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

January 10, 2019

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

RE: **Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 873128**
T-Mobile Site ID: CT11203B
800 Booth Hill Road, Trumbull, CT 06611
Latitude: 41° 16' 44.26" / Longitude: -73° 11' 6.4"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 247 foot level of the existing 460 foot guyed tower at 800 Booth Hill Road in Trumbull, CT. The tower and ground is owned by Crown Castle. T-Mobile now intends to replace (3) existing antennas with (3) new antennas, adding (2) hybrid fiber cables, (6) diplexors and (3) RRUs as well as removing (2) lines of coax. T-Mobile will also be replacing the antenna mounts.

Please be advised I have included an email from Gail Andreyka with the zoning department at the Town of Trumbull indicating they no longer have the original zoning approval on file as well as an email from myself indicating the same. Please use both emails to replace the zoning approval requirement.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Vicki Tesoro, First Selectman for the Town of Trumbull, Rina Bakalar, Economic and Community Development Director, and the Estate of F. Francis D'Addario as the property owner.

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: William Stone.

Sincerely,

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

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc:

The Honorable Vicki Tesoro, First Selectman for the Town of Trumbull
Town Hall – 2nd Floor
5866 Main Street
Trumbull, CT 06611
(203) 452-5005

Rina Bakalar, Economic and Community Development Director
Town Hall – 2nd Floor
5866 Main Street
Trumbull, CT 06611
(203) 452-5005

Crown Castle as Tower and Ground Owner

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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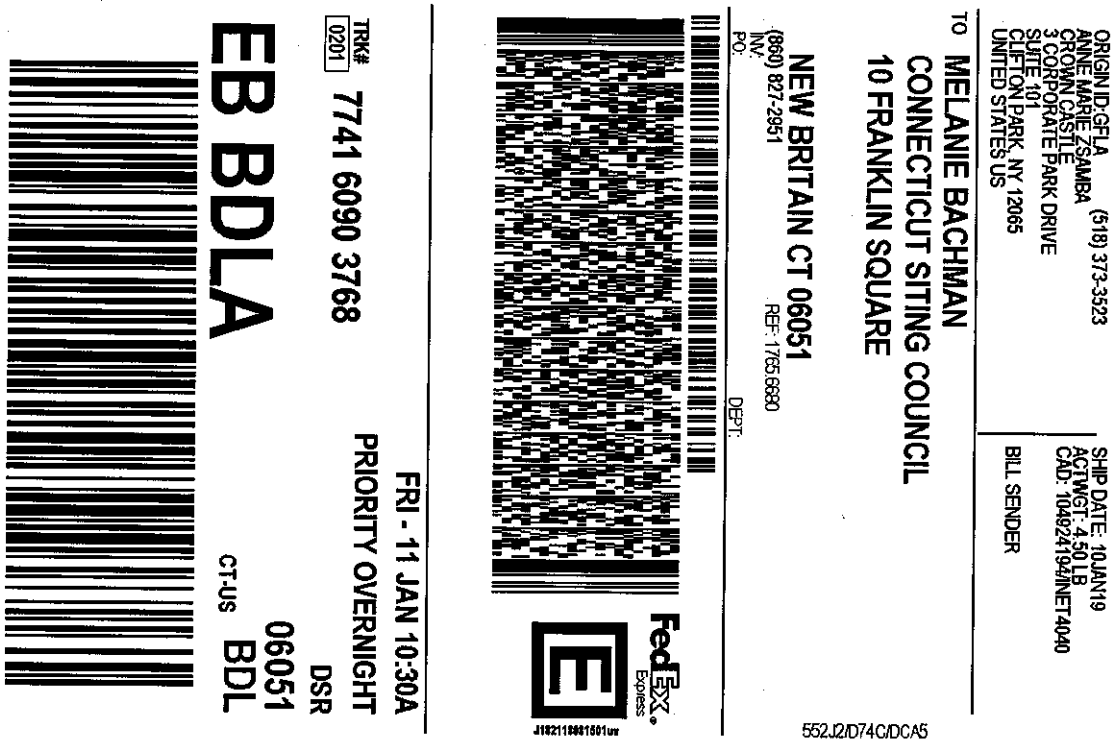

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From:	Holzschuh, Cymon
To:	Myl, Kimberly; CSC-DL Siting Council
Cc:	Helton, Heather (Contractor)
Subject:	RE: Existing Telecommunication Facility 800 Booth Hill Road, Trumbull (Crown: 873128 | T-Mobile: CT11203B)
Date:	Tuesday, January 19, 2016 2:40:02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

Thank you for your submission.

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

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

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

Thanks,

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

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

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

To Whom It May Concern:

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

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

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

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

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

Hi Kimberly,

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

Gail

800 BOOTH HILL ROAD

Location	800 BOOTH HILL ROAD	**Mblu**	H/04 / 00072/ 000/
Acct#		**Owner**	GLOBAL SIGNAL ACQUISITIONS IV LLC
Assessment	$4,200,000	**Appraisal**	$6,000,000
PID	2543	**Building Count**	1
Fire District	N		

Current Value

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

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

Owner of Record

Owner	GLOBAL SIGNAL ACQUISITIONS IV LLC	**Sale Price**	$575,000
Co-Owner	C/O CROWN CASTLE USA INC	**Book & Page**	1714/ 158
Address	2000 CORPORATE DRIVE CANONSBURG, PA 15317	**Sale Date**	05/17/2016
		Instrument	25

Ownership History

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

Building Information

Building 1 : Section 1

Year Built: 1952
Living Area: 4,470

Building Attributes	
Field	**Description**
STYLE	Telephone Bldg
Stories:	1 Story

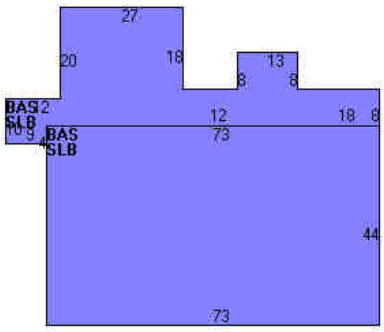
Building Photo

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

H04-72 05/04/2015

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

Building Layout



(http://images.vgsi.com/photos2/TrumbullCTPhotos//Sketches/2

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	433
Description	Rad/TV Tw
Zone	AA
Neighborhood	350
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	15.9
Frontage	
Depth	

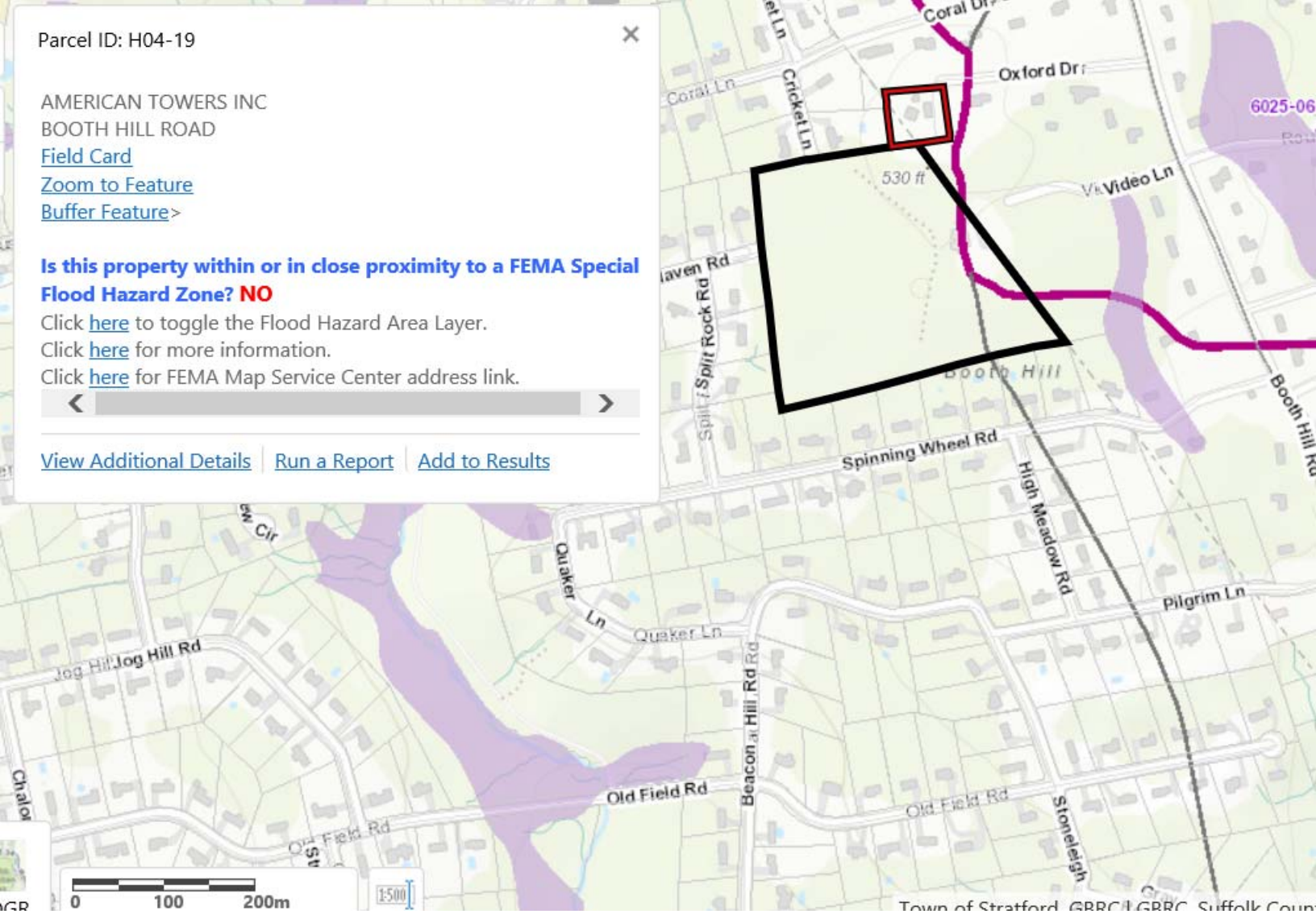
Outbuildings

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

Valuation History

Appraisal	
Valuation Year	Total
2016	$9,710,400
2015	$9,710,400
2014	$3,013,400

Assessment	
Valuation Year	Total
2016	$6,797,280
2015	$6,797,280
2014	$2,109,300


Parcel ID: H04-19
AMERICAN TOWERS INC
BOOTH HILL ROAD
Field Card
Zoom to Feature
Buffer Feature>
Is this property within or in close proximity to a FEMA Special Flood Hazard Zone? NO
Click here to toggle the Flood Hazard Area Layer.
Click here for more information.
Click here for FEMA Map Service Center address link.
View Additional Details
Run a Report
Add to Results
530 ft
Oxford Dr
Coral Ln
Cricket Ln
Video Ln
Split Rock Rd
Booth Hill
Booth Hill Rd
Spinning Wheel Rd
High Meadow Rd
Pilgrim Ln
Quaker Ln
Beacon Hill Rd
Old Field Rd
Stoneleigh
Jog Hill Rd
0
100
200m
1:500

SHEET INDEX

NO.	DESCRIPTION
T1	TITLE PAGE
N1	NOTES
C1	PLAN & ELEVATION
C2	RF CHART AND ORIENTATION
D1	EQUIPMENT DETAILS
E1	GROUNDING & ELECTRICAL DETAILS
E2	RF PLUMBING DIAGRAM

TOWER OWNER NOTIFICATION

ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

T-Mobile

CROWN CASTLE

CBU

873128

SITE ID

CT11203B

SITE NAME

TRUMBULL / RT. 108

SITE ADDRESS

800 BOOTH HILL RD

TRUMBULL, FAIRFIELD COUNTY, CT 06611

CONFIGURATION

67D94B

PROJECT SITE INFORMATION

SITE ID:	CT11203B	
SITE NAME:	TRUMBULL / RT. 108	
SITE ADDRESS:	800 BOOTH HILL RD TRUMBULL, FAIRFIELD COUNTY, CT 06611	
PERMITTING JURISDICTION:	TOWN OF TRUMBULL	
COUNTY:	FAIRFIELD	
ZONING:	AA	
SITE COORDINATES:		
LATITUDE:	41° 16' 44.26" (41.27893°)	(NAD 83)
LONGITUDE:	73° 11' 6.4" (-73.18494°)	(NAD 83)
APPLICANT:	T-MOBILE NORTHEAST LLC 103 MONARCH DRIVE LIVERPOOL, NY 13088	

STRUCTURAL ANALYSIS INFORMATION

TOWER ANALYSIS

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

ANTENNA MOUNTS

INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING **MOUNTS** FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO PASSING MOUNT ANALYSIS PRIOR TO ANY CONSTRUCTION.

PROJECT TEAM INFORMATION

CLIENT REPRESENTATIVE:	CROWN CASTLE 3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
CLIENT REP. CONTACT:	WILL STONE (518) 373-3543
ENGINEER:	INFINIGY 6865 DEERPATH ROAD SUITE 152 ELKRIDGE, MD 21075
ENGINEER CONTACT:	MATTHEW LIVERETTE (518) 690-0790

SCOPE OF WORK

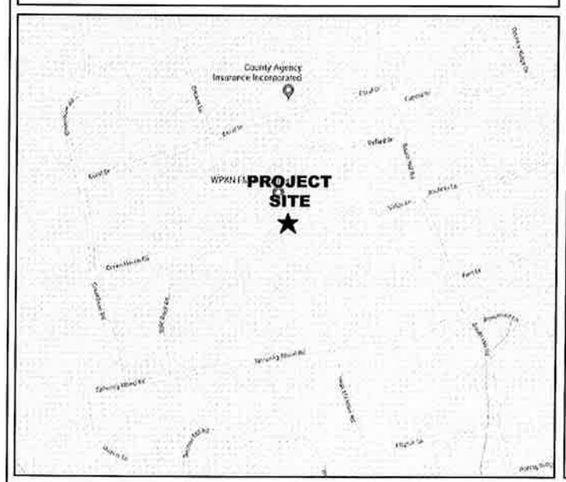
SCOPE OF WORK:

TMO L700 4X2 67D94B OUTDOOR (CONNECTICUT MARKET) REPLACING (3) EXISTING ANTENNAS WITH NEW MODELS. REMOVING (2) COAX AND ADDING (2) HYBRID FIBER CABLES. ADDING (6) DIPLEXERS AND (3) RRUS. REMOVING BIAST. REPLACE (3) MOUNTS WITH NEW MODELS.
CURRENT INSTALL: (6) ANTENNAS, (18) COAX, (6) TMA'S, AND (3) BIAST.
NO CHANGES MADE TO LEASED GROUND SPACE.
FINAL CONFIGURATION: (6) ANTENNAS, (16) COAX, (2) HYBRID FIBER CABLES, (6) TMA'S, (6) DIPLEXERS, AND (3) RRU'S.

811 Know what's below. Call before you dig.

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG
TOLL FREE: 1-800-922-4455 OR www.cbyd.com
CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

LOCATION MAP



GENERAL NOTES

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- FACILITY HAS NO PLUMBING OR REFRIGERANTS.
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RRH AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
- THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON STORMWATER DRAINAGE.
- NO SANITARY SEWER, POTABLE WATER, OR TRASH DISPOSAL SERVICE IS REQUIRED
- NO COMMERCIAL SIGNAGE IS PROPOSED

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED WITH ANY LOCAL AMENDMENTS BY THE LOCAL GOVERNING AUTHORITIES:

- INTERNATIONAL BUILDING CODE
- NATIONAL ELECTRICAL CODE
- NATIONAL FIRE PROTECTION ASSOCIATION 101
- NATIONAL FIRE PROTECTION ASSOCIATION 1
- LOCAL BUILDING CODES
- CITY/COUNTY ORDINANCES
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS (AISC)
- UNDERWRITERS LABORATORIES APPROVED ELECTRICAL PRODUCTS.
- ANSI EIA/TIA 222 REV. G
- TIA 607
- INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
- IEEE C2 (LATEST EDITION)
- TELCORDIA GR-1275
- ANSI T1.311

T-Mobile

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

INFINIGY

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

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
DEC 14 2018

No.	Submittal / Revision	App'd	Date
2	COAX REMOVAL	SL	12/11/18
1	ADDRESS REVISION	SL	11/26/18
0	ISSUED FOR CONSTRUCTION	SL	09/25/18
A	ISSUED FOR REVIEW	SL	09/06/18

Drawn: RCD
Designed: MRL
Checked: AJD

Project Number: 600-007

Project Title: CT11203B TRUMBULL / RT. 108
800 BOOTH HILL RD
TRUMBULL, FAIRFIELD COUNTY, CT 06611

Prepared For: CROWN CASTLE

Drawing Title: TITLE PAGE

Drawing Number: T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
- A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
- B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
- C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
- D. AND NFPA 101 (LIFE SAFETY CODE).
- E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
- F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: T-MOBILE CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.

1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.7 NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE T-MOBILE WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY T-MOBILE TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.

2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR T-MOBILE PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
- A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
- B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
- C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
- D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO T-MOBILE OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
- E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
- F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

5.1 TESTS AND INSPECTIONS:
- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.
- C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
- D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
- E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
- F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.

A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.

B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.

C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.

F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBING, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
	UNDERGROUND UTILITIES
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
OR	GROUND ROD
OR	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	120AC DUPLEX RECEPTACLE
G	GROUND CONDUCTOR
	DC POWER AND FIBER OPTIC TRUNK CABLES
E	DC POWER CABLES
# / #	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
DEC 14 2018

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2	COAX REMOVAL	SL	12/11/18
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0	ISSUED FOR CONSTRUCTION	SL	09/25/18
A	ISSUED FOR REVIEW	SL	09/06/18

Drawn: RCD
Designed: MRL
Checked: AJD

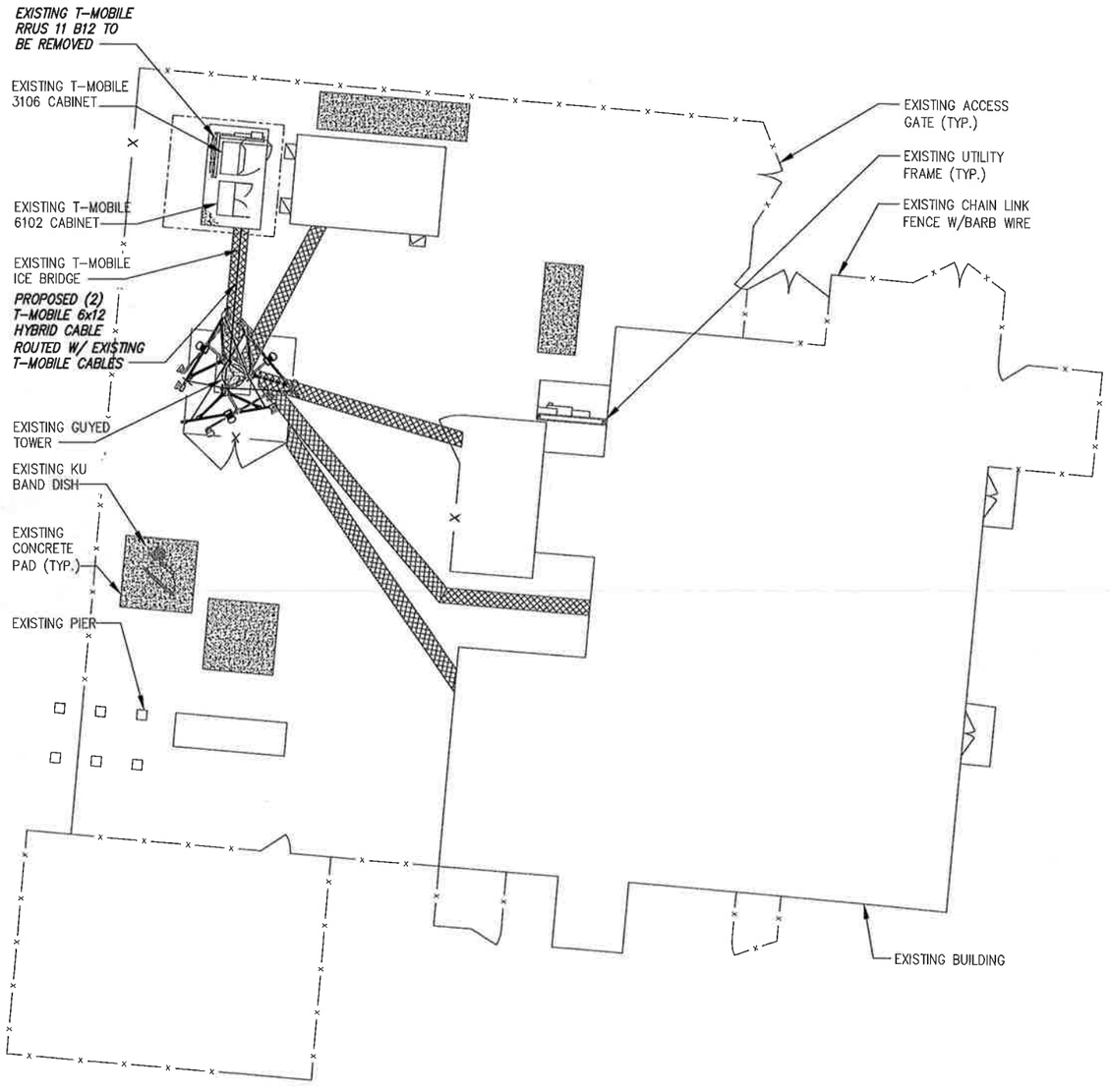
Project Number: 600-007

Project Title:
CT11203B
TRUMBULL / RT. 108
800 BOOTH HILL RD
TRUMBULL, FAIRFIELD COUNTY, CT 06611

Prepared For:
CROWN CASTLE

Drawing Title
NOTES

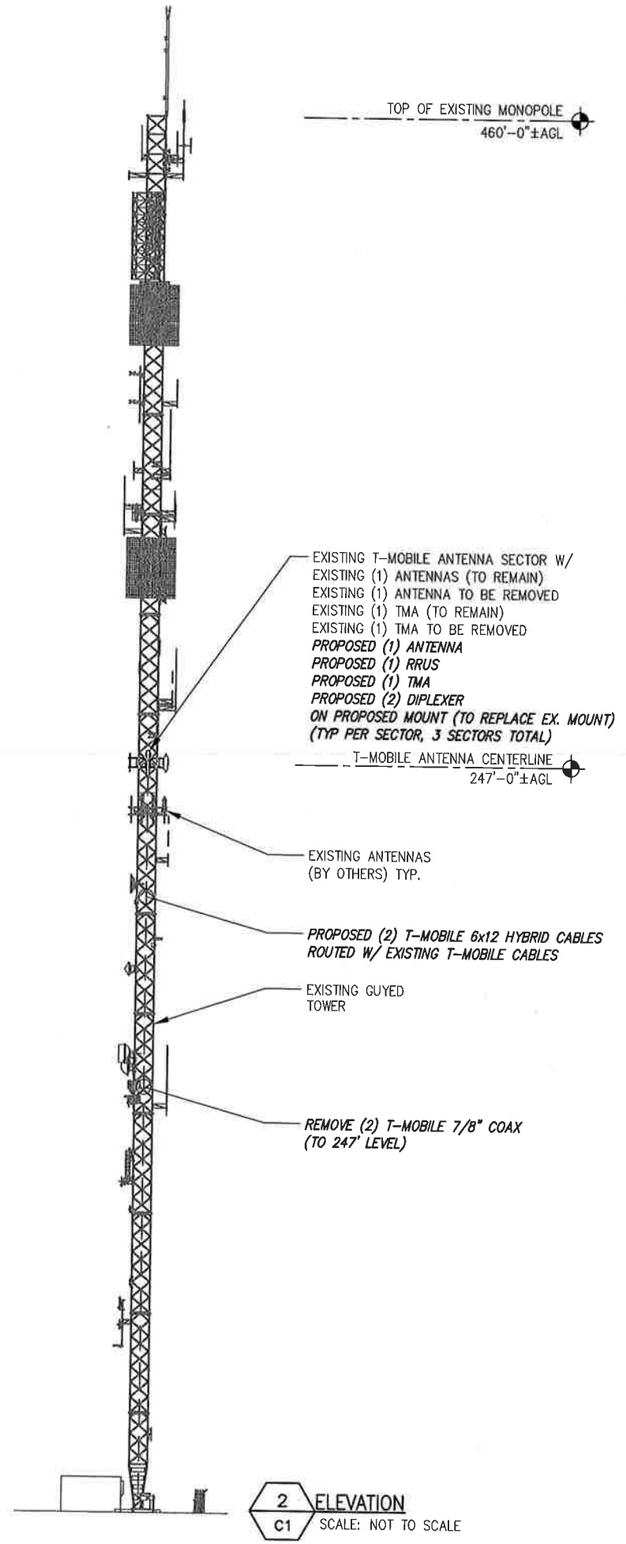
Drawing Number
N1



NORTH

1 / C1 PLAN VIEW
SCALE: AS NOTED

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"



2 / C1 ELEVATION
SCALE: NOT TO SCALE

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PLAN AND ELEVATION

Drawing Number
C1

SECTOR	ANTENNA POSITION	ANTENNA MODEL #	VENDOR	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA/RRU MODEL #	CABLE LENGTH	CABLE TYPE AND QUANTITY
ALPHA	A-1	APX16DWV-16DWV-E-A20	RFS	50°	TBD	TBD	247'-0"	TWIN STYLE 1B-AWS **ATMA4P4DBP-1A20** **(2) FDBL5003D-S**	EXISTING	(6) 7/8" COAX
	A-2	**APXVAARR24-43-U-NA20**	**RFS**	**50°**	TBD	TBD	**247'-0"**	**RADIO 4449 B71+B12**	**280'±**	**(2) 6X12 HYBRID TRUNK CABLES (SHARED BY ALL SECTORS)**
	A-3	--	--	--	--	--	--	--	--	--
BETA	B-1	APX16DWV-16DWV-E-A20	RFS	150°	TBD	TBD	247'-0"	TWIN STYLE 1B-AWS **ATMA4P4DBP-1A20** **(2) FDBL5003D-S**	EXISTING	(6) 7/8" COAX
	B-2	**APXVAARR24-43-U-NA20**	**RFS**	**150°**	TBD	TBD	**247'-0"**	**RADIO 4449 B71+B12**	**280'±**	**(2) 6X12 HYBRID TRUNK CABLES (SHARED BY ALL SECTORS)**
	B-3	--	--	--	--	--	--	--	--	--
GAMMA	C-1	APX16DWV-16DWV-E-A20	RFS	310°	TBD	TBD	247'-0"	TWIN STYLE 1B-AWS **ATMA4P4DBP-1A20** **(2) FDBL5003D-S**	EXISTING	(4) 7/8" COAX
	C-2	**APXVAARR24-43-U-NA20**	**RFS**	**310°**	TBD	TBD	**247'-0"**	**RADIO 4449 B71+B12**	**280'±**	**(2) 6X12 HYBRID TRUNK CABLES (SHARED BY ALL SECTORS)**
	C-3	--	--	--	--	--	--	--	--	--

1 / C2 RF SYSTEM CHART
SCALE: NOT TO SCALE

KEY

EXISTING
PROPOSED

ANTENNA LOCATION KEY

VIEWED FROM BEHIND

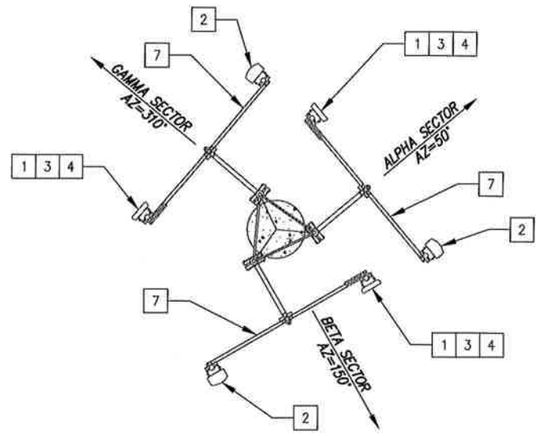
#1 #2

GENERAL NOTES:

1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS FOR ANY PROPOSED CABLES/JUMPERS PRIOR TO CONSTRUCTION.

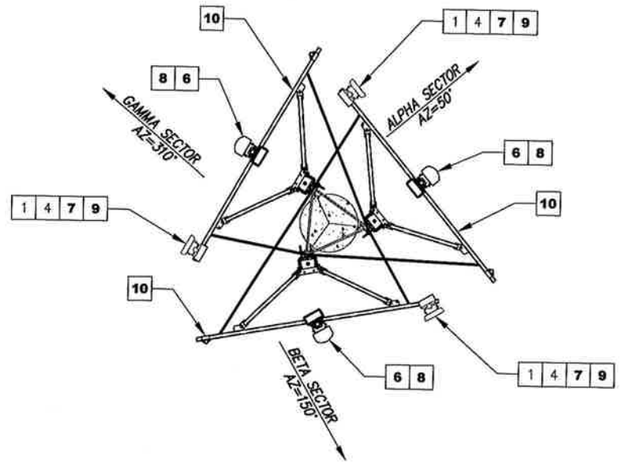
ORIENTATION PLAN KEY

KEY	DESCRIPTION	TYPE	QTY	STATUS
1	APX16DWV-16DWV-E-A20	ANTENNA	3	REMAIN
2	LNX-6515DS-A1M	ANTENNA	3	REMOVED
3	TWIN STYLE 1A - PCS	TMA	3	REMOVED
4	TWIN STYLE 1B - AWS	TMA	3	REMAIN
5	T-FRAME	SECTOR FRAME	3	REMOVED
6	**APXVAARR24-43-U-NA20**	**ANTENNA**	**3**	**PROPOSED**
7	**ATMA4P4DBP-1A20**	**TMA**	**3**	**PROPOSED**
8	**RADIO 4449 B71 +B12**	**RRU**	**3**	**PROPOSED**
9	**FDBL5003D-S**	**DIPLEXER**	**6**	**PROPOSED**
10	**SITE PRO 1 VFA12-HD**	**SECTOR FRAME**	**3**	**PROPOSED**



NORTH

2 / C2 EXISTING ANTENNA ORIENTATION
SCALE: NOT TO SCALE



NORTH

3 / C2 PROPOSED ANTENNA ORIENTATION
SCALE: NOT TO SCALE

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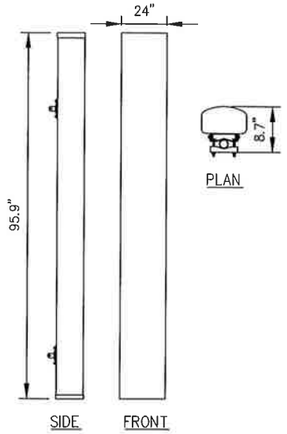
Prepared For:
CROWN CASTLE

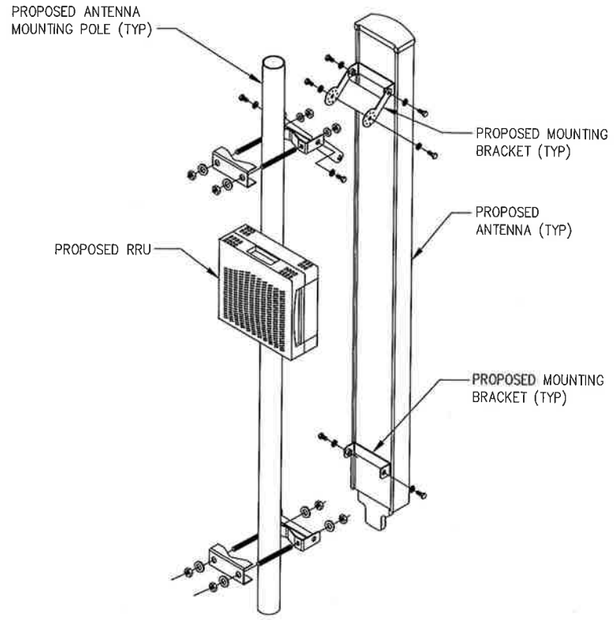
Drawing Title
RF CHART

Drawing Number
C2

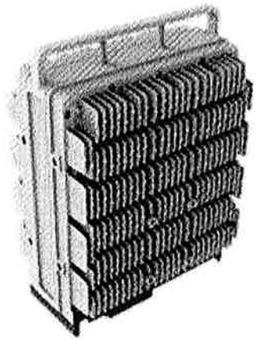


RFS MODEL NO.:	APXVAARR24_43-U-NA20
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD:	95.9"x24"x8.7"
WEIGHT, W/O MOUNTING KIT:	128 LBS

1 / D1 APX ANTENNA DETAIL
SCALE: NOT TO SCALE



2 / D1 ANTENNA/RRU MOUNTING DETAIL
SCALE: NOT TO SCALE



ERICSSON 4449 B71+B12 SPECIFICATIONS

- HxWxD, (INCHES) : 17.91"x13.19"x10.63"
- WEIGHT (LBS) : 74.96
- COLOR : GRAY

3 / D1 4449 B71+B12 RRU DETAIL
SCALE: NOT TO SCALE

RFS FDBL5003D-S SPECIFICATIONS

- HxWxD, (INCHES) : 7.58"x8.6"x2.0"
- WEIGHT (LBS) : 7.7 LBS
- COLOR : GRAY

NOTE:
SECURE DIPLEXER TO PIPE MAST PER MANU. SPECS

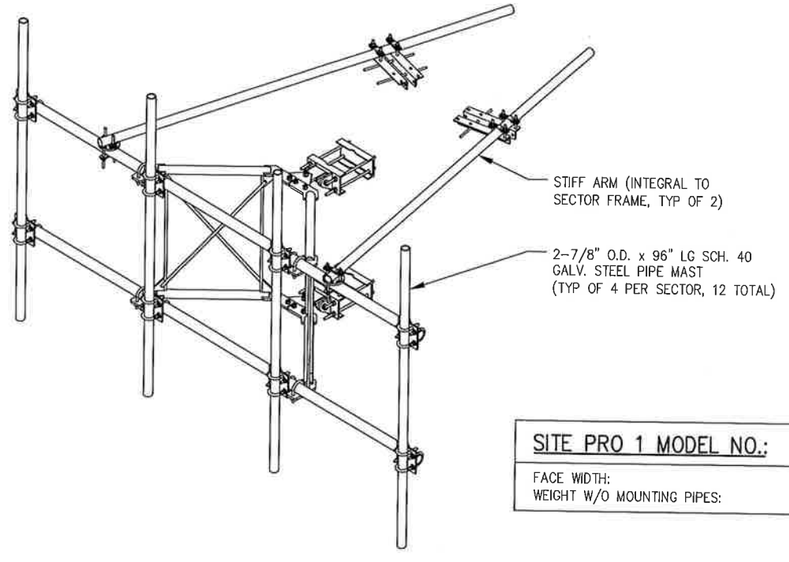
4 / D1 DIPLEXER DETAIL
SCALE: NOT TO SCALE

RFS ATMA4P4DBP-1A20 SPECIFICATIONS

- HxWxD, (INCHES) : 11.2"x8"x4.9"
- WEIGHT (LBS) : 15.85
- COLOR : GRAY

NOTE:
SECURE TMA TO PIPE MAST PER MANU. SPECS

5 / D1 TMA DETAIL
SCALE: NOT TO SCALE



SITE PRO 1 MODEL NO.:	VFA12-HD
FACE WIDTH:	12'-6"
WEIGHT W/O MOUNTING PIPES:	657LBS

6 / D1 ANTENNA MOUNT DETAIL
SCALE: NOT TO SCALE

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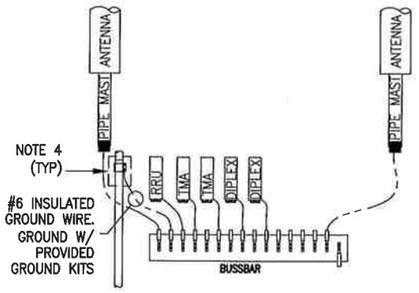
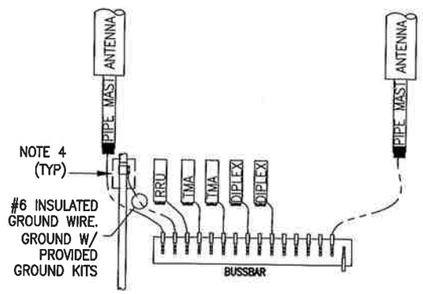
EQUIPMENT DETAILS

Drawing Number
D1

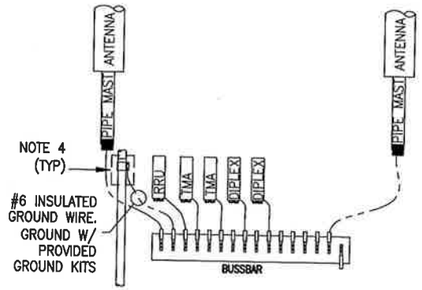
ALPHA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)



BETA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)

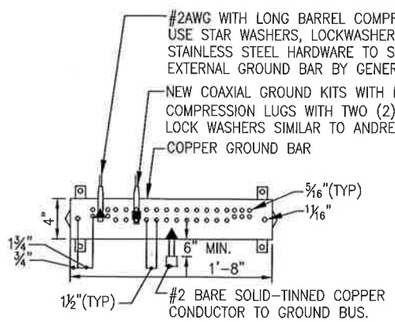


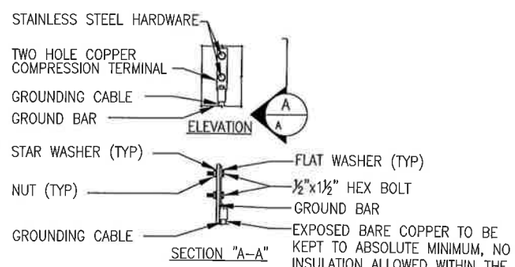
GAMMA SECTOR
(LAYOUT SHOWN GENERICALLY, SEE ANTENNA ORIENTATION)



NOTES:
1. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
3. PROVIDE SOLID TINNED BARE COPPER WIRE (BCW) GROUNDING CONDUCTOR.
4. PROVIDE STANDARD COAX OR HYBRID CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. TOTAL LENGTH OF GROUNDING CONDUCTOR SHALL NOT EXCEED 10'-0".
5. PROVIDE GROUNDING ELECTRODES QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
6. LEAVE GROUND WIRE COILED UP ABOVE GRADE. CAP END OF CONDUIT.
7. ADD COAX OR HYBRID CABLE GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF CABLE TRAY (FROM TOWER OR MONOPOLE TO EQUIPMENT) IS GREATER THAN 20'-0".
8. ADD #2/0 GREEN INSULATED CONDUCTOR BETWEEN CABLE TRAY AND GRIPSTRUT/COVER.
9. BUSSBARS ARE TO BE TINNED COPPER BARS (¼"X2"X12") MOUNTED ON INSULATORS, U.O.N.
10. GROUND ALL PROPOSED ANTENNAS, DIPLEXERS, TMAS, AND RRUS PER MANU. SPECS.

1 / E1 GROUNDING DIAGRAM
SCALE: NOT TO SCALE

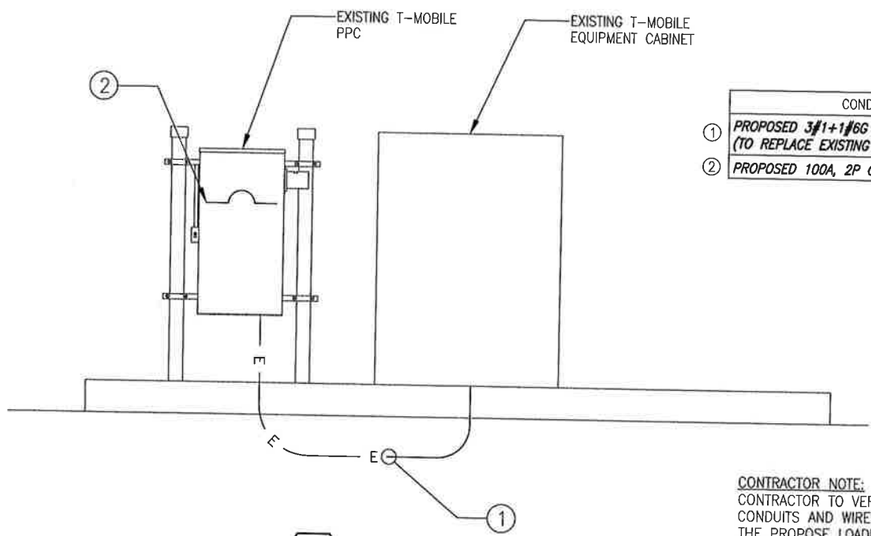




NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

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

2 / E1 GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



CONDUIT SCHEDULE
① PROPOSED 3#1+1#6G IN 1-1/2" CONDUIT (TO REPLACE EXISTING CONDUCTOR AND CONDUIT)
② PROPOSED 100A, 2P C.B.

3 / E1 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

CONTRACTOR NOTE:
CONTRACTOR TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSE LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

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

INFINIGY
6865 DEERPATH ROAD SUITE 152
ELKRIDGE, MD 21075
TEL (443) 592-3143

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
DEC 14 2018

No.	Submittal / Revision	App'd	Date
2	COAX REMOVAL	SL	12/11/18
1	ADDRESS REVISION	SL	11/26/18
0	ISSUED FOR CONSTRUCTION	SL	09/25/18
A	ISSUED FOR REVIEW	SL	09/06/18

Drawn: RCD
Designed: MRL
Checked: AJD

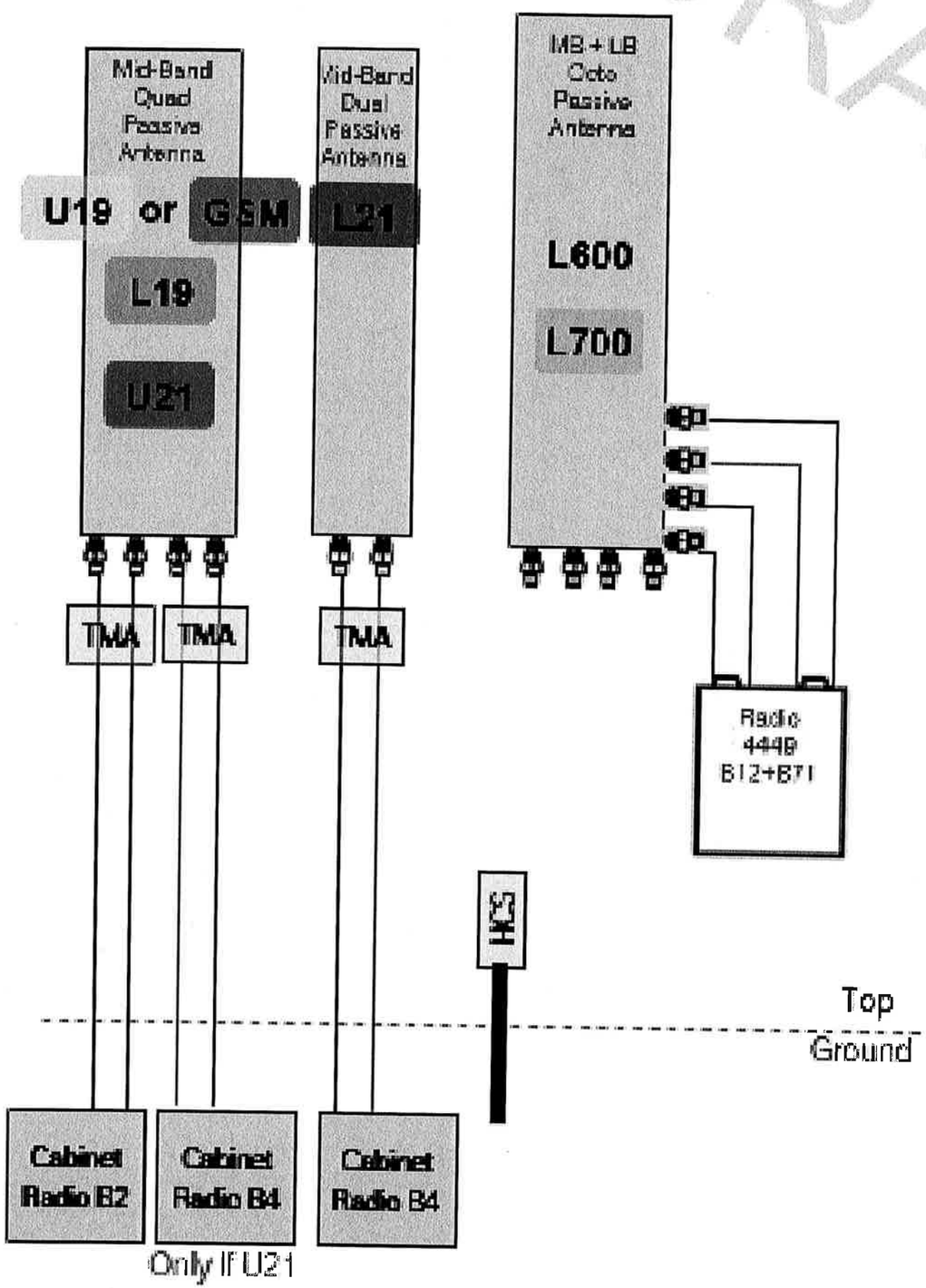
Project Number: 600-007

Project Title:
CT11203B
TRUMBULL / RT. 108
800 BOOTH HILL RD
TRUMBULL, FAIRFIELD COUNTY, CT 06611

Prepared For:
CROWN CASTLE

Drawing Title
GROUNDING & ELECTRICAL DETAILS

Drawing Number
E1



1 / E2 RF PLUMBING DIAGRAM
SCALE: AS NOTED

T-Mobile

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103 MONARCH DRIVE
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INFINIGY

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Prepared For:
CROWN CASTLE

Drawing Title
RF PLUMBING DIAGRAM

Drawing Number
E2

Date: **December 12, 2018**

Jason Rouse
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

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

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11203B
	Carrier Site Name:	Trumbul/Rt. 108
Crown Castle Designation:	**Crown Castle BU Number:**	873128
	Crown Castle Site Name:	Trumbull
	Crown Castle JDE Job Number:	510739
	Crown Castle Work Order Number:	1669772
	Crown Castle Application Number:	444687 Rev. 5
Engineering Firm Designation:	**TEP Project Number:**	25575.201175
Site Data:	**800 Booth Hill Rd., Trumbull, Fairfield County, CT 06611** **Latitude *41° 16' 44.26"*, Longitude *-73° 11' 6.40"*** **457 Foot - Guyed Tower**	

Dear Jason Rouse,

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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

LC4.5: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

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

Structural analysis prepared by: Jessica R. Moebs, P.E. / AJO

Respectfully submitted by:

Aaron Rucker, P.E.

