omni (DNK-53 / CSP-45)	A	From Leg	4.00 0.00 3.00	0.0000	171.00	No Ice	2.00	2.00	10.00
						1/2" Ice	3.03	3.03	25.00
						1" Ice	4.06	4.06	40.00
AP11-850/090/ADT w/Mount Pipe (DNK-49 / CSP-46)	B	From Leg	5.00 0.00 0.00	0.0000	162.00	No Ice	5.31	3.92	39.15
						1/2" Ice	5.93	4.96	84.22
						1" Ice	6.44	5.72	135.57
5' Standoff (DNK-49 / CSP-46)	B	None		0.0000	162.00	No Ice	3.42	3.42	110.00
						1/2" Ice	3.67	3.67	147.19
						1" Ice	3.92	3.92	187.07
8'x2 1/2" Pipe Mount (DNK-50 / CSP-60)	C	None		0.0000	162.00	No Ice	2.20	2.20	40.50
						1/2" Ice	3.13	3.13	57.38
						1" Ice	3.62	3.62	79.58
3' Yagi (DNK-51 / CSP-1)	B	From Leg	0.50 0.00 0.00	0.0000	169.00	No Ice	2.08	2.08	30.95
						1/2" Ice	3.79	3.79	52.87
						1" Ice	5.52	5.52	85.27
4'x4" Pipe Mount (DNK-52)	C	None		0.0000	177.00	No Ice	1.00	1.00	44.00
						1/2" Ice	1.58	1.58	56.99
						1" Ice	1.84	1.84	73.03
AP11-850/090/ADT w/Mount Pipe (DNK-54 / CSP-47)	B	None		0.0000	178.00	No Ice	5.31	3.92	39.15
						1/2" Ice	5.93	4.96	84.22
						1" Ice	6.44	5.72	135.57

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
WPA-700102-4CF-EDIN-X	B	From Leg	6.00	0.0000	170.00	No Ice	3.58	3.66	39.60
w/ Mount Kit			0.00			1/2" Ice	3.88	4.21	75.22
(Troop G TX)			3.00			1" Ice	4.20	4.77	116.30
432E-83I-01T TTA Unit	B	From Leg	3.00	0.0000	170.00	No Ice	2.85	0.97	25.00
(Troop G)			0.00			1/2" Ice	3.06	1.11	44.70
			0.00			1" Ice	3.28	1.26	67.39
SE419-SWBPALDF(D00)	B	From Leg	6.00	0.0000	170.00	No Ice	25.03	9.80	50.00
(Troop G RX)			0.00			1/2" Ice	25.87	10.44	176.52
			-3.00			1" Ice	26.71	11.09	312.27
SE419-SWBPALDF Panel	B	None		0.0000	175.00	No Ice	11.64	7.88	50.00
Antenna						1/2" Ice	12.29	8.51	114.67
(Troop G SZ)						1" Ice	12.95	9.14	187.34
6' Side-Arm	B	None		0.0000	170.00	No Ice	10.60	10.60	140.00
(Troop G)						1/2" Ice	15.40	15.40	212.00
						1" Ice	20.20	20.20	284.00
*** VZW Antennas 12/20/2016									
Pirod 15' T-Frame Sector	A	None		0.0000	160.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(Verizon)						1" Ice	26.20	26.20	800.00
Pirod 15' T-Frame Sector	B	None		0.0000	160.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(Verizon)						1" Ice	26.20	26.20	800.00
Pirod 15' T-Frame Sector	C	None		0.0000	160.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(Verizon)						1" Ice	26.20	26.20	800.00
SBNHH-1D65B	A	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon - LTE & PCS)			0.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RH_2x60-07-L (700 MHz)	A	From Face	3.00	0.0000	160.00	No Ice	1.82	1.52	60.00
(Verizon LTE)			0.00			1/2" Ice	1.99	1.69	77.37
			0.00			1" Ice	2.18	1.86	97.53
DB-T1-6Z-8AB-0Z Dist. Box	A	From Face	3.00	0.0000	160.00	No Ice	4.80	2.00	45.00
(Verizon LTE)			0.00			1/2" Ice	5.07	2.19	81.13
			0.00			1" Ice	5.35	2.39	121.22
** SBNHH-1D65B Shared (above)									
RRH_2x60_PCS	A	From Face	3.00	0.0000	160.00	No Ice	2.84	3.00	74.42
(Verizon PCS)			4.00			1/2" Ice	3.33	3.59	108.94
			0.00			1" Ice	3.77	4.13	148.57
SBNHH-1D65B	A	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon AWS)			-6.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RRH_2x60-AWS	A	From Face	3.00	0.0000	160.00	No Ice	1.87	1.23	44.00
(Verizon AWS)			-6.00			1/2" Ice	2.04	1.38	59.92
			0.00			1" Ice	2.23	1.53	78.53
DB-T1-6Z-8AB-0Z Dist. Box	A	From Face	3.00	0.0000	160.00	No Ice	4.80	2.00	45.00
(Verizon AWS)			-6.00			1/2" Ice	5.07	2.19	81.13
			0.00			1" Ice	5.35	2.39	121.22
BXA-70080-4CF-EDIN	A	From Face	3.00	0.0000	160.00	No Ice	3.62	5.03	40.21
Panel			6.00			1/2" Ice	3.93	5.59	82.86
(Verizon 850 MHz)			0.00			1" Ice	4.25	6.17	131.22
SBNHH-1D65B	B	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon - LTE & PCS)			0.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RH_2x60-07-L (700 MHz)	B	From Face	3.00	0.0000	160.00	No Ice	1.82	1.52	60.00
(Verizon LTE)			0.00			1/2" Ice	1.99	1.69	77.37

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
			0.00			1" Ice	2.18	1.86	97.53
** SBNHH-1D65B Shared (above)									
RRH_2x60_PCS	B	From Face	3.00	0.0000	160.00	No Ice	2.84	3.00	74.42
(Verizon PCS)			4.00			1/2" Ice	3.33	3.59	108.94
			0.00			1" Ice	3.77	4.13	148.57
SBNHH-1D65B	B	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon AWS)			-6.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RRH_2x60-AWS	B	From Face	3.00	0.0000	160.00	No Ice	1.87	1.23	44.00
(Verizon AWS)			-6.00			1/2" Ice	2.04	1.38	59.92
			0.00			1" Ice	2.23	1.53	78.53
BXA-70080-4CF-EDIN	B	From Face	3.00	0.0000	160.00	No Ice	3.62	5.03	40.21
Panel			6.00			1/2" Ice	3.93	5.59	82.86
(Verizon 850 MHz)			0.00			1" Ice	4.25	6.17	131.22
SBNHH-1D65B	C	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon - LTE & PCS)			0.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RH_2x60-07-L (700 MHz)	C	From Face	3.00	0.0000	160.00	No Ice	1.82	1.52	60.00
(Verizon LTE)			0.00			1/2" Ice	1.99	1.69	77.37
			0.00			1" Ice	2.18	1.86	97.53
** SBNHH-1D65B Shared (above)									
RRH_2x60_PCS	C	From Face	3.00	0.0000	160.00	No Ice	2.84	3.00	74.42
(Verizon PCS)			4.00			1/2" Ice	3.33	3.59	108.94
			0.00			1" Ice	3.77	4.13	148.57
SBNHH-1D65B	C	From Face	3.00	0.0000	160.00	No Ice	8.20	5.42	40.60
(Verizon AWS)			-6.00			1/2" Ice	8.66	5.88	91.24
			0.00			1" Ice	9.13	6.35	148.02
RRH_2x60-AWS	C	From Face	3.00	0.0000	160.00	No Ice	1.87	1.23	44.00
(Verizon AWS)			-6.00			1/2" Ice	2.04	1.38	59.92
			0.00			1" Ice	2.23	1.53	78.53
BXA-70080-4CF-EDIN	C	From Face	3.00	0.0000	160.00	No Ice	3.62	5.03	40.21
Panel			6.00			1/2" Ice	3.93	5.59	82.86
(Verizon 850 MHz)			0.00			1" Ice	4.25	6.17	131.22
*** AT-T Antennas 12/20/2016									
Pirod 15' T-Frame Sector	A	None		0.0000	133.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(AT&T)						1" Ice	26.20	26.20	800.00
Pirod 15' T-Frame Sector	B	None		0.0000	133.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(AT&T)						1" Ice	26.20	26.20	800.00
Pirod 15' T-Frame Sector	C	None		0.0000	133.00	No Ice	15.00	15.00	500.00
Mount (1)						1/2" Ice	20.60	20.60	650.00
(AT&T)						1" Ice	26.20	26.20	800.00
P65-16-XLH-RR	A	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			-6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
P65-16-XLH-RR	A	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
RRUS-11	A	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-6.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
HPA-65R-BUU-H6 Panel	A	From Leg	3.00	0.0000	133.00	No Ice	9.49	5.49	48.00
(AT&T - Proposed)			-2.00			1/2" Ice	9.96	5.94	105.33

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
			0.00			1" Ice	10.43	6.41	168.95
RRUS-32	A	From Leg	3.00	0.0000	133.00	No Ice	3.33	2.36	80.00
(AT&T - Proposed)			-2.00			1/2" Ice	3.55	2.56	112.20
			0.00			1" Ice	3.78	2.76	148.06
RRUS-11	A	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-2.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
DC6-48-60-18-8F (Squid)	A	From Leg	3.00	0.0000	133.00	No Ice	0.79	0.79	20.00
Suppressor			-6.00			1/2" Ice	1.27	1.27	35.12
(AT&T)			0.00			1" Ice	1.45	1.45	52.57
DC6-48-60-18-8F (Squid)	A	From Leg	3.00	0.0000	133.00	No Ice	0.79	0.79	20.00
Suppressor			-2.00			1/2" Ice	1.27	1.27	35.12
(AT&T)			0.00			1" Ice	1.45	1.45	52.57
TT19-08BP111-001 TMA's	A	From Leg	3.00	0.0000	133.00	No Ice	0.55	0.45	16.00
(AT&T)			0.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
P65-16-XLH-RR	B	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			-6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
P65-16-XLH-RR	B	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
RRUS-11	B	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-6.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
HPA-65R-BUU-H6 Panel	B	From Leg	3.00	0.0000	133.00	No Ice	9.49	5.49	48.00
(AT&T - Proposed)			-2.00			1/2" Ice	9.96	5.94	105.33
			0.00			1" Ice	10.43	6.41	168.95
RRUS-32	B	From Leg	3.00	0.0000	133.00	No Ice	3.33	2.36	80.00
(AT&T - Proposed)			-2.00			1/2" Ice	3.55	2.56	112.20
			0.00			1" Ice	3.78	2.76	148.06
RRUS-11	B	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-2.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
TT19-08BP111-001 TMA's	B	From Leg	3.00	0.0000	133.00	No Ice	0.55	0.45	16.00
(AT&T)			0.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
P65-16-XLH-RR	C	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			-6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
P65-16-XLH-RR	C	From Leg	3.00	0.0000	133.00	No Ice	8.40	4.70	60.00
(AT&T)			6.00			1/2" Ice	8.95	5.15	111.28
			0.00			1" Ice	9.51	5.60	164.59
RRUS-11	C	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-6.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
HPA-65R-BUU-H6 Panel	C	From Leg	3.00	0.0000	133.00	No Ice	9.49	5.49	48.00
(AT&T - Proposed)			-2.00			1/2" Ice	9.96	5.94	105.33
			0.00			1" Ice	10.43	6.41	168.95
RRUS-32	C	From Leg	3.00	0.0000	133.00	No Ice	3.33	2.36	80.00
(AT&T - Proposed)			-2.00			1/2" Ice	3.55	2.56	112.20
			0.00			1" Ice	3.78	2.76	148.06
RRUS-11	C	From Leg	3.00	0.0000	133.00	No Ice	2.57	1.07	50.00
(AT&T)			-2.00			1/2" Ice	2.76	1.21	69.57
			0.00			1" Ice	2.97	1.36	92.08
TT19-08BP111-001 TMA's	C	From Leg	3.00	0.0000	133.00	No Ice	0.55	0.45	16.00
(AT&T)			0.00			1/2" Ice	0.65	0.53	21.80

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
			0.00			1" Ice	0.75	0.63	29.22
*** Sprint Antennas 05/17/2017									
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	A	None		0.0000	145.00	No Ice 1/2" Ice 1" Ice	17.27 23.67 30.01	9.44 12.83 16.15	517.08 621.28 763.57
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	B	None		0.0000	145.00	No Ice 1/2" Ice 1" Ice	17.27 23.67 30.01	9.44 12.83 16.15	517.08 621.28 763.57
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly (Sprint)	C	None		0.0000	145.00	No Ice 1/2" Ice 1" Ice	17.27 23.67 30.01	9.44 12.83 16.15	517.08 621.28 763.57
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	A	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	8.02 8.48 8.94	5.81 6.27 6.73	90.00 141.99 200.12
APXVTM14-C-120 Panel Antenna (Sprint)	A	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	3.61 3.97 4.33	72.00 111.53 156.12
800 RRH (800 MHz) Unit (Sprint)	A	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	5.58 5.94 6.31	60.00 109.72 164.80
1900 RRH (1900 MHz) Unit (Sprint)	A	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	2.54 2.75 2.97	60.00 86.47 116.36
TD-RRH8x20 (Sprint)	A	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	66.13 93.27 123.93
ALU Model 800 Notch Filter (Sprint)	A	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	11.00 16.81 24.26
RFS Switch # ACU-A20N (Sprint)	A	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	A	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	A	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
NEMA Enclosure (Sprint)	A	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.65 0.75 0.86	0.42 0.51 0.60	2.20 8.42 16.32
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	B	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	8.02 8.48 8.94	5.81 6.27 6.73	90.00 141.99 200.12
APXVTM14-C-120 Panel Antenna (Sprint)	B	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	3.61 3.97 4.33	72.00 111.53 156.12
800 RRH (800 MHz) Unit (Sprint)	B	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	5.58 5.94 6.31	60.00 109.72 164.80
1900 RRH (1900 MHz) Unit (Sprint)	B	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	2.54 2.75 2.97	60.00 86.47 116.36
TD-RRH8x20 (Sprint)	B	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	66.13 93.27 123.93

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
ALU Model 800 Notch Filter (Sprint)	B	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	11.00 16.81 24.26
RFS Switch # ACU-A20N (Sprint)	B	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	B	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	B	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	C	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	8.02 8.48 8.94	5.81 6.27 6.73	90.00 141.99 200.12
APXVTM14-C-120 Panel Antenna (Sprint)	C	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	3.61 3.97 4.33	72.00 111.53 156.12
800 RRH (800 MHz) Unit (Sprint)	C	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.34 6.72 7.10	5.58 5.94 6.31	60.00 109.72 164.80
1900 RRH (1900 MHz) Unit (Sprint)	C	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	2.54 2.75 2.97	60.00 86.47 116.36
TD-RRH8x20 (Sprint)	C	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	66.13 93.27 123.93
ALU Model 800 Notch Filter (Sprint)	C	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	11.00 16.81 24.26
RFS Switch # ACU-A20N (Sprint)	C	From Leg	2.75 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	C	From Leg	2.75 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36
RFS Switch # ACU-A20N (Sprint)	C	From Leg	2.75 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.07 0.10 0.15	0.11 0.16 0.21	1.04 2.30 4.36

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	Worst		177.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.05 29.83	90.00 240.00 390.00
VHLP2-11 Dish	C	Paraboloid w/o	From	0.50	Worst		145.00	2.00	No Ice	3.14	17.00

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 ft²	Weight lb
Antenna		Radome	Leg	0.00					1/2" Ice	3.41	34.50
(Clearwire)				0.00					1" Ice	3.68	52.01
VHLP800-11 6WH	A	Paraboloid	From	0.50	Worst		145.00	2.60	No Ice	5.31	49.00
Dish Antenna		w/Radome	Leg	0.00					1/2" Ice	5.66	78.05
(Clearwire)				0.00					1" Ice	6.00	107.11

222-G Verification Constants

Constant	Value
Wind Importance Factor Without Ice	1.15
Wind Importance Factor With Ice Factor	1
Ice Importance Factor	1.25
K_d	0.85
Z_g	900
α	9.5
K_{zmin}	0.85
K_e	1
K_t	1
f	1

222-G Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
T1 180.00-160.00	1	ROHN 3 STD	40.93	39.248	C	0.139	0.354	5.833	13.197	3.055	8.151
	1	ROHN 3 STD	40.93	39.248	A	0.139	0.354	5.833	13.197	3.055	8.151
	2	ROHN 3 STD	40.93	39.248	C	0.139	0.354	5.833	13.197	3.055	8.151
	2	ROHN 3 STD	40.93	39.248	B	0.139	0.354	5.833	13.197	3.055	8.151
	3	ROHN 3 STD	40.93	39.248	B	0.139	0.354	5.833	13.197	3.055	8.151
	3	ROHN 3 STD	40.93	39.248	A	0.139	0.354	5.833	13.197	3.055	8.151
	4	ROHN 1.5 STD	22.219	31.317	C	0.139	0.354	1.306	4.344	0.740	2.683
	5	ROHN 1.5 STD	22.219	31.317	B	0.139	0.354	1.306	4.344	0.740	2.683
	6	ROHN 1.5 STD	22.219	31.317	A	0.139	0.354	1.306	4.344	0.740	2.683
	7	ROHN 1.5 STD	22.219	31.317	C	0.139	0.354	1.315	4.373	0.745	2.701
	8	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.518	4.343	0.860	2.682
	9	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.518	4.343	0.860	2.682
	10	ROHN 1.5 STD	22.219	31.317	B	0.139	0.354	1.315	4.373	0.745	2.701
	11	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.518	4.343	0.860	2.682
	12	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.518	4.343	0.860	2.682
	13	ROHN 1.5 STD	22.219	31.317	A	0.139	0.354	1.315	4.373	0.745	2.701
	14	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.518	4.343	0.860	2.682
	15	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.518	4.343	0.860	2.682
	19	ROHN 1.5 STD	22.219	31.317	C	0.139	0.354	1.311	4.358	0.743	2.692
	20	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.517	4.338	0.859	2.680
	21	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.517	4.338	0.859	2.680
	22	ROHN 1.5 STD	22.219	31.317	B	0.139	0.354	1.311	4.358	0.743	2.692
	23	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.517	4.338	0.859	2.680
	24	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.517	4.338	0.859	2.680
	25	ROHN 1.5 STD	22.219	31.317	A	0.139	0.354	1.311	4.358	0.743	2.692
	26	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.517	4.338	0.859	2.680

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
	27	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.517	4.338	0.859	2.680
	31	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.515	4.333	0.858	2.677
	32	ROHN 2 STD	27.774	33.671	C	0.139	0.354	1.515	4.333	0.858	2.677
	33	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.515	4.333	0.858	2.677
	34	ROHN 2 STD	27.774	33.671	B	0.139	0.354	1.515	4.333	0.858	2.677
	35	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.515	4.333	0.858	2.677
	36	ROHN 2 STD	27.774	33.671	A	0.139	0.354	1.515	4.333	0.858	2.677
					A		Sum:	24.699	65.497	13.494	40.456
					B			24.699	65.497	13.494	40.456
					C			24.699	65.497	13.494	40.456
T2 160.00-140.00	40	ROHN 4 STD	51.935	43.357	C	0.144	0.34	7.514	14.798	3.550	9.061
	40	ROHN 4 STD	51.935	43.357	A	0.144	0.34	7.514	14.798	3.550	9.061
	41	ROHN 4 STD	51.935	43.357	C	0.144	0.34	7.514	14.798	3.550	9.061
	41	ROHN 4 STD	51.935	43.357	B	0.144	0.34	7.514	14.798	3.550	9.061
	42	ROHN 4 STD	51.935	43.357	B	0.144	0.34	7.514	14.798	3.550	9.061
	42	ROHN 4 STD	51.935	43.357	A	0.144	0.34	7.514	14.798	3.550	9.061
	43	ROHN 1.5 STD	21.928	30.638	C	0.144	0.34	1.526	5.031	0.865	3.080
	44	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.634	4.635	0.926	2.838
	45	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.634	4.635	0.926	2.838
	46	ROHN 1.5 STD	21.928	30.638	B	0.144	0.34	1.526	5.031	0.865	3.080
	47	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.634	4.635	0.926	2.838
	48	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.634	4.635	0.926	2.838
	49	ROHN 1.5 STD	21.928	30.638	A	0.144	0.34	1.526	5.031	0.865	3.080
	50	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.634	4.635	0.926	2.838
	51	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.634	4.635	0.926	2.838
	55	ROHN 1.5 STD	21.928	30.638	C	0.144	0.34	1.416	4.668	0.803	2.858
	56	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.589	4.508	0.901	2.760
	57	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.589	4.508	0.901	2.760
	58	ROHN 1.5 STD	21.928	30.638	B	0.144	0.34	1.416	4.668	0.803	2.858
	59	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.589	4.508	0.901	2.760
	60	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.589	4.508	0.901	2.760
	61	ROHN 1.5 STD	21.928	30.638	A	0.144	0.34	1.416	4.668	0.803	2.858
	62	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.589	4.508	0.901	2.760
	63	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.589	4.508	0.901	2.760
	67	ROHN 1.5 STD	21.928	30.638	C	0.144	0.34	1.319	4.349	0.748	2.663
	68	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.546	4.385	0.876	2.685
	69	ROHN 2 STD	27.41	32.962	C	0.144	0.34	1.546	4.385	0.876	2.685
	70	ROHN 1.5 STD	21.928	30.638	B	0.144	0.34	1.319	4.349	0.748	2.663
	71	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.546	4.385	0.876	2.685
	72	ROHN 2 STD	27.41	32.962	B	0.144	0.34	1.546	4.385	0.876	2.685
	73	ROHN 1.5 STD	21.928	30.638	A	0.144	0.34	1.319	4.349	0.748	2.663
	74	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.546	4.385	0.876	2.685
	75	ROHN 2 STD	27.41	32.962	A	0.144	0.34	1.546	4.385	0.876	2.685
					A		Sum:	28.825	70.700	14.923	43.287
					B			28.825	70.700	14.923	43.287
					C			28.825	70.700	14.923	43.287
T3 140.00-133.33	79	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	C	0.15	0.33	3.061	5.467	1.298	3.328
	79	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	A	0.15	0.33	3.061	5.467	1.298	3.328
	80	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	C	0.15	0.33	3.061	5.467	1.298	3.328
	80	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	B	0.15	0.33	3.061	5.467	1.298	3.328
	81	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	B	0.15	0.33	3.061	5.467	1.298	3.328
	81	ROHN 5 EH (5.5 OD x 0.375)	62.857	47.583	A	0.15	0.33	3.061	5.467	1.298	3.328
	82	ROHN 2 STD	27.143	32.444	C	0.15	0.33	2.045	5.768	1.161	3.511

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
	83	ROHN 2 EH	27.2	32.469	C	0.15	0.33	1.670	4.704	0.948	2.864
	84	ROHN 2 EH	27.2	32.469	C	0.15	0.33	1.670	4.704	0.948	2.864
	85	ROHN 2 STD	27.143	32.444	B	0.15	0.33	2.045	5.768	1.161	3.511
	86	ROHN 2 EH	27.2	32.469	B	0.15	0.33	1.670	4.704	0.948	2.864
	87	ROHN 2 EH	27.2	32.469	B	0.15	0.33	1.670	4.704	0.948	2.864
	88	ROHN 2 STD	27.143	32.444	A	0.15	0.33	2.045	5.768	1.161	3.511
	89	ROHN 2 EH	27.2	32.469	A	0.15	0.33	1.670	4.704	0.948	2.864
	90	ROHN 2 EH	27.2	32.469	A	0.15	0.33	1.670	4.704	0.948	2.864
					A		Sum:	11.508	26.110	5.652	15.895
					B			11.508	26.110	5.652	15.895
					C			11.508	26.110	5.652	15.895
T4	94	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	C	0.144	0.318	3.061	5.455	1.294	3.299
133.33-126.67	94	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	A	0.144	0.318	3.061	5.455	1.294	3.299
	95	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	C	0.144	0.318	3.061	5.455	1.294	3.299
	95	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	B	0.144	0.318	3.061	5.455	1.294	3.299
	96	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	B	0.144	0.318	3.061	5.455	1.294	3.299
	96	ROHN 5 EH (5.5 OD x 0.375)	62.527	47.229	A	0.144	0.318	3.061	5.455	1.294	3.299
	97	ROHN 2 STD	27	32.17	C	0.144	0.318	2.166	6.089	1.228	3.682
	98	ROHN 2 STD	27	32.17	B	0.144	0.318	2.166	6.089	1.228	3.682
	99	ROHN 2 STD	27	32.17	A	0.144	0.318	2.166	6.089	1.228	3.682
	100	ROHN 2 EH	27.057	32.194	C	0.144	0.318	1.718	4.823	0.974	2.917
	101	ROHN 2 EH	27.057	32.194	C	0.144	0.318	1.718	4.823	0.974	2.917
	102	ROHN 2 EH	27.057	32.194	B	0.144	0.318	1.718	4.823	0.974	2.917
	103	ROHN 2 EH	27.057	32.194	B	0.144	0.318	1.718	4.823	0.974	2.917
	104	ROHN 2 EH	27.057	32.194	A	0.144	0.318	1.718	4.823	0.974	2.917
	105	ROHN 2 EH	27.057	32.194	A	0.144	0.318	1.718	4.823	0.974	2.917
					A		Sum:	11.725	26.645	5.764	16.113
					B			11.725	26.645	5.764	16.113
					C			11.725	26.645	5.764	16.113
T5	109	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	C	0.139	0.308	3.061	5.442	1.291	3.273
126.67-120.00	109	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	A	0.139	0.308	3.061	5.442	1.291	3.273
	110	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	C	0.139	0.308	3.061	5.442	1.291	3.273
	110	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	B	0.139	0.308	3.061	5.442	1.291	3.273
	111	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	B	0.139	0.308	3.061	5.442	1.291	3.273
	111	ROHN 5 EH (5.5 OD x 0.375)	62.182	46.86	A	0.139	0.308	3.061	5.442	1.291	3.273
	112	ROHN 2 STD	26.851	31.884	C	0.139	0.308	2.304	6.453	1.305	3.881
	113	ROHN 2 STD	26.851	31.884	B	0.139	0.308	2.304	6.453	1.305	3.881
	114	ROHN 2 STD	26.851	31.884	A	0.139	0.308	2.304	6.453	1.305	3.881
	115	ROHN 2 XXS	26.851	31.884	C	0.139	0.308	1.763	4.940	0.999	2.971
	116	ROHN 2 XXS	26.851	31.884	C	0.139	0.308	1.763	4.940	0.999	2.971
	117	ROHN 2 XXS	26.851	31.884	B	0.139	0.308	1.763	4.940	0.999	2.971
	118	ROHN 2 XXS	26.851	31.884	B	0.139	0.308	1.763	4.940	0.999	2.971
	119	ROHN 2 XXS	26.851	31.884	A	0.139	0.308	1.763	4.940	0.999	2.971
	120	ROHN 2 XXS	26.851	31.884	A	0.139	0.308	1.763	4.940	0.999	2.971
					A		Sum:	11.953	27.218	5.886	16.369
					B			11.953	27.218	5.886	16.369
					C			11.953	27.218	5.886	16.369
T6	124	ROHN 6 EHS	74.004	51.395	C	0.133	0.265	11.065	18.129	4.542	10.675

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
120.00-100.00											
	124	ROHN 6 EHS	74.004	51.395	A	0.133	0.265	11.065	18.129	4.542	10.675
	125	ROHN 6 EHS	74.004	51.395	C	0.133	0.265	11.065	18.129	4.542	10.675
	125	ROHN 6 EHS	74.004	51.395	B	0.133	0.265	11.065	18.129	4.542	10.675
	126	ROHN 6 EHS	74.004	51.395	B	0.133	0.265	11.065	18.129	4.542	10.675
	126	ROHN 6 EHS	74.004	51.395	A	0.133	0.265	11.065	18.129	4.542	10.675
	127	ROHN 2 STD	26.53	31.272	C	0.133	0.265	2.645	7.356	1.497	4.331
	128	ROHN 2.5 XXS	32.115	33.639	C	0.133	0.265	2.889	7.139	1.634	4.204
	129	ROHN 2.5 XXS	32.115	33.639	C	0.133	0.265	2.889	7.139	1.634	4.204
	130	ROHN 2 STD	26.53	31.272	B	0.133	0.265	2.645	7.356	1.497	4.331
	131	ROHN 2.5 XXS	32.115	33.639	B	0.133	0.265	2.889	7.139	1.634	4.204
	132	ROHN 2.5 XXS	32.115	33.639	B	0.133	0.265	2.889	7.139	1.634	4.204
	133	ROHN 2 STD	26.53	31.272	A	0.133	0.265	2.645	7.356	1.497	4.331
	134	ROHN 2.5 XXS	32.115	33.639	A	0.133	0.265	2.889	7.139	1.634	4.204
	135	ROHN 2.5 XXS	32.115	33.639	A	0.133	0.265	2.889	7.139	1.634	4.204
	139	ROHN 2 STD	26.53	31.272	C	0.133	0.265	2.441	6.788	1.382	3.997
	140	ROHN 2.5 XXS	32.115	33.639	C	0.133	0.265	2.804	6.930	1.586	4.080
	141	ROHN 2.5 XXS	32.115	33.639	C	0.133	0.265	2.804	6.930	1.586	4.080
	142	ROHN 2 STD	26.53	31.272	B	0.133	0.265	2.441	6.788	1.382	3.997
	143	ROHN 2.5 XXS	32.115	33.639	B	0.133	0.265	2.804	6.930	1.586	4.080
	144	ROHN 2.5 XXS	32.115	33.639	B	0.133	0.265	2.804	6.930	1.586	4.080
	145	ROHN 2 STD	26.53	31.272	A	0.133	0.265	2.441	6.788	1.382	3.997
	146	ROHN 2.5 XXS	32.115	33.639	A	0.133	0.265	2.804	6.930	1.586	4.080
	147	ROHN 2.5 XXS	32.115	33.639	A	0.133	0.265	2.804	6.930	1.586	4.080
					A		Sum:	38.602	78.541	18.401	46.245
					B			38.602	78.541	18.401	46.245
					C			38.602	78.541	18.401	46.245
T7 100.00-90.00	151	ROHN 6 EH	72.871	50.321	C	0.131	0.252	5.537	9.020	2.265	5.282
	151	ROHN 6 EH	72.871	50.321	A	0.131	0.252	5.537	9.020	2.265	5.282
	152	ROHN 6 EH	72.871	50.321	C	0.131	0.252	5.537	9.020	2.265	5.282
	152	ROHN 6 EH	72.871	50.321	B	0.131	0.252	5.537	9.020	2.265	5.282
	153	ROHN 6 EH	72.871	50.321	B	0.131	0.252	5.537	9.020	2.265	5.282
	153	ROHN 6 EH	72.871	50.321	A	0.131	0.252	5.537	9.020	2.265	5.282
	154	ROHN 2 STD	26.123	30.506	C	0.131	0.252	2.868	7.901	1.623	4.627
	155	ROHN 3 STD	38.498	35.751	C	0.131	0.252	3.643	7.981	1.945	4.674
	156	ROHN 3 STD	38.498	35.751	C	0.131	0.252	3.643	7.981	1.945	4.674
	157	ROHN 2 STD	26.123	30.506	B	0.131	0.252	2.868	7.901	1.623	4.627
	158	ROHN 3 STD	38.498	35.751	B	0.131	0.252	3.643	7.981	1.945	4.674
	159	ROHN 3 STD	38.498	35.751	B	0.131	0.252	3.643	7.981	1.945	4.674
	160	ROHN 2 STD	26.123	30.506	A	0.131	0.252	2.868	7.901	1.623	4.627
	161	ROHN 3 STD	38.498	35.751	A	0.131	0.252	3.643	7.981	1.945	4.674
	162	ROHN 3 STD	38.498	35.751	A	0.131	0.252	3.643	7.981	1.945	4.674
					A		Sum:	21.227	41.903	10.043	24.538
					B			21.227	41.903	10.043	24.538
					C			21.227	41.903	10.043	24.538
T8 90.00-80.00	166	ROHN 6 EH	72.022	49.523	C	0.124	0.24	5.537	8.982	2.247	5.232
	166	ROHN 6 EH	72.022	49.523	A	0.124	0.24	5.537	8.982	2.247	5.232
	167	ROHN 6 EH	72.022	49.523	C	0.124	0.24	5.537	8.982	2.247	5.232
	167	ROHN 6 EH	72.022	49.523	B	0.124	0.24	5.537	8.982	2.247	5.232
	168	ROHN 6 EH	72.022	49.523	B	0.124	0.24	5.537	8.982	2.247	5.232
	168	ROHN 6 EH	72.022	49.523	A	0.124	0.24	5.537	8.982	2.247	5.232
	169	ROHN 2 STD	25.819	29.939	C	0.124	0.24	3.129	8.559	1.769	4.986
	170	ROHN 2 STD	25.819	29.939	B	0.124	0.24	3.129	8.559	1.769	4.986
	171	ROHN 2 STD	25.819	29.939	A	0.124	0.24	3.129	8.559	1.769	4.986
	172	ROHN 3 STD	38.05	35.123	C	0.124	0.24	3.773	8.216	2.019	4.786
	173	ROHN 3 STD	38.05	35.123	C	0.124	0.24	3.773	8.216	2.019	4.786
	174	ROHN 3 STD	38.05	35.123	B	0.124	0.24	3.773	8.216	2.019	4.786
	175	ROHN 3 STD	38.05	35.123	B	0.124	0.24	3.773	8.216	2.019	4.786
	176	ROHN 3 STD	38.05	35.123	A	0.124	0.24	3.773	8.216	2.019	4.786
	177	ROHN 3 STD	38.05	35.123	A	0.124	0.24	3.773	8.216	2.019	4.786

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
					A		Sum:	21.747	42.954	10.301	25.023
					B			21.747	42.954	10.301	25.023
					C			21.747	42.954	10.301	25.023
T9 80.00-60.00	181	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	C	0.136	0.243	14.621	21.377	6.019	12.467
	181	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	A	0.136	0.243	14.621	21.377	6.019	12.467
	182	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	C	0.136	0.243	14.621	21.377	6.019	12.467
	182	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	B	0.136	0.243	14.621	21.377	6.019	12.467
	183	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	B	0.136	0.243	14.621	21.377	6.019	12.467
	183	ROHN 8 EHS (8.75 OD x 0.375(t))	93.2	57.757	A	0.136	0.243	14.621	21.377	6.019	12.467
	184	ROHN 2.5 STD	30.623	31.233	C	0.136	0.243	4.360	10.491	2.469	6.118
	185	ROHN 3 STD	37.28	34.054	C	0.136	0.243	3.995	8.609	2.160	5.021
	186	ROHN 3 STD	37.28	34.054	C	0.136	0.243	3.995	8.609	2.160	5.021
	187	ROHN 2.5 STD	30.623	31.233	B	0.136	0.243	4.360	10.491	2.469	6.118
	188	ROHN 3 STD	37.28	34.054	B	0.136	0.243	3.995	8.609	2.160	5.021
	189	ROHN 3 STD	37.28	34.054	B	0.136	0.243	3.995	8.609	2.160	5.021
	190	ROHN 2.5 STD	30.623	31.233	A	0.136	0.243	4.360	10.491	2.469	6.118
	191	ROHN 3 STD	37.28	34.054	A	0.136	0.243	3.995	8.609	2.160	5.021
	192	ROHN 3 STD	37.28	34.054	A	0.136	0.243	3.995	8.609	2.160	5.021
	196	ROHN 2.5 STD	30.623	31.233	C	0.136	0.243	4.103	9.872	2.323	5.758
	197	ROHN 3 STD	37.28	34.054	C	0.136	0.243	3.862	8.324	2.089	4.855
	198	ROHN 3 STD	37.28	34.054	C	0.136	0.243	3.862	8.324	2.089	4.855
	199	ROHN 2.5 STD	30.623	31.233	B	0.136	0.243	4.103	9.872	2.323	5.758
	200	ROHN 3 STD	37.28	34.054	B	0.136	0.243	3.862	8.324	2.089	4.855
	201	ROHN 3 STD	37.28	34.054	B	0.136	0.243	3.862	8.324	2.089	4.855
	202	ROHN 2.5 STD	30.623	31.233	A	0.136	0.243	4.103	9.872	2.323	5.758
	203	ROHN 3 STD	37.28	34.054	A	0.136	0.243	3.862	8.324	2.089	4.855
	204	ROHN 3 STD	37.28	34.054	A	0.136	0.243	3.862	8.324	2.089	4.855
					A		Sum:	53.420	96.983	25.327	56.561
					B			53.420	96.983	25.327	56.561
					C			53.420	96.983	25.327	56.561
T10 60.00-40.00	208	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	C	0.131	0.229	14.621	21.153	5.984	12.272
	208	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	A	0.131	0.229	14.621	21.153	5.984	12.272
	209	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	C	0.131	0.229	14.621	21.153	5.984	12.272
	209	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	B	0.131	0.229	14.621	21.153	5.984	12.272
	210	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	B	0.131	0.229	14.621	21.153	5.984	12.272
	210	ROHN 8 EHS (8.75 OD x 0.375(t))	89.956	55.164	A	0.131	0.229	14.621	21.153	5.984	12.272
	211	ROHN 2.5 STD	29.557	29.563	C	0.131	0.229	4.959	11.701	2.806	6.789
	212	P3.5x.226	41.123	34.465	C	0.131	0.229	4.879	9.647	2.543	5.597
	213	P3.5x.226	41.123	34.465	C	0.131	0.229	4.879	9.647	2.543	5.597
	214	ROHN 2.5 STD	29.557	29.563	B	0.131	0.229	4.959	11.701	2.806	6.789
	215	P3.5x.226	41.123	34.465	B	0.131	0.229	4.879	9.647	2.543	5.597
	216	P3.5x.226	41.123	34.465	B	0.131	0.229	4.879	9.647	2.543	5.597
	217	ROHN 2.5 STD	29.557	29.563	A	0.131	0.229	4.959	11.701	2.806	6.789
	218	P3.5x.226	41.123	34.465	A	0.131	0.229	4.879	9.647	2.543	5.597
	219	P3.5x.226	41.123	34.465	A	0.131	0.229	4.879	9.647	2.543	5.597
	223	ROHN 2.5 STD	29.557	29.563	C	0.131	0.229	4.659	10.995	2.637	6.379
	224	P3.5x.226	41.123	34.465	C	0.131	0.229	4.720	9.334	2.460	5.415
	225	P3.5x.226	41.123	34.465	C	0.131	0.229	4.720	9.334	2.460	5.415

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
	226	ROHN 2.5 STD	29.557	29.563	B	0.131	0.229	4.659	10.995	2.637	6.379
	227	P3.5x.226	41.123	34.465	B	0.131	0.229	4.720	9.334	2.460	5.415
	228	P3.5x.226	41.123	34.465	B	0.131	0.229	4.720	9.334	2.460	5.415
	229	ROHN 2.5 STD	29.557	29.563	A	0.131	0.229	4.659	10.995	2.637	6.379
	230	P3.5x.226	41.123	34.465	A	0.131	0.229	4.720	9.334	2.460	5.415
	231	P3.5x.226	41.123	34.465	A	0.131	0.229	4.720	9.334	2.460	5.415
					A			Sum: 58.059	102.963	27.419	59.734
					B			58.059	102.963	27.419	59.734
					C			58.059	102.963	27.419	59.734
T11 40.00-30.00	235	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	C	0.125	0.216	7.311	10.462	2.970	6.042
	235	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	A	0.125	0.216	7.311	10.462	2.970	6.042
	236	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	C	0.125	0.216	7.311	10.462	2.970	6.042
	236	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	B	0.125	0.216	7.311	10.462	2.970	6.042
	237	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	B	0.125	0.216	7.311	10.462	2.970	6.042
	237	ROHN 8 EHS (8.75 OD x 0.375(t))	86.642	52.556	A	0.125	0.216	7.311	10.462	2.970	6.042
	238	ROHN 2.5 STD	28.468	27.899	C	0.125	0.216	5.258	12.158	2.973	7.021
	239	P3.5x.226	39.608	32.62	C	0.125	0.216	5.041	9.794	2.659	5.656
	240	P3.5x.226	39.608	32.62	C	0.125	0.216	5.041	9.794	2.659	5.656
	241	ROHN 2.5 STD	28.468	27.899	B	0.125	0.216	5.258	12.158	2.973	7.021
	242	P3.5x.226	39.608	32.62	B	0.125	0.216	5.041	9.794	2.659	5.656
	243	P3.5x.226	39.608	32.62	B	0.125	0.216	5.041	9.794	2.659	5.656
	244	ROHN 2.5 STD	28.468	27.899	A	0.125	0.216	5.258	12.158	2.973	7.021
	245	P3.5x.226	39.608	32.62	A	0.125	0.216	5.041	9.794	2.659	5.656
	246	P3.5x.226	39.608	32.62	A	0.125	0.216	5.041	9.794	2.659	5.656
					A			Sum: 29.961	52.670	14.232	30.418
					B			29.961	52.670	14.232	30.418
					C			29.961	52.670	14.232	30.418
T12 30.00-20.00	250	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	C	0.126	0.213	7.311	10.358	2.974	5.975
	250	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	A	0.126	0.213	7.311	10.358	2.974	5.975
	251	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	C	0.126	0.213	7.311	10.358	2.974	5.975
	251	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	B	0.126	0.213	7.311	10.358	2.974	5.975
	252	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	B	0.126	0.213	7.311	10.358	2.974	5.975
	252	ROHN 8 EHS (8.75 OD x 0.375(t))	83.627	50.222	A	0.126	0.213	7.311	10.358	2.974	5.975
	253	ROHN 3 STD	33.451	28.954	C	0.126	0.213	6.766	13.817	3.778	7.970
	254	ROHN 3 STD	33.451	28.954	B	0.126	0.213	6.766	13.817	3.778	7.970
	255	ROHN 3 STD	33.451	28.954	A	0.126	0.213	6.766	13.817	3.778	7.970
	256	P3.5x.226	38.229	30.98	C	0.126	0.213	5.205	9.951	2.783	5.740
	257	P3.5x.226	38.229	30.98	C	0.126	0.213	5.205	9.951	2.783	5.740
	258	P3.5x.226	38.229	30.98	B	0.126	0.213	5.205	9.951	2.783	5.740
	259	P3.5x.226	38.229	30.98	B	0.126	0.213	5.205	9.951	2.783	5.740
	260	P3.5x.226	38.229	30.98	A	0.126	0.213	5.205	9.951	2.783	5.740
	261	P3.5x.226	38.229	30.98	A	0.126	0.213	5.205	9.951	2.783	5.740
					A			Sum: 31.798	54.436	15.291	31.400
					B			31.798	54.436	15.291	31.400
					C			31.798	54.436	15.291	31.400
T13 20.00-0.00	265	ROHN 8 EH	78.168	45.917	C	0.107	0.179	14.412	19.973	5.738	11.408
	265	ROHN 8 EH	78.168	45.917	A	0.107	0.179	14.412	19.973	5.738	11.408
	266	ROHN 8 EH	78.168	45.917	C	0.107	0.179	14.412	19.973	5.738	11.408

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
	266	ROHN 8 EH	78.168	45.917	B	0.107	0.179	14.412	19.973	5.738	11.408
	267	ROHN 8 EH	78.168	45.917	B	0.107	0.179	14.412	19.973	5.738	11.408
	267	ROHN 8 EH	78.168	45.917	A	0.107	0.179	14.412	19.973	5.738	11.408
	268	P3.5x.226	36.252	28.15	C	0.107	0.179	8.149	14.929	4.421	8.527
	269	P3.5x.226	36.252	28.15	C	0.107	0.179	7.900	14.473	4.285	8.267
	270	ROHN 1.5 STD	17.22	20.083	C	0.107	0.179	0.940	2.586	0.531	1.477
	271	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	C	0.107	0.179	1.704	4.689	0.962	2.678
	272	P3.5x.226	36.252	28.15	C	0.107	0.179	7.900	14.473	4.285	8.267
	273	ROHN 1.5 STD	17.22	20.083	C	0.107	0.179	0.940	2.586	0.531	1.477
	274	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	C	0.107	0.179	1.704	4.689	0.962	2.678
	275	P3.5x.226	36.252	28.15	B	0.107	0.179	8.149	14.929	4.421	8.527
	276	P3.5x.226	36.252	28.15	B	0.107	0.179	7.900	14.473	4.285	8.267
	277	ROHN 1.5 STD	17.22	20.083	B	0.107	0.179	0.940	2.586	0.531	1.477
	278	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	B	0.107	0.179	1.704	4.689	0.962	2.678
	279	P3.5x.226	36.252	28.15	B	0.107	0.179	7.900	14.473	4.285	8.267
	280	ROHN 1.5 STD	17.22	20.083	B	0.107	0.179	0.940	2.586	0.531	1.477
	281	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	B	0.107	0.179	1.704	4.689	0.962	2.678
	284	P3.5x.226	36.252	28.15	A	0.107	0.179	8.149	14.929	4.421	8.527
	285	P3.5x.226	36.252	28.15	A	0.107	0.179	7.900	14.473	4.285	8.267
	286	ROHN 1.5 STD	17.22	20.083	A	0.107	0.179	0.940	2.586	0.531	1.477
	287	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	A	0.107	0.179	1.704	4.689	0.962	2.678
	288	P3.5x.226	36.252	28.15	A	0.107	0.179	7.900	14.473	4.285	8.267
	289	ROHN 1.5 STD	17.22	20.083	A	0.107	0.179	0.940	2.586	0.531	1.477
	290	ROHN 1.5 SCH XS (Extra Strong)	17.22	20.083	A	0.107	0.179	1.704	4.689	0.962	2.678
					A		Sum:	58.062	98.372	27.453	56.187
					B			58.062	98.372	27.453	56.187
					C			58.062	98.372	27.453	56.187

222-G 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		43	A	0.139	13.494
								B	0.139	13.494
								C	0.139	13.494
T2 160.00-140.00	150.00		1.378	1	1		42	A	0.144	14.923
								B	0.144	14.923
								C	0.144	14.923
T3 140.00-133.33	136.67		1.352	1	1		41	A	0.15	5.652
								B	0.15	5.652
								C	0.15	5.652
T4 133.33-126.67	130.00		1.337	1	1		40	A	0.144	5.764
								B	0.144	5.764
								C	0.144	5.764
T5 126.67-120.00	123.33		1.323	1	1		40	A	0.139	5.886

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 ft²
								B	0.139	5.886
								C	0.139	5.886
T6 120.00-100.00	110.00		1.291	1	1		39	A	0.133	18.401
								B	0.133	18.401
								C	0.133	18.401
T7 100.00-90.00	95.00		1.252	1	1		38	A	0.131	10.043
								B	0.131	10.043
								C	0.131	10.043
T8 90.00-80.00	85.00		1.223	1	1		37	A	0.124	10.301
								B	0.124	10.301
								C	0.124	10.301
T9 80.00-60.00	70.00		1.174	1	1		36	A	0.136	25.327
								B	0.136	25.327
								C	0.136	25.327
T10 60.00-40.00	50.00		1.094	1	1		33	A	0.131	27.419
								B	0.131	27.419
								C	0.131	27.419
T11 40.00-30.00	35.00		1.015	1	1		31	A	0.125	14.232
								B	0.125	14.232
								C	0.125	14.232
T12 30.00-20.00	25.00		0.945	1	1		29	A	0.126	15.291
								B	0.126	15.291
								C	0.126	15.291
T13 20.00-0.00	10.00		0.85	1	1		26	A	0.107	32.093
								B	0.107	30.054
								C	0.107	28.015

222-G 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	A_rR_r ft²
T1 180.00-160.00	170.00	170.00	1.415	1	1	2.2090	8	A	0.354	40.456
								B	0.354	40.456
								C	0.354	40.456
T2 160.00-140.00	150.00	150.00	1.378	1	1	2.1815	7	A	0.34	43.287
								B	0.34	43.287
								C	0.34	43.287
T3 140.00-133.33	136.67	136.67	1.352	1	1	2.1613	7	A	0.33	15.895
								B	0.33	15.895
								C	0.33	15.895
T4 133.33-126.67	130.00	130.00	1.337	1	1	2.1505	7	A	0.318	16.113
								B	0.318	16.113
								C	0.318	16.113
T5 126.67-120.00	123.33	123.33	1.323	1	1	2.1392	7	A	0.308	16.369
								B	0.308	16.369
								C	0.308	16.369
T6 120.00-100.00	110.00	110.00	1.291	1	1	2.1149	7	A	0.265	46.245
								B	0.265	46.245
								C	0.265	46.245
T7 100.00-90.00	95.00	95.00	1.252	1	1	2.0841	7	A	0.252	24.538
								B	0.252	24.538
								C	0.252	24.538
T8 90.00-80.00	85.00	85.00	1.223	1	1	2.0611	7	A	0.24	25.023
								B	0.24	25.023
								C	0.24	25.023

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 ft²
T9 80.00-60.00	70.00	70.00	1.174	1	1	2.0214	6	A	0.243	56.561
								B	0.243	56.561
								C	0.243	56.561
T10 60.00-40.00	50.00	50.00	1.094	1	1	1.9546	6	A	0.229	59.734
								B	0.229	59.734
								C	0.229	59.734
T11 40.00-30.00	35.00	35.00	1.015	1	1	1.8861	6	A	0.216	30.418
								B	0.216	30.418
								C	0.216	30.418
T12 30.00-20.00	25.00	25.00	0.945	1	1	1.8237	5	A	0.213	31.400
								B	0.213	31.400
								C	0.213	31.400
T13 20.00-0.00	10.00	10.00	0.85	1	1	1.6640	5	A	0.179	66.654
								B	0.179	62.204
								C	0.179	57.753

222-G Section Verification Tables - Service

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 ft²
T1 180.00-160.00	170.00		1.415	1	1		11	A	0.139	13.494
								B	0.139	13.494
								C	0.139	13.494
T2 160.00-140.00	150.00		1.378	1	1		11	A	0.144	14.923
								B	0.144	14.923
								C	0.144	14.923
T3 140.00-133.33	136.67		1.352	1	1		11	A	0.15	5.652
								B	0.15	5.652
								C	0.15	5.652
T4 133.33-126.67	130.00		1.337	1	1		10	A	0.144	5.764
								B	0.144	5.764
								C	0.144	5.764
T5 126.67-120.00	123.33		1.323	1	1		10	A	0.139	5.886
								B	0.139	5.886
								C	0.139	5.886
T6 120.00-100.00	110.00		1.291	1	1		10	A	0.133	18.401
								B	0.133	18.401
								C	0.133	18.401
T7 100.00-90.00	95.00		1.252	1	1		10	A	0.131	10.043
								B	0.131	10.043
								C	0.131	10.043
T8 90.00-80.00	85.00		1.223	1	1		10	A	0.124	10.301
								B	0.124	10.301
								C	0.124	10.301
T9 80.00-60.00	70.00		1.174	1	1		9	A	0.136	25.327
								B	0.136	25.327
								C	0.136	25.327
T10 60.00-40.00	50.00		1.094	1	1		9	A	0.131	27.419
								B	0.131	27.419
								C	0.131	27.419
T11 40.00-30.00	35.00		1.015	1	1		8	A	0.125	14.232
								B	0.125	14.232
								C	0.125	14.232
T12 30.00-20.00	25.00		0.945	1	1		7	A	0.126	15.291
								B	0.126	15.291

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 ft²
T13 20.00-0.00	10.00		0.85	1	1		7	C	0.126	15.291
								A	0.107	32.093
								B	0.107	30.054
								C	0.107	28.015

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	43	177.503	A	0.000	24.699	11.667	47.24	33.340	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	42	200.850	A	0.000	28.825	15.027	52.13	107.160	0.000
160.00-140.00					B	0.000	28.825		52.13	0.000	0.000
					C	0.000	28.825		52.13	3.710	0.000
T3	136.67	1.352	41	76.767	A	0.000	11.508	6.122	53.20	35.720	0.000
140.00-133.33					B	0.000	11.508		53.20	0.000	0.000
					C	0.000	11.508		53.20	4.947	0.000
T4	130.00	1.337	40	81.396	A	0.000	11.725	6.122	52.22	35.720	0.000
133.33-126.67					B	0.000	11.725		52.22	14.852	0.000
					C	0.000	11.725		52.22	4.947	0.000
T5	123.33	1.323	40	86.025	A	0.000	11.953	6.122	51.22	35.720	0.000
126.67-120.00					B	0.000	11.953		51.22	33.808	0.000
					C	0.000	11.953		51.22	4.947	0.000
T6	110.00	1.291	39	289.399	A	0.000	38.602	22.130	57.33	108.420	0.000
120.00-100.00					B	0.000	38.602		57.33	119.597	0.000
					C	0.000	38.602		57.33	14.840	0.000
T7	95.00	1.252	38	162.540	A	0.000	21.227	11.074	52.17	54.840	0.000
100.00-90.00					B	0.000	21.227		52.17	59.799	0.000
					C	0.000	21.227		52.17	7.420	0.000
T8 90.00-80.00	85.00	1.223	37	175.715	A	0.000	21.747	11.074	50.92	54.840	0.000
					B	0.000	21.747		50.92	59.799	0.000
					C	0.000	21.747		50.92	7.420	0.000
T9 80.00-60.00	70.00	1.174	36	393.152	A	0.000	53.420	29.243	54.74	109.680	0.000
					B	0.000	53.420		54.74	119.597	0.000
					C	0.000	53.420		54.74	14.840	0.000
T10	50.00	1.094	33	443.152	A	0.000	58.059	29.243	50.37	109.680	0.000
60.00-40.00					B	0.000	58.059		50.37	119.597	0.000
					C	0.000	58.059		50.37	14.840	0.000
T11	35.00	1.015	31	240.326	A	0.000	29.961	14.621	48.80	54.840	0.000
40.00-30.00					B	0.000	29.961		48.80	59.799	0.000
					C	0.000	29.961		48.80	7.420	0.000
T12	25.00	0.945	29	252.826	A	0.000	31.798	14.621	45.98	54.840	0.000
30.00-20.00					B	0.000	31.798		45.98	59.799	0.000
					C	0.000	31.798		45.98	7.420	0.000
T13 20.00-0.00	10.00	0.85	26	542.943	A	0.000	58.062	28.825	49.64	109.680	0.000
					B	0.000	58.062		49.64	119.597	0.000
					C	0.000	58.062		49.64	14.840	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 180.00-160.00	170.00	1.415	8	2.2090	184.867	A	0.000	65.497	26.393	40.30	94.841	0.000
						B	0.000	65.497		40.30	0.000	0.000
						C	0.000	65.497		40.30	0.000	0.000
T2 160.00-140.00	150.00	1.378	7	2.1815	208.132	A	0.000	70.700	29.597	41.86	278.117	0.000
						B	0.000	70.700		41.86	0.000	0.000
						C	0.000	70.700		41.86	15.159	0.000
T3 140.00-133.33	136.67	1.352	7	2.1613	79.172	A	0.000	26.110	10.934	41.88	92.456	0.000
						B	0.000	26.110		41.88	0.000	0.000
						C	0.000	26.110		41.88	20.121	0.000
T4 133.33-126.67	130.00	1.337	7	2.1505	83.789	A	0.000	26.645	10.910	40.94	92.323	0.000
						B	0.000	26.645		40.94	37.292	0.000
						C	0.000	26.645		40.94	20.073	0.000
T5 126.67-120.00	123.33	1.323	7	2.1392	88.405	A	0.000	27.218	10.885	39.99	92.184	0.000
						B	0.000	27.218		39.99	70.057	0.000
						C	0.000	27.218		39.99	20.022	0.000
T6 120.00-100.00	110.00	1.291	7	2.1149	296.460	A	0.000	78.541	36.259	46.17	285.421	0.000
						B	0.000	78.541		46.17	239.961	0.000
						C	0.000	78.541		46.17	59.738	0.000
T7 100.00-90.00	95.00	1.252	7	2.0841	166.021	A	0.000	41.903	18.041	43.05	146.918	0.000
						B	0.000	41.903		43.05	119.271	0.000
						C	0.000	41.903		43.05	29.662	0.000
T8 90.00-80.00	85.00	1.223	7	2.0611	179.158	A	0.000	42.954	17.964	41.82	146.411	0.000
						B	0.000	42.954		41.82	118.740	0.000
						C	0.000	42.954		41.82	29.506	0.000
T9 80.00-60.00	70.00	1.174	6	2.0214	399.903	A	0.000	96.983	42.754	44.08	291.080	0.000
						B	0.000	96.983		44.08	235.654	0.000
						C	0.000	96.983		44.08	58.479	0.000
T10 60.00-40.00	50.00	1.094	6	1.9546	449.680	A	0.000	102.963	42.307	41.09	288.142	0.000
						B	0.000	102.963		41.09	232.574	0.000
						C	0.000	102.963		41.09	57.579	0.000
T11 40.00-30.00	35.00	1.015	6	1.8861	243.475	A	0.000	52.670	20.924	39.73	142.568	0.000
						B	0.000	52.670		39.73	114.711	0.000
						C	0.000	52.670		39.73	28.329	0.000
T12 30.00-20.00	25.00	0.945	5	1.8237	255.871	A	0.000	54.436	20.716	38.06	141.200	0.000
						B	0.000	54.436		38.06	113.275	0.000
						C	0.000	54.436		38.06	27.911	0.000
T13 20.00-0.00	10.00	0.85	5	1.6640	548.500	A	0.000	98.372	39.947	40.61	275.410	0.000
						B	0.000	98.372		40.61	219.210	0.000
						C	0.000	98.372		40.61	53.684	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 180.00-160.00	170.00	1.415	11	177.503	A	0.000	24.699	11.667	47.24	33.340	0.000
					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	28.825	15.027	52.13	107.160	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
160.00-140.00					B	0.000	28.825		52.13	0.000	0.000
					C	0.000	28.825		52.13	3.710	0.000
T3	136.67	1.352	11	76.767	A	0.000	11.508	6.122	53.20	35.720	0.000
140.00-133.33					B	0.000	11.508		53.20	0.000	0.000
					C	0.000	11.508		53.20	4.947	0.000
T4	130.00	1.337	10	81.396	A	0.000	11.725	6.122	52.22	35.720	0.000
133.33-126.67					B	0.000	11.725		52.22	14.852	0.000
					C	0.000	11.725		52.22	4.947	0.000
T5	123.33	1.323	10	86.025	A	0.000	11.953	6.122	51.22	35.720	0.000
126.67-120.00					B	0.000	11.953		51.22	33.808	0.000
					C	0.000	11.953		51.22	4.947	0.000
T6	110.00	1.291	10	289.399	A	0.000	38.602	22.130	57.33	108.420	0.000
120.00-100.00					B	0.000	38.602		57.33	119.597	0.000
					C	0.000	38.602		57.33	14.840	0.000
T7	95.00	1.252	10	162.540	A	0.000	21.227	11.074	52.17	54.840	0.000
100.00-90.00					B	0.000	21.227		52.17	59.799	0.000
					C	0.000	21.227		52.17	7.420	0.000
T8 90.00-80.00	85.00	1.223	10	175.715	A	0.000	21.747	11.074	50.92	54.840	0.000
					B	0.000	21.747		50.92	59.799	0.000
					C	0.000	21.747		50.92	7.420	0.000
T9 80.00-60.00	70.00	1.174	9	393.152	A	0.000	53.420	29.243	54.74	109.680	0.000
					B	0.000	53.420		54.74	119.597	0.000
					C	0.000	53.420		54.74	14.840	0.000
T10	50.00	1.094	9	443.152	A	0.000	58.059	29.243	50.37	109.680	0.000
60.00-40.00					B	0.000	58.059		50.37	119.597	0.000
					C	0.000	58.059		50.37	14.840	0.000
T11	35.00	1.015	8	240.326	A	0.000	29.961	14.621	48.80	54.840	0.000
40.00-30.00					B	0.000	29.961		48.80	59.799	0.000
					C	0.000	29.961		48.80	7.420	0.000
T12	25.00	0.945	7	252.826	A	0.000	31.798	14.621	45.98	54.840	0.000
30.00-20.00					B	0.000	31.798		45.98	59.799	0.000
					C	0.000	31.798		45.98	7.420	0.000
T13 20.00-0.00	10.00	0.85	7	542.943	A	0.000	58.062	28.825	49.64	109.680	0.000
					B	0.000	58.062		49.64	119.597	0.000
					C	0.000	58.062		49.64	14.840	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	127.00	1250.43	A	0.139	2.812	43	1	1	13.494	2110.58	105.53	C
180.00-160.00			B	0.139	2.812		1	1	13.494			
			C	0.139	2.812		1	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	42	1	1	14.923	3839.93	192.00	C
160.00-140.00			B	0.144	2.796		1	1	14.923			
			C	0.144	2.796		1	1	14.923			
T3	168.09	820.85	A	0.15	2.772	41	1	1	5.652	1393.85	209.08	C
140.00-133.33			B	0.15	2.772		1	1	5.652			
			C	0.15	2.772		1	1	5.652			
T4	227.27	837.12	A	0.144	2.794	40	1	1	5.764	1700.96	255.14	C
133.33-126.67			B	0.144	2.794		1	1	5.764			
			C	0.144	2.794		1	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	40	1	1	5.886	2084.81	312.72	C
126.67-120.00			B	0.139	2.813		1	1	5.886			
			C	0.139	2.813		1	1	5.886			

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
T6	998.98	3821.31	A	0.133	2.834	39	1	1	18.401	6575.44	328.77	C
120.00-100.00			B	0.133	2.834		1	1	18.401			
			C	0.133	2.834		1	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	38	1	1	10.043	3280.38	328.04	C
100.00-90.00			B	0.131	2.844		1	1	10.043			
			C	0.131	2.844		1	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	37	1	1	10.301	3236.06	323.61	C
90.00-80.00			B	0.124	2.87		1	1	10.301			
			C	0.124	2.87		1	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	36	1	1	25.327	6587.29	329.36	C
80.00-60.00			B	0.136	2.824		1	1	25.327			
			C	0.136	2.824		1	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	33	1	1	27.419	6317.31	315.87	C
60.00-40.00			B	0.131	2.843		1	1	27.419			
			C	0.131	2.843		1	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	31	1	1	14.232	2978.02	297.80	C
40.00-30.00			B	0.125	2.867		1	1	14.232			
			C	0.125	2.867		1	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	29	1	1	15.291	2846.63	284.66	C
30.00-20.00			B	0.126	2.863		1	1	15.291			
			C	0.126	2.863		1	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	26	1	1	32.093	5265.81	263.29	A
20.00-0.00			B	0.107	2.936		1	1	30.054			
			C	0.107	2.936		1	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	3918.56 kip-ft	48217.06		

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	127.00	1250.43	A	0.139	2.812	43	0.825	1	13.494	2110.58	105.53	C
180.00-160.00			B	0.139	2.812		0.825	1	13.494			
			C	0.139	2.812		0.825	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	42	0.825	1	14.923	3839.93	192.00	C
160.00-140.00			B	0.144	2.796		0.825	1	14.923			
			C	0.144	2.796		0.825	1	14.923			
T3	168.09	820.85	A	0.15	2.772	41	0.825	1	5.652	1393.85	209.08	C
140.00-133.33			B	0.15	2.772		0.825	1	5.652			
			C	0.15	2.772		0.825	1	5.652			
T4	227.27	837.12	A	0.144	2.794	40	0.825	1	5.764	1700.96	255.14	C
133.33-126.67			B	0.144	2.794		0.825	1	5.764			
			C	0.144	2.794		0.825	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	40	0.825	1	5.886	2084.81	312.72	C
126.67-120.00			B	0.139	2.813		0.825	1	5.886			
			C	0.139	2.813		0.825	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	39	0.825	1	18.401	6575.44	328.77	C
120.00-100.00			B	0.133	2.834		0.825	1	18.401			
			C	0.133	2.834		0.825	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	38	0.825	1	10.043	3280.38	328.04	C
100.00-90.00			B	0.131	2.844		0.825	1	10.043			
			C	0.131	2.844		0.825	1	10.043			

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
T8	500.99	1722.73	A	0.124	2.87	37	0.825	1	10.301	3236.06	323.61	C
90.00-80.00			B	0.124	2.87		0.825	1	10.301			
			C	0.124	2.87		0.825	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	36	0.825	1	25.327	6587.29	329.36	C
80.00-60.00			B	0.136	2.824		0.825	1	25.327			
			C	0.136	2.824		0.825	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	33	0.825	1	27.419	6317.31	315.87	C
60.00-40.00			B	0.131	2.843		0.825	1	27.419			
			C	0.131	2.843		0.825	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	31	0.825	1	14.232	2978.02	297.80	C
40.00-30.00			B	0.125	2.867		0.825	1	14.232			
			C	0.125	2.867		0.825	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	29	0.825	1	15.291	2846.63	284.66	C
30.00-20.00			B	0.126	2.863		0.825	1	15.291			
			C	0.126	2.863		0.825	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	26	0.825	1	32.093	5265.81	263.29	A
20.00-0.00			B	0.107	2.936		0.825	1	30.054			
			C	0.107	2.936		0.825	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	3918.56 kip-ft	48217.06		

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	127.00	1250.43	A	0.139	2.812	43	0.8	1	13.494	2110.58	105.53	C
180.00-160.00			B	0.139	2.812		0.8	1	13.494			
			C	0.139	2.812		0.8	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	42	0.8	1	14.923	3839.93	192.00	C
160.00-140.00			B	0.144	2.796		0.8	1	14.923			
			C	0.144	2.796		0.8	1	14.923			
T3	168.09	820.85	A	0.15	2.772	41	0.8	1	5.652	1393.85	209.08	C
140.00-133.33			B	0.15	2.772		0.8	1	5.652			
			C	0.15	2.772		0.8	1	5.652			
T4	227.27	837.12	A	0.144	2.794	40	0.8	1	5.764	1700.96	255.14	C
133.33-126.67			B	0.144	2.794		0.8	1	5.764			
			C	0.144	2.794		0.8	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	40	0.8	1	5.886	2084.81	312.72	C
126.67-120.00			B	0.139	2.813		0.8	1	5.886			
			C	0.139	2.813		0.8	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	39	0.8	1	18.401	6575.44	328.77	C
120.00-100.00			B	0.133	2.834		0.8	1	18.401			
			C	0.133	2.834		0.8	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	38	0.8	1	10.043	3280.38	328.04	C
100.00-90.00			B	0.131	2.844		0.8	1	10.043			
			C	0.131	2.844		0.8	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	37	0.8	1	10.301	3236.06	323.61	C
90.00-80.00			B	0.124	2.87		0.8	1	10.301			
			C	0.124	2.87		0.8	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	36	0.8	1	25.327	6587.29	329.36	C
80.00-60.00			B	0.136	2.824		0.8	1	25.327			
			C	0.136	2.824		0.8	1	25.327			

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
T10	1001.98	4731.59	A	0.131	2.843	33	0.8	1	27.419	6317.31	315.87	C
60.00-40.00			B	0.131	2.843		0.8	1	27.419			
			C	0.131	2.843		0.8	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	31	0.8	1	14.232	2978.02	297.80	C
40.00-30.00			B	0.125	2.867		0.8	1	14.232			
			C	0.125	2.867		0.8	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	29	0.8	1	15.291	2846.63	284.66	C
30.00-20.00			B	0.126	2.863		0.8	1	15.291			
			C	0.126	2.863		0.8	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	26	0.8	1	32.093	5265.81	263.29	A
20.00-0.00			B	0.107	2.936		0.8	1	30.054			
			C	0.107	2.936		0.8	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	3918.56 kip-ft	48217.06		