Electronic Copy

12/12/2018

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1) INTRODUCTION

This tower is a 457-ft guyed tower designed by Blaw Knox, and mapped by Pinnacle Towers in July of 2003. The original design standard and wind speed are unknown. The tower has been modified multiple times in the past to accommodate additional loading. The proposed modifications designed by TEP in October of 2018 were considered in this analysis. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
247.0	247.0	3	RFS Celwave	APX16DWV-16DWVS-C w/ Mount Pipe	16 2	7/8 1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	KRY 112 489/2		
		3	Ericsson	Radio 4449 B12/B71		
		6	RFS Celwave	FDBL5003D-S		
		3	RFS Celwave	ATMAA1412D-1A20		
		1	Tower Mounts	Sector Mount [SM 301-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
458.0	477.0	1	Dielectric	TFU-20JDAS	1	4-1/16
444.0	454.0	1	Sinclair	SRL-235-2	1	7/8
	444.0	1	Tower Mounts	Side Arm Mount [SO 308-1]		
419.0	419.0	1	ERI	1183-3CP	1	3
393.0	393.0	1	Shively Labs	6014-2	1	1-5/8
382.0	382.0	1	Shively Labs	6014-2	1	1-5/8
367.0	367.0	1	ERI	SHP-2AE	1	3
342.0	352.0	1	RFS Celwave	455-6	1	1/2
	350.0	1	Antel	BCD-87077		
	342.0	1	Tower Mounts	Side Arm Mount [SO 601-1]		
		1	Tower Mounts	Side Arm Mount [SO 303-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
330.0	335.0	1	Andrew	PG1N0F-0090-310	1	1-1/4
	330.0	1	Tower Mounts	Side Arm Mount [SO 602-1]		
		-	-	-	1	1-5/8
326.0	329.0	1	Decibel	DB201-A	-	-
	326.0	1	Tower Mounts	Side Arm Mount [SO 602-1]		
325.0	325.0	1	Decibel	DB408	1	1-1/4
		1	Tower Mounts	Side Arm Mount [SO 303-1]		
322.0	327.0	1	Sinclair	SRL-310C-4HD	1 1	1-1/4 1/2
	322.0	1	Radiowaves	SPD3-5.8		
		1	Tower Mounts	Side Arm Mount [SO 308-1]		
		1	Tower Mounts	Pipe Mount [PM 601-1]		
310.0	316.0	1	Shively Labs	6014-2	1	1-5/8
	306.0	1	Shively Labs	6014-2		
277.0	283.0	1	RFS Celwave	BMR10-A-B1	1	1-5/8
264.0	273.0	1	Telewave	ANT150F6	1	1-5/8
	264.0	1	Tower Mounts	Side Arm Mount [SO 303-1]		
255.0	261.0	1	Decibel	DB809KT3E-Y	1	1-1/4
	255.0	1	Tower Mounts	Side Arm Mount [SO 203-1]		
230.0	232.0	3	Alcatel Lucent	RRH2x60-700	2 19	1-5/8 7/8
		3	Commscope	HBXX-6516DS-VTM w/ Mount Pipe		
		3	Andrew	SBNHH-1D65B w/ Mount Pipe		
		2	Andrew	LNX-8513DS-VTM w/ Mount Pipe		
		1	Andrew	LNX-6514DS-VTM w/ Mount Pipe		
		3	Alcatel Lucent	RRH2X60-PCS		
		3	Alcatel Lucent	RRH2X60-AWS		
		2	RFS Celwave	DB-T1-6Z-8AB-0Z		
	230.0	1	Tower Mounts	Sector Mount [SM 407-3]		
206.0	206.0	1	Mark	P-9A72GN-U	1	7/8
200.0	200.0	1	Gabriel Elec.	DFPD1-52 w/ Mount Pipe	1	1/4
178.0	178.0	1	Radiowaves	SPD4-5.2	1	1/2
150.0	150.0	1	Andrew	HPX6-65-P3A	2	EW63
146.0	146.0	1	Andrew	PL6-65-PXA	1	EW63
		1	Tower Mounts	Pipe Mount [PM 601-1]		
140.0	140.0	1	Channel Master	CM 4228HD	1	3/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
136.0	138.0	1	RFS Celwave	MGA2-16N	3	3/8
	136.0	1	CSI-Cellular Specialties	CSI-AY/809-960/11		
		1	Tower Mounts	2.4"Ø x 8' Mount Pipe		
	135.0	1	Channel Master	CM 4228HD		
	134.0	1	RFS Celwave	MGAR3-23N		
133.0	143.0	1	RFS Celwave	220-5	2 1	7/8 1/2
	142.0	1	Decibel	DB264-A		
	133.0	1	Tower Mounts	Side Arm Mount [SO 601-1]		
		1	Tower Mounts	Side Arm Mount [SO 202-1]		
117.0	117.0	1	Mark	P-9A48GN-U	1	7/8
109.0	113.0	1	RFS Celwave	PD1132-D	1	7/8
	109.0	1	Tower Mounts	Side Arm Mount [SO 202-1]		
108.0	108.0	1	Mark	SSH-9A72GN	1	7/8
99.0	99.0	1	Ligowave	PTP 900-13	1 1	7/8 1/4
		1	Radiowaves	SPD2-5.8		
62.0	68.0	1	Mark	P-9A48GN-U	3	7/8
	62.0	2	Tower Mounts	Side Arm Mount [SO 601-1]		
	61.0	1	Mark	SSH-9A72GN		
	54.0	1	CSI-Cellular Specialties	CSI-AY/809-960/11		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Reports	FDH Engineering	1418454	CCISites
Tower Foundation Mapping	Tower Engineering Professionals	1520339	CCISites
Tower Mapping	Pinnacle Towers Inc.	1327906	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	2407618	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	2633757	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	2755396	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	3006419	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	5592838	CCISites
Post-Modification Inspection	Pinnacle Towers Inc.	1956007	CCISites
Post-Modification Inspection	Tower Engineering Professionals	2438393	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3417531	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3442609	CCISites
Post-Modification Inspection	Sinnott Gering and Schmitt Towers, Inc.	5760315	CCISites
Appurtenance Mapping	Tower Engineering Professionals	1327906	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	7951650	CCISites

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

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

3.2) Assumptions

1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
3) All tower components are in sufficient condition to carry their full design capacity.
4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
5) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
6) Per photos from CCI Sites, the termination and stitch welds of the reinforcing sleeves to the tower legs at 361-ft to 401-ft were assumed to be 3/16" fillet welds by 3" long. The end gaps between the sleeves and the flange were assumed to be 12".
7) The following material grades were assumed:
   a) Leg Grade: A7-33
   b) Original Bracing Grade: A7-33
   c) Original Connection Bolts: A307
   d) 2L3-1/2x3-1/2x3/8 Pull-off: A36
   e) L3x3x3/16 Torque Arm Members: A36
8) TEP could not analyze the base casting. The base casting thickness was not provided. TEP recommends a base casting thickness be obtained prior to modification. TEP assumes the base casting is sufficient for the purposes of this analysis.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T1	457 - 436	Leg	3	4	-35869	156820	22.9	Pass
T2	436 - 421	Leg	2 3/4	46	-50366	128255	39.3	Pass
T3	421 - 401	Leg	2 3/4	76	-93748	128255	73.1	Pass
T4-T7	401 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	Note 1	Note 1	Note 1	72.6 73.0 (b)	Pass
T8-T11	381 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	Note 1	Note 1	Note 1	62.3	Pass
T12	361 - 341	Leg	3	191	-127231	204054	62.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T13	341 - 321	Leg	3	236	-102034	161863	63.0	Pass
T14	321 - 301	Leg	3	269	-86125	161863	53.2	Pass
T15	301 - 281	Leg	3	302	-98250	161863	60.7	Pass
T16	281 - 276	Leg	3	336	-103236	161863	63.8	Pass
T17	276 - 271	Leg	3	345	-108533	161863	67.1	Pass
T18	271 - 266	Leg	3	354	-115278	161863	71.2	Pass
T19	266 - 261	Leg	3	366	-121194	161863	74.9	Pass
T20	261 - 256	Leg	3	378	-132868	161863	82.1	Pass
T21	256 - 251	Leg	3	387	-137906	204054	67.6	Pass
T22	251 - 246	Leg	3	399	-109636	161863	67.7	Pass
T23	246 - 241	Leg	3	410	-103278	204054	50.6	Pass
T24	241 - 221	Leg	3	427	-108600	161863	67.1	Pass
T25	221 - 201	Leg	3 1/4	458	-129329	198845	65.0	Pass
T26	201 - 181	Leg	3 1/4	492	-139637	198845	70.2	Pass
T27	181 - 161	Leg	3 1/4	525	-139974	198845	70.4	Pass
T28	161 - 141	Leg	3 1/2	559	-131733	239126	55.1	Pass
T29	141 - 121	Leg	3 1/2	592	-126872	239126	53.1	Pass
T30	121 - 101	Leg	3 1/2	625	-162713	239126	68.0	Pass
T31	101 - 81	Leg	3 1/2	657	-175814	239126	73.5	Pass
T32	81 - 61	Leg	3 1/2	690	-180124	239126	75.3	Pass
T33	61 - 41	Leg	3 1/2	724	-177665	239126	74.3	Pass
T34	41 - 20	Leg	3 1/2	757	-174937	233628	74.9	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-174866	209100	83.6	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-178832	245056	73.0	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	43	-2762	24604	11.2 29.2 (b)	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	55	-3072	19146	16.0 18.1 (b)	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	86	-6086	19146	31.8 40.2 (b)	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	113	-6470	19146	33.8 42.4 (b)	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	122	-7231	19146	37.8 48.4 (b)	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	134	-8937	19146	46.7 52.0 (b)	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	146	-7761	19146	40.5 60.0 (b)	Pass
T8	381 - 376	Diagonal	L2 1/2x2x3/16	152	-7234	19146	37.8 57.0 (b)	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	162	-8748	19146	45.7 51.4 (b)	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	176	-7250	19146	37.9 48.6 (b)	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	188	-7529	19146	39.3 49.4 (b)	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	230	-7031	19146	36.7 45.4 (b)	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	266	-5425	19146	28.3 36.2 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T14	321 - 301	Diagonal	L2 1/2x2x3/16	279	-3937	19146	20.6 34.0 (b)	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	312	-5247	19146	27.4 45.2 (b)	Pass
T16	281 - 276	Diagonal	L2 1/2x2x3/16	339	-5448	19146	28.5 36.5 (b)	Pass
T17	276 - 271	Diagonal	L2 1/2x2x3/16	348	-6108	19146	31.9 39.6 (b)	Pass
T18	271 - 266	Diagonal	L2 1/2x2x3/16	359	-5855	19146	30.6 45.9 (b)	Pass
T19	266 - 261	Diagonal	L2 1/2x2x3/16	371	-6794	19146	35.5 40.8 (b)	Pass
T20	261 - 256	Diagonal	L3x3x1/4	381	11087	43976	25.2 59.7 (b)	Pass
T21	256 - 251	Diagonal	L3x3x1/4	392	15954	43976	36.3 86.0 (b)	Pass
T22	251 - 246	Diagonal	L3x3x1/4	406	-11364	42355	26.8 61.2 (b)	Pass
T23	246 - 241	Diagonal	L3x3x1/4	418	10148	43976	23.1 54.7 (b)	Pass
T24	241 - 221	Diagonal	L3x3x1/4	455	-8961	42355	21.2 48.3 (b)	Pass
T25	221 - 201	Diagonal	L2 1/2x2x3/16	488	-5113	19146	26.7 44.1 (b)	Pass
T26	201 - 181	Diagonal	L2 1/2x2x3/16	521	-2716	19146	14.2 23.4 (b)	Pass
T27	181 - 161	Diagonal	L2 1/2x2x3/16	537	-2712	19146	14.2 23.4 (b)	Pass
T28	161 - 141	Diagonal	L3x3x1/4	566	-5691	42423	13.4 23.9 (b)	Pass
T29	141 - 121	Diagonal	L3x3x1/4	612	7268	42906	16.9 31.9 (b)	Pass
T30	121 - 101	Diagonal	L2 1/2x2x3/16	654	-5473	19146	28.6 35.7 (b)	Pass
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3461	19146	18.1 29.8 (b)	Pass
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-1690	19146	8.8 14.6 (b)	Pass
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-3401	19146	17.8 29.3 (b)	Pass
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-5235	18871	27.7 45.1 (b)	Pass
T35	20 - 6.70833	Diagonal	L2x2x3/16	794	-1992	18534	10.7 17.2 (b)	Pass
T36	6.70833 - 0	Diagonal	L2x2x3/16	817	-3837	22580	17.0 33.1 (b)	Pass
T1	457 - 436	Horizontal	L2 1/2x2x1/4	36	-1317	16395	8.0 11.4 (b)	Pass
T2	436 - 421	Horizontal	L2 1/2x2x1/4	57	1528	32027	4.8 13.2 (b)	Pass
T12	361 - 341	Secondary Horizontal	L2x2x1/4	208	-2204	23775	9.3 21.7 (b)	Pass
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	395	22795	154196	14.8 61.4 (b)	Pass
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1789	154196	1.2 4.8 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T1	457 - 436	Top Girt	C8x13.75	7	-1	68630	0.3	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	9	1112	32027	3.5 9.6 (b)	Pass
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	612	32027	1.9 5.3 (b)	Pass
T4	401 - 396	Top Girt	L2 1/2x2x1/4	77	-477	16310	2.9 5.0 (b)	Pass
T6	391 - 386	Top Girt	L2 1/2x2x1/4	130	675	33056	2.0	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	745	33056	2.3	Pass
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	666	32027	2.1 5.7 (b)	Pass
T13	341 - 321	Top Girt	L2 1/2x2x1/4	194	361	32027	1.1 3.1 (b)	Pass
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	378	32027	1.2 3.3 (b)	Pass
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	371	24516	1.5 3.2 (b)	Pass
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	321	32027	1.0 2.8 (b)	Pass
T18	271 - 266	Top Girt	L2 1/2x2x1/4	358	-740	16395	4.5 6.4 (b)	Pass
T20	261 - 256	Top Girt	L2 1/2x2x3/16	370	-5333	12631	42.2 46.0 (b)	Pass
T22	251 - 246	Top Girt	L2 1/2x2x3/16	403	-5750	12631	45.5 49.6 (b)	Pass
T24	241 - 221	Top Girt	L2 1/2x2x3/16	413	-638	12631	5.1 5.5 (b)	Pass
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	610	24516	2.5 5.3 (b)	Pass
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	639	24516	2.6 5.5 (b)	Pass
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	836	73267	1.1 3.6 (b)	Pass
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	758	24516	3.1 6.5 (b)	Pass
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1569	24516	6.4 13.5 (b)	Pass
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7133	12763	55.9 61.5 (b)	Pass
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	804	24516	3.3 6.9 (b)	Pass
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	905	24516	3.7 7.8 (b)	Pass
T33	61 - 41	Top Girt	L2 1/2x2x3/16	692	937	24516	3.8 8.1 (b)	Pass
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	821	24516	3.3 7.1 (b)	Pass
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	16217	49003	33.1 54.5 (b)	Pass
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	13	4139	32027	12.9 35.7 (b)	Pass
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	80	-432	16310	2.6 4.6 (b)	Pass
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	344	32027	1.1 3.0 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	243	304	32027	0.9 2.6 (b)	Pass
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	460	32027	1.4 4.0 (b)	Pass
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	300	24516	1.2 2.6 (b)	Pass
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	714	24516	2.9 6.2 (b)	Pass
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	596	24516	2.4 5.1 (b)	Pass
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	655	24516	2.7 5.6 (b)	Pass
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	645	24516	2.6 5.6 (b)	Pass
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	740	24516	3.0 6.4 (b)	Pass
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	598	-8169	12763	64.0 77.0 (b)	Pass
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	631	605	24516	2.5 5.2 (b)	Pass
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	878	24516	3.6 7.6 (b)	Pass
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	697	905	24516	3.7 7.8 (b)	Pass
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	856	24516	3.5 7.4 (b)	Pass
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1324	24516	5.4 11.4 (b)	Pass
T1	457 - 436	Guy A@446.5	9/16	826	13546	22050	61.4	Pass
T8	381 - 376	Guy A@381	1 3/8	829	65884	146157	45.1	Pass
T21	256 - 251	Guy A@254.5	1 1/4	832	60290	120958	49.8	Pass
T29	141 - 121	Guy A@131	11/16	846	21496	31499	68.2	Pass
T1	457 - 436	Guy B@446.5	9/16	825	13549	22050	61.4	Pass
T8	381 - 376	Guy B@381	1 3/8	828	67195	146157	46.0	Pass
T21	256 - 251	Guy B@254.5	1 1/4	831	60540	120958	50.1	Pass
T29	141 - 121	Guy B@131	11/16	839	21358	31499	67.8	Pass
T1	457 - 436	Guy C@446.5	9/16	824	13494	22050	61.2	Pass
T8	381 - 376	Guy C@381	1 3/8	827	64381	146157	44.0	Pass
T21	256 - 251	Guy C@254.5	1 1/4	830	59354	120958	49.1	Pass
T29	141 - 121	Guy C@131	11/16	833	20796	31499	66.0	Pass
T8	381 - 376	Top Guy Pull-Off@381	2L3x2x1/4x3/8	142	21289	73267	29.1 91.8 (b)	Pass
T29	141 - 121	Torque Arm Top@131	L3x3x3/16 (TA - BU#873128)	848	18571	37082	50.1	Pass
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-23949	33027	72.5	Pass
							Summary	
						Leg (T35)	83.6	Pass
						Diagonal (T21)	86.0	Pass
						Horizontal (T2)	13.2	Pass
						Secondary Horizontal (T21)	61.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
						Top Girt (T30)	61.5	Pass
						Mid Girt (T29)	77.0	Pass
						Guy A (T29)	68.2	Pass
						Guy B (T29)	67.8	Pass
						Guy C (T29)	66.0	Pass
						Top Guy Pull-Off (T8)	91.8	Pass
						Torque Arm Top (T29)	50.1	Pass
						Torque Arm Bottom (T29)	72.5	Pass
						Bolt Checks	91.8	Pass
						RATING =	**91.8**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC4.5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Mast Foundation	-	48.0	Pass
1,2	Guy Anchor Foundation A	-	57.0	Pass
1,2	Guy Anchor Foundation B	-	76.7	Pass
1,2	Guy Anchor Foundation C	-	74.9	Pass

Structure Rating (max from all components) =	91.8%

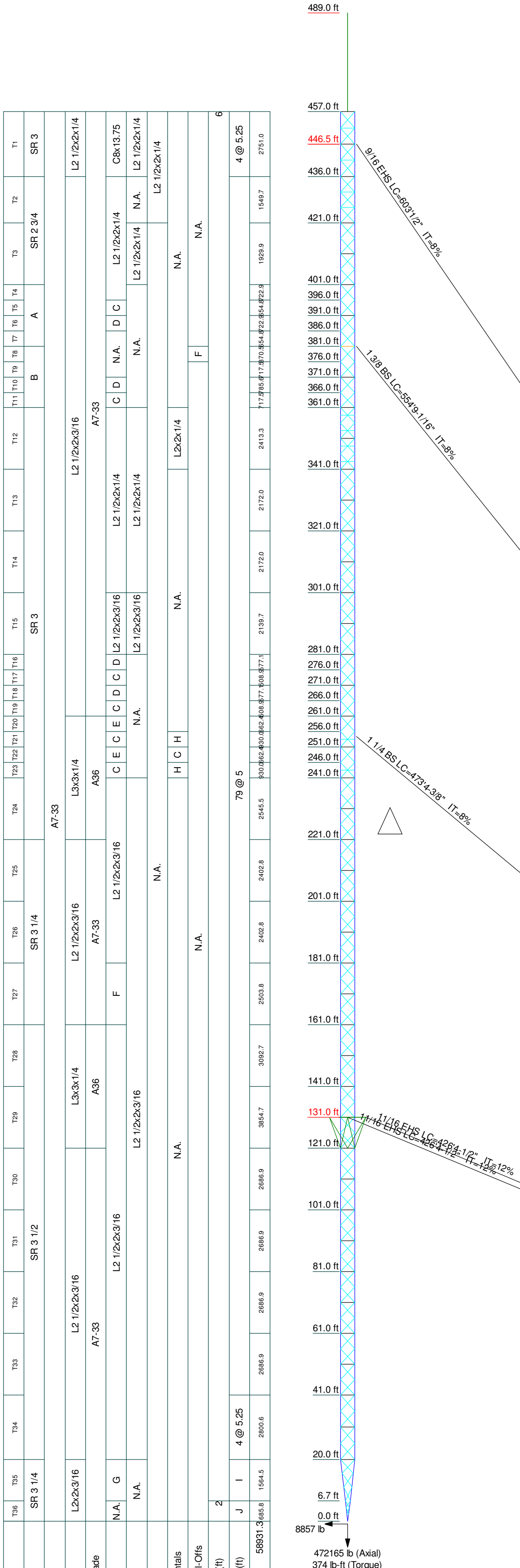
Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Rating per TIA-222-H Section 15.5

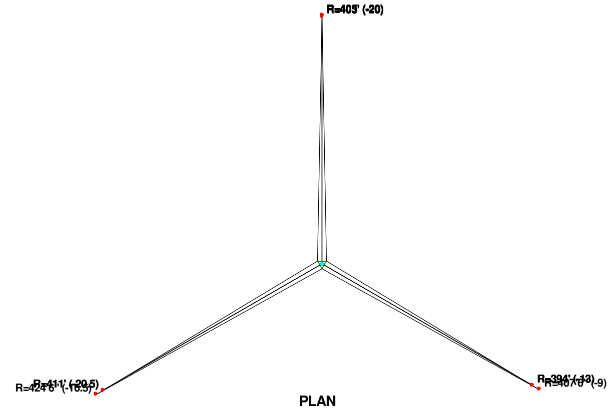
4.1) Recommendations

1) If the load differs from that described in Tables 1 and 2 of this report, the referenced drawings, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its base and anchor foundations have sufficient capacity to carry the proposed load configuration. No further modifications are required once the proposed modifications are installed.

APPENDIX A

TNXTOWER OUTPUT





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12" x 3' Beacon	457	HBXX-6516DS-VTM w/ Mount Pipe	230
SRL-235-2	444	HBXX-6516DS-VTM w/ Mount Pipe	230
Side Arm Mount [SO 308-1]	444	HBXX-6516DS-VTM w/ Mount Pipe	230
ERI 1183-3CP	419	SBNHH-1D65B w/ Mount Pipe	230
6014-2	393	SBNHH-1D65B w/ Mount Pipe	230
6014-2	382	SBNHH-1D65B w/ Mount Pipe	230
SHP-2AE	367	LNX-8513DS-VTM w/ Mount Pipe	230
BCD-87077	342	LNX-6514DS-VTM w/ Mount Pipe	230
Side Arm Mount [SO 303-1]	342	LNX-8513DS-VTM w/ Mount Pipe	230
455-6	342	RRH2X60-PCS	230
Side Arm Mount [SO 601-1]	342	RRH2X60-PCS	230
3" x 6" SideLight	333	RRH2X60-PCS	230
3" x 6" SideLight	333	RRH2X60-AWS	230
3" x 6" SideLight	333	RRH2X60-AWS	230
PG1N0F-0090-310	330	RRH2X60-AWS	230
Side Arm Mount [SO 601-1]	330	RRH2x60-700	230
DB201-A	326	RRH2x60-700	230
Side Arm Mount [SO 602-1]	326	RRH2x60-700	230
DB408	325	(2) DB-T1-6Z-8AB-0Z	230
Side Arm Mount [SO 303-1]	325	Sector Mount [SM 407-3]	230
SRL310C-4HD	322	3" x 6" SideLight	215
Side Arm Mount [SO 308-1]	322	3" x 6" SideLight	215
Pipe Mount [PM 601-1]	322	3" x 6" SideLight	215
SPD3-5.8	322	P-9A72GN-U	206
6014-2	316	DFPD1-52 w/ Mount Pipe	200
6014-2	306	SPD4-5.2	178
BMR10-A-B1	277	12"x12"x3" TMA	178
ANT150F6	264	1.9" x 5.5' Pipe (Horizontal)	150
Side Arm Mount [SO 303-1]	264	HPX6-65-P3A	150
(2) PL6" x 0.5"	258.5	Pipe Mount [PM 601-1]	146
(2) PL6" x 0.5"	258.5	PL6-65-PXA	146
(2) PL6" x 0.5"	258.5	CM 4228HD	140
DB809KT3E-Y	255	2.4" Dia x 8-ft Mount Pipe	136
Side Arm Mount [SO 203-1]	255	CSI-AY/809-960/11	136
APXVAARR24_43-U-NA20 w/ Mount Pipe	247	CM 4228HD	136
APXVAARR24_43-U-NA20 w/ Mount Pipe	247	MGA2-16N	136
APXVAARR24_43-U-NA20 w/ Mount Pipe	247	MGAR3-23N	136
(2) RADIO 4449 B12/B71	247	Side Arm Mount [SO 601-1]	133
RADIO 4449 B12/B71	247	220-5	133
APX16DWV-16DWVS-C w/ Mount Pipe	247	DB264-A	133
APX16DWV-16DWVS-C w/ Mount Pipe	247	Side Arm Mount [SO 202-1]	133
APX16DWV-16DWVS-C w/ Mount Pipe	247	P-9A48GN-U	117
KRY 112 489/2	247	3" x 6" SideLight	112
KRY 112 489/2	247	3" x 6" SideLight	112
KRY 112 489/2	247	3" x 6" SideLight	112
(2) FDBL5003D-S	247	Side Arm Mount [SO 202-1]	109
(2) FDBL5003D-S	247	PD1132-D	109
(2) FDBL5003D-S	247	2.4" Dia x 4-ft Mount Pipe	108
ATMAA1412D-1A20	247	SSH-9A72GN	108
ATMAA1412D-1A20	247	PTP 900-13 w/ Mount Pipe	99
ATMAA1412D-1A20	247	SPD2-5.8	99
2.4" Dia x 6-ft Pipe	247	CSI-AY/809-960/11	62
2.4" Dia x 6-ft Pipe	247	(2) Side Arm Mount [SO 601-1]	62
2.4" Dia x 6-ft Pipe	247	P-9A48GN-U	62
Sector Mount [SM 301-3]	247	SSH-9A72GN	62

SYMBOL LIST

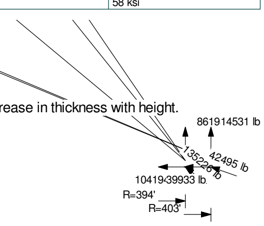
MARK	SIZE	MARK	SIZE
A	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	F	2L3x2x1/4x3/8
B	3.5" S.R. w/ 3.5 SCH40 Half Pipe	G	2L2 1/2x2x3/16x1/4
C	N.A.	H	2L3 1/2x3 1/2x3/8x3/8
D	L2 1/2x2x1/4	I	3 @ 4.43056
E	L2 1/2x2x3/16	J	3 @ 2.23611

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.27 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. 32' Dielectric TFU Antenna is included for load transfer only.
9. TIA-222-H Annex S



ALL REACTIONS ARE FACTORED

Tower Engineering Professionals
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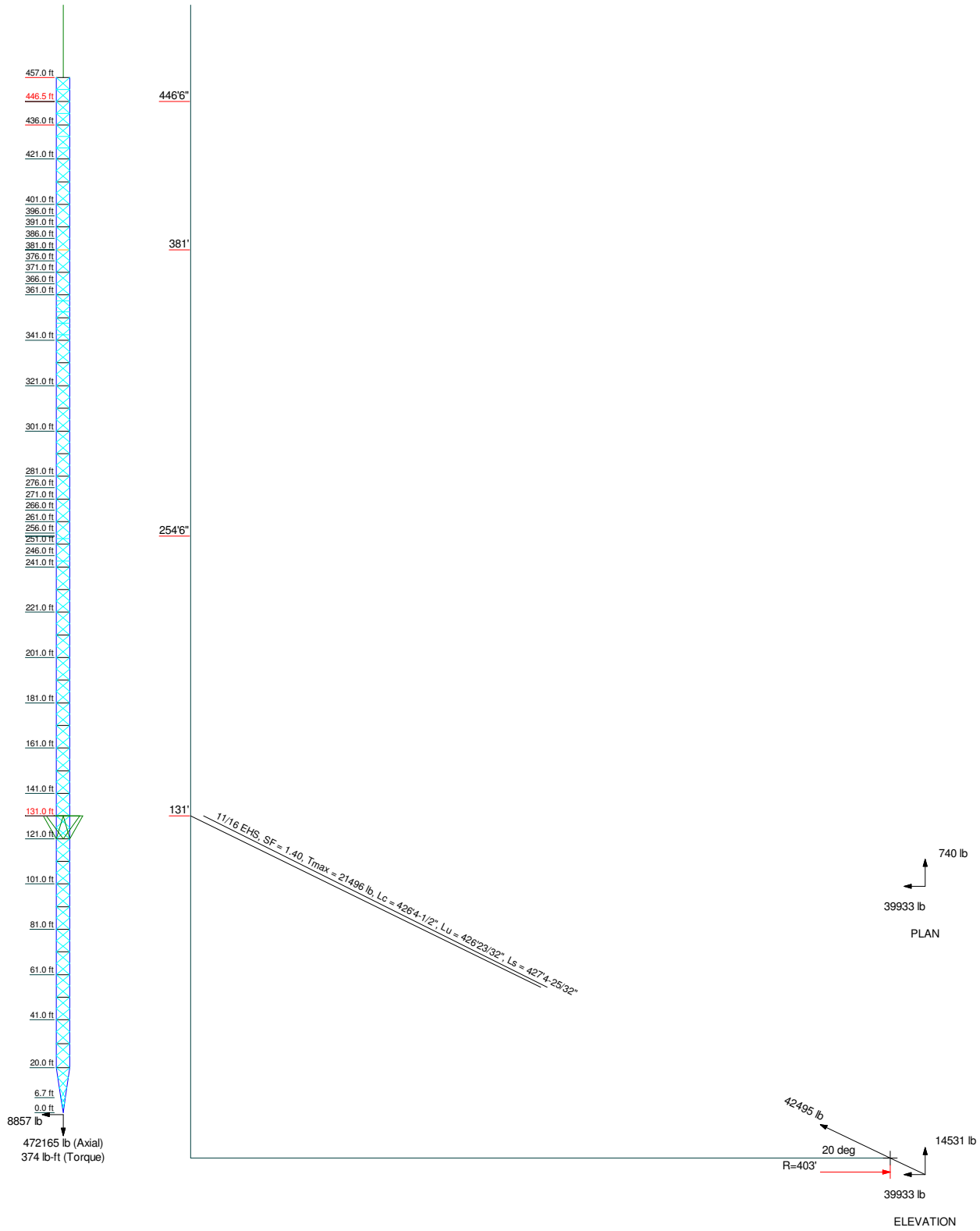
Job: Trumbull (BU 873128)		
Project: TEP No. 25575.201175		
Client: Crown Castle	Drawn by: JRM	App'd:
Code: TIA-222-H	Date: 12/11/18	Scale: NTS
Path:		Dwg No. E-1

Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'A'@403 ft Azimuth 0 deg Elev -20 ft
Plane through centroid of tower



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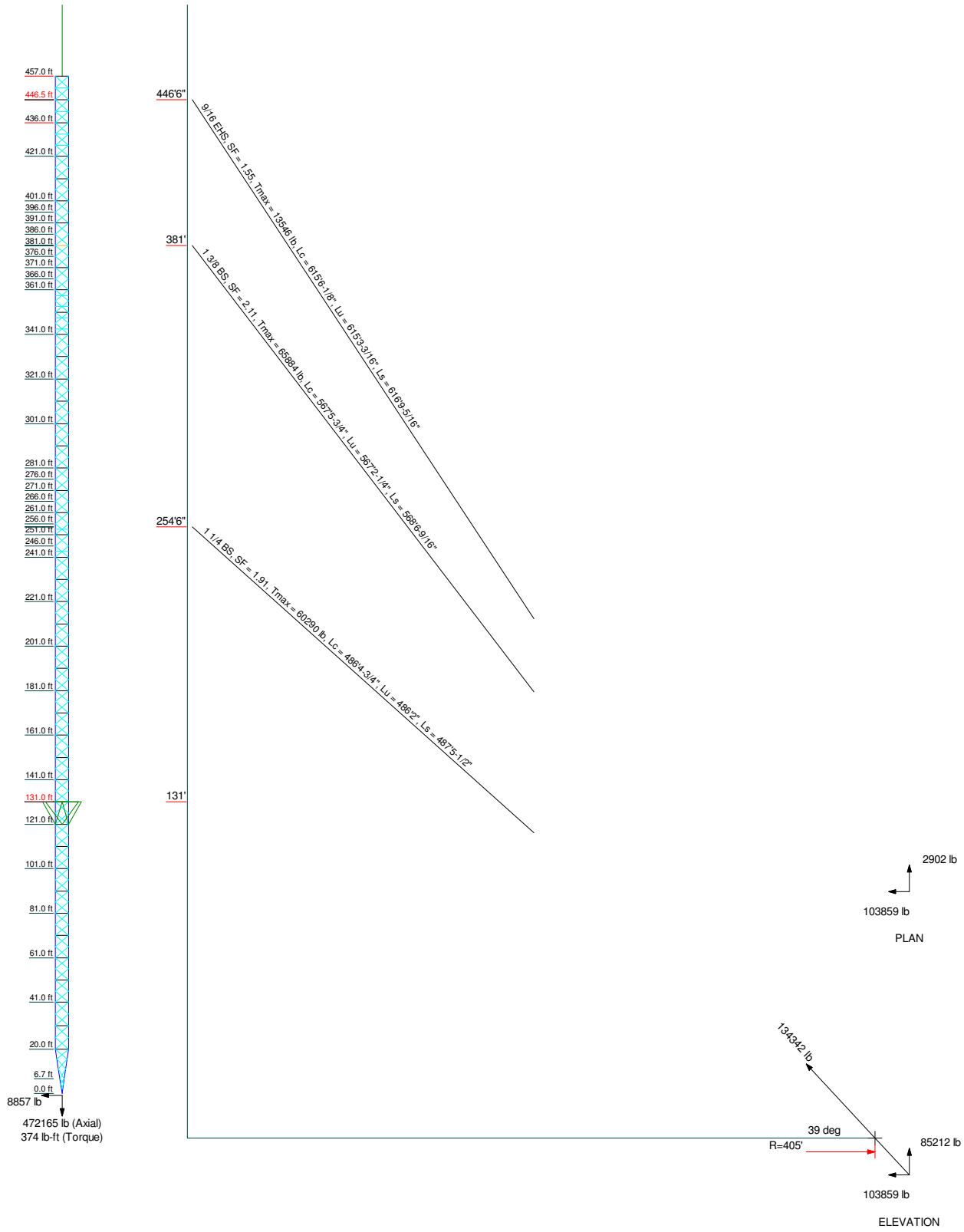
Path:		Dwg No. E-6	

Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'A'@405 ft Azimuth 0 deg Elev -20 ft
Plane through centroid of tower



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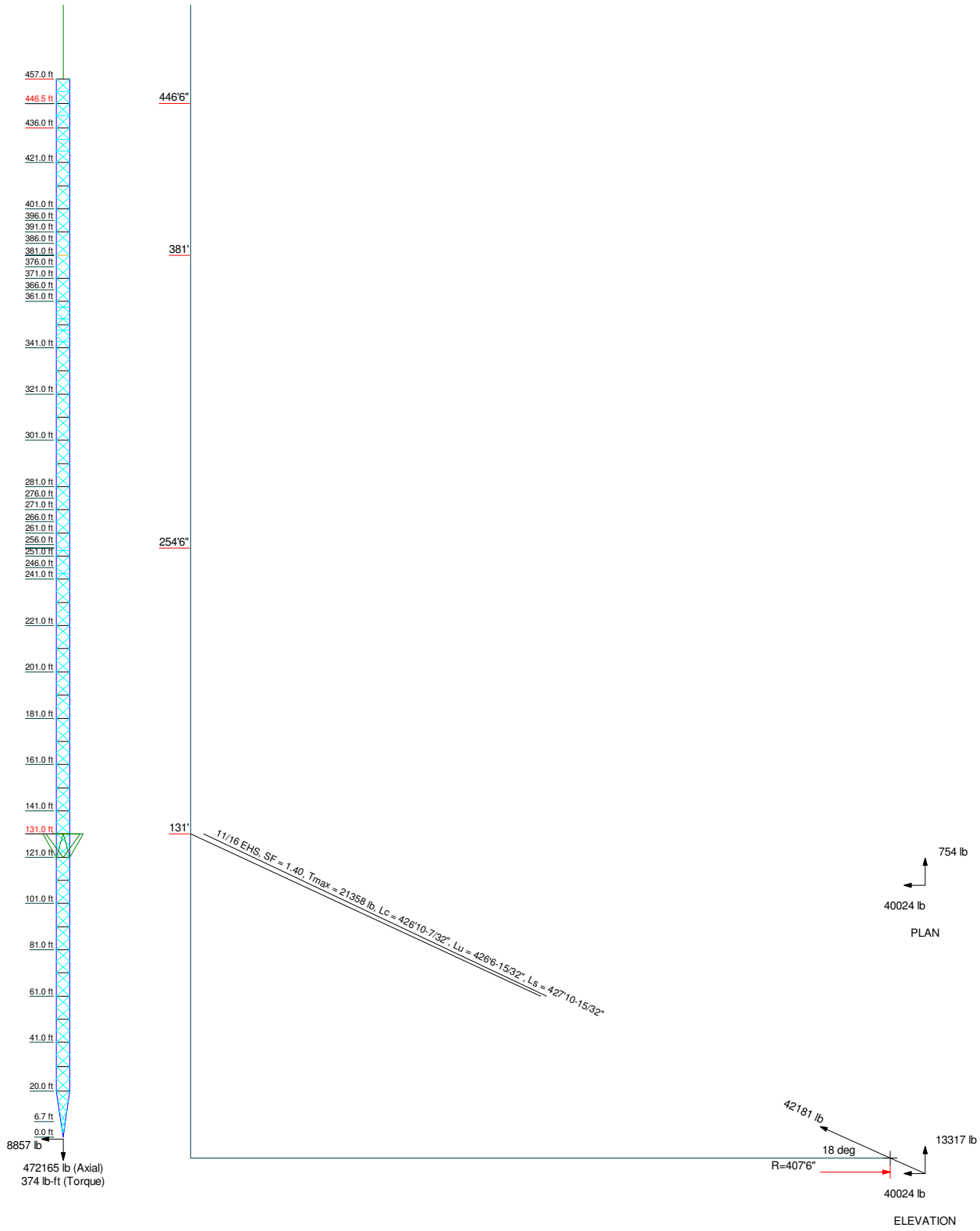
Path:		Dwg No. E-6	

Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'B'@407.5 ft Azimuth 120 deg Elev -9 ft
Plane through centroid of tower



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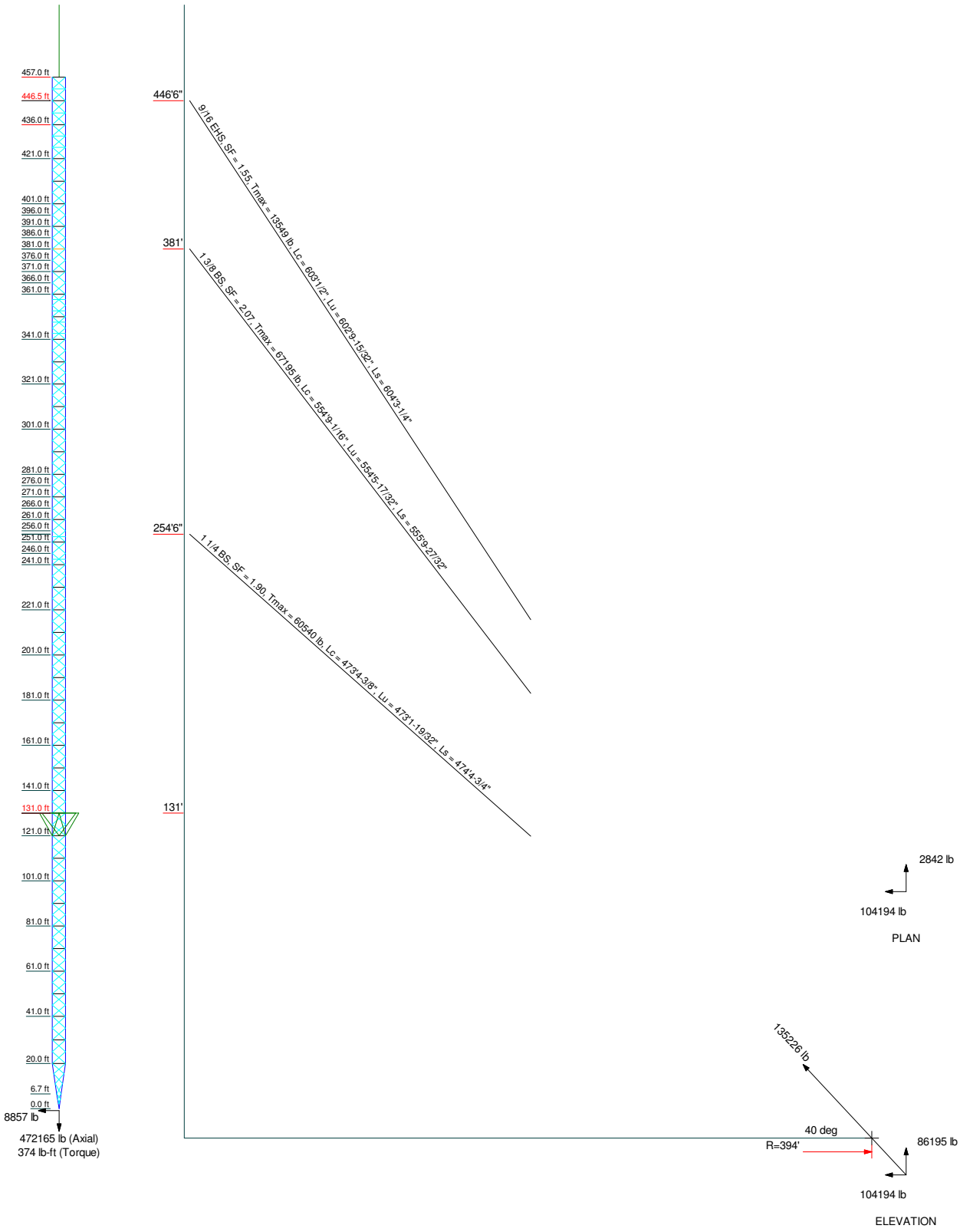
Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'B'@394 ft Azimuth 120 deg Elev -13 ft
Plane through centroid of tower



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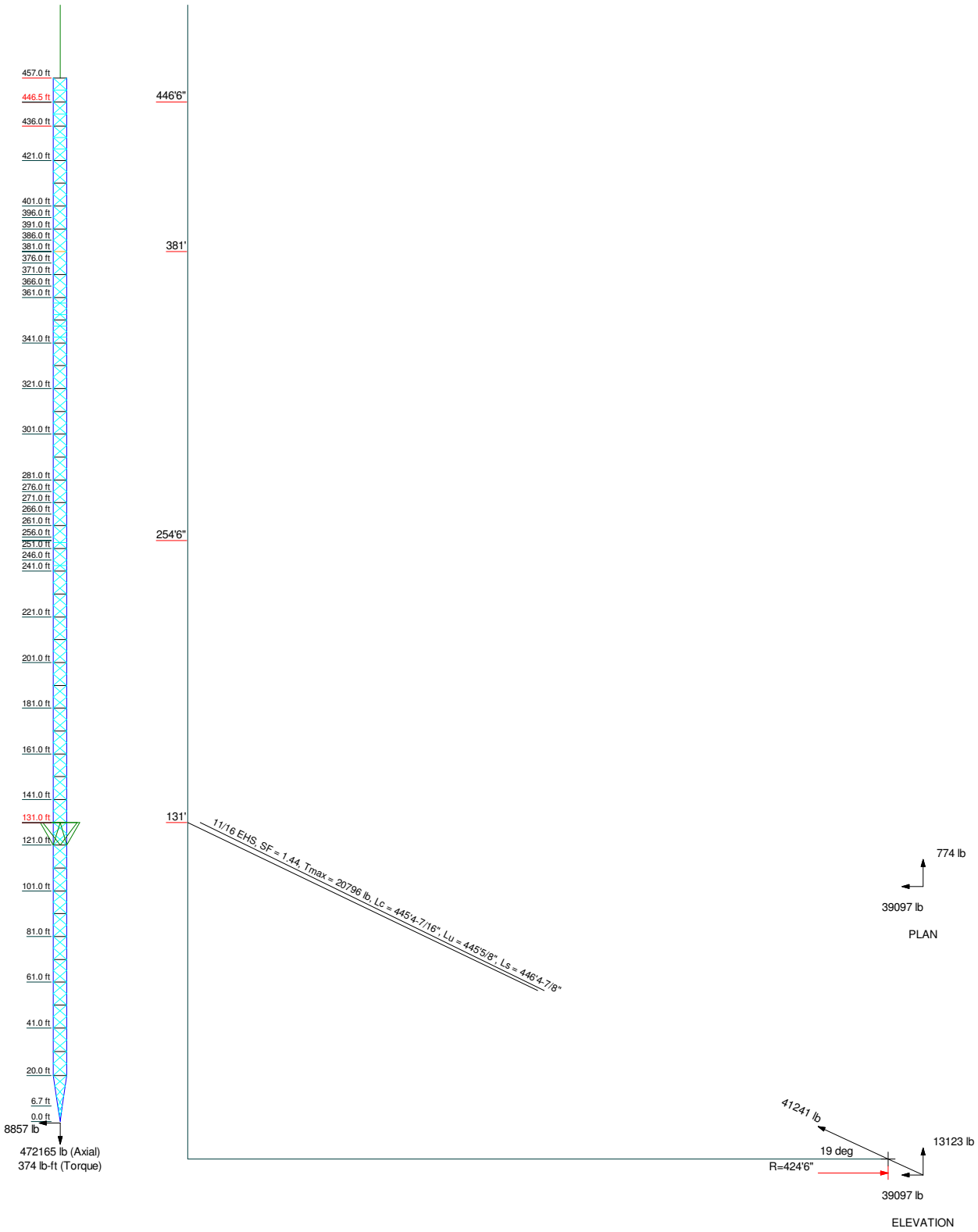
Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'C'@424.5 ft Azimuth 240 deg Elev -16.5 ft
Plane through centroid of tower



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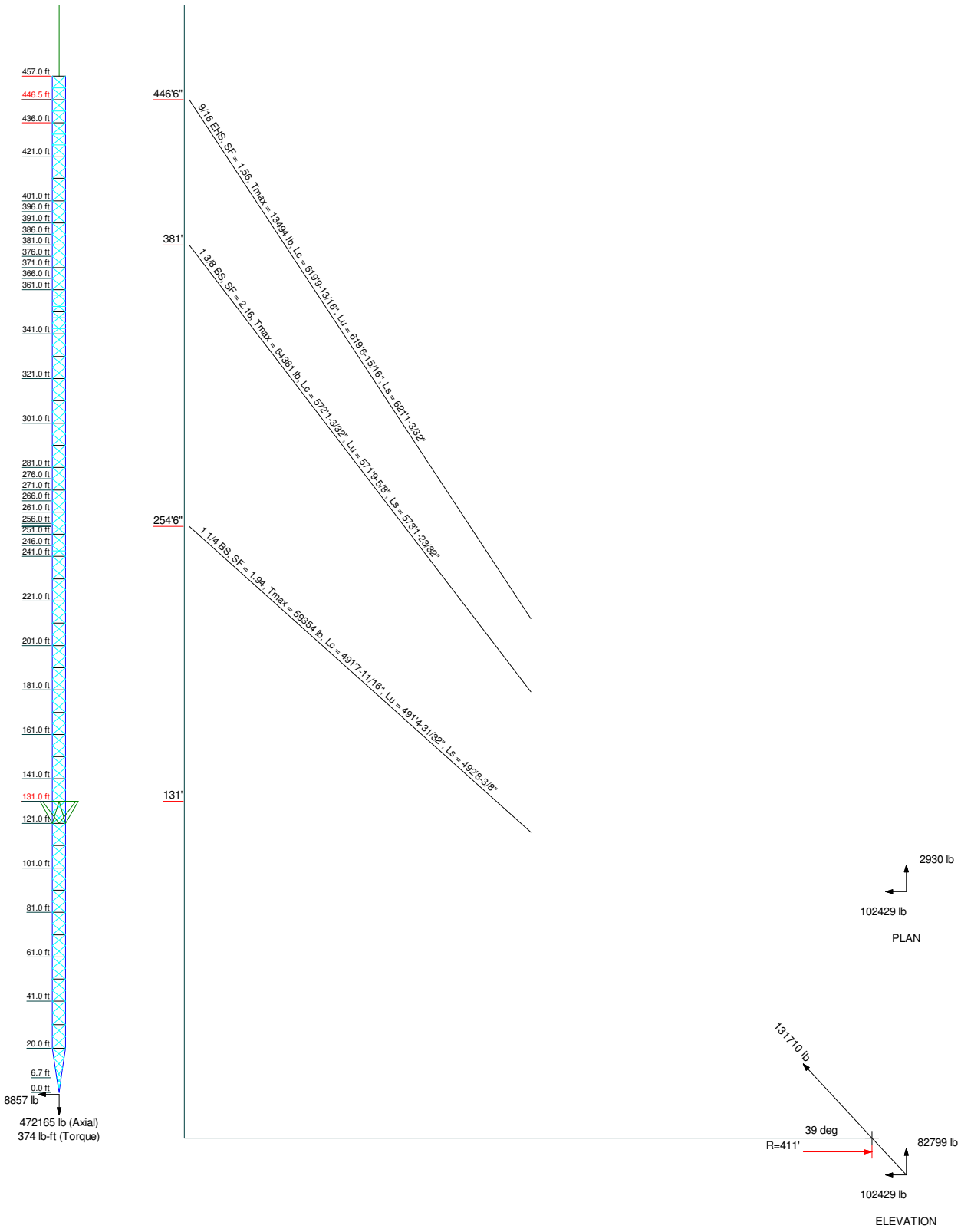
Path:		Dwg No. E-6	

Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'C'@411 ft Azimuth 240 deg Elev -20.5 ft
Plane through centroid of tower



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Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
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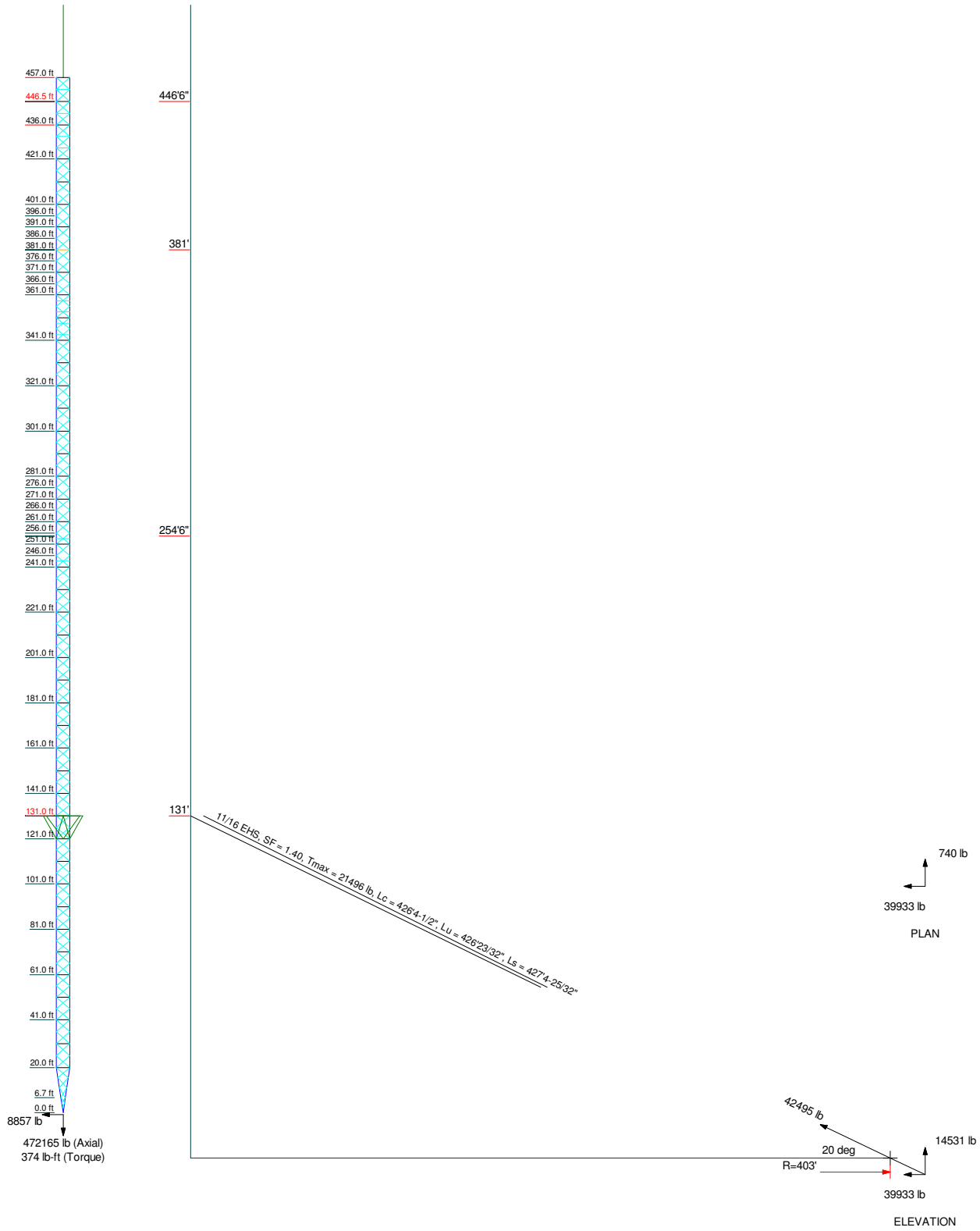
Plane through centroid of tower