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	127.00	1250.43	A	0.139	2.812	43	0.85	1	13.494	2110.58	105.53	C
180.00-160.00			B	0.139	2.812		0.85	1	13.494			
			C	0.139	2.812		0.85	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	42	0.85	1	14.923	3839.93	192.00	C
160.00-140.00			B	0.144	2.796		0.85	1	14.923			
			C	0.144	2.796		0.85	1	14.923			
T3	168.09	820.85	A	0.15	2.772	41	0.85	1	5.652	1393.85	209.08	C
140.00-133.33			B	0.15	2.772		0.85	1	5.652			
			C	0.15	2.772		0.85	1	5.652			
T4	227.27	837.12	A	0.144	2.794	40	0.85	1	5.764	1700.96	255.14	C
133.33-126.67			B	0.144	2.794		0.85	1	5.764			
			C	0.144	2.794		0.85	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	40	0.85	1	5.886	2084.81	312.72	C
126.67-120.00			B	0.139	2.813		0.85	1	5.886			
			C	0.139	2.813		0.85	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	39	0.85	1	18.401	6575.44	328.77	C
120.00-100.00			B	0.133	2.834		0.85	1	18.401			
			C	0.133	2.834		0.85	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	38	0.85	1	10.043	3280.38	328.04	C
100.00-90.00			B	0.131	2.844		0.85	1	10.043			
			C	0.131	2.844		0.85	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	37	0.85	1	10.301	3236.06	323.61	C
90.00-80.00			B	0.124	2.87		0.85	1	10.301			
			C	0.124	2.87		0.85	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	36	0.85	1	25.327	6587.29	329.36	C
80.00-60.00			B	0.136	2.824		0.85	1	25.327			
			C	0.136	2.824		0.85	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	33	0.85	1	27.419	6317.31	315.87	C
60.00-40.00			B	0.131	2.843		0.85	1	27.419			
			C	0.131	2.843		0.85	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	31	0.85	1	14.232	2978.02	297.80	C
40.00-30.00			B	0.125	2.867		0.85	1	14.232			
			C	0.125	2.867		0.85	1	14.232			

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
T12	500.99	2640.30	A	0.126	2.863	29	0.85	1	15.291	2846.63	284.66	C
30.00-20.00			B	0.126	2.863		0.85	1	15.291			
			C	0.126	2.863		0.85	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	26	0.85	1	32.093	5265.81	263.29	A
20.00-0.00			B	0.107	2.936		0.85	1	30.054			
			C	0.107	2.936		0.85	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	3918.56 kip-ft	48217.06		

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 ft²	F lb	w plf	Ctrl. Face
T1	1830.45	5320.85	A	0.354	2.162	8	1	1	40.456	944.64	47.23	C
180.00-160.00			B	0.354	2.162		1	1	40.456			
			C	0.354	2.162		1	1	40.456			
T2	5489.50	5862.20	A	0.34	2.196	7	1	1	43.287	1727.38	86.37	C
160.00-140.00			B	0.34	2.196		1	1	43.287			
			C	0.34	2.196		1	1	43.287			
T3	2028.59	2453.98	A	0.33	2.22	7	1	1	15.895	642.68	96.40	C
140.00-133.33			B	0.33	2.22		1	1	15.895			
			C	0.33	2.22		1	1	15.895			
T4	2703.68	2513.45	A	0.318	2.249	7	1	1	16.113	779.59	116.94	C
133.33-126.67			B	0.318	2.249		1	1	16.113			
			C	0.318	2.249		1	1	16.113			
T5	3498.68	2793.33	A	0.308	2.275	7	1	1	16.369	896.68	134.50	C
126.67-120.00			B	0.308	2.275		1	1	16.369			
			C	0.308	2.275		1	1	16.369			
T6	11302.72	8604.65	A	0.265	2.393	7	1	1	46.245	2757.09	137.85	C
120.00-100.00			B	0.265	2.393		1	1	46.245			
			C	0.265	2.393		1	1	46.245			
T7	5650.58	4287.82	A	0.252	2.43	7	1	1	24.538	1372.93	137.29	C
100.00-90.00			B	0.252	2.43		1	1	24.538			
			C	0.252	2.43		1	1	24.538			
T8	5596.05	4396.61	A	0.24	2.469	7	1	1	25.023	1349.19	134.92	C
90.00-80.00			B	0.24	2.469		1	1	25.023			
			C	0.24	2.469		1	1	25.023			
T9	11005.85	10200.14	A	0.243	2.46	6	1	1	56.561	2661.64	133.08	C
80.00-60.00			B	0.243	2.46		1	1	56.561			
			C	0.243	2.46		1	1	56.561			
T10	10694.99	11278.45	A	0.229	2.502	6	1	1	59.734	2510.79	125.54	C
60.00-40.00			B	0.229	2.502		1	1	59.734			
			C	0.229	2.502		1	1	59.734			
T11	5190.61	5741.72	A	0.216	2.542	6	1	1	30.418	1166.84	116.68	C
40.00-30.00			B	0.216	2.542		1	1	30.418			
			C	0.216	2.542		1	1	30.418			
T12	5049.65	5993.87	A	0.213	2.554	5	1	1	31.400	1091.09	109.11	C
30.00-20.00			B	0.213	2.554		1	1	31.400			
			C	0.213	2.554		1	1	31.400			
T13	9395.28	10884.34	A	0.179	2.666	5	1	1	66.654	1991.58	99.58	A
20.00-0.00			B	0.179	2.666		1	1	62.204			
			C	0.179	2.666		1	1	57.753			

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
Sum Weight:	79436.62	80331.41						OTM	1667.74 kip-ft	19892.12		

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	1830.45	5320.85	A	0.354	2.162	8	0.825	1	40.456	944.64	47.23	C
180.00-160.00			B	0.354	2.162		0.825	1	40.456			
			C	0.354	2.162		0.825	1	40.456			
T2	5489.50	5862.20	A	0.34	2.196	7	0.825	1	43.287	1727.38	86.37	C
160.00-140.00			B	0.34	2.196		0.825	1	43.287			
			C	0.34	2.196		0.825	1	43.287			
T3	2028.59	2453.98	A	0.33	2.22	7	0.825	1	15.895	642.68	96.40	C
140.00-133.33			B	0.33	2.22		0.825	1	15.895			
			C	0.33	2.22		0.825	1	15.895			
T4	2703.68	2513.45	A	0.318	2.249	7	0.825	1	16.113	779.59	116.94	C
133.33-126.67			B	0.318	2.249		0.825	1	16.113			
			C	0.318	2.249		0.825	1	16.113			
T5	3498.68	2793.33	A	0.308	2.275	7	0.825	1	16.369	896.68	134.50	C
126.67-120.00			B	0.308	2.275		0.825	1	16.369			
			C	0.308	2.275		0.825	1	16.369			
T6	11302.72	8604.65	A	0.265	2.393	7	0.825	1	46.245	2757.09	137.85	C
120.00-100.00			B	0.265	2.393		0.825	1	46.245			
			C	0.265	2.393		0.825	1	46.245			
T7	5650.58	4287.82	A	0.252	2.43	7	0.825	1	24.538	1372.93	137.29	C
100.00-90.00			B	0.252	2.43		0.825	1	24.538			
			C	0.252	2.43		0.825	1	24.538			
T8	5596.05	4396.61	A	0.24	2.469	7	0.825	1	25.023	1349.19	134.92	C
90.00-80.00			B	0.24	2.469		0.825	1	25.023			
			C	0.24	2.469		0.825	1	25.023			
T9	11005.85	10200.14	A	0.243	2.46	6	0.825	1	56.561	2661.64	133.08	C
80.00-60.00			B	0.243	2.46		0.825	1	56.561			
			C	0.243	2.46		0.825	1	56.561			
T10	10694.99	11278.45	A	0.229	2.502	6	0.825	1	59.734	2510.79	125.54	C
60.00-40.00			B	0.229	2.502		0.825	1	59.734			
			C	0.229	2.502		0.825	1	59.734			
T11	5190.61	5741.72	A	0.216	2.542	6	0.825	1	30.418	1166.84	116.68	C
40.00-30.00			B	0.216	2.542		0.825	1	30.418			
			C	0.216	2.542		0.825	1	30.418			
T12	5049.65	5993.87	A	0.213	2.554	5	0.825	1	31.400	1091.09	109.11	C
30.00-20.00			B	0.213	2.554		0.825	1	31.400			
			C	0.213	2.554		0.825	1	31.400			
T13	9395.28	10884.34	A	0.179	2.666	5	0.825	1	66.654	1991.58	99.58	A
20.00-0.00			B	0.179	2.666		0.825	1	62.204			
			C	0.179	2.666		0.825	1	57.753			
Sum Weight:	79436.62	80331.41						OTM	1667.74 kip-ft	19892.12		

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	1830.45	5320.85	A	0.354	2.162	8	0.8	1	40.456	944.64	47.23	C
180.00-160.00			B	0.354	2.162		0.8	1	40.456			
			C	0.354	2.162		0.8	1	40.456			
T2	5489.50	5862.20	A	0.34	2.196	7	0.8	1	43.287	1727.38	86.37	C
160.00-140.00			B	0.34	2.196		0.8	1	43.287			
			C	0.34	2.196		0.8	1	43.287			
T3	2028.59	2453.98	A	0.33	2.22	7	0.8	1	15.895	642.68	96.40	C
140.00-133.33			B	0.33	2.22		0.8	1	15.895			
			C	0.33	2.22		0.8	1	15.895			
T4	2703.68	2513.45	A	0.318	2.249	7	0.8	1	16.113	779.59	116.94	C
133.33-126.67			B	0.318	2.249		0.8	1	16.113			
			C	0.318	2.249		0.8	1	16.113			
T5	3498.68	2793.33	A	0.308	2.275	7	0.8	1	16.369	896.68	134.50	C
126.67-120.00			B	0.308	2.275		0.8	1	16.369			
			C	0.308	2.275		0.8	1	16.369			
T6	11302.72	8604.65	A	0.265	2.393	7	0.8	1	46.245	2757.09	137.85	C
120.00-100.00			B	0.265	2.393		0.8	1	46.245			
			C	0.265	2.393		0.8	1	46.245			
T7	5650.58	4287.82	A	0.252	2.43	7	0.8	1	24.538	1372.93	137.29	C
100.00-90.00			B	0.252	2.43		0.8	1	24.538			
			C	0.252	2.43		0.8	1	24.538			
T8	5596.05	4396.61	A	0.24	2.469	7	0.8	1	25.023	1349.19	134.92	C
90.00-80.00			B	0.24	2.469		0.8	1	25.023			
			C	0.24	2.469		0.8	1	25.023			
T9	11005.85	10200.14	A	0.243	2.46	6	0.8	1	56.561	2661.64	133.08	C
80.00-60.00			B	0.243	2.46		0.8	1	56.561			
			C	0.243	2.46		0.8	1	56.561			
T10	10694.99	11278.45	A	0.229	2.502	6	0.8	1	59.734	2510.79	125.54	C
60.00-40.00			B	0.229	2.502		0.8	1	59.734			
			C	0.229	2.502		0.8	1	59.734			
T11	5190.61	5741.72	A	0.216	2.542	6	0.8	1	30.418	1166.84	116.68	C
40.00-30.00			B	0.216	2.542		0.8	1	30.418			
			C	0.216	2.542		0.8	1	30.418			
T12	5049.65	5993.87	A	0.213	2.554	5	0.8	1	31.400	1091.09	109.11	C
30.00-20.00			B	0.213	2.554		0.8	1	31.400			
			C	0.213	2.554		0.8	1	31.400			
T13	9395.28	10884.34	A	0.179	2.666	5	0.8	1	66.654	1991.58	99.58	A
20.00-0.00			B	0.179	2.666		0.8	1	62.204			
			C	0.179	2.666		0.8	1	57.753			
Sum Weight:	79436.62	80331.41						OTM	1667.74 kip-ft	19892.12		

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 ft²	F lb	w plf	Ctrl. Face
T1	1830.45	5320.85	A	0.354	2.162	8	0.85	1	40.456	944.64	47.23	C
180.00-160.00			B	0.354	2.162		0.85	1	40.456			

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	0.354	2.162		0.85	1	40.456			
T2	5489.50	5862.20	A	0.34	2.196	7	0.85	1	43.287	1727.38	86.37	C
160.00-140.00			B	0.34	2.196		0.85	1	43.287			
			C	0.34	2.196		0.85	1	43.287			
T3	2028.59	2453.98	A	0.33	2.22	7	0.85	1	15.895	642.68	96.40	C
140.00-133.33			B	0.33	2.22		0.85	1	15.895			
			C	0.33	2.22		0.85	1	15.895			
T4	2703.68	2513.45	A	0.318	2.249	7	0.85	1	16.113	779.59	116.94	C
133.33-126.67			B	0.318	2.249		0.85	1	16.113			
			C	0.318	2.249		0.85	1	16.113			
T5	3498.68	2793.33	A	0.308	2.275	7	0.85	1	16.369	896.68	134.50	C
126.67-120.00			B	0.308	2.275		0.85	1	16.369			
			C	0.308	2.275		0.85	1	16.369			
T6	11302.72	8604.65	A	0.265	2.393	7	0.85	1	46.245	2757.09	137.85	C
120.00-100.00			B	0.265	2.393		0.85	1	46.245			
			C	0.265	2.393		0.85	1	46.245			
T7	5650.58	4287.82	A	0.252	2.43	7	0.85	1	24.538	1372.93	137.29	C
100.00-90.00			B	0.252	2.43		0.85	1	24.538			
			C	0.252	2.43		0.85	1	24.538			
T8	5596.05	4396.61	A	0.24	2.469	7	0.85	1	25.023	1349.19	134.92	C
90.00-80.00			B	0.24	2.469		0.85	1	25.023			
			C	0.24	2.469		0.85	1	25.023			
T9	11005.85	10200.14	A	0.243	2.46	6	0.85	1	56.561	2661.64	133.08	C
80.00-60.00			B	0.243	2.46		0.85	1	56.561			
			C	0.243	2.46		0.85	1	56.561			
T10	10694.99	11278.45	A	0.229	2.502	6	0.85	1	59.734	2510.79	125.54	C
60.00-40.00			B	0.229	2.502		0.85	1	59.734			
			C	0.229	2.502		0.85	1	59.734			
T11	5190.61	5741.72	A	0.216	2.542	6	0.85	1	30.418	1166.84	116.68	C
40.00-30.00			B	0.216	2.542		0.85	1	30.418			
			C	0.216	2.542		0.85	1	30.418			
T12	5049.65	5993.87	A	0.213	2.554	5	0.85	1	31.400	1091.09	109.11	C
30.00-20.00			B	0.213	2.554		0.85	1	31.400			
			C	0.213	2.554		0.85	1	31.400			
T13	9395.28	10884.34	A	0.179	2.666	5	0.85	1	66.654	1991.58	99.58	A
20.00-0.00			B	0.179	2.666		0.85	1	62.204			
			C	0.179	2.666		0.85	1	57.753			
Sum Weight:	79436.62	80331.41						OTM	1667.74 kip-ft	19892.12		

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	127.00	1250.43	A	0.139	2.812	11	1	1	13.494	546.04	27.30	C
180.00-160.00			B	0.139	2.812		1	1	13.494			
			C	0.139	2.812		1	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	11	1	1	14.923	993.44	49.67	C
160.00-140.00			B	0.144	2.796		1	1	14.923			
			C	0.144	2.796		1	1	14.923			
T3	168.09	820.85	A	0.15	2.772	11	1	1	5.652	360.61	54.09	C
140.00-133.33			B	0.15	2.772		1	1	5.652			

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	0.15	2.772		1	1	5.652			
T4	227.27	837.12	A	0.144	2.794	10	1	1	5.764	440.06	66.01	C
133.33-126.67			B	0.144	2.794		1	1	5.764			
			C	0.144	2.794		1	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	10	1	1	5.886	539.37	80.91	C
126.67-120.00			B	0.139	2.813		1	1	5.886			
			C	0.139	2.813		1	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	10	1	1	18.401	1701.16	85.06	C
120.00-100.00			B	0.133	2.834		1	1	18.401			
			C	0.133	2.834		1	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	10	1	1	10.043	848.68	84.87	C
100.00-90.00			B	0.131	2.844		1	1	10.043			
			C	0.131	2.844		1	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	10	1	1	10.301	837.21	83.72	C
90.00-80.00			B	0.124	2.87		1	1	10.301			
			C	0.124	2.87		1	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	9	1	1	25.327	1704.22	85.21	C
80.00-60.00			B	0.136	2.824		1	1	25.327			
			C	0.136	2.824		1	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	9	1	1	27.419	1634.37	81.72	C
60.00-40.00			B	0.131	2.843		1	1	27.419			
			C	0.131	2.843		1	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	8	1	1	14.232	770.45	77.05	C
40.00-30.00			B	0.125	2.867		1	1	14.232			
			C	0.125	2.867		1	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	7	1	1	15.291	736.46	73.65	C
30.00-20.00			B	0.126	2.863		1	1	15.291			
			C	0.126	2.863		1	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	7	1	1	32.093	1362.34	68.12	A
20.00-0.00			B	0.107	2.936		1	1	30.054			
			C	0.107	2.936		1	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	1013.79 kip-ft	12474.41		

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	127.00	1250.43	A	0.139	2.812	11	0.825	1	13.494	546.04	27.30	C
180.00-160.00			B	0.139	2.812		0.825	1	13.494			
			C	0.139	2.812		0.825	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	11	0.825	1	14.923	993.44	49.67	C
160.00-140.00			B	0.144	2.796		0.825	1	14.923			
			C	0.144	2.796		0.825	1	14.923			
T3	168.09	820.85	A	0.15	2.772	11	0.825	1	5.652	360.61	54.09	C
140.00-133.33			B	0.15	2.772		0.825	1	5.652			
			C	0.15	2.772		0.825	1	5.652			
T4	227.27	837.12	A	0.144	2.794	10	0.825	1	5.764	440.06	66.01	C
133.33-126.67			B	0.144	2.794		0.825	1	5.764			
			C	0.144	2.794		0.825	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	10	0.825	1	5.886	539.37	80.91	C
126.67-120.00			B	0.139	2.813		0.825	1	5.886			

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	0.139	2.813		0.825	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	10	0.825	1	18.401	1701.16	85.06	C
120.00-100.00			B	0.133	2.834		0.825	1	18.401			
			C	0.133	2.834		0.825	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	10	0.825	1	10.043	848.68	84.87	C
100.00-90.00			B	0.131	2.844		0.825	1	10.043			
			C	0.131	2.844		0.825	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	10	0.825	1	10.301	837.21	83.72	C
90.00-80.00			B	0.124	2.87		0.825	1	10.301			
			C	0.124	2.87		0.825	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	9	0.825	1	25.327	1704.22	85.21	C
80.00-60.00			B	0.136	2.824		0.825	1	25.327			
			C	0.136	2.824		0.825	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	9	0.825	1	27.419	1634.37	81.72	C
60.00-40.00			B	0.131	2.843		0.825	1	27.419			
			C	0.131	2.843		0.825	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	8	0.825	1	14.232	770.45	77.05	C
40.00-30.00			B	0.125	2.867		0.825	1	14.232			
			C	0.125	2.867		0.825	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	7	0.825	1	15.291	736.46	73.65	C
30.00-20.00			B	0.126	2.863		0.825	1	15.291			
			C	0.126	2.863		0.825	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	7	0.825	1	32.093	1362.34	68.12	A
20.00-0.00			B	0.107	2.936		0.825	1	30.054			
			C	0.107	2.936		0.825	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	1013.79 kip-ft	12474.41		

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 ft²	F lb	w plf	Ctrl. Face
T1	127.00	1250.43	A	0.139	2.812	11	0.8	1	13.494	546.04	27.30	C
180.00-160.00			B	0.139	2.812		0.8	1	13.494			
			C	0.139	2.812		0.8	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	11	0.8	1	14.923	993.44	49.67	C
160.00-140.00			B	0.144	2.796		0.8	1	14.923			
			C	0.144	2.796		0.8	1	14.923			
T3	168.09	820.85	A	0.15	2.772	11	0.8	1	5.652	360.61	54.09	C
140.00-133.33			B	0.15	2.772		0.8	1	5.652			
			C	0.15	2.772		0.8	1	5.652			
T4	227.27	837.12	A	0.144	2.794	10	0.8	1	5.764	440.06	66.01	C
133.33-126.67			B	0.144	2.794		0.8	1	5.764			
			C	0.144	2.794		0.8	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	10	0.8	1	5.886	539.37	80.91	C
126.67-120.00			B	0.139	2.813		0.8	1	5.886			
			C	0.139	2.813		0.8	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	10	0.8	1	18.401	1701.16	85.06	C
120.00-100.00			B	0.133	2.834		0.8	1	18.401			
			C	0.133	2.834		0.8	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	10	0.8	1	10.043	848.68	84.87	C
100.00-90.00			B	0.131	2.844		0.8	1	10.043			

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	0.131	2.844		0.8	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	10	0.8	1	10.301	837.21	83.72	C
90.00-80.00			B	0.124	2.87		0.8	1	10.301			
			C	0.124	2.87		0.8	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	9	0.8	1	25.327	1704.22	85.21	C
80.00-60.00			B	0.136	2.824		0.8	1	25.327			
			C	0.136	2.824		0.8	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	9	0.8	1	27.419	1634.37	81.72	C
60.00-40.00			B	0.131	2.843		0.8	1	27.419			
			C	0.131	2.843		0.8	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	8	0.8	1	14.232	770.45	77.05	C
40.00-30.00			B	0.125	2.867		0.8	1	14.232			
			C	0.125	2.867		0.8	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	7	0.8	1	15.291	736.46	73.65	C
30.00-20.00			B	0.126	2.863		0.8	1	15.291			
			C	0.126	2.863		0.8	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	7	0.8	1	32.093	1362.34	68.12	A
20.00-0.00			B	0.107	2.936		0.8	1	30.054			
			C	0.107	2.936		0.8	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	1013.79 kip-ft	12474.41		

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 ft²	F lb	w plf	Ctrl. Face
T1	127.00	1250.43	A	0.139	2.812	11	0.85	1	13.494	546.04	27.30	C
180.00-160.00			B	0.139	2.812		0.85	1	13.494			
			C	0.139	2.812		0.85	1	13.494			
T2	436.78	1495.62	A	0.144	2.796	11	0.85	1	14.923	993.44	49.67	C
160.00-140.00			B	0.144	2.796		0.85	1	14.923			
			C	0.144	2.796		0.85	1	14.923			
T3	168.09	820.85	A	0.15	2.772	11	0.85	1	5.652	360.61	54.09	C
140.00-133.33			B	0.15	2.772		0.85	1	5.652			
			C	0.15	2.772		0.85	1	5.652			
T4	227.27	837.12	A	0.144	2.794	10	0.85	1	5.764	440.06	66.01	C
133.33-126.67			B	0.144	2.794		0.85	1	5.764			
			C	0.144	2.794		0.85	1	5.764			
T5	306.59	1075.34	A	0.139	2.813	10	0.85	1	5.886	539.37	80.91	C
126.67-120.00			B	0.139	2.813		0.85	1	5.886			
			C	0.139	2.813		0.85	1	5.886			
T6	998.98	3821.31	A	0.133	2.834	10	0.85	1	18.401	1701.16	85.06	C
120.00-100.00			B	0.133	2.834		0.85	1	18.401			
			C	0.133	2.834		0.85	1	18.401			
T7	500.99	1682.80	A	0.131	2.844	10	0.85	1	10.043	848.68	84.87	C
100.00-90.00			B	0.131	2.844		0.85	1	10.043			
			C	0.131	2.844		0.85	1	10.043			
T8	500.99	1722.73	A	0.124	2.87	10	0.85	1	10.301	837.21	83.72	C
90.00-80.00			B	0.124	2.87		0.85	1	10.301			
			C	0.124	2.87		0.85	1	10.301			
T9	1001.98	4133.20	A	0.136	2.824	9	0.85	1	25.327	1704.22	85.21	C
80.00-60.00			B	0.136	2.824		0.85	1	25.327			

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	0.136	2.824		0.85	1	25.327			
T10	1001.98	4731.59	A	0.131	2.843	9	0.85	1	27.419	1634.37	81.72	C
60.00-40.00			B	0.131	2.843		0.85	1	27.419			
			C	0.131	2.843		0.85	1	27.419			
T11	500.99	2453.18	A	0.125	2.867	8	0.85	1	14.232	770.45	77.05	C
40.00-30.00			B	0.125	2.867		0.85	1	14.232			
			C	0.125	2.867		0.85	1	14.232			
T12	500.99	2640.30	A	0.126	2.863	7	0.85	1	15.291	736.46	73.65	C
30.00-20.00			B	0.126	2.863		0.85	1	15.291			
			C	0.126	2.863		0.85	1	15.291			
T13	1001.98	5437.54	A	0.107	2.936	7	0.85	1	32.093	1362.34	68.12	A
20.00-0.00			B	0.107	2.936		0.85	1	30.054			
			C	0.107	2.936		0.85	1	28.015			
Sum Weight:	7274.62	32102.03						OTM	1013.79 kip-ft	12474.41		

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
AIR21 B2A/B4P	300.0000	110.02	-7.67	0.19	125.00	1.326	40	6.05	5.54
AIR21 B2A/B4P	60.0000	110.02	3.67	-6.74	125.00	1.326	40	6.05	5.54
AIR21 B2A/B4P	180.0000	110.02	4.00	6.54	125.00	1.326	40	6.05	5.54
TMA	300.0000	20.00	-5.67	-3.27	125.00	1.326	40	1.06	0.45
TMA	60.0000	20.00	5.67	-3.27	125.00	1.326	40	1.06	0.45
TMA	180.0000	20.00	0.00	6.54	125.00	1.326	40	1.06	0.45
LNX-6515DS-VTM	300.0000	90.02	-5.67	-3.27	125.00	1.326	40	11.39	9.92
LNX-6515DS-VTM	60.0000	90.02	5.67	-3.27	125.00	1.326	40	11.39	9.92
LNX-6515DS-VTM	180.0000	90.02	0.00	6.54	125.00	1.326	40	11.39	9.92
AIR21 B2A/B4P	300.0000	110.02	-3.67	-6.74	125.00	1.326	40	6.05	5.54
AIR21 B2A/B4P	60.0000	110.02	7.67	0.19	125.00	1.326	40	6.05	5.54
AIR21 B2A/B4P	180.0000	110.02	-4.00	6.54	125.00	1.326	40	6.05	5.54
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	40	13.60	13.60
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	40	13.60	13.60
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	40	13.60	13.60
RRUS-11	300.0000	50.00	-5.67	-3.27	125.00	1.326	40	2.57	1.07
RRUS-11	60.0000	50.00	5.67	-3.27	125.00	1.326	40	2.57	1.07
RRUS-11	180.0000	50.00	0.00	6.54	125.00	1.326	40	2.57	1.07
GPS	180.0000	0.00	0.00	6.82	60.00	1.137	34	0.00	0.00
4' Standoff	0.0000	110.00	0.00	0.00	60.00	1.137	34	3.42	3.42
2" Dia 10' Omni	240.0000	10.00	-6.96	4.02	159.00	1.395	42	2.00	2.00
3' Side Arm	0.0000	50.00	0.00	0.00	159.00	1.395	42	2.72	2.72
2" Dia 10' Omni	0.0000	10.00	0.00	-8.95	168.00	1.412	43	2.00	2.00
4' Standoff	0.0000	110.00	0.00	0.00	171.00	1.417	43	3.42	3.42
2" Dia 10' Omni	0.0000	10.00	0.00	-8.95	174.00	1.422	43	2.00	2.00
AP11-850/090/ADT w/Mount Pipe	120.0000	39.15	8.64	4.99	162.00	1.401	42	5.31	3.92
5' Standoff	0.0000	110.00	0.00	0.00	162.00	1.401	42	3.42	3.42
8'x2 1/2" Pipe Mount	0.0000	40.50	0.00	0.00	162.00	1.401	42	2.20	2.20
3' Yagi	120.0000	30.95	4.73	2.73	169.00	1.413	43	2.08	2.08

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
4'x4" Pipe Mount	0.0000	44.00	0.00	0.00	177.00	1.427	43	1.00	1.00
AP11-850/090/ADT w/Mount Pipe	0.0000	39.15	0.00	0.00	178.00	1.429	43	5.31	3.92
WPA-700102-4CF-EDIN -X w/ Mount Kit	120.0000	39.60	9.49	5.48	173.00	1.420	43	3.58	3.66
432E-83I-01T TTA Unit	120.0000	25.00	6.89	3.98	170.00	1.415	43	2.85	0.97
SE419-SWBPALDF(D0 0)	120.0000	50.00	9.49	5.48	167.00	1.410	43	25.03	9.80
SE419-SWBPALDF Panel Antenna	0.0000	50.00	0.00	0.00	175.00	1.424	43	11.64	7.88
6' Side-Arm	0.0000	140.00	0.00	0.00	170.00	1.415	43	10.60	10.60
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	42	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	42	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	42	15.00	15.00
SBNHH-1D65B	300.0000	40.60	-4.75	-2.74	160.00	1.397	42	8.20	5.42
RH_2x60-07-L (700 MHz)	300.0000	60.00	-4.75	-2.74	160.00	1.397	42	1.82	1.52
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	45.00	-4.75	-2.74	160.00	1.397	42	4.80	2.00
RRH_2x60_PCS	300.0000	74.42	-2.75	-6.21	160.00	1.397	42	2.84	3.00
SBNHH-1D65B	300.0000	40.60	-7.75	2.45	160.00	1.397	42	8.20	5.42
RRH_2x60-AWS	300.0000	44.00	-7.75	2.45	160.00	1.397	42	1.87	1.23
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	45.00	-7.75	2.45	160.00	1.397	42	4.80	2.00
BXA-70080-4CF-EDIN Panel	300.0000	40.21	-1.75	-7.94	160.00	1.397	42	3.62	5.03
SBNHH-1D65B	60.0000	40.60	4.75	-2.74	160.00	1.397	42	8.20	5.42
RH_2x60-07-L (700 MHz)	60.0000	60.00	4.75	-2.74	160.00	1.397	42	1.82	1.52
RRH_2x60_PCS	60.0000	74.42	6.75	0.72	160.00	1.397	42	2.84	3.00
SBNHH-1D65B	60.0000	40.60	1.75	-7.94	160.00	1.397	42	8.20	5.42
RRH_2x60-AWS	60.0000	44.00	1.75	-7.94	160.00	1.397	42	1.87	1.23
BXA-70080-4CF-EDIN Panel	60.0000	40.21	7.75	2.45	160.00	1.397	42	3.62	5.03
SBNHH-1D65B	180.0000	40.60	0.00	5.49	160.00	1.397	42	8.20	5.42
RH_2x60-07-L (700 MHz)	180.0000	60.00	0.00	5.49	160.00	1.397	42	1.82	1.52
RRH_2x60_PCS	180.0000	74.42	-4.00	5.49	160.00	1.397	42	2.84	3.00
SBNHH-1D65B	180.0000	40.60	6.00	5.49	160.00	1.397	42	8.20	5.42
RRH_2x60-AWS	180.0000	44.00	6.00	5.49	160.00	1.397	42	1.87	1.23
BXA-70080-4CF-EDIN Panel	180.0000	40.21	-6.00	5.49	160.00	1.397	42	3.62	5.03
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	41	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	41	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	41	15.00	15.00
P65-16-XLH-RR	0.0000	60.00	-6.00	-9.60	133.00	1.344	41	8.40	4.70
P65-16-XLH-RR	0.0000	60.00	6.00	-9.60	133.00	1.344	41	8.40	4.70
RRUS-11	0.0000	50.00	-6.00	-9.60	133.00	1.344	41	2.57	1.07
HPA-65R-BUU-H6 Panel	0.0000	48.00	-2.00	-9.60	133.00	1.344	41	9.49	5.49
RRUS-32	0.0000	80.00	-2.00	-9.60	133.00	1.344	41	3.33	2.36
RRUS-11	0.0000	50.00	-2.00	-9.60	133.00	1.344	41	2.57	1.07
DC6-48-60-18-8F (Squid) Suppressor	0.0000	20.00	-6.00	-9.60	133.00	1.344	41	0.79	0.79
DC6-48-60-18-8F	0.0000	20.00	-2.00	-9.60	133.00	1.344	41	0.79	0.79

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
(Squid) Suppressor									
TT19-08BP111-001 TMA's	0.0000	16.00	0.00	-9.60	133.00	1.344	41	0.55	0.45
P65-16-XLH-RR	120.0000	60.00	11.32	-0.39	133.00	1.344	41	8.40	4.70
P65-16-XLH-RR	120.0000	60.00	5.32	10.00	133.00	1.344	41	8.40	4.70
RRUS-11	120.0000	50.00	11.32	-0.39	133.00	1.344	41	2.57	1.07
HPA-65R-BUU-H6 Panel	120.0000	48.00	9.32	3.07	133.00	1.344	41	9.49	5.49
RRUS-32	120.0000	80.00	9.32	3.07	133.00	1.344	41	3.33	2.36
RRUS-11	120.0000	50.00	9.32	3.07	133.00	1.344	41	2.57	1.07
TT19-08BP111-001 TMA's	120.0000	16.00	8.32	4.80	133.00	1.344	41	0.55	0.45
P65-16-XLH-RR	240.0000	60.00	-5.32	10.00	133.00	1.344	41	8.40	4.70
P65-16-XLH-RR	240.0000	60.00	-11.32	-0.39	133.00	1.344	41	8.40	4.70
RRUS-11	240.0000	50.00	-5.32	10.00	133.00	1.344	41	2.57	1.07
HPA-65R-BUU-H6 Panel	240.0000	48.00	-7.32	6.53	133.00	1.344	41	9.49	5.49
RRUS-32	240.0000	80.00	-7.32	6.53	133.00	1.344	41	3.33	2.36
RRUS-11	240.0000	50.00	-7.32	6.53	133.00	1.344	41	2.57	1.07
TT19-08BP111-001 TMA's	240.0000	16.00	-8.32	4.80	133.00	1.344	41	0.55	0.45
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	41	17.27	9.44
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	41	17.27	9.44
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	41	17.27	9.44
APXVSPP18-C-A20 w/ Mount Pipe	0.0000	90.00	6.00	-8.63	145.00	1.369	41	8.02	5.81
APXVTM14-C-120 Panel Antenna	0.0000	72.00	-6.00	-8.63	145.00	1.369	41	6.34	3.61
800 RRH (800 MHz) Unit	0.0000	60.00	6.00	-8.63	145.00	1.369	41	6.34	5.58
1900 RRH (1900 MHz) Unit	0.0000	60.00	-6.00	-8.63	145.00	1.369	41	2.58	2.54
TD-RRH8x20	0.0000	66.13	0.00	-8.63	145.00	1.369	41	4.05	1.53
ALU Model 800 Notch Filter	0.0000	11.00	0.00	-8.63	145.00	1.369	41	0.66	0.32
RFS Switch # ACU-A20N	0.0000	1.04	6.00	-8.63	145.00	1.369	41	0.07	0.11
RFS Switch # ACU-A20N	0.0000	1.04	-6.00	-8.63	145.00	1.369	41	0.07	0.11
RFS Switch # ACU-A20N	0.0000	1.04	0.00	-8.63	145.00	1.369	41	0.07	0.11
NEMA Enclosure	0.0000	2.20	0.00	-8.63	145.00	1.369	41	0.65	0.42
APXVSPP18-C-A20 w/ Mount Pipe	120.0000	90.00	4.48	9.51	145.00	1.369	41	8.02	5.81
APXVTM14-C-120 Panel Antenna	120.0000	72.00	10.48	-0.88	145.00	1.369	41	6.34	3.61
800 RRH (800 MHz) Unit	120.0000	60.00	4.48	9.51	145.00	1.369	41	6.34	5.58
1900 RRH (1900 MHz) Unit	120.0000	60.00	10.48	-0.88	145.00	1.369	41	2.58	2.54
TD-RRH8x20	120.0000	66.13	7.48	4.32	145.00	1.369	41	4.05	1.53
ALU Model 800 Notch Filter	120.0000	11.00	7.48	4.32	145.00	1.369	41	0.66	0.32
RFS Switch # ACU-A20N	120.0000	1.04	4.48	9.51	145.00	1.369	41	0.07	0.11

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
RFS Switch # ACU-A20N	120.0000	1.04	10.48	-0.88	145.00	1.369	41	0.07	0.11
RFS Switch # ACU-A20N	120.0000	1.04	7.48	4.32	145.00	1.369	41	0.07	0.11
APXVSPP18-C-A20 w/ Mount Pipe	240.0000	90.00	-10.48	-0.88	145.00	1.369	41	8.02	5.81
APXVTM14-C-120 Panel Antenna	240.0000	72.00	-4.48	9.51	145.00	1.369	41	6.34	3.61
800 RRH (800 MHz) Unit	240.0000	60.00	-10.48	-0.88	145.00	1.369	41	6.34	5.58
1900 RRH (1900 MHz) Unit	240.0000	60.00	-4.48	9.51	145.00	1.369	41	2.58	2.54
TD-RRH8x20	240.0000	66.13	-7.48	4.32	145.00	1.369	41	4.05	1.53
ALU Model 800 Notch Filter	240.0000	11.00	-7.48	4.32	145.00	1.369	41	0.66	0.32
RFS Switch # ACU-A20N	240.0000	1.04	-10.48	-0.88	145.00	1.369	41	0.07	0.11
RFS Switch # ACU-A20N	240.0000	1.04	-4.48	9.51	145.00	1.369	41	0.07	0.11
RFS Switch # ACU-A20N	240.0000	1.04	-7.48	4.32	145.00	1.369	41	0.07	0.11
	Sum Weight:	11205.21							

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
AIR21 B2A/B4P	300.0000	407.41	-7.67	0.19	125.00	1.326	7	7.68	8.40	2.1421
AIR21 B2A/B4P	60.0000	407.41	3.67	-6.74	125.00	1.326	7	7.68	8.40	2.1421
AIR21 B2A/B4P	180.0000	407.41	4.00	6.54	125.00	1.326	7	7.68	8.40	2.1421
TMA	300.0000	63.49	-5.67	-3.27	125.00	1.326	7	1.77	1.05	2.1421
TMA	60.0000	63.49	5.67	-3.27	125.00	1.326	7	1.77	1.05	2.1421
TMA	180.0000	63.49	0.00	6.54	125.00	1.326	7	1.77	1.05	2.1421
LNX-6515DS-VTM	300.0000	559.14	-5.67	-3.27	125.00	1.326	7	14.05	15.01	2.1421
LNX-6515DS-VTM	60.0000	559.14	5.67	-3.27	125.00	1.326	7	14.05	15.01	2.1421
LNX-6515DS-VTM	180.0000	559.14	0.00	6.54	125.00	1.326	7	14.05	15.01	2.1421
AIR21 B2A/B4P	300.0000	407.41	-3.67	-6.74	125.00	1.326	7	7.68	8.40	2.1421
AIR21 B2A/B4P	60.0000	407.41	7.67	0.19	125.00	1.326	7	7.68	8.40	2.1421
AIR21 B2A/B4P	180.0000	407.41	-4.00	6.54	125.00	1.326	7	7.68	8.40	2.1421
LTF12=372 Sector Mount (1)	0.0000	1043.37	0.00	0.00	125.00	1.326	7	34.16	34.16	2.1421
LTF12=372 Sector Mount (1)	0.0000	1043.37	0.00	0.00	125.00	1.326	7	34.16	34.16	2.1421
LTF12=372 Sector Mount (1)	0.0000	1043.37	0.00	0.00	125.00	1.326	7	34.16	34.16	2.1421
RRUS-11	300.0000	157.56	-5.67	-3.27	125.00	1.326	7	3.47	1.73	2.1421
RRUS-11	60.0000	157.56	5.67	-3.27	125.00	1.326	7	3.47	1.73	2.1421
RRUS-11	180.0000	157.56	0.00	6.54	125.00	1.326	7	3.47	1.73	2.1421
GPS	180.0000	0.00	0.00	6.82	60.00	1.137	6	0.00	0.00	1.9905
4' Standoff	0.0000	278.25	0.00	0.00	60.00	1.137	6	4.45	4.45	1.9905
2" Dia 10' Omni	240.0000	75.83	-6.96	4.02	159.00	1.395	8	6.52	6.52	2.1943
3' Side Arm	0.0000	221.15	0.00	0.00	159.00	1.395	8	12.33	12.33	2.1943
2" Dia 10' Omni	0.0000	76.31	0.00	-8.95	168.00	1.412	8	6.55	6.55	2.2103
4' Standoff	0.0000	304.22	0.00	0.00	171.00	1.417	8	4.58	4.58	2.2103
2" Dia 10' Omni	0.0000	76.31	0.00	-8.95	174.00	1.422	8	6.55	6.55	2.2103
AP11-850/090/ADT	120.0000	297.91	8.64	4.99	162.00	1.401	8	7.70	7.59	2.1984

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
w/Mount Pipe										
5' Standoff	0.0000	302.80	0.00	0.00	162.00	1.401	8	4.58	4.58	2.1984
8'x2 1/2" Pipe Mount	0.0000	159.73	0.00	0.00	162.00	1.401	8	4.83	4.83	2.1984
3' Yagi	120.0000	219.89	4.73	2.73	169.00	1.413	8	9.71	9.71	2.2077
4'x4" Pipe Mount	0.0000	128.73	0.00	0.00	177.00	1.427	8	2.53	2.53	2.2179
AP11-850/090/ADT w/Mount Pipe	0.0000	301.80	0.00	0.00	178.00	1.429	8	7.73	7.63	2.2192
WPA-700102-4CF-EDIN-X w/ Mount Kit	120.0000	248.83	9.49	5.48	173.00	1.420	8	4.99	6.19	2.2090
432E-83I-01T TTA Unit	120.0000	138.63	6.89	3.98	170.00	1.415	8	3.84	1.64	2.2090
SE419-SWBPALDF(D00)	120.0000	687.44	9.49	5.48	167.00	1.410	8	28.79	12.69	2.2090
SE419-SWBPALDF Panel Antenna	0.0000	405.40	0.00	0.00	175.00	1.424	8	14.58	10.72	2.2154
6' Side-Arm	0.0000	458.10	0.00	0.00	170.00	1.415	8	31.81	31.81	2.2090
Pirod 15' T-Frame Sector Mount (1)	0.0000	1158.69	0.00	0.00	160.00	1.397	8	39.59	39.59	2.1956
Pirod 15' T-Frame Sector Mount (1)	0.0000	1158.69	0.00	0.00	160.00	1.397	8	39.59	39.59	2.1956
Pirod 15' T-Frame Sector Mount (1)	0.0000	1158.69	0.00	0.00	160.00	1.397	8	39.59	39.59	2.1956
SBNHH-1D65B	300.0000	314.87	-4.75	-2.74	160.00	1.397	8	10.28	7.49	2.1956
RH_2x60-07-L (700 MHz)	300.0000	160.78	-4.75	-2.74	160.00	1.397	8	2.65	2.31	2.1956
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	237.67	-4.75	-2.74	160.00	1.397	8	6.05	2.91	2.1956
RRH_2x60_PCS	300.0000	269.07	-2.75	-6.21	160.00	1.397	8	4.91	5.48	2.1956
SBNHH-1D65B	300.0000	314.87	-7.75	2.45	160.00	1.397	8	10.28	7.49	2.1956
RRH_2x60-AWS	300.0000	137.61	-7.75	2.45	160.00	1.397	8	2.70	1.96	2.1956
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	237.67	-7.75	2.45	160.00	1.397	8	6.05	2.91	2.1956
BXA-70080-4CF-EDIN Panel	300.0000	280.61	-1.75	-7.94	160.00	1.397	8	5.06	7.64	2.1956
SBNHH-1D65B	60.0000	314.87	4.75	-2.74	160.00	1.397	8	10.28	7.49	2.1956
RH_2x60-07-L (700 MHz)	60.0000	160.78	4.75	-2.74	160.00	1.397	8	2.65	2.31	2.1956
RRH_2x60_PCS	60.0000	269.07	6.75	0.72	160.00	1.397	8	4.91	5.48	2.1956
SBNHH-1D65B	60.0000	314.87	1.75	-7.94	160.00	1.397	8	10.28	7.49	2.1956
RRH_2x60-AWS	60.0000	137.61	1.75	-7.94	160.00	1.397	8	2.70	1.96	2.1956
BXA-70080-4CF-EDIN Panel	60.0000	280.61	7.75	2.45	160.00	1.397	8	5.06	7.64	2.1956
SBNHH-1D65B	180.0000	314.87	0.00	5.49	160.00	1.397	8	10.28	7.49	2.1956
RH_2x60-07-L (700 MHz)	180.0000	160.78	0.00	5.49	160.00	1.397	8	2.65	2.31	2.1956
RRH_2x60_PCS	180.0000	269.07	-4.00	5.49	160.00	1.397	8	4.91	5.48	2.1956
SBNHH-1D65B	180.0000	314.87	6.00	5.49	160.00	1.397	8	10.28	7.49	2.1956
RRH_2x60-AWS	180.0000	137.61	6.00	5.49	160.00	1.397	8	2.70	1.96	2.1956
BXA-70080-4CF-EDIN Panel	180.0000	280.61	-6.00	5.49	160.00	1.397	8	5.06	7.64	2.1956
Pirod 15' T-Frame Sector Mount (1)	0.0000	1146.63	0.00	0.00	133.00	1.344	7	39.14	39.14	2.1554
Pirod 15' T-Frame Sector Mount (1)	0.0000	1146.63	0.00	0.00	133.00	1.344	7	39.14	39.14	2.1554
Pirod 15' T-Frame Sector Mount (1)	0.0000	1146.63	0.00	0.00	133.00	1.344	7	39.14	39.14	2.1554
P65-16-XLH-RR	0.0000	315.86	-6.00	-9.60	133.00	1.344	7	10.83	6.69	2.1554
P65-16-XLH-RR	0.0000	315.86	6.00	-9.60	133.00	1.344	7	10.83	6.69	2.1554
RRUS-11	0.0000	158.58	-6.00	-9.60	133.00	1.344	7	3.48	1.74	2.1554
HPA-65R-BUU-H6 Panel	0.0000	345.18	-2.00	-9.60	133.00	1.344	7	11.57	7.50	2.1554
RRUS-32	0.0000	248.59	-2.00	-9.60	133.00	1.344	7	4.36	3.26	2.1554

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
RRUS-11	0.0000	158.58	-2.00	-9.60	133.00	1.344	7	3.48	1.74	2.1554
DC6-48-60-18-8F (Squid) Suppressor	0.0000	104.41	-6.00	-9.60	133.00	1.344	7	1.90	1.90	2.1554
DC6-48-60-18-8F (Squid) Suppressor	0.0000	104.41	-2.00	-9.60	133.00	1.344	7	1.90	1.90	2.1554
TT19-08BP111-001 TMA's	0.0000	55.06	0.00	-9.60	133.00	1.344	7	1.02	0.89	2.1554
P65-16-XLH-RR	120.0000	315.86	11.32	-0.39	133.00	1.344	7	10.83	6.69	2.1554
P65-16-XLH-RR	120.0000	315.86	5.32	10.00	133.00	1.344	7	10.83	6.69	2.1554
RRUS-11	120.0000	158.58	11.32	-0.39	133.00	1.344	7	3.48	1.74	2.1554
HPA-65R-BUU-H6 Panel	120.0000	345.18	9.32	3.07	133.00	1.344	7	11.57	7.50	2.1554
RRUS-32	120.0000	248.59	9.32	3.07	133.00	1.344	7	4.36	3.26	2.1554
RRUS-11	120.0000	158.58	9.32	3.07	133.00	1.344	7	3.48	1.74	2.1554
TT19-08BP111-001 TMA's	120.0000	55.06	8.32	4.80	133.00	1.344	7	1.02	0.89	2.1554
P65-16-XLH-RR	240.0000	315.86	-5.32	10.00	133.00	1.344	7	10.83	6.69	2.1554
P65-16-XLH-RR	240.0000	315.86	-11.32	-0.39	133.00	1.344	7	10.83	6.69	2.1554
RRUS-11	240.0000	158.58	-5.32	10.00	133.00	1.344	7	3.48	1.74	2.1554
HPA-65R-BUU-H6 Panel	240.0000	345.18	-7.32	6.53	133.00	1.344	7	11.57	7.50	2.1554
RRUS-32	240.0000	248.59	-7.32	6.53	133.00	1.344	7	4.36	3.26	2.1554
RRUS-11	240.0000	158.58	-7.32	6.53	133.00	1.344	7	3.48	1.74	2.1554
TT19-08BP111-001 TMA's	240.0000	55.06	-8.32	4.80	133.00	1.344	7	1.02	0.89	2.1554
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	1097.68	0.00	0.00	145.00	1.369	7	44.89	23.94	2.1741
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	1097.68	0.00	0.00	145.00	1.369	7	44.89	23.94	2.1741
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	1097.68	0.00	0.00	145.00	1.369	7	44.89	23.94	2.1741
APXVSPP18-C-A20 w/ Mount Pipe	0.0000	366.32	6.00	-8.63	145.00	1.369	7	10.06	7.85	2.1741
APXVTM14-C-120 Panel Antenna	0.0000	285.65	-6.00	-8.63	145.00	1.369	7	8.02	5.20	2.1741
800 RRH (800 MHz) Unit	0.0000	320.28	6.00	-8.63	145.00	1.369	7	8.02	7.22	2.1741
1900 RRH (1900 MHz) Unit	0.0000	203.76	-6.00	-8.63	145.00	1.369	7	3.56	3.52	2.1741
TD-RRH8x20	0.0000	213.69	0.00	-8.63	145.00	1.369	7	5.20	2.37	2.1741
ALU Model 800 Notch Filter	0.0000	50.83	0.00	-8.63	145.00	1.369	7	1.16	0.72	2.1741
RFS Switch # ACU-A20N	0.0000	14.53	6.00	-8.63	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	0.0000	14.53	-6.00	-8.63	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	0.0000	14.53	0.00	-8.63	145.00	1.369	7	0.29	0.37	2.1741
NEMA Enclosure	0.0000	44.16	0.00	-8.63	145.00	1.369	7	1.15	0.86	2.1741
APXVSPP18-C-A20 w/ Mount Pipe	120.0000	366.32	4.48	9.51	145.00	1.369	7	10.06	7.85	2.1741
APXVTM14-C-120 Panel Antenna	120.0000	285.65	10.48	-0.88	145.00	1.369	7	8.02	5.20	2.1741
800 RRH (800 MHz) Unit	120.0000	320.28	4.48	9.51	145.00	1.369	7	8.02	7.22	2.1741
1900 RRH (1900 MHz) Unit	120.0000	203.76	10.48	-0.88	145.00	1.369	7	3.56	3.52	2.1741
TD-RRH8x20	120.0000	213.69	7.48	4.32	145.00	1.369	7	5.20	2.37	2.1741

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
ALU Model 800 Notch Filter	120.0000	50.83	7.48	4.32	145.00	1.369	7	1.16	0.72	2.1741
RFS Switch # ACU-A20N	120.0000	14.53	4.48	9.51	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	120.0000	14.53	10.48	-0.88	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	120.0000	14.53	7.48	4.32	145.00	1.369	7	0.29	0.37	2.1741
APXVSPP18-C-A20 w/ Mount Pipe	240.0000	366.32	-10.48	-0.88	145.00	1.369	7	10.06	7.85	2.1741
APXVTM14-C-120 Panel Antenna	240.0000	285.65	-4.48	9.51	145.00	1.369	7	8.02	5.20	2.1741
800 RRH (800 MHz) Unit	240.0000	320.28	-10.48	-0.88	145.00	1.369	7	8.02	7.22	2.1741
1900 RRH (1900 MHz) Unit	240.0000	203.76	-4.48	9.51	145.00	1.369	7	3.56	3.52	2.1741
TD-RRH8x20	240.0000	213.69	-7.48	4.32	145.00	1.369	7	5.20	2.37	2.1741
ALU Model 800 Notch Filter	240.0000	50.83	-7.48	4.32	145.00	1.369	7	1.16	0.72	2.1741
RFS Switch # ACU-A20N	240.0000	14.53	-10.48	-0.88	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	240.0000	14.53	-4.48	9.51	145.00	1.369	7	0.29	0.37	2.1741
RFS Switch # ACU-A20N	240.0000	14.53	-7.48	4.32	145.00	1.369	7	0.29	0.37	2.1741
	Sum Weight:	36912.61								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
AIR21 B2A/B4P	300.0000	110.02	-7.67	0.19	125.00	1.326	10	6.05	5.54
AIR21 B2A/B4P	60.0000	110.02	3.67	-6.74	125.00	1.326	10	6.05	5.54
AIR21 B2A/B4P	180.0000	110.02	4.00	6.54	125.00	1.326	10	6.05	5.54
TMA	300.0000	20.00	-5.67	-3.27	125.00	1.326	10	1.06	0.45
TMA	60.0000	20.00	5.67	-3.27	125.00	1.326	10	1.06	0.45
TMA	180.0000	20.00	0.00	6.54	125.00	1.326	10	1.06	0.45
LNX-6515DS-VTM	300.0000	90.02	-5.67	-3.27	125.00	1.326	10	11.39	9.92
LNX-6515DS-VTM	60.0000	90.02	5.67	-3.27	125.00	1.326	10	11.39	9.92
LNX-6515DS-VTM	180.0000	90.02	0.00	6.54	125.00	1.326	10	11.39	9.92
AIR21 B2A/B4P	300.0000	110.02	-3.67	-6.74	125.00	1.326	10	6.05	5.54
AIR21 B2A/B4P	60.0000	110.02	7.67	0.19	125.00	1.326	10	6.05	5.54
AIR21 B2A/B4P	180.0000	110.02	-4.00	6.54	125.00	1.326	10	6.05	5.54
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	10	13.60	13.60
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	10	13.60	13.60
LTF12=372 Sector Mount (1)	0.0000	465.00	0.00	0.00	125.00	1.326	10	13.60	13.60
RRUS-11	300.0000	50.00	-5.67	-3.27	125.00	1.326	10	2.57	1.07
RRUS-11	60.0000	50.00	5.67	-3.27	125.00	1.326	10	2.57	1.07
RRUS-11	180.0000	50.00	0.00	6.54	125.00	1.326	10	2.57	1.07
GPS	180.0000	0.00	0.00	6.82	60.00	1.137	9	0.00	0.00
4' Standoff	0.0000	110.00	0.00	0.00	60.00	1.137	9	3.42	3.42
2" Dia 10' Omni	240.0000	10.00	-6.96	4.02	159.00	1.395	11	2.00	2.00
3' Side Arm	0.0000	50.00	0.00	0.00	159.00	1.395	11	2.72	2.72

tnxTower	Job: Sprint/Clearwire Upgrades - MODification Analysis	Page: 52 of 83
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: Westport, Connecticut	Date: 15:00:07 05/30/17
	Client: Sprint - JPW-001	Designed by: MCD

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
2" Dia 10' Omni	0.0000	10.00	0.00	-8.95	168.00	1.412	11	2.00	2.00
4' Standoff	0.0000	110.00	0.00	0.00	171.00	1.417	11	3.42	3.42
2" Dia 10' Omni	0.0000	10.00	0.00	-8.95	174.00	1.422	11	2.00	2.00
AP11-850/090/ADT w/Mount Pipe	120.0000	39.15	8.64	4.99	162.00	1.401	11	5.31	3.92
5' Standoff	0.0000	110.00	0.00	0.00	162.00	1.401	11	3.42	3.42
8'x2 1/2" Pipe Mount	0.0000	40.50	0.00	0.00	162.00	1.401	11	2.20	2.20
3' Yagi	120.0000	30.95	4.73	2.73	169.00	1.413	11	2.08	2.08
4'x4" Pipe Mount	0.0000	44.00	0.00	0.00	177.00	1.427	11	1.00	1.00
AP11-850/090/ADT w/Mount Pipe	0.0000	39.15	0.00	0.00	178.00	1.429	11	5.31	3.92
WPA-700102-4CF-EDIN -X w/ Mount Kit	120.0000	39.60	9.49	5.48	173.00	1.420	11	3.58	3.66
432E-83I-01T TTA Unit	120.0000	25.00	6.89	3.98	170.00	1.415	11	2.85	0.97
SE419-SWBPALDF(D0 0)	120.0000	50.00	9.49	5.48	167.00	1.410	11	25.03	9.80
SE419-SWBPALDF Panel Antenna	0.0000	50.00	0.00	0.00	175.00	1.424	11	11.64	7.88
6' Side-Arm	0.0000	140.00	0.00	0.00	170.00	1.415	11	10.60	10.60
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	11	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	11	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	160.00	1.397	11	15.00	15.00
SBNHH-1D65B	300.0000	40.60	-4.75	-2.74	160.00	1.397	11	8.20	5.42
RH_2x60-07-L (700 MHz)	300.0000	60.00	-4.75	-2.74	160.00	1.397	11	1.82	1.52
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	45.00	-4.75	-2.74	160.00	1.397	11	4.80	2.00
RRH_2x60_PCS	300.0000	74.42	-2.75	-6.21	160.00	1.397	11	2.84	3.00
SBNHH-1D65B	300.0000	40.60	-7.75	2.45	160.00	1.397	11	8.20	5.42
RRH_2x60-AWS	300.0000	44.00	-7.75	2.45	160.00	1.397	11	1.87	1.23
DB-T1-6Z-8AB-0Z Dist. Box	300.0000	45.00	-7.75	2.45	160.00	1.397	11	4.80	2.00
BXA-70080-4CF-EDIN Panel	300.0000	40.21	-1.75	-7.94	160.00	1.397	11	3.62	5.03
SBNHH-1D65B	60.0000	40.60	4.75	-2.74	160.00	1.397	11	8.20	5.42
RH_2x60-07-L (700 MHz)	60.0000	60.00	4.75	-2.74	160.00	1.397	11	1.82	1.52
RRH_2x60_PCS	60.0000	74.42	6.75	0.72	160.00	1.397	11	2.84	3.00
SBNHH-1D65B	60.0000	40.60	1.75	-7.94	160.00	1.397	11	8.20	5.42
RRH_2x60-AWS	60.0000	44.00	1.75	-7.94	160.00	1.397	11	1.87	1.23
BXA-70080-4CF-EDIN Panel	60.0000	40.21	7.75	2.45	160.00	1.397	11	3.62	5.03
SBNHH-1D65B	180.0000	40.60	0.00	5.49	160.00	1.397	11	8.20	5.42
RH_2x60-07-L (700 MHz)	180.0000	60.00	0.00	5.49	160.00	1.397	11	1.82	1.52
RRH_2x60_PCS	180.0000	74.42	-4.00	5.49	160.00	1.397	11	2.84	3.00
SBNHH-1D65B	180.0000	40.60	6.00	5.49	160.00	1.397	11	8.20	5.42
RRH_2x60-AWS	180.0000	44.00	6.00	5.49	160.00	1.397	11	1.87	1.23
BXA-70080-4CF-EDIN Panel	180.0000	40.21	-6.00	5.49	160.00	1.397	11	3.62	5.03
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	11	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	11	15.00	15.00
Pirod 15' T-Frame Sector Mount (1)	0.0000	500.00	0.00	0.00	133.00	1.344	11	15.00	15.00
P65-16-XLH-RR	0.0000	60.00	-6.00	-9.60	133.00	1.344	11	8.40	4.70
P65-16-XLH-RR	0.0000	60.00	6.00	-9.60	133.00	1.344	11	8.40	4.70

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
RRUS-11	0.0000	50.00	-6.00	-9.60	133.00	1.344	11	2.57	1.07
HPA-65R-BUU-H6 Panel	0.0000	48.00	-2.00	-9.60	133.00	1.344	11	9.49	5.49
RRUS-32	0.0000	80.00	-2.00	-9.60	133.00	1.344	11	3.33	2.36
RRUS-11	0.0000	50.00	-2.00	-9.60	133.00	1.344	11	2.57	1.07
DC6-48-60-18-8F (Squid) Suppressor	0.0000	20.00	-6.00	-9.60	133.00	1.344	11	0.79	0.79
DC6-48-60-18-8F (Squid) Suppressor	0.0000	20.00	-2.00	-9.60	133.00	1.344	11	0.79	0.79
TT19-08BP111-001 TMA's	0.0000	16.00	0.00	-9.60	133.00	1.344	11	0.55	0.45
P65-16-XLH-RR	120.0000	60.00	11.32	-0.39	133.00	1.344	11	8.40	4.70
P65-16-XLH-RR	120.0000	60.00	5.32	10.00	133.00	1.344	11	8.40	4.70
RRUS-11	120.0000	50.00	11.32	-0.39	133.00	1.344	11	2.57	1.07
HPA-65R-BUU-H6 Panel	120.0000	48.00	9.32	3.07	133.00	1.344	11	9.49	5.49
RRUS-32	120.0000	80.00	9.32	3.07	133.00	1.344	11	3.33	2.36
RRUS-11	120.0000	50.00	9.32	3.07	133.00	1.344	11	2.57	1.07
TT19-08BP111-001 TMA's	120.0000	16.00	8.32	4.80	133.00	1.344	11	0.55	0.45
P65-16-XLH-RR	240.0000	60.00	-5.32	10.00	133.00	1.344	11	8.40	4.70
P65-16-XLH-RR	240.0000	60.00	-11.32	-0.39	133.00	1.344	11	8.40	4.70
RRUS-11	240.0000	50.00	-5.32	10.00	133.00	1.344	11	2.57	1.07
HPA-65R-BUU-H6 Panel	240.0000	48.00	-7.32	6.53	133.00	1.344	11	9.49	5.49
RRUS-32	240.0000	80.00	-7.32	6.53	133.00	1.344	11	3.33	2.36
RRUS-11	240.0000	50.00	-7.32	6.53	133.00	1.344	11	2.57	1.07
TT19-08BP111-001 TMA's	240.0000	16.00	-8.32	4.80	133.00	1.344	11	0.55	0.45
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	11	17.27	9.44
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	11	17.27	9.44
USF12-448-U 12'/ 4 Pipe Antenna Mount Assembly	0.0000	517.08	0.00	0.00	145.00	1.369	11	17.27	9.44
APXVSPP18-C-A20 w/ Mount Pipe	0.0000	90.00	6.00	-8.63	145.00	1.369	11	8.02	5.81
APXVTM14-C-120 Panel Antenna	0.0000	72.00	-6.00	-8.63	145.00	1.369	11	6.34	3.61
800 RRH (800 MHz) Unit	0.0000	60.00	6.00	-8.63	145.00	1.369	11	6.34	5.58
1900 RRH (1900 MHz) Unit	0.0000	60.00	-6.00	-8.63	145.00	1.369	11	2.58	2.54
TD-RRH8x20	0.0000	66.13	0.00	-8.63	145.00	1.369	11	4.05	1.53
ALU Model 800 Notch Filter	0.0000	11.00	0.00	-8.63	145.00	1.369	11	0.66	0.32
RFS Switch # ACU-A20N	0.0000	1.04	6.00	-8.63	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	0.0000	1.04	-6.00	-8.63	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	0.0000	1.04	0.00	-8.63	145.00	1.369	11	0.07	0.11
NEMA Enclosure	0.0000	2.20	0.00	-8.63	145.00	1.369	11	0.65	0.42
APXVSPP18-C-A20 w/ Mount Pipe	120.0000	90.00	4.48	9.51	145.00	1.369	11	8.02	5.81
APXVTM14-C-120 Panel Antenna	120.0000	72.00	10.48	-0.88	145.00	1.369	11	6.34	3.61
800 RRH (800 MHz)	120.0000	60.00	4.48	9.51	145.00	1.369	11	6.34	5.58

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Unit 1900 RRH (1900 MHz) Unit	120.0000	60.00	10.48	-0.88	145.00	1.369	11	2.58	2.54
TD-RRH8x20	120.0000	66.13	7.48	4.32	145.00	1.369	11	4.05	1.53
ALU Model 800 Notch Filter	120.0000	11.00	7.48	4.32	145.00	1.369	11	0.66	0.32
RFS Switch # ACU-A20N	120.0000	1.04	4.48	9.51	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	120.0000	1.04	10.48	-0.88	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	120.0000	1.04	7.48	4.32	145.00	1.369	11	0.07	0.11
APXVSPP18-C-A20 w/ Mount Pipe	240.0000	90.00	-10.48	-0.88	145.00	1.369	11	8.02	5.81
APXVTM14-C-120 Panel Antenna	240.0000	72.00	-4.48	9.51	145.00	1.369	11	6.34	3.61
800 RRH (800 MHz) Unit	240.0000	60.00	-10.48	-0.88	145.00	1.369	11	6.34	5.58
1900 RRH (1900 MHz) Unit	240.0000	60.00	-4.48	9.51	145.00	1.369	11	2.58	2.54
TD-RRH8x20	240.0000	66.13	-7.48	4.32	145.00	1.369	11	4.05	1.53
ALU Model 800 Notch Filter	240.0000	11.00	-7.48	4.32	145.00	1.369	11	0.66	0.32
RFS Switch # ACU-A20N	240.0000	1.04	-10.48	-0.88	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	240.0000	1.04	-4.48	9.51	145.00	1.369	11	0.07	0.11
RFS Switch # ACU-A20N	240.0000	1.04	-7.48	4.32	145.00	1.369	11	0.07	0.11
	Sum Weight:	11205.21							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
177.00	PA6-65AC	240.0000	90.00	-5.14	2.97	1.427	28.27	43
145.00	VHLP2-11 Dish Antenna	240.0000	17.00	-5.53	3.19	1.369	3.14	41
145.00	VHLP800-11 6WH Dish Antenna	0.0000	49.00	0.00	-6.38	1.369	5.31	41
		Sum Weight:	156.00					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf	t_z in
177.00	PA6-65AC	240.0000	622.30	-5.14	2.97	1.427	31.04	8	1.7743
145.00	VHLP2-11 Dish Antenna	240.0000	77.89	-5.53	3.19	1.369	4.07	7	1.7393
145.00	VHLP800-11 6WH Dish Antenna	0.0000	150.07	0.00	-6.38	1.369	6.51	7	1.7393
		Sum Weight:	850.27						

Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
177.00	PA6-65AC	240.0000	90.00	-5.14	2.97	1.427	28.27	11
145.00	VHLP2-11 Dish Antenna	240.0000	17.00	-5.53	3.19	1.369	3.14	11
145.00	VHLP800-11 6WH Dish Antenna	0.0000	49.00	0.00	-6.38	1.369	5.31	11
		Sum Weight:	156.00					

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	14105.14					
Bracing Weight	17996.89					
Total Member Self-Weight	32102.03			-20.96	-4.30	
Total Weight	50737.86			-20.96	-4.30	
Wind 0 deg - No Ice		-359.27	-66928.75	-6714.11	55.18	0.03
Wind 30 deg - No Ice		33488.47	-58009.23	-5789.93	-3334.56	-11.29
Wind 45 deg - No Ice		47360.58	-47071.74	-4711.67	-4742.93	-15.87
Wind 60 deg - No Ice		58136.13	-33153.24	-3316.02	-5829.69	-19.44
Wind 90 deg - No Ice		67337.24	359.27	38.52	-6765.22	-22.47
Wind 120 deg - No Ice		58722.26	33906.49	3378.44	-5891.44	-19.68
Wind 135 deg - No Ice		48053.89	47765.04	4755.73	-4828.90	-16.08
Wind 150 deg - No Ice		34045.24	58255.06	5806.36	-3436.93	-11.33
Wind 180 deg - No Ice		359.27	67190.71	6674.82	-63.78	-0.06
Wind 210 deg - No Ice		-33488.47	58009.23	5748.01	3325.95	11.29
Wind 225 deg - No Ice		-47360.58	47071.74	4669.76	4734.33	15.87
Wind 240 deg - No Ice		-58249.56	33218.73	3274.76	5822.22	19.53
Wind 270 deg - No Ice		-67337.24	-359.27	-80.44	6756.62	22.47
Wind 300 deg - No Ice		-58608.83	-33841.00	-3419.70	5881.70	19.58
Wind 315 deg - No Ice		-48053.89	-47765.04	-4797.64	4820.30	16.08
Wind 330 deg - No Ice		-34045.24	-58255.06	-5848.27	3428.32	11.33
Member Ice	48229.38					
Total Weight Ice	197530.91			-219.59	-11.41	
Wind 0 deg - Ice		-62.64	-26147.72	-2814.55	-1.05	-2.25
Wind 30 deg - Ice		13101.68	-22694.06	-2462.52	-1306.26	-4.81
Wind 45 deg - Ice		18495.03	-18444.94	-2047.18	-1847.31	-5.59
Wind 60 deg - Ice		22674.63	-13019.61	-1508.10	-2263.71	-6.02
Wind 90 deg - Ice		26218.56	62.64	-209.23	-2618.12	-5.65
Wind 120 deg - Ice		22818.05	13174.75	1087.33	-2274.88	-3.80
Wind 135 deg - Ice		18649.58	18599.48	1623.31	-1862.62	-2.43
Wind 150 deg - Ice		13186.85	22716.30	2033.30	-1323.97	-0.88
Wind 180 deg - Ice		62.64	26241.00	2376.31	-21.77	2.26
Wind 210 deg - Ice		-13101.68	22694.06	2023.35	1283.44	4.81
Wind 225 deg - Ice		-18495.03	18444.94	1608.01	1824.49	5.59
Wind 240 deg - Ice		-22715.02	13042.94	1069.16	2241.29	6.05
Wind 270 deg - Ice		-26218.56	-62.64	-229.94	2595.30	5.65
Wind 300 deg - Ice		-22777.66	-13151.42	-1526.27	2251.65	3.79
Wind 315 deg - Ice		-18649.58	-18599.48	-2062.49	1839.79	2.43
Wind 330 deg - Ice		-13186.85	-22716.30	-2472.47	1301.15	0.88
Total Weight	50737.86			-20.96	-4.30	
Wind 0 deg - Service		-92.95	-17315.38	-1731.29	15.23	0.01