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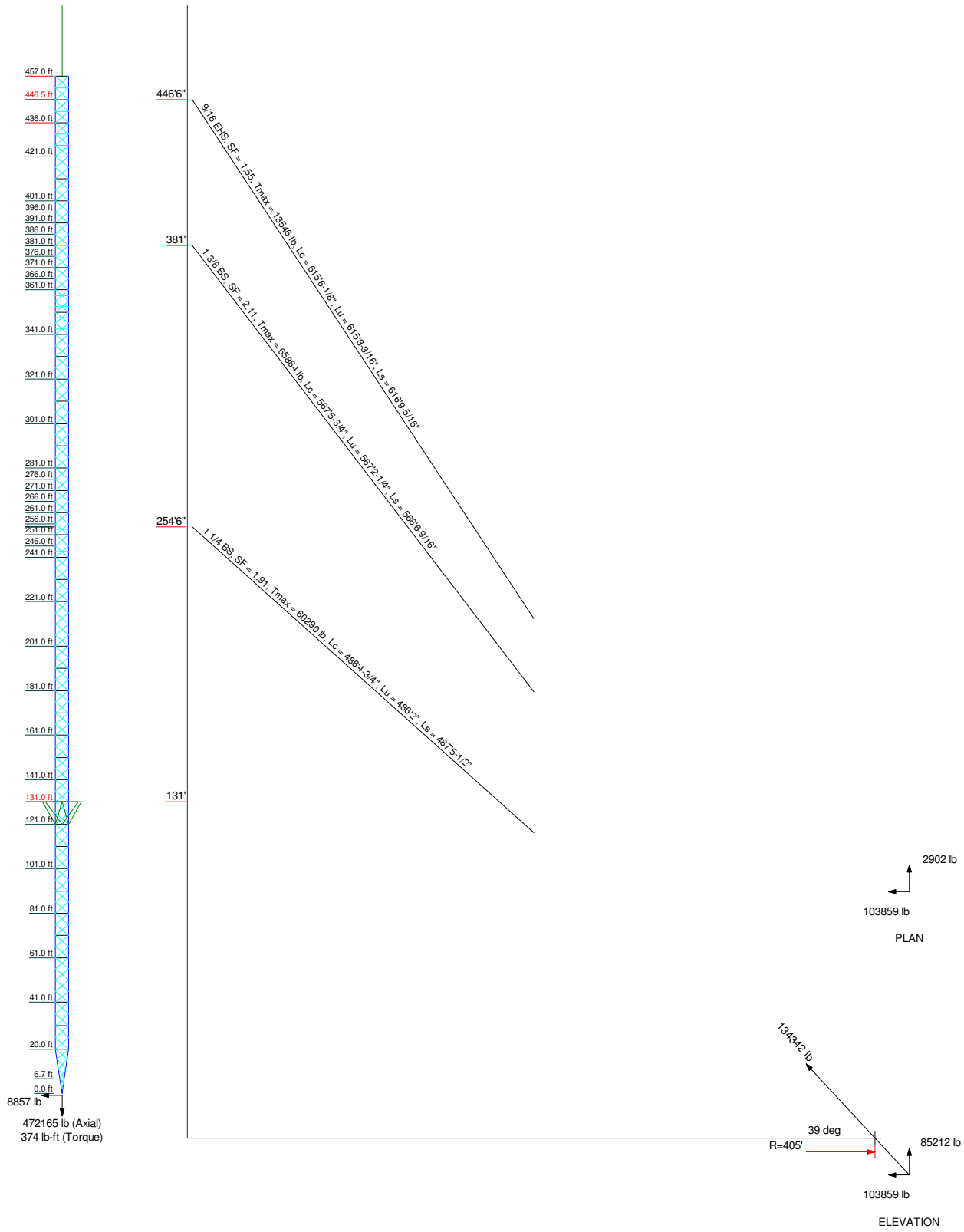
Maximum Values
Anchor 'A'@405 ft Azimuth 0 deg Elev -20 ft
Plane through centroid of tower



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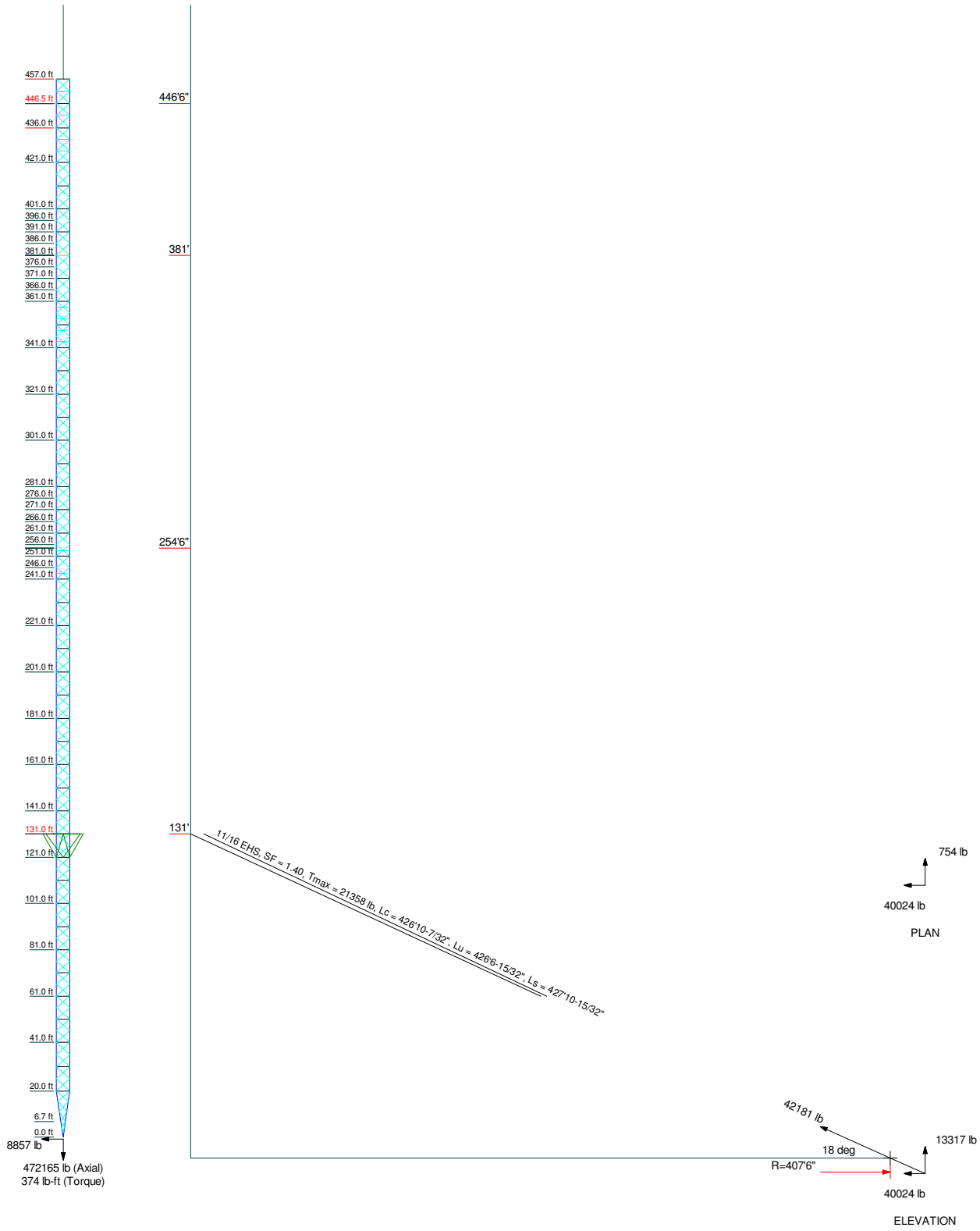
Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'B'@407.5 ft Azimuth 120 deg Elev -9 ft
Plane through centroid of tower



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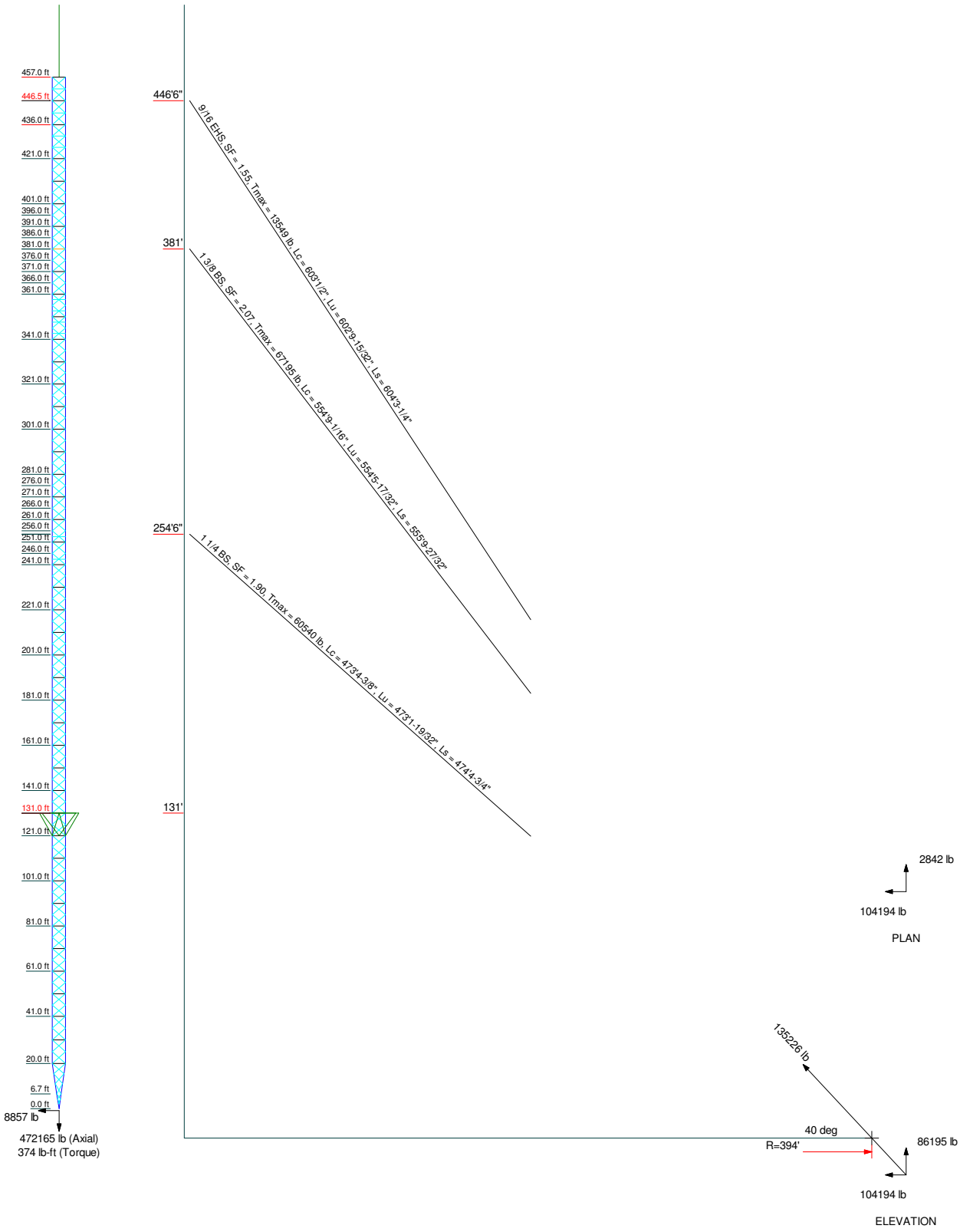
Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'B'@394 ft Azimuth 120 deg Elev -13 ft
Plane through centroid of tower



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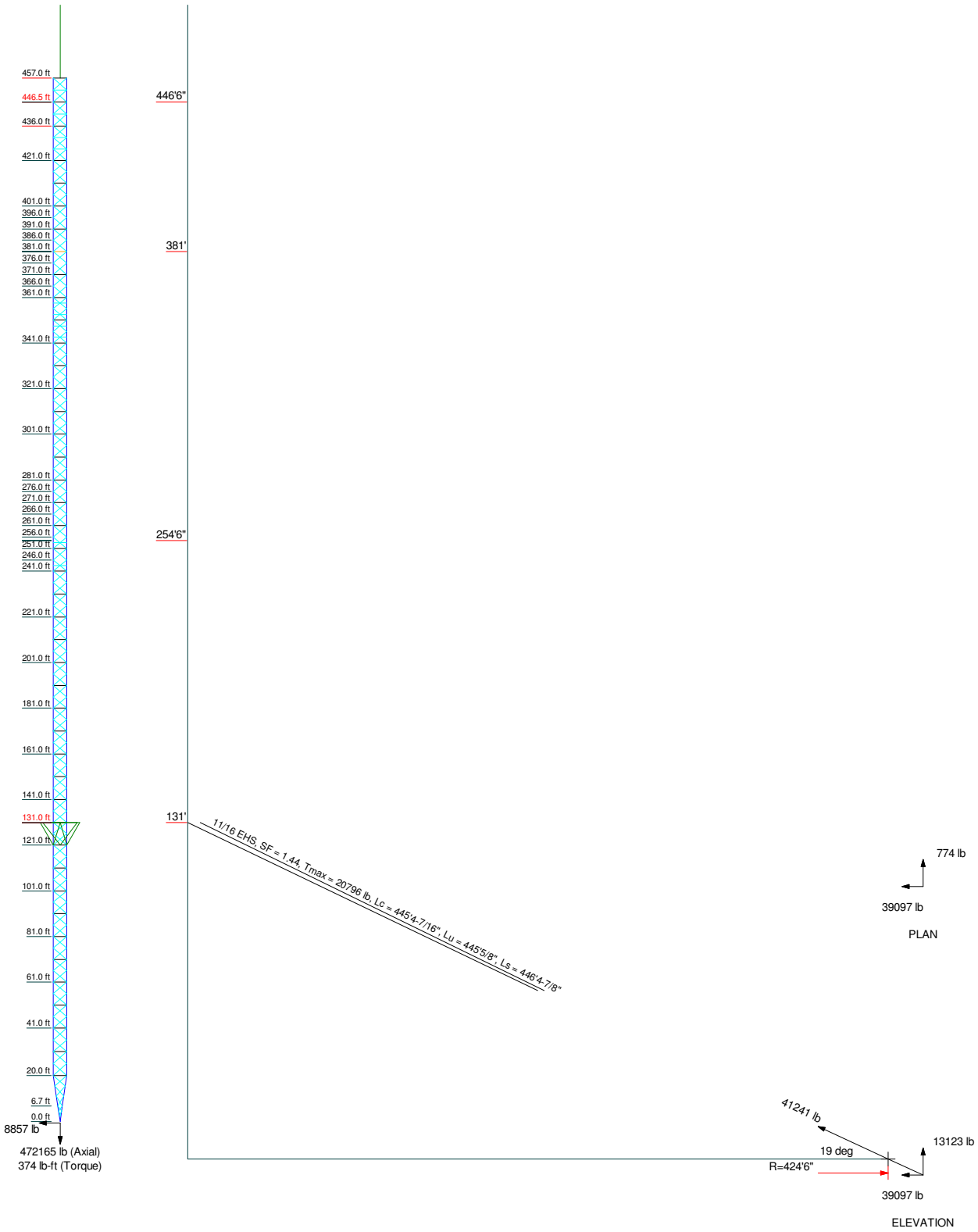
Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'C'@424.5 ft Azimuth 240 deg Elev -16.5 ft
Plane through centroid of tower



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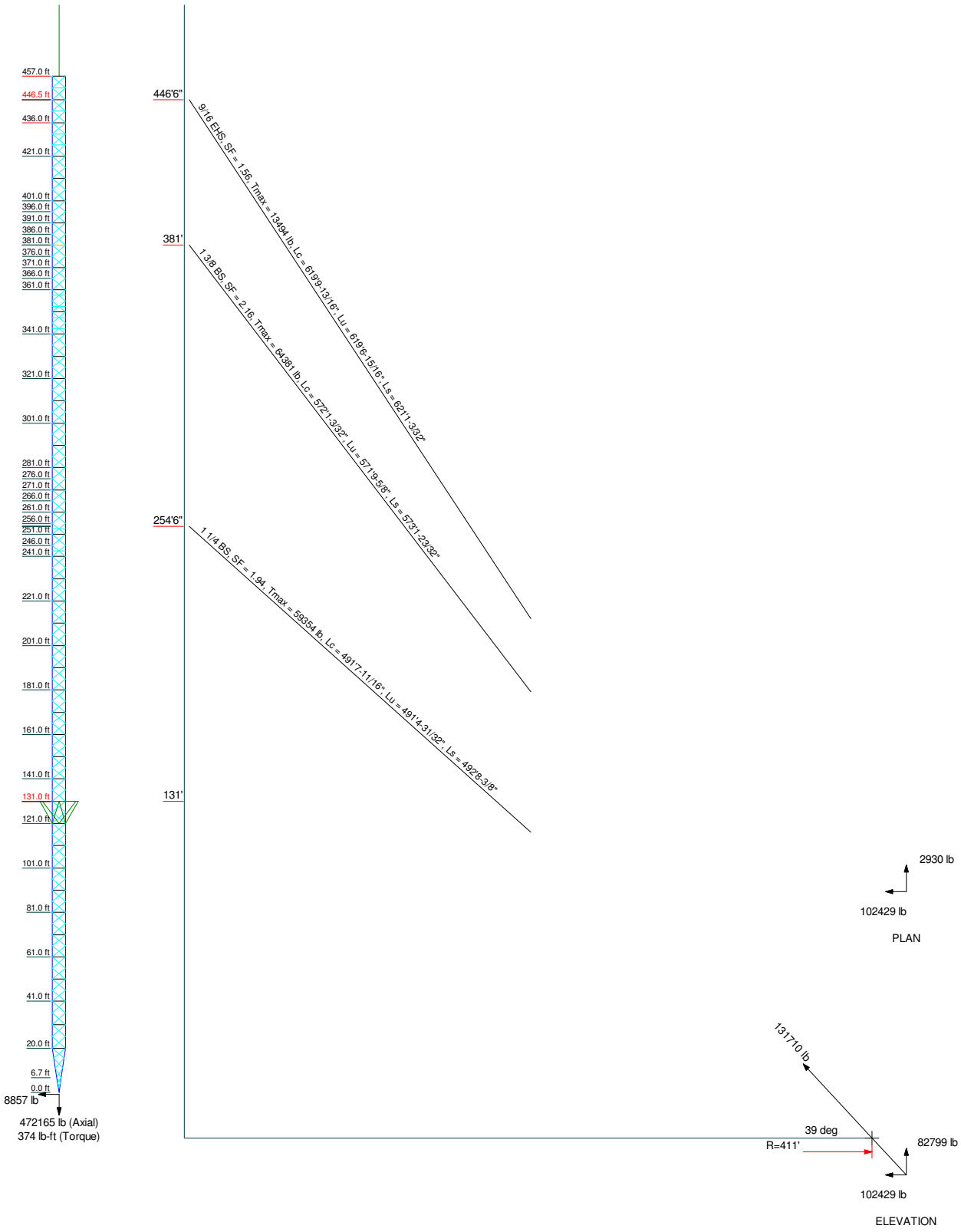
Path:		Dwg No. E-6	

Guy Tensions and Tower Reactions

TIA-222-H - 125 mph/50 mph 1.2750 in Ice Exposure B

Maximum Values
Anchor 'C'@411 ft Azimuth 240 deg Elev -20.5 ft
Plane through centroid of tower



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TEP

Job: *Trumbull (BU 873128)*			
Project: *TEP No. 25575.201175*			
Client: Crown Castle	Drawn by: JRM	App'd:	
Code: TIA-222-H	Date: 12/11/18	Scale: NTS	
Path:		Dwg No. E-6	

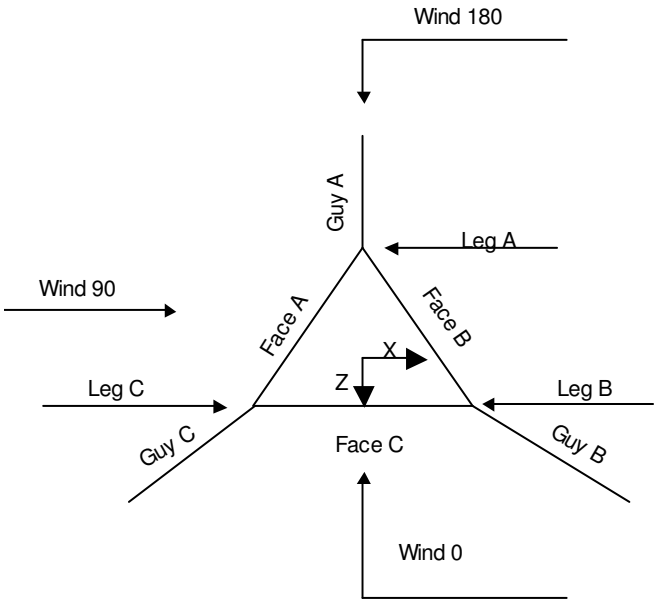
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 457' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 6' at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

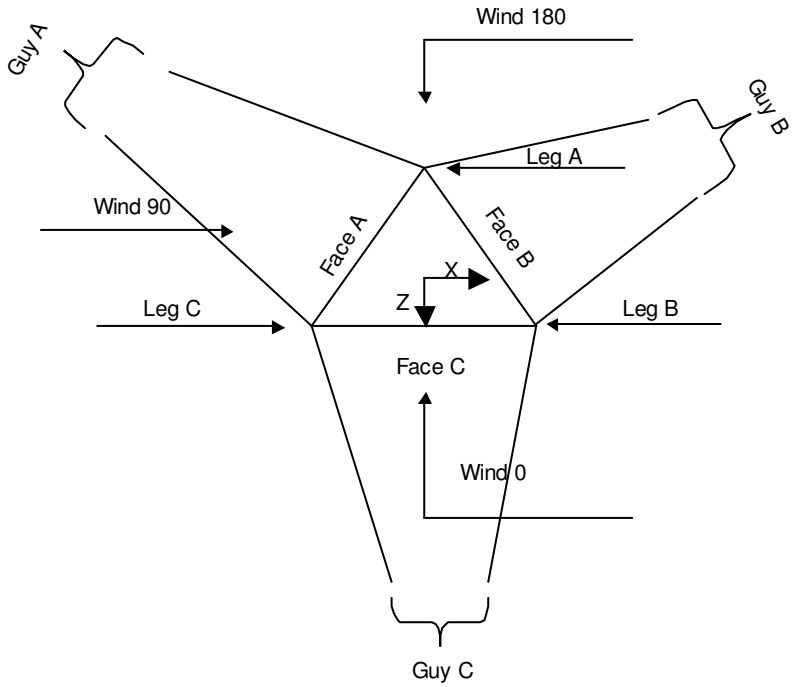
Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 520'.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height 0'.
Nominal ice thickness of 1.2750 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.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
Pressures are calculated at each section.
Safety factor used in guy design is 0.9524.
Stress ratio used in tower member design is 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

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

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

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	457'-436'	5'3"	X Brace	No	Yes	0.0000	0.0000
T2	436'-421'	5'	X Brace	No	Yes	0.0000	0.0000
T3	421'-401'	5'	X Brace	No	Yes	0.0000	0.0000
T4	401'-396'	5'	X Brace	No	Yes	0.0000	0.0000
T5	396'-391'	5'	X Brace	No	Yes	0.0000	0.0000
T6	391'-386'	5'	X Brace	No	Yes	0.0000	0.0000
T7	386'-381'	5'	X Brace	No	Yes	0.0000	0.0000
T8	381'-376'	5'	X Brace	No	Yes	0.0000	0.0000
T9	376'-371'	5'	X Brace	No	Yes	0.0000	0.0000
T10	371'-366'	5'	X Brace	No	Yes	0.0000	0.0000
T11	366'-361'	5'	X Brace	No	Yes	0.0000	0.0000
T12	361'-341'	5'	X Brace	No	Yes	0.0000	0.0000
T13	341'-321'	5'	X Brace	No	Yes	0.0000	0.0000
T14	321'-301'	5'	X Brace	No	Yes	0.0000	0.0000
T15	301'-281'	5'	X Brace	No	Yes	0.0000	0.0000
T16	281'-276'	5'	X Brace	No	Yes	0.0000	0.0000
T17	276'-271'	5'	X Brace	No	Yes	0.0000	0.0000
T18	271'-266'	5'	X Brace	No	Yes	0.0000	0.0000
T19	266'-261'	5'	X Brace	No	Yes	0.0000	0.0000
T20	261'-256'	5'	X Brace	No	Yes	0.0000	0.0000
T21	256'-251'	5'	X Brace	No	Yes	0.0000	0.0000
T22	251'-246'	5'	X Brace	No	Yes	0.0000	0.0000
T23	246'-241'	5'	X Brace	No	Yes	0.0000	0.0000
T24	241'-221'	5'	X Brace	No	Yes	0.0000	0.0000
T25	221'-201'	5'	X Brace	No	Yes	0.0000	0.0000
T26	201'-181'	5'	X Brace	No	Yes	0.0000	0.0000
T27	181'-161'	5'	X Brace	No	Yes	0.0000	0.0000
T28	161'-141'	5'	X Brace	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
T29	141'-121'	5'	X Brace	No	Yes	0.0000	0.0000
T30	121'-101'	5'	X Brace	No	Yes	0.0000	0.0000
T31	101'-81'	5'	X Brace	No	Yes	0.0000	0.0000
T32	81'-61'	5'	X Brace	No	Yes	0.0000	0.0000
T33	61'-41'	5'	X Brace	No	Yes	0.0000	0.0000
T34	41'-20'	5'3"	X Brace	No	Yes	0.0000	0.0000
T35	20'-6'8-17/32"	4'5-5/32"	X Brace	No	Yes	0.0000	0.0000
T36	6'8-17/32"-0'	2'2-7/8"	X Brace	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 457'-436'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x1/4	A7-33 (33 ksi)
T2 436'-421'	Solid Round	2 3/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T3 421'-401'	Solid Round	2 3/4	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T4 401'-396'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T5 396'-391'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T6 391'-386'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T7 386'-381'	Arbitrary Shape	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T8 381'-376'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T9 376'-371'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T10 371'-366'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T11 366'-361'	Arbitrary Shape	3.5" S.R. w/ 3.5 SCH40 Half Pipe	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T12 361'-341'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T13 341'-321'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T14 321'-301'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T15 301'-281'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T16 281'-276'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T17 276'-271'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T18 271'-266'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T19 266'-261'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)
T20 261'-256'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T21 256'-251'	Solid Round	3	A7-33 (33 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T22 251'-246'	Solid Round	3	A7-33	Single Angle	L3x3x1/4	A36

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

Tower Section Geometry *(cont'd)*

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

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

Tower Section Geometry *(cont'd)*

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

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

Tower Section Geometry *(cont'd)*

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 457'-436'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	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
T2 436'-421'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T3 421'-401'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T4 401'-396'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T5 396'-391'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T6 391'-386'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T7 386'-381'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T8 381'-376'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T9 376'-371'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T10 371'-366'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T11 366'-361'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T12 361'-341'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T13 341'-321'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T14 321'-301'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T15 301'-281'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T16 281'-276'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T17 276'-271'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T18 271'-266'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T19 266'-261'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T20 261'-256'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T21 256'-251'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T22 251'-246'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T23 246'-241'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T24 241'-221'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T25 221'-201'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T26 201'-181'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T27 181'-161'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T28 161'-141'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T29 141'-121'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	38.0000	38.0000	36.0000
T30 121'-101'	0.00	0.3750	A7-33 (33 ksi)	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T31 101'-81'	0.00	0.3750	A7-33	1.03	1	1.05	Third-Pt	Third-Pt	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
T32 81'-61'	0.00	0.3750	(33 ksi) A7-33	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T33 61'-41'	0.00	0.3750	(33 ksi) A7-33	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T34 41'-20'	0.00	0.3750	(33 ksi) A7-33	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T35 20'-6'8-17/32"	0.00	0.2500	(33 ksi) A7-33	1.03	1	1.05	Third-Pt	Third-Pt	36.0000
T36 6'8-17/32"-0'	0.00	0.2500	(33 ksi) A7-33	1.03	1	1.05	Third-Pt	Third-Pt	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 457'-436'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 436'-421'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 421'-401'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 401'-396'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 396'-391'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 391'-386'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 386'-381'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 381'-376'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 376'-371'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 371'-366'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 366'-361'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T12 361'-341'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T13 341'-321'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T14 321'-301'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T15 301'-281'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T16 281'-276'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T17 276'-271'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T18 271'-266'	Yes	No	1	1	1	1	1	1	1	1

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
				1	1	1	1	1	1	1
T19 266'-261'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T20 261'-256'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T21 256'-251'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T22 251'-246'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T23 246'-241'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T24 241'-221'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T25 221'-201'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T26 201'-181'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T27 181'-161'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T28 161'-141'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T29 141'-121'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T30 121'-101'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T31 101'-81'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T32 81'-61'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T33 61'-41'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T34 41'-20'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T35 20'-6'8-17/32"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T36 6'8-17/32"-0'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 457'-436'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1
T2 436'-421'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75	0.0000	1
T3 421'-401'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T4 401'-396'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1
T5 396'-391'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T6 391'-386'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T7 386'-381'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75
T8 381'-376'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1
T9 376'-371'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1
T10 371'-366'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1
T11 366'-361'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1
T12 361'-341'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T13 341'-321'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T14 321'-301'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T15 301'-281'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T16 281'-276'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T17 276'-271'	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T18 271'-266'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T19 266'-261'	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T20 261'-256'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T21 256'-251'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T22 251'-246'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T23 246'-241'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T24 241'-221'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T25 221'-201'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T26 201'-181'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T27 181'-161'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T28 161'-141'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T29 141'-121'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T30 121'-101'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T31 101'-81'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T32 81'-61'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T33 61'-41'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1
T34 41'-20'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T35 20'-6'8-17/32"	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75
T36 6'8-17/32"-0'	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 457'-436'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T2 436'-421'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T3 421'-401'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T4 401'-396'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T5 396'-391'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T6 391'-386'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T7 386'-381'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T8 381'-376'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T9 376'-371'	3.0000	0.0000	3.0000	0.0000	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 371'-366'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T11 366'-361'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T12 361'-341'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T13 341'-321'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T14 321'-301'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T15 301'-281'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T16 281'-276'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T17 276'-271'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T18 271'-266'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T19 266'-261'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T20 261'-256'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T21 256'-251'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T22 251'-246'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T23 246'-241'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T24 241'-221'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T25 221'-201'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T26 201'-181'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T27 181'-161'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T28 161'-141'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T29 141'-121'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T30 121'-101'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T31 101'-81'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T32 81'-61'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T33 61'-41'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T34 41'-20'	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T35 20'-6'8-17/32"	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T36 6'8-17/32"-0'	0.0000	0.0000	0.0000	0.0000	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 457'-436'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A325X	0
T2 436'-421'	Flange	0.8750 A307	8	0.5000 A325X	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	0	0.5000 A307	2	0.0000 A325X	0
T3 421'-401'	Flange	0.8750 A307	8	0.5000 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T4 401'-396'	Flange	0.8750 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T5 396'-391'	Flange	0.8750 A307	0	0.5000 A325N	2	0.0000 A307	0	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T6 391'-386'	Flange	0.8750 A307	0	0.5000 A325X	2	0.0000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.5000 A325X	0
T7 386'-381'	Flange	0.8750 A307	8	0.5000 A325X	2	0.0000 A307	0	0.5000 A307	2	0.5000 A307	0	0.0000 A307	0	0.5000 A325X	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T8 381'-376'	Flange	0.8750 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T9 376'-371'	Flange	0.8750 A307	0	0.5000 A325N	2	0.0000 A307	0	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T10 371'-366'	Flange	0.8750 A307	0	0.5000 A325N	2	0.0000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T11 366'-361'	Flange	0.8750 A307	8	0.5000 A325N	2	0.0000 A307	0	0.5000 A307	2	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0
T12 361'-341'	Flange	0.8750 A307	8	0.5000 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.5000 A325X	1
T13 341'-321'	Flange	0.8750 A307	8	0.5000 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T14 321'-301'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T15 301'-281'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T16 281'-276'	Flange	0.8750 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T17 276'-271'	Flange	0.8750 A307	0	0.5000 A325N	2	0.0000 A307	0	0.0000 A307	0	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T18 271'-266'	Flange	0.8750 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T19 266'-261'	Flange	0.8750 A307	8	0.5000 A325N	2	0.0000 A307	0	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T20 261'-256'	Flange	0.6250 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.5000 A325N	0
T21 256'-251'	Flange	0.6250 A307	0	0.5000 A325N	2	0.0000 A307	0	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.5000 A325N	2
T22 251'-246'	Flange	0.6250 A307	0	0.5000 A325N	2	0.5000 A307	2	0.0000 A307	0	0.5000 A307	0	0.0000 A307	0	0.5000 A325N	0
T23 246'-241'	Flange	0.6250 A307	8	0.5000 A325N	2	0.0000 A307	0	0.5000 A307	2	0.5000 A307	0	0.0000 A307	0	0.5000 A325N	2
T24 241'-221'	Flange	0.6250 A307	8	0.5000 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T25 221'-201'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T26 201'-181'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T27 181'-161'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T28 161'-141'	Flange	0.6250 A307	8	0.6250 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T29 141'-121'	Flange	0.6250 A307	8	0.6250 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A325N	2	0.0000 A307	0	0.0000 A325X	0
T30 121'-101'	Flange	0.8750 A307	8	0.5000 A325N	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T31 101'-81'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T32 81'-61'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T33 61'-41'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.0000 A325X	0
T34 41'-20'	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.5000 A307	2	0.0000 A307	0	0.6250 A325X	0
T35 20'-6'8-17/32"	Flange	0.8750 A307	8	0.5000 A307	2	0.5000 A325N	2	0.5000 A307	0	0.5000 A307	0	0.0000 A307	0	0.6250 A325X	0
T36 6'8-17/32"-0'	Flange	0.8750 A307	0	0.5000 A307	2	0.5000 A307	0	0.5000 A307	0	0.5000 A307	0	0.0000 A307	0	0.0000 A325X	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
446.5	EHS	A	9/16	2800	8%	23000	0.671	615'3-27/32"	405'	0.0000	-20'	100%
		B	9/16	2800	8%	23000	0.671	602'10-3/32"	394'	0.0000	-13'	100%
		C	9/16	2800	8%	23000	0.671	619'7-9/16"	411'	0.0000	-20'6"	100%
381	BS	A	1 3/8	18560	8%	24000	3.970	567'2-3/4"	405'	0.0000	-20'	100%
		B	1 3/8	18560	8%	24000	3.970	554'6-1/8"	394'	0.0000	-13'	100%
		C	1 3/8	18560	8%	24000	3.970	571'10-3/16"	411'	0.0000	-20'6"	100%
254.5	BS	A	1 1/4	15360	8%	24000	3.280	486'2-13/32"	405'	0.0000	-20'	100%
		B	1 1/4	15360	8%	24000	3.280	473'1-29/32"	394'	0.0000	-13'	100%
		C	1 1/4	15360	8%	24000	3.280	491'5-9/32"	411'	0.0000	-20'6"	100%
131	EHS	A	11/16	6000	12%	24000	0.994	426'27/32"	403'	0.0000	-20'	100%
		B	11/16	6000	12%	24000	0.994	426'6-19/32"	407'6"	0.0000	-9'	100%
		C	11/16	6000	12%	24000	0.994	445'23/32"	424'6"	0.0000	-16'6"	100%

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
446.5	No	No			1	1	1	1
381	No	No			1	1	1	1
254.5	No	No			1	1	1	1
131	Yes	Yes	0.98	0.98	1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
446.5	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
381	0.6250 A325N	0	0.0000	0.75	0.5000 A307	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
254.5	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
131	0.7500 A307	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
446.5	A	213'3"	39	6	1.5366
	B	216'9"	39	6	1.5391
	C	213'	39	6	1.5364
381	A	180'6"	37	6	1.5111
	B	184'	37	6	1.5141

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	C	180'3"	37	6	1.5109
254.5	A	117'3"	33	5	1.4473
	B	120'9"	33	5	1.4516
	C	117'	33	5	1.4470
131	A	55'6"	26	4	1.3430
	B	61'	27	4	1.3558
	C	57'3"	27	4	1.3472

Guy-Tensioning Information

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation ft		H ft	V ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft
446.5	A	401.54	466.50	3196	37.91	3057	39.57	2924	41.28	2800	43.03	2676	44.93	2568	46.71	2467	48.52
	B	390.54	459.50	3201	36.37	3059	37.98	2926	39.63	2800	41.33	2682	43.06	2564	44.94	2462	46.70
	C	407.54	467.00	3197	38.44	3057	40.12	2924	41.86	2800	43.63	2676	45.55	2568	47.37	2467	49.20
381	A	401.54	401.00	21808	28.28	20660	29.79	19577	31.38	18560	33.04	17610	34.75	16726	36.52	15906	38.32
	B	390.54	394.00	21845	26.99	20686	28.46	19590	29.99	18560	31.60	17597	33.26	16700	34.97	15868	36.73
	C	407.54	401.50	21815	28.73	20663	30.28	19578	31.89	18560	33.58	17610	35.32	16727	37.11	15909	38.93
254.5	A	401.54	274.50	19088	19.85	17746	21.32	16502	22.89	15360	24.55	14320	26.29	13381	28.08	12536	29.92
	B	390.54	267.50	19167	18.74	17798	20.15	16528	21.66	15360	23.27	14296	24.96	13335	26.70	12472	28.50
	C	407.54	275.00	19076	20.30	17737	21.80	16497	23.40	15360	25.08	14326	26.85	13393	28.66	12554	30.52
131	A	398.74	151.00	7859	11.38	7214	12.39	6600	13.53	6000	14.87	5469	16.30	4987	17.85	4557	19.52
	B	403.24	140.00	7890	11.37	7233	12.39	6609	13.55	6000	14.92	5463	16.37	4977	17.95	4544	19.64
	C	420.24	147.50	7845	12.44	7201	13.54	6569	14.84	6000	16.23	5478	17.76	5006	19.42	4585	21.18

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Ar (CaAa)	230' - 10'	-5.0000	0.35	2	2	0.5000	1.9800		1.30
LCF78-50A(7/8")	A	No	No	Ar (CaAa)	230' - 10'	-4.0000	0.35	7	3	0.5000	1.0900		0.34
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	247' - 10'	0.0000	0.4	12	6	0.5000	1.0900		0.33
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	247' - 10'	0.0000	0.2	4	2	0.5000	1.0900		0.33
HB158-1-08U8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	247' - 10'	0.0000	0.35	2	2	0.5000	1.9800		1.30
EW63(ELLIPTICAL)	A	No	No	Ar (CaAa)	150' - 10'	0.0000	-0.28	2	1	0.5000	2.0100		0.51
LCF78-50A(7/8")	A	No	No	Ar (CaAa)	206' - 10'	-3.0000	-0.38	7	3	0.5000	1.0900		0.34
LCF78-50A(7/8")	A	No	No	Ar (CaAa)	230' - 206'	-3.0000	-0.38	6	3	0.5000	1.0900		0.34
1" Rigid Conduit	A	No	No	Ar (CaAa)	457' - 10'	0.0000	-0.33	1	1	1.0000	1.0000		1.13
3/8" Cable (Lights)	C	No	No	Ar (CaAa)	457' - 10'	0.0000	0.4	1	1	0.3750	0.3750		0.22
1/4 Coax	B	No	No	Ar (CaAa)	99' - 10'	0.0000	-0.18	1	1	0.2500	0.2500		0.10

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/4 Coax	C	No	No	Ar (CaAa)	200' - 10'	0.0000	0.4	1	1	0.2500	0.2500		0.10
3/8" Coax	A	No	No	Ar (CaAa)	136' - 10'	0.0000	-0.15	3	3	0.3750	0.3750		0.07
3/8" Coax	A	No	No	Ar (CaAa)	140' - 10'	3.0000	-0.15	1	1	0.3750	0.3750		0.07
Banjo (6" dia, 36" step)	A	No	No	Af (CaAa)	230' - 10'	-2.0000	0.35	1	1	0.3330	0.3330		0.45
Banjo (6" dia, 36" step)	A	No	No	Af (CaAa)	230' - 10'	-2.0000	-0.38	1	1	0.3330	0.3330		0.45
LDF5-50A(7/8")	B	No	No	Ar (CaAa)	133' - 10'	0.0000	-0.4	2	2	0.7500	1.0900		0.33
LDF5-50A(7/8")	B	No	No	Ar (CaAa)	444' - 133'	0.0000	-0.4	1	1	1.0900	1.0900		0.33
HJ8-50B(3")	B	No	No	Ar (CaAa)	419' - 10'	0.0000	0	1	1	3.0100	3.0100		1.78
LDF6-50A(1 1/4")	B	No	No	Ar (CaAa)	330' - 10'	0.0000	-0.03	1	1	1.5500	1.5500		0.66
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	264' - 10'	-2.0000	0.1	1	1	1.9800	1.9800		0.82
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	310' - 10'	0.0000	-0.05	1	1	1.9800	1.9800		0.82
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	277' - 10'	0.0000	0.26	1	1	1.9800	1.9800		0.82
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	322' - 10'	0.0000	-0.3	2	1	0.5000	1.5500		0.66
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	325' - 322'	0.0000	-0.3	1	1	0.5000	1.5500		0.66
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	330' - 10'	0.0000	-0.35	1	1	1.9800	1.9800		0.82
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	133' - 10'	0.0000	-0.14	3	2	0.3000	0.6300		0.15
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	178' - 133'	0.0000	-0.14	2	2	0.3000	0.6300		0.15
LDF4P-50A(1/2")	B	No	No	Ar (CaAa)	322' - 178'	0.0000	-0.14	1	1	0.3000 0.6300	0.6300		0.15
LDF4-50A(1/2")	B	No	No	Ar (CaAa)	342' - 10'	1.0000	0.4	1	1	0.5000	0.6300		0.15
EW63(ELLIPTICAL) **	B	No	No	Ar (CaAa)	146' - 10'	0.0000	-0.23	1	1	2.0100	2.0100		0.51
AVA5-50(7/8")	C	No	No	Ar (CaAa)	230' - 10'	-4.0000	-0.4	6	3	0.5000	1.1020		0.30
Banjo 12" Dia. (40" Step)	C	No	No	Af (CaAa)	230' - 10'	-3.0000	-0.4	1	1	0.2500	0.0001		1.91
475-000(4 1/16")	C	No	No	Ar (CaAa)	457' - 10'	-6.0000	0	1	1	4.0620	4.0620		5.50
LDF7-50A(1-5/8")	C	No	No	Ar (CaAa)	388' - 10'	0.0000	-0.35	1	1	1.9800	1.9800		0.82
HJ8-50B(3")	C	No	No	Ar (CaAa)	367' - 10'	0.0000	-0.1	1	1	3.0100	3.0100		1.78
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	109' - 10'	0.0000	-0.4	1	1	1.0900	1.0900		0.33
LDF6-50A(1-1/4")	C	No	No	Ar (CaAa)	255' - 10'	0.0000	0.1	1	1	0.5000	1.5500		0.66
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	133' - 117'	0.0000	0.475	1	1	1.0900	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	117' - 99'	0.0000	0.475	2	2	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	99' - 62'	0.0000	0.475	3	2	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	62' - 10'	0.0000	0.475	6	2	0.5000	1.0900		0.33
LDF5-50A(7/8")	C	No	No	Ar (CaAa)	108' - 10'	0.0000	0.4	1	1	1.0900	1.0900		0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8")	C	No	No	Ar (CaAa)	393' - 10'	0.0000	0.2	1	1	1.9800	1.9800		0.82
**													
Thin Flat Climbing Ladder	C	No	No	Af (CaAa)	457' - 10'	-9.0000	0	1	1	2.0000	2.0000		4.00
Safety Line 3/8	C	No	No	Ar (CaAa)	457' - 10'	-9.0000	0	1	1	0.3750	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
**								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	457'-436'	A	0.000	0.000	2.100	0.000	24
		B	0.000	0.000	0.872	0.000	3
		C	0.000	0.000	15.022	0.000	209
T2	436'-421'	A	0.000	0.000	1.500	0.000	17
		B	0.000	0.000	1.635	0.000	5
		C	0.000	0.000	10.757	0.000	149
T3	421'-401'	A	0.000	0.000	2.000	0.000	23
		B	0.000	0.000	7.598	0.000	39
		C	0.000	0.000	14.380	0.000	199
T4	401'-396'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	3.602	0.000	50
T5	396'-391'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	4.001	0.000	51
T6	391'-386'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	4.994	0.000	55
T7	386'-381'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	5.590	0.000	58
T8	381'-376'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	5.593	0.000	58
T9	376'-371'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	5.596	0.000	58
T10	371'-366'	A	0.000	0.000	0.500	0.000	6

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	5.900	0.000	60
T11	366'-361'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	2.050	0.000	11
		C	0.000	0.000	7.108	0.000	67
T12	361'-341'	A	0.000	0.000	2.000	0.000	23
		B	0.000	0.000	8.263	0.000	42
		C	0.000	0.000	28.462	0.000	267
T13	341'-321'	A	0.000	0.000	2.000	0.000	23
		B	0.000	0.000	13.460	0.000	62
		C	0.000	0.000	28.515	0.000	267
T14	321'-301'	A	0.000	0.000	2.000	0.000	23
		B	0.000	0.000	25.762	0.000	112
		C	0.000	0.000	28.573	0.000	267
T15	301'-281'	A	0.000	0.000	2.000	0.000	23
		B	0.000	0.000	27.940	0.000	121
		C	0.000	0.000	28.634	0.000	267
T16	281'-276'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	7.183	0.000	31
		C	0.000	0.000	7.169	0.000	67
T17	276'-271'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	7.975	0.000	34
		C	0.000	0.000	7.173	0.000	67
T18	271'-266'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	7.975	0.000	34
		C	0.000	0.000	7.177	0.000	67
T19	266'-261'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	8.569	0.000	37
		C	0.000	0.000	7.182	0.000	67
T20	261'-256'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	8.965	0.000	38
		C	0.000	0.000	7.186	0.000	67
T21	256'-251'	A	0.000	0.000	0.500	0.000	6
		B	0.000	0.000	8.965	0.000	38
		C	0.000	0.000	7.811	0.000	69
T22	251'-246'	A	0.000	0.000	2.640	0.000	14
		B	0.000	0.000	8.965	0.000	38
		C	0.000	0.000	7.971	0.000	70
T23	246'-241'	A	0.000	0.000	11.200	0.000	45
		B	0.000	0.000	8.965	0.000	38
		C	0.000	0.000	7.976	0.000	70
T24	241'-221'	A	0.000	0.000	58.552	0.000	228
		B	0.000	0.000	35.860	0.000	153
		C	0.000	0.000	41.468	0.000	337
T25	221'-201'	A	0.000	0.000	75.905	0.000	288
		B	0.000	0.000	35.860	0.000	153
		C	0.000	0.000	53.185	0.000	407
T26	201'-181'	A	0.000	0.000	77.540	0.000	293
		B	0.000	0.000	35.860	0.000	153
		C	0.000	0.000	53.758	0.000	408
T27	181'-161'	A	0.000	0.000	77.540	0.000	293
		B	0.000	0.000	36.931	0.000	156
		C	0.000	0.000	53.894	0.000	409
T28	161'-141'	A	0.000	0.000	81.158	0.000	302
		B	0.000	0.000	38.125	0.000	159
		C	0.000	0.000	54.020	0.000	409
T29	141'-121'	A	0.000	0.000	87.980	0.000	318
		B	0.000	0.000	43.204	0.000	172
		C	0.000	0.000	55.475	0.000	413
T30	121'-101'	A	0.000	0.000	88.580	0.000	320
		B	0.000	0.000	44.580	0.000	176

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
		C	0.000	0.000	59.901	0.000	425
T31	101'-81'	A	0.000	0.000	88.580	0.000	320
		B	0.000	0.000	45.030	0.000	178
		C	0.000	0.000	65.240	0.000	441
T32	81'-61'	A	0.000	0.000	88.580	0.000	320
		B	0.000	0.000	45.080	0.000	178
		C	0.000	0.000	66.063	0.000	443
T33	61'-41'	A	0.000	0.000	88.580	0.000	320
		B	0.000	0.000	45.080	0.000	178
		C	0.000	0.000	72.415	0.000	461
T34	41'-20'	A	0.000	0.000	93.009	0.000	336
		B	0.000	0.000	47.334	0.000	187
		C	0.000	0.000	76.036	0.000	484
T35	20'-6'8-17/32"	A	0.000	0.000	44.290	0.000	160
		B	0.000	0.000	22.540	0.000	89
		C	0.000	0.000	36.208	0.000	231
T36	6'8-17/32"-0'	A	0.000	0.000	0.000	0.000	0
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.000	0.000	0