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 30 deg - Service		8663.92	-15007.78	-1492.19	-861.74	-2.92
Wind 45 deg - Service		12252.83	-12178.10	-1213.23	-1226.11	-4.10
Wind 60 deg - Service		15040.61	-8577.20	-852.15	-1507.26	-5.03
Wind 90 deg - Service		17421.06	92.95	15.71	-1749.30	-5.81
Wind 120 deg - Service		15192.25	8772.07	879.79	-1523.24	-5.09
Wind 135 deg - Service		12432.20	12357.47	1236.12	-1248.35	-4.16
Wind 150 deg - Service		8807.97	15071.38	1507.93	-888.22	-2.93
Wind 180 deg - Service		92.95	17383.15	1732.61	-15.55	-0.01
Wind 210 deg - Service		-8663.92	15007.78	1492.83	861.43	2.92
Wind 225 deg - Service		-12252.83	12178.10	1213.88	1225.79	4.10
Wind 240 deg - Service		-15069.95	8594.14	852.97	1507.24	5.05
Wind 270 deg - Service		-17421.06	-92.95	-15.07	1748.98	5.81
Wind 300 deg - Service		-15162.90	-8755.13	-878.98	1522.63	5.06
Wind 315 deg - Service		-12432.20	-12357.47	-1235.47	1248.03	4.16
Wind 330 deg - Service		-8807.97	-15071.38	-1507.28	887.91	2.93

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 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

Comb. No.	Description
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
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	9	4867.90	-0.37	-0.35
			Max. Compression	12	-6239.76	0.11	-0.04
			Max. Mx	28	-97.31	-1.03	0.22
			Max. My	32	-233.90	0.07	-1.63
			Max. Vy	28	-652.95	-1.03	0.22
			Max. Vx	16	903.24	-0.07	-1.13
		Diagonal	Max Tension	27	5614.11	0.00	0.00
			Max. Compression	26	-5681.61	0.00	0.00
			Max. Mx	34	-108.10	0.07	0.00
			Max. Vy	34	-36.14	0.00	0.00
		Horizontal	Max Tension	26	3128.72	-0.01	0.00
			Max. Compression	11	-3094.68	0.00	0.00
			Max. Mx	38	-3.55	-0.04	-0.00
			Max. My	28	-772.04	-0.01	-0.01
			Max. Vy	38	39.59	-0.04	-0.00
			Max. Vx	28	1.48	-0.01	-0.01
		Top Girt	Max Tension	19	644.15	0.00	0.00
			Max. Compression	2	-644.40	-0.01	-0.00
			Max. Mx	48	-52.73	-0.03	-0.00
			Max. My	8	-224.57	-0.01	-0.00
			Max. Vy	48	38.35	-0.03	-0.00
			Max. Vx	8	0.24	0.00	0.00
		Inner Bracing	Max Tension	2	11.16	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
			Max. Compression	2	-11.20	0.00	0.00
			Max. Mx	34	-0.17	-0.04	0.00
			Max. Vy	34	-33.47	0.00	0.00
T2	160 - 140	Leg	Max Tension	29	35399.67	-1.14	-0.00
			Max. Compression	12	-40834.78	1.19	-0.01
			Max. Mx	18	31510.00	1.82	-0.07
			Max. My	16	-2389.22	-0.04	1.86
			Max. Vy	28	-2346.02	-0.11	0.04
			Max. Vx	16	-2434.94	0.02	-0.12
		Diagonal	Max Tension	11	12053.59	0.00	0.00
			Max. Compression	10	-12135.11	0.00	0.00
			Max. Mx	34	-186.73	0.09	0.00
			Max. Vy	34	-44.29	0.00	0.00
		Horizontal	Max Tension	11	7547.50	0.00	0.00
			Max. Compression	10	-7570.37	0.00	0.00
			Max. Mx	48	-364.64	-0.05	-0.00
			Max. My	12	1047.84	-0.00	0.01
			Max. Vy	48	-45.95	-0.05	-0.00
			Max. Vx	12	-3.08	-0.00	0.01
		Inner Bracing	Max Tension	13	6.17	0.00	0.00
			Max. Compression	28	-8.09	0.00	0.00
			Max. Mx	34	-5.36	-0.05	0.00
			Max. Vy	34	-38.38	0.00	0.00
T3	140 - 133.333	Leg	Max Tension	29	50398.59	-1.24	0.01
			Max. Compression	12	-56972.32	-0.08	0.00
			Max. Mx	28	49479.34	-1.25	0.01
			Max. My	32	-5407.73	-0.03	1.34
			Max. Vy	18	-281.70	-1.24	-0.07
			Max. Vx	16	-306.19	-0.04	-1.34
		Diagonal	Max Tension	11	13067.37	0.00	0.00
			Max. Compression	10	-13181.73	0.00	0.00
			Max. Mx	34	-235.72	0.11	0.00
			Max. Vy	34	-51.45	0.00	0.00
		Horizontal	Max Tension	10	8513.79	0.00	0.00
			Max. Compression	11	-8503.06	0.00	0.00
			Max. Mx	48	-161.75	-0.07	-0.01
			Max. My	28	-1197.90	-0.03	-0.02
			Max. Vy	48	-56.75	-0.07	-0.01
			Max. Vx	28	-4.20	0.00	0.00
		Inner Bracing	Max Tension	13	8.27	0.00	0.00
			Max. Compression	28	-11.11	0.00	0.00
			Max. Mx	34	-6.05	-0.05	0.00
			Max. Vy	34	40.57	0.00	0.00
T4	133.333 - 126.667	Leg	Max Tension	29	66968.58	0.08	-0.00
			Max. Compression	12	-75375.96	1.55	-0.01
			Max. Mx	28	64904.38	-1.63	0.01
			Max. My	32	-7308.24	-0.03	1.55
			Max. Vy	18	-1856.80	0.09	0.01
			Max. Vx	26	-1836.83	0.01	0.10
		Diagonal	Max Tension	11	15172.10	0.00	0.00
			Max. Compression	10	-15294.23	0.00	0.00
			Max. Mx	34	-260.70	0.12	0.00
			Max. Vy	34	-54.32	0.00	0.00
		Top Girt	Max Tension	10	10212.05	0.00	0.00
			Max. Compression	10	-10212.11	0.00	0.00
			Max. Mx	48	-297.23	-0.08	-0.01
			Max. My	12	1575.72	-0.00	0.03
			Max. Vy	48	-60.20	-0.08	-0.01
			Max. Vx	12	4.60	0.00	0.00
		Inner Bracing	Max Tension	26	176.93	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
			Max. Compression	26	-178.52.	0.00	0.00
			Max. Mx	34	0.51	-0.06	0.00
			Max. Vy	34	42.93	0.00	0.00
T5	126.667 - 120	Leg	Max Tension	29	85218.35	-1.62	0.01
			Max. Compression	12	-96147.74	1.17	0.05
			Max. Mx	28	83840.39	-1.63	0.01
			Max. My	32	-7827.50	-0.03	1.55
			Max. Vy	18	-1558.77	-1.61	-0.00
			Max. Vx	10	1514.91	-0.05	1.53
		Diagonal	Max Tension	11	17706.36	0.00	0.00
			Max. Compression	10	-17894.00	0.00	0.00
			Max. Mx	34	-295.15	0.17	0.00
			Max. Vy	34	72.45	0.00	0.00
		Top Girt	Max Tension	10	12283.00	0.00	0.00
			Max. Compression	10	-12287.42	0.00	0.00
			Max. Mx	48	-348.64	-0.09	-0.01
			Max. My	12	1778.97	-0.00	0.03
			Max. Vy	48	63.47	-0.09	-0.01
			Max. Vx	12	-4.92	-0.00	0.03
		Inner Bracing	Max Tension	10	212.87	0.00	0.00
			Max. Compression	10	-215.27	0.00	0.00
			Max. Mx	34	0.71	-0.07	0.00
			Max. Vy	34	45.25	0.00	0.00
T6	120 - 100	Leg	Max Tension	29	137685.87	-0.77	-0.08
			Max. Compression	12	-151984.28	0.45	0.07
			Max. Mx	28	104466.34	-1.22	-0.05
			Max. My	26	-9764.88	-0.02	-1.27
			Max. Vy	18	-188.84	-1.20	0.02
			Max. Vx	26	-225.57	-0.01	-0.87
		Diagonal	Max Tension	11	22508.15	0.00	0.00
			Max. Compression	10	-22807.37	0.00	0.00
			Max. Mx	34	-411.41	0.35	0.00
			Max. Vy	34	-110.45	0.00	0.00
		Horizontal	Max Tension	20	13592.38	0.00	0.00
			Max. Compression	21	-13490.13	0.00	0.00
			Max. Mx	48	-262.06	-0.12	-0.01
			Max. My	28	-1212.55	-0.05	-0.03
			Max. Vy	48	-72.40	-0.12	-0.01
			Max. Vx	28	-4.46	0.00	0.00
		Inner Bracing	Max Tension	13	6.30	0.00	0.00
			Max. Compression	28	-14.82	0.00	0.00
			Max. Mx	34	-11.89	-0.11	0.00
			Max. Vy	34	63.61	0.00	0.00
T7	100 - 90	Leg	Max Tension	29	168473.95	-0.47	-0.08
			Max. Compression	12	-184537.90	0.85	0.06
			Max. Mx	28	165933.32	-0.90	-0.07
			Max. My	10	-7081.24	-0.04	0.91
			Max. Vy	18	186.51	-0.88	0.02
			Max. Vx	10	-224.83	-0.04	0.91
		Diagonal	Max Tension	21	20970.02	0.00	0.00
			Max. Compression	20	-21198.34	0.00	0.00
			Max. Mx	34	-475.69	0.31	0.00
			Max. Vy	34	95.47	0.00	0.00
		Horizontal	Max Tension	20	13313.01	0.00	0.00
			Max. Compression	20	-13301.24	0.00	0.00
			Max. Mx	48	-619.80	-0.13	-0.01
			Max. My	28	-1580.03	-0.06	-0.03
			Max. Vy	48	-76.02	-0.13	-0.01
			Max. Vx	28	3.43	-0.06	-0.03
		Inner Bracing	Max Tension	13	4.52	0.00	0.00
			Max. Compression	43	-14.81	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
			Max. Mx	34	-12.86	-0.13	0.00
			Max. Vy	34	67.66	0.00	0.00
T8	90 - 80	Leg	Max Tension	29	196022.36	-0.89	-0.07
			Max. Compression	12	-213598.10	1.08	0.07
			Max. Mx	28	193265.43	-1.12	-0.07
			Max. My	10	-7866.96	-0.04	1.26
			Max. Vy	18	165.62	-1.11	0.02
			Max. Vx	10	-212.61	-0.04	1.26
		Diagonal	Max Tension	21	21146.36	0.00	0.00
			Max. Compression	20	-21394.13	0.00	0.00
			Max. Mx	34	-531.61	0.34	0.00
			Max. Vy	34	102.19	0.00	0.00
		Top Girt	Max Tension	20	14081.53	0.00	0.00
			Max. Compression	21	-14009.27	0.00	0.00
			Max. Mx	48	-349.24	-0.14	-0.01
			Max. My	28	-799.29	-0.06	-0.02
			Max. Vy	48	-81.28	-0.14	-0.01
			Max. Vx	28	-2.92	-0.06	-0.02
		Inner Bracing	Max Tension	5	239.70	0.00	0.00
			Max. Compression	4	-247.27	0.00	0.00
			Max. Mx	34	-2.58	-0.15	0.00
			Max. Vy	34	72.70	0.00	0.00
T9	80 - 60	Leg	Max Tension	29	249740.48	-1.58	-0.05
			Max. Compression	12	-270707.61	1.85	0.07
			Max. Mx	28	246451.92	-1.90	-0.07
			Max. My	10	-9724.03	-0.04	1.92
			Max. Vy	18	219.93	-1.55	0.03
			Max. Vx	26	245.75	-0.01	-1.92
		Diagonal	Max Tension	21	22455.73	0.00	0.00
			Max. Compression	20	-22790.98	0.00	0.00
			Max. Mx	34	-673.25	0.41	0.00
			Max. Vy	34	-114.76	0.00	0.00
		Horizontal	Max Tension	20	16091.14	0.00	0.00
			Max. Compression	21	-15956.55	0.00	0.00
			Max. Mx	48	-299.89	-0.24	-0.01
			Max. My	28	-941.29	-0.12	-0.03
			Max. Vy	48	-115.36	-0.24	-0.01
			Max. Vx	28	-3.84	-0.12	-0.03
		Inner Bracing	Max Tension	13	4.60	0.00	0.00
			Max. Compression	43	-17.40	0.00	0.00
			Max. Mx	34	-15.33	-0.22	0.00
			Max. Vy	34	94.26	0.00	0.00
T10	60 - 40	Leg	Max Tension	29	302612.18	-1.64	-0.05
			Max. Compression	12	-327423.64	1.29	0.05
			Max. Mx	28	273115.83	-1.90	-0.07
			Max. My	10	-10203.62	-0.05	1.92
			Max. Vy	18	-247.68	-1.87	0.02
			Max. Vx	26	-279.56	-0.01	-1.92
		Diagonal	Max Tension	17	23410.80	0.00	0.00
			Max. Compression	16	-23872.79	0.00	0.00
			Max. Mx	34	-835.24	0.54	0.00
			Max. Vy	34	-142.71	0.00	0.00
		Horizontal	Max Tension	16	17793.38	-0.10	-0.00
			Max. Compression	17	-17565.56	-0.08	-0.00
			Max. Mx	48	-218.76	-0.29	-0.01
			Max. My	28	-575.91	-0.14	-0.03
			Max. Vy	48	-126.00	-0.29	-0.01
			Max. Vx	28	3.31	-0.14	-0.03
		Inner Bracing	Max Tension	13	2.29	0.00	0.00
			Max. Compression	43	-20.05	0.00	0.00
			Max. Mx	34	-18.27	-0.34	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	-125.28	0.00	0.00
T11	40 - 30	Leg	Max Tension	29	328495.29	-1.37	-0.06
			Max. Compression	12	-355318.80	3.16	0.04
			Max. Mx	12	-355318.80	3.16	0.04
			Max. My	10	-12489.43	-0.07	1.71
			Max. Vy	18	314.44	-2.95	0.02
			Max. Vx	10	227.45	-0.07	1.71
		Diagonal	Max Tension	17	23760.66	0.00	0.00
			Max. Compression	16	-24257.26	0.00	0.00
			Max. Mx	34	-888.93	0.57	0.00
			Max. Vy	34	-146.65	0.00	0.00
		Horizontal	Max Tension	16	18485.76	-0.12	-0.00
			Max. Compression	17	-18249.09	-0.09	-0.00
			Max. Mx	48	-271.32	-0.31	-0.01
			Max. My	28	-1468.18	-0.16	-0.03
			Max. Vy	48	-129.00	-0.31	-0.01
			Max. Vx	28	2.82	-0.16	-0.03
		Inner Bracing	Max Tension	13	0.75	0.00	0.00
			Max. Compression	43	-20.24	0.00	0.00
			Max. Mx	34	-18.57	-0.36	0.00
			Max. Vy	34	128.42	0.00	0.00
T12	30 - 20	Leg	Max Tension	29	353808.57	-3.02	-0.04
			Max. Compression	12	-382708.38	-3.28	0.16
			Max. Mx	12	-382708.38	-3.28	0.16
			Max. My	10	-14187.67	-0.42	5.33
			Max. Vy	12	758.74	3.16	0.04
			Max. Vx	10	-578.68	-0.42	5.33
		Diagonal	Max Tension	17	24303.05	0.00	0.00
			Max. Compression	16	-24881.35	0.00	0.00
			Max. Mx	34	-969.63	0.61	0.00
			Max. Vy	34	-150.60	0.00	0.00
		Top Girt	Max Tension	16	19385.75	-0.17	-0.00
			Max. Compression	17	-19021.84	-0.13	-0.00
			Max. Mx	48	100.87	-0.42	-0.01
			Max. My	28	-682.66	-0.25	-0.05
			Max. Vy	48	-160.38	-0.42	-0.01
			Max. Vx	28	-3.81	0.00	0.00
		Inner Bracing	Max Tension	33	325.76	0.00	0.00
			Max. Compression	32	-340.15	0.00	0.00
			Max. Mx	34	-19.97	-0.39	0.00
			Max. Vy	34	131.55	0.00	0.00
T13	20 - 0	Leg	Max Tension	29	376559.03	2.52	-0.16
			Max. Compression	12	-408502.27	0.00	0.00
			Max. Mx	12	-408155.04	9.94	-0.20
			Max. My	10	-15171.87	-0.42	5.34
			Max. Vy	12	-1437.04	9.94	-0.20
			Max. Vx	10	1065.86	-0.42	5.34
		Diagonal	Max Tension	17	35535.74	-0.25	-0.07
			Max. Compression	16	-36275.12	0.00	0.00
			Max. Mx	6	22962.14	-0.36	0.15
			Max. My	16	-36165.70	0.09	-0.26
			Max. Vy	37	-97.70	-0.24	0.01
			Max. Vx	16	21.48	0.09	-0.26
		Horizontal	Max Tension	16	20026.07	-0.23	-0.00
			Max. Compression	17	-19924.71	-0.18	-0.00
			Max. Mx	38	-761.89	-0.55	-0.02
			Max. My	28	-974.36	-0.42	-0.06
			Max. Vy	38	184.95	-0.55	-0.02
			Max. Vx	28	-5.07	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	12	7091.94	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
			Max. Compression	12	-7091.94	0.00	0.00
			Max. Mx	34	1290.19	0.05	0.00
			Max. Vy	34	33.08	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	12	6479.22	0.00	0.00
			Max. Compression	12	-6479.22	0.00	0.00
			Max. Mx	34	1178.72	0.09	0.00
			Max. Vy	34	-32.97	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	17	44.94	0.00	0.00
			Max. Compression	32	-57.10	0.00	0.00
			Max. Mx	34	-13.58	0.05	0.00
			Max. Vy	34	-33.08	0.00	0.00
		Redund Hip Diagonal 1 Bracing	Max Tension	24	110.92	0.00	0.00
			Max. Compression	8	-116.67	0.00	0.00
			Max. Mx	34	72.69	0.34	0.00
			Max. Vy	34	91.29	0.00	0.00
		Inner Bracing	Max Tension	9	9.94	0.00	0.00
			Max. Compression	24	-24.45	0.00	0.00
			Max. Mx	34	-18.48	0.25	0.00
			Max. Vy	34	-79.30	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	24	452832.07	53590.85	-31683.43
	Max. H_x	24	452832.07	53590.85	-31683.43
	Max. H_z	7	-402776.70	-47743.71	31475.09
	Min. Vert	9	-418560.03	-50995.11	30154.19
	Min. H_x	9	-418560.03	-50995.11	30154.19
	Min. H_z	22	437048.74	50340.94	-33001.74
Leg B	Max. Vert	12	460082.30	-54122.29	-32025.98
	Max. H_x	29	-425157.48	51520.66	30485.77
	Max. H_z	31	-410167.47	48335.66	31836.08
	Min. Vert	29	-425157.48	51520.66	30485.77
	Min. H_x	12	460082.30	-54122.29	-32025.98
	Min. H_z	14	445092.28	-50939.00	-33373.32
Leg A	Max. Vert	2	454638.54	26.71	62286.73
	Max. H_x	26	25314.93	11912.49	2111.79
	Max. H_z	2	454638.54	26.71	62286.73
	Min. Vert	19	-417285.90	-21.50	-59222.84
	Min. H_x	11	12037.72	-11906.38	952.10
	Min. H_z	19	-417285.90	-21.50	-59222.84

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	50737.86	0.00	-0.00	-20.96	-4.30	0.00

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
1.2 Dead+1.6 Wind 0 deg - No Ice	60885.43	-574.83	-107505.13	-10410.77	90.01	0.05
0.9 Dead+1.6 Wind 0 deg - No Ice	45664.07	-574.83	-107505.13	-10404.48	91.30	0.05
1.2 Dead+1.6 Wind 30 deg - No Ice	60885.43	53581.54	-92814.76	-8971.78	-5169.76	-18.07
0.9 Dead+1.6 Wind 30 deg - No Ice	45664.07	53581.54	-92814.76	-8965.49	-5168.47	-18.07
1.2 Dead+1.6 Wind 45 deg - No Ice	60885.43	76073.30	-75611.14	-7301.60	-7358.27	-25.38
0.9 Dead+1.6 Wind 45 deg - No Ice	45664.07	76073.30	-75611.14	-7295.31	-7356.98	-25.38
1.2 Dead+1.6 Wind 60 deg - No Ice	60885.43	93380.78	-53254.75	-5135.54	-9045.68	-31.11
0.9 Dead+1.6 Wind 60 deg - No Ice	45664.07	93380.78	-53254.75	-5129.25	-9044.39	-31.11
1.2 Dead+1.6 Wind 90 deg - No Ice	60885.43	108158.72	574.83	70.02	-10499.20	-35.95
0.9 Dead+1.6 Wind 90 deg - No Ice	45664.07	108158.72	574.83	76.31	-10497.91	-35.95
1.2 Dead+1.6 Wind 120 deg - No Ice	60885.43	93955.61	54250.38	5250.08	-9140.85	-31.49
0.9 Dead+1.6 Wind 120 deg - No Ice	45664.07	93955.61	54250.38	5256.37	-9139.56	-31.49
1.2 Dead+1.6 Wind 135 deg - No Ice	60885.43	76886.23	76424.07	7385.89	-7492.86	-25.74
0.9 Dead+1.6 Wind 135 deg - No Ice	45664.07	76886.23	76424.07	7392.18	-7491.57	-25.74
1.2 Dead+1.6 Wind 150 deg - No Ice	60885.43	54577.17	93389.59	9016.65	-5334.60	-18.13
0.9 Dead+1.6 Wind 150 deg - No Ice	45664.07	54577.17	93389.59	9022.94	-5333.31	-18.13
1.2 Dead+1.6 Wind 180 deg - No Ice	60885.43	574.83	107505.13	10360.47	-100.33	-0.09
0.9 Dead+1.6 Wind 180 deg - No Ice	45664.07	574.83	107505.13	10366.76	-99.04	-0.09
1.2 Dead+1.6 Wind 210 deg - No Ice	60885.43	-53581.54	92814.76	8921.48	5159.44	18.07
0.9 Dead+1.6 Wind 210 deg - No Ice	45664.07	-53581.54	92814.76	8927.77	5160.73	18.07
1.2 Dead+1.6 Wind 225 deg - No Ice	60885.43	-76073.30	75611.14	7251.30	7347.95	25.38
0.9 Dead+1.6 Wind 225 deg - No Ice	45664.07	-76073.30	75611.14	7257.59	7349.24	25.38
1.2 Dead+1.6 Wind 240 deg - No Ice	60885.43	-93380.78	53254.75	5085.24	9035.36	31.25
0.9 Dead+1.6 Wind 240 deg - No Ice	45664.07	-93380.78	53254.75	5091.53	9036.65	31.25
1.2 Dead+1.6 Wind 270 deg - No Ice	60885.43	-108158.72	-574.83	-120.32	10488.88	35.95
0.9 Dead+1.6 Wind 270 deg - No Ice	45664.07	-108158.72	-574.83	-114.03	10490.17	35.95
1.2 Dead+1.6 Wind 300 deg - No Ice	60885.43	-93955.61	-54250.38	-5300.38	9130.53	31.32
0.9 Dead+1.6 Wind 300 deg - No Ice	45664.07	-93955.61	-54250.38	-5294.09	9131.82	31.32
1.2 Dead+1.6 Wind 315 deg - No Ice	60885.43	-76886.23	-76424.07	-7436.19	7482.54	25.74
0.9 Dead+1.6 Wind 315 deg - No Ice	45664.07	-76886.23	-76424.07	-7429.90	7483.83	25.74
1.2 Dead+1.6 Wind 330 deg -	60885.43	-54577.17	-93389.59	-9066.95	5324.28	18.13

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
No Ice						
0.9 Dead+1.6 Wind 330 deg - No Ice	45664.07	-54577.17	-93389.59	-9060.66	5325.57	18.13
1.2 Dead+1.0 Ice	207678.48	-0.00	-0.00	-223.78	-12.27	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	207678.48	-62.64	-26241.00	-2731.55	-1.92	-2.25
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	207678.48	13101.68	-22694.06	-2390.39	-1263.06	-4.81
1.2 Dead+1.0 Wind 45 deg+1.0 Ice	207678.48	18561.00	-18510.90	-1989.71	-1786.52	-5.59
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	207678.48	22755.41	-13066.26	-1468.69	-2189.06	-6.02
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	207678.48	26311.85	62.64	-213.42	-2531.79	-5.66
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	207678.48	22818.05	13174.75	1039.08	-2199.42	-3.80
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	207678.48	18649.58	18599.48	1556.81	-1801.16	-2.43
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	207678.48	13210.17	22756.69	1953.19	-1281.00	-0.88
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	207678.48	62.64	26241.00	2283.99	-22.63	2.26
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	207678.48	-13101.68	22694.06	1942.84	1238.51	4.81
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	207678.48	-18561.00	18510.90	1542.16	1761.97	5.59
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	207678.48	-22755.41	13066.26	1021.14	2164.51	6.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	207678.48	-26311.85	-62.64	-234.14	2507.24	5.66
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	207678.48	-22818.05	-13174.75	-1486.63	2174.87	3.79
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	207678.48	-18649.58	-18599.48	-2004.36	1776.62	2.43
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	207678.48	-13210.17	-22756.69	-2400.75	1256.45	0.88
Dead+Wind 0 deg - Service	50737.86	-92.95	-17383.15	-1700.27	11.09	0.01
Dead+Wind 30 deg - Service	50737.86	8663.92	-15007.78	-1467.59	-839.40	-2.92
Dead+Wind 45 deg - Service	50737.86	12300.75	-12226.02	-1197.53	-1193.27	-4.10
Dead+Wind 60 deg - Service	50737.86	15099.30	-8611.08	-847.29	-1466.12	-5.03
Dead+Wind 90 deg - Service	50737.86	17488.83	92.95	-5.57	-1701.15	-5.81
Dead+Wind 120 deg - Service	50737.86	15192.25	8772.07	832.03	-1481.51	-5.09
Dead+Wind 135 deg - Service	50737.86	12432.20	12357.47	1177.38	-1215.03	-4.16
Dead+Wind 150 deg - Service	50737.86	8824.91	15100.72	1441.07	-866.05	-2.93
Dead+Wind 180 deg - Service	50737.86	92.95	17383.15	1658.36	-19.69	-0.02
Dead+Wind 210 deg - Service	50737.86	-8663.92	15007.78	1425.68	830.79	2.92
Dead+Wind 225 deg - Service	50737.86	-12300.75	12226.02	1155.62	1184.67	4.10
Dead+Wind 240 deg - Service	50737.86	-15099.30	8611.08	805.37	1457.51	5.05
Dead+Wind 270 deg - Service	50737.86	-17488.83	-92.95	-36.35	1692.54	5.81
Dead+Wind 300 deg - Service	50737.86	-15192.25	-8772.07	-873.94	1472.90	5.06
Dead+Wind 315 deg - Service	50737.86	-12432.20	-12357.47	-1219.29	1206.43	4.16
Dead+Wind 330 deg - Service	50737.86	-8824.91	-15100.72	-1482.98	857.45	2.93

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-50737.86	0.00	-0.00	50737.86	0.00	0.000%
2	-574.83	-60885.43	-107505.13	574.83	60885.43	107505.13	0.000%
3	-574.83	-45664.07	-107505.13	574.83	45664.07	107505.13	0.000%
4	53581.54	-60885.43	-92814.76	-53581.54	60885.43	92814.76	0.000%
5	53581.54	-45664.07	-92814.76	-53581.54	45664.07	92814.76	0.000%
6	76073.30	-60885.43	-75611.14	-76073.30	60885.43	75611.14	0.000%
7	76073.30	-45664.07	-75611.14	-76073.30	45664.07	75611.14	0.000%
8	93380.78	-60885.43	-53254.75	-93380.78	60885.43	53254.75	0.000%
9	93380.78	-45664.07	-53254.75	-93380.78	45664.07	53254.75	0.000%
10	108158.72	-60885.43	574.83	-108158.72	60885.43	-574.83	0.000%
11	108158.72	-45664.07	574.83	-108158.72	45664.07	-574.83	0.000%
12	93955.61	-60885.43	54250.38	-93955.61	60885.43	-54250.38	0.000%
13	93955.61	-45664.07	54250.38	-93955.61	45664.07	-54250.38	0.000%
14	76886.22	-60885.43	76424.07	-76886.23	60885.43	-76424.07	0.000%
15	76886.22	-45664.07	76424.07	-76886.23	45664.07	-76424.07	0.000%
16	54577.17	-60885.43	93389.59	-54577.17	60885.43	-93389.59	0.000%
17	54577.17	-45664.07	93389.59	-54577.17	45664.07	-93389.59	0.000%
18	574.83	-60885.43	107505.13	-574.83	60885.43	-107505.13	0.000%
19	574.83	-45664.07	107505.13	-574.83	45664.07	-107505.13	0.000%
20	-53581.54	-60885.43	92814.76	53581.54	60885.43	-92814.76	0.000%
21	-53581.54	-45664.07	92814.76	53581.54	45664.07	-92814.76	0.000%
22	-76073.30	-60885.43	75611.14	76073.30	60885.43	-75611.14	0.000%
23	-76073.30	-45664.07	75611.14	76073.30	45664.07	-75611.14	0.000%
24	-93380.78	-60885.43	53254.75	93380.78	60885.43	-53254.75	0.000%
25	-93380.78	-45664.07	53254.75	93380.78	45664.07	-53254.75	0.000%
26	-108158.72	-60885.43	-574.83	108158.72	60885.43	574.83	0.000%
27	-108158.72	-45664.07	-574.83	108158.72	45664.07	574.83	0.000%
28	-93955.61	-60885.43	-54250.38	93955.61	60885.43	54250.38	0.000%
29	-93955.61	-45664.07	-54250.38	93955.61	45664.07	54250.38	0.000%
30	-76886.22	-60885.43	-76424.07	76886.23	60885.43	76424.07	0.000%
31	-76886.22	-45664.07	-76424.07	76886.23	45664.07	76424.07	0.000%
32	-54577.17	-60885.43	-93389.59	54577.17	60885.43	93389.59	0.000%
33	-54577.17	-45664.07	-93389.59	54577.17	45664.07	93389.59	0.000%
34	0.00	-207678.48	0.00	0.00	207678.48	0.00	0.000%
35	-62.64	-207678.48	-26241.00	62.64	207678.48	26241.00	0.000%
36	13101.68	-207678.48	-22694.06	-13101.68	207678.48	22694.06	0.000%
37	18561.00	-207678.48	-18510.90	-18561.00	207678.48	18510.90	0.000%
38	22755.41	-207678.48	-13066.26	-22755.41	207678.48	13066.26	0.000%
39	26311.85	-207678.48	62.64	-26311.85	207678.48	-62.64	0.000%
40	22818.05	-207678.48	13174.75	-22818.05	207678.48	-13174.75	0.000%
41	18649.58	-207678.48	18599.48	-18649.58	207678.48	-18599.48	0.000%
42	13210.17	-207678.48	22756.69	-13210.17	207678.48	-22756.69	0.000%
43	62.64	-207678.48	26241.00	-62.64	207678.48	-26241.00	0.000%
44	-13101.68	-207678.48	22694.06	13101.68	207678.48	-22694.06	0.000%
45	-18561.00	-207678.48	18510.90	18561.00	207678.48	-18510.90	0.000%
46	-22755.41	-207678.48	13066.26	22755.41	207678.48	-13066.26	0.000%
47	-26311.85	-207678.48	-62.64	26311.85	207678.48	62.64	0.000%
48	-22818.05	-207678.48	-13174.75	22818.05	207678.48	13174.75	0.000%
49	-18649.58	-207678.48	-18599.48	18649.58	207678.48	18599.48	0.000%
50	-13210.17	-207678.48	-22756.69	13210.17	207678.48	22756.69	0.000%
51	-92.95	-50737.86	-17383.15	92.95	50737.86	17383.15	0.000%
52	8663.92	-50737.86	-15007.78	-8663.92	50737.86	15007.78	0.000%
53	12300.75	-50737.86	-12226.02	-12300.75	50737.86	12226.02	0.000%
54	15099.30	-50737.86	-8611.08	-15099.30	50737.86	8611.08	0.000%
55	17488.83	-50737.86	92.95	-17488.83	50737.86	-92.95	0.000%
56	15192.25	-50737.86	8772.07	-15192.25	50737.86	-8772.07	0.000%
57	12432.20	-50737.86	12357.47	-12432.20	50737.86	-12357.47	0.000%
58	8824.91	-50737.86	15100.72	-8824.91	50737.86	-15100.72	0.000%
59	92.95	-50737.86	17383.15	-92.95	50737.86	-17383.15	0.000%
60	-8663.92	-50737.86	15007.78	8663.92	50737.86	-15007.78	0.000%
61	-12300.75	-50737.86	12226.02	12300.75	50737.86	-12226.02	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
62	-15099.30	-50737.86	8611.08	15099.30	50737.86	-8611.08	0.000%
63	-17488.83	-50737.86	-92.95	17488.83	50737.86	92.95	0.000%
64	-15192.25	-50737.86	-8772.07	15192.25	50737.86	8772.07	0.000%
65	-12432.20	-50737.86	-12357.47	12432.20	50737.86	12357.47	0.000%
66	-8824.91	-50737.86	-15100.72	8824.91	50737.86	15100.72	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	2.525	65	0.1056	0.0059
T2	160 - 140	2.075	65	0.1047	0.0031
T3	140 - 133.333	1.621	65	0.0972	0.0041
T4	133.333 - 126.667	1.479	65	0.0946	0.0043
T5	126.667 - 120	1.339	65	0.0913	0.0044
T6	120 - 100	1.207	65	0.0872	0.0044
T7	100 - 90	0.860	65	0.0724	0.0044
T8	90 - 80	0.704	65	0.0654	0.0041
T9	80 - 60	0.562	65	0.0579	0.0038
T10	60 - 40	0.326	65	0.0440	0.0030
T11	40 - 30	0.152	64	0.0287	0.0021
T12	30 - 20	0.089	56	0.0208	0.0016
T13	20 - 0	0.044	58	0.0126	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.00	AP11-850/090/ADT w/Mount Pipe	65	2.481	0.1057	0.0056	927005
177.00	PA6-65AC	65	2.458	0.1058	0.0055	927005
175.00	SE419-SWBPALDF Panel Antenna	65	2.413	0.1058	0.0052	927005
171.00	2" Dia 10' Omni	65	2.324	0.1059	0.0046	515001
170.00	WPA-700102-4CF-EDIN-X w/ Mount Kit	65	2.301	0.1058	0.0044	463502
169.00	3' Yagi	65	2.279	0.1058	0.0043	421365
162.00	AP11-850/090/ADT w/Mount Pipe	65	2.120	0.1051	0.0032	271671
160.00	Pirod 15' T-Frame Sector Mount (1)	65	2.075	0.1047	0.0031	296102
159.00	2" Dia 10' Omni	65	2.052	0.1044	0.0030	341850
145.00	VHLP2-11 Dish Antenna	65	1.732	0.0992	0.0038	107196
133.00	Pirod 15' T-Frame Sector Mount (1)	65	1.472	0.0944	0.0043	296073
125.00	AIR21 B2A/B4P	65	1.305	0.0904	0.0044	58108
60.00	GPS	65	0.326	0.0440	0.0030	73683