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	457'-436'	A	1.654	0.000	0.000	9.048	0.000	136
		B		0.000	0.000	3.519	0.000	47
		C		0.000	0.000	44.899	0.000	816
T2	436'-421'	A	1.648	0.000	0.000	6.443	0.000	97
		B		0.000	0.000	6.578	0.000	88
		C		0.000	0.000	31.989	0.000	580
T3	421'-401'	A	1.641	0.000	0.000	8.563	0.000	128
		B		0.000	0.000	20.068	0.000	316
		C		0.000	0.000	42.543	0.000	770
T4	401'-396'	A	1.636	0.000	0.000	2.136	0.000	32
		B		0.000	0.000	5.321	0.000	84
		C		0.000	0.000	10.615	0.000	192
T5	396'-391'	A	1.634	0.000	0.000	2.134	0.000	32
		B		0.000	0.000	5.317	0.000	84
		C		0.000	0.000	11.657	0.000	208
T6	391'-386'	A	1.632	0.000	0.000	2.132	0.000	32
		B		0.000	0.000	5.313	0.000	84
		C		0.000	0.000	14.269	0.000	248
T7	386'-381'	A	1.629	0.000	0.000	2.129	0.000	32
		B		0.000	0.000	5.309	0.000	84
		C		0.000	0.000	15.829	0.000	271
T8	381'-376'	A	1.627	0.000	0.000	2.127	0.000	32
		B		0.000	0.000	5.305	0.000	84
		C		0.000	0.000	15.816	0.000	271
T9	376'-371'	A	1.625	0.000	0.000	2.125	0.000	32
		B		0.000	0.000	5.300	0.000	84
		C		0.000	0.000	15.803	0.000	270
T10	371'-366'	A	1.623	0.000	0.000	2.123	0.000	32
		B		0.000	0.000	5.296	0.000	83
		C		0.000	0.000	16.416	0.000	281
T11	366'-361'	A	1.621	0.000	0.000	2.121	0.000	32
		B		0.000	0.000	5.291	0.000	83
		C		0.000	0.000	18.903	0.000	324

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
T12	361'-341'	A	1.615	0.000	0.000	8.460	0.000	126
		B		0.000	0.000	21.507	0.000	336
		C		0.000	0.000	75.452	0.000	1292
T13	341'-321'	A	1.606	0.000	0.000	8.422	0.000	125
		B		0.000	0.000	40.092	0.000	591
		C		0.000	0.000	75.188	0.000	1283
T14	321'-301'	A	1.596	0.000	0.000	8.383	0.000	124
		B		0.000	0.000	81.436	0.000	1139
		C		0.000	0.000	74.909	0.000	1274
T15	301'-281'	A	1.585	0.000	0.000	8.340	0.000	123
		B		0.000	0.000	86.755	0.000	1214
		C		0.000	0.000	74.613	0.000	1264
T16	281'-276'	A	1.578	0.000	0.000	2.078	0.000	31
		B		0.000	0.000	22.142	0.000	309
		C		0.000	0.000	18.605	0.000	315
T17	276'-271'	A	1.575	0.000	0.000	2.075	0.000	30
		B		0.000	0.000	24.168	0.000	339
		C		0.000	0.000	18.585	0.000	314
T18	271'-266'	A	1.572	0.000	0.000	2.072	0.000	30
		B		0.000	0.000	24.140	0.000	338
		C		0.000	0.000	18.564	0.000	313
T19	266'-261'	A	1.569	0.000	0.000	2.069	0.000	30
		B		0.000	0.000	25.647	0.000	360
		C		0.000	0.000	18.544	0.000	313
T20	261'-256'	A	1.566	0.000	0.000	2.066	0.000	30
		B		0.000	0.000	26.638	0.000	375
		C		0.000	0.000	18.523	0.000	312
T21	256'-251'	A	1.563	0.000	0.000	2.063	0.000	30
		B		0.000	0.000	26.606	0.000	374
		C		0.000	0.000	20.372	0.000	338
T22	251'-246'	A	1.560	0.000	0.000	5.912	0.000	80
		B		0.000	0.000	26.572	0.000	373
		C		0.000	0.000	20.815	0.000	343
T23	246'-241'	A	1.557	0.000	0.000	21.299	0.000	280
		B		0.000	0.000	26.538	0.000	372
		C		0.000	0.000	20.789	0.000	343
T24	241'-221'	A	1.549	0.000	0.000	113.823	0.000	1490
		B		0.000	0.000	105.801	0.000	1477
		C		0.000	0.000	106.508	0.000	1664
T25	221'-201'	A	1.535	0.000	0.000	149.068	0.000	1942
		B		0.000	0.000	105.201	0.000	1459
		C		0.000	0.000	134.672	0.000	2013
T26	201'-181'	A	1.520	0.000	0.000	150.336	0.000	1956
		B		0.000	0.000	104.548	0.000	1440
		C		0.000	0.000	140.162	0.000	2055
T27	181'-161'	A	1.503	0.000	0.000	149.554	0.000	1935
		B		0.000	0.000	110.052	0.000	1442
		C		0.000	0.000	139.589	0.000	2034
T28	161'-141'	A	1.484	0.000	0.000	158.801	0.000	2035
		B		0.000	0.000	112.785	0.000	1457
		C		0.000	0.000	138.586	0.000	2006
T29	141'-121'	A	1.463	0.000	0.000	187.242	0.000	2299
		B		0.000	0.000	125.969	0.000	1578
		C		0.000	0.000	142.277	0.000	2034
T30	121'-101'	A	1.439	0.000	0.000	189.659	0.000	2290
		B		0.000	0.000	129.204	0.000	1576
		C		0.000	0.000	157.361	0.000	2146
T31	101'-81'	A	1.411	0.000	0.000	187.829	0.000	2244
		B		0.000	0.000	133.234	0.000	1590
		C		0.000	0.000	169.477	0.000	2262
T32	81'-61'	A	1.377	0.000	0.000	185.593	0.000	2188

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	131.878	0.000	1547
		C		0.000	0.000	167.497	0.000	2210
T33	61'-41'	A	1.332	0.000	0.000	182.698	0.000	2117
		B		0.000	0.000	129.327	0.000	1484
		C		0.000	0.000	167.248	0.000	2217
T34	41'-20'	A	1.265	0.000	0.000	187.306	0.000	2115
		B		0.000	0.000	131.803	0.000	1462
		C		0.000	0.000	170.780	0.000	2208
T35	20'-6'8-17/32"	A	1.165	0.000	0.000	85.957	0.000	932
		B		0.000	0.000	59.909	0.000	630
		C		0.000	0.000	77.868	0.000	968
T36	6'8-17/32"-0'	A	1.014	0.000	0.000	0.000	0.000	0
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	0

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	457'-436'	-0.6300	1.7639	-1.9430	2.3821
T2	436'-421'	-0.6170	1.4120	-1.8968	1.5560
T3	421'-401'	0.8440	0.4747	-1.0059	1.0426
T4	401'-396'	0.9038	0.3392	-0.7478	0.8190
T5	396'-391'	0.8267	0.6948	-1.2091	1.4533
T6	391'-386'	0.7443	1.2735	-0.8751	2.0060
T7	386'-381'	1.3114	1.8498	-0.3432	3.0196
T8	381'-376'	1.1189	1.5976	-0.2636	2.3423
T9	376'-371'	1.2937	1.8249	-0.3324	2.9350
T10	371'-366'	1.2279	1.9436	-0.2037	2.5772
T11	366'-361'	1.7281	3.4320	0.0577	3.9629
T12	361'-341'	1.5491	3.1198	0.0912	3.2447
T13	341'-321'	2.2012	2.6587	1.4852	2.9761
T14	321'-301'	2.9015	0.5928	2.7121	-0.1175
T15	301'-281'	3.0921	0.3882	2.9789	-0.3823
T16	281'-276'	3.0572	0.4013	2.9137	-0.3180
T17	276'-271'	3.9028	0.5498	4.0122	-0.2006
T18	271'-266'	3.5181	0.5030	3.5246	-0.1769
T19	266'-261'	4.1285	0.5032	4.3134	-0.2514
T20	261'-256'	3.6926	0.4138	3.8176	-0.2426
T21	256'-251'	3.4372	0.6974	3.4834	0.2073
T22	251'-246'	3.2466	-0.4362	3.2727	-0.6899
T23	246'-241'	2.2418	-4.4577	2.2461	-4.0790
T24	241'-221'	1.8536	-4.4033	1.6980	-3.9434
T25	221'-201'	1.2339	-4.1592	0.9023	-3.4979
T26	201'-181'	0.8653	-4.0489	0.3515	-3.1653
T27	181'-161'	0.8976	-4.0908	0.3848	-3.2579
T28	161'-141'	0.4711	-3.9217	-0.0375	-3.1959
T29	141'-121'	-0.2209	-4.0746	-1.2955	-3.3404
T30	121'-101'	-0.9764	-4.3191	-1.8556	-3.0539
T31	101'-81'	-1.2571	-3.6766	-1.7777	-2.6239
T32	81'-61'	-1.2806	-3.5886	-1.7661	-2.6408
T33	61'-41'	-1.2983	-3.1548	-1.7685	-2.4669
T34	41'-20'	-1.3064	-3.1715	-1.7761	-2.5139
T35	20'-6'8-17/32"	-0.9483	-2.5570	-1.2394	-2.0085
T36	6'8-17/32"-0'	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	9	1" Rigid Conduit	436.00 - 457.00	0.6000	0.5177
T1	10	3/8" Cable (Lights)	436.00 - 457.00	0.6000	0.5177
T1	20	LDF5-50A(7/8")	436.00 - 444.00	0.6000	0.5177
T1	42	475-000(4 1/16")	436.00 - 457.00	1.0000	0.5177
T1	65	Thin Flat Climbing Ladder	436.00 - 457.00	0.6000	0.5177
T1	66	Safety Line 3/8	436.00 - 457.00	0.6000	0.5177
T2	9	1" Rigid Conduit	421.00 - 436.00	0.6000	0.5327
T2	10	3/8" Cable (Lights)	421.00 - 436.00	0.6000	0.5327
T2	20	LDF5-50A(7/8")	421.00 - 436.00	0.6000	0.5327
T2	42	475-000(4 1/16")	421.00 - 436.00	1.0000	0.5327
T2	65	Thin Flat Climbing Ladder	421.00 - 436.00	0.6000	0.5327
T2	66	Safety Line 3/8	421.00 - 436.00	0.6000	0.5327
T3	9	1" Rigid Conduit	401.00 - 421.00	0.6000	0.5769
T3	10	3/8" Cable (Lights)	401.00 - 421.00	0.6000	0.5769
T3	20	LDF5-50A(7/8")	401.00 - 421.00	0.6000	0.5769
T3	21	HJ8-50B(3")	401.00 - 419.00	1.0000	0.5769
T3	42	475-000(4 1/16")	401.00 - 421.00	1.0000	0.5769
T3	65	Thin Flat Climbing Ladder	401.00 - 421.00	0.6000	0.5769
T3	66	Safety Line 3/8	401.00 - 421.00	0.6000	0.5769
T4	9	1" Rigid Conduit	396.00 - 401.00	0.6000	0.5138
T4	10	3/8" Cable (Lights)	396.00 - 401.00	0.6000	0.5138
T4	20	LDF5-50A(7/8")	396.00 - 401.00	0.6000	0.5138
T4	21	HJ8-50B(3")	396.00 - 401.00	1.0000	0.5138
T4	42	475-000(4 1/16")	396.00 - 401.00	1.0000	0.5138
T4	65	Thin Flat Climbing Ladder	396.00 - 401.00	0.6000	0.5138
T4	66	Safety Line 3/8	396.00 - 401.00	0.6000	0.5138
T5	9	1" Rigid Conduit	391.00 -	0.6000	0.5996

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	10	3/8" Cable (Lights)	391.00 - 396.00	0.6000	0.5996
T5	20	LDF5-50A(7/8")	391.00 - 396.00	0.6000	0.5996
T5	21	HJ8-50B(3")	391.00 - 396.00	1.0000	0.5996
T5	42	475-000(4 1/16")	391.00 - 396.00	1.0000	0.5996
T5	63	LDF7-50A(1-5/8")	391.00 - 393.00	0.6000	0.5996
T5	65	Thin Flat Climbing Ladder	391.00 - 396.00	0.6000	0.5996
T5	66	Safety Line 3/8	391.00 - 396.00	0.6000	0.5996
T6	9	1" Rigid Conduit	386.00 - 391.00	0.6000	0.5147
T6	10	3/8" Cable (Lights)	386.00 - 391.00	0.6000	0.5147
T6	20	LDF5-50A(7/8")	386.00 - 391.00	0.6000	0.5147
T6	21	HJ8-50B(3")	386.00 - 391.00	1.0000	0.5147
T6	42	475-000(4 1/16")	386.00 - 391.00	1.0000	0.5147
T6	45	LDF7-50A(1-5/8")	386.00 - 388.00	0.6000	0.5147
T6	63	LDF7-50A(1-5/8")	386.00 - 391.00	0.6000	0.5147
T6	65	Thin Flat Climbing Ladder	386.00 - 391.00	0.6000	0.5147
T6	66	Safety Line 3/8	386.00 - 391.00	0.6000	0.5147
T7	9	1" Rigid Conduit	381.00 - 386.00	0.6000	0.6000
T7	10	3/8" Cable (Lights)	381.00 - 386.00	0.6000	0.6000
T7	20	LDF5-50A(7/8")	381.00 - 386.00	0.6000	0.6000
T7	21	HJ8-50B(3")	381.00 - 386.00	1.0000	0.6000
T7	42	475-000(4 1/16")	381.00 - 386.00	1.0000	0.6000
T7	45	LDF7-50A(1-5/8")	381.00 - 386.00	0.6000	0.6000
T7	63	LDF7-50A(1-5/8")	381.00 - 386.00	0.6000	0.6000
T7	65	Thin Flat Climbing Ladder	381.00 - 386.00	0.6000	0.6000
T7	66	Safety Line 3/8	381.00 - 386.00	0.6000	0.6000
T8	9	1" Rigid Conduit	376.00 - 381.00	0.6000	0.4934
T8	10	3/8" Cable (Lights)	376.00 - 381.00	0.6000	0.4934
T8	20	LDF5-50A(7/8")	376.00 - 381.00	0.6000	0.4934
T8	21	HJ8-50B(3")	376.00 - 381.00	1.0000	0.4934
T8	42	475-000(4 1/16")	376.00 - 381.00	1.0000	0.4934
T8	45	LDF7-50A(1-5/8")	376.00 -	0.6000	0.4934

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	63	LDF7-50A(1-5/8")	376.00 - 381.00	0.6000	0.4934
T8	65	Thin Flat Climbing Ladder	376.00 - 381.00	0.6000	0.4934
T8	66	Safety Line 3/8	376.00 - 381.00	0.6000	0.4934
T9	9	1" Rigid Conduit	371.00 - 376.00	0.6000	0.5863
T9	10	3/8" Cable (Lights)	371.00 - 376.00	0.6000	0.5863
T9	20	LDF5-50A(7/8")	371.00 - 376.00	0.6000	0.5863
T9	21	HJ8-50B(3")	371.00 - 376.00	1.0000	0.5863
T9	42	475-000(4 1/16")	371.00 - 376.00	1.0000	0.5863
T9	45	LDF7-50A(1-5/8")	371.00 - 376.00	0.6000	0.5863
T9	63	LDF7-50A(1-5/8")	371.00 - 376.00	0.6000	0.5863
T9	65	Thin Flat Climbing Ladder	371.00 - 376.00	0.6000	0.5863
T9	66	Safety Line 3/8	371.00 - 376.00	0.6000	0.5863
T10	9	1" Rigid Conduit	366.00 - 371.00	0.6000	0.5021
T10	10	3/8" Cable (Lights)	366.00 - 371.00	0.6000	0.5021
T10	20	LDF5-50A(7/8")	366.00 - 371.00	0.6000	0.5021
T10	21	HJ8-50B(3")	366.00 - 371.00	1.0000	0.5021
T10	42	475-000(4 1/16")	366.00 - 371.00	1.0000	0.5021
T10	45	LDF7-50A(1-5/8")	366.00 - 371.00	0.6000	0.5021
T10	46	HJ8-50B(3")	366.00 - 367.00	1.0000	0.5021
T10	63	LDF7-50A(1-5/8")	366.00 - 371.00	0.6000	0.5021
T10	65	Thin Flat Climbing Ladder	366.00 - 371.00	0.6000	0.5021
T10	66	Safety Line 3/8	366.00 - 371.00	0.6000	0.5021
T11	9	1" Rigid Conduit	361.00 - 366.00	0.6000	0.5868
T11	10	3/8" Cable (Lights)	361.00 - 366.00	0.6000	0.5868
T11	20	LDF5-50A(7/8")	361.00 - 366.00	0.6000	0.5868
T11	21	HJ8-50B(3")	361.00 - 366.00	1.0000	0.5868
T11	42	475-000(4 1/16")	361.00 - 366.00	1.0000	0.5868
T11	45	LDF7-50A(1-5/8")	361.00 - 366.00	0.6000	0.5868
T11	46	HJ8-50B(3")	361.00 - 366.00	1.0000	0.5868
T11	63	LDF7-50A(1-5/8")	361.00 - 366.00	0.6000	0.5868
T11	65	Thin Flat Climbing Ladder	361.00 -	0.6000	0.5868

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	66	Safety Line 3/8	366.00 361.00 - 366.00	0.6000	0.5868
T12	9	1" Rigid Conduit	341.00 - 361.00	0.6000	0.4978
T12	10	3/8" Cable (Lights)	341.00 - 361.00	0.6000	0.4978
T12	20	LDF5-50A(7/8")	341.00 - 361.00	0.6000	0.4978
T12	21	HJ8-50B(3")	341.00 - 361.00	1.0000	0.4978
T12	37	LDF4-50A(1/2")	341.00 - 342.00	0.6000	0.4978
T12	42	475-000(4 1/16")	341.00 - 361.00	1.0000	0.4978
T12	45	LDF7-50A(1-5/8")	341.00 - 361.00	0.6000	0.4978
T12	46	HJ8-50B(3")	341.00 - 361.00	1.0000	0.4978
T12	63	LDF7-50A(1-5/8")	341.00 - 361.00	0.6000	0.4978
T12	65	Thin Flat Climbing Ladder	341.00 - 361.00	0.6000	0.4978
T12	66	Safety Line 3/8	341.00 - 361.00	0.6000	0.4978
T13	9	1" Rigid Conduit	321.00 - 341.00	0.6000	0.5767
T13	10	3/8" Cable (Lights)	321.00 - 341.00	0.6000	0.5767
T13	20	LDF5-50A(7/8")	321.00 - 341.00	0.6000	0.5767
T13	21	HJ8-50B(3")	321.00 - 341.00	1.0000	0.5767
T13	23	LDF6-50A(1 1/4")	321.00 - 330.00	0.6000	0.5767
T13	31	LDF6-50A(1-1/4")	321.00 - 322.00	0.6000	0.5767
T13	32	LDF6-50A(1-1/4")	322.00 - 325.00	0.6000	0.5767
T13	33	LDF7-50A(1-5/8")	321.00 - 330.00	0.6000	0.5767
T13	36	LDF4P-50A(1/2")	321.00 - 322.00	0.6000	0.5767
T13	37	LDF4-50A(1/2")	321.00 - 341.00	0.6000	0.5767
T13	42	475-000(4 1/16")	321.00 - 341.00	1.0000	0.5767
T13	45	LDF7-50A(1-5/8")	321.00 - 341.00	0.6000	0.5767
T13	46	HJ8-50B(3")	321.00 - 341.00	1.0000	0.5767
T13	63	LDF7-50A(1-5/8")	321.00 - 341.00	0.6000	0.5767
T13	65	Thin Flat Climbing Ladder	321.00 - 341.00	0.6000	0.5767
T13	66	Safety Line 3/8	321.00 - 341.00	0.6000	0.5767
T14	9	1" Rigid Conduit	301.00 - 321.00	0.6000	0.5780
T14	10	3/8" Cable (Lights)	301.00 - 321.00	0.6000	0.5780
T14	20	LDF5-50A(7/8")	301.00 -	0.6000	0.5780

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	21	HJ8-50B(3")	301.00 - 321.00	1.0000	0.5780
T14	23	LDF6-50A(1 1/4")	301.00 - 321.00	0.6000	0.5780
T14	27	LDF7-50A(1-5/8")	301.00 - 310.00	0.6000	0.5780
T14	31	LDF6-50A(1-1/4")	301.00 - 321.00	0.6000	0.5780
T14	33	LDF7-50A(1-5/8")	301.00 - 321.00	0.6000	0.5780
T14	36	LDF4P-50A(1/2")	301.00 - 321.00	0.6000	0.5780
T14	37	LDF4-50A(1/2")	301.00 - 321.00	0.6000	0.5780
T14	42	475-000(4 1/16")	301.00 - 321.00	1.0000	0.5780
T14	45	LDF7-50A(1-5/8")	301.00 - 321.00	0.6000	0.5780
T14	46	HJ8-50B(3")	301.00 - 321.00	1.0000	0.5780
T14	63	LDF7-50A(1-5/8")	301.00 - 321.00	0.6000	0.5780
T14	65	Thin Flat Climbing Ladder	301.00 - 321.00	0.6000	0.5780
T14	66	Safety Line 3/8	301.00 - 321.00	0.6000	0.5780
T15	9	1" Rigid Conduit	281.00 - 301.00	0.6000	0.5794
T15	10	3/8" Cable (Lights)	281.00 - 301.00	0.6000	0.5794
T15	20	LDF5-50A(7/8")	281.00 - 301.00	0.6000	0.5794
T15	21	HJ8-50B(3")	281.00 - 301.00	1.0000	0.5794
T15	23	LDF6-50A(1 1/4")	281.00 - 301.00	0.6000	0.5794
T15	27	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	31	LDF6-50A(1-1/4")	281.00 - 301.00	0.6000	0.5794
T15	33	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	36	LDF4P-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	37	LDF4-50A(1/2")	281.00 - 301.00	0.6000	0.5794
T15	42	475-000(4 1/16")	281.00 - 301.00	1.0000	0.5794
T15	45	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	46	HJ8-50B(3")	281.00 - 301.00	1.0000	0.5794
T15	63	LDF7-50A(1-5/8")	281.00 - 301.00	0.6000	0.5794
T15	65	Thin Flat Climbing Ladder	281.00 - 301.00	0.6000	0.5794
T15	66	Safety Line 3/8	281.00 - 301.00	0.6000	0.5794
T16	9	1" Rigid Conduit	276.00 - 281.00	0.6000	0.5381
T16	10	3/8" Cable (Lights)	276.00 -	0.6000	0.5381

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	20	LDF5-50A(7/8")	276.00 - 281.00	0.6000	0.5381
T16	21	HJ8-50B(3")	276.00 - 281.00	1.0000	0.5381
T16	23	LDF6-50A(1 1/4")	276.00 - 281.00	0.6000	0.5381
T16	27	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	28	LDF7-50A(1-5/8")	276.00 - 277.00	0.6000	0.5381
T16	31	LDF6-50A(1-1/4")	276.00 - 281.00	0.6000	0.5381
T16	33	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	36	LDF4P-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	37	LDF4-50A(1/2")	276.00 - 281.00	0.6000	0.5381
T16	42	475-000(4 1/16")	276.00 - 281.00	1.0000	0.5381
T16	45	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	46	HJ8-50B(3")	276.00 - 281.00	1.0000	0.5381
T16	63	LDF7-50A(1-5/8")	276.00 - 281.00	0.6000	0.5381
T16	65	Thin Flat Climbing Ladder	276.00 - 281.00	0.6000	0.5381
T16	66	Safety Line 3/8	276.00 - 281.00	0.6000	0.5381
T17	9	1" Rigid Conduit	271.00 - 276.00	0.6000	0.6000
T17	10	3/8" Cable (Lights)	271.00 - 276.00	0.6000	0.6000
T17	20	LDF5-50A(7/8")	271.00 - 276.00	0.6000	0.6000
T17	21	HJ8-50B(3")	271.00 - 276.00	1.0000	0.6000
T17	23	LDF6-50A(1 1/4")	271.00 - 276.00	0.6000	0.6000
T17	27	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	28	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	31	LDF6-50A(1-1/4")	271.00 - 276.00	0.6000	0.6000
T17	33	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	36	LDF4P-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	37	LDF4-50A(1/2")	271.00 - 276.00	0.6000	0.6000
T17	42	475-000(4 1/16")	271.00 - 276.00	1.0000	0.6000
T17	45	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	46	HJ8-50B(3")	271.00 - 276.00	1.0000	0.6000
T17	63	LDF7-50A(1-5/8")	271.00 - 276.00	0.6000	0.6000
T17	65	Thin Flat Climbing Ladder	271.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	66	Safety Line 3/8	276.00 271.00 - 276.00	0.6000	0.6000
T18	9	1" Rigid Conduit	266.00 - 271.00	0.6000	0.5390
T18	10	3/8" Cable (Lights)	266.00 - 271.00	0.6000	0.5390
T18	20	LDF5-50A(7/8")	266.00 - 271.00	0.6000	0.5390
T18	21	HJ8-50B(3")	266.00 - 271.00	1.0000	0.5390
T18	23	LDF6-50A(1 1/4")	266.00 - 271.00	0.6000	0.5390
T18	27	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	28	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	31	LDF6-50A(1-1/4")	266.00 - 271.00	0.6000	0.5390
T18	33	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	36	LDF4P-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	37	LDF4-50A(1/2")	266.00 - 271.00	0.6000	0.5390
T18	42	475-000(4 1/16")	266.00 - 271.00	1.0000	0.5390
T18	45	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	46	HJ8-50B(3")	266.00 - 271.00	1.0000	0.5390
T18	63	LDF7-50A(1-5/8")	266.00 - 271.00	0.6000	0.5390
T18	65	Thin Flat Climbing Ladder	266.00 - 271.00	0.6000	0.5390
T18	66	Safety Line 3/8	266.00 - 271.00	0.6000	0.5390
T19	9	1" Rigid Conduit	261.00 - 266.00	0.6000	0.6000
T19	10	3/8" Cable (Lights)	261.00 - 266.00	0.6000	0.6000
T19	20	LDF5-50A(7/8")	261.00 - 266.00	0.6000	0.6000
T19	21	HJ8-50B(3")	261.00 - 266.00	1.0000	0.6000
T19	23	LDF6-50A(1 1/4")	261.00 - 266.00	0.6000	0.6000
T19	26	LDF7-50A(1-5/8")	261.00 - 264.00	0.6000	0.6000
T19	27	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	28	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	31	LDF6-50A(1-1/4")	261.00 - 266.00	0.6000	0.6000
T19	33	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	36	LDF4P-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	37	LDF4-50A(1/2")	261.00 - 266.00	0.6000	0.6000
T19	42	475-000(4 1/16")	261.00 -	1.0000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T19	45	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	46	HJ8-50B(3")	261.00 - 266.00	1.0000	0.6000
T19	63	LDF7-50A(1-5/8")	261.00 - 266.00	0.6000	0.6000
T19	65	Thin Flat Climbing Ladder	261.00 - 266.00	0.6000	0.6000
T19	66	Safety Line 3/8	261.00 - 266.00	0.6000	0.6000
T20	9	1" Rigid Conduit	256.00 - 261.00	0.6000	0.5201
T20	10	3/8" Cable (Lights)	256.00 - 261.00	0.6000	0.5201
T20	20	LDF5-50A(7/8")	256.00 - 261.00	0.6000	0.5201
T20	21	HJ8-50B(3")	256.00 - 261.00	1.0000	0.5201
T20	23	LDF6-50A(1 1/4")	256.00 - 261.00	0.6000	0.5201
T20	26	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	27	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	28	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	31	LDF6-50A(1-1/4")	256.00 - 261.00	0.6000	0.5201
T20	33	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	36	LDF4P-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	37	LDF4-50A(1/2")	256.00 - 261.00	0.6000	0.5201
T20	42	475-000(4 1/16")	256.00 - 261.00	1.0000	0.5201
T20	45	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	46	HJ8-50B(3")	256.00 - 261.00	1.0000	0.5201
T20	63	LDF7-50A(1-5/8")	256.00 - 261.00	0.6000	0.5201
T20	65	Thin Flat Climbing Ladder	256.00 - 261.00	0.6000	0.5201
T20	66	Safety Line 3/8	256.00 - 261.00	0.6000	0.5201
T21	9	1" Rigid Conduit	251.00 - 256.00	0.6000	0.5054
T21	10	3/8" Cable (Lights)	251.00 - 256.00	0.6000	0.5054
T21	20	LDF5-50A(7/8")	251.00 - 256.00	0.6000	0.5054
T21	21	HJ8-50B(3")	251.00 - 256.00	1.0000	0.5054
T21	23	LDF6-50A(1 1/4")	251.00 - 256.00	0.6000	0.5054
T21	26	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	27	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	28	LDF7-50A(1-5/8")	251.00 -	0.6000	0.5054

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T21	31	LDF6-50A(1-1/4")	251.00 - 256.00	0.6000	0.5054
T21	33	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	36	LDF4P-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	37	LDF4-50A(1/2")	251.00 - 256.00	0.6000	0.5054
T21	42	475-000(4 1/16")	251.00 - 256.00	1.0000	0.5054
T21	45	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	46	HJ8-50B(3")	251.00 - 256.00	1.0000	0.5054
T21	53	LDF6-50A(1-1/4")	251.00 - 255.00	0.6000	0.5054
T21	63	LDF7-50A(1-5/8")	251.00 - 256.00	0.6000	0.5054
T21	65	Thin Flat Climbing Ladder	251.00 - 256.00	0.6000	0.5054
T21	66	Safety Line 3/8	251.00 - 256.00	0.6000	0.5054
T22	3	LDF5-50A(7/8")	246.00 - 247.00	0.6000	0.5210
T22	4	LDF5-50A(7/8")	246.00 - 247.00	0.6000	0.5210
T22	5	HB158-1-08U8-S8J18(1-5/8)	246.00 - 247.00	0.6000	0.5210
T22	9	1" Rigid Conduit	246.00 - 251.00	0.6000	0.5210
T22	10	3/8" Cable (Lights)	246.00 - 251.00	0.6000	0.5210
T22	20	LDF5-50A(7/8")	246.00 - 251.00	0.6000	0.5210
T22	21	HJ8-50B(3")	246.00 - 251.00	1.0000	0.5210
T22	23	LDF6-50A(1 1/4")	246.00 - 251.00	0.6000	0.5210
T22	26	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	27	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	28	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	31	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	33	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	36	LDF4P-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	37	LDF4-50A(1/2")	246.00 - 251.00	0.6000	0.5210
T22	42	475-000(4 1/16")	246.00 - 251.00	1.0000	0.5210
T22	45	LDF7-50A(1-5/8")	246.00 - 251.00	0.6000	0.5210
T22	46	HJ8-50B(3")	246.00 - 251.00	1.0000	0.5210
T22	53	LDF6-50A(1-1/4")	246.00 - 251.00	0.6000	0.5210
T22	63	LDF7-50A(1-5/8")	246.00 -	0.6000	0.5210

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T22	65	Thin Flat Climbing Ladder	246.00 - 251.00	0.6000	0.5210
T22	66	Safety Line 3/8	246.00 - 251.00	0.6000	0.5210
T23	3	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	4	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	5	HB158-1-08U8-S8J18(1-5/8)	241.00 - 246.00	0.6000	0.5063
T23	9	1" Rigid Conduit	241.00 - 246.00	0.6000	0.5063
T23	10	3/8" Cable (Lights)	241.00 - 246.00	0.6000	0.5063
T23	20	LDF5-50A(7/8")	241.00 - 246.00	0.6000	0.5063
T23	21	HJ8-50B(3")	241.00 - 246.00	1.0000	0.5063
T23	23	LDF6-50A(1 1/4")	241.00 - 246.00	0.6000	0.5063
T23	26	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	27	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	28	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	31	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	33	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	36	LDF4P-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	37	LDF4-50A(1/2")	241.00 - 246.00	0.6000	0.5063
T23	42	475-000(4 1/16")	241.00 - 246.00	1.0000	0.5063
T23	45	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	46	HJ8-50B(3")	241.00 - 246.00	1.0000	0.5063
T23	53	LDF6-50A(1-1/4")	241.00 - 246.00	0.6000	0.5063
T23	63	LDF7-50A(1-5/8")	241.00 - 246.00	0.6000	0.5063
T23	65	Thin Flat Climbing Ladder	241.00 - 246.00	0.6000	0.5063
T23	66	Safety Line 3/8	241.00 - 246.00	0.6000	0.5063
T24	1	HB158-1-08U8-S8J18(1-5/8)	221.00 - 230.00	0.6000	0.5644
T24	2	LCF78-50A(7/8")	221.00 - 230.00	0.6000	0.5644
T24	3	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	4	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	5	HB158-1-08U8-S8J18(1-5/8)	221.00 - 241.00	0.6000	0.5644
T24	8	LCF78-50A(7/8")	221.00 - 230.00	0.6000	0.5644
T24	9	1" Rigid Conduit	221.00 -	0.6000	0.5644

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T24	10	3/8" Cable (Lights)	221.00 - 241.00	0.6000	0.5644
T24	15	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	16	Banjo (6" dia, 36" step)	221.00 - 230.00	0.6000	0.5644
T24	20	LDF5-50A(7/8")	221.00 - 241.00	0.6000	0.5644
T24	21	HJ8-50B(3")	221.00 - 241.00	1.0000	0.5644
T24	23	LDF6-50A(1 1/4")	221.00 - 241.00	0.6000	0.5644
T24	26	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	27	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	28	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	31	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	33	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	36	LDF4P-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	37	LDF4-50A(1/2")	221.00 - 241.00	0.6000	0.5644
T24	40	AVA5-50(7/8")	221.00 - 230.00	0.6000	0.5644
T24	41	Banjo 12" Dia. (40" Step)	221.00 - 230.00	0.6000	0.5644
T24	42	475-000(4 1/16")	221.00 - 241.00	1.0000	0.5644
T24	45	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	46	HJ8-50B(3")	221.00 - 241.00	1.0000	0.5644
T24	53	LDF6-50A(1-1/4")	221.00 - 241.00	0.6000	0.5644
T24	63	LDF7-50A(1-5/8")	221.00 - 241.00	0.6000	0.5644
T24	65	Thin Flat Climbing Ladder	221.00 - 241.00	0.6000	0.5644
T24	66	Safety Line 3/8	221.00 - 241.00	0.6000	0.5644
T25	1	HB158-1-08U8-S8J18(1-5/8)	201.00 - 221.00	0.6000	0.5810
T25	2	LCF78-50A(7/8")	201.00 - 221.00	0.6000	0.5810
T25	3	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5810
T25	4	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5810
T25	5	HB158-1-08U8-S8J18(1-5/8)	201.00 - 221.00	0.6000	0.5810
T25	7	LCF78-50A(7/8")	201.00 - 206.00	0.6000	0.5810
T25	8	LCF78-50A(7/8")	206.00 - 221.00	0.6000	0.5810
T25	9	1" Rigid Conduit	201.00 - 221.00	0.6000	0.5810
T25	10	3/8" Cable (Lights)	201.00 -	0.6000	0.5810

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T25	15	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5810
T25	16	Banjo (6" dia, 36" step)	201.00 - 221.00	0.6000	0.5810
T25	20	LDF5-50A(7/8")	201.00 - 221.00	0.6000	0.5810
T25	21	HJ8-50B(3")	201.00 - 221.00	1.0000	0.5810
T25	23	LDF6-50A(1 1/4")	201.00 - 221.00	0.6000	0.5810
T25	26	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	27	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	28	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	31	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5810
T25	33	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	36	LDF4P-50A(1/2")	201.00 - 221.00	0.6000	0.5810
T25	37	LDF4-50A(1/2")	201.00 - 221.00	0.6000	0.5810
T25	40	AVA5-50(7/8")	201.00 - 221.00	0.6000	0.5810
T25	41	Banjo 12" Dia. (40" Step)	201.00 - 221.00	0.6000	0.5810
T25	42	475-000(4 1/16")	201.00 - 221.00	1.0000	0.5810
T25	45	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	46	HJ8-50B(3")	201.00 - 221.00	1.0000	0.5810
T25	53	LDF6-50A(1-1/4")	201.00 - 221.00	0.6000	0.5810
T25	63	LDF7-50A(1-5/8")	201.00 - 221.00	0.6000	0.5810
T25	65	Thin Flat Climbing Ladder	201.00 - 221.00	0.6000	0.5810
T25	66	Safety Line 3/8	201.00 - 221.00	0.6000	0.5810
T26	1	HB158-1-08U8-S8J18(1-5/8)	181.00 - 201.00	0.6000	0.5831
T26	2	LCF78-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	3	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	4	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	5	HB158-1-08U8-S8J18(1-5/8)	181.00 - 201.00	0.6000	0.5831
T26	7	LCF78-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	9	1" Rigid Conduit	181.00 - 201.00	0.6000	0.5831
T26	10	3/8" Cable (Lights)	181.00 - 201.00	0.6000	0.5831
T26	12	1/4 Coax	181.00 - 200.00	0.6000	0.5831
T26	15	Banjo (6" dia, 36" step)	181.00 -	0.6000	0.5831

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T26	16	Banjo (6" dia, 36" step)	181.00 - 201.00	0.6000	0.5831
T26	20	LDF5-50A(7/8")	181.00 - 201.00	0.6000	0.5831
T26	21	HJ8-50B(3")	181.00 - 201.00	1.0000	0.5831
T26	23	LDF6-50A(1 1/4")	181.00 - 201.00	0.6000	0.5831
T26	26	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	27	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	28	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	31	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	33	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	36	LDF4P-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	37	LDF4-50A(1/2")	181.00 - 201.00	0.6000	0.5831
T26	40	AVA5-50(7/8")	181.00 - 201.00	0.6000	0.5831
T26	41	Banjo 12" Dia. (40" Step)	181.00 - 201.00	0.6000	0.5831
T26	42	475-000(4 1/16")	181.00 - 201.00	1.0000	0.5831
T26	45	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	46	HJ8-50B(3")	181.00 - 201.00	1.0000	0.5831
T26	53	LDF6-50A(1-1/4")	181.00 - 201.00	0.6000	0.5831
T26	63	LDF7-50A(1-5/8")	181.00 - 201.00	0.6000	0.5831
T26	65	Thin Flat Climbing Ladder	181.00 - 201.00	0.6000	0.5831
T26	66	Safety Line 3/8	181.00 - 201.00	0.6000	0.5831
T27	1	HB158-1-08U8-S8J18(1-5/8)	161.00 - 181.00	0.6000	0.5834
T27	2	LCF78-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	3	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	4	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	5	HB158-1-08U8-S8J18(1-5/8)	161.00 - 181.00	0.6000	0.5834
T27	7	LCF78-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	9	1" Rigid Conduit	161.00 - 181.00	0.6000	0.5834
T27	10	3/8" Cable (Lights)	161.00 - 181.00	0.6000	0.5834
T27	12	1/4 Coax	161.00 - 181.00	0.6000	0.5834
T27	15	Banjo (6" dia, 36" step)	161.00 - 181.00	0.6000	0.5834
T27	16	Banjo (6" dia, 36" step)	161.00 -	0.6000	0.5834

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T27	20	LDF5-50A(7/8")	161.00 - 181.00	0.6000	0.5834
T27	21	HJ8-50B(3")	161.00 - 181.00	1.0000	0.5834
T27	23	LDF6-50A(1 1/4")	161.00 - 181.00	0.6000	0.5834
T27	26	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	27	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	28	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	31	LDF6-50A(1-1/4")	161.00 - 181.00	0.6000	0.5834
T27	33	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	35	LDF4P-50A(1/2")	161.00 - 178.00	0.6000	0.5834
T27	36	LDF4P-50A(1/2")	178.00 - 181.00	0.6000	0.5834
T27	37	LDF4-50A(1/2")	161.00 - 181.00	0.6000	0.5834
T27	40	AVA5-50(7/8")	161.00 - 181.00	0.6000	0.5834
T27	41	Banjo 12" Dia. (40" Step)	161.00 - 181.00	0.6000	0.5834
T27	42	475-000(4 1/16")	161.00 - 181.00	1.0000	0.5834
T27	45	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	46	HJ8-50B(3")	161.00 - 181.00	1.0000	0.5834
T27	53	LDF6-50A(1-1/4")	161.00 - 181.00	0.6000	0.5834
T27	63	LDF7-50A(1-5/8")	161.00 - 181.00	0.6000	0.5834
T27	65	Thin Flat Climbing Ladder	161.00 - 181.00	0.6000	0.5834
T27	66	Safety Line 3/8	161.00 - 181.00	0.6000	0.5834
T28	1	HB158-1-08U8-S8J18(1-5/8)	141.00 - 161.00	0.6000	0.5631
T28	2	LCF78-50A(7/8")	141.00 - 161.00	0.6000	0.5631
T28	3	LDF5-50A(7/8")	141.00 - 161.00	0.6000	0.5631
T28	4	LDF5-50A(7/8")	141.00 - 161.00	0.6000	0.5631
T28	5	HB158-1-08U8-S8J18(1-5/8)	141.00 - 161.00	0.6000	0.5631
T28	6	EW63(ELLIPTICAL)	141.00 - 150.00	0.6000	0.5631
T28	7	LCF78-50A(7/8")	141.00 - 161.00	0.6000	0.5631
T28	9	1" Rigid Conduit	141.00 - 161.00	0.6000	0.5631
T28	10	3/8" Cable (Lights)	141.00 - 161.00	0.6000	0.5631
T28	12	1/4 Coax	141.00 - 161.00	0.6000	0.5631
T28	15	Banjo (6" dia, 36" step)	141.00 -	0.6000	0.5631

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T28	16	Banjo (6" dia, 36" step)	141.00 - 161.00	0.6000	0.5631
T28	20	LDF5-50A(7/8")	141.00 - 161.00	0.6000	0.5631
T28	21	HJ8-50B(3")	141.00 - 161.00	1.0000	0.5631
T28	23	LDF6-50A(1 1/4")	141.00 - 161.00	0.6000	0.5631
T28	26	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	27	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	28	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	31	LDF6-50A(1-1/4")	141.00 - 161.00	0.6000	0.5631
T28	33	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	35	LDF4P-50A(1/2")	141.00 - 161.00	0.6000	0.5631
T28	37	LDF4-50A(1/2")	141.00 - 161.00	0.6000	0.5631
T28	38	EW63(ELLIPTICAL)	141.00 - 146.00	0.6000	0.5631
T28	40	AVA5-50(7/8")	141.00 - 161.00	0.6000	0.5631
T28	41	Banjo 12" Dia. (40" Step)	141.00 - 161.00	0.6000	0.5631
T28	42	475-000(4 1/16")	141.00 - 161.00	1.0000	0.5631
T28	45	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	46	HJ8-50B(3")	141.00 - 161.00	1.0000	0.5631
T28	53	LDF6-50A(1-1/4")	141.00 - 161.00	0.6000	0.5631
T28	63	LDF7-50A(1-5/8")	141.00 - 161.00	0.6000	0.5631
T28	65	Thin Flat Climbing Ladder	141.00 - 161.00	0.6000	0.5631
T28	66	Safety Line 3/8	141.00 - 161.00	0.6000	0.5631
T29	1	HB158-1-08U8-S8J18(1-5/8)	121.00 - 141.00	0.6000	0.5659
T29	2	LCF78-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	3	LDF5-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	4	LDF5-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	5	HB158-1-08U8-S8J18(1-5/8)	121.00 - 141.00	0.6000	0.5659
T29	6	EW63(ELLIPTICAL)	121.00 - 141.00	0.6000	0.5659
T29	7	LCF78-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	9	1" Rigid Conduit	121.00 - 141.00	0.6000	0.5659
T29	10	3/8" Cable (Lights)	121.00 - 141.00	0.6000	0.5659
T29	12	1/4 Coax	121.00 -	0.6000	0.5659

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T29	13	3/8" Coax	121.00 - 141.00	0.6000	0.5659
T29	14	3/8" Coax	121.00 - 136.00	0.6000	0.5659
T29	15	Banjo (6" dia, 36" step)	121.00 - 140.00	0.6000	0.5659
T29	16	Banjo (6" dia, 36" step)	121.00 - 141.00	0.6000	0.5659
T29	19	LDF5-50A(7/8")	121.00 - 141.00	0.6000	0.5659
T29	20	LDF5-50A(7/8")	133.00 - 141.00	0.6000	0.5659
T29	21	HJ8-50B(3")	121.00 - 141.00	1.0000	0.5659
T29	23	LDF6-50A(1 1/4")	121.00 - 141.00	0.6000	0.5659
T29	26	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	27	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	28	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	31	LDF6-50A(1-1/4")	121.00 - 141.00	0.6000	0.5659
T29	33	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	34	LDF4P-50A(1/2")	121.00 - 133.00	0.6000	0.5659
T29	35	LDF4P-50A(1/2")	133.00 - 141.00	0.6000	0.5659
T29	37	LDF4-50A(1/2")	121.00 - 141.00	0.6000	0.5659
T29	38	EW63(ELLIPTICAL)	121.00 - 141.00	0.6000	0.5659
T29	40	AVA5-50(7/8")	121.00 - 141.00	0.6000	0.5659
T29	41	Banjo 12" Dia. (40" Step)	121.00 - 141.00	0.6000	0.5659
T29	42	475-000(4 1/16")	121.00 - 141.00	1.0000	0.5659
T29	45	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	46	HJ8-50B(3")	121.00 - 141.00	1.0000	0.5659
T29	53	LDF6-50A(1-1/4")	121.00 - 141.00	0.6000	0.5659
T29	58	LDF5-50A(7/8")	121.00 - 133.00	0.6000	0.5659
T29	63	LDF7-50A(1-5/8")	121.00 - 141.00	0.6000	0.5659
T29	65	Thin Flat Climbing Ladder	121.00 - 141.00	0.6000	0.5659
T29	66	Safety Line 3/8	121.00 - 141.00	0.6000	0.5659
T30	1	HB158-1-08U8-S8J18(1-5/8)	101.00 - 121.00	0.6000	0.5888
T30	2	LCF78-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	3	LDF5-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	4	LDF5-50A(7/8")	101.00 -	0.6000	0.5888

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T30	5	HB158-1-08U8-S8J18(1-5/8)	101.00 - 121.00	0.6000	0.5888
T30	6	EW63(ELLIPTICAL)	101.00 - 121.00	0.6000	0.5888
T30	7	LCF78-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	9	1" Rigid Conduit	101.00 - 121.00	0.6000	0.5888
T30	10	3/8" Cable (Lights)	101.00 - 121.00	0.6000	0.5888
T30	12	1/4 Coax	101.00 - 121.00	0.6000	0.5888
T30	13	3/8" Coax	101.00 - 121.00	0.6000	0.5888
T30	14	3/8" Coax	101.00 - 121.00	0.6000	0.5888
T30	15	Banjo (6" dia, 36" step)	101.00 - 121.00	0.6000	0.5888
T30	16	Banjo (6" dia, 36" step)	101.00 - 121.00	0.6000	0.5888
T30	19	LDF5-50A(7/8")	101.00 - 121.00	0.6000	0.5888
T30	21	HJ8-50B(3")	101.00 - 121.00	0.6000	0.5888
T30	23	LDF6-50A(1 1/4")	101.00 - 121.00	0.6000	0.5888
T30	26	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	27	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	28	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	31	LDF6-50A(1-1/4")	101.00 - 121.00	0.6000	0.5888
T30	33	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	34	LDF4P-50A(1/2")	101.00 - 121.00	0.6000	0.5888
T30	37	LDF4-50A(1/2")	101.00 - 121.00	0.6000	0.5888
T30	38	EW63(ELLIPTICAL)	101.00 - 121.00	0.6000	0.5888
T30	40	AVA5-50(7/8")	101.00 - 121.00	0.6000	0.5888
T30	41	Banjo 12" Dia. (40" Step)	101.00 - 121.00	0.6000	0.5888
T30	42	475-000(4 1/16")	101.00 - 121.00	1.0000	0.5888
T30	45	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	46	HJ8-50B(3")	101.00 - 121.00	0.6000	0.5888
T30	49	LDF5-50A(7/8")	101.00 - 109.00	0.6000	0.5888
T30	53	LDF6-50A(1-1/4")	101.00 - 121.00	0.6000	0.5888
T30	58	LDF5-50A(7/8")	117.00 - 121.00	0.6000	0.5888
T30	59	LDF5-50A(7/8")	101.00 - 117.00	0.6000	0.5888
T30	62	LDF5-50A(7/8")	101.00 -	0.6000	0.5888

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			108.00		
T30	63	LDF7-50A(1-5/8")	101.00 - 121.00	0.6000	0.5888
T30	65	Thin Flat Climbing Ladder	101.00 - 121.00	0.6000	0.5888
T30	66	Safety Line 3/8	101.00 - 121.00	0.6000	0.5888
T31	1	HB158-1-08U8-S8J18(1-5/8)	81.00 - 101.00	0.6000	0.5925
T31	2	LCF78-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	3	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	4	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	5	HB158-1-08U8-S8J18(1-5/8)	81.00 - 101.00	0.6000	0.5925
T31	6	EW63(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	7	LCF78-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	9	1" Rigid Conduit	81.00 - 101.00	0.6000	0.5925
T31	10	3/8" Cable (Lights)	81.00 - 101.00	0.6000	0.5925
T31	11	1/4 Coax	81.00 - 99.00	0.6000	0.5925
T31	12	1/4 Coax	81.00 - 101.00	0.6000	0.5925
T31	13	3/8" Coax	81.00 - 101.00	0.6000	0.5925
T31	14	3/8" Coax	81.00 - 101.00	0.6000	0.5925
T31	15	Banjo (6" dia, 36" step)	81.00 - 101.00	0.6000	0.5925
T31	16	Banjo (6" dia, 36" step)	81.00 - 101.00	0.6000	0.5925
T31	19	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	21	HJ8-50B(3")	81.00 - 101.00	0.6000	0.5925
T31	23	LDF6-50A(1 1/4")	81.00 - 101.00	0.6000	0.5925
T31	26	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	27	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	28	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	31	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	33	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	34	LDF4P-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	37	LDF4-50A(1/2")	81.00 - 101.00	0.6000	0.5925
T31	38	EW63(ELLIPTICAL)	81.00 - 101.00	0.6000	0.5925
T31	40	AVA5-50(7/8")	81.00 - 101.00	0.6000	0.5925
T31	41	Banjo 12" Dia. (40" Step)	81.00 - 101.00	0.6000	0.5925
T31	42	475-000(4 1/16")	81.00 - 101.00	1.0000	0.5925
T31	45	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	46	HJ8-50B(3")	81.00 - 101.00	0.6000	0.5925
T31	49	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	53	LDF6-50A(1-1/4")	81.00 - 101.00	0.6000	0.5925
T31	59	LDF5-50A(7/8")	99.00 - 101.00	0.6000	0.5925
T31	60	LDF5-50A(7/8")	81.00 - 99.00	0.6000	0.5925
T31	62	LDF5-50A(7/8")	81.00 - 101.00	0.6000	0.5925
T31	63	LDF7-50A(1-5/8")	81.00 - 101.00	0.6000	0.5925
T31	65	Thin Flat Climbing Ladder	81.00 - 101.00	0.6000	0.5925
T31	66	Safety Line 3/8	81.00 - 101.00	0.6000	0.5925
T32	1	HB158-1-08U8-S8J18(1-5/8)	61.00 - 81.00	0.6000	0.5971
T32	2	LCF78-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	3	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	4	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	5	HB158-1-08U8-S8J18(1-5/8)	61.00 - 81.00	0.6000	0.5971
T32	6	EW63(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	7	LCF78-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	9	1" Rigid Conduit	61.00 - 81.00	0.6000	0.5971
T32	10	3/8" Cable (Lights)	61.00 - 81.00	0.6000	0.5971
T32	11	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	12	1/4 Coax	61.00 - 81.00	0.6000	0.5971
T32	13	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	14	3/8" Coax	61.00 - 81.00	0.6000	0.5971
T32	15	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	16	Banjo (6" dia, 36" step)	61.00 - 81.00	0.6000	0.5971
T32	19	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T32	21	HJ8-50B(3")	61.00 - 81.00	0.6000	0.5971
T32	23	LDF6-50A(1 1/4")	61.00 - 81.00	0.6000	0.5971
T32	26	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	27	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	28	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	31	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	33	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	34	LDF4P-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	37	LDF4-50A(1/2")	61.00 - 81.00	0.6000	0.5971
T32	38	EW63(ELLIPTICAL)	61.00 - 81.00	0.6000	0.5971
T32	40	AVA5-50(7/8")	61.00 - 81.00	0.6000	0.5971
T32	41	Banjo 12" Dia. (40" Step)	61.00 - 81.00	0.6000	0.5971
T32	42	475-000(4 1/16")	61.00 - 81.00	1.0000	0.5971
T32	45	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	46	HJ8-50B(3")	61.00 - 81.00	0.6000	0.5971
T32	49	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	53	LDF6-50A(1-1/4")	61.00 - 81.00	0.6000	0.5971
T32	60	LDF5-50A(7/8")	62.00 - 81.00	0.6000	0.5971
T32	61	LDF5-50A(7/8")	61.00 - 62.00	0.6000	0.5971
T32	62	LDF5-50A(7/8")	61.00 - 81.00	0.6000	0.5971
T32	63	LDF7-50A(1-5/8")	61.00 - 81.00	0.6000	0.5971
T32	65	Thin Flat Climbing Ladder	61.00 - 81.00	0.6000	0.5971
T32	66	Safety Line 3/8	61.00 - 81.00	0.6000	0.5971
T33	1	HB158-1-08U8-S8J18(1-5/8)	41.00 - 61.00	0.6000	0.6000
T33	2	LCF78-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	3	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	4	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	5	HB158-1-08U8-S8J18(1-5/8)	41.00 - 61.00	0.6000	0.6000
T33	6	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	7	LCF78-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	9	1" Rigid Conduit	41.00 - 61.00	0.6000	0.6000
T33	10	3/8" Cable (Lights)	41.00 - 61.00	0.6000	0.6000
T33	11	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	12	1/4 Coax	41.00 - 61.00	0.6000	0.6000
T33	13	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	14	3/8" Coax	41.00 - 61.00	0.6000	0.6000
T33	15	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	16	Banjo (6" dia, 36" step)	41.00 - 61.00	0.6000	0.6000
T33	19	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	21	HJ8-50B(3")	41.00 - 61.00	0.6000	0.6000
T33	23	LDF6-50A(1 1/4")	41.00 - 61.00	0.6000	0.6000
T33	26	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	27	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	28	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	31	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	33	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	34	LDF4P-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	37	LDF4-50A(1/2")	41.00 - 61.00	0.6000	0.6000
T33	38	EW63(ELLIPTICAL)	41.00 - 61.00	0.6000	0.6000
T33	40	AVA5-50(7/8")	41.00 - 61.00	0.6000	0.6000
T33	41	Banjo 12" Dia. (40" Step)	41.00 - 61.00	0.6000	0.6000
T33	42	475-000(4 1/16")	41.00 - 61.00	1.0000	0.6000
T33	45	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	46	HJ8-50B(3")	41.00 - 61.00	0.6000	0.6000
T33	49	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	53	LDF6-50A(1-1/4")	41.00 - 61.00	0.6000	0.6000
T33	61	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	62	LDF5-50A(7/8")	41.00 - 61.00	0.6000	0.6000
T33	63	LDF7-50A(1-5/8")	41.00 - 61.00	0.6000	0.6000
T33	65	Thin Flat Climbing Ladder	41.00 - 61.00	0.6000	0.6000
T33	66	Safety Line 3/8	41.00 - 61.00	0.6000	0.6000
T34	1	HB158-1-08U8-S8J18(1-5/8)	20.00 - 41.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T34	2	LCF78-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	3	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	4	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	5	HB158-1-08U8-S8J18(1-5/8)	20.00 - 41.00	0.6000	0.6000
T34	6	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	7	LCF78-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	9	1" Rigid Conduit	20.00 - 41.00	0.6000	0.6000
T34	10	3/8" Cable (Lights)	20.00 - 41.00	0.6000	0.6000
T34	11	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	12	1/4 Coax	20.00 - 41.00	0.6000	0.6000
T34	13	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	14	3/8" Coax	20.00 - 41.00	0.6000	0.6000
T34	15	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	16	Banjo (6" dia, 36" step)	20.00 - 41.00	0.6000	0.6000
T34	19	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	21	HJ8-50B(3")	20.00 - 41.00	0.6000	0.6000
T34	23	LDF6-50A(1 1/4")	20.00 - 41.00	0.6000	0.6000
T34	26	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	27	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	28	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	31	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	33	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	34	LDF4P-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	37	LDF4-50A(1/2")	20.00 - 41.00	0.6000	0.6000
T34	38	EW63(ELLIPTICAL)	20.00 - 41.00	0.6000	0.6000
T34	40	AVA5-50(7/8")	20.00 - 41.00	0.6000	0.6000
T34	41	Banjo 12" Dia. (40" Step)	20.00 - 41.00	0.6000	0.6000
T34	42	475-000(4 1/16")	20.00 - 41.00	1.0000	0.6000
T34	45	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	46	HJ8-50B(3")	20.00 - 41.00	0.6000	0.6000
T34	49	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	53	LDF6-50A(1-1/4")	20.00 - 41.00	0.6000	0.6000
T34	61	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	62	LDF5-50A(7/8")	20.00 - 41.00	0.6000	0.6000
T34	63	LDF7-50A(1-5/8")	20.00 - 41.00	0.6000	0.6000
T34	65	Thin Flat Climbing Ladder	20.00 - 41.00	0.6000	0.6000
T34	66	Safety Line 3/8	20.00 - 41.00	0.6000	0.6000
T35	1	HB158-1-08U8-S8J18(1-5/8)	10.00 - 20.00	0.6000	0.5401
T35	2	LCF78-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	3	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	4	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	5	HB158-1-08U8-S8J18(1-5/8)	10.00 - 20.00	0.6000	0.5401
T35	6	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5401
T35	7	LCF78-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	9	1" Rigid Conduit	10.00 - 20.00	0.6000	0.5401
T35	10	3/8" Cable (Lights)	10.00 - 20.00	0.6000	0.5401
T35	11	1/4 Coax	10.00 - 20.00	0.6000	0.5401
T35	12	1/4 Coax	10.00 - 20.00	0.6000	0.5401
T35	13	3/8" Coax	10.00 - 20.00	0.6000	0.5401
T35	14	3/8" Coax	10.00 - 20.00	0.6000	0.5401
T35	15	Banjo (6" dia, 36" step)	10.00 - 20.00	0.6000	0.5401
T35	16	Banjo (6" dia, 36" step)	10.00 - 20.00	0.6000	0.5401
T35	19	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	21	HJ8-50B(3")	10.00 - 20.00	0.6000	0.5401
T35	23	LDF6-50A(1 1/4")	10.00 - 20.00	0.6000	0.5401
T35	26	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	27	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	28	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	31	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5401
T35	33	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	34	LDF4P-50A(1/2")	10.00 - 20.00	0.6000	0.5401
T35	37	LDF4-50A(1/2")	10.00 - 20.00	0.6000	0.5401

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T35	38	EW63(ELLIPTICAL)	10.00 - 20.00	0.6000	0.5401
T35	40	AVA5-50(7/8")	10.00 - 20.00	0.6000	0.5401
T35	41	Banjo 12" Dia. (40" Step)	10.00 - 20.00	0.6000	0.5401
T35	42	475-000(4 1/16")	10.00 - 20.00	1.0000	0.5401
T35	45	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	46	HJ8-50B(3")	10.00 - 20.00	0.6000	0.5401
T35	49	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	53	LDF6-50A(1-1/4")	10.00 - 20.00	0.6000	0.5401
T35	61	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	62	LDF5-50A(7/8")	10.00 - 20.00	0.6000	0.5401
T35	63	LDF7-50A(1-5/8")	10.00 - 20.00	0.6000	0.5401
T35	65	Thin Flat Climbing Ladder	10.00 - 20.00	0.6000	0.5401
T35	66	Safety Line 3/8	10.00 - 20.00	0.6000	0.5401

Antenna Pole Forces *Dielectric TFU Antenna*

Length of Pole	Ix	Iy	Modulus E		Antenna Pole C_AA_A	Antenna Pole Weight	Length of Beacon	Beacon C_AA_A	Beacon Weight
ft	in^4	in^4	ksi		ft^2/ft	plf	ft	ft^2	lb
32'	655.5500	655.5500	10000	No Ice	2.33	75.00	0'	0.00	0
				With Ice	2.48	86.50		0.00	0

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	lb
12" x 3' Beacon	A	From Centroid-Leg	0.00 0' 34'	0.0000	457'	No Ice 1/2" Ice 1" Ice 2" Ice	1.53 2.36 2.60 3.11	1.53 2.36 2.60 3.11	21 49 79 150
3" x 6" SideLight	A	From Leg	1.00 0' 0'	0.0000	333'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	B	From Leg	1.00 0' 0'	0.0000	333'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	C	From Leg	1.00 0' 0'	0.0000	333'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	A	From Leg	1.00 0' 0'	0.0000	215'	No Ice 1/2" Ice 1" Ice	0.09 0.14 0.19	0.09 0.14 0.19	1 2 5

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						2" Ice	0.34	0.34	12
3" x 6" SideLight	B	From Leg	1.00 0' 0'	0.0000	215'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	C	From Leg	1.00 0' 0'	0.0000	215'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	A	From Leg	1.00 0' 0'	0.0000	112'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	B	From Leg	1.00 0' 0'	0.0000	112'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
3" x 6" SideLight	C	From Leg	1.00 0' 0'	0.0000	112'	No Ice 1/2" Ice 1" Ice 2" Ice	0.09 0.14 0.19 0.34	0.09 0.14 0.19 0.34	1 2 5 12
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SRL-235-2	A	From Leg	6.00 0' 10'	80.0000	444'	No Ice 1/2" Ice 1" Ice 2" Ice	5.60 7.84 10.10 14.65	5.60 7.84 10.10 14.65	90 124 174 323
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	80.0000	444'	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	3.03 5.22 7.41 11.79	53 79 105 156
***									
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ERI 1183-3CP	C	None		0.0000	419'	No Ice 1/2" Ice 1" Ice 2" Ice	119.38 167.05 169.13 173.32	119.38 167.05 169.13 173.32	4350 6270 8216 12193
***									
6014-2	A	None		0.0000	393'	No Ice 1/2" Ice 1" Ice 2" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
6014-2	C	None		0.0000	382'	No Ice 1/2" Ice 1" Ice 2" Ice	65.00 135.00 205.00 345.00	65.00 135.00 205.00 345.00	1086 2388 3690 6294
***									
SHP-2AE	C	From Leg	1.00 0' 0'	-20.0000	367'	No Ice 1/2" Ice 1" Ice 2" Ice	39.75 41.11 42.49 45.26	110.98 112.49 114.00 117.06	220 780 1359 2576
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BCD-87077	C	From Leg	6.00	0.0000	342'	No Ice	3.06	3.06	27

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'			1/2" Ice	4.27	4.27	49
			8'			1" Ice	5.49	5.49	79
						2" Ice	7.55	7.55	163
Side Arm Mount [SO 303-1]	C	From Leg	3.00	0.0000	342'	No Ice	2.24	5.32	115
			0'			1/2" Ice	3.19	7.69	159
			0'			1" Ice	4.14	10.06	202
						2" Ice	6.04	14.80	290
455-6	A	From Leg	4.00	-60.0000	342'	No Ice	5.50	5.50	25
			0'			1/2" Ice	7.53	7.53	65
			10'			1" Ice	9.58	9.58	118
						2" Ice	13.73	13.73	262
Side Arm Mount [SO 601-1]	A	From Leg	2.00	-60.0000	342'	No Ice	1.22	6.30	159
			0'			1/2" Ice	1.85	8.61	197
			0'			1" Ice	2.48	10.92	234
						2" Ice	3.74	15.54	310
***									
***									
PG1N0F-0090-310	B	From Leg	6.00	-60.0000	330'	No Ice	3.00	3.00	28
			0'			1/2" Ice	4.03	4.03	50
			5'			1" Ice	5.03	5.03	78
						2" Ice	6.26	6.26	155
Side Arm Mount [SO 601-1]	B	From Leg	3.00	-60.0000	330'	No Ice	1.22	6.30	159
			0'			1/2" Ice	1.85	8.61	197
			0'			1" Ice	2.48	10.92	234
						2" Ice	3.74	15.54	310
***									
***									
DB201-A	A	From Leg	6.00	0.0000	326'	No Ice	1.10	1.10	25
			0'			1/2" Ice	1.98	1.98	33
			3'			1" Ice	2.86	2.86	40
						2" Ice	4.62	4.62	55
Side Arm Mount [SO 602-1]	A	From Leg	3.00	0.0000	326'	No Ice	2.72	12.93	146
			0'			1/2" Ice	4.11	17.82	223
			0'			1" Ice	5.50	22.71	301
						2" Ice	8.28	32.49	456
***									
DB408	A	From Leg	6.00	0.0000	325'	No Ice	1.90	1.90	17
			0'			1/2" Ice	3.42	3.42	22
			0'			1" Ice	4.94	4.94	27
						2" Ice	7.98	7.98	37
Side Arm Mount [SO 303-1]	A	From Leg	3.00	0.0000	325'	No Ice	2.24	5.32	115
			0'			1/2" Ice	3.19	7.69	159
			0'			1" Ice	4.14	10.06	202
						2" Ice	6.04	14.80	290
***									
SRL310C-4HD	B	From Leg	6.00	0.0000	322'	No Ice	1.14	1.14	15
			0'			1/2" Ice	2.09	2.09	25
			5'			1" Ice	3.04	3.04	35
						2" Ice	4.94	4.94	55
Side Arm Mount [SO 308-1]	B	From Leg	3.00	0.0000	322'	No Ice	0.98	3.03	53
			0'			1/2" Ice	1.70	5.22	79
			0'			1" Ice	2.42	7.41	105
						2" Ice	3.86	11.79	156
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	322'	No Ice	3.00	0.90	65
			0'			1/2" Ice	3.74	1.12	79
			0'			1" Ice	4.48	1.34	93
						2" Ice	5.96	1.78	122

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)
***									
6014-2	A	None		0.0000	316'	No Ice	65.00	65.00	1086
						1/2" Ice	135.00	135.00	2388
						1" Ice	205.00	205.00	3690
						2" Ice	345.00	345.00	6294
6014-2	A	None		0.0000	306'	No Ice	65.00	65.00	1086
						1/2" Ice	135.00	135.00	2388
						1" Ice	205.00	205.00	3690
						2" Ice	345.00	345.00	6294
***									
***									
BMR10-A-B1	B	From Leg	1.00 0' 6'	-30.0000	277'	No Ice	8.60	8.60	55
						1/2" Ice	9.90	9.90	113
						1" Ice	11.20	11.20	180
						2" Ice	13.80	13.80	340
***									
ANT150F6	A	From Leg	6.00 0' 9'	0.0000	264'	No Ice	4.80	4.80	30
						1/2" Ice	6.83	6.83	66
						1" Ice	8.87	8.87	114
						2" Ice	13.01	13.01	249
Side Arm Mount [SO 303-1]	A	From Leg	3.00 0' 0'	0.0000	264'	No Ice	2.24	5.32	115
						1/2" Ice	3.19	7.69	159
						1" Ice	4.14	10.06	202
						2" Ice	6.04	14.80	290
****									
DB809KT3E-Y	B	From Leg	3.00 0' 6'	-60.0000	255'	No Ice	3.39	3.39	30
						1/2" Ice	4.55	4.55	55
						1" Ice	5.73	5.73	86
						2" Ice	7.38	7.38	173
Side Arm Mount [SO 203-1]	B	From Leg	1.50 0' 0'	-60.0000	255'	No Ice	2.96	3.36	125
						1/2" Ice	4.10	4.68	154
						1" Ice	5.24	6.00	182
						2" Ice	7.52	8.64	239
***									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 5' 0'	-10.0000	247'	No Ice	20.48	11.02	161
						1/2" Ice	21.23	12.55	297
						1" Ice	21.99	14.10	444
						2" Ice	23.44	16.45	775
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 5' 0'	-30.0000	247'	No Ice	20.48	11.02	161
						1/2" Ice	21.23	12.55	297
						1" Ice	21.99	14.10	444
						2" Ice	23.44	16.45	775
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 5' 0'	-50.0000	247'	No Ice	20.48	11.02	161
						1/2" Ice	21.23	12.55	297
						1" Ice	21.99	14.10	444
						2" Ice	23.44	16.45	775
(2) RADIO 4449 B12/B71	A	From Leg	4.00 -5' 0'	-10.0000	247'	No Ice	1.65	1.16	74
						1/2" Ice	1.81	1.30	90
						1" Ice	1.98	1.45	109
						2" Ice	2.34	1.76	155
RADIO 4449 B12/B71	B	From Leg	4.00 5' 0'	-30.0000	247'	No Ice	1.65	1.16	74
						1/2" Ice	1.81	1.30	90
						1" Ice	1.98	1.45	109
						2" Ice	2.34	1.76	155
APX16DWV-16DWVS-C w/ Mount Pipe	A	From Leg	4.00 -5' 0'	-10.0000	247'	No Ice	6.82	3.49	61
						1/2" Ice	7.28	4.26	110
						1" Ice	7.72	4.96	165

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
						2" Ice	8.63	6.40	298
APX16DWV-16DWVS-C w/ Mount Pipe	B	From Leg	4.00 -5' 0'	-30.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	6.82 7.28 7.72 8.63	3.49 4.26 4.96 6.40	61 110 165 298
APX16DWV-16DWVS-C w/ Mount Pipe	C	From Leg	4.00 -5' 0'	-50.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	6.82 7.28 7.72 8.63	3.49 4.26 4.96 6.40	61 110 165 298
KRY 112 489/2	A	From Leg	4.00 -5' 0'	-10.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	15 20 27 46
KRY 112 489/2	B	From Leg	4.00 -5' 0'	-30.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	15 20 27 46
KRY 112 489/2	C	From Leg	4.00 -5' 0'	-50.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	15 20 27 46
(2) FDBL5003D-S	A	From Leg	4.00 5' 0'	-10.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.52 0.62 0.71 0.94	0.13 0.18 0.24 0.39	8 11 16 31
(2) FDBL5003D-S	B	From Leg	4.00 -5' 0'	-30.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.52 0.62 0.71 0.94	0.13 0.18 0.24 0.39	8 11 16 31
(2) FDBL5003D-S	C	From Leg	4.00 0' 0'	-50.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	0.52 0.62 0.71 0.94	0.13 0.18 0.24 0.39	8 11 16 31
ATMAA1412D-1A20	A	From Leg	4.00 -5' 0'	-10.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	13 21 30 56
ATMAA1412D-1A20	B	From Leg	4.00 -5' 0'	-30.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	13 21 30 56
ATMAA1412D-1A20	C	From Leg	4.00 -5' 0'	-50.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	13 21 30 56
2.4" Dia x 6-ft Pipe	A	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	22 33 48 90
2.4" Dia x 6-ft Pipe	B	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	22 33 48 90
2.4" Dia x 6-ft Pipe	C	From Leg	4.00 0' 0'	0.0000	247'	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	22 33 48 90

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
Sector Mount [SM 301-3]	C	None		0.0000	247'	No Ice	29.61	29.61	1302
						1/2" Ice	39.80	39.80	1843
						1" Ice	49.99	49.99	2383
						2" Ice	70.37	70.37	3465
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HBXX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	5.66	4.53	50
						1/2" Ice	6.07	5.21	99
						1" Ice	6.48	5.86	155
						2" Ice	7.33	7.20	287
HBXX-6516DS-VTM w/ Mount Pipe	B	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	5.66	4.53	50
						1/2" Ice	6.07	5.21	99
						1" Ice	6.48	5.86	155
						2" Ice	7.33	7.20	287
HBXX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	5.66	4.53	50
						1/2" Ice	6.07	5.21	99
						1" Ice	6.48	5.86	155
						2" Ice	7.33	7.20	287
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice	8.65	7.64	87
						1/2" Ice	9.32	8.93	162
						1" Ice	9.90	9.88	246
						2" Ice	11.10	11.82	439
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice	8.65	7.64	87
						1/2" Ice	9.32	8.93	162
						1" Ice	9.90	9.88	246
						2" Ice	11.10	11.82	439
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice	8.65	7.64	87
						1/2" Ice	9.32	8.93	162
						1" Ice	9.90	9.88	246
						2" Ice	11.10	11.82	439
LNX-8513DS-VTM w/ Mount Pipe	A	From Leg	4.00 2' 2'	-30.0000	230'	No Ice	8.41	7.08	65
						1/2" Ice	8.97	8.27	134
						1" Ice	9.50	9.18	211
						2" Ice	10.59	11.02	393
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00 2' 2'	-30.0000	230'	No Ice	8.44	7.42	79
						1/2" Ice	8.98	8.45	152
						1" Ice	9.51	9.34	233
						2" Ice	10.58	11.18	420
LNX-8513DS-VTM w/ Mount Pipe	B	From Leg	4.00 2' 2'	-30.0000	230'	No Ice	8.41	7.08	65
						1/2" Ice	8.97	8.27	134
						1" Ice	9.50	9.18	211
						2" Ice	10.59	11.02	393
RRH2X60-PCS	A	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	2.20	1.72	55
						1/2" Ice	2.39	1.90	75
						1" Ice	2.59	2.09	99
						2" Ice	3.01	2.48	155
RRH2X60-PCS	B	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	2.20	1.72	55
						1/2" Ice	2.39	1.90	75
						1" Ice	2.59	2.09	99
						2" Ice	3.01	2.48	155
RRH2X60-PCS	C	From Leg	4.00 -6' 2'	-30.0000	230'	No Ice	2.20	1.72	55
						1/2" Ice	2.39	1.90	75
						1" Ice	2.59	2.09	99
						2" Ice	3.01	2.48	155
RRH2X60-AWS	A	From Leg	4.00 2' 2'	-30.0000	230'	No Ice	3.50	1.82	60
						1/2" Ice	3.76	2.05	83
						1" Ice	4.03	2.29	109
						2" Ice	4.58	2.79	173

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	lb
RRH2X60-AWS	B	From Leg	4.00 2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	1.82 2.05 2.29 2.79	60 83 109 173
RRH2X60-AWS	C	From Leg	4.00 2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	1.82 2.05 2.29 2.79	60 83 109 173
RRH2x60-700	A	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	1.82 2.05 2.29 2.79	60 83 109 173
RRH2x60-700	B	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	1.82 2.05 2.29 2.79	60 83 109 173
RRH2x60-700	C	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	1.82 2.05 2.29 2.79	60 83 109 173
(2) DB-T1-6Z-8AB-0Z	B	From Leg	4.00 -2' 2'	-30.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	44 80 120 213
Sector Mount [SM 407-3]	C	None		0.0000	230'	No Ice 1/2" Ice 1" Ice 2" Ice	20.49 30.39 40.29 60.09	20.49 30.39 40.29 60.09	956 1376 1797 2638
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DFPD1-52 w/ Mount Pipe	C	From Leg	1.00 0' 0'	60.0000	200'	No Ice 1/2" Ice 1" Ice 2" Ice	1.63 1.84 2.07 2.56	0.93 1.17 1.43 1.99	22 38 58 109
***									
***									
***									
12"x12"x3" TMA	C	From Leg	0.50 0' 0'	0.0000	178'	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.34 1.48 1.79	0.32 0.40 0.49 0.69	15 23 33 59
1.9" x 5.5' Pipe (Horizontal)	B	From Leg	0.00 -2' 0'	0.0000	150'	No Ice 1/2" Ice 1" Ice 2" Ice	1.04 1.43 1.81 2.61	0.03 0.05 0.09 0.17	14 24 39 85
***									
Pipe Mount [PM 601-1]	B	From Leg	0.50 0' 0'	-50.0000	146'	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 3.74 4.48 5.96	0.90 1.12 1.34 1.78	65 79 93 122
***									
CSI-AY/809-960/11	B	From Leg	1.50 0' 0'	20.0000	136'	No Ice 1/2" Ice 1" Ice 2" Ice	0.16 0.50 0.84 1.52	0.21 0.69 1.17 2.13	7 13 19 32
2.4" Dia x 8-ft Mount Pipe	B	From Leg	0.67	0.0000	136'	No Ice	1.90	1.90	29

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
			0'			1/2" Ice	2.73	2.73	44
			0'			1" Ice	3.40	3.40	63
						2" Ice	4.40	4.40	119
***									
220-5	A	From Leg	6.00	-60.0000	133'	No Ice	3.40	3.40	22
			0'			1/2" Ice	5.42	5.42	49
			10'			1" Ice	7.46	7.46	89
						2" Ice	11.59	11.59	206
Side Arm Mount [SO 601-1]	A	From Leg	3.00	-60.0000	133'	No Ice	1.22	6.30	159
			0'			1/2" Ice	1.85	8.61	197
			0'			1" Ice	2.48	10.92	234
						2" Ice	3.74	15.54	310
DB264-A	C	From Leg	2.00	-20.0000	133'	No Ice	3.16	3.16	36
			0'			1/2" Ice	5.69	5.69	47
			9'			1" Ice	8.22	8.22	58
						2" Ice	13.27	13.27	79
Side Arm Mount [SO 202-1]	C	From Leg	1.00	-20.0000	133'	No Ice	2.96	2.53	110
			0'			1/2" Ice	4.10	3.51	134
			0'			1" Ice	5.24	4.49	157
						2" Ice	7.52	6.45	204
***									
***									
PD1132-D	B	From Leg	2.00	80.0000	109'	No Ice	24.89	24.89	105
			0'			1/2" Ice	25.85	25.85	276
			4'			1" Ice	26.81	26.81	459
						2" Ice	28.75	28.75	862
Side Arm Mount [SO 202-1]	B	From Leg	1.00	80.0000	109'	No Ice	2.96	2.53	110
			0'			1/2" Ice	4.10	3.51	134
			0'			1" Ice	5.24	4.49	157
						2" Ice	7.52	6.45	204
***									
2.4" Dia x 4-ft Mount Pipe	C	From Leg	0.50	0.0000	108'	No Ice	0.87	0.87	15
			0'			1/2" Ice	1.12	1.12	22
			0'			1" Ice	1.37	1.37	32
						2" Ice	1.91	1.91	62
***									
***									
PTP 900-13 w/ Mount Pipe	C	From Leg	2.00	50.0000	99'	No Ice	2.15	0.92	15
			0'			1/2" Ice	2.39	1.17	34
			0'			1" Ice	2.64	1.44	56
						2" Ice	3.18	2.03	113
***									
CSI-AY/809-960/11	C	From Leg	2.00	-20.0000	62'	No Ice	0.16	0.21	7
			0'			1/2" Ice	0.50	0.69	13
			-8'			1" Ice	0.84	1.17	19
						2" Ice	1.52	2.13	32
(2) Side Arm Mount [SO 601-1]	C	From Leg	1.00	0.0000	62'	No Ice	1.22	6.30	159
			0'			1/2" Ice	1.85	8.61	197
			0'			1" Ice	2.48	10.92	234
						2" Ice	3.74	15.54	310
***									
(2) PL6" x 0.5"	A	From Face	0.00	0.0000	258'6"	No Ice	9.40	0.01	123
			0'			1/2" Ice	10.75	0.02	153
			0'			1" Ice	12.10	0.03	184
						2" Ice	14.80	0.05	246
(2) PL6" x 0.5"	B	From Face	0.00	0.0000	258'6"	No Ice	9.40	0.01	123
			0'			1/2" Ice	10.75	0.02	153

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) PL6" x 0.5"	C	From Face	0' 0.00 0' 0'	0.0000	258'6"	1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	12.10 14.80 9.40 10.75 12.10 14.80	0.03 0.05 0.01 0.02 0.03 0.05	184 246 123 153 184 246

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
SPD4-5.2	C	Paraboloid w/Radome	From Leg	1.00 0' 0'	50.0000		178'	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.57 13.10 13.62 14.68	0 0 0 0
SPD3-5.8	A	Paraboloid w/Radome	From Leg	1.00 0' 0'	0.0000		322'	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	35 73 112 188
P-9A72GN-U	C	Grid	From Leg	0.50 0' 0'	60.0000		206'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.07 29.86 31.44	112 261 410 709
HPX6-65-P3A	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	0.0000		150'	6.46	No Ice 1/2" Ice 1" Ice 2" Ice	32.76 33.61 34.46 36.16	359 532 704 1049
PL6-65-PXA	B	Paraboloid w/Radome	From Leg	1.00 0' 0'	-50.0000		146'	6.36	No Ice 1/2" Ice 1" Ice 2" Ice	31.75 32.59 33.43 35.10	161 167 174 186
CM 4228HD	B	Grid	From Leg	1.00 0' 0'	-20.0000		140'	3.55	No Ice 1/2" Ice 1" Ice 2" Ice	9.90 10.37 10.84 11.78	40 93 56 63
CM 4228HD	B	Grid	From Leg	1.00 0' -1'	10.0000		136'	3.55	No Ice 1/2" Ice 1" Ice 2" Ice	9.90 10.37 10.84 11.78	40 93 56 63
MGA2-16N	B	Grid	From Leg	0.67 0' 2'	0.0000		136'	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.68 4.21	20 38 55 90
MGAR3-23N	B	Grid	From Leg	0.67 0' -2'	20.0000		136'	3.38	No Ice 1/2" Ice 1" Ice 2" Ice	9.00 9.45 9.90 10.79	30 79 127 224
P-9A48GN-U	C	Grid	From	1.00	-60.0000		117'	4.00	No Ice	12.57	112

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
			Leg	0' 0'					1/2" Ice 1" Ice 2" Ice	13.10 13.62 14.68	179 246 381
SSH-9A72GN	C	Grid	From Leg	1.00 0' 0'	0.0000		108'	2.84	No Ice 1/2" Ice 1" Ice 2" Ice	6.35 6.73 7.11 7.86	38 128 219 400
SPD2-5.8	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 0'	0.0000		99'	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.68 4.21	22 40 60 90
P-9A48GN-U	C	Grid	From Leg	2.00 0' 6'	-70.0000		62'	4.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.57 13.10 13.62 14.68	112 179 246 381
SSH-9A72GN	C	Grid	From Leg	2.00 0' -1'	-20.0000		62'	6.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.27 29.07 29.86 31.44	112 261 410 709

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy
3	1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy
4	1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy
5	1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy
6	1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy
7	1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy
8	1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy
9	1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy
10	1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy
11	1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy
12	1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy
13	1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy
14	1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy
15	1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy
16	1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy
17	1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy
18	1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy
19	1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy
20	1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy
21	1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy
22	1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy
23	1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy
24	1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy
25	1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy
26	1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy
27	1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy
28	1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy
29	1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy
30	1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy
31	1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy
32	1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy

Comb. No.	Description
33	1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy
34	1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy
35	1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy
36	1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy
37	1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Ice+1.0 Temp+Guy
39	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
40	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
41	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
42	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
43	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
44	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
45	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
46	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
47	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
48	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
49	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
51	Dead+Wind 0 deg - Service+Guy
52	Dead+Wind 30 deg - Service+Guy
53	Dead+Wind 60 deg - Service+Guy
54	Dead+Wind 90 deg - Service+Guy
55	Dead+Wind 120 deg - Service+Guy
56	Dead+Wind 150 deg - Service+Guy
57	Dead+Wind 180 deg - Service+Guy
58	Dead+Wind 210 deg - Service+Guy
59	Dead+Wind 240 deg - Service+Guy
60	Dead+Wind 270 deg - Service+Guy
61	Dead+Wind 300 deg - Service+Guy
62	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	47	472165	1144	-796
	Max. H_x	29	276345	8507	34
	Max. H_z	2	289111	-2	8723
	Max. M_x	1	0	-21	-6
	Max. M_z	1	0	-21	-6
	Max. Torsion	36	374	4164	6920
	Min. Vert	1	187433	-21	-6
	Min. H_x	11	275064	-8566	15
	Min. H_z	20	258359	-18	-8581
	Min. M_x	1	0	-21	-6
	Min. M_z	1	0	-21	-6
	Min. Torsion	18	-328	-3836	-7057
Guy C @ 411 ft Elev -20.5 ft Azimuth 240 deg	Max. Vert	28	-2645	-3156	1822
	Max. H_x	28	-2645	-3156	1822
	Max. H_z	7	-80720	-85752	51048
	Min. Vert	13	-82799	-89391	50029
	Min. H_x	13	-82799	-89391	50029
	Min. H_z	28	-2645	-3156	1822
Guy B @ 394 ft Elev -13 ft Azimuth 120 deg	Max. Vert	16	-2368	2717	1569

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_x	31	-85122	89855	50327
	Max. H_z	37	-86195	89561	53263
	Min. Vert	37	-86195	89561	53263
	Min. H_x	16	-2368	2717	1569
	Min. H_z	16	-2368	2717	1569
Guy A @ 405 ft Elev -20 ft Azimuth 0 deg	Max. Vert	4	-2552	0	-3435
	Max. H_x	31	-43915	2880	-53432
	Max. H_z	4	-2552	0	-3435
	Min. Vert	19	-85212	-1369	-103859
	Min. H_x	13	-46308	-2902	-56072
	Min. H_z	19	-85212	-1369	-103859
Guy C @ 424.5 ft Elev -16.5 ft Azimuth 240 deg	Max. Vert	28	-454	-1988	1148
	Max. H_x	28	-454	-1988	1148
	Max. H_z	13	-13123	-34006	19294
	Min. Vert	13	-13123	-34006	19294
	Min. H_x	13	-13123	-34006	19294
	Min. H_z	28	-454	-1988	1148
Guy B @ 407.5 ft Elev -9 ft Azimuth 120 deg	Max. Vert	16	-382	1793	1035
	Max. H_x	31	-13234	34598	19637
	Max. H_z	37	-13317	34517	20262
	Min. Vert	37	-13317	34517	20262
	Min. H_x	16	-382	1793	1035
	Min. H_z	16	-382	1793	1035
Guy A @ 403 ft Elev -20 ft Azimuth 0 deg	Max. Vert	4	-446	0	-2034
	Max. H_x	30	-7436	738	-20772
	Max. H_z	4	-446	0	-2034
	Min. Vert	19	-14531	-293	-39933
	Min. H_x	13	-7525	-740	-21008
	Min. H_z	19	-14531	-293	-39933

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	187433	21	6	0	0	0
1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy	289111	2	-8723	0	0	-225
1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy	291988	8	-7993	0	0	-338
1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy	298509	4	-7666	0	0	-332
1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy	271949	4185	-7144	0	0	82
1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy	273664	4003	-6604	0	0	3
1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy	278518	3959	-6353	0	0	9
1.2D+1.0W (pattern 1) 60 deg -	255331	7330	-4171	0	0	94

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
No Ice+1.0 Guy						
1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy	256139	6921	-3983	0	0	75
1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy	258377	6815	-3925	0	0	99
1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy	275064	8566	-15	0	0	-226
1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy	278330	7942	-168	0	0	-182
1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy	283207	7699	-259	0	0	-155
1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy	292422	7660	4447	0	0	-146
1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy	296812	6965	4041	0	0	-49
1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy	303311	6675	3875	0	0	-37
1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy	277334	4288	7536	0	0	190
1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy	280937	3836	7057	0	0	328
1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy	285886	3634	6892	0	0	327
1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy	258359	18	8581	0	0	161
1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy	259441	-34	8122	0	0	314
1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy	261762	-38	8002	0	0	312
1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy	274128	-4020	7199	0	0	-83
1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy	275687	-3648	6771	0	0	-4
1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy	280529	-3451	6609	0	0	-9
1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy	289606	-7349	4260	0	0	28
1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy	292009	-6729	3905	0	0	46
1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy	298477	-6448	3740	0	0	29
1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy	276345	-8507	-34	0	0	236
1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy	278631	-7925	-151	0	0	191
1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy	283485	-7686	-245	0	0	163
1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy	260023	-7576	-4344	0	0	128
1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy	261553	-7174	-4100	0	0	-3
1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy	263910	-7072	-4040	0	0	-25
1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy	276437	-4360	-7501	0	0	-235
1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy	279218	-4164	-6920	0	0	-374
1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy	284156	-4125	-6666	0	0	-372
1.2 Dead+1.0 Ice+1.0 Temp+Guy	462356	90	96	0	0	0

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	470852	115	-1389	0	0	-152
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	468148	986	-1276	0	0	-78
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	466196	1552	-847	0	0	-134
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	467965	1654	-83	0	0	-172
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	470362	1311	763	0	0	-41
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	468674	739	1507	0	0	136
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	467431	87	1789	0	0	146
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	469600	-587	1523	0	0	45
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	472165	-1144	796	0	0	104
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	470076	-1461	-67	0	0	145
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	468121	-1364	-787	0	0	9
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	469336	-759	-1275	0	0	-177
Dead+Wind 0 deg - Service+Guy	192891	16	-1968	0	0	-86
Dead+Wind 30 deg - Service+Guy	191087	975	-1603	0	0	0
Dead+Wind 60 deg - Service+Guy	190053	1661	-937	0	0	8
Dead+Wind 90 deg - Service+Guy	191090	1963	-14	0	0	-41
Dead+Wind 120 deg - Service+Guy	192745	1766	1018	0	0	-3
Dead+Wind 150 deg - Service+Guy	191590	982	1725	0	0	90
Dead+Wind 180 deg - Service+Guy	190849	18	1936	0	0	77
Dead+Wind 210 deg - Service+Guy	191960	-895	1645	0	0	-1
Dead+Wind 240 deg - Service+Guy	193614	-1664	976	0	0	7
Dead+Wind 270 deg - Service+Guy	192381	-1925	-12	0	0	41
Dead+Wind 300 deg - Service+Guy	191379	-1696	-979	0	0	-8
Dead+Wind 330 deg - Service+Guy	191994	-989	-1689	0	0	-98

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0	-108540	0	2	108540	0	0.001%
2	-1657	-128059	-123343	1658	128059	123337	0.003%
3	-2271	-128059	-126919	2271	128059	126913	0.003%
4	-2277	-128059	-130642	2277	128059	130636	0.003%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
5	58170	-127190	-101320	-58170	127190	101315	0.003%
6	59425	-127190	-103806	-59426	127190	103801	0.003%
7	61183	-127190	-106888	-61183	127190	106882	0.003%
8	101172	-126316	-57322	-101169	126316	57328	0.004%
9	103847	-126316	-58331	-103843	126316	58337	0.004%
10	106851	-126316	-60079	-106848	126316	60083	0.003%
11	120328	-127228	1289	-120323	127228	-1285	0.003%
12	123884	-127228	1918	-123879	127228	-1914	0.003%
13	127410	-127228	1924	-127405	127228	-1921	0.003%
14	109197	-128127	63626	-109191	128127	-63622	0.004%
15	112896	-128127	65953	-112890	128127	-65950	0.004%
16	116093	-128127	67820	-116087	128127	-67817	0.004%
17	61658	-127228	105437	-61652	127228	-105434	0.004%
18	63991	-127228	108565	-63985	127228	-108562	0.003%
19	65760	-127228	111652	-65754	127228	-111650	0.004%
20	1287	-126320	118326	-1282	126320	-118326	0.003%
21	1900	-126320	121468	-1895	126320	-121468	0.003%
22	1906	-126320	124976	-1900	126320	-124976	0.004%
23	-58109	-127189	101750	58104	127189	-101748	0.003%
24	-59380	-127189	104265	59375	127189	-104263	0.003%
25	-61138	-127189	107346	61133	127189	-107344	0.003%
26	-105959	-128063	59881	105955	128063	-59878	0.003%
27	-109045	-128063	61146	109040	128063	-61143	0.003%
28	-112235	-128063	63002	112230	128063	-62999	0.003%
29	-120690	-127151	-1268	120685	127151	1272	0.003%
30	-124246	-127151	-1866	124241	127151	1869	0.003%
31	-127772	-127151	-1872	127767	127151	1876	0.003%
32	-105163	-126252	-61144	105164	126252	61143	0.001%
33	-108450	-126252	-63214	108453	126252	63212	0.002%
34	-111460	-126252	-64974	111462	126252	64971	0.002%
35	-62061	-127151	-105364	62062	127151	105358	0.003%
36	-64378	-127151	-108463	64379	127151	108457	0.003%
37	-66147	-127151	-111551	66148	127151	111545	0.003%
38	0	-331082	0	-5	331082	2	0.001%
39	-458	-331649	-45783	458	331649	45781	0.001%
40	22250	-331082	-38939	-22250	331082	38937	0.001%
41	38977	-330511	-22206	-38975	330511	22205	0.001%
42	45401	-331105	325	-45400	331105	-323	0.001%
43	39952	-331691	23100	-39949	331691	-23098	0.001%
44	23106	-331105	39430	-23104	331105	-39429	0.001%
45	564	-330515	45170	-565	330515	-45168	0.001%
46	-22294	-331082	38825	22292	331082	-38825	0.001%
47	-39498	-331653	22313	39496	331653	-22311	0.001%
48	-45414	-331058	-511	45413	331058	512	0.001%
49	-39533	-330473	-23099	39531	330473	23099	0.001%
50	-23068	-331059	-39607	23068	331058	39605	0.001%
51	-525	-108741	-30915	525	108741	30913	0.001%
52	14488	-108540	-25304	-14488	108540	25302	0.002%
53	25287	-108339	-14228	-25288	108339	14231	0.003%
54	30138	-108549	443	-30136	108549	-442	0.002%
55	27454	-108756	16033	-27452	108756	-16032	0.002%
56	15542	-108549	26402	-15540	108549	-26402	0.002%
57	439	-108340	29566	-438	108340	-29569	0.003%
58	-14477	-108540	25410	14475	108540	-25409	0.002%
59	-26565	-108742	14923	26563	108742	-14922	0.001%
60	-30221	-108531	-431	30219	108531	433	0.002%
61	-26349	-108324	-15356	26352	108324	15358	0.004%
62	-15631	-108531	-26379	15632	108531	26377	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00002338
2	Yes	20	0.00006311	0.00007887
3	Yes	20	0.00006032	0.00007670
4	Yes	20	0.00005877	0.00008148
5	Yes	20	0.00006755	0.00006768
6	Yes	20	0.00006148	0.00006110
7	Yes	20	0.00006127	0.00006748
8	Yes	16	0.00008184	0.00002494
9	Yes	17	0.00009590	0.00002168
10	Yes	18	0.00006706	0.00001433
11	Yes	20	0.00007509	0.00007452
12	Yes	20	0.00006720	0.00006828
13	Yes	20	0.00006652	0.00007433
14	Yes	20	0.00006671	0.00008270
15	Yes	20	0.00006345	0.00008122
16	Yes	20	0.00006174	0.00008571
17	Yes	20	0.00007825	0.00007706
18	Yes	20	0.00007069	0.00007179
19	Yes	20	0.00006976	0.00007788
20	Yes	17	0.00007062	0.00002255
21	Yes	18	0.00007746	0.00002168
22	Yes	18	0.00009442	0.00002842
23	Yes	20	0.00006978	0.00007075
24	Yes	20	0.00006445	0.00006472
25	Yes	20	0.00006441	0.00007157
26	Yes	20	0.00006351	0.00007991
27	Yes	20	0.00006060	0.00007719
28	Yes	20	0.00005919	0.00008228
29	Yes	20	0.00007527	0.00007486
30	Yes	20	0.00007145	0.00007152
31	Yes	20	0.00007085	0.00007813
32	Yes	15	0.00006733	0.00007093
33	Yes	15	0.00009571	0.00008661
34	Yes	16	0.00007208	0.00006040
35	Yes	20	0.00007584	0.00007382
36	Yes	20	0.00007166	0.00007094
37	Yes	20	0.00007055	0.00007706
38	Yes	11	0.00010000	0.00005354
39	Yes	17	0.00008093	0.00002101
40	Yes	17	0.00000001	0.00001441
41	Yes	14	0.00008929	0.00004030
42	Yes	17	0.00000001	0.00000976
43	Yes	17	0.00007242	0.00001620
44	Yes	17	0.00000001	0.00000996
45	Yes	14	0.00009074	0.00003878
46	Yes	17	0.00000001	0.00001425
47	Yes	17	0.00007990	0.00002084
48	Yes	17	0.00000001	0.00001320
49	Yes	14	0.00000001	0.00003389
50	Yes	17	0.00000001	0.00001353
51	Yes	16	0.00000001	0.00003658
52	Yes	15	0.00000001	0.00004135
53	Yes	11	0.00000001	0.00003539
54	Yes	15	0.00000001	0.00004072
55	Yes	16	0.00000001	0.00003556
56	Yes	15	0.00000001	0.00004206
57	Yes	11	0.00000001	0.00003971

58	Yes	15	0.00000001	0.00004095
59	Yes	16	0.00000001	0.00003604
60	Yes	15	0.00000001	0.00004179
61	Yes	11	0.00000001	0.00004962
62	Yes	15	0.00000001	0.00004347

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	489 - 457	7.975	61	0.3815	0.1825
Antenna					
T1	457 - 436	5.833	61	0.1350	0.1856
T2	436 - 421	5.306	61	0.1263	0.1860
T3	421 - 401	5.033	59	0.1163	0.1871
T4	401 - 396	4.783	51	0.0927	0.1883
T5	396 - 391	4.732	51	0.0873	0.1887
T6	391 - 386	4.693	55	0.0811	0.1891
T7	386 - 381	4.658	55	0.0739	0.1894
T8	381 - 376	4.632	55	0.0657	0.1898
T9	376 - 371	4.624	55	0.0600	0.1906
T10	371 - 366	4.623	55	0.0553	0.1917
T11	366 - 361	4.623	55	0.0514	0.1912
T12	361 - 341	4.623	55	0.0483	0.1844
T13	341 - 321	4.631	55	0.0374	0.1590
T14	321 - 301	4.620	55	0.0360	0.1328
T15	301 - 281	4.558	55	0.0377	0.1136
T16	281 - 276	4.458	55	0.0325	0.0955
T17	276 - 271	4.431	55	0.0295	0.0912
T18	271 - 266	4.407	55	0.0256	0.0872
T19	266 - 261	4.383	55	0.0211	0.0833
T20	261 - 256	4.364	55	0.0169	0.0799
T21	256 - 251	4.352	55	0.0116	0.0781
T22	251 - 246	4.351	55	0.0069	0.0766
T23	246 - 241	4.358	55	0.0048	0.0750
T24	241 - 221	4.365	55	0.0061	0.0731
T25	221 - 201	4.377	55	0.0117	0.0665
T26	201 - 181	4.329	55	0.0294	0.0560
T27	181 - 161	4.186	55	0.0509	0.0441
T28	161 - 141	3.945	55	0.0722	0.0321
T29	141 - 121	3.637	55	0.0833	0.0265
T30	121 - 101	3.315	55	0.0832	0.0248
T31	101 - 81	3.002	55	0.0967	0.0282
T32	81 - 61	2.609	55	0.1179	0.0332
T33	61 - 41	2.121	55	0.1421	0.0377
T34	41 - 20	1.533	55	0.1647	0.0370
T35	20 - 6.70833	0.824	55	0.1818	0.0363
T36	6.70833 - 0	0.336	55	0.2242	0.0396

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
457'	12" x 3' Beacon	61	5.833	0.1350	0.1856	5205

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
446'6"	Guy	61	5.518	0.1225	0.1857	12883
444'	SRL-235-2	61	5.464	0.1232	0.1857	21442
419'	ERI 1183-3CP	59	5.004	0.1140	0.1872	46361
393'	6014-2	55	4.708	0.0837	0.1889	78347
382'	6014-2	55	4.636	0.0672	0.1897	15523
381'	Guy	55	4.632	0.0657	0.1898	15298
367'	SHP-2AE	55	4.623	0.0521	0.1918	101747
342'	BCD-87077	55	4.631	0.0378	0.1602	238880
333'	3" x 6" SideLight	55	4.631	0.0358	0.1484	129915
330'	PG1N0F-0090-310	55	4.630	0.0356	0.1444	113397
326'	DB201-A	55	4.627	0.0357	0.1390	96959
325'	DB408	55	4.626	0.0357	0.1378	93598
322'	SPD3-5.8	55	4.621	0.0359	0.1340	86290
316'	6014-2	55	4.609	0.0366	0.1274	87149
306'	6014-2	55	4.578	0.0376	0.1180	99415
277'	BMR10-A-B1	55	4.437	0.0302	0.0920	89923
264'	ANT150F6	55	4.375	0.0195	0.0817	47749
258'6"	(2) PL6" x 0.5"	55	4.356	0.0143	0.0789	27148
255'	DB809KT3E-Y	55	4.351	0.0106	0.0778	23782
254'6"	Guy	55	4.350	0.0100	0.0777	24239
247'	APXVAARR24_43-U-NA20 w/ Mount Pipe	55	4.357	0.0049	0.0753	121114
230'	HBXX-6516DS-VTM w/ Mount Pipe	55	4.376	0.0066	0.0696	126382
215'	3" x 6" SideLight	55	4.371	0.0164	0.0638	64156
206'	P-9A72GN-U	55	4.349	0.0244	0.0589	52587
200'	DFPD1-52 w/ Mount Pipe	55	4.325	0.0304	0.0554	48004
178'	SPD4-5.2	55	4.156	0.0541	0.0421	48029
150'	HPX6-65-P3A	55	3.780	0.0802	0.0283	125160
146'	PL6-65-PXA	55	3.717	0.0820	0.0274	173890
140'	CM 4228HD	55	3.620	0.0834	0.0263	381238
138'	MGA2-16N	55	3.588	0.0835	0.0260	644292
136'	CSI-AY/809-960/11	55	3.555	0.0834	0.0257	987528
135'	CM 4228HD	55	3.539	0.0834	0.0256	648839
134'	MGAR3-23N	55	3.523	0.0833	0.0254	477436
133'	220-5	55	3.507	0.0832	0.0253	377667
131'	Guy	55	3.474	0.0830	0.0251	266352
117'	P-9A48GN-U	55	3.254	0.0846	0.0251	298148
112'	3" x 6" SideLight	55	3.178	0.0874	0.0259	182646
109'	PD1132-D	55	3.132	0.0896	0.0264	101598
108'	SSH-9A72GN	55	3.116	0.0904	0.0266	88506
99'	SPD2-5.8	55	2.967	0.0986	0.0287	47018
68'	P-9A48GN-U	55	2.302	0.1331	0.0365	51435
62'	CSI-AY/809-960/11	55	2.147	0.1408	0.0376	51360
61'	SSH-9A72GN	55	2.121	0.1421	0.0377	50977