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	15.551	28	0.6506	0.0366
T2	160 - 140	12.776	28	0.6439	0.0189
T3	140 - 133.333	9.987	28	0.5973	0.0255
T4	133.333 - 126.667	9.110	28	0.5815	0.0265
T5	126.667 - 120	8.247	28	0.5616	0.0270
T6	120 - 100	7.433	28	0.5362	0.0271
T7	100 - 90	5.299	28	0.4452	0.0269
T8	90 - 80	4.338	28	0.4024	0.0253
T9	80 - 60	3.468	28	0.3561	0.0231
T10	60 - 40	2.010	28	0.2705	0.0181
T11	40 - 30	0.941	28	0.1767	0.0126
T12	30 - 20	0.548	12	0.1276	0.0096
T13	20 - 0	0.270	14	0.0772	0.0068

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.00	AP11-850/090/ADT w/Mount Pipe	28	15.276	0.6511	0.0345	156112
177.00	PA6-65AC	28	15.138	0.6513	0.0336	156112
175.00	SE419-SWBPALDF Panel Antenna	28	14.862	0.6516	0.0318	156112
171.00	2" Dia 10' Omni	28	14.310	0.6516	0.0281	86729
170.00	WPA-700102-4CF-EDIN-X w/ Mount Kit	28	14.171	0.6515	0.0272	78056
169.00	3' Yagi	28	14.033	0.6512	0.0263	70960
162.00	AP11-850/090/ADT w/Mount Pipe	28	13.057	0.6465	0.0199	45793
160.00	Pirod 15' T-Frame Sector Mount (1)	28	12.776	0.6439	0.0189	50099
159.00	2" Dia 10' Omni	28	12.635	0.6423	0.0186	58105
145.00	VHLP2-11 Dish Antenna	28	10.667	0.6100	0.0231	17520
133.00	Pirod 15' T-Frame Sector Mount (1)	28	9.066	0.5807	0.0266	49365
125.00	AIR21 B2A/B4P	28	8.038	0.5557	0.0270	9439
60.00	GPS	28	2.010	0.2705	0.0181	11979

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.8750	4	89.16	40589.10	0.002 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	1893.87	12425.20	0.152 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	1564.36	12425.20	0.126 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	322.20	12425.20	0.026 ✔	1	Bolt Shear
T2	160	Leg	A325N	0.8750	4	2806.23	40589.10	0.069 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	4045.04	12425.20	0.326 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	3785.19	12425.20	0.305 ✔	1	Bolt Shear
T3	140	Leg	A325N	0.7500	6	8399.76	29820.60	0.282 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.6250	3	4393.91	12425.20	0.354 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	4256.90	12425.20	0.343 ✓	1	Bolt Shear
T4	133.333	Leg	A325N	0.7500	6	11161.40	29820.60	0.374 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	5098.08	12425.20	0.410 ✓	1	Bolt Shear
		Top Girt	A325N	0.6250	2	5106.06	12425.20	0.411 ✓	1	Bolt Shear
T5	126.667	Leg	A325N	0.7500	6	14203.10	29820.60	0.476 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	5964.67	12425.20	0.480 ✓	1	Bolt Shear
		Top Girt	A325N	0.6250	2	6143.71	12425.20	0.494 ✓	1	Bolt Shear
T6	120	Leg	A325N	0.7500	6	17706.00	29820.60	0.594 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	7602.46	12425.20	0.612 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	6796.19	12425.20	0.547 ✓	1	Bolt Shear
T7	100	Leg	A490X	0.7500	6	28079.00	37441.40	0.750 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	7066.11	12425.20	0.569 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	6656.51	12425.20	0.536 ✓	1	Bolt Shear
T8	90	Leg	A325N	1.0000	6	32670.40	53014.40	0.616 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	7131.38	12425.20	0.574 ✓	1	Bolt Shear
		Top Girt	A325N	0.6250	2	7040.76	12425.20	0.567 ✓	1	Bolt Shear
T9	80	Leg	A325N	1.0000	6	37123.60	53014.40	0.700 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	7596.99	12425.20	0.611 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	8045.57	12425.20	0.648 ✓	1	Bolt Shear
T10	60	Leg	A325N	1.0000	8	34539.00	53014.40	0.652 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	7957.60	12425.20	0.640 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	8896.69	12425.20	0.716 ✓	1	Bolt Shear
T11	40	Leg	A325N	1.0000	8	41061.90	53014.40	0.775 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	8085.75	12425.20	0.651 ✓	1	Bolt Shear
		Horizontal	A325N	0.6250	2	9242.88	12425.20	0.744 ✓	1	Bolt Shear
T12	30	Leg	A325N	1.0000	8	44226.10	53014.40	0.834 ✓	1	Bolt Tension
		Diagonal	A325N	0.6250	3	8293.78	12425.20	0.667 ✓	1	Bolt Shear
		Top Girt	A325N	0.6250	2	9692.87	12425.20	0.780 ✓	1	Bolt Shear
T13	20	Leg	A325N	1.0000	8	47069.90	53014.40	0.888 ✓	1	Bolt Tension
		Diagonal	A325X	0.6250	3	12091.70	15186.40	0.796 ✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	10013.00	17892.40	0.560 ✓	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	-6239.76	70976.40	0.088 [1] ✔
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1 K=1.00	3.1741	-40834.80	116229.00	0.351 [1] ✔
T3	140 - 133.333	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1 K=1.00	6.0377	-56972.30	235665.00	0.242 [1] ✔
T4	133.333 - 126.667	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1 K=1.00	6.0377	-75376.00	235665.00	0.320 [1] ✔
T5	126.667 - 120	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1 K=1.00	6.0377	-96147.70	235665.00	0.408 [1] ✔
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0 K=1.00	6.7133	-151984.00	244017.00	0.623 [1] ✔
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8 K=1.00	8.4049	-184538.00	303585.00	0.608 [1] ✔
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8 K=1.00	8.4049	-213598.00	303585.00	0.704 [1] ✔
T9	80 - 60	ROHN 8 EHS (8.75 OD x 0.375(t))	20.05	10.03	40.6 K=1.00	9.8666	-270708.00	393602.00	0.688 [1] ✔
T10	60 - 40	ROHN 8 EHS (8.75 OD x 0.375(t))	20.05	10.03	40.6 K=1.00	9.8666	-327424.00	393602.00	0.832 [1] ✔
T11	40 - 30	ROHN 8 EHS (8.75 OD x 0.375(t))	10.03	10.03	40.6 K=1.00	9.8666	-355319.00	393602.00	0.903 [1] ✔
T12	30 - 20	ROHN 8 EHS (8.75 OD x 0.375(t))	10.03	10.03	40.6 K=1.00	9.8666	-382708.00	393602.00	0.972 [1] ✔
T13	20 - 0	ROHN 8 EH	20.05	10.03	41.8 K=1.00	12.7627	-408502.00	505434.00	0.808 [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	-5681.61	17747.50	0.320 [1] ✔
T2	160 - 140	ROHN 2 STD	8.55	8.25	125.8 K=1.00	1.0745	-12135.10	15331.30	0.792 [1] ✔
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.6 K=1.00	1.4807	-13181.70	19329.00	0.682 [1] ✔
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.3 K=1.00	1.4807	-15294.20	18268.60	0.837 [1] ✔
T5	126.667 - 120	ROHN 2 XXS	9.24	8.91	152.2 K=1.00	2.6559	-17894.00	25913.80	0.691 [1] ✔
T6	120 - 100	ROHN 2.5 XXS	12.52	12.06	171.4 K=1.00	4.0285	-22783.70	30977.00	0.736 [1] ✔
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8 K=1.00	2.2285	-21198.30	30346.40	0.699 [1] ✔
T8	90 - 80	ROHN 3 STD	13.35	12.93	133.4 K=1.00	2.2285	-21394.10	28290.90	0.756 [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	ROHN 3 STD	14.21	13.70	141.3 K=1.00	2.2285	-22791.00	25233.20	0.903 [1]
T10	60 - 40	P3.5x.226	15.12	14.64	131.4 K=1.00	2.6795	-23872.80	35061.40	0.681 [1]
T11	40 - 30	P3.5x.226	15.60	15.12	135.8 K=1.00	2.6795	-24257.30	32848.30	0.738 [1]
T12	30 - 20	P3.5x.226	16.08	15.62	140.2 K=1.00	2.6795	-24881.40	30803.00	0.808 [1]
T13	20 - 0	P3.5x.226	24.33	12.17	54.6 K=0.50	2.6795	-36275.10	96957.10	0.374 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0 K=1.00	0.7995	-3094.68	22519.90	0.137 [1]
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9 K=1.00	0.7995	-7570.37	19142.00	0.395 [1]
T3	140 - 133.333	ROHN 2 STD	10.71	5.17	78.8 K=1.00	1.0745	-8503.06	30717.90	0.277 [1]
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9 K=1.00	1.0745	-13490.10	22639.20	0.596 [1]
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5 K=1.00	1.0745	-13301.20	19817.20	0.671 [1]
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.2 K=1.00	1.7040	-15956.50	28984.30	0.551 [1]
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1 K=1.00	1.7040	-17565.60	22405.40	0.784 [1]
T11	40 - 30	ROHN 2.5 STD	22.68	10.97	139.0 K=1.00	1.7040	-18249.10	19925.90	0.916 [1]
T13	20 - 0	P3.5x.226	25.18	12.22	109.7 K=1.00	2.6795	-19924.70	49988.70	0.399 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5 K=1.00	0.7995	-644.40	22660.50	0.028 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	133.333 - 126.667	ROHN 2 STD	11.40	5.47	83.4 K=1.00	1.0745	-10212.10	29067.20	0.351 [1] ✔
T5	126.667 - 120	ROHN 2 STD	12.10	5.82	88.7 K=1.00	1.0745	-12287.40	27193.80	0.452 [1] ✔
T8	90 - 80	ROHN 2 STD	16.36	7.90	120.5 K=1.00	1.0745	-14009.30	16719.60	0.838 [1] ✔
T12	30 - 20	ROHN 3 STD	23.93	11.60	119.6 K=1.00	2.2285	-19021.80	35183.60	0.541 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (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 1.5 STD	6.29	5.93	91.5 K=0.80	0.7995	-7091.94	19502.40	0.364 [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 1.5 SCH XS (Extra Strong)	11.50	10.76	170.7 K=0.80	1.0681	-6479.22	8278.56	0.783 [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 1.5 STD	6.29	6.29	97.1 K=0.80	0.7995	-57.10	18067.90	0.003 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip 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 2.5 STD	15.07	15.07	190.9 K=1.00	1.7040	-116.67	10559.80	0.011 [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	4.27	4.27	128.9 K=1.00	0.4844	-11.20	6510.70	0.002 [1] ✔
T2	160 - 140	L2x2x1/8	5.01	5.01	151.1 K=1.00	0.4844	-7.71	4790.07	0.002 [1] ✔
T3	140 - 133.333	L2x2x1/8	5.35	5.35	161.6 K=1.00	0.4844	-11.11	4188.78	0.003 [1] ✔
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	172.1 K=1.00	0.4844	-178.52	3694.21	0.048 [1] ✔
T5	126.667 - 120	L2x2x1/8	6.05	6.05	182.6 K=1.00	0.4844	-215.27	3282.33	0.066 [1] ✔
T6	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	168.7 K=1.00	0.9020	-14.07	7160.82	0.002 [1] ✔
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	182.3 K=1.00	0.9020	-14.81	6129.75	0.002 [1] ✔
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	198.3 K=1.00	0.9020	-247.27	5182.20	0.048 [1] ✔
T9	80 - 60	L3x3x3/16	9.46	9.46	190.5 K=1.00	1.0900	-17.40	6782.55	0.003 [1] ✔
T10	60 - 40	L3 1/2x3 1/2x1/4	10.71	10.71	185.2 K=1.00	1.6900	-20.05	11125.50	0.002 [1] ✔
T11	40 - 30	L3 1/2x3 1/2x1/4	11.34	11.34	196.1 K=1.00	1.6900	-20.24	9932.80	0.002 [1] ✔
T12	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	206.9 K=1.00	1.6900	-340.15	8922.09	0.038 [1] ✔
T13	20 - 0	ROHN 2 STD	12.59	12.59	191.9 K=1.00	1.0745	-24.45	6590.81	0.004 [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	4867.90	100281.00	0.049 [1] ✔
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1	3.1741	35399.70	142832.00	0.248 [1] ✔
T3	140 - 133.333	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1	6.0377	50398.60	271699.00	0.185 [1] ✔
T4	133.333 - 126.667	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1	6.0377	66968.60	271699.00	0.246 [1] ✔
T5	126.667 - 120	ROHN 5 EH (5.5 OD x 0.375)	6.68	6.68	44.1	6.0377	85218.30	271699.00	0.314 [1] ✔
T6	120 - 100	ROHN 6 EHS	20.04	10.02	54.0	6.7133	137686.00	302097.00	0.456 [1] ✔
T7	100 - 90	ROHN 6 EH	10.03	10.03	54.8	8.4049	168474.00	378222.00	0.445 [1] ✔
T8	90 - 80	ROHN 6 EH	10.03	10.03	54.8	8.4049	196022.00	378222.00	0.518 [1] ✔
T9	80 - 60	ROHN 8 EHS (8.75 OD x 0.375(t))	20.05	10.03	40.6	9.8666	249740.00	443995.00	0.562 [1] ✔
T10	60 - 40	ROHN 8 EHS (8.75 OD x 0.375(t))	20.05	10.03	40.6	9.8666	302612.00	443995.00	0.682 [1] ✔
T11	40 - 30	ROHN 8 EHS (8.75 OD x 0.375(t))	10.03	10.03	40.6	9.8666	328495.00	443995.00	0.740 [1] ✔
T12	30 - 20	ROHN 8 EHS (8.75 OD x 0.375(t))	10.03	10.03	40.6	9.8666	353809.00	443995.00	0.797 [1] ✔
T13	20 - 0	ROHN 8 EH	20.05	10.03	41.8	12.7627	376559.00	574322.00	0.656 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 2 STD	7.94	7.67	117.0	1.0745	5614.11	48353.90	0.116 [1] ✔
T2	160 - 140	ROHN 2 STD	8.55	8.25	125.8	1.0745	12053.60	48353.90	0.249 [1] ✔
T3	140 - 133.333	ROHN 2 EH	8.77	8.42	131.6	1.4807	13067.40	66630.70	0.196 [1] ✔
T4	133.333 - 126.667	ROHN 2 EH	9.00	8.66	135.3	1.4807	15172.10	66630.70	0.228 [1] ✔
T5	126.667 - 120	ROHN 2 XXS	9.24	8.91	152.2	2.6559	17706.40	119516.00	0.148 [1] ✔
T6	120 - 100	ROHN 2.5 XXS	12.19	11.73	166.7	4.0285	22508.20	181280.00	0.124 [1] ✔
T7	100 - 90	ROHN 3 STD	12.92	12.49	128.8	2.2285	20970.00	100281.00	0.209 [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	ROHN 3 STD	13.35	12.93	133.4	2.2285	21146.40	100281.00	0.211 [1]
T9	80 - 60	ROHN 3 STD	14.21	13.70	141.3	2.2285	22455.70	100281.00	0.224 [1]
T10	60 - 40	P3.5x.226	15.12	14.64	131.4	2.6795	23410.80	120579.00	0.194 [1]
T11	40 - 30	P3.5x.226	15.60	15.12	135.8	2.6795	23760.70	120579.00	0.197 [1]
T12	30 - 20	P3.5x.226	16.08	15.62	140.2	2.6795	24303.00	120579.00	0.202 [1]
T13	20 - 0	P3.5x.226	24.33	12.17	109.2	2.6795	35535.70	120579.00	0.295 [1]

[1] $P_u / \phi P_n$ 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	3128.72	35975.60	0.087 [1]
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9	0.7995	7547.50	35975.60	0.210 [1]
T3	140 - 133.333	ROHN 2 STD	10.71	5.17	78.8	1.0745	8513.79	48353.90	0.176 [1]
T6	120 - 100	ROHN 2 STD	13.92	6.68	101.9	1.0745	13592.40	48353.90	0.281 [1]
T7	100 - 90	ROHN 2 STD	15.04	7.24	110.5	1.0745	13313.00	48353.90	0.275 [1]
T9	80 - 60	ROHN 2.5 STD	18.93	9.10	115.2	1.7040	16091.10	76682.30	0.210 [1]
T10	60 - 40	ROHN 2.5 STD	21.43	10.35	131.1	1.7040	17793.40	76682.30	0.232 [1]
T11	40 - 30	ROHN 2.5 STD	22.68	10.97	139.0	1.7040	18485.80	76682.30	0.241 [1]
T13	20 - 0	P3.5x.226	25.18	12.22	109.7	2.6795	20026.10	120579.00	0.166 [1]

[1] $P_u / \phi P_n$ 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	644.15	35975.60	0.018 [1] ✔
T4	133.333 - 126.667	ROHN 2 STD	11.40	5.47	83.4	1.0745	10212.00	48353.90	0.211 [1] ✔
T5	126.667 - 120	ROHN 2 STD	12.10	5.82	88.7	1.0745	12283.00	48353.90	0.254 [1] ✔
T8	90 - 80	ROHN 2 STD	16.36	7.90	120.5	1.0745	14081.50	48353.90	0.291 [1] ✔
T12	30 - 20	ROHN 3 STD	23.93	11.60	119.6	2.2285	19385.70	100281.00	0.193 [1] ✔

[1] $P_u / \phi P_n$ 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	7091.94	35975.60	0.197 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (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 SCH XS (Extra Strong)	11.50	10.76	213.4	1.0681	6479.22	48066.40	0.135 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Hip (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	6.29	121.3	0.7995	44.94	35975.60	0.001 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Hip 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 2.5 STD	15.07	15.07	190.9	1.7040	110.92	76682.30	0.001 [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	4.27	4.27	81.8	0.4844	11.16	15693.80	0.001 [1] ✔
T2	160 - 140	L2x2x1/8	4.31	4.31	82.6	0.4844	6.17	15693.80	0.000 [1] ✔
T3	140 - 133.333	L2x2x1/8	5.35	5.35	102.6	0.4844	8.27	15693.80	0.001 [1] ✔
T4	133.333 - 126.667	L2x2x1/8	5.70	5.70	109.3	0.4844	176.93	15693.80	0.011 [1] ✔
T5	126.667 - 120	L2x2x1/8	6.05	6.05	115.9	0.4844	212.87	15693.80	0.014 [1] ✔
T6	120 - 100	L2 1/2x2 1/2x3/16	6.40	6.40	98.7	0.9020	6.30	29224.80	0.000 [1] ✔
T7	100 - 90	L2 1/2x2 1/2x3/16	7.52	7.52	116.0	0.9020	4.52	29224.80	0.000 [1] ✔
T8	90 - 80	L2 1/2x2 1/2x3/16	8.18	8.18	126.2	0.9020	239.70	29224.80	0.008 [1] ✔
T9	80 - 60	L3x3x3/16	8.84	8.84	113.0	1.0900	4.60	35316.00	0.000 [1] ✔
T10	60 - 40	L3 1/2x3 1/2x1/4	10.09	10.09	111.1	1.6900	2.29	76050.00	0.000 [1] ✔
T11	40 - 30	L3 1/2x3 1/2x1/4	11.34	11.34	124.8	1.6900	0.75	76050.00	0.000 [1] ✔
T12	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	131.7	1.6900	325.76	76050.00	0.004 [1] ✔
T13	20 - 0	ROHN 2 STD	12.59	12.59	191.9	1.0745	9.94	48353.90	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	-5957.73	70976.40	8.4	Pass
		Leg	ROHN 3 STD	2	-6239.76	70976.40	8.8	Pass
		Leg	ROHN 3 STD	3	-6005.64	70976.40	8.5	Pass
T2	160 - 140	Leg	ROHN 4 STD	40	-38817.10	116229.00	33.4	Pass
		Leg	ROHN 4 STD	41	-40834.80	116229.00	35.1	Pass
		Leg	ROHN 4 STD	42	-38836.70	116229.00	33.4	Pass
T3	140 - 133.333	Leg	ROHN 5 EH (5.5 OD x 0.375)	79	-54423.90	235665.00	23.1 26.6 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	80	-56972.30	235665.00	24.2 28.2 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	81	-54451.30	235665.00	23.1 26.6 (b)	Pass
T4	133.333 - 126.667	Leg	ROHN 5 EH (5.5 OD x 0.375)	94	-72324.30	235665.00	30.7 35.5 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	95	-75376.00	235665.00	32.0 37.4 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	96	-72417.90	235665.00	30.7 35.5 (b)	Pass
T5	126.667 - 120	Leg	ROHN 5 EH (5.5 OD x 0.375)	109	-92606.00	235665.00	39.3 45.5 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	110	-96147.70	235665.00	40.8 47.6 (b)	Pass
		Leg	ROHN 5 EH (5.5 OD x 0.375)	111	-92798.90	235665.00	39.4 45.5 (b)	Pass
T6	120 - 100	Leg	ROHN 6 EHS	124	-147424.00	244017.00	60.4	Pass
		Leg	ROHN 6 EHS	125	-151984.00	244017.00	62.3	Pass
		Leg	ROHN 6 EHS	126	-147985.00	244017.00	60.6	Pass
T7	100 - 90	Leg	ROHN 6 EH	151	-179494.00	303585.00	59.1 72.7 (b)	Pass
		Leg	ROHN 6 EH	152	-184538.00	303585.00	60.8 75.0 (b)	Pass
		Leg	ROHN 6 EH	153	-180221.00	303585.00	59.4 72.6 (b)	Pass
T8	90 - 80	Leg	ROHN 6 EH	166	-208204.00	303585.00	68.6	Pass
		Leg	ROHN 6 EH	167	-213598.00	303585.00	70.4	Pass
		Leg	ROHN 6 EH	168	-209079.00	303585.00	68.9	Pass
T9	80 - 60	Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	181	-264730.00	393602.00	67.3 68.3 (b)	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	182	-270708.00	393602.00	68.8 70.0 (b)	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	183	-265882.00	393602.00	67.6 68.1 (b)	Pass
T10	60 - 40	Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	208	-320966.00	393602.00	81.5	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	209	-327424.00	393602.00	83.2	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	210	-322377.00	393602.00	81.9	Pass
T11	40 - 30	Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	235	-348657.00	393602.00	88.6	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	236	-355319.00	393602.00	90.3	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	237	-350191.00	393602.00	89.0	Pass
T12	30 - 20	Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	250	-375864.00	393602.00	95.5	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	251	-382708.00	393602.00	97.2	Pass
		Leg	ROHN 8 EHS (8.75 OD x 0.375(t))	252	-377518.00	393602.00	95.9	Pass
T13	20 - 0	Leg	ROHN 8 EH	265	-401478.00	505434.00	79.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							87.3 (b)	
		Leg	ROHN 8 EH	266	-408502.00	505434.00	80.8	Pass
							88.8 (b)	
		Leg	ROHN 8 EH	267	-403441.00	505434.00	79.8	Pass
							87.0 (b)	
T1	180 - 160	Diagonal	ROHN 2 STD	8	-5681.61	17747.50	32.0	Pass
		Diagonal	ROHN 2 STD	9	-5680.99	17747.50	32.0	Pass
		Diagonal	ROHN 2 STD	11	-4870.70	17747.50	27.4	Pass
		Diagonal	ROHN 2 STD	12	-4871.31	17747.50	27.4	Pass
		Diagonal	ROHN 2 STD	14	-3825.60	17747.50	21.6	Pass
		Diagonal	ROHN 2 STD	15	-3825.62	17747.50	21.6	Pass
		Diagonal	ROHN 2 STD	20	-3967.76	17782.20	22.3	Pass
		Diagonal	ROHN 2 STD	21	-3967.61	17782.20	22.3	Pass
		Diagonal	ROHN 2 STD	23	-2631.15	17782.20	14.8	Pass
		Diagonal	ROHN 2 STD	24	-2631.35	17782.20	14.8	Pass
		Diagonal	ROHN 2 STD	26	-3362.30	17782.20	18.9	Pass
		Diagonal	ROHN 2 STD	27	-3362.25	17782.20	18.9	Pass
		Diagonal	ROHN 2 STD	31	-955.53	17817.00	5.4	Pass
		Diagonal	ROHN 2 STD	32	-956.06	17817.00	5.4	Pass
		Diagonal	ROHN 2 STD	33	-235.38	17817.00	1.3	Pass
		Diagonal	ROHN 2 STD	34	-234.30	17817.00	1.3	Pass
		Diagonal	ROHN 2 STD	35	-1077.12	17817.00	6.0	Pass
		Diagonal	ROHN 2 STD	36	-1076.67	17817.00	6.0	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	44	-12128.90	15331.30	79.1	Pass
		Diagonal	ROHN 2 STD	45	-12135.10	15331.30	79.2	Pass
		Diagonal	ROHN 2 STD	47	-11180.60	15331.30	72.9	Pass
		Diagonal	ROHN 2 STD	48	-11174.00	15331.30	72.9	Pass
		Diagonal	ROHN 2 STD	50	-11215.20	15331.30	73.2	Pass
		Diagonal	ROHN 2 STD	51	-11215.60	15331.30	73.2	Pass
		Diagonal	ROHN 2 STD	56	-9233.07	16154.50	57.2	Pass
		Diagonal	ROHN 2 STD	57	-9234.51	16154.50	57.2	Pass
		Diagonal	ROHN 2 STD	59	-8152.94	16154.50	50.5	Pass
		Diagonal	ROHN 2 STD	60	-8153.77	16154.50	50.5	Pass
		Diagonal	ROHN 2 STD	62	-7804.32	16154.50	48.3	Pass
		Diagonal	ROHN 2 STD	63	-7802.04	16154.50	48.3	Pass
		Diagonal	ROHN 2 STD	68	-9536.38	17005.60	56.1	Pass
		Diagonal	ROHN 2 STD	69	-9532.35	17005.60	56.1	Pass
		Diagonal	ROHN 2 STD	71	-8320.69	17005.60	48.9	Pass
		Diagonal	ROHN 2 STD	72	-8327.15	17005.60	49.0	Pass
		Diagonal	ROHN 2 STD	74	-7778.91	17005.60	45.7	Pass
		Diagonal	ROHN 2 STD	75	-7776.46	17005.60	45.7	Pass
T3	140 - 133.333	Diagonal	ROHN 2 EH	83	-13171.80	19329.00	68.1	Pass
		Diagonal	ROHN 2 EH	84	-13181.70	19329.00	68.2	Pass
		Diagonal	ROHN 2 EH	86	-12307.80	19329.00	63.7	Pass
		Diagonal	ROHN 2 EH	87	-12296.40	19329.00	63.6	Pass
		Diagonal	ROHN 2 EH	89	-12555.50	19329.00	65.0	Pass
		Diagonal	ROHN 2 EH	90	-12557.00	19329.00	65.0	Pass
T4	133.333 - 126.667	Diagonal	ROHN 2 EH	100	-15283.30	18268.60	83.7	Pass
		Diagonal	ROHN 2 EH	101	-15294.20	18268.60	83.7	Pass
		Diagonal	ROHN 2 EH	102	-14573.30	18268.60	79.8	Pass
		Diagonal	ROHN 2 EH	103	-14558.60	18268.60	79.7	Pass
		Diagonal	ROHN 2 EH	104	-14844.20	18268.60	81.3	Pass
		Diagonal	ROHN 2 EH	105	-14848.00	18268.60	81.3	Pass
T5	126.667 - 120	Diagonal	ROHN 2 XXS	115	-17884.90	25913.80	69.0	Pass
		Diagonal	ROHN 2 XXS	116	-17894.00	25913.80	69.1	Pass
		Diagonal	ROHN 2 XXS	117	-17282.00	25913.80	66.7	Pass
		Diagonal	ROHN 2 XXS	118	-17266.90	25913.80	66.6	Pass
		Diagonal	ROHN 2 XXS	119	-17530.50	25913.80	67.6	Pass
		Diagonal	ROHN 2 XXS	120	-17536.60	25913.80	67.7	Pass
T6	120 - 100	Diagonal	ROHN 2.5 XXS	128	-22676.00	30977.00	73.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	ROHN 2.5 XXS	129	-22679.80	30977.00	73.2	Pass
		Diagonal	ROHN 2.5 XXS	131	-22586.80	30977.00	72.9	Pass
		Diagonal	ROHN 2.5 XXS	132	-22555.20	30977.00	72.8	Pass
		Diagonal	ROHN 2.5 XXS	134	-22756.00	30977.00	73.5	Pass
		Diagonal	ROHN 2.5 XXS	135	-22783.70	30977.00	73.6	Pass
		Diagonal	ROHN 2.5 XXS	140	-22799.20	32743.10	69.6	Pass
		Diagonal	ROHN 2.5 XXS	141	-22807.40	32743.10	69.7	Pass
		Diagonal	ROHN 2.5 XXS	143	-22356.20	32743.10	68.3	Pass
		Diagonal	ROHN 2.5 XXS	144	-22330.60	32743.10	68.2	Pass
		Diagonal	ROHN 2.5 XXS	146	-22607.80	32743.10	69.0	Pass
		Diagonal	ROHN 2.5 XXS	147	-22625.20	32743.10	69.1	Pass
T7	100 - 90	Diagonal	ROHN 3 STD	155	-20823.30	30346.40	68.6	Pass
		Diagonal	ROHN 3 STD	156	-20823.70	30346.40	68.6	Pass
		Diagonal	ROHN 3 STD	158	-21019.20	30346.40	69.3	Pass
		Diagonal	ROHN 3 STD	159	-20977.20	30346.40	69.1	Pass
		Diagonal	ROHN 3 STD	161	-21156.70	30346.40	69.7	Pass
		Diagonal	ROHN 3 STD	162	-21198.30	30346.40	69.9	Pass
T8	90 - 80	Diagonal	ROHN 3 STD	172	-20843.50	28290.90	73.7	Pass
		Diagonal	ROHN 3 STD	173	-20840.40	28290.90	73.7	Pass
		Diagonal	ROHN 3 STD	174	-21267.80	28290.90	75.2	Pass
		Diagonal	ROHN 3 STD	175	-21221.20	28290.90	75.0	Pass
		Diagonal	ROHN 3 STD	176	-21344.50	28290.90	75.4	Pass
		Diagonal	ROHN 3 STD	177	-21394.10	28290.90	75.6	Pass
T9	80 - 60	Diagonal	ROHN 3 STD	185	-21977.40	25233.20	87.1	Pass
		Diagonal	ROHN 3 STD	186	-21969.40	25233.20	87.1	Pass
		Diagonal	ROHN 3 STD	188	-22760.30	25233.20	90.2	Pass
		Diagonal	ROHN 3 STD	189	-22708.70	25233.20	90.0	Pass
		Diagonal	ROHN 3 STD	191	-22731.50	25233.20	90.1	Pass
		Diagonal	ROHN 3 STD	192	-22791.00	25233.20	90.3	Pass
		Diagonal	ROHN 3 STD	197	-21679.80	26922.60	80.5	Pass
		Diagonal	ROHN 3 STD	198	-21674.20	26922.60	80.5	Pass
		Diagonal	ROHN 3 STD	200	-22303.00	26922.60	82.8	Pass
		Diagonal	ROHN 3 STD	201	-22254.20	26922.60	82.7	Pass
		Diagonal	ROHN 3 STD	203	-22318.90	26922.60	82.9	Pass
		Diagonal	ROHN 3 STD	204	-22373.30	26922.60	83.1	Pass
T10	60 - 40	Diagonal	P3.5x.226	212	-22813.10	35061.40	65.1	Pass
		Diagonal	P3.5x.226	213	-22801.10	35061.40	65.0	Pass
		Diagonal	P3.5x.226	215	-23872.80	35061.40	68.1	Pass
		Diagonal	P3.5x.226	216	-23814.40	35061.40	67.9	Pass
		Diagonal	P3.5x.226	218	-23778.40	35061.40	67.8	Pass
		Diagonal	P3.5x.226	219	-23849.00	35061.40	68.0	Pass
		Diagonal	P3.5x.226	224	-22518.70	37388.20	60.2	Pass
							60.4 (b)	
		Diagonal	P3.5x.226	225	-22508.50	37388.20	60.2	Pass
							60.4 (b)	
		Diagonal	P3.5x.226	227	-23457.20	37388.20	62.7	Pass
							62.9 (b)	
		Diagonal	P3.5x.226	228	-23401.70	37388.20	62.6	Pass
							62.8 (b)	
		Diagonal	P3.5x.226	230	-23394.40	37388.20	62.6	Pass
							62.8 (b)	
		Diagonal	P3.5x.226	231	-23460.10	37388.20	62.7	Pass
							62.9 (b)	
T11	40 - 30	Diagonal	P3.5x.226	239	-23081.40	32848.30	70.3	Pass
		Diagonal	P3.5x.226	240	-23067.20	32848.30	70.2	Pass
		Diagonal	P3.5x.226	242	-24257.30	32848.30	73.8	Pass
		Diagonal	P3.5x.226	243	-24194.80	32848.30	73.7	Pass
		Diagonal	P3.5x.226	245	-24137.00	32848.30	73.5	Pass
		Diagonal	P3.5x.226	246	-24213.20	32848.30	73.7	Pass
T12	30 - 20	Diagonal	P3.5x.226	256	-23643.20	30803.00	76.8	Pass
		Diagonal	P3.5x.226	257	-23629.10	30803.00	76.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	P3.5x.226	258	-24881.40	30803.00	80.8	Pass
		Diagonal	P3.5x.226	259	-24819.20	30803.00	80.6	Pass
		Diagonal	P3.5x.226	260	-24734.60	30803.00	80.3	Pass
		Diagonal	P3.5x.226	261	-24813.30	30803.00	80.6	Pass
T13	20 - 0	Diagonal	P3.5x.226	269	-34212.80	96957.10	35.3 75.1 (b)	Pass
		Diagonal	P3.5x.226	272	-34263.50	96957.10	35.3 75.2 (b)	Pass
		Diagonal	P3.5x.226	276	-36275.10	96957.10	37.4 79.6 (b)	Pass
		Diagonal	P3.5x.226	279	-36198.40	96957.10	37.3 79.5 (b)	Pass
		Diagonal	P3.5x.226	285	-35980.10	96957.10	37.1 79.0 (b)	Pass
		Diagonal	P3.5x.226	288	-36156.10	96957.10	37.3 79.4 (b)	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	7	-3094.68	22519.90	13.7	Pass
		Horizontal	ROHN 1.5 STD	10	-2654.65	22519.90	11.8	Pass
		Horizontal	ROHN 1.5 STD	13	-2155.51	22519.90	9.6	Pass
		Horizontal	ROHN 1.5 STD	19	-2448.84	22590.20	10.8	Pass
		Horizontal	ROHN 1.5 STD	22	-1612.55	22590.20	7.1	Pass
		Horizontal	ROHN 1.5 STD	25	-2190.07	22590.20	9.7	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	43	-7570.37	19142.00	39.5	Pass
		Horizontal	ROHN 1.5 STD	46	-7094.74	19142.00	37.1	Pass
		Horizontal	ROHN 1.5 STD	49	-7035.18	19142.00	36.8	Pass
		Horizontal	ROHN 1.5 STD	55	-5498.61	20895.80	26.3	Pass
		Horizontal	ROHN 1.5 STD	58	-4849.44	20895.80	23.2	Pass
		Horizontal	ROHN 1.5 STD	61	-4638.26	20895.80	22.2	Pass
		Horizontal	ROHN 1.5 STD	67	-5698.96	22661.30	25.1	Pass
		Horizontal	ROHN 1.5 STD	70	-5093.66	22661.30	22.5	Pass
		Horizontal	ROHN 1.5 STD	73	-4944.09	22661.30	21.8	Pass
T3	140 - 133.333	Horizontal	ROHN 2 STD	82	-8503.06	30717.90	27.7 34.3 (b)	Pass
		Horizontal	ROHN 2 STD	85	-7934.99	30717.90	25.8 32.0 (b)	Pass
		Horizontal	ROHN 2 STD	88	-8098.58	30717.90	26.4 32.6 (b)	Pass
T6	120 - 100	Horizontal	ROHN 2 STD	127	-13427.80	22639.20	59.3	Pass
		Horizontal	ROHN 2 STD	130	-13372.60	22639.20	59.1	Pass
		Horizontal	ROHN 2 STD	133	-13490.10	22639.20	59.6	Pass
		Horizontal	ROHN 2 STD	139	-12865.70	25586.40	50.3 51.9 (b)	Pass
		Horizontal	ROHN 2 STD	142	-12609.10	25586.40	49.3 50.9 (b)	Pass
		Horizontal	ROHN 2 STD	145	-12759.80	25586.40	49.9 51.5 (b)	Pass
T7	100 - 90	Horizontal	ROHN 2 STD	154	-13070.60	19817.20	66.0	Pass
		Horizontal	ROHN 2 STD	157	-13210.10	19817.20	66.7	Pass
		Horizontal	ROHN 2 STD	160	-13301.20	19817.20	67.1	Pass
T9	80 - 60	Horizontal	ROHN 2.5 STD	184	-15380.90	28984.30	53.1 62.4 (b)	Pass
		Horizontal	ROHN 2.5 STD	187	-15936.50	28984.30	55.0 64.7 (b)	Pass
		Horizontal	ROHN 2.5 STD	190	-15956.50	28984.30	55.1 64.8 (b)	Pass
		Horizontal	ROHN 2.5 STD	196	-14694.40	33028.40	44.5 59.6 (b)	Pass
		Horizontal	ROHN 2.5 STD	199	-15113.10	33028.40	45.8 61.4 (b)	Pass
		Horizontal	ROHN 2.5 STD	202	-15164.20	33028.40	45.9 61.6 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T10	60 - 40	Horizontal	ROHN 2.5 STD	211	-16773.20	22405.40	74.9	Pass
		Horizontal	ROHN 2.5 STD	214	-17565.60	22405.40	78.4	Pass
		Horizontal	ROHN 2.5 STD	217	-17546.20	22405.40	78.3	Pass
		Horizontal	ROHN 2.5 STD	223	-16176.20	25378.10	63.7	Pass
							65.7 (b)	
		Horizontal	ROHN 2.5 STD	226	-16860.90	25378.10	66.4	Pass
							68.5 (b)	
		Horizontal	ROHN 2.5 STD	229	-16861.30	25378.10	66.4	Pass
							68.5 (b)	
T11	40 - 30	Horizontal	ROHN 2.5 STD	238	-17346.40	19925.90	87.1	Pass
		Horizontal	ROHN 2.5 STD	241	-18249.10	19925.90	91.6	Pass
		Horizontal	ROHN 2.5 STD	244	-18212.10	19925.90	91.4	Pass
T13	20 - 0	Horizontal	P3.5x.226	268	-18765.20	49988.70	37.5	Pass
							52.8 (b)	
		Horizontal	P3.5x.226	275	-19924.70	49988.70	39.9	Pass
							56.0 (b)	
		Horizontal	P3.5x.226	284	-19838.40	49988.70	39.7	Pass
							55.7 (b)	
T1	180 - 160	Top Girt	ROHN 1.5 STD	4	-606.30	22660.50	2.7	Pass
		Top Girt	ROHN 1.5 STD	5	-224.57	22660.50	1.0	Pass
		Top Girt	ROHN 1.5 STD	6	-644.40	22660.50	2.8	Pass
T4	133.333 - 126.667	Top Girt	ROHN 2 STD	97	-10212.10	29067.20	35.1	Pass
							41.1 (b)	
		Top Girt	ROHN 2 STD	98	-9757.19	29067.20	33.6	Pass
							39.3 (b)	
		Top Girt	ROHN 2 STD	99	-9914.80	29067.20	34.1	Pass
							39.9 (b)	
T5	126.667 - 120	Top Girt	ROHN 2 STD	112	-12287.40	27193.80	45.2	Pass
							49.4 (b)	
		Top Girt	ROHN 2 STD	113	-11885.10	27193.80	43.7	Pass
							47.8 (b)	
		Top Girt	ROHN 2 STD	114	-12040.30	27193.80	44.3	Pass
							48.5 (b)	
T8	90 - 80	Top Girt	ROHN 2 STD	169	-13646.00	16719.60	81.6	Pass
		Top Girt	ROHN 2 STD	170	-13926.90	16719.60	83.3	Pass
		Top Girt	ROHN 2 STD	171	-14009.30	16719.60	83.8	Pass
T12	30 - 20	Top Girt	ROHN 3 STD	253	-18067.00	35183.60	51.4	Pass
							74.1 (b)	
		Top Girt	ROHN 3 STD	254	-19021.80	35183.60	54.1	Pass
							78.0 (b)	
		Top Girt	ROHN 3 STD	255	-18972.20	35183.60	53.9	Pass
							77.8 (b)	
T13	20 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	270	-6969.99	19502.40	35.7	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	273	-7091.94	19502.40	36.4	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	277	-7091.94	19502.40	36.4	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	280	-7004.06	19502.40	35.9	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	286	-7004.06	19502.40	35.9	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	289	-6969.99	19502.40	35.7	Pass
T13	20 - 0	Redund Diag 1 Bracing	ROHN 1.5 SCH XS (Extra Strong)	271	-6367.80	8278.56	76.9	Pass
		Redund Diag 1 Bracing	ROHN 1.5 SCH XS (Extra Strong)	274	-6479.22	8278.56	78.3	Pass
		Redund Diag 1 Bracing	ROHN 1.5 SCH XS (Extra Strong)	278	-6479.22	8278.56	78.3	Pass
		Redund Diag 1	ROHN 1.5 SCH XS (Extra	281	-6398.93	8278.56	77.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing	Strong)					
		Redund Diag 1 Bracing	ROHN 1.5 SCH XS (Extra Strong)	287	-6398.93	8278.56	77.3	Pass
		Redund Diag 1 Bracing	ROHN 1.5 SCH XS (Extra Strong)	290	-6367.80	8278.56	76.9	Pass
T13	20 - 0	Redund Hip 1 Bracing	ROHN 1.5 STD	282	-57.10	18067.90	0.3	Pass
		Redund Hip 1 Bracing	ROHN 1.5 STD	291	-56.34	18067.90	0.3	Pass
		Redund Hip 1 Bracing	ROHN 1.5 STD	293	-54.00	18067.90	0.3	Pass
T13	20 - 0	Redund Hip Diagonal 1 Bracing	ROHN 2.5 STD	283	-112.81	10559.80	1.1	Pass
		Redund Hip Diagonal 1 Bracing	ROHN 2.5 STD	292	-116.67	10559.80	1.1	Pass
		Redund Hip Diagonal 1 Bracing	ROHN 2.5 STD	294	-108.89	10559.80	1.0	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	16	-3.44	6439.55	0.7	Pass
		Inner Bracing	L2x2x1/8	17	-3.05	6439.55	0.7	Pass
		Inner Bracing	L2x2x1/8	18	-3.05	6439.55	0.7	Pass
		Inner Bracing	L2x2x1/8	28	-2.95	6475.08	0.7	Pass
		Inner Bracing	L2x2x1/8	29	-2.73	6475.08	0.7	Pass
		Inner Bracing	L2x2x1/8	30	-2.73	6475.08	0.7	Pass
		Inner Bracing	L2x2x1/8	37	-10.54	6510.70	0.7	Pass
		Inner Bracing	L2x2x1/8	38	-11.20	6510.70	0.7	Pass
		Inner Bracing	L2x2x1/8	39	-11.20	6510.70	0.7	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	52	-7.71	4790.07	0.8	Pass
		Inner Bracing	L2x2x1/8	53	-7.52	4790.07	0.8	Pass
		Inner Bracing	L2x2x1/8	54	-7.52	4790.07	0.8	Pass
		Inner Bracing	L2x2x1/8	64	-6.17	5530.76	0.7	Pass
		Inner Bracing	L2x2x1/8	65	-6.15	5530.76	0.7	Pass
		Inner Bracing	L2x2x1/8	66	-6.13	5530.76	0.7	Pass
		Inner Bracing	L2x2x1/8	76	-8.09	6404.10	0.7	Pass
		Inner Bracing	L2x2x1/8	77	-7.75	6404.10	0.7	Pass
		Inner Bracing	L2x2x1/8	78	-7.75	6404.10	0.7	Pass
T3	140 - 133.333	Inner Bracing	L2x2x1/8	91	-11.11	4188.78	0.8	Pass
		Inner Bracing	L2x2x1/8	92	-10.87	4188.78	0.8	Pass
		Inner Bracing	L2x2x1/8	93	-10.86	4188.78	0.8	Pass
T4	133.333 - 126.667	Inner Bracing	L2x2x1/8	106	-178.52	3694.21	4.8	Pass
		Inner Bracing	L2x2x1/8	107	-173.37	3694.21	4.7	Pass
		Inner Bracing	L2x2x1/8	108	-178.52	3694.21	4.8	Pass
T5	126.667 - 120	Inner Bracing	L2x2x1/8	121	-215.27	3282.33	6.6	Pass
		Inner Bracing	L2x2x1/8	122	-211.01	3282.33	6.4	Pass
		Inner Bracing	L2x2x1/8	123	-215.27	3282.33	6.6	Pass
T6	120 - 100	Inner Bracing	L2 1/2x2 1/2x3/16	136	-13.99	7160.82	0.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	137	-14.07	7160.82	0.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	138	-14.00	7160.82	0.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	148	-14.82	8475.74	0.6	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	149	-14.70	8475.74	0.6	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	150	-14.69	8475.74	0.6	Pass
T7	100 - 90	Inner Bracing	L2 1/2x2 1/2x3/16	163	-14.71	6129.75	0.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	164	-14.81	6129.75	0.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	165	-14.72	6129.75	0.7	Pass
T8	90 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	178	-245.83	5182.20	4.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	179	-247.27	5182.20	4.8	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	180	-247.26	5182.20	4.8	Pass
T9	80 - 60	Inner Bracing	L3x3x3/16	193	-17.26	6782.55	0.9	Pass
		Inner Bracing	L3x3x3/16	194	-17.40	6782.55	0.9	Pass
		Inner Bracing	L3x3x3/16	195	-17.26	6782.55	0.9	Pass
		Inner Bracing	L3x3x3/16	205	-16.62	7775.70	0.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Inner Bracing	L3x3x3/16	206	-16.78	7775.70	0.8	Pass
		Inner Bracing	L3x3x3/16	207	-16.63	7775.70	0.8	Pass
T10	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	220	-19.91	11125.50	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	221	-20.05	11125.50	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	222	-19.90	11125.50	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	232	-19.23	12546.70	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	233	-19.37	12546.70	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	234	-19.22	12546.70	0.5	Pass
T11	40 - 30	Inner Bracing	L3 1/2x3 1/2x1/4	247	-20.10	9932.80	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	248	-20.24	9932.80	0.5	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	249	-20.09	9932.80	0.5	Pass
T12	30 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	262	-340.13	8922.09	3.8	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	263	-340.15	8922.09	3.8	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	264	-338.99	8922.09	3.8	Pass
T13	20 - 0	Inner Bracing	ROHN 2 STD	295	-23.18	6590.81	0.4	Pass
		Inner Bracing	ROHN 2 STD	296	-24.45	6590.81	0.4	Pass
		Inner Bracing	ROHN 2 STD	297	-22.47	6590.81	0.3	Pass
							Summary	
						Leg (T12)	97.2	Pass
						Diagonal (T9)	90.3	Pass
						Horizontal (T11)	91.6	Pass
						Top Girt (T8)	83.8	Pass
						Redund Horz 1 Bracing (T13)	36.4	Pass
						Redund Diag 1 Bracing (T13)	78.3	Pass
						Redund Hip 1 Bracing (T13)	0.3	Pass
						Redund Hip Diagonal 1 Bracing (T13)	1.1	Pass
						Inner Bracing (T5)	6.6	Pass
						Bolt Checks	88.8	Pass
						RATING =	**97.2**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift:	Uplift := 425.157·kips	*user input*
Shear:	Shear := 62.888·kips	*user input*
Compression:	Compression := 460.082·kips	*user input*