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
Pole	489 - 457	50.040	14	1.9775	0.7104
Antenna					
T1	457 - 436	38.853	14	0.9015	0.7281
T2	436 - 421	35.457	14	0.8623	0.7299
T3	421 - 401	33.161	14	0.8116	0.7333

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T4	401 - 396	30.445	16	0.6885	0.7374
T5	396 - 391	30.276	16	0.6608	0.7385
T6	391 - 386	30.121	16	0.6289	0.7397
T7	386 - 381	29.975	16	0.5921	0.7409
T8	381 - 376	29.863	16	0.5504	0.7423
T9	376 - 371	29.829	16	0.5184	0.7469
T10	371 - 366	29.820	16	0.4890	0.7533
T11	366 - 361	29.814	16	0.4623	0.7522
T12	361 - 341	29.805	16	0.4379	0.7243
T13	341 - 321	29.775	16	0.3193	0.6192
T14	321 - 301	29.619	16	0.2389	0.5110
T15	301 - 281	29.216	16	0.1763	0.4329
T16	281 - 276	28.630	16	0.1531	0.3596
T17	276 - 271	28.478	16	0.1450	0.3423
T18	271 - 266	28.333	16	0.1329	0.3265
T19	266 - 261	28.195	16	0.1167	0.3107
T20	261 - 256	28.074	16	0.0964	0.2972
T21	256 - 251	27.987	16	0.0799	0.2906
T22	251 - 246	27.952	16	0.1088	0.2849
T23	246 - 241	27.953	16	0.1275	0.2793
T24	241 - 221	27.951	16	0.1385	0.2722
T25	221 - 201	27.865	16	0.1205	0.2483
T26	201 - 181	27.468	16	0.1795	0.2110
T27	181 - 161	26.570	16	0.3097	0.1675
T28	161 - 141	25.128	16	0.4375	0.1535
T29	141 - 121	23.265	16	0.5201	0.1406
T30	121 - 101	21.196	16	0.5571	0.1232
T31	101 - 81	19.023	16	0.6524	0.1144
T32	81 - 61	16.386	15	0.7788	0.1359
T33	61 - 41	13.202	15	0.9138	0.1549
T34	41 - 20	9.473	15	1.0360	0.1514
T35	20 - 6.70833	5.063	15	1.1276	0.1476
T36	6.70833 - 0	2.054	15	1.3778	0.1604

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
457'	12" x 3' Beacon	14	38.853	0.9015	0.7281	1156
446'6"	Guy	14	36.925	0.8469	0.7285	2855
444'	SRL-235-2	14	36.562	0.8496	0.7288	4746
419'	ERI 1183-3CP	14	32.857	0.7998	0.7337	8240
393'	6014-2	16	30.182	0.6422	0.7392	14560
382'	6014-2	16	29.879	0.5582	0.7418	3565
381'	Guy	16	29.863	0.5504	0.7423	3520
367'	SHP-2AE	16	29.815	0.4673	0.7545	12483
342'	BCD-87077	16	29.778	0.3248	0.6243	12775
333'	3" x 6" SideLight	16	29.738	0.2818	0.5754	15587
330'	PG1N0F-0090-310	16	29.716	0.2700	0.5586	16933
326'	DB201-A	16	29.679	0.2555	0.5366	19135
325'	DB408	16	29.668	0.2521	0.5312	18886
322'	SPD3-5.8	16	29.632	0.2421	0.5159	17727
316'	6014-2	16	29.542	0.2230	0.4886	18172
306'	6014-2	16	29.339	0.1920	0.4507	20875
277'	BMR10-A-B1	16	28.508	0.1469	0.3456	10884
264'	ANT150F6	16	28.144	0.1091	0.3047	9478

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
258'6"	(2) PL6" x 0.5"	16	28.024	0.0847	0.2933	5802
255'	DB809KT3E-Y	16	27.976	0.0861	0.2894	5122
254'6"	Guy	16	27.971	0.0892	0.2889	5225
247'	APXVAARR24_43-U-NA20 w/ Mount Pipe	16	27.952	0.1245	0.2805	22592
230'	HBXX-6516DS-VTM w/ Mount Pipe	16	27.927	0.1399	0.2592	20069
215'	3" x 6" SideLight	16	27.789	0.1038	0.2387	11361
206'	P-9A72GN-U	16	27.608	0.1506	0.2214	9404
200'	DFPD1-52 w/ Mount Pipe	16	27.436	0.1855	0.2089	8589
178'	SPD4-5.2	16	26.387	0.3300	0.1604	8149
150'	HPX6-65-P3A	16	24.143	0.4911	0.1473	12751
146'	PL6-65-PXA	16	23.760	0.5058	0.1445	14367
140'	CM 4228HD	16	23.165	0.5224	0.1397	17832
138'	MGA2-16N	16	22.962	0.5264	0.1380	19480
136'	CSI-AY/809-960/11	16	22.758	0.5299	0.1362	21494
135'	CM 4228HD	16	22.655	0.5315	0.1353	22668
134'	MGAR3-23N	16	22.552	0.5330	0.1344	23978
133'	220-5	16	22.449	0.5344	0.1335	25449
131'	Guy	16	22.241	0.5374	0.1317	29008
117'	P-9A48GN-U	16	20.778	0.5706	0.1202	28167
112'	3" x 6" SideLight	16	20.251	0.5922	0.1166	14973
109'	PD1132-D	16	19.928	0.6072	0.1143	11684
108'	SSH-9A72GN	16	19.819	0.6125	0.1135	10886
99'	SPD2-5.8	16	18.784	0.6645	0.1164	7502
68'	P-9A48GN-U	15	14.376	0.8645	0.1501	8748
62'	CSI-AY/809-960/11	15	13.374	0.9065	0.1544	8991
61'	SSH-9A72GN	15	13.202	0.9138	0.1549	8953

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	457	Leg	A307	0.8750	8	2846	20778	0.137	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1692	5522	0.306	1.05	Bolt Shear
		Horizontal	A307	0.5000	2	658	5522	0.119	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	0	5522	0.000	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	2070	5522	0.375	1.05	Bolt Shear
T2	436	Leg	A307	0.8750	8	4619	20778	0.222	1.05	Bolt Tension
		Diagonal	A325X	0.5000	2	1343	7082	0.190	1.05	Member Block Shear
		Horizontal	A307	0.5000	2	764	5522	0.138	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	556	5522	0.101	1.05	Bolt Shear
T3	421	Leg	A307	0.8750	8	8806	20778	0.424	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	2990	7082	0.422	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	306	5522	0.055	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	264	5522	0.048	1.05	Bolt Shear
T4	401	Diagonal	A325N	0.5000	2	3153	7082	0.445	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	291	5522	0.053	1.05	Bolt Shear
T5	396	Diagonal	A325N	0.5000	2	3603	7082	0.509	1.05	Member Block Shear
T6	391	Diagonal	A325X	0.5000	2	3871	7082	0.547	1.05	Member Block

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
										Shear
T7	386	Leg	A307	0.8750	8	15917	20778	0.766	1.05	Bolt Tension
		Diagonal	A325X	0.5000	2	4464	7082	0.630	1.05	Member Block Shear
T8	381	Diagonal	A325N	0.5000	2	4235	7082	0.598	1.05	Member Block Shear
		Top Guy Pull-Off@381	A307	0.5000	2	10644	11045	0.964	1.05	Bolt Shear
T9	376	Diagonal	A325N	0.5000	2	3821	7082	0.540	1.05	Member Block Shear
T10	371	Diagonal	A325N	0.5000	2	3617	7082	0.511	1.05	Member Block Shear
T11	366	Leg	A307	0.8750	8	7010	20778	0.337	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	3673	7082	0.519	1.05	Member Block Shear
T12	361	Leg	A307	0.8750	8	4471	20778	0.215	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	3374	7082	0.476	1.05	Member Block Shear
		Secondary Horizontal	A325X	0.5000	1	2204	9661	0.228	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	333	5522	0.060	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	172	5522	0.031	1.05	Bolt Shear
T13	341	Leg	A307	0.8750	8	3706	20778	0.178	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	2692	7082	0.380	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	180	5522	0.033	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	152	5522	0.027	1.05	Bolt Shear
T14	321	Leg	A307	0.8750	8	3589	20778	0.173	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1969	5522	0.356	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	189	5522	0.034	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	230	5522	0.042	1.05	Bolt Shear
T15	301	Leg	A307	0.8750	8	4094	20778	0.197	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	2623	5522	0.475	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	186	5522	0.034	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	150	5522	0.027	1.05	Bolt Shear
T16	281	Diagonal	A325N	0.5000	2	2715	7082	0.383	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	161	5522	0.029	1.05	Bolt Shear
T17	276	Diagonal	A325N	0.5000	2	2944	7082	0.416	1.05	Member Block Shear
T18	271	Diagonal	A325N	0.5000	2	3416	7082	0.482	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	370	5522	0.067	1.05	Bolt Shear
T19	266	Leg	A307	0.8750	8	5050	20778	0.243	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	3036	7082	0.429	1.05	Member Block Shear
T20	261	Diagonal	A325N	0.5000	2	5543	8836	0.627	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	2666	5522	0.483	1.05	Bolt Shear
T21	256	Diagonal	A325N	0.5000	2	7977	8836	0.903	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	11397	17672	0.645	1.05	Bolt Shear
T22	251	Diagonal	A325N	0.5000	2	5682	8836	0.643	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	2875	5522	0.521	1.05	Bolt Shear
T23	246	Leg	A307	0.6250	8	4295	10170	0.422	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	5074	8836	0.574	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	894	17672	0.051	1.05	Bolt Shear
T24	241	Leg	A307	0.6250	8	4525	10170	0.445	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	4480	8836	0.507	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	319	5522	0.058	1.05	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Mid Girt	A307	0.5000	2	357	5522	0.065	1.05	Bolt Shear
T25	221	Leg	A307	0.8750	8	5389	20778	0.259	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	2557	5522	0.463	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	305	5522	0.055	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	298	5522	0.054	1.05	Bolt Shear
T26	201	Leg	A307	0.8750	8	5818	20778	0.280	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1358	5522	0.246	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	320	5522	0.058	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	327	5522	0.059	1.05	Bolt Shear
T27	181	Leg	A307	0.8750	8	5603	20778	0.270	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1356	5522	0.246	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	418	11045	0.038	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	322	5522	0.058	1.05	Bolt Shear
T28	161	Leg	A307	0.6250	8	5355	10170	0.527	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	2719	10833	0.251	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	379	5522	0.069	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	370	5522	0.067	1.05	Bolt Shear
T29	141	Leg	A307	0.6250	8	5220	10170	0.513	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	3634	10833	0.335	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	784	5522	0.142	1.05	Bolt Shear
		Mid Girt	A325N	0.5000	2	5723	7082	0.808	1.05	Member Block Shear
T30	121	Leg	A307	0.8750	8	6780	20778	0.326	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	2653	7082	0.375	1.05	Member Block Shear
		Top Girt	A307	0.5000	2	3566	5522	0.646	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	302	5522	0.055	1.05	Bolt Shear
T31	101	Leg	A307	0.8750	8	7326	20778	0.353	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1731	5522	0.313	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	402	5522	0.073	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	439	5522	0.080	1.05	Bolt Shear
T32	81	Leg	A307	0.8750	8	7474	20778	0.360	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	845	5522	0.153	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	452	5522	0.082	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	453	5522	0.082	1.05	Bolt Shear
T33	61	Leg	A307	0.8750	8	7339	20778	0.353	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	1701	5522	0.308	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	468	5522	0.085	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	428	5522	0.077	1.05	Bolt Shear
T34	41	Leg	A307	0.8750	8	7125	20778	0.343	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	2617	5522	0.474	1.05	Bolt Shear
		Top Girt	A307	0.5000	2	410	5522	0.074	1.05	Bolt Shear
		Mid Girt	A307	0.5000	2	662	5522	0.120	1.05	Bolt Shear
T35	20	Leg	A307	0.8750	8	7152	20778	0.344	1.05	Bolt Tension
		Diagonal	A307	0.5000	2	996	5522	0.180	1.05	Bolt Shear
		Top Girt	A325N	0.5000	2	8109	14165	0.572	1.05	Member Block Shear
T36	6.70833	Diagonal	A307	0.5000	2	1919	5522	0.347	1.05	Bolt Shear

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	446'6" (A) (826)	9/16 EHS	2800	35000	13546	22050	0.952	1.550
	446'6" (B) (825)	9/16 EHS	2800	35000	13549	22050	0.952	1.550
	446'6" (C) (824)	9/16 EHS	2800	35000	13494	22050	0.952	1.556
T8	381' (A) (829)	1 3/8 BS	18560	232000	65884	146157	0.952	2.113
	381' (B) (828)	1 3/8 BS	18560	232000	67195	146157	0.952	2.072
	381' (C) (827)	1 3/8 BS	18560	232000	64381	146157	0.952	2.162
T21	254'6" (A) (832)	1 1/4 BS	15360	192000	60290	120958	0.952	1.911
	254'6" (B) (831)	1 1/4 BS	15360	192000	60540	120958	0.952	1.903
	254'6" (C) (830)	1 1/4 BS	15360	192000	59354	120958	0.952	1.941
T29	131' (A) (845)	11/16 EHS	6000	50000	21304	31499	0.952	1.408
	131' (A) (846)	11/16 EHS	6000	50000	21496	31499	0.952	1.396
	131' (B) (839)	11/16 EHS	6000	50000	21358	31499	0.952	1.405
	131' (B) (840)	11/16 EHS	6000	50000	21118	31499	0.952	1.421
	131' (C) (833)	11/16 EHS	6000	50000	20796	31499	0.952	1.443
	131' (C) (834)	11/16 EHS	6000	50000	20743	31499	0.952	1.446

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0 K=1.00	7.0686	-35869	149352	0.240 [1]
T2	436 - 421	2 3/4	15'	5'	87.3 K=1.00	5.9396	-50366	122148	0.412 [1]
T3	421 - 401	2 3/4	20'	5'	87.3 K=1.00	5.9396	-93748	122148	0.767 [1]
T4	401 - 396	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.7900	-107256	232333	0.462 [1]
T5	396 - 391	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.7900	-122269	232333	0.526 [1]
T6	391 - 386	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.7900	-138767	232333	0.597 [1]
T7	386 - 381	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2 K=1.00	9.7900	-158070	232333	0.680 [1]
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6 K=1.00	10.9600	-164138	266168	0.617 [1]
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6 K=1.00	10.9600	-153182	266168	0.576 [1]
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6 K=1.00	10.9600	-144053	266168	0.541 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T11	366 - 361	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6 K=1.00	10.9600	-135275	266168	0.508 [1]
T12	361 - 341	3	20'	2'6"	40.0 K=1.00	7.0686	-127231	194337	0.655 [1]
T13	341 - 321	3	20'	5'	80.0 K=1.00	7.0686	-102034	154155	0.662 [1]
T14	321 - 301	3	20'	5'	80.0 K=1.00	7.0686	-86125	154155	0.559 [1]
T15	301 - 281	3	20'	5'	80.0 K=1.00	7.0686	-98250	154155	0.637 [1]
T16	281 - 276	3	5'	5'	80.0 K=1.00	7.0686	-103236	154155	0.670 [1]
T17	276 - 271	3	5'	5'	80.0 K=1.00	7.0686	-108533	154155	0.704 [1]
T18	271 - 266	3	5'	5'	80.0 K=1.00	7.0686	-115278	154155	0.748 [1]
T19	266 - 261	3	5'	5'	80.0 K=1.00	7.0686	-121194	154155	0.786 [1]
T20	261 - 256	3	5'	5'	80.0 K=1.00	7.0686	-132868	154155	0.862 [1]
T21	256 - 251	3	5'	2'6"	40.0 K=1.00	7.0686	-137906	194337	0.710 [1]
T22	251 - 246	3	5'	5'	80.0 K=1.00	7.0686	-109636	154155	0.711 [1]
T23	246 - 241	3	5'	2'6"	40.0 K=1.00	7.0686	-103278	194337	0.531 [1]
T24	241 - 221	3	20'	5'	80.0 K=1.00	7.0686	-108600	154155	0.704 [1]
T25	221 - 201	3 1/4	20'	5'	73.8 K=1.00	8.2958	-129329	189376	0.683 [1]
T26	201 - 181	3 1/4	20'	5'	73.8 K=1.00	8.2958	-139637	189376	0.737 [1]
T27	181 - 161	3 1/4	20'	5'	73.8 K=1.00	8.2958	-139974	189376	0.739 [1]
T28	161 - 141	3 1/2	20'	5'	68.6 K=1.00	9.6211	-131733	227739	0.578 [1]
T29	141 - 121	3 1/2	20'	5'	68.6 K=1.00	9.6211	-126872	227739	0.557 [1]
T30	121 - 101	3 1/2	20'	5'	68.6 K=1.00	9.6211	-162713	227739	0.714 [1]
T31	101 - 81	3 1/2	20'	5'	68.6 K=1.00	9.6211	-175814	227739	0.772 [1]
T32	81 - 61	3 1/2	20'	5'	68.6 K=1.00	9.6211	-180124	227739	0.791 [1]
T33	61 - 41	3 1/2	20'	5'	68.6 K=1.00	9.6211	-177665	227739	0.780 [1]
T34	41 - 20	3 1/2	21'	5'3"	72.0 K=1.00	9.6211	-174937	222503	0.786 [1]
T35	20 - 6.70833	3 1/4	13'5-7/8"	4'6"	66.4 K=1.00	8.2958	-174866	199143	0.878 [1]
T36	6.70833 - 0	3 1/4	6'9-23/32"	2'3-1/4"	33.5 K=1.00	8.2958	-178832	233387	0.766 [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	457 - 436	L2 1/2x2x1/4	7'7-13/16"	3'7-9/16"	107.0 K=1.04	1.0600	-2762	23433	0.118 [1]
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-3072	18234	0.168 [1]
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-6086	18234	0.334 [1]
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-6470	18234	0.355 [1]
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7231	18234	0.397 [1]
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-8937	18234	0.490 [1]
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7761	18234	0.426 [1]
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7234	18234	0.397 [1]
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-8748	18234	0.480 [1]
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7250	18234	0.398 [1]
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7529	18234	0.413 [1]
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-7031	18234	0.386 [1]
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-5425	18234	0.298 [1]
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-3937	18234	0.216 [1]
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-5247	18234	0.288 [1]
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-5448	18234	0.299 [1]
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-6108	18234	0.335 [1]
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-5855	18234	0.321 [1]
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-6794	18234	0.373 [1]
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.4400	-4006	40338	0.099 [1]
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.4400	-11308	40338	0.280 [1]
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.4400	-11364	40338	0.282 [1]
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.4400	-8931	40338	0.221 [1]
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/32"	84.0 K=1.17	1.4400	-8961	40338	0.222 [1]
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-5113	18234	0.280 [1]
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-2716	18234	0.149 [1]
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-2712	18234	0.149 [1]
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.4400	-5691	40403	0.141 [1]
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/32"	83.8 K=1.17	1.4400	-7127	40403	0.176 [1]
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9	0.8090	-5473	18234	0.300 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T31	101 - 81	L2 1/2x2x3/16	7'6"	2" 3'6-19/32"	K=1.05 104.9 K=1.05	0.8090	-3461	18234	0.190 [1]
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-1690	18234	0.093 [1]
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/32"	104.9 K=1.05	0.8090	-3401	18234	0.187 [1]
T34	41 - 20	L2 1/2x2x3/16	7'7-13/16"	3'7-9/16"	106.5 K=1.04	0.8090	-5235	17973	0.291 [1]
T35	20 - 6.70833	L2x2x3/16	4'9-1/8"	2'9-3/8"	93.5 K=1.10	0.7150	-1992	17651	0.113 [1]
T36	6.70833 - 0	L2x2x3/16	2'5-17/32"	1'1-5/16"	55.4 K=1.63	0.7150	-3837	21505	0.178 [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	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-1317	15614	0.084 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.0600	-692	15533	0.045 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2x2x1/4	6'	2'9-1/8"	102.4 K=1.21	0.9380	-2204	22643	0.097 [1]
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	30.4 K=1.00	4.9700	-2389	171077	0.014 [1]
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	30.4 K=1.00	4.9700	-1789	171077	0.010 [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 $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	C8x13.75	6'	5'9"	112.2 K=1.00	4.0400	-1	65362	0.000 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-287	15614	0.018 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.0600	-154	15533	0.010 [1]
T4	401 - 396	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.0600	-477	15533	0.031 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'3-23/32"	138.7 K=0.92	1.0600	-325	15778	0.021 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-27	15614	0.002 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-74	15614	0.005 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	-50	12030	0.004 [1]
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-93	15614	0.006 [1]
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-740	15614	0.047 [1]
T20	261 - 256	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	-5333	12030	0.443 [1]
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	-5750	12030	0.478 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	-638	12030	0.053 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.8090	-26	12092	0.002 [1]
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	87.0 K=1.00	2.3800	-119	60208	0.002 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.8090	-49	12092	0.004 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-407	12156	0.034 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-7133	12156	0.587 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-5	12156	0.000 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-117	12156	0.010 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-162	12156	0.013 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	139.8 K=0.92	1.0600	-432	15533	0.028 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-105	15614	0.007 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-44	15614	0.003 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	139.4 K=0.92	1.0600	-137	15614	0.009 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	0	12030	0.000 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	138.7 K=0.92	0.8090	-241	12030	0.020 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.8090	-76	12092	0.006 [1]
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/32"	138.4 K=0.92	0.8090	-54	12092	0.004 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-8169	12156	0.672 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-80	12156	0.007 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-126	12156	0.010 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	138.0 K=0.92	0.8090	-70	12156	0.006 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (835)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 835	7'6-19/32"	7'4-13/16"	137.6 K=0.91	1.0900	-247	9500	0.026 [1]
T29	141 - 121 (841)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 841	7'6-19/32"	7'4-13/16"	137.6 K=0.91	1.0900	-391	9500	0.041 [1]
T29	141 - 121 (842)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 842	7'6-19/32"	7'4-13/16"	137.6 K=0.91	1.0900	-589	9500	0.062 [1]
T29	141 - 121 (847)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 847	7'6-19/32"	7'4-13/16"	137.6 K=0.91	1.0900	-762	9500	0.080 [1]
T29	141 - 121 (848)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 848	7'6-19/32"	7'4-13/16"	137.6 K=0.91	1.0900	-382	9500	0.040 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (837)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-22305	31454	0.709 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-22926	31454	0.729 [1]
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-23245	31454	0.739 [1]
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-23229	31454	0.739 [1]
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-23368	31454	0.743 [1]
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	140.8 K=0.90	2.1800	-23949	31454	0.761 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	3	21'	5'3"	84.0	7.0686	22770	209937	0.108 [1]
T2	436 - 421	2 3/4	15'	5'	87.3	5.9396	36953	176405	0.209 [1]
T3	421 - 401	2 3/4	20'	5'	87.3	5.9396	70445	176405	0.399 [1]
T4	401 - 396	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.7900	82987	290763	0.285 [1]
T5	396 - 391	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.7900	96316	290763	0.331 [1]
T6	391 - 386	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.7900	112475	290763	0.387 [1]
T7	386 - 381	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	5'	5'	68.2	9.7900	127336	290763	0.438 [1]
T8	381 - 376	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6	10.9600	84547	325512	0.260 [1]
T9	376 - 371	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6	10.9600	76301	325512	0.234 [1]
T10	371 - 366	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6	10.9600	65234	325512	0.200 [1]
T11	366 - 361	3.5" S.R. w/ 3.5 SCH40 Half Pipe	5'	5'	64.6	10.9600	56078	325512	0.172 [1]
T12	361 - 341	3	20'	2'6"	40.0	7.0686	47906	209937	0.228 [1]
T13	341 - 321	3	20'	5'	80.0	7.0686	20653	209937	0.098 [1]
T14	321 - 301	3	20'	5'	80.0	7.0686	3451	209937	0.016 [1]
T15	301 - 281	3	20'	5'	80.0	7.0686	11622	209937	0.055 [1]
T16	281 - 276	3	5'	5'	80.0	7.0686	15710	209937	0.075 [1]
T17	276 - 271	3	5'	5'	80.0	7.0686	20687	209937	0.099 [1]
T18	271 - 266	3	5'	5'	80.0	7.0686	25475	209937	0.121 [1]
T19	266 - 261	3	5'	5'	80.0	7.0686	32385	209937	0.154 [1]
T20	261 - 256	3	5'	5'	80.0	7.0686	34560	209937	0.165 [1]
T21	256 - 251	3	5'	2'6"	40.0	7.0686	42691	209937	0.203 [1]
T25	221 - 201	3 1/4	20'	5'	73.8	8.2958	18866	246384	0.077 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T26	201 - 181	3 1/4	20'	5'	73.8	8.2958	28827	246384	0.117 [1]
T27	181 - 161	3 1/4	20'	5'	73.8	8.2958	28014	246384	0.114 [1]
T28	161 - 141	3 1/2	20'	5'	68.6	9.6211	16877	285748	0.059 [1]
T30	121 - 101	3 1/2	20'	5'	68.6	9.6211	17671	285748	0.062 [1]
T31	101 - 81	3 1/2	20'	5'	68.6	9.6211	32411	285748	0.113 [1]
T32	81 - 61	3 1/2	20'	5'	68.6	9.6211	33141	285748	0.116 [1]
T33	61 - 41	3 1/2	20'	5'	68.6	9.6211	24417	285748	0.085 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	7'7-13/16"	3'7-9/16"	77.5	0.6778	3384	30502	0.111 [1]
T2	436 - 421	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	2686	23349	0.115 [1]
T3	421 - 401	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5980	23349	0.256 [1]
T4	401 - 396	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	6307	23349	0.270 [1]
T5	396 - 391	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	7206	23349	0.309 [1]
T6	391 - 386	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	7741	23349	0.332 [1]
T7	386 - 381	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	8929	23349	0.382 [1]
T8	381 - 376	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	8471	23349	0.363 [1]
T9	376 - 371	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	7643	23349	0.327 [1]
T10	371 - 366	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	7234	23349	0.310 [1]
T11	366 - 361	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	7347	23349	0.315 [1]
T12	361 - 341	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	6748	23349	0.289 [1]
T13	341 - 321	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5385	23349	0.231 [1]
T14	321 - 301	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	3918	23349	0.168 [1]
T15	301 - 281	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5072	23349	0.217 [1]
T16	281 - 276	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5429	23349	0.233 [1]
T17	276 - 271	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5888	23349	0.252 [1]
T18	271 - 266	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	6831	23349	0.293 [1]
T19	266 - 261	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	6073	23349	0.260 [1]
T20	261 - 256	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.9628	11087	41882	0.265 [1]
T21	256 - 251	L3x3x1/4	7'6"	3'6-19/3	48.4	0.9628	15954	41882	0.381 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T22	251 - 246	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.9628	10194	41882	0.243 [1]
T23	246 - 241	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.9628	10148	41882	0.242 [1]
T24	241 - 221	L3x3x1/4	7'6"	3'6-19/32"	48.4	0.9628	8640	41882	0.206 [1]
T25	221 - 201	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	4937	23349	0.211 [1]
T26	201 - 181	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	2512	23349	0.108 [1]
T27	181 - 161	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	2540	23349	0.109 [1]
T28	161 - 141	L3x3x1/4	7'6"	3'6-15/32"	48.4	0.9394	5438	40863	0.133 [1]
T29	141 - 121	L3x3x1/4	7'6"	3'6-15/32"	48.4	0.9394	7268	40863	0.178 [1]
T30	121 - 101	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	5306	23349	0.227 [1]
T31	101 - 81	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	3212	23349	0.138 [1]
T32	81 - 61	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	1389	23349	0.059 [1]
T33	61 - 41	L2 1/2x2x3/16	7'6"	3'6-19/32"	75.0	0.5189	3101	23349	0.133 [1]
T34	41 - 20	L2 1/2x2x3/16	7'7-13/16"	3'7-9/16"	76.6	0.5189	5174	23349	0.222 [1]
T35	20 - 6.70833	L2x2x3/16	5'7-7/16"	3'31/32"	63.8	0.4484	1430	20176	0.071 [1]
T36	6.70833 - 0	L2x2x3/16	2'9-19/32"	1'1-13/16"	26.3	0.4484	2419	20176	0.120 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	813	30502	0.027 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.6778	1528	30502	0.050 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T12	361 - 341	L2x2x1/4	6'	2'9-1/8"	113.3	0.5863	2204	25505	0.086 [1]
T21	256 - 251	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	42.9	3.3759	22795	146853	0.155 [1]
T23	246 - 241	2L3 1/2x3 1/2x3/8x3/8	6'	2'8-17/32"	42.9	3.3759	1789	146853	0.012 [1]

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

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	457 - 436	C8x13.75	6'	5'9"	112.2	4.0400	1	119988	0.000 [1]
T2	436 - 421	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	1112	30502	0.036 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.6778	612	30502	0.020 [1]
T4	401 - 396	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.6778	582	30502	0.019 [1]
T6	391 - 386	L2 1/2x2x1/4	6'	5'9"	116.5	1.0600	675	31482	0.021 [1]
T10	371 - 366	L2 1/2x2x1/4	6'	5'8-17/32"	115.6	1.0600	745	31482	0.024 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'3-23/32"	115.6	0.6778	666	30502	0.022 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	361	30502	0.012 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	378	30502	0.012 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	371	23349	0.016 [1]
T16	281 - 276	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	321	30502	0.011 [1]
T18	271 - 266	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	244	30502	0.008 [1]
T22	251 - 246	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	59	23349	0.003 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	349	23349	0.015 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	610	23349	0.026 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.5189	639	23349	0.027 [1]
T27	181 - 161	2L3x2x1/4x3/8	6'	5'3-31/32"	77.2	1.5506	836	69778	0.012 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.5189	758	23349	0.032 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	1569	23349	0.067 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	6159	23349	0.264 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	804	23349	0.034 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	905	23349	0.039 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	937	23349	0.040 [1]
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	821	23349	0.035 [1]
T35	20 - 6.70833	2L2 1/2x2x3/16x1/4	6'	5'3-23/32"	86.4	1.0371	16217	46670	0.347 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	457 - 436	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	4139	30502	0.136 [1]
T3	421 - 401	L2 1/2x2x1/4	6'	5'4-9/16"	116.9	0.6778	528	30502	0.017 [1]
T12	361 - 341	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	344	30502	0.011 [1]
T13	341 - 321	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	304	30502	0.010 [1]
T14	321 - 301	L2 1/2x2x1/4	6'	5'4-3/16"	116.5	0.6778	460	30502	0.015 [1]
T15	301 - 281	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	300	23349	0.013 [1]
T24	241 - 221	L2 1/2x2x3/16	6'	5'4-3/16"	115.0	0.5189	714	23349	0.031 [1]
T25	221 - 201	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.5189	596	23349	0.026 [1]
T26	201 - 181	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.5189	655	23349	0.028 [1]
T27	181 - 161	L2 1/2x2x3/16	6'	5'3-31/32"	114.6	0.5189	645	23349	0.028 [1]
T28	161 - 141	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	740	23349	0.032 [1]
T29	141 - 121	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	11447	23349	0.490 [1]
T30	121 - 101	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	605	23349	0.026 [1]
T31	101 - 81	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	878	23349	0.038 [1]
T32	81 - 61	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	905	23349	0.039 [1]
T33	61 - 41	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	856	23349	0.037 [1]
T34	41 - 20	L2 1/2x2x3/16	6'	5'3-23/32"	114.2	0.5189	1324	23349	0.057 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	381 - 376	2L3x2x1/4x3/8	6'	5'9"	77.4	1.5506	21289	69778	0.305 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (835)	L3x3x3/16 (TA -	7'6-19/32	7'4-13/16	151.6	1.0900	17977	35316	0.509 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
		BU#873128) b/t > 25 - 835	2"	6"					
T29	141 - 121 (836)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 836	7'6-19/32"	7'4-13/16"	151.6	1.0900	17391	35316	0.492 [1]
T29	141 - 121 (841)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 841	7'6-19/32"	7'4-13/16"	151.6	1.0900	18453	35316	0.523 [1]
T29	141 - 121 (842)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 842	7'6-19/32"	7'4-13/16"	151.6	1.0900	17524	35316	0.496 [1]
T29	141 - 121 (847)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 847	7'6-19/32"	7'4-13/16"	151.6	1.0900	18023	35316	0.510 [1]
T29	141 - 121 (848)	L3x3x3/16 (TA - BU#873128) b/t > 25 - 848	7'6-19/32"	7'4-13/16"	151.6	1.0900	18571	35316	0.526 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T29	141 - 121 (837)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	12483	70632	0.177 [1]
T29	141 - 121 (838)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	13004	70632	0.184 [1]
T29	141 - 121 (843)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	13170	70632	0.186 [1]
T29	141 - 121 (844)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	13548	70632	0.192 [1]
T29	141 - 121 (849)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	13358	70632	0.189 [1]
T29	141 - 121 (850)	2L3x3x3/16x3/4	12'6-3/8"	12'3-15/32"	157.0	2.1800	13325	70632	0.189 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	457 - 436	Leg	3	4	-35869	156820	22.9	Pass
T2	436 - 421	Leg	2 3/4	46	-50366	128255	39.3	Pass
T3	421 - 401	Leg	2 3/4	76	-93748	128255	73.1	Pass
T4-T7	401 - 381	Leg	3" S.R. w/ 3 SCH 40 Half Pipe and 3.75 x 5/16 Half Pipe	Note 1	Note 1	Note 1	72.6 73.0 (b)	Pass
T8-T11	381 - 361	Leg	3.5" S.R. w/ 3.5 SCH40 Half Pipe	Note 1	Note 1	Note 1	62.3	Pass
T12	361 - 341	Leg	3	191	-127231	204054	62.4	Pass
T13	341 - 321	Leg	3	236	-102034	161863	63.0	Pass
T14	321 - 301	Leg	3	269	-86125	161863	53.2	Pass
T15	301 - 281	Leg	3	302	-98250	161863	60.7	Pass
T16	281 - 276	Leg	3	336	-103236	161863	63.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T17	276 - 271	Leg	3	345	-108533	161863	67.1	Pass
T18	271 - 266	Leg	3	354	-115278	161863	71.2	Pass
T19	266 - 261	Leg	3	366	-121194	161863	74.9	Pass
T20	261 - 256	Leg	3	378	-132868	161863	82.1	Pass
T21	256 - 251	Leg	3	387	-137906	204054	67.6	Pass
T22	251 - 246	Leg	3	399	-109636	161863	67.7	Pass
T23	246 - 241	Leg	3	410	-103278	204054	50.6	Pass
T24	241 - 221	Leg	3	427	-108600	161863	67.1	Pass
T25	221 - 201	Leg	3 1/4	458	-129329	198845	65.0	Pass
T26	201 - 181	Leg	3 1/4	492	-139637	198845	70.2	Pass
T27	181 - 161	Leg	3 1/4	525	-139974	198845	70.4	Pass
T28	161 - 141	Leg	3 1/2	559	-131733	239126	55.1	Pass
T29	141 - 121	Leg	3 1/2	592	-126872	239126	53.1	Pass
T30	121 - 101	Leg	3 1/2	625	-162713	239126	68.0	Pass
T31	101 - 81	Leg	3 1/2	657	-175814	239126	73.5	Pass
T32	81 - 61	Leg	3 1/2	690	-180124	239126	75.3	Pass
T33	61 - 41	Leg	3 1/2	724	-177665	239126	74.3	Pass
T34	41 - 20	Leg	3 1/2	757	-174937	233628	74.9	Pass
T35	20 - 6.70833	Leg	3 1/4	787	-174866	209100	83.6	Pass
T36	6.70833 - 0	Leg	3 1/4	811	-178832	245056	73.0	Pass
T1	457 - 436	Diagonal	L2 1/2x2x1/4	43	-2762	24604	11.2 29.2 (b)	Pass
T2	436 - 421	Diagonal	L2 1/2x2x3/16	55	-3072	19146	16.0 18.1 (b)	Pass
T3	421 - 401	Diagonal	L2 1/2x2x3/16	86	-6086	19146	31.8 40.2 (b)	Pass
T4	401 - 396	Diagonal	L2 1/2x2x3/16	113	-6470	19146	33.8 42.4 (b)	Pass
T5	396 - 391	Diagonal	L2 1/2x2x3/16	122	-7231	19146	37.8 48.4 (b)	Pass
T6	391 - 386	Diagonal	L2 1/2x2x3/16	134	-8937	19146	46.7 52.0 (b)	Pass
T7	386 - 381	Diagonal	L2 1/2x2x3/16	146	-7761	19146	40.5 60.0 (b)	Pass
T8	381 - 376	Diagonal	L2 1/2x2x3/16	152	-7234	19146	37.8 57.0 (b)	Pass
T9	376 - 371	Diagonal	L2 1/2x2x3/16	162	-8748	19146	45.7 51.4 (b)	Pass
T10	371 - 366	Diagonal	L2 1/2x2x3/16	176	-7250	19146	37.9 48.6 (b)	Pass
T11	366 - 361	Diagonal	L2 1/2x2x3/16	188	-7529	19146	39.3 49.4 (b)	Pass
T12	361 - 341	Diagonal	L2 1/2x2x3/16	230	-7031	19146	36.7 45.4 (b)	Pass
T13	341 - 321	Diagonal	L2 1/2x2x3/16	266	-5425	19146	28.3 36.2 (b)	Pass
T14	321 - 301	Diagonal	L2 1/2x2x3/16	279	-3937	19146	20.6 34.0 (b)	Pass
T15	301 - 281	Diagonal	L2 1/2x2x3/16	312	-5247	19146	27.4 45.2 (b)	Pass
T16	281 - 276	Diagonal	L2 1/2x2x3/16	339	-5448	19146	28.5 36.5 (b)	Pass
T17	276 - 271	Diagonal	L2 1/2x2x3/16	348	-6108	19146	31.9 39.6 (b)	Pass
T18	271 - 266	Diagonal	L2 1/2x2x3/16	359	-5855	19146	30.6 45.9 (b)	Pass
T19	266 - 261	Diagonal	L2 1/2x2x3/16	371	-6794	19146	35.5 40.8 (b)	Pass
T20	261 - 256	Diagonal	L3x3x1/4	381	11087	43976	25.2 59.7 (b)	Pass
T21	256 - 251	Diagonal	L3x3x1/4	392	15954	43976	36.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							86.0 (b)	
T22	251 - 246	Diagonal	L3x3x1/4	406	-11364	42355	26.8	Pass
							61.2 (b)	
T23	246 - 241	Diagonal	L3x3x1/4	418	10148	43976	23.1	Pass
							54.7 (b)	
T24	241 - 221	Diagonal	L3x3x1/4	455	-8961	42355	21.2	Pass
							48.3 (b)	
T25	221 - 201	Diagonal	L2 1/2x2x3/16	488	-5113	19146	26.7	Pass
							44.1 (b)	
T26	201 - 181	Diagonal	L2 1/2x2x3/16	521	-2716	19146	14.2	Pass
							23.4 (b)	
T27	181 - 161	Diagonal	L2 1/2x2x3/16	537	-2712	19146	14.2	Pass
							23.4 (b)	
T28	161 - 141	Diagonal	L3x3x1/4	566	-5691	42423	13.4	Pass
							23.9 (b)	
T29	141 - 121	Diagonal	L3x3x1/4	612	7268	42906	16.9	Pass
							31.9 (b)	
T30	121 - 101	Diagonal	L2 1/2x2x3/16	654	-5473	19146	28.6	Pass
							35.7 (b)	
T31	101 - 81	Diagonal	L2 1/2x2x3/16	687	-3461	19146	18.1	Pass
							29.8 (b)	
T32	81 - 61	Diagonal	L2 1/2x2x3/16	701	-1690	19146	8.8	Pass
							14.6 (b)	
T33	61 - 41	Diagonal	L2 1/2x2x3/16	732	-3401	19146	17.8	Pass
							29.3 (b)	
T34	41 - 20	Diagonal	L2 1/2x2x3/16	768	-5235	18871	27.7	Pass
							45.1 (b)	
T35	20 - 6.70833	Diagonal	L2x2x3/16	794	-1992	18534	10.7	Pass
							17.2 (b)	
T36	6.70833 - 0	Diagonal	L2x2x3/16	817	-3837	22580	17.0	Pass
							33.1 (b)	
T1	457 - 436	Horizontal	L2 1/2x2x1/4	36	-1317	16395	8.0	Pass
							11.4 (b)	
T2	436 - 421	Horizontal	L2 1/2x2x1/4	57	1528	32027	4.8	Pass
							13.2 (b)	
T12	361 - 341	Secondary Horizontal	L2x2x1/4	208	-2204	23775	9.3	Pass
							21.7 (b)	
T21	256 - 251	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	395	22795	154196	14.8	Pass
							61.4 (b)	
T23	246 - 241	Secondary Horizontal	2L3 1/2x3 1/2x3/8x3/8	422	1789	154196	1.2	Pass
							4.8 (b)	
T1	457 - 436	Top Girt	C8x13.75	7	-1	68630	0.3	Pass
T2	436 - 421	Top Girt	L2 1/2x2x1/4	9	1112	32027	3.5	Pass
							9.6 (b)	
T3	421 - 401	Top Girt	L2 1/2x2x1/4	49	612	32027	1.9	Pass
							5.3 (b)	
T4	401 - 396	Top Girt	L2 1/2x2x1/4	77	-477	16310	2.9	Pass
							5.0 (b)	
T6	391 - 386	Top Girt	L2 1/2x2x1/4	130	675	33056	2.0	Pass
T10	371 - 366	Top Girt	L2 1/2x2x1/4	172	745	33056	2.3	Pass
T12	361 - 341	Top Girt	L2 1/2x2x1/4	184	666	32027	2.1	Pass
							5.7 (b)	
T13	341 - 321	Top Girt	L2 1/2x2x1/4	194	361	32027	1.1	Pass
							3.1 (b)	
T14	321 - 301	Top Girt	L2 1/2x2x1/4	241	378	32027	1.2	Pass
							3.3 (b)	
T15	301 - 281	Top Girt	L2 1/2x2x3/16	274	371	24516	1.5	Pass
							3.2 (b)	
T16	281 - 276	Top Girt	L2 1/2x2x1/4	307	321	32027	1.0	Pass
							2.8 (b)	
T18	271 - 266	Top Girt	L2 1/2x2x1/4	358	-740	16395	4.5	Pass

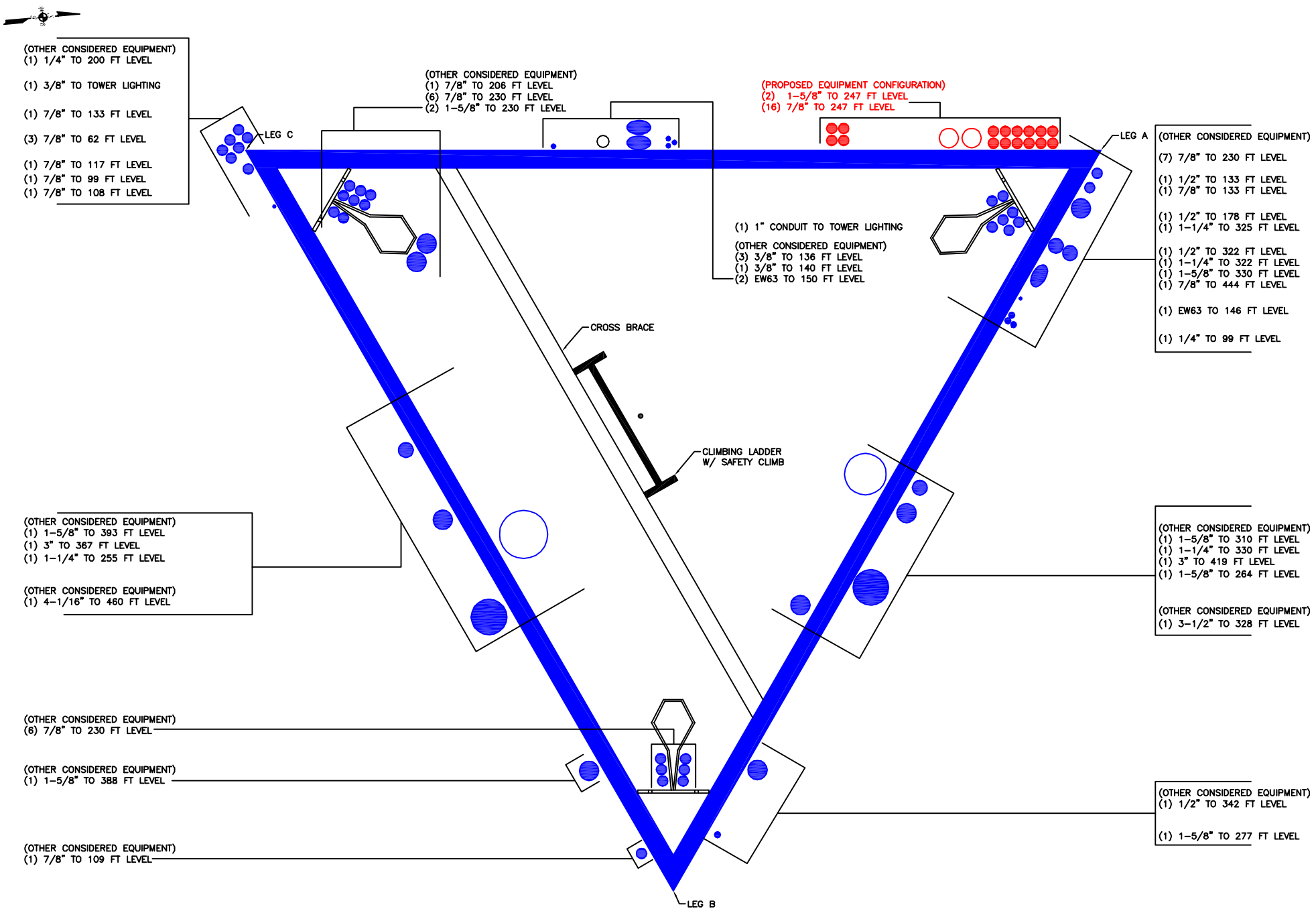
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							6.4 (b)	
T20	261 - 256	Top Girt	L2 1/2x2x3/16	370	-5333	12631	42.2	Pass
							46.0 (b)	
T22	251 - 246	Top Girt	L2 1/2x2x3/16	403	-5750	12631	45.5	Pass
							49.6 (b)	
T24	241 - 221	Top Girt	L2 1/2x2x3/16	413	-638	12631	5.1	Pass
							5.5 (b)	
T25	221 - 201	Top Girt	L2 1/2x2x3/16	430	610	24516	2.5	Pass
							5.3 (b)	
T26	201 - 181	Top Girt	L2 1/2x2x3/16	463	639	24516	2.6	Pass
							5.5 (b)	
T27	181 - 161	Top Girt	2L3x2x1/4x3/8	496	836	73267	1.1	Pass
							3.6 (b)	
T28	161 - 141	Top Girt	L2 1/2x2x3/16	529	758	24516	3.1	Pass
							6.5 (b)	
T29	141 - 121	Top Girt	L2 1/2x2x3/16	562	1569	24516	6.4	Pass
							13.5 (b)	
T30	121 - 101	Top Girt	L2 1/2x2x3/16	595	-7133	12763	55.9	Pass
							61.5 (b)	
T31	101 - 81	Top Girt	L2 1/2x2x3/16	628	804	24516	3.3	Pass
							6.9 (b)	
T32	81 - 61	Top Girt	L2 1/2x2x3/16	661	905	24516	3.7	Pass
							7.8 (b)	
T33	61 - 41	Top Girt	L2 1/2x2x3/16	692	937	24516	3.8	Pass
							8.1 (b)	
T34	41 - 20	Top Girt	L2 1/2x2x3/16	727	821	24516	3.3	Pass
							7.1 (b)	
T35	20 - 6.70833	Top Girt	2L2 1/2x2x3/16x1/4	789	16217	49003	33.1	Pass
							54.5 (b)	
T1	457 - 436	Mid Girt	L2 1/2x2x1/4	13	4139	32027	12.9	Pass
							35.7 (b)	
T3	421 - 401	Mid Girt	L2 1/2x2x1/4	80	-432	16310	2.6	Pass
							4.6 (b)	
T12	361 - 341	Mid Girt	L2 1/2x2x1/4	199	344	32027	1.1	Pass
							3.0 (b)	
T13	341 - 321	Mid Girt	L2 1/2x2x1/4	243	304	32027	0.9	Pass
							2.6 (b)	
T14	321 - 301	Mid Girt	L2 1/2x2x1/4	277	460	32027	1.4	Pass
							4.0 (b)	
T15	301 - 281	Mid Girt	L2 1/2x2x3/16	310	300	24516	1.2	Pass
							2.6 (b)	
T24	241 - 221	Mid Girt	L2 1/2x2x3/16	433	714	24516	2.9	Pass
							6.2 (b)	
T25	221 - 201	Mid Girt	L2 1/2x2x3/16	466	596	24516	2.4	Pass
							5.1 (b)	
T26	201 - 181	Mid Girt	L2 1/2x2x3/16	499	655	24516	2.7	Pass
							5.6 (b)	
T27	181 - 161	Mid Girt	L2 1/2x2x3/16	532	645	24516	2.6	Pass
							5.6 (b)	
T28	161 - 141	Mid Girt	L2 1/2x2x3/16	565	740	24516	3.0	Pass
							6.4 (b)	
T29	141 - 121	Mid Girt	L2 1/2x2x3/16	598	-8169	12763	64.0	Pass
							77.0 (b)	
T30	121 - 101	Mid Girt	L2 1/2x2x3/16	631	605	24516	2.5	Pass
							5.2 (b)	
T31	101 - 81	Mid Girt	L2 1/2x2x3/16	664	878	24516	3.6	Pass
							7.6 (b)	
T32	81 - 61	Mid Girt	L2 1/2x2x3/16	697	905	24516	3.7	Pass
							7.8 (b)	
T33	61 - 41	Mid Girt	L2 1/2x2x3/16	730	856	24516	3.5	Pass
							7.4 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T34	41 - 20	Mid Girt	L2 1/2x2x3/16	759	1324	24516	5.4 11.4 (b)	Pass
T1	457 - 436	Guy A@446.5	9/16	826	13546	22050	61.4	Pass
T8	381 - 376	Guy A@381	1 3/8	829	65884	146157	45.1	Pass
T21	256 - 251	Guy A@254.5	1 1/4	832	60290	120958	49.8	Pass
T29	141 - 121	Guy A@131	11/16	846	21496	31499	68.2	Pass
T1	457 - 436	Guy B@446.5	9/16	825	13549	22050	61.4	Pass
T8	381 - 376	Guy B@381	1 3/8	828	67195	146157	46.0	Pass
T21	256 - 251	Guy B@254.5	1 1/4	831	60540	120958	50.1	Pass
T29	141 - 121	Guy B@131	11/16	839	21358	31499	67.8	Pass
T1	457 - 436	Guy C@446.5	9/16	824	13494	22050	61.2	Pass
T8	381 - 376	Guy C@381	1 3/8	827	64381	146157	44.0	Pass
T21	256 - 251	Guy C@254.5	1 1/4	830	59354	120958	49.1	Pass
T29	141 - 121	Guy C@131	11/16	833	20796	31499	66.0	Pass
T8	381 - 376	Top Guy Pull-Off@381	2L3x2x1/4x3/8	142	21289	73267	29.1 91.8 (b)	Pass
T29	141 - 121	Torque Arm Top@131	L3x3x3/16 (TA - BU#873128)	848	18571	37082	50.1	Pass
T29	141 - 121	Torque Arm Bottom@131	2L3x3x3/16x3/4	850	-23949	33027	72.5	Pass
						Summary		
						Leg (T35)	83.6	Pass
						Diagonal (T21)	86.0	Pass
						Horizontal (T2)	13.2	Pass
						Secondary Horizontal (T21)	61.4	Pass
						Top Girt (T30)	61.5	Pass
						Mid Girt (T29)	77.0	Pass
						Guy A (T29)	68.2	Pass
						Guy B (T29)	67.8	Pass
						Guy C (T29)	66.0	Pass
						Top Guy Pull-Off (T8)	91.8	Pass
						Torque Arm Top (T29)	50.1	Pass
						Torque Arm Bottom (T29)	72.5	Pass
						Bolt Checks	91.8	Pass
						RATING =	**91.8**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 873128 TOWER ID: C_BASELEVEL