Anchor Bolt Data:

Use ASTM A354 Gr. BC

Number of Anchor Bolts = N	N := 10	*user input*	
Bolt Ultimate Strength:	F_u := 125·ksi	*user input*	
Bolt Yield Strength:	Fy := 109·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.0in	*user input*	
Threads per Inch:	n := 8	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-15)
Length from top of pier to bottom of leveling nut:	L_{ar} := 0in	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	

Anchor Bolt Section Properties:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 0.79 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 0.61 \cdot in^2$$

Net Diameter:

$$D_n := D - \frac{0.9743 in}{n} \qquad D_n = 0.88 \cdot in$$

Radius of Gyration of Bolt:

$$r := \frac{D_n}{4} \qquad r = 0.22 \cdot in$$

Plastic Section Modulus of Bolt:

$$Z_x := \frac{D_n^3}{6} \qquad Z_x = 0.11 \cdot in^3$$

Forces:

Tension Force:

$$T_u := \frac{Uplift}{N}$$

$T_u = 42.52 \cdot kip$ $\qquad T_{ub} := T_u$

Shear Force:

$$V_u := \frac{Shear}{N}$$

$V_u = 6.29 \cdot kip$ $\qquad V_{ub} := V_u$

Resistance Factor for Flexure (ANSI/TIA-222-G 4.7):

$\phi_f := 0.9$

Resistance Factor for Anchor Bolt (ANSI/TIA-222-G 4.5.4.2):

$\phi_b := 0.80$

Resistance Factor for Tension (ANSI/TIA-222-G 4.9.6.1):

$\phi_t := 0.75$

Resistance Factor for Shear (ANSI/TIA-222-G 4.9.6.3):

$\phi_v := 0.75$

ANSI/TIA-222-G 4.7.1 Flexural Members:

Nominal Flexure Strength, Mn:

$M_n := Fy \cdot Z_x$

$M_n = 1.03 \cdot ft \cdot kip$

$\phi_f \cdot M_n = 0.92 \cdot ft \cdot kip$

Applied Moment due to Shear (worst case lever arm), Mu:

$M_u := L_{ar} \cdot V_u$

$M_u = 0 \cdot ft \cdot kip$

Flexure Check:

$FlexureCheck := if(M_u \le \phi_f \cdot M_n, "OK", "NO GOOD")$

FlexureCheck = "OK"

$\frac{M_u}{\phi_f \cdot M_n} = 0 \cdot \%$

ANSI/TIA-222-G 4.9.6.1 Tensile Strength:

Design Tensile Strength, Rnt:

$R_{nt} := F_u \cdot A_n$

$R_{nt} = 75.72 \cdot ft \cdot kip$

$\phi_t \cdot R_{nt} = 56.79 \cdot ft \cdot kip$

Tension Check:

$TensionCheck := if(T_u \le \phi_t \cdot R_{nt}, "OK", "NO GOOD")$

TensionCheck = "OK"

$\frac{T_u}{\phi_t \cdot R_{nt}} = 74.87 \cdot \%$

ANSI/TIA-222-G 4.9.6.3 Design Shear Strength:

Design Shear Strength, Rnv:

$R_{nv} := 0.45 \cdot F_u \cdot A_g$

$R_{nv} = 44.18 \cdot ft \cdot kip$

$\phi_v \cdot R_{nv} = 33.13 \cdot ft \cdot kip$

Shear Check:

$ShearCheck := if(V_u \le \phi_v \cdot R_{nv}, "OK", "NO GOOD")$

ShearCheck = "OK"

$\frac{V_u}{\phi_v \cdot R_{nv}} = 18.98 \cdot \%$

ANSI/TIA-222-G 4.9.6.4 Combined Shear and Tension:

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1$$

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 = 0.6$$

Combined Shear and Tension Check:

$$\text{ShearAndTensionCheck} := \text{if}\left[\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

ShearAndTensionCheck = "OK"

ANSI/TIA-222-G 4.9.9 Anchor Rods (Capacity):

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot P_n} \le 1$$

$\eta := 0.55$ *user input from ANSI/TIA-222-G 4.9.9*

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} = 0.891$$

Capacity Check:

$$\text{CapacityCheck} := \text{if}\left[\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

CapacityCheck = "OK"

FOUNDATION ANALYSIS
(PERFORMED BY DR. CLARENCE WELTI, P.E., P.C.)

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street • P.O. Box 397
Glastonbury, CT 06033

(860) 633-4623 / FAX (860) 657-2514

October 10, 2002

Mr. Mohsen Sahirad
URS Corporation
500 Enterprise Drive; Suite 3B
Rocky Hill, CT 06067

Re: Telecommunications Tower; 880 Post Road; Westport, CT ; Evaluation of Existing Foundation for Increased Design Loads

Dear Mohsen:

1.0 Herewith are boring data pertaining to the above. Two borings were drilled to a maximum depth of 12 feet. One boring was drilled 10 feet into bedrock and the second boring was drilled to the top of bedrock. The two borings are shown on the attached photo. Boring B-1 was about 11 feet from the tower leg and boring B-2 was about 15 feet from the tower leg. Considering that the rock outcrops at the third leg, the two borings define rock sufficiently to permit a reasonable interpolation of rock at the actual leg foundations. The former police station site is undergoing environmental remediation. *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The purpose of this study is to assess the capability of tower legs to receive the proposed revised loadings. The load summary, including initial and revised design loadings is as follows:

Loading Type	Original Reaction	Revised Reactions
Uplift	276.7 kips	324 kips
Download	319.9 kips	374 kips
Shear	41.0 kips	48 kips

3.0 The initial boring data (1990 data from Test Craig Laboratories) indicated bedrock over the entire site. It is understood that there is information indicating that two of the legs were placed in earth instead of rock. The recent boring tends to belie this. The analyses for uplift (which is the only critical item on the above reaction schedule) have been done for both earth and rock. The reference for both analyses is FHWA-1F-025 Publication "Drilled Shafts: Construction Procedures and Design Methods".

3.0.1 The tower legs were each placed on 4.5 feet diameter shafts installed 27 feet deep into either earth or rock. The design uplift was and is based on an effective length of 21 feet.

3.1 Regarding the shaft in earth analysis there were no deep blow counts in the borings, since rock was encountered within 2 feet of grade. It is however reasonable to assume the N value (blows per 12" on split spoon) will be about 60 in the till overlying rock. Using the procedure indicated on the attached calculations the ultimate uplift capacity would be 831 kips. Design capacity would be ½ of this value or 415 kips. In reviewing the reference you cited (Foundation Engineering by Das, 4th edition) a similar ultimate load capacity can also be found if one assumes an angle of internal friction of about 40° (which would be typical for N = 60) and a δ/ϕ ratio of 1.0 (relative density of soil ≥ 85+%).

3.2 Regarding the shaft in rock the friction is defined in the attached calculations. The ultimate uplift of the shaft placed the Straits Schist rock formation would be about 10 kips/sf. With a factor of safety of 3 (using 3 kips/sf) the allowable loading would be 888 kips.

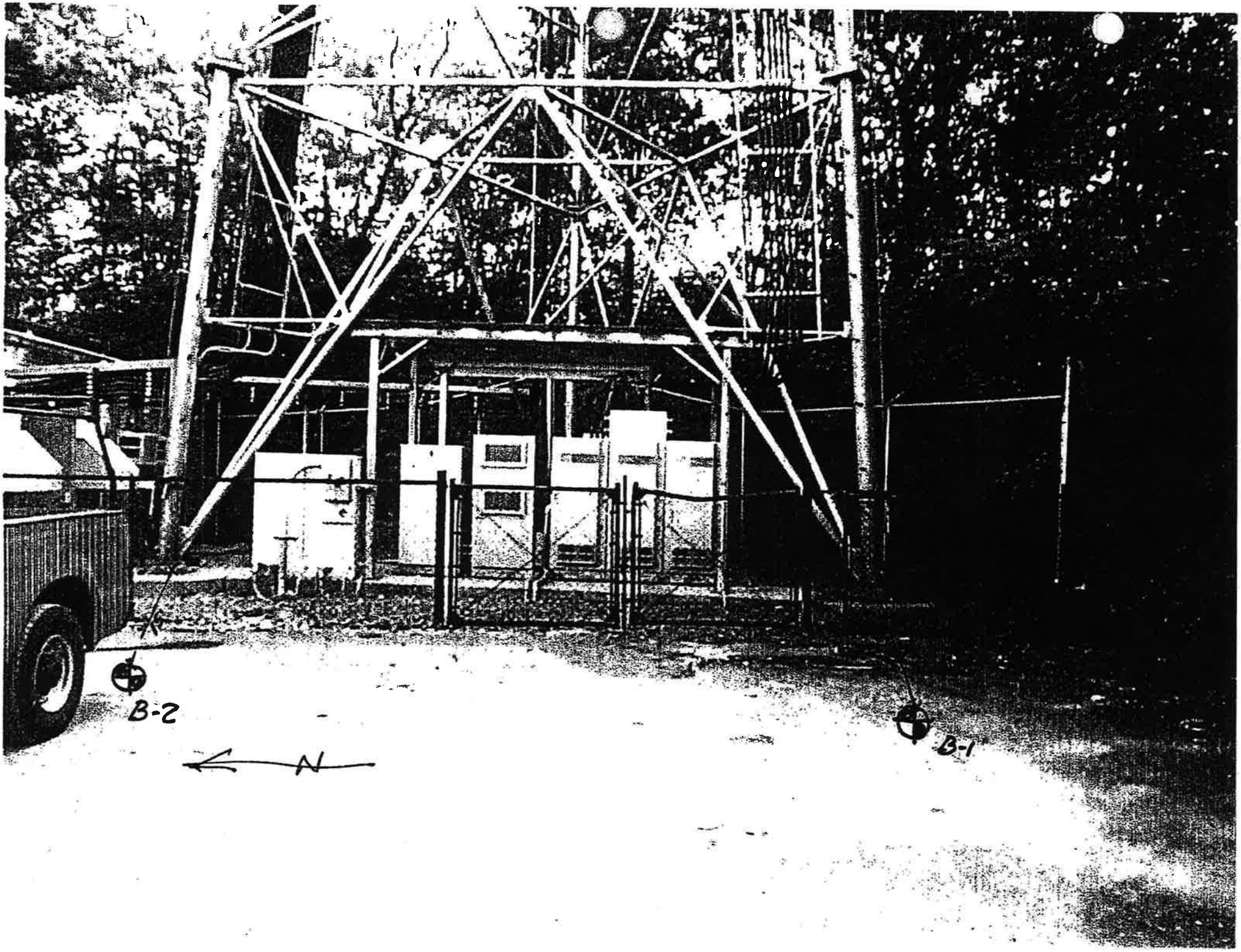
4.0 In summary it is believed that the shafts are in rock. The rock is a Schist with steep foliation and may have been drilled with only moderate effort. If the actual shaft are in earth there would have to have been a deep depression between the rock outcrop (which was cut down about 5 feet at the east leg) and the boring locations west of the two west legs, which indicated rock at 2 feet below grade similar to the original borings on the site. If there was a depression in the rock, the soil would be glacial till similar to what is being excavated to the northwest of the site at the old State Police Station. The analyses included herewith indicate that with either rock or till overburden the shafts have adequate capacity for the revised loading.

If you have any questions, please call me.

Very truly yours.

Clarence Welti, PhD, P. E.
Pres. Dr. Clarence Welti, P. E., P.C.

A:\urstoweranalysis9/04/02


B-2
B-1
N

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
URS CORPORATION

PROJECT NAME
CELL TOWER SITE
LOCATION
880 POST ROAD
WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NX
SIZE I.D.	3.75"		1.5"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. B-1

GROUND WATER OBSERVATIONS
AT 2.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 10/7/02
FINISH DATE 10/7/02

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-13-20-60	0.00'-1.50'		ASPHALT .10 BR. FINE-CRS. SAND AND FINE GRAVEL - FILL .80 GRAY ROCK FRAGMENTS, LITTLE SILT AND FINE SAND 1.5 GRAY ROCK FRAGMENTS 2.0 CORED ROCK -	
5					RUN #1 2.0' - 7.0' RECOVERED 50" RUN #2 7.0' - 12.0' RECOVERED 60"	
10					12.0 BOTTOM OF BORING @ 12.0'	
15					NOTE: BORING WAS DRILLED 11.0' WEST OF TOWER LEG	
20						
25						
30						
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-1

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT URS CORPORATION	PROJECT NAME CELL TOWER SITE LOCATION 880 POST ROAD WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV.	HOLE NO. B-2
TYPE	HSA		SS		LINE & STA.	GROUND WATER OBSERVATIONS	START DATE 10/7/02
SIZE I.D.	3.75"		1.5"		N. COORDINATE	AT none FT. AFTER 0 HOURS	
HAMMER WT.			140lbs		E. COORDINATE	AT FT. AFTER HOURS	FINISH DATE 10/7/02
HAMMER FALL			30"				

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	1-8-12-60	0.00'-1.50'		DARK BR. FINE-CRS. SAND, SOME FINE-MED. GRAVEL, TRACE SILT - FILL (1.0)	
					BR./GRAY ROCK FRAGMENTS, SILT AND FINE SAND (1.5)	
					GRAY ROCK FRAGMENTS (2.0)	
					AUGER REFUSAL @ 2.0'	
					NOTE: BORING WAS DRILLED 15'WEST OF TOWER LEG	
5						
10						
15						
20						
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY

INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-2

DR. CLARENCE WELTI, PE, PC
P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

CLIENT URS.
PROJECT Communication Tower Wallpack
SUBJECT Assessment of Capacity
BY CW DATE 10/ /02 SHEET NO.

Reference: Drilled Shafts Construction Procedures & Design Methods PUBLICATION NO FHWA-IF-99-025

Material: Intermediate Geo-material " N > 50 B/12"

(IGM)

(1) $f_{max} = \sigma_{vi} K_{oi} \tan \phi_i'$

σ_{vi} = vertical effective stress at mid-height of layer i ≈ 1.0 ksf

K_{oi} = design value of earth pressure coefficient at rest

ϕ_i = design value of angle of friction for the layer i

(2) $\phi_1 = \tan^{-1}\left[\frac{N_{60}(Layer\ 1)}{12.3 + 20.3\left(\frac{\sigma_{vi}}{p_a}\right)}\right]^{0.34}$ p_a 2 ksf ≈ 14.7 psi

$N_{60}(Layer\ 1) = 60$

$= \tan^{-1}\left\{\left[\frac{60}{12.3 + 20.3 \times 1.0}\right]^{0.34}\right\} = \tan^{-1}(1.96)^{.34} = 51.5°$

(3) $K_{o1} = (1 - \sin\phi_1')\left[\frac{0.2\, p_a\, N_{60}(Layer\ 1)}{\sigma_{vi}}\right]^{\sin\phi}$

$= (1 - .78)\left[\frac{.2 \times 2 \times 60}{1.0}\right]^{.78} = 1.65$

f_{max} (from (1)) = 3.73 ksf × 0.75 (ϕ factor) = 2.8 ksf

21' × 4.5' × π × 2.8 ksf = 831 kips ULTIMATE SHAFT CAPACITY

FOR SHAFT IN ROCK

$f_{max} = 0.8\left[\frac{4R}{R}\left(\frac{L'}{L}\right)\right]^{0.45} q_u$

f_{max} = 5.37 TSF = 10.78 ksf

q_u = 5000 psi × 333 TSF

L = 21'
4R = 05' L' = 0.2'

21' × π × 4.5' = 296 SF

Assume 1/3 for f_{all} = 3 ksf. Q = 888 kips

AECOM

Job Westport, Ct (CSP tower) | Page 1 of 3
Description Evaluating Foundation Capacity from 2002 assessment | Project No. | Sheet ___ of ___
Computed by MCD | Date 12/16
Checked by | Date

Reference

from Dr. Clarence Welti, P.E., P.C.
From original Welti Calculation;

HAND CALCULATIONS INITIALLY DERIVED FROM PROJECT (VZ5-202 / SAI-097 DATED DECEMBER 2016)

Given values:

$N_{60} = 60$
$\sigma'_v = 1.8\ ksf$
$P_a = 2000\ psf$ (Atmospheric pressure)
$Dpier = 4.5ft$
$HtPier = 21ft$

FHWA-IF-99-025 (Reference for Design for cohesionless IGM – compression)

EQ (B.61) $$\phi' = \tan^{-1}\left[\left[\frac{N_{60}}{12.2+20.3\left(\frac{\sigma'_v}{P_a}\right)}\right]^{0.34}\right] = \tan^{-1}\left[\left[\frac{60}{12.2+20.3\left(\frac{1.8}{2}\right)}\right]^{0.34}\right]$$

EQ $\phi' = 51.5°$

(B.60) $$\text{"OCR"} = \frac{\sigma'_p}{\sigma'_v} = \frac{(0.2)(N_{60})(P_a)}{\sigma'_v} = \frac{(0.2)(60)(2\ ksf)}{1.8\ ksf} = 13.3$$

EQ. (B.59)

EQ (B.51) $$K_o = (1-\sin\phi')(OCR)^{\sin\phi'} = (1-\sin 51.5°)(13.3)^{\sin 51.5°}$$

EQ. $K_o = 1.65$

EQ. (B.62) $$f_{max} = \sigma'_v \times K_o \times \tan\phi' = 1.8\ ksf \times 1.65 \times \tan 51.5° = 3.734\ ksf$$

$3.734\ ksf \times 21ft \times 4.5ft \times \pi = R_n = 1109\ kip \times 0.60$ (cons.) ϕ_{LRFD} (FHWA factor)

$= 665\ kip$ ↓ (Comp Capacity LRFD)

Pg 50 table L/B → ψ factor EQ (B.46)

$L = 21ft$
$B = 4.5ft$ $\frac{L}{B} \approx 5 \Rightarrow \psi = 0.74$

$Uplift = (\psi)(comp) = 492 \times$ Uplift Cap LRFD

Reference

FHWA-NHI-10-016 – Drilled Shafts: Construction Procedures & LRFD Design Methods (follows up to AASHTO LRFD 2009)

13.3.5.1 – Cohesionless Soil – Side Resistance

EQ (13-5) $R_n = \#\beta\Delta z(\sigma'_v K \tan\delta)$ $\beta = K \cdot \tan\delta$

$= \#\beta\Delta z(\sigma'_v \beta)$

[EQ 13-12] (Gravely Soils)

$\frac{\sigma'_p}{P_a} = 0.15 \times N_{60}$

Given by Welti's calculations:

$N_{60} = 60$ $z = 27$ ft

$P_a = 2.116$ ksf $B = 4.5$ ft

$\sigma_v = 1.8$ ksf

$\sigma'_p = 0.15 \times N_{60} \times P_a = (0.15)(60)(2.116\ \text{ksf})$

$= 19.044$ ksf

[EQ 13-13] $\beta \approx (1-\sin\phi')\left(\frac{\sigma'_p}{\sigma'_v}\right)^{\sin\phi'} \times \tan\phi' \leq K_p \times \tan\phi$

$\phi' = 27.5 + 9.2[\log(N_1)_{60}] \rightarrow 27.5 + 9.2[\log(60)] = 43.85^\circ = \phi'$

[EQ 3-8]
(cons.)