APPENDIX C

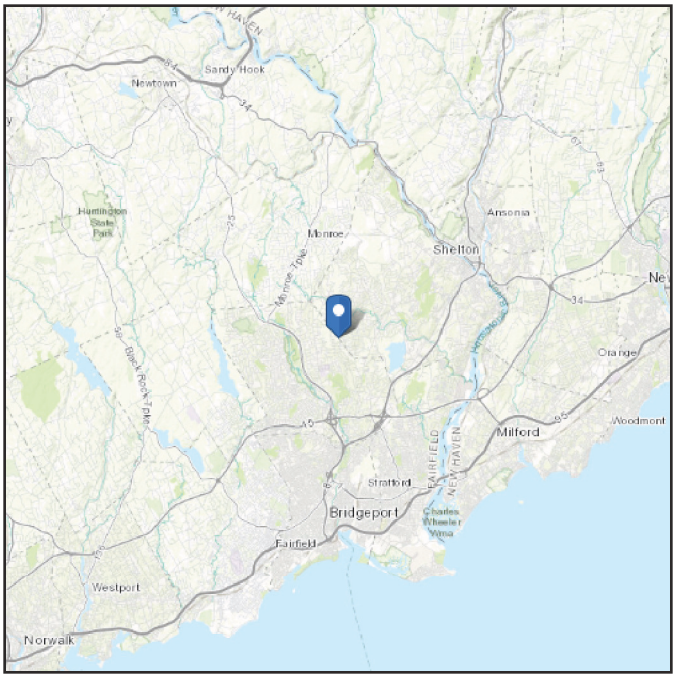
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 519.67 ft (NAVD 88)
Latitude: 41.27896
Longitude: -73.18511



Wind

Results:

Wind Speed:	122 Vmph	Connecticut State Building Code Wind speed: 125mph
10-year MRI	76 Vmph	
25-year MRI	86 Vmph	
50-year MRI	92 Vmph	
100-year MRI	99 Vmph	

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

Date Accessed: Mon Aug 27 2018

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

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

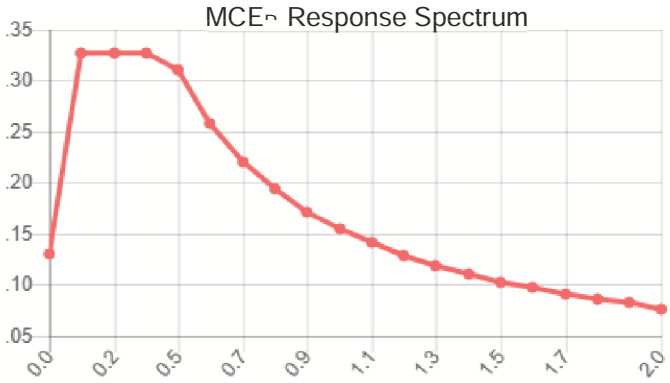
Seismic

Site Soil Class: D - Stiff Soil

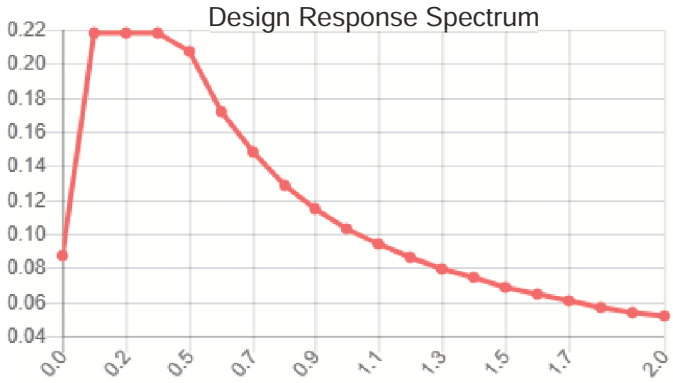
Results:

S_S :	0.204	S_{DS} :	0.218
S_1 :	0.065	S_{D1} :	0.103
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.110
S_{MS} :	0.327	PGA_M :	0.174
S_{M1} :	0.155	F_{PGA} :	1.580
		I_e :	1

Seismic Design Category B



S_a (g) vs T(s)



S_a (g) vs T(s)

Data Accessed: Mon Aug 27 2018

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Aug 27 2018

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

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

Project Name:	Trumbull	**Engineer:**	JRM
Project Number:	25575.191102	**Check:**	ECL
Client Site Number:	BU 873128	**Date:**	12/11/18
		Code:	TIA-222-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F - - - Elevations: 381' - 401'

ϕc =	0.90	- LRFD strength reduction factor (compression)
ϕT =	0.90	- LRFD strength reduction factor (tension)
ϕw =	0.75	- LRFD strength reduction factor (weld shear)
ϕv =	0.75	- LRFD strength reduction factor (shear)

Input - Loads

$P_{initial}$:	30.0	kips - force from initial load (no wind)
P_{wind}:	158.1	kips - force due to final loading including reinforcement
T_u:	127.3	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	58.2%
Crushing Check:	72.6%
Leg Comp. Check:	58.0%
Sleeve Check:	42.0%
Built-up Check:	67.3%
Slenderness Check:	OK
Leg Tension Check:	57.8%

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

Input - Tower Leg 3" Dia. SR

K:	1.00	- effective length factor for leg
L_u:	5.00	ft - unbraced length of tower leg
F_{y_leg}:	33.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	60.00	ksi - minimum specified ultimate strength of tower leg
r:	0.75	in - minimum radius of gyration of tower leg
A_{leg}:	7.07	in^2 - area of tower leg
Di:	0.00	in - inside diameter of tower leg
t_{leg}:	1.50	in - thickness of tower leg
f`c:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F 1 Sleeve: 3.75" OD Inner Sleeve & 3STD Outer Sleeve

F_{y_sleeve}:	35.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	60.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.51	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	1.16	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	1.11	in^2 - area of sleeve r/f
t_{sleeve}:	0.22	in - thickness of tower leg

Termination: Connected to Leg ONLY

Input - Sleeve Connection to Leg

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

Input - Built-up Leg Section

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

Input - Leg w/ Single Sleeve

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

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Trumbull	**Engineer:**	JRM
Project Number:	25575.191102	**Check:**	ECL
Client Site Number:	BU 873128	**Date:**	12/11/2018
Elevation:	361 - 381	**Code:**	TIA-222-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

Φc =	0.90	- LRFD strength reduction factor (compression)	Mast St.: 1.00 - from tnxTower
ΦT =	0.90	- LRFD strength reduction factor (tension)	
Φw =	0.75	- LRFD strength reduction factor (weld shear)	
Φv =	0.75	- LRFD strength reduction factor (shear)	

Input - Loads

$P_{initial}$:	30.0	kips - force from initial load (no wind)
P_{wind}:	164.1	kips - force due to final loading including reinforcement
T_u:	84.5	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	62.3%
Crushing Check:	55.2%
Leg Comp. Check:	49.4%
Sleeve Check:	37.2%
Built-up Check:	58.7%
Slenderness Check:	OK
Leg Tension Check:	28.2%

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

Input - Tower Leg

3.5" SR

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

Input - Sleeve R/F

3.5 STD Gap Check: OK

F_{y_sleeve}:	35.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	60.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.58	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	1.34	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	1.34	in^2 - area of sleeve r/f
t_{sleeve}:	0.23	in - thickness of sleeve r/f

Termination: Connected to Leg ONLY

Input - Sleeve Connection to Leg

a:	6.00	in - spacing of connectors connecting the sleeve to the leg
D:	3.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	3.00	in - length of weld on each side of the leg at the termination
Length ⊥:	0.00	in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	4.00	in - maximum width of the built-up leg
Gap:	12.00	in - length of leg considered for crushing

Input - Built-up Leg Section

3.5" SR w/3.5 STD Half Sleeve

r_{x_bu}:	0.93	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	0.94	in - minimum radius of gyration of the built-up section about the y-axis

Bearing: 48.0% **Rating per TIA-222-H, Section 15.5*

Pad		
Width at the top of the pad (ft)	**Width at the bottom of the pad (ft)**	**Thickness of the pad (ft)**
10.50	10.50	2.00

Pier			
Width at the top of the pier (ft)	**Width at the bottom of the pier (ft)**	**Length of the pier (ft)**	**Pier Extension above grade (ft)**
4.50	10.00	3.00	0.50

Soil Density (kcf)	**Depth to base of foundation (ft)**	**Factored Vertical Load (kip)**	**Factored Horizontal Load (kip)**
0.115	5.00	472.2	8.86

Weight of Concrete	57.86	**kip**
W_c (Replaced)	13.65	**kip**
Weight of Soil	18.54	**kip**
Total Vertical Load	563.85	**kip**
Moment	44.29	**kip-ft**
Section Modulus - S	136.43	**ft^3**
Area - A	110.25	**ft^2**
Min. Pressure - q_{min}	4.79	**ksf**
Max Pressure - q_{max}	5.44	**ksf**

All. Pressure - q_{all}	6.00	**ksf**	**Net Bearing Pressure?**	No
Factor of Safety	3			
ϕ	**0.6**			
ϕq_n	**10.8**			

Lateral: 5.1%

Coefficient of Friction (μ)	**Friction Angle (ϕ) (Degrees)**	**Cohesion (ksf)**
0.4	34	0

K_P	3.54	
$Pressure_{Top}$	1.22	**ksf**
$Pressure_{Bottom}$	2.03	**ksf**
Force from pressure	34.17	**kip**
Force from friction	187.95	**kip**
ϕ	**0.75**	
ϕR_n	**166.59**	**kip**

Deadman Anchor Analysis: A - Anchor Path

Project Name: Trumbull
Job #: TEP No. 25575.201175
Client: BU 873128
Analysis by: JRM
Checked by: ECL

Anchor Block is Adequate for Uplift	**20.2%**
Anchor Block is Adequate for Lateral	**57.0%**

*Rating per TIA-222-H, Section I 5.5

Loads

U_{max}: 99.74 kips - maximum uplift reaction
H_{max}: 143.79 kips - maximum horizontal reaction

Capacity

U_{all}: 471.17 kips - allowable uplift
H_{all}: 240.17 kips - allowable horizontal

Foundation Input

Guy Path: A
Anchor Ring: Anchor Path

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

Ultimate Soil Properties

D_w: 8.50 ft - depth from t/ grade to water table

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

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

Layer	Begin (ft)	End (ft)	ϕ Friction Angle (deg)	c Ult. Cohesion (psf)	γ Eff. Unit Weight (pcf)	f_s Ult. Skin Friction (ksf)	μ Friction Factor
1	0.00	2.00	33.00	0.00	115.00	0.00	0.00
2	2.00	3.50	0.00	0.00	115.00	0.00	0.40
3	3.50	4.00	33.00	0.00	115.00	0.36	0.40
4	4.00	5.30	41.00	0.00	125.00	0.65	0.40
5							
6							

Weight: 191.29

Analysis Criteria

Uplift:	F_{s_sides}=	21.68	Yes	Horizontal:	F_{s_sides} =	31.26	Yes
	F_{s_front}=	23.65	Yes		F_{s_top} =	0.00	No
	F_{s_back}=	0.00	No		F_{s_bottom} =	0.00	No
					$F_{\perp} \cdot \mu$ =	183.31	Yes

Deadman Anchor Analysis: B - Anchor Path

Project Name: Trumbull
Job #: TEP No. 25575.201175
Client: BU 873128
Analysis by: JRM
Checked by: ECL

Anchor Block is Adequate for Uplift	**41.9%**
Anchor Block is Adequate for Lateral	**22.6%**
Concrete Block is Adequate for Lateral	**76.7%**
Concrete Block is Adequate for Overturning	**38.9%**

*Rating per TIA-222-H, Section 15.5

Loads

U_1: 86.20 kips - uplift reaction (block front)
H_1: 104.19 kips - maximum horizontal reaction (block
U_2: 13.32 kips - uplift reaction (block back)
H_2: 40.02 kips - maximum horizontal reaction (block back)

Capacity

U_{all}: 196.02 kips - allowable uplift
H_{all}: 438.94 kips - allowable horizontal

Foundation Input

Guy Path: B
Anchor Ring: Anchor Path

W_b: 7.00 ft - width of anchor block
L_b: 6.00 ft - length of anchor block
T_b: 5.50 ft - thickness of anchor block
d: 4.30 ft - depth from t/ grade to t/ anchor block
b: 9.80 ft - depth from t/ grade to b/ anchor block

Ultimate Soil Properties

D_w: 8.50 ft - depth from t/ grade to water table

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

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

Layer	Begin (ft)	End (ft)	ϕ Friction Angle (deg)	c Ult. Cohesion (psf)	γ Eff. Unit Weight (pcf)	f_s Ult. Skin Friction (ksf)	μ Friction Factor
1	0.00	2.30	0.00	0.00	115.00	0.00	0.00
2	2.30	3.50	34.00	0.00	115.00	0.00	0.40
3	3.50	4.30	0.00	5000.00	135.00	2.32	0.40
4	4.30	8.50	0.00	5000.00	135.00	2.32	0.40
5	8.50	9.80	0.00	5000.00	72.60	2.32	0.40
6							

Analysis Criteria

Uplift:	F_{s_sides}=	113.87	Yes	Horizontal:	F_{s_sides} =	137.65	Yes
	F_{s_front}=	76.56	Yes		F_{s_top} =	0.00	No
	F_{s_back}=	0.00	No		F_{s_bottom} =	0.00	No
					$F_{\perp} \cdot \mu$ =	88.81	Yes

Deadman Anchor Analysis: C - Anchor Path

Project Name: Trumbull
Job #: TEP No. 25575.201175
Client: BU 873128
Analysis by: JRM
Checked by: ECL

Anchor Block is Adequate for Uplift	**68.4%**
Anchor Block is Adequate for Lateral	**49.2%**
Concrete Block is Adequate for Lateral	**74.9%**
Concrete Block is Adequate for Overturning	**38.1%**

*Rating per TIA-222-H, Section 15.5

Loads

U_1: 82.80 kips - uplift reaction (block front)
H_1: 102.43 kips - maximum horizontal reaction (block
U_2: 13.12 kips - uplift reaction (block back)
H_2: 39.10 kips - maximum horizontal reaction (block back)

Capacity

U_{all}: 115.26 kips - allowable uplift
H_{all}: 198.44 kips - allowable horizontal

Foundation Input

Guy Path: C
Anchor Ring: Anchor Path

W_b: 7.00 ft - width of anchor block
L_b: 6.00 ft - length of anchor block
T_b: 5.50 ft - thickness of anchor block
d: 4.30 ft - depth from t/ grade to t/ anchor block
b: 9.80 ft - depth from t/ grade to b/ anchor block

Ultimate Soil Properties

D_w: 8.50 ft - depth from t/ grade to water table

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

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

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

Analysis Criteria

Uplift:	F_{s_sides}=	44.43	Yes	Horizontal:	F_{s_sides} =	54.96	Yes
	F_{s_front}=	30.29	Yes		F_{s_top} =	0.00	No
	F_{s_back}=	0.00	No		F_{s_bottom} =	0.00	No
					$F_{\perp} \cdot \mu$ =	86.65	Yes

Date: **September 4, 2018**

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Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300,
Charlotte, NC 28277
(704) 405-6607

Tectonic
1279 Route 300
Newburgh, NY 12550
(845) -567-6656

Subject:	**Mount Replacement Analysis Report- Rev 1**	
Carrier Designation:	**T-Mobile Tower Equipment**	
	Carrier Site Number:	CT11203B
	Carrier Site Name:	Trumbul/Rt. 108
Crown Castle Designation:	**Crown Castle BU Number:**	873128
	Crown Castle Site Name:	Trumbull
	Crown Castle JDE Job Number:	510739
	Crown Castle PO Number:	1244376
	Crown Castle Application Number:	444687 Rev 0
Engineering Firm Designation:	**Tectonic Project Number:**	9500.873128 Rev 1
Site Data:	**800 Booth Hill Rd., Trumbull, Fairfield County, CT 06611** **Latitude 41° 16' 44.26" Longitude 73° 11' 6.40"**	
Structure Information:	**Tower Height & Type:**	**457 ft Guyed Tower**
	Mount Elevation:	**247 ft**
	Mount Type:	**12.5 ft Sector Mount**

Dear Charles,

Tectonic Engineering & Surveying Consultants P.C. (Tectonic) is pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore, is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

Based upon our analysis, we have determined the adequacy of the antenna mounting system that will support the existing and proposed loading to be:

Sector Mount (Typical of 3) **Sufficient**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.00 and Risk Category II were used in this analysis.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Swati Gandhi \ KZ

Respectfully Submitted by:

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

9/4/18

Antonio A. gualtieri, P.E.
Sr. Vice President

TABLE OF CONTENTS

1) INTRODUCTION

The existing mount will not be adequate to support the proposed T-Mobile upgrade. As such, it will be replaced with a new mounting system.

The proposed antenna mounting system can be categorized as Sector Mount to be installed at the 247 ft elevation above ground level.

Based on the documents referenced below, the proposed mounting system is a sector mount (PN # VFA12-HD), as manufactured by SitePro1. The member sizes for the analysis are therefore, based on mount assembly drawings and information provided by the manufacturer.

2) ANALYSIS CRITERIA

The structural analysis was performed in accordance with the requirements of ANSI/TIA-222-G-2005 "Structural Standard for Antenna Supporting Structures and Antennas" using a nominal 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75 inch escalated ice thickness, Exposure B and Topographic Category 1. In addition, the mount has been analyzed for various live loading conditions consisting of a 250-pound man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a nominal 3-second gust wind speed of 30 mph.

Table 1 - Proposed Equipment Loading Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
247	247	3	RFS/Celwave	APXVAARR24_43-U-NA20	12.5 ft Heavy Duty V-Frame Assembly with two stiff arms	-
		6	RFS/Celwave	FDBL5003D-S		
		3	Ericsson	RADIO 4449 B12/B71		

Table 2 - Existing Antenna and Cable Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
247	247	3	Ericsson	APX16DWV-16DWVS-C	-	1
		3	Ericsson	KRY 112 489/2		
		3	RFS/Celwave	ATMAA1412D-1A20		
		3	Ericsson	LNX-6515DS-A1M	Sector Mount	2
		3	RFS/Celwave	ATBT-BOTTOM-24V		

Notes:
1) Existing Equipment to be installed on the proposed mount.
2) Existing Equipment to be removed, not considered in this analysis.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER STRUCTURAL ANALYSIS REPORTS	Tower Engineering Professionals	6016497	CCISITES
MOUNT ASSEMBLY DRAWINGS (VFA12-HD)	SitePro1	-	ON FILE
SITE PHOTOS	-	-	CCISITES

3.1) Analysis Method

RISA-3D (16.0.0), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Proprietary excel sheets were used to calculate appurtenance and member loading for various load cases. Selected output from the analysis is included in Appendix B

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

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

4) ANALYSIS RESULTS

Table 4(a) - Mount Component Stresses vs. Capacity (Sector Mount; All Sector)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	247	56	Pass
	Standoff Horizontal		36	Pass
	Standoff Vertical		33	Pass
	Stiff Arm		11	Pass
	Mount Pipe		46	Pass

Tieback End Reaction (Max)	2711 lbs

Structure Rating (max from all components) =	56%

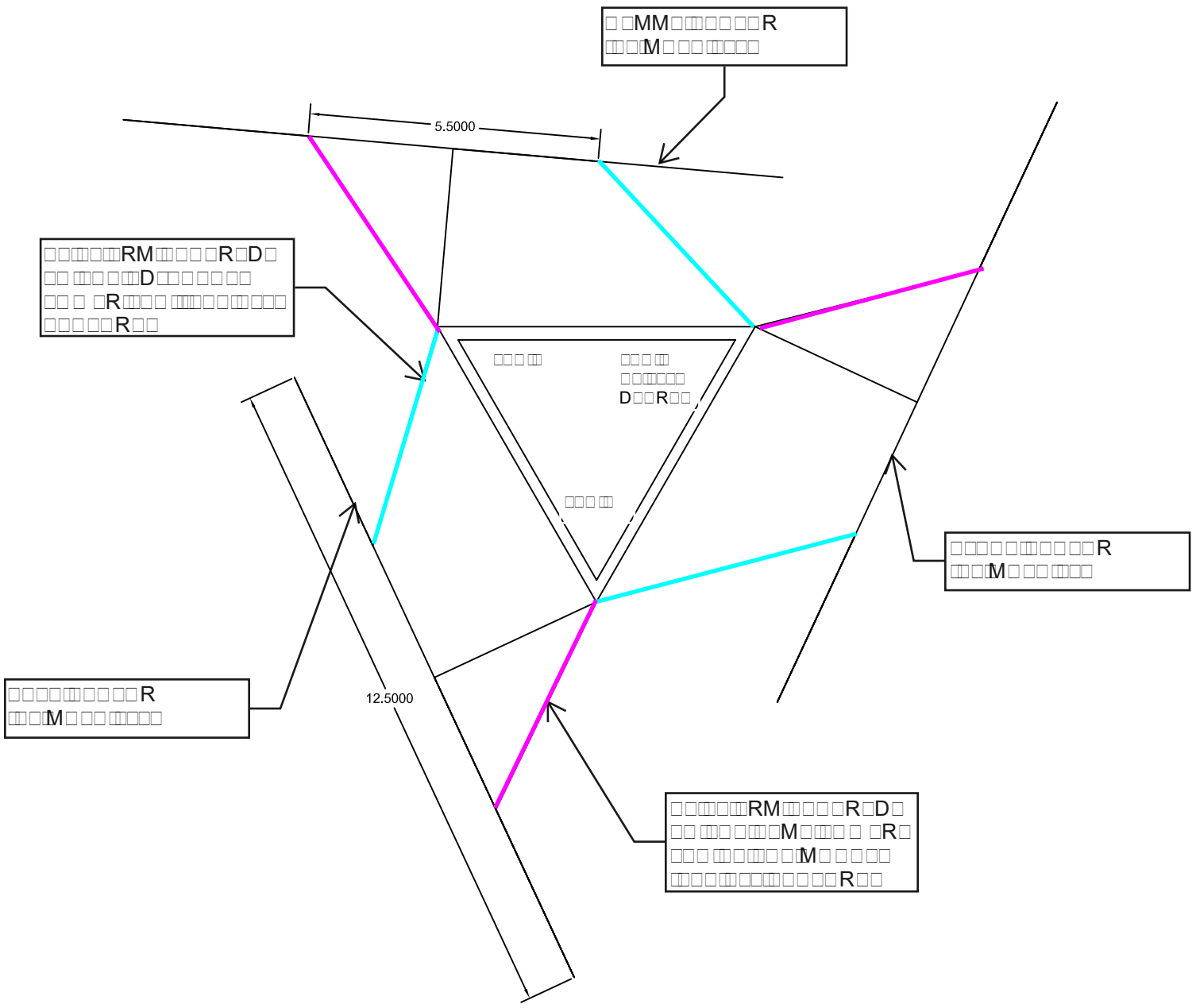
Note:
1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.

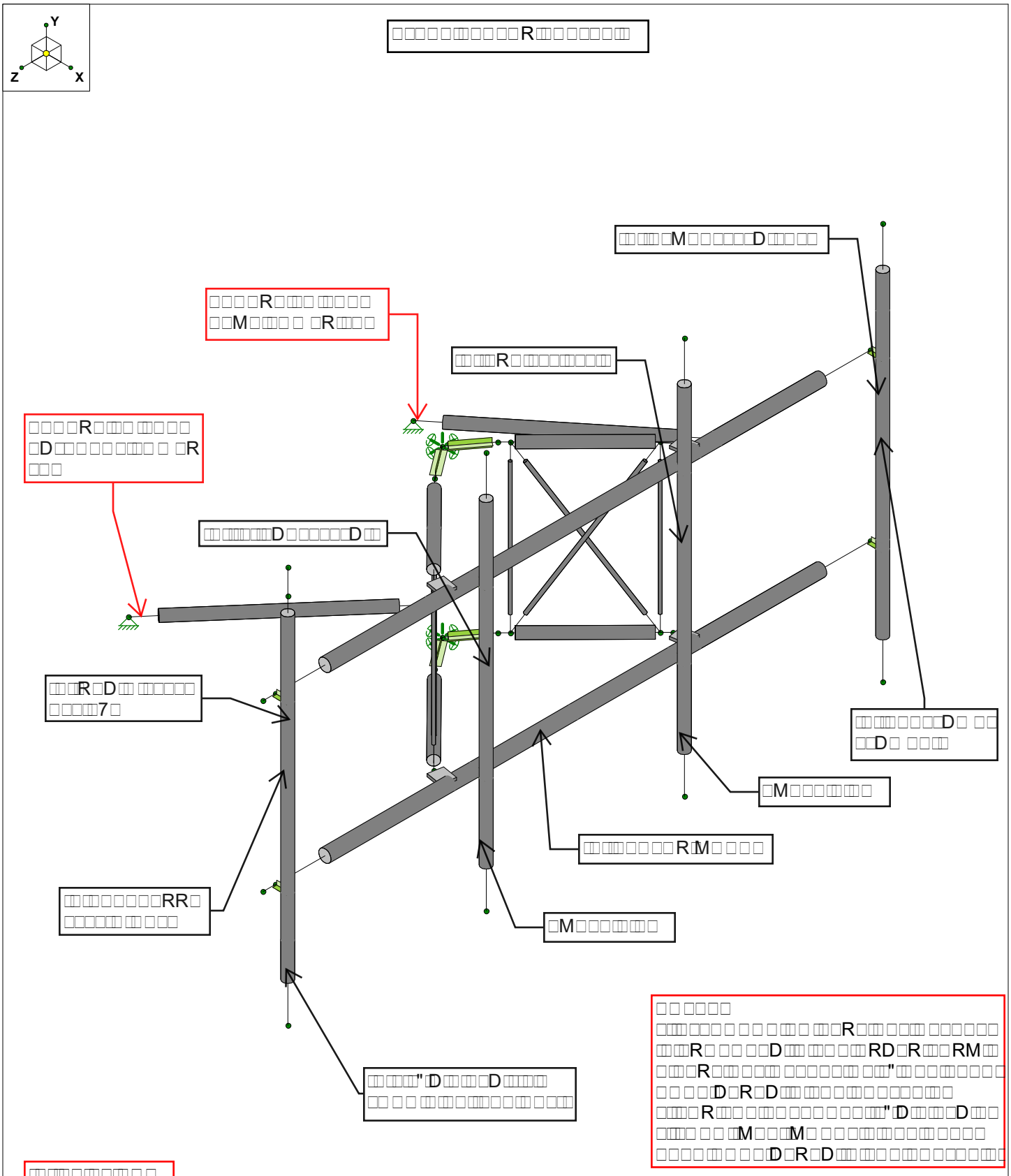
4.1) Recommendations

The proposed 12.5 ft Heavy Duty V-Frame Assembly with two stiff arms (PN # VFA12-HD) as manufactured by SitePro1, referenced herein, will be sufficient to support the existing and proposed equipment.

APPENDIX A

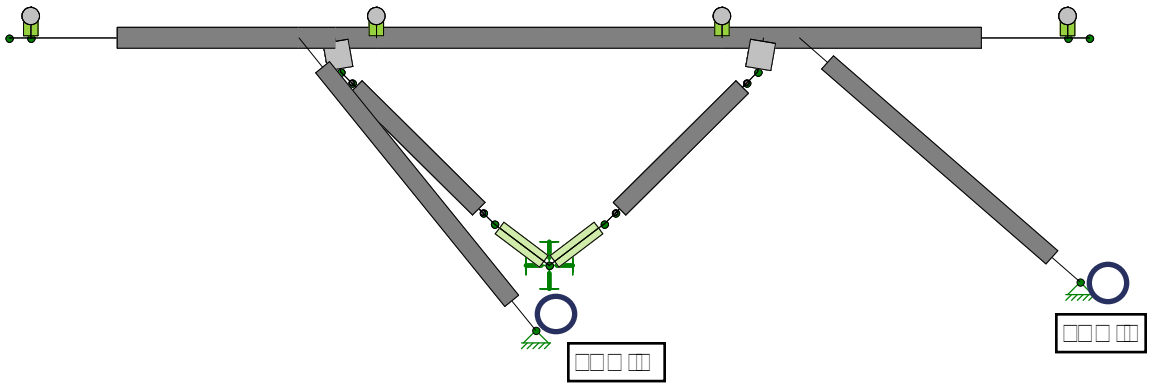
WIRE FRAME AND RENDERED MODELS


5.5000
12.5000



Envelope Only Solution

Tectonic	All Sector	SK - 1
SM		Aug 30, 2018 at 12:39 PM
9500.873128		9500.873128 Mount Analysis-All S...



Envelope Only Solution

Tectonic	All Sector	SK - 1
SM		Aug 31, 2018 at 4:30 PM
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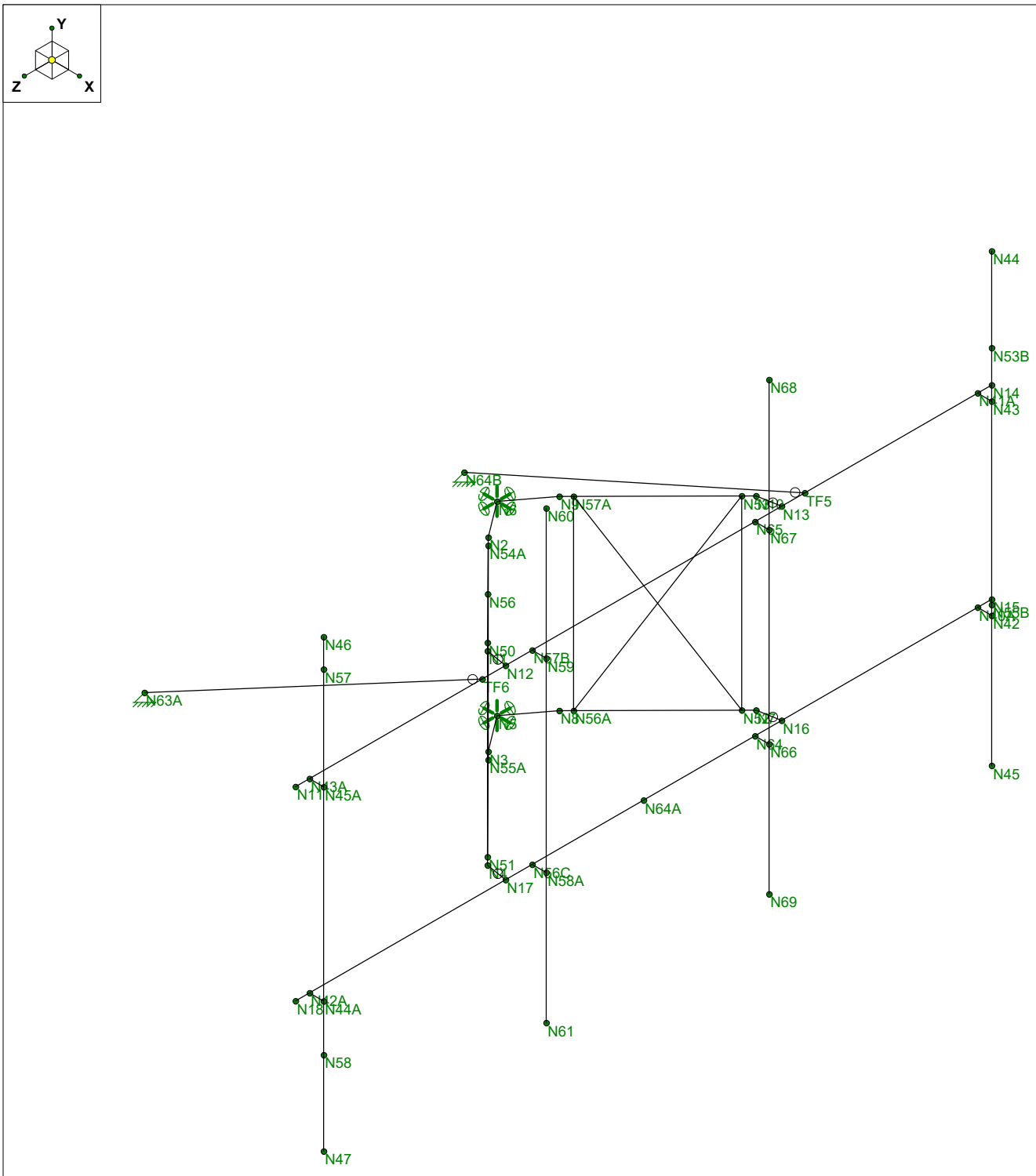

Envelope Only Solution

Tectonic	All Sector	SK - 2
SM		Aug 30, 2018 at 12:41 PM
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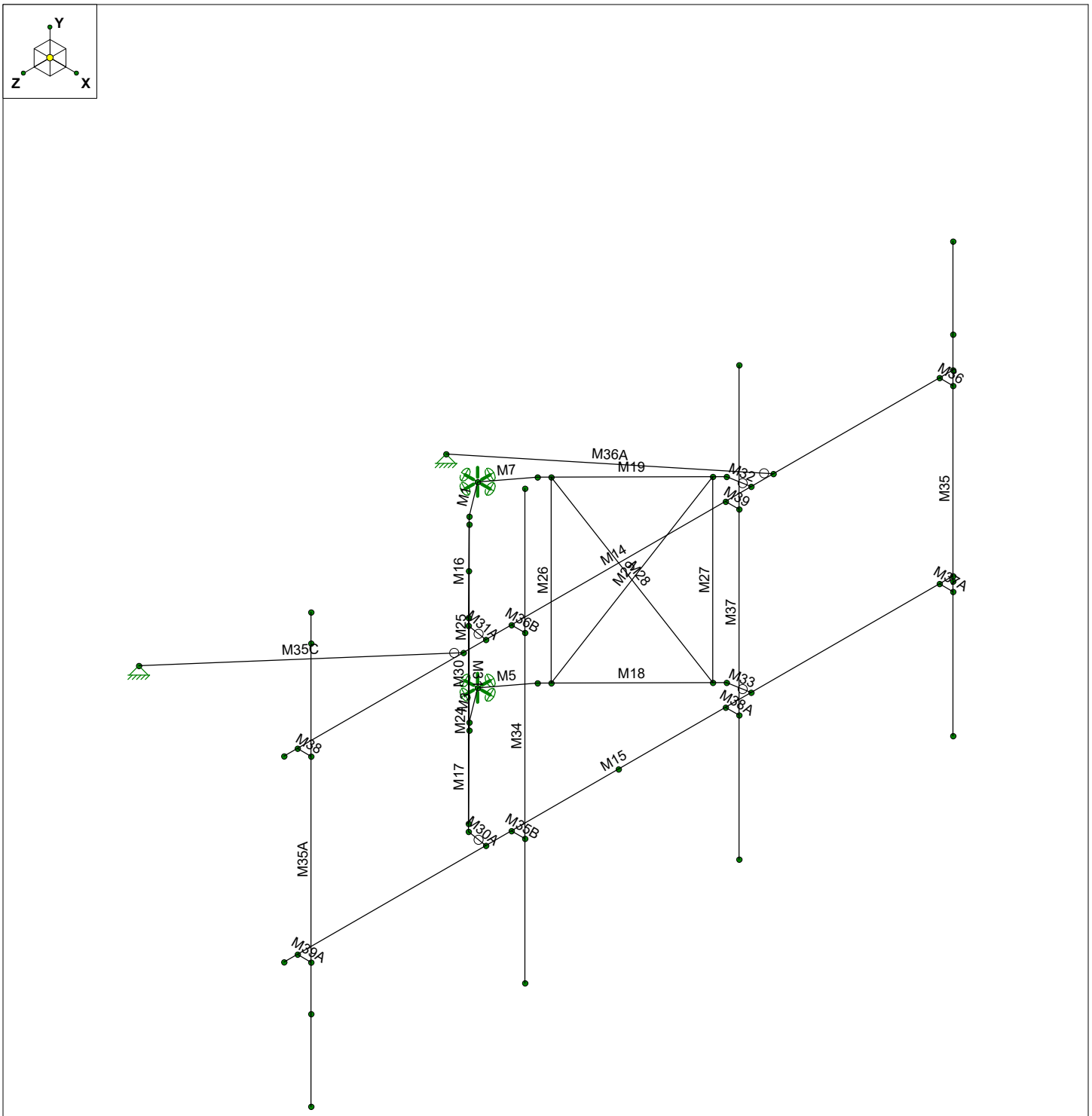

Envelope Only Solution

Tectonic	All Sector	SK - 3
SM		Aug 30, 2018 at 12:41 PM
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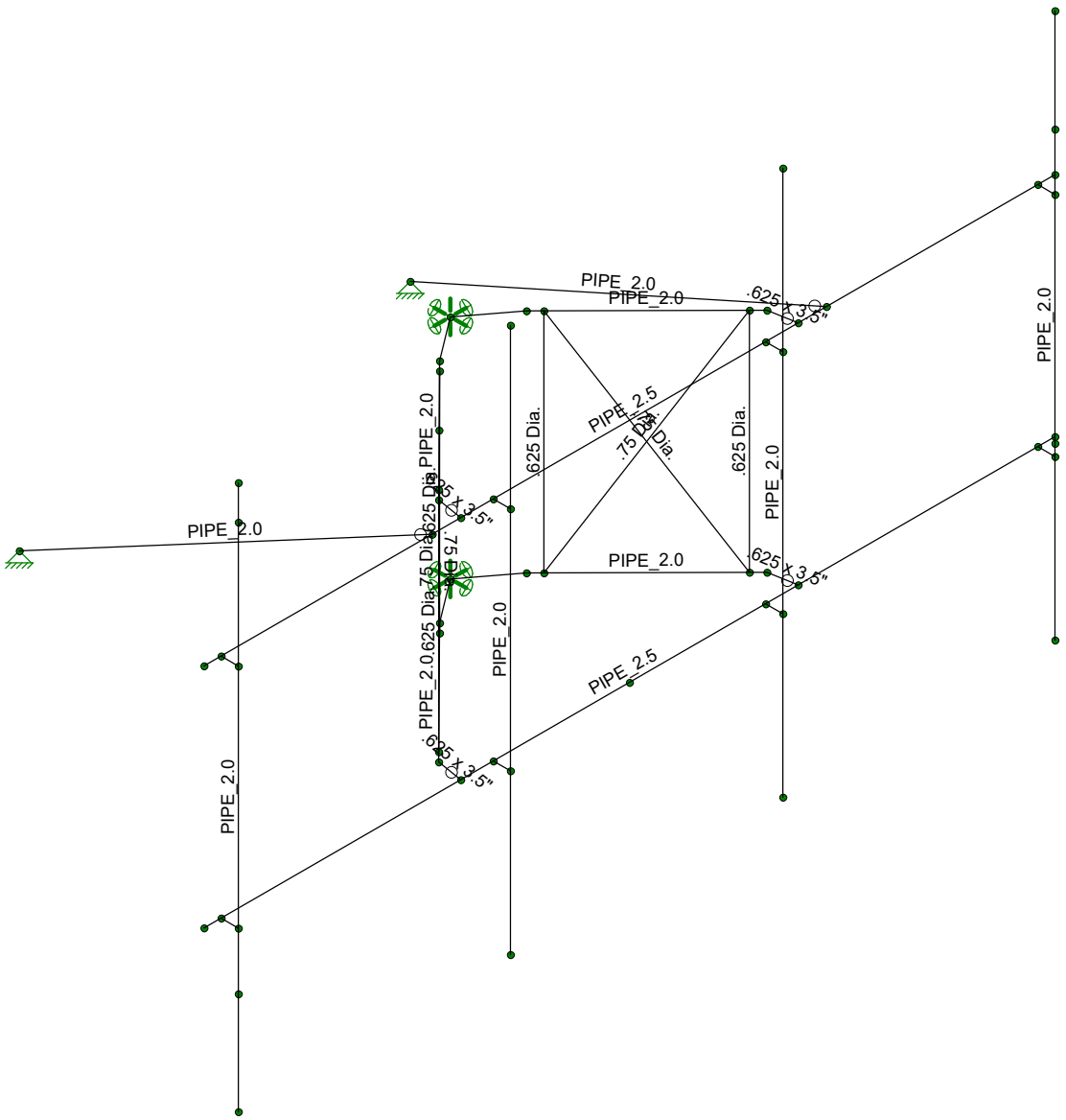
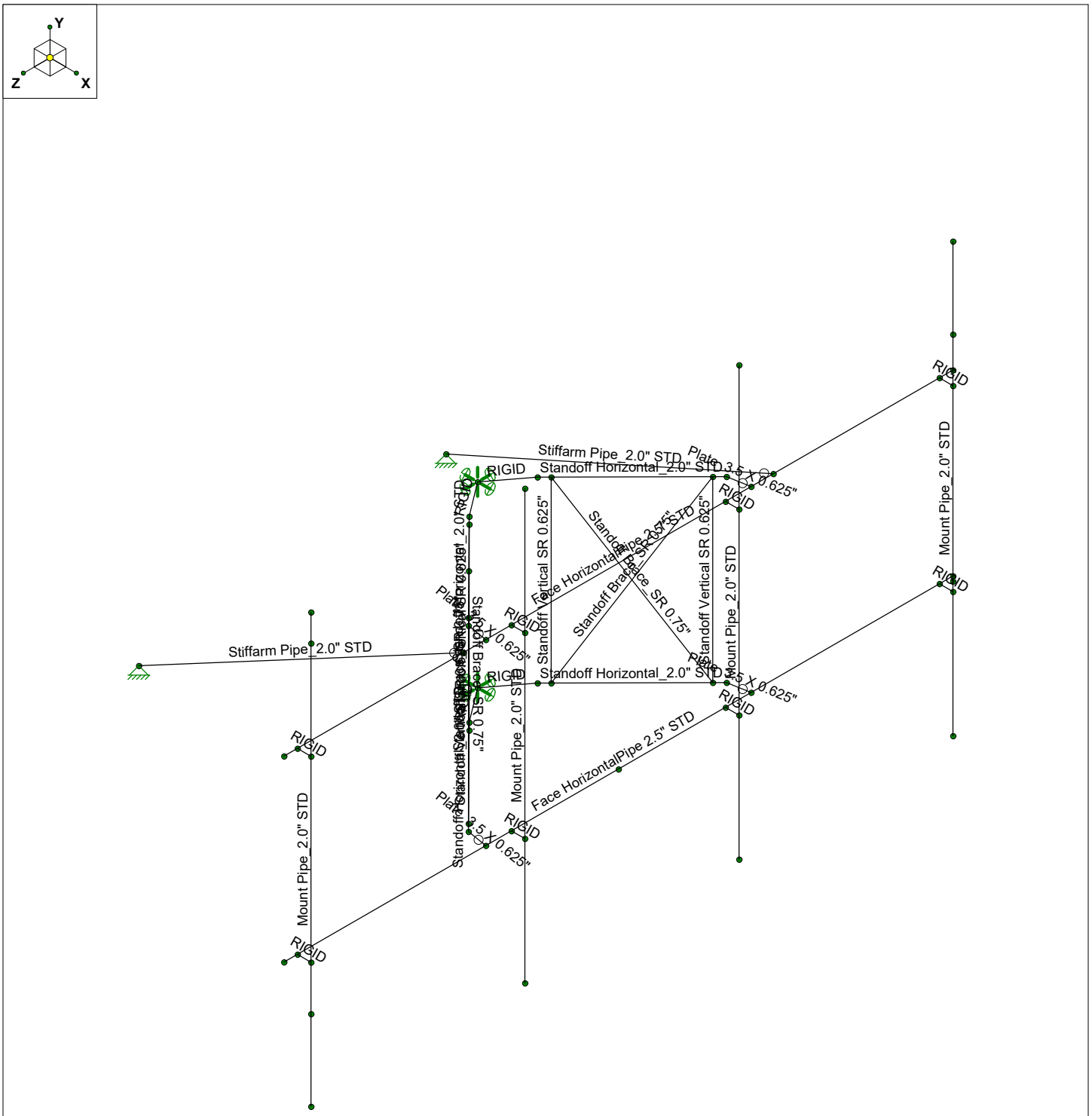


Envelope Only Solution

Tectonic	All Sector	SK - 4
SM		Aug 30, 2018 at 12:41 PM
9500.873128		9500.873128 Mount Analysis-All S...