[EQ 13-13] $\beta \approx (1-\sin(43.85^\circ))\left(\frac{19.044}{1.8}\right)^{\sin 43.85^\circ} \times \tan 43.85^\circ = 1.513$

$K_p \times \tan\phi' = \tan^2\left(45 + \frac{\phi}{2}\right) \times \tan\phi = \tan^2\left(45 + \frac{43.85^\circ}{2}\right) \times \tan 43.85^\circ$

$= 5.29$

$1.513 \leq 5.29$ (OK) $\rightarrow$ use $\beta = 1.513$

$\delta = \phi = 43.85^\circ$

[Eq 13-7] $f_{SN} = \sigma'_N \beta = 1.8\,ksf \times 1.513 = 2.7234\,ksf$

[Eq 13-5] $R_{SN} = (\pi)(B)(\Delta z)(f_{SN}) = \pi \times 4.5ft \times 27ft \times 2.7434\,ksf$

$= 1039.5$ kips Slide/Uplift Resistance (Nominal)

TIA-222-G Reduction factor 0.75 – Uplift Rock/Soil

FHWA pg. 13-13 "Casing reduction factors of 0.6–0.75 are commonly used" (for "Permanent Casing").

Check $(0.75 = \phi)_{red}$

$\therefore 1039.5\,kips \times 0.75 = 779.625^{kips}$ Uplift (Ult. Capacity)

Check $(0.60 = \phi_{red})$

$1039.5\,kips \times 0.6 = 623.7$ kip Uplift (Ult. Capacity)

$\therefore$ Based off of given Soil/Geotechnical parameters provided in "Evaluation of Existing Foundation for Increased Design Loads" Provided by Dr. Clarence Welti, P.E, P.C., the following shall be used for uplift & compression capacities.

* Uplift (LRFD) = 492 kips (664.94 kip) *

Compression (LRFD) = 665 kips
Bearing on
Rock

*DR Welti's 2002 Assessment (Attached)

ANTENNA MOUNT REFERENCES

CT State Police Tower - 880 Post Road E, Westport, CT (Sprint RF approved permanent loading)

Equipment List

Sprint NV + 2.5 Equipment-

three (3) panel antenna (RFS Model APXVSPP18-C-A20; each is 72" x 11.8" x 7"; 57 lbs)

three (3) panel antenna (RFS Model APXVTM14-C-120; each is 56.3" x 12.6" 6.3"; 56.2 lbs)

three (3) 800 MHz Remote Radio Units (ALU Model 800MHZ RRH; each is 19.7" x 13" x 10.8"; 53 lbs)

three (3) 1900 MHz Remote Radio Units (ALU Model PCS 1900MHz 4x45W-65MHz; each is 25" x 12.4" x 12.2"; 60 lbs)

three (3) 2500 MHz Remote Radio Units (ALU Model TD-RRH8x20-25, each is 26.1" x 18.6" x 6.71"; 70 lbs)

three (3) 800 MHz Notch Filters (ALU Model 800 External Notch Filter; each is 8.9" x 8.9" x 4.33"; 11 lbs)

nine (9) Tower Mount Switch (RFS/Celwave Model ACU-A20-N; each 4" x 2" x 3.5"; 1.04 lbs)

four (4) lines of 1-1/4" hybrid cabling (with 1.54" outer diameter)

one (1) NEMA 4X Enclosure Box [10"x7"x5"; 1 lbs]

Clearwire Microwave Equipment -

Two (2) Microwave Dish Antenna (Andrew Model VHLP800-11-DW1 VHLP2-11) (each 31.2" diameter; 66.1 lbs)

Two (2) ODU Radio Units (Dragonwave Model Horizon Duo) (each 4.7 in x 7.5 in (diameter); 7 lbs)

Two (2) lines of 1/2" cable.

Dalickas, Michael

From: Artaiz, Naish
Sent: Wednesday, May 17, 2017 1:11 PM
To: Dalickas, Michael
Subject: FW: Sprint CT25XC355 Westport - CT State Police Tower at 880 Post Road E, Westport - Sprint Permanent Loading
Attachments: CT25XC355_Westport - Sprint Permanent Loading_for SA_050417.doc; ALU 800MHz Remote Radio Head Specifications.pdf; ALU 1900MHz _65MHz_ Cut Sheet.pdf; ALU TD-RRH8X20 RRHs -equipment.pdf; APXVSPP18-C-A20.pdf; APXVTM14-ALU-I20 _datasheet_revA2.pdf; VHLP800-11-DW1 (MW Dish).pdf; DragonWave-Horizon Duo (ODU).pdf; NemaEnclosure.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Sprint Westport Permanent Installation at 145'. We are selecting the mounts.
, PO has been entered. Job number should be chargeable soon.

Ignacio C. Artaiz
Architect
D 1-860-990-6767 C 1-203-772-5940
naish.artaiz@aecom.com

AECOM
500 Enterprise Drive, Suite 3B, Rocky Hill, Connecticut 06067
T 1-860-529-8882 F 1-860-529-3991
www.aecom.com

From: Joseph Papa [mailto:joseph.a.papa@gmail.com]
Sent: Wednesday, May 17, 2017 11:41 AM
To: Artaiz, Naish
Cc: Bisceglia, Colleen M [NTK]; Castagnaro, Heather [NTK]; Camara, Steve [NTK]
Subject: Sprint CT25XC355 Westport - CT State Police Tower at 880 Post Road E, Westport - Sprint Permanent Loading

Hi Naish,

For the proposed permanent Sprint loading at 145 ft. on the CT State Police Tower at 880 Post Road E, Westport, I am attaching the loading list along with manufacturer specification sheets. Also attached is the PO to AECOM for the structural + modification design.

Please let us know any questions or additional information needed. We have not yet picked out a sector mount for the permanent install and ask that you please do so.

Thanks!
Joe

Joseph A. Papa, Jr.
Site Acquisition Consultant for Sprint
518-365-9711
joseph.a.papa@gmail.com

Ultimate Sector Frames

- COMPLETE KITS include: attachment hardware, two stiff arms, and antenna mounting pipes
- 2' gate is easily adjusted for taper up to 6 degrees in 3/4 degree increments
- Frames are manufactured from 2-3/8" pipe and rotate for easy azimuth adjustment
- Universal mounting, round legs from 1" to 8" and 60° angle legs from 1-1/2" to 8", 90° angles 1-1/2" to 6"
- Large-Leg Adapter Kit available for round legs up to 12-3/4", 60° angle legs up to 12", and 90° angles up to 8-1/2"

Close-up of gate shows easy attachment hardware as well as easy taper adjustment due to multi-holed foot.

10'-6" Frames (2-3/8" OD Face Pipes)

Part #	Face Width	Mounting Pipes	Price
USF10-296-U	10'-6"	(2) 2-3/8" x 96"	$810.00
USF10-372-U	10'-6"	(3) 2-3/8" x 72"	$865.00
USF10-384-U	10'-6"	(3) 2-3/8" x 84"	$875.00
USF10-396-U	10'-6"	(3) 2-3/8" x 96"	$885.00
USF10-3126-U	10'-6"	(3) 2-3/8" x 126"	$915.00
USF10-3096-U	10'-6"	(3) 2-7/8" x 96"	$999.00

12'-6" Frames (2-3/8" OD Face Pipes)

USF12-372-U	12'-6"	(3) 2-3/8" x 72"	$895.00
USF12-384-U	12'-6"	(3) 2-3/8" x 84"	$905.00
USF12-396-U	12'-6"	(3) 2-3/8" x 96"	$915.00
USF12-472-U	12'-6"	(4) 2-3/8" x 72"	$975.00
USF12-484-U	12'-6"	(4) 2-3/8" x 84"	$989.00
USF12-496-U	12'-6"	(4) 2-3/8" x 96"	$999.00
USF12-4126-U	12'-6"	(4) 2-3/8" x 126"	$1,030.00
USF12-4096-U	12'-6"	(4) 2-7/8" x 96"	$1,155.00

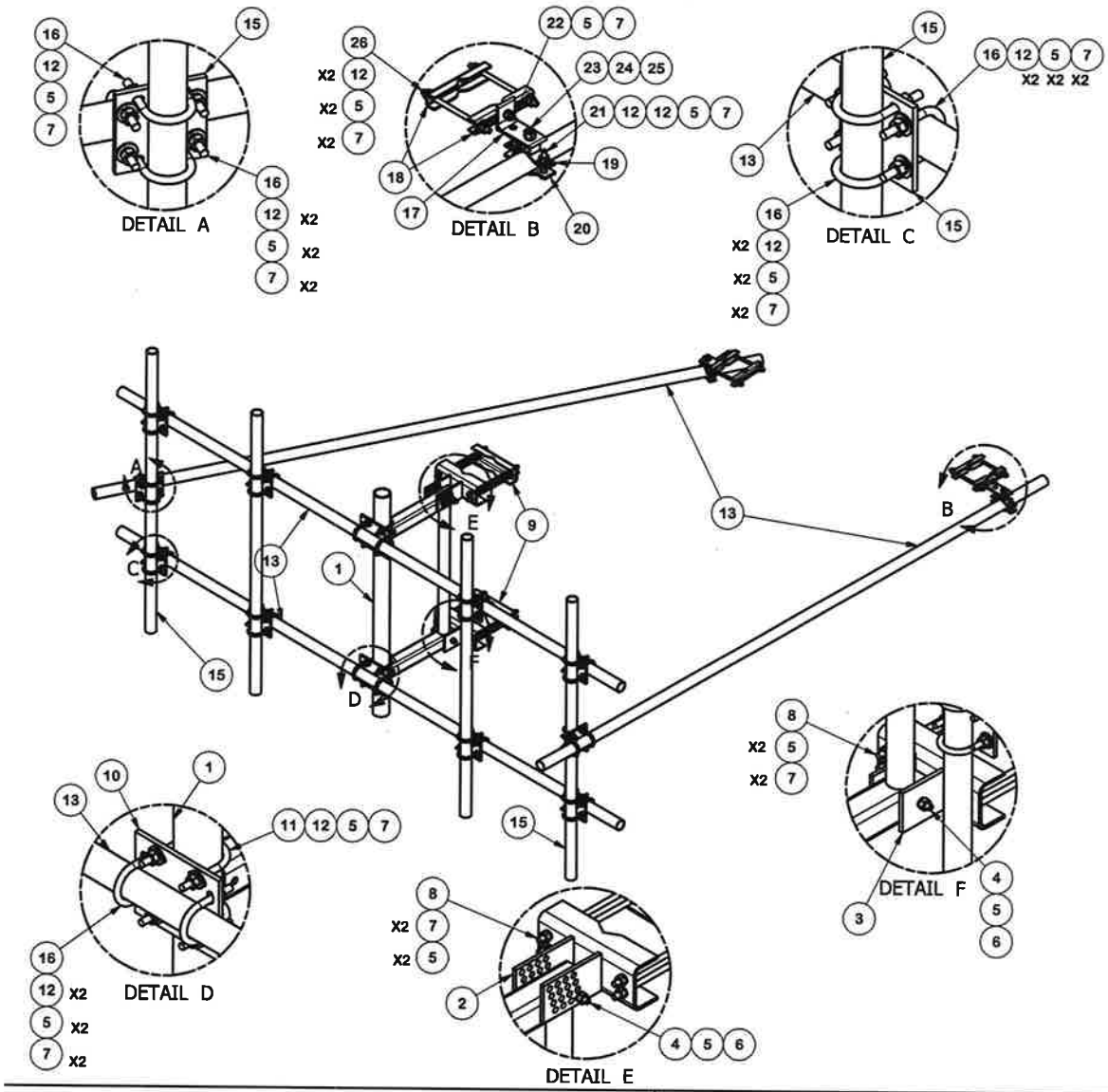
14'-6" Frames (2-7/8" OD Face Pipes)

USF14-472-U	14'-6"	(4) 2-3/8" x 72"	$1,009.00
USF14-484-U	14'-6"	(4) 2-3/8" x 84"	$1,020.00
USF14-496-U	14'-6"	(4) 2-3/8" x 96"	$1,035.00
USF14-4126-U	14'-6"	(4) 2-3/8" x 126"	$1,076.00
USF14-4096-U	14'-6"	(4) 2-7/8" x 96"	$1,199.00

Large-Leg Adapter Kit

Part #	Description	Price
TAM-LL	Large-Leg Adapter Kit	$117.00

New York 1-888-438-7761
Georgia 1-866-901-0603
Indiana 1-888-753-7446
Florida 1-844-278-6371



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT
1	1	2PBG	24" PIPE MOUNT STANDOFF ARM		71.96	71.96
2	1	CFM	UPPER GATE FOOT WELDMENT		13.90	13.90
3	1	CFS	LOWER GATE FOOT WELDMENT		12.72	12.72
4	2	A1205	1/2" x 5" A325 HDG BOLT	5"	0.34	0.69
5	128	G12LW	1/2" HDG LOCKWASHER		0.01	1.78
6	2	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.14
7	126	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	9.02
8	8	G12R-12	1/2" x 12" THREADED ROD (HDG.)		0.40	3.19
8	8	G12R-15	1/2" x 15" THREADED ROD (HDG.)		0.40	3.19
9	2	GBB	GATE BACKING BAR		4.53	9.06
10	2	SCX4	CROSSOVER PLATE	8.500 in	6.02	12.04
11	4	X-UB1358	1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.)		0.26	1.03
12	112	G12FW	1/2" HDG USS FLATWASHER		0.03	3.82
13	4	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150.0000 in	45.77	183.07
14	2	A	B	C	D	
15	10	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"		3.71	37.09
16	44	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	11.31
17	2	X-STA3	STIFF ARM ANGLE BRACKET	2.500 in	1.39	2.78
18	4	X-STU	STIFF ARM CHANNEL BRACKET		1.37	5.49
19	2	SAM	STIFF ARM MOUNT CLAMP		0.77	1.54
20	2	ACP	4-1/16" CLAMP HALF, 1/4" THK.		0.65	1.31
21	4	G1203	1/2" x 3" HDG HEX BOLT GR5 FULL THREAD	3"	0.22	0.87
22	2	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1-1/2"	0.15	0.30
23	2	G58112	5/8" x 1-1/2" HDG BOLT	1-1/2"	0.25	0.49
24	2	G58LW	5/8" HDG LOCKWASHER		0.03	0.05
25	2	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.26
26	4	G12R-10	1/2" x 10" THREADED ROD (HDG.)		0.40	1.60

ANTENNA MOUNTING PIPES

"ASSEMBLY NO."	PART NO. "A"	PART DESCRIPTION "B"	LENGTH "C"	UNIT WT. "D"	TOTAL WT.
USF12-472-U	P272	2-3/8" O.D. SCH. 40 PIPE	72"	23.07	501.72
USF12-484-U	P284	2-3/8" O.D. SCH. 40 PIPE	84"	26.91	517.08
USF12-496-U	P296	2-3/8" O.D. SCH. 40 PIPE	96"	30.76	532.48
USF12-4126-U	P126	2-3/8" O.D. SCH. 40 PIPE	126"	40.75	572.44

REVISION HISTORY

V	DESCRIPTION OF REVISIONS	CPD	BY	DATE
	ADDED 10' 6" 2-3/8" & 96" 2-7/8" ANTENNA PIPES	5001	CEK	6/22/2015

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
ULTIMATE SECTOR FRAME
12'-6" FACE WIDTH

SITE PRO 1
A valmont COMPANY

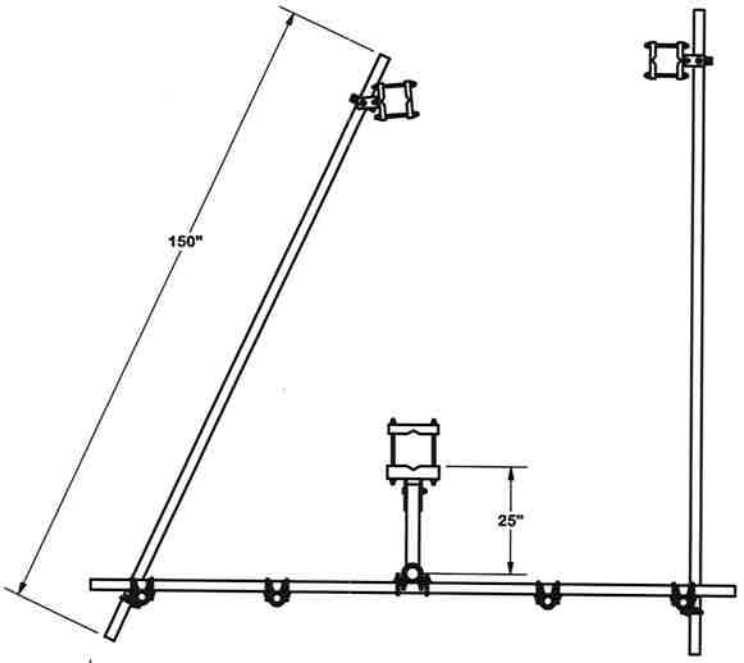
Engineering Support Team: 1-888-753-7446

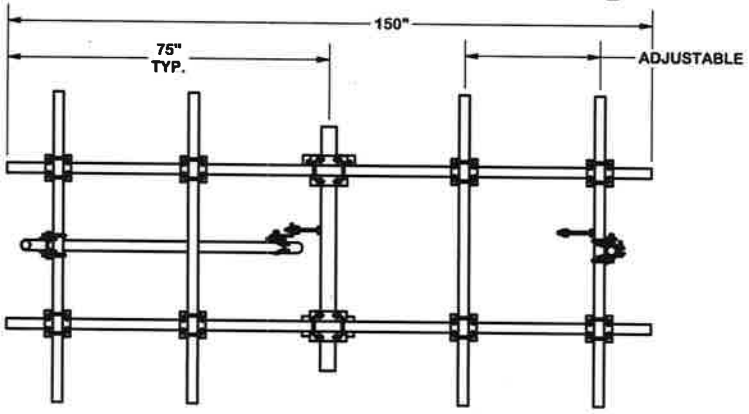
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

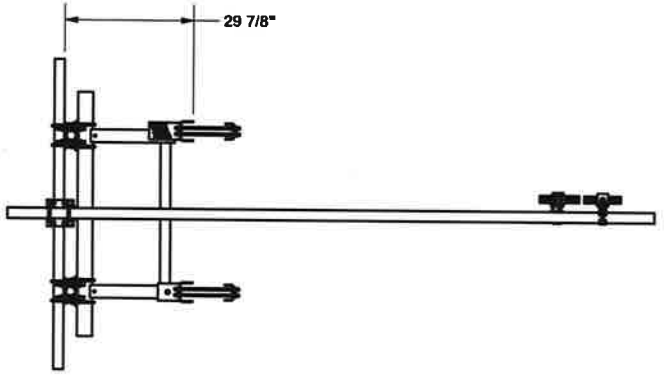
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
5001	CEK 4/12/2011		SEE "ASSEMBLY NO."

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 6/22/2015	USF12-4XX-U

SHT 1 OF 2







V	ADDED 10' 6" 2-3/8" & 96" 2-7/8" ANTENNA PIPES	5001	CEK	6/22/2015
	DESCRIPTION OF REVISIONS	CPD	BY	DATE
	REVISION HISTORY			

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DESCRIPTION
ULTIMATE SECTOR FRAME
12'-6" FACE WIDTH

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
5001	CEK 4/12/2011		SEE "ASSEMBLY NO."
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81 / 01	CUSTOMER	BMC 6/22/2015	USF12-4XX-U

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

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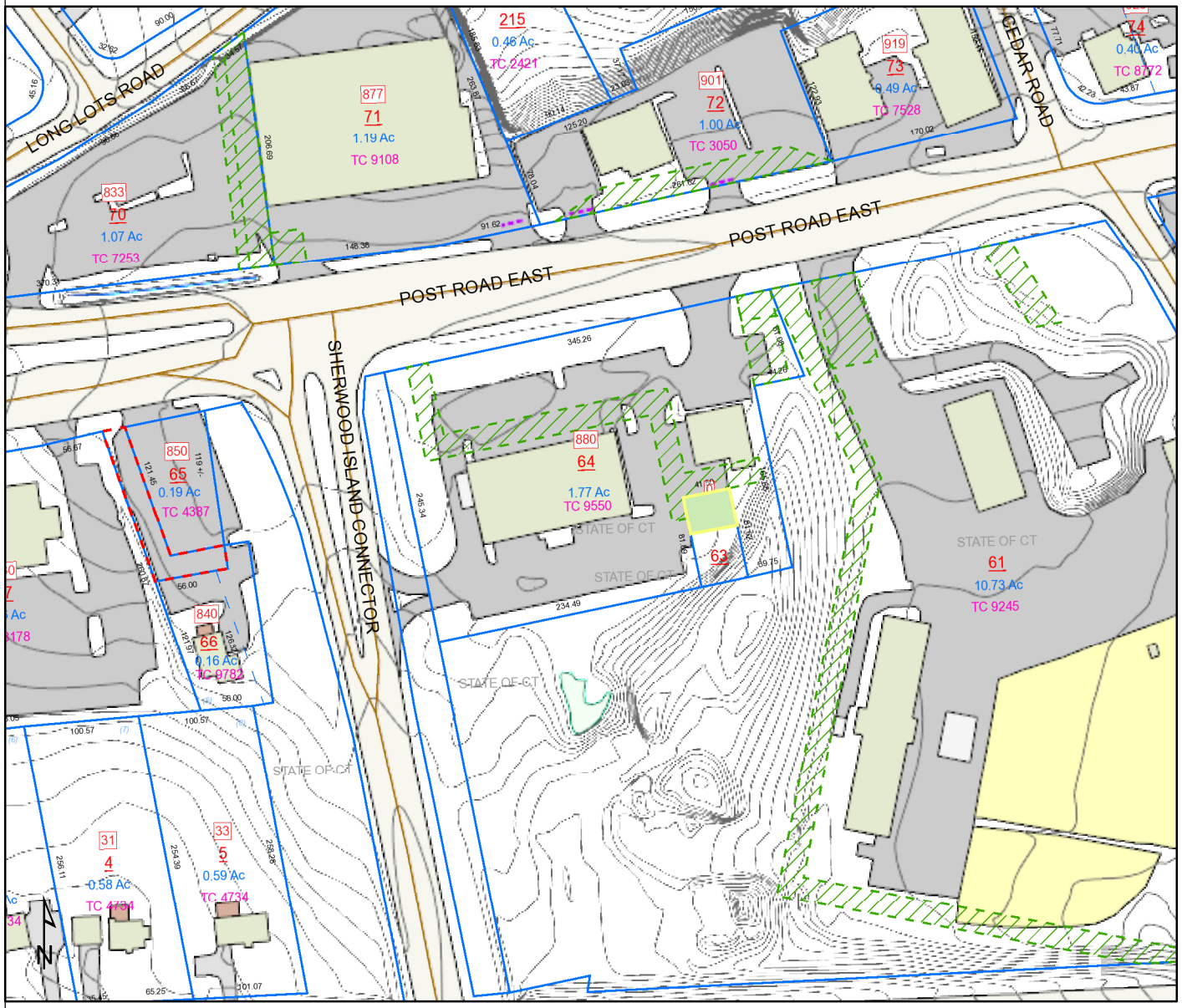
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
860-529-8882
Fax: 860-529-3991



Westport CT Web GIS Map Legend

CAM_line	Culvert	Golf Path
Deleted_Wetland	Dam	Paved Parking
Amended_Wetland	Ditch	Unpaved Parking
dot_line	Rip Rap	Paved Driveway
Tidal_Wetland	Elevation Well	Unpaved Driveway
Waterbody_Watercourse	Fence	Public Sidewalk
wet_text_line	Guardrail	Treeline
Wetland	Hedge	Wet Area
100 Year Flood Zone	Retaining Wall	Sound, Lake, Pond, or River
500 Year Flood Zone	Stone Wall	Pool
Floodway in Zone AE	Trails	Golf Green
Basins	Abandoned Railroad Tracks	Golf Bunker
Spot Elevation	Railroad Tracks	Tennis Court
Water Spot Elevation	Paved Road Centerline	Golf Tee
bulkhead_polylines	Unpaved Road Centerline	Wharf, Dock, or Pier
landhook_polylines	Stream	Park
original_parcel_polylines	Coast Line	Athletic Field
Index	Easement	Golf Course
Index Depression	Utility Right of Way	index_polygon
Index Obscured	Private Right of Way	HYDRIC SOILS
Index Depression Obscured	Proposed Right of Way	NON-HYDRIC SOILS
Intermediate	Public Right of Way	WATER
Intermediate Depression	Parcel	A
Intermediate Obscured	Fuel Tank	AA
Intermediate Depression (Obs)	Water Tank	AAA
Tree	Quarry or Pit	B
Pipe	Building	BCD
Outfall	Building Construction	BPD
Catchbasin	Cement Pad	CPD
Manhole	Deck	DDD4
Electrical Box	Foundation	GBD
Hydrant	Greenhouse	GBD/S
Light Pole	Mobile Home	HDD
Utility Pole	Ruins	HSD
Sign	Silo	MHP
Unknown	Somkestack	OSRD
Billboard	Substation	PRD
Pipeline Above Ground	Bridge	RBD
Tower	Paved Road	RORD
townline_polyline	Runway	RPOD
Unknown Lines	Unpaved Road	

1 inch = 142 feet

Property Location: POST RD E | **MAP ID:** F09/ / 063/000 / | **Bldg Name:** | **State Use:** 435

Vision ID: 100302 | **Account #** 14621 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 06/28/2017 14:51

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
CONNECTICUT STATE OF CELL TOWER/WALGREENS 30 TRINITY ST HARTFORD, CT 06106 Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	53184
Historic ID	
Census	
WestportCode	
Survey Map	
Survey Map	
GIS ID: F09063000	
Lift Hse	
ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
UTL BLDG	4-2	1,000	700
UTL OUTBL	4-3	984,000	688,800
	Total	985,000	689,500

6158
WESTPORT, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
CONNECTICUT STATE OF	0/ 0	10/01/2005	U	I		

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	4-2	700	2015	4-3	343,600	2014	4-3	343,600
2016	4-3	688,800						
	Total:	689,500		Total:	343,600		Total:	343,600

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	984,000
Appraised Land Value (Bldg)	0
Special Land Value	0
Total Appraised Parcel Value	985,000
Valuation Method:	I
Adjustment:	0
Net Total Appraised Parcel Value	**985,000**

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

CELL TOWER BEHIND THE WALGREENS AT
880 POST RD E
3 CELL SITES

TOWER VALUE= 2000 X 12=24000 X .75=18000
18000/.11=163,600 X 3=490,800

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
05/13/2010			J	11	QC - Check/Field Review

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.		C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	435	Cell Site Vac Lnd	GBD				0	SF	0.00	1.0000	C		1.00		0.00				.00		0

Total Card Land Units:	0.00	AC	Parcel Total Land Area:	0 AC	Total Land Value:	0

Property Location: POST RD E **MAP ID:** F09/ / 063/000 / **Bldg Name:** **State Use:** 435

Vision ID: 100302 **Account #** 14621 **Bldg #:** 1 of 1 **Sec #:** 1 of 1 **Card** 1 of 1 **Print Date:** 06/28/2017 14:51

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Model	00		Vacant

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
435	Cell Site Vac Lnd	100

COST/MARKET VALUATION

Adj. Base Rate:	0.00
	0
Net Other Adj:	0.00
Replace Cost	0
AYB	
Dep Code	
Remodel Rating	
Year Remodeled	
Dep %	
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Special Condition Code	
% Complete	
Overall % Cond	
Apprais Val	
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	

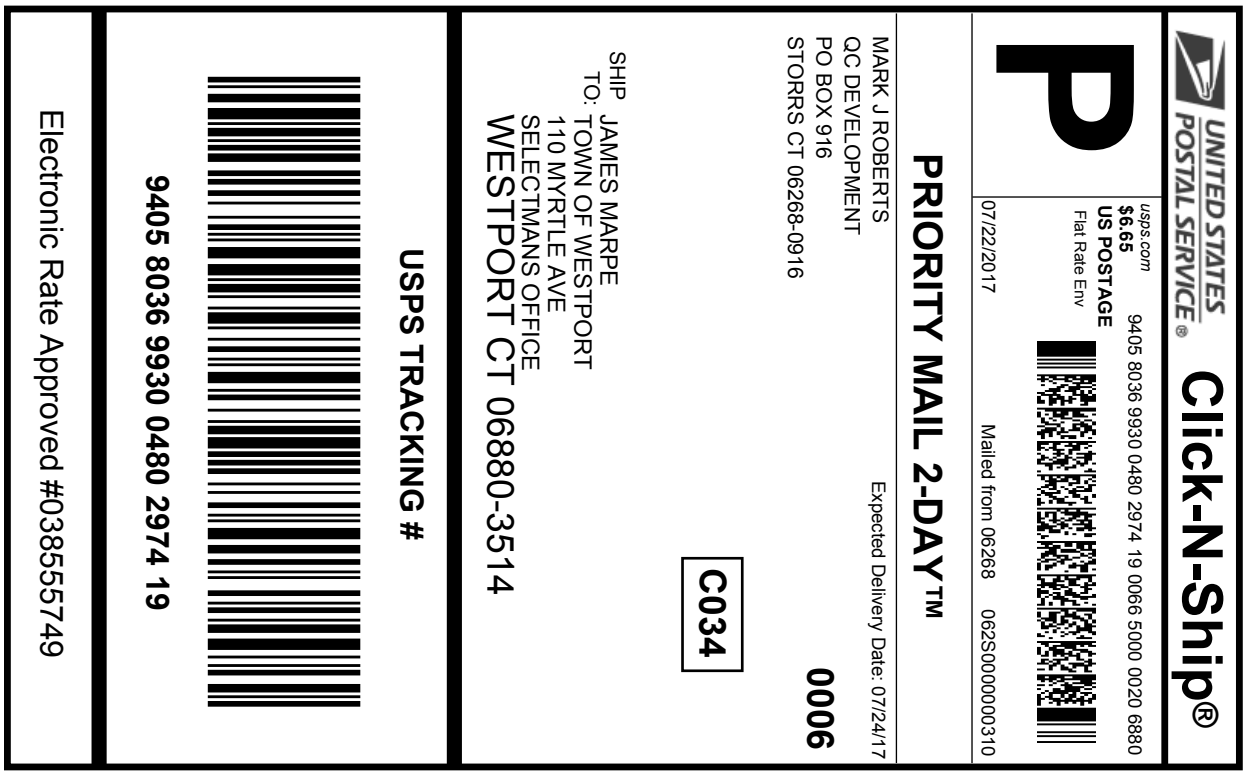
OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
CELL	Cell on TWR	TW		L	3	328,000.00	2010		0		100	984,000

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0			

No Photo On Record



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0480 2974 19

Trans. #:	410685389
Print Date:	07/21/2017
Ship Date:	07/22/2017
Expected Delivery Date:	07/24/2017
Insured Value:	$50.00

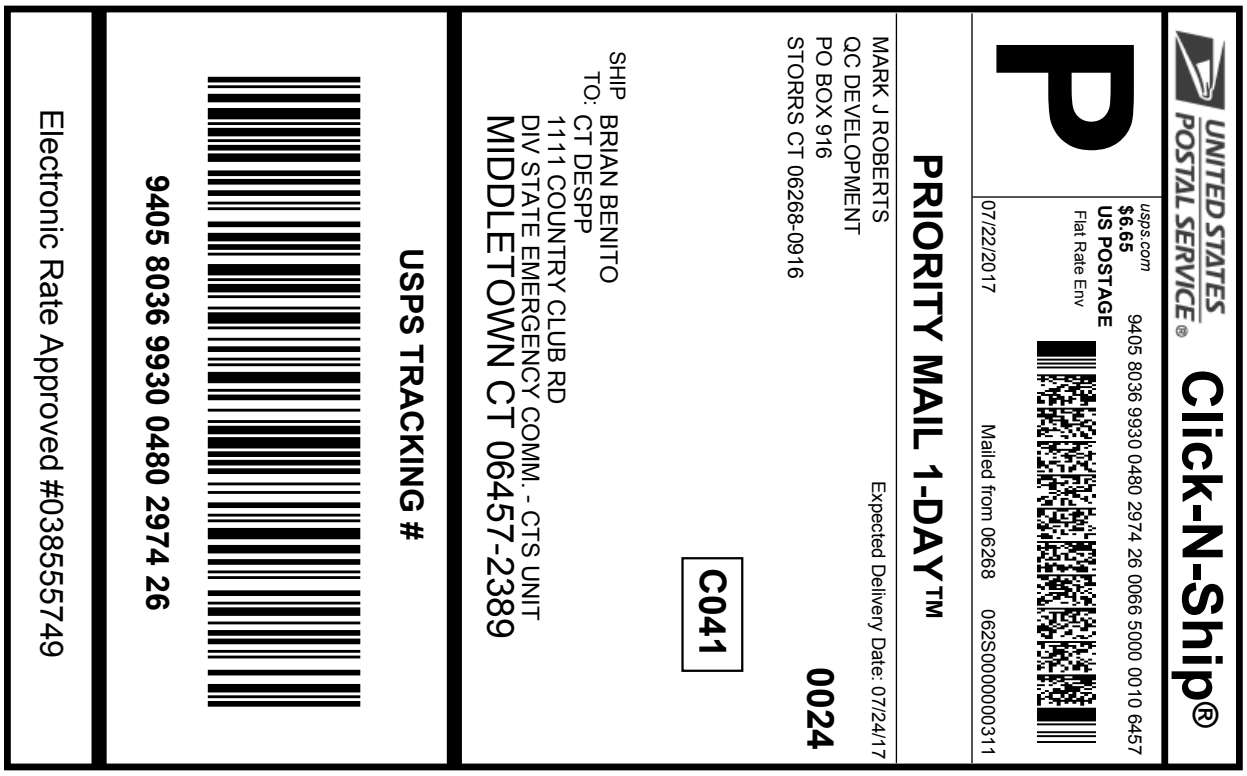
Priority Mail® Postage:	**$6.65**
Insurance Fee	**$0.00**
Total	**$6.65**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: JAMES MARPE
TOWN OF WESTPORT
110 MYRTLE AVE
SELECTMANS OFFICE
WESTPORT CT 06880-3514

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0480 2974 26

Trans. #:	410685389
Print Date:	07/21/2017
Ship Date:	07/22/2017
Expected Delivery Date:	07/24/2017
Insured Value:	$50.00

Priority Mail® Postage:	**$6.65**
Insurance Fee	**$0.00**
Total	**$6.65**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: BRIAN BENITO
CT DESPP
1111 COUNTRY CLUB RD
DIV STATE EMERGENCY COMM. - CTS UNIT
MIDDLETOWN CT 06457-2389

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com