Envelope Only Solution

Tectonic	All Sector	SK - 5
SM		Aug 30, 2018 at 12:41 PM
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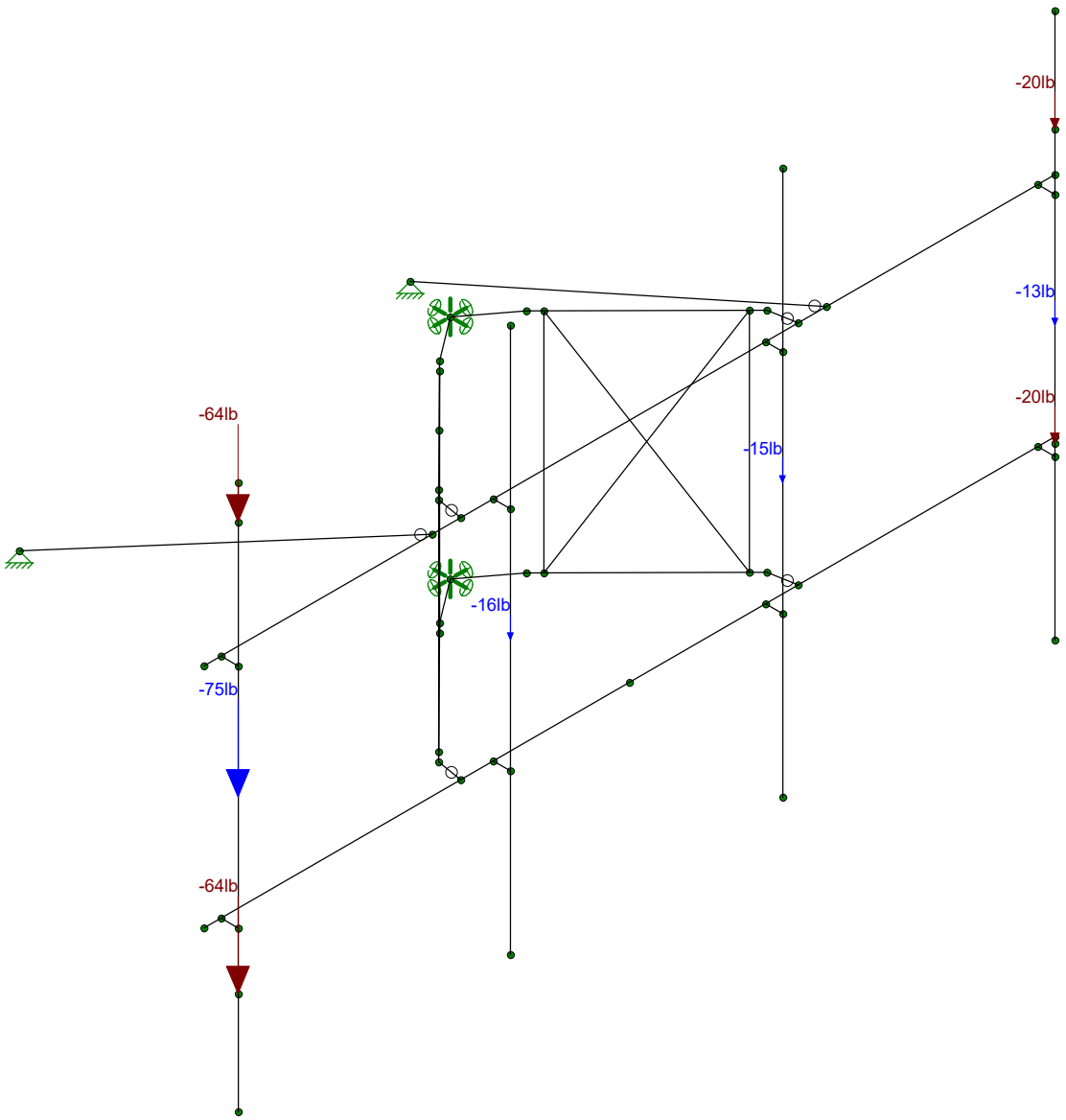

Loads: BLC 1, DEAD LOAD
Envelope Only Solution

Tectonic	All Sector	SK - 6
SM		Aug 30, 2018 at 12:41 PM
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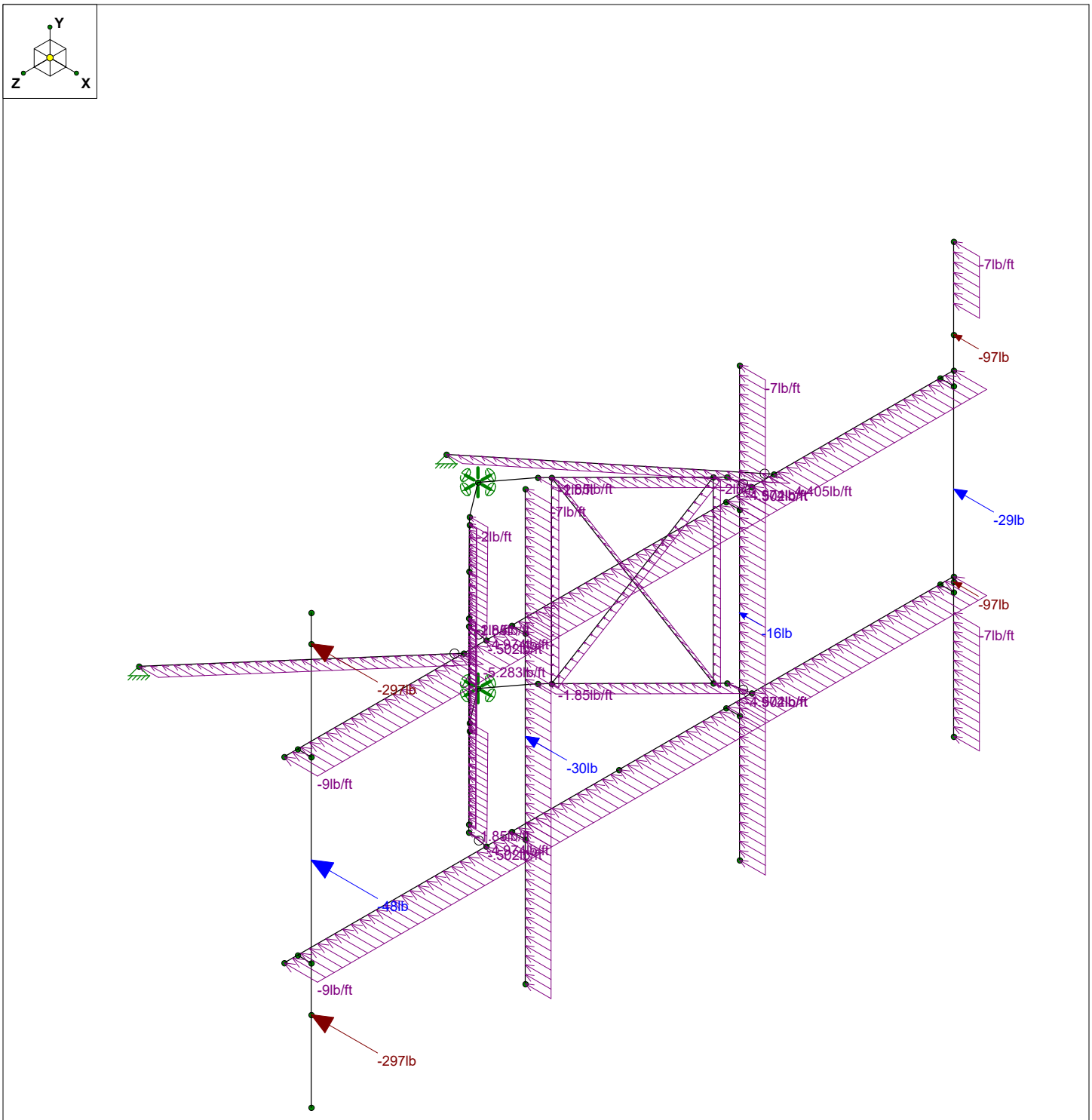
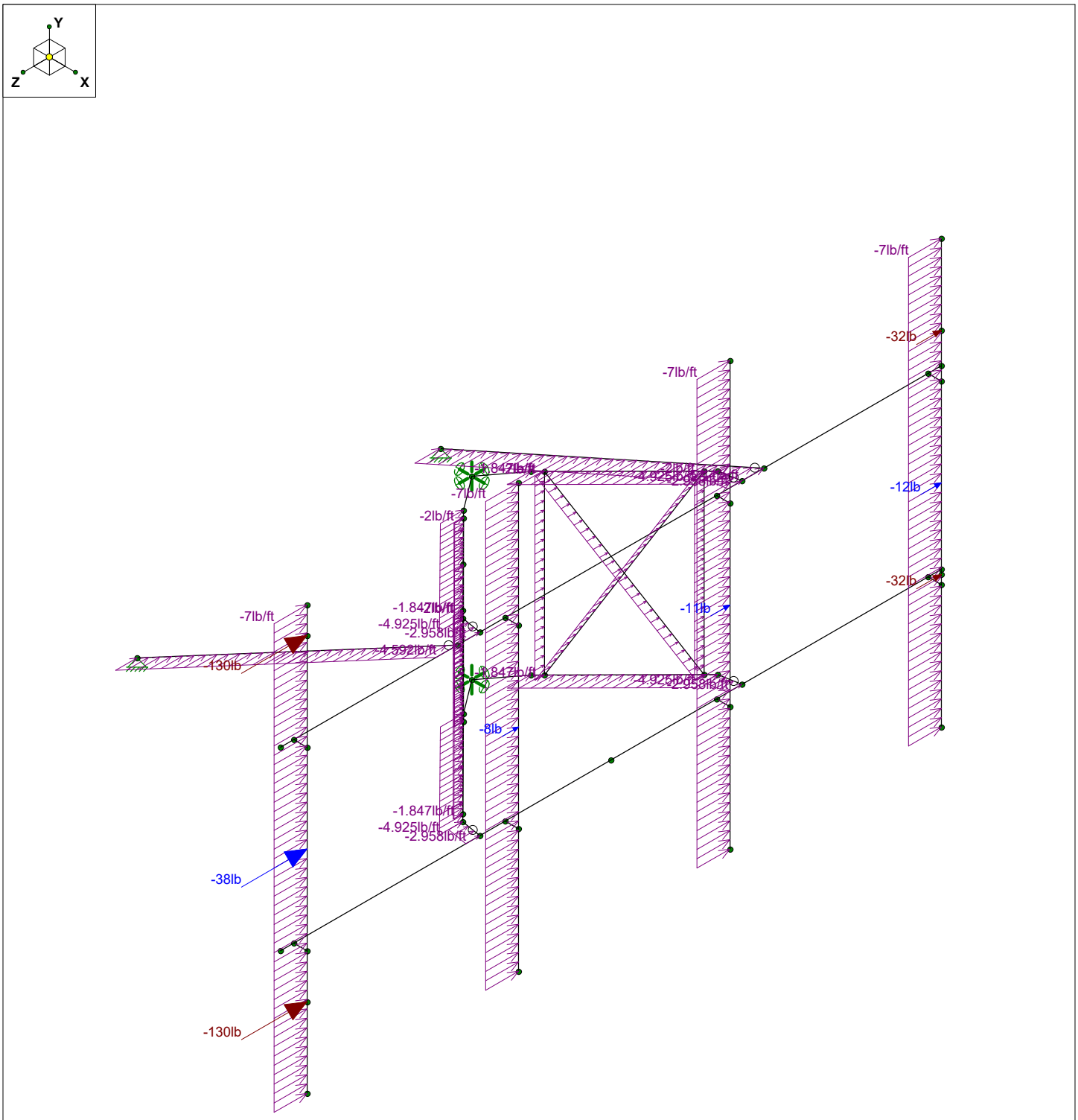


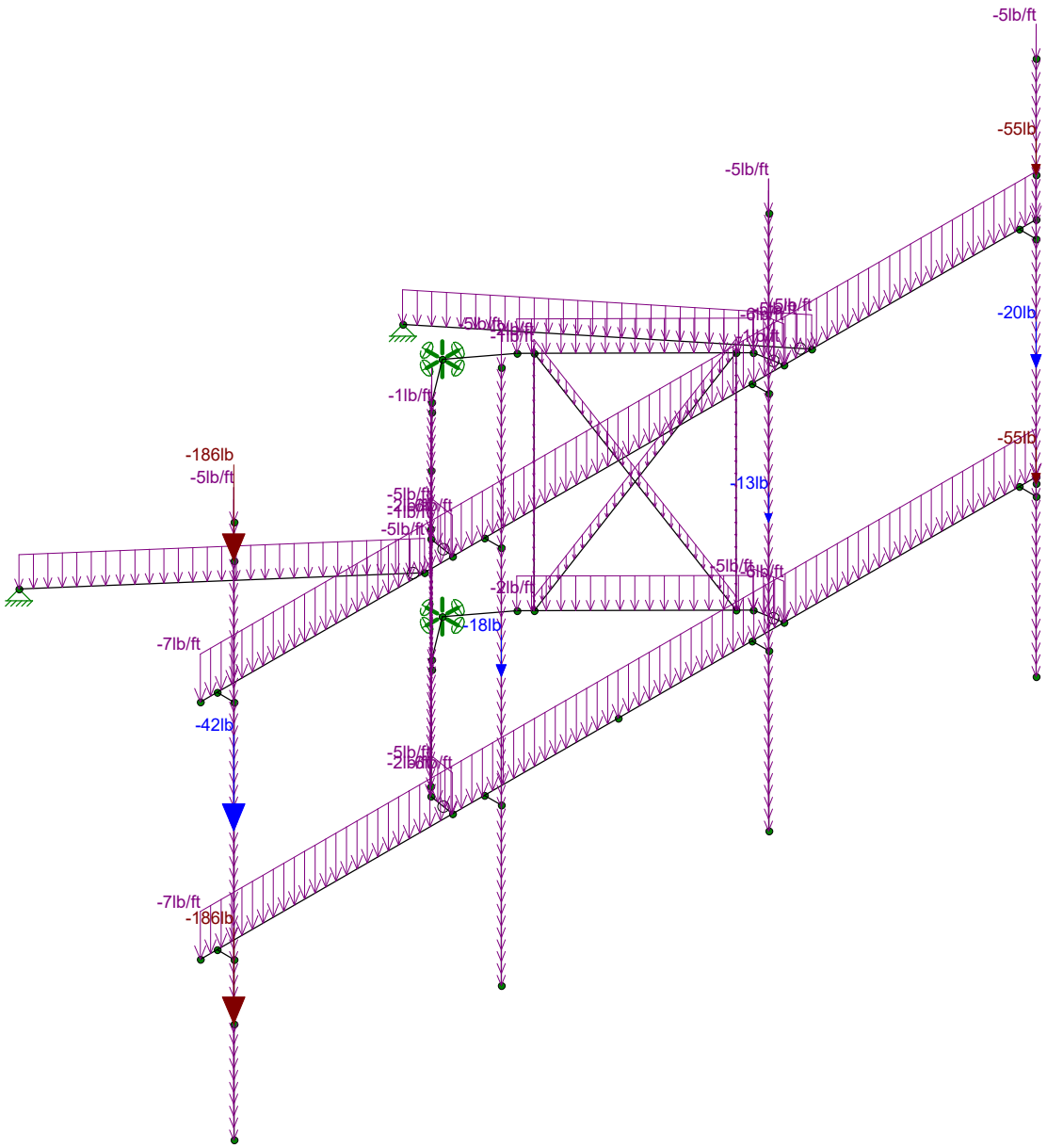
Loads: BLC 2, WIND X
Envelope Only Solution

Tectonic	All Sector	SK - 7
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



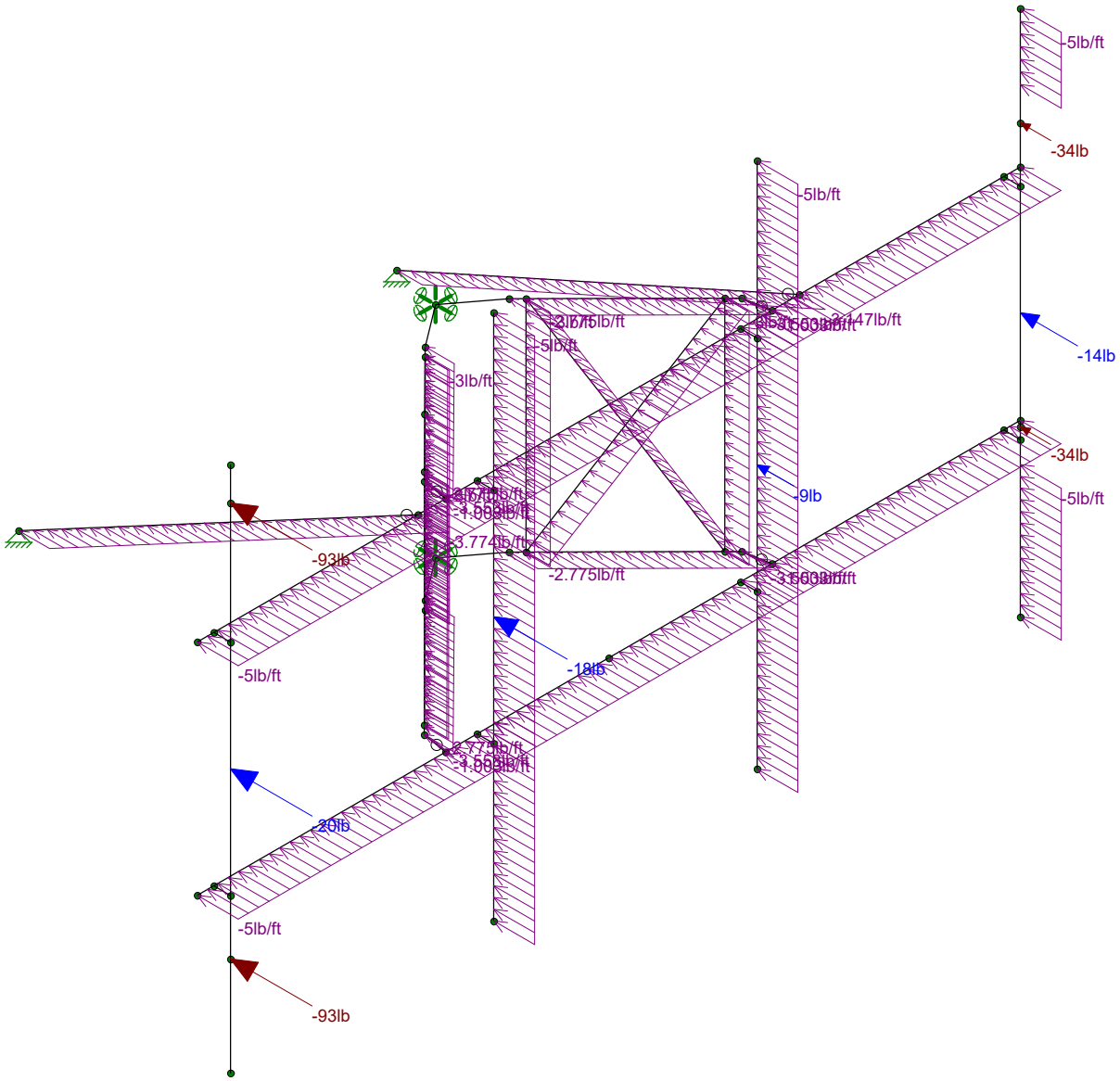
Loads: BLC 3, WIND Z
Envelope Only Solution

Tectonic	All Sector	SK - 8
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



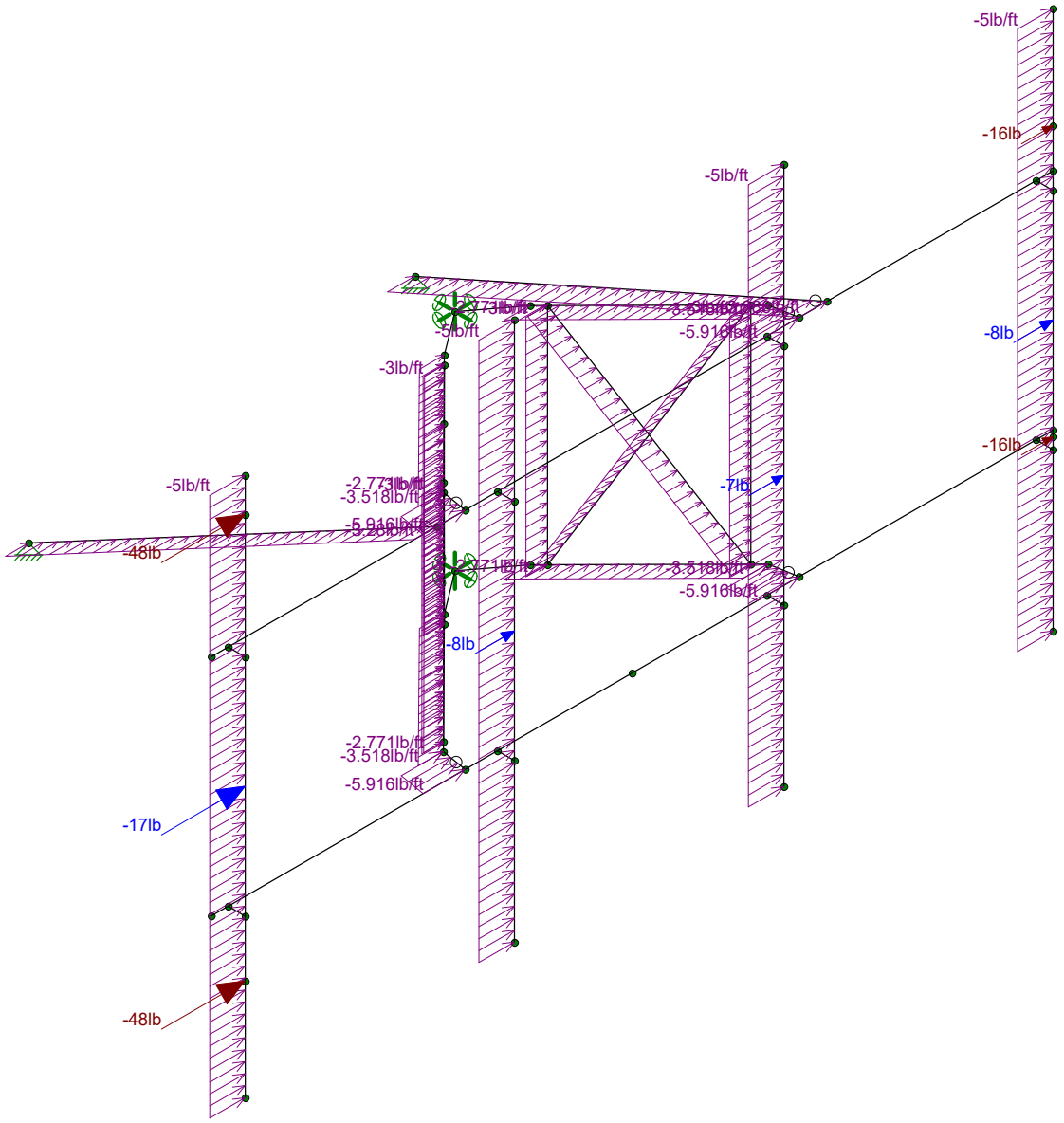
Loads: BLC 4, ICE LOAD
Envelope Only Solution

Tectonic	All Sector	SK - 9
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



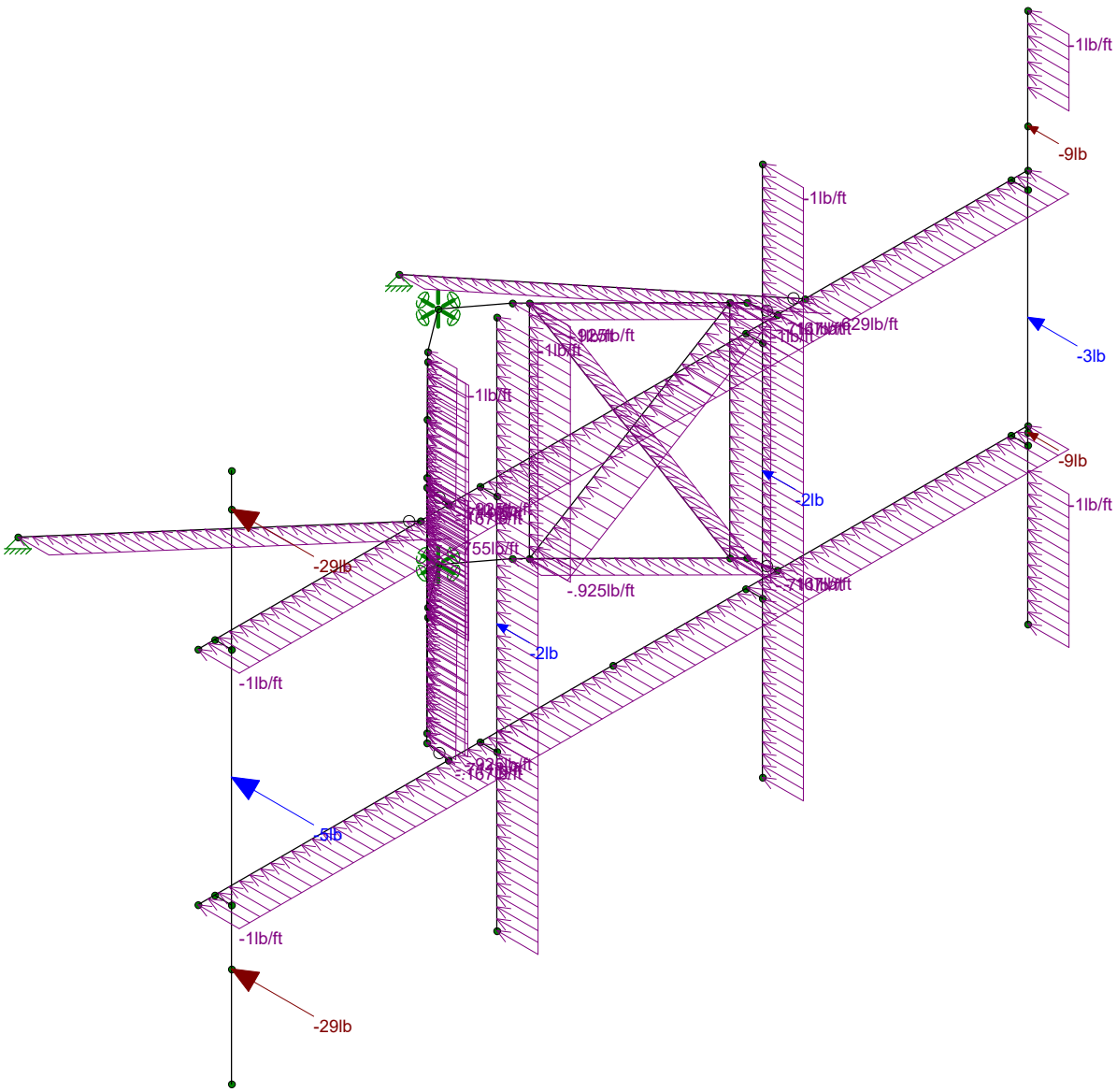
Loads: BLC 5, WIND + ICE IN X
Envelope Only Solution

Tectonic	All Sector	SK - 10
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



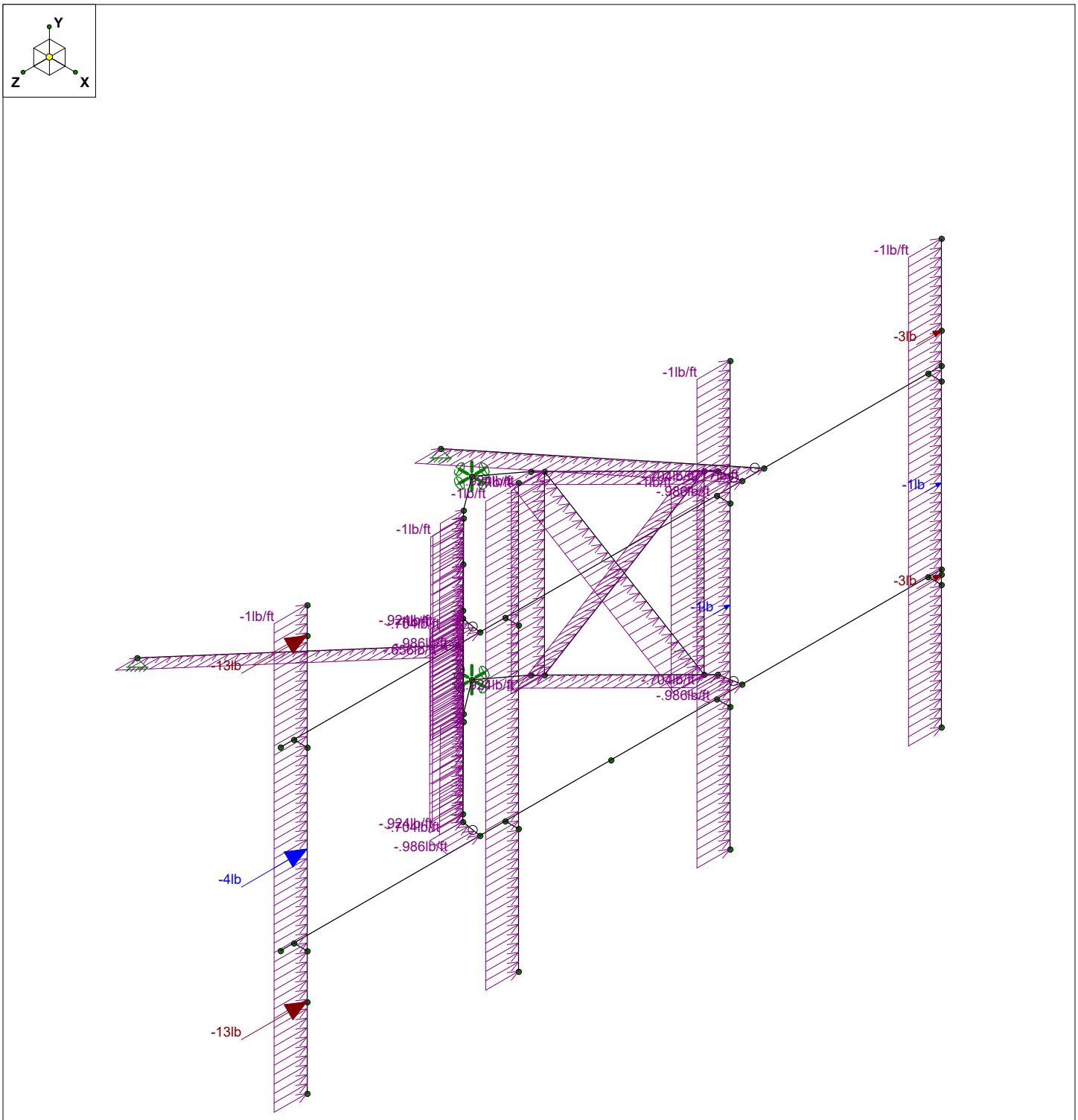
Loads: BLC 6, WIND + ICE IN Z
Envelope Only Solution

Tectonic	All Sector	SK - 11
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



Loads: BLC 7, WIND X Main
Envelope Only Solution

Tectonic	All Sector	SK - 12
SM		Aug 30, 2018 at 12:42 PM
9500.873128		9500.873128 Mount Analysis-All S...



Loads: BLC 8, WIND Z Main
Envelope Only Solution

Tectonic	All Sector	SK - 13
SM		Aug 30, 2018 at 12:43 PM
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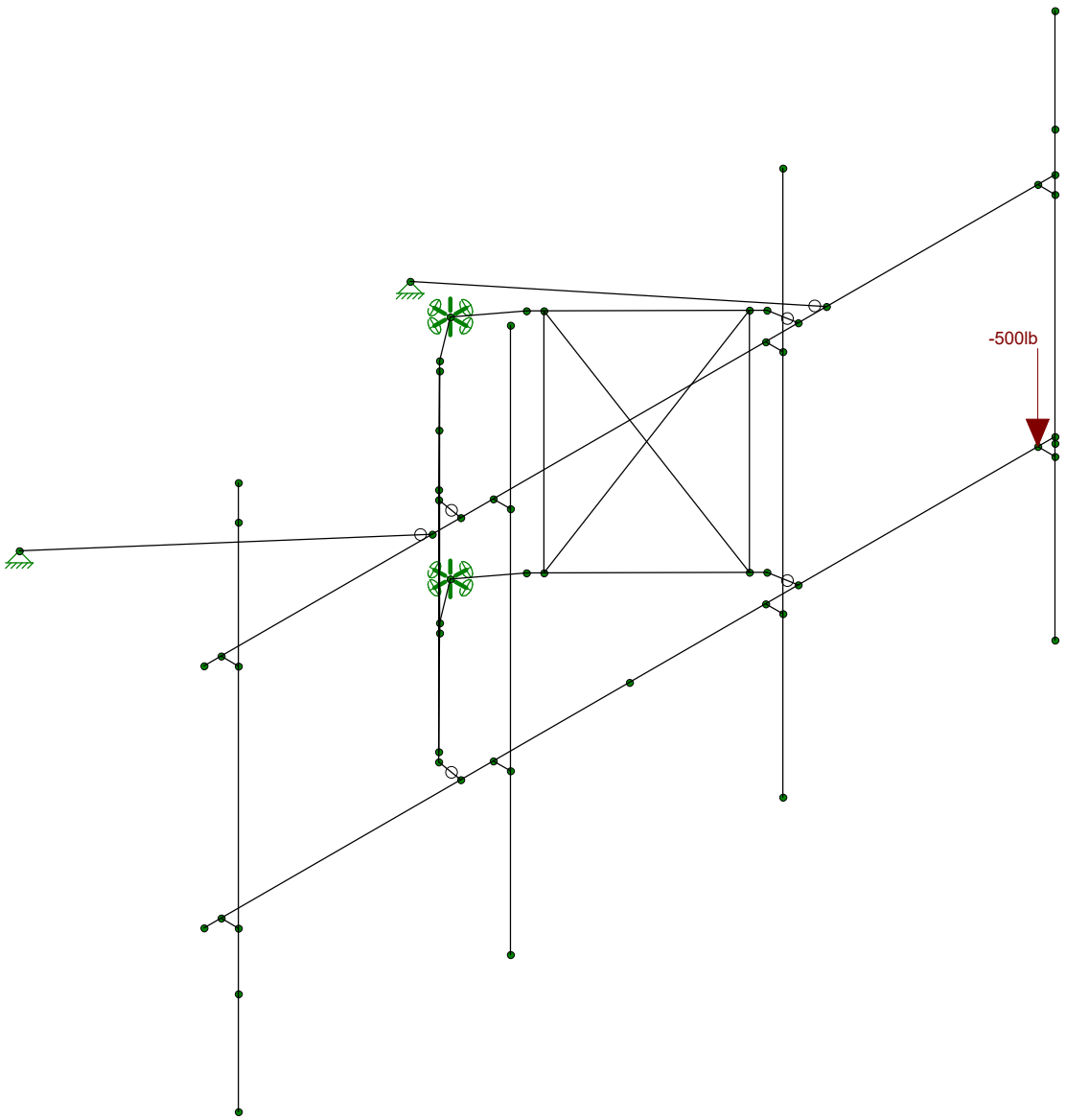

Loads: BLC 9, LM1
Envelope Only Solution

Tectonic	All Sector	SK - 14
SM		Aug 30, 2018 at 12:43 PM
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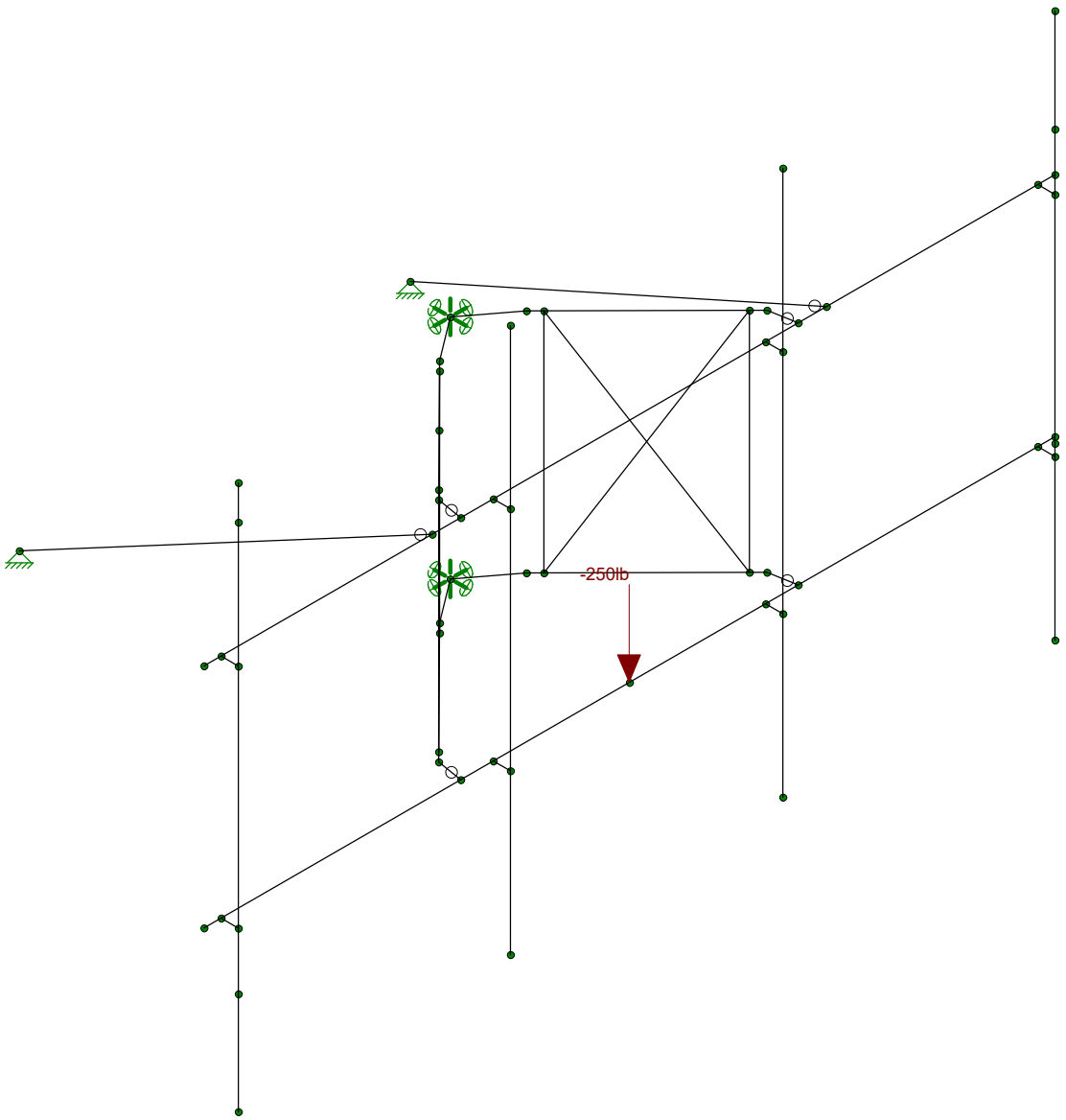

Loads: BLC 13, LV1
Envelope Only Solution

Tectonic	All Sector	SK - 15
SM		Aug 30, 2018 at 12:43 PM
9500.873128		9500.873128 Mount Analysis-All S...

APPENDIX B

SOFTWARE INPUT CALCULATIONS

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Job No9500.873128 Rev 1			
Sheet No.	1	of	3
Calculated By	SM	Date :	08/30/18
Checked By	KZ	Date :	08/30/18

WIND AND ICE LOADS PER TIA-222-G

W.O.	9500.873128 Rev 1
Project Name	Trumbull
Location	800 Booth Hill Rd., Trumbull, CT 06611
County	Fairfield

Tower Type	GT	Guyed Tower
Structure Class	2	Substantial hazard
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft

Basic Wind Speed (3-sec gust):		
Without ice	97	mph*
With ice	50	mph
Maintenance	30	mph
Ice thickness	0.75	in

Importance Factor	
Wind only	1.00
Wind with ice	1.00
Ice thickness	1.00
Supporting Data:	
K_e	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)	247
	Kh	N/A
	Kzt	1.00
	Kz	1.28
	Kiz	1.22
Wind Pressure, qz (psf)	No Ice	29.28
	With Ice	7.78
	Service	2.80
(tiz)	Ice Thk	1.83
Appurtenances (qzGh)	No Ice	29.28
	With Ice	7.78
	Service	2.80

*Basic Wind speed converted from ultimate gust wind speed of 125 mph.

Appurtenance Information

Effective Projected Area for Appurtenance $(EPA)_A=Max((EPA)_N,(EPA)_T)$

$(EPA)_T=\sum(C_aA_A)_T$ | $(EPA)_N=\sum(C_aA_A)_N$

Reduction Factor = 1 Section 2.6.9

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(Aa)_T$ (ft^2)	Wind ward Side Face (CaAa)T (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
APX16DWV-16DWVS-C	E	3	247	4.66	13.30	3.15	Flat	1.76	1.28	1.22	6.45	5.16	19.76	193	63	40.7	122.1
APXVAARR24_43-U-NA20	**P**	**3**	247	7.99	24.00	8.70	Flat	1.53	1.27	5.79	26.67	15.98	60.73	593	260	128.0	384.0
KRY 112 489/2	E	3	247	0.92	6.10	3.94	Flat	1.21	1.20	0.30	1.10	0.47	1.68	16	11	15.4	46.2
RADIO 4449 B12/B71	**P**	**3**	247	1.25	13.20	10.40	Flat	1.20	1.20	1.08	3.90	1.38	4.95	48	38	75.0	225.0
ATMAA1412D-1A20	E	3	247	1.00	10.00	4.00	Flat	1.22	1.20	0.33	1.22	0.83	3.00	29	12	13.0	39.0
FDBL5003D-S	**P**	**6**	247	0.61	8.60	2.00	Flat	1.25	1.20	0.10	0.76	0.44	3.14	15	4	7.7	46.2
										$\sum(CaAA)_T$	40.09	$\sum(CaAA)_N$	93.25				863

Note: Appurtenances listed above are to be installed along (3) sectors

Wind with Ice Load Combinations

Ice Thk= 1.83 in

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
APX16DWV-16DWVS-C	E	3.00	247.00	4.96	16.97	6.82	Cylindrical	1.46	1.24	2.82	12.34	7.02	26.22	68	32	12.8	109.3
APXVAARR24_43-U-NA20	P	3.00	247.00	8.30	27.67	12.37	Cylindrical	1.43	1.25	8.55	36.82	19.13	71.68	186	95	43.6	372.9
KRY 112 489/2	E	3.00	247.00	1.22	9.77	7.61	Cylindrical	1.20	1.20	0.78	2.79	1.00	3.58	9	7	1.5	13.1
RADIO 4449 B12/B71	P	3.00	247.00	1.56	16.87	14.07	Cylindrical	1.20	1.20	1.82	6.57	2.19	7.87	20	17	4.9	42.1
ATMAA1412D-1A20	E	3.00	247.00	1.31	13.67	7.67	Cylindrical	1.20	1.20	0.83	3.00	1.49	5.35	14	8	2.3	20.0
FDBL5003D-S	P	6.00	247.00	0.91	12.27	5.67	Cylindrical	1.20	1.20	0.43	3.11	0.93	6.73	9	4	1.1	9.2
										$\sum(CaAA)_T$	64.63	$\sum(CaAA)_N$	121.43				567

Maintenance Wind Load Combinations

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	TransverseAntenna Wind Load Each (lb)
APX16DWV-16DWVS-C	E	3	247	4.66	13.3	3.15	Flat	1.76	1.28	1.22	6.45	5.16	19.76	18	6
APXVAARR24_43-U-NA20	P	3	247	7.99	24	8.7	Flat	1.53	1.27	5.79	26.67	15.98	60.73	57	25
KRY 112 489/2	E	3	247	0.92	6.1	3.94	Flat	1.21	1.20	0.30	1.10	0.47	1.68	2	1
RADIO 4449 B12/B71	P	3	247	1.25	13.2	10.4	Flat	1.20	1.20	1.08	3.90	1.38	4.95	5	4
ATMAA1412D-1A20	E	3	247	1.00	10	4	Flat	1.22	1.20	0.33	1.22	0.83	3.00	3	1
FDBL5003D-S	P	6	247	0.61	8.6	2	Flat	1.25	1.20	0.10	0.76	0.44	3.14	1	0
										$\sum(CaAA)_T$	40.09	$\sum(CaAA)_N$	93.25		

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Job No. 9500.873128 Rev 1
Sheet No. 3 of 3
Calculated By SM Date : 08/31/18
Checked By KZ Date : 08/31/18

Proposed Sector Mount

Mount Center Line=	247 ft

Member sizes and dimensions are based on assembly drawings entitled "SitePro1:VFA12-HD Assembly".

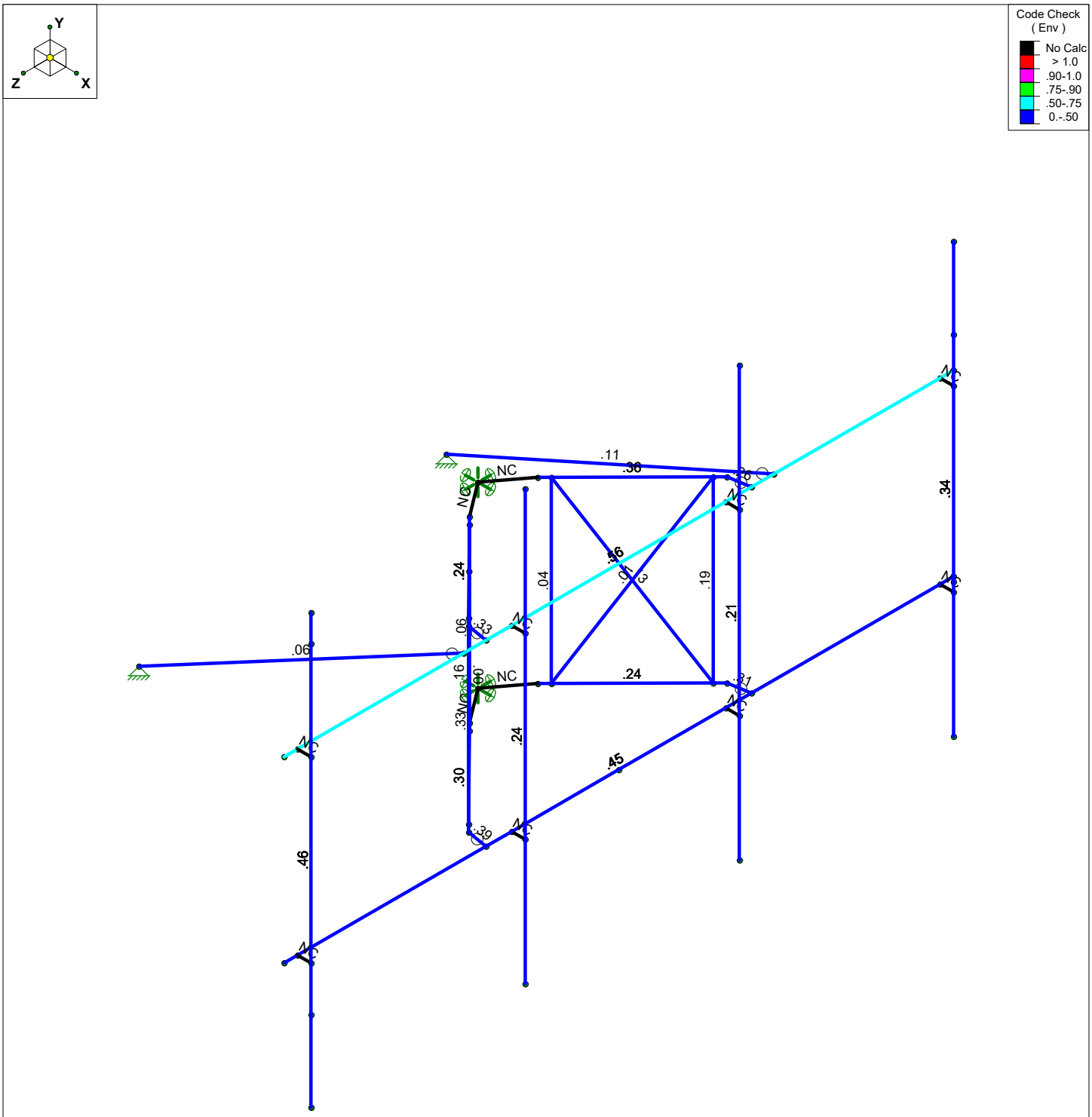
Reduction Factor = 1 Section 2.6.9

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical ?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Service Wind Force (lbs/ft)
Face Horizontal Pipe 2.5" STD	2	12.50	2.90	2.90	Cylindrical	1.2	7.25	8.5	18.97	6.5	16.42	5.1	0.8
Mount Pipe_2.0" STD	4	8.00	2.40	2.40	Cylindrical	1.2	7.68	7.0	20.10	5.4	19.42	4.7	0.7
Standoff Horizontal_2.0" STD	4	4.00	2.40	2.40	Cylindrical	1.2	3.84	7.0	10.05	5.4	9.71	4.7	0.7
Standoff Vertical SR 0.625"	4	3.33	0.63	0.63	Cylindrical	1.2	0.84	1.8	2.20	1.4	5.73	3.3	0.2
Standoff Brace_SR 0.75"	4	3.95	0.75	0.75	Cylindrical	1.2	1.19	2.2	3.10	1.7	6.98	3.4	0.2
Plate 3.5"X0.625"	4	0.40	0.63	3.50	Flat	2	0.17	3.1	1.10	5.9	1.15	5.6	0.3
Stiffarm Pipe 1_2.0" STD	1	4.30	2.40	2.40	Cylindrical	1.2	1.03	7.0	2.70	5.4	2.61	4.7	0.7
Stiffarm Pipe 2_2.0" STD	1	4.35	2.40	2.40	Cylindrical	1.2	1.04	7.0	2.73	5.4	2.64	4.7	0.7

Note: The members listed above are for one Sector Mount

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic	All Sector	SK - 16
SM		Aug 30, 2018 at 12:43 PM
9500.873128		9500.873128 Mount Analysis-All S...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53-b	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face HorizontalPipe 2.5" STD	PIPE 2.5	Beam	Pipe	A53-b	Typical	1.61	1.45	1.45	2.89
2	Mount Pipe_2.0" STD	PIPE_2.0	Beam	Pipe	A53-b	Typical	1.02	.627	.627	1.25
3	Standoff Horizontal_2.0" STD	PIPE 2.0	Beam	Pipe	A53-b	Typical	1.02	.627	.627	1.25
4	Standoff Vertical SR 0.625"	.625 Dia.	Beam	BAR	A53-b	Typical	.307	.007	.007	.015
5	Standoff Brace_SR 0.75"	.75 Dia.	Beam	BAR	A53-b	Typical	.442	.016	.016	.031
6	Plate 3.5 X 0.625"	.625 x 3.5"	Beam	RECT	A53-b	Typical	2.188	.071	2.233	.253
7	Stiffarm Pipe_2.0" STD	PIPE_2.0	Beam	Pipe	A53-b	Typical	1.02	.627	.627	1.25

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1	DEAD LOAD	DL		-1.05		4	5			
2	WIND X	WLX				4	5	24		
3	WIND Z	WLZ				4	5	24		
4	ICE LOAD	SL				4	5	24		
5	WIND + ICE IN X	WL+X				4	5	24		
6	WIND + ICE IN Z	WL+Z				4	5	24		
7	WIND X Main	WL+X				4	5	24		
8	WIND Z Main	WL+Z				4	3	24		
9	LM1	OL1				1				
10	LM2	OL2				1				
11	LM3	OL3				1				
12	LM4	OL4				1				
13	LV1	OL5				1				
14	LV2	OL6				1				
15	LV3	OL7				1				

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		1	1.4																				
2	1.2D+1.6WLX	Yes	Y		1	1.2	2	1.6																		
3	1.2D+1.6WLZ	Yes	Y		1	1.2	3	1.6																		
4	1.2D+1.6(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1.6																		
5	1.2D+1.6(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	1.3...	3	.8																
6	1.2D+1.6(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.8	3	1.3...																
7	1.2D+1.6(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1.6																
8	1.2D+1.6(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.8	3	1.3...																
9	1.2D+1.6(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-1....	3	.8																
10	1.2D+1.6(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1.6	3																	
11	1.2D+1.6(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-1....	3	-.8																
12	1.2D+1.6(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.8	3	-1....																
13	1.2D+1.6(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1.6																
14	1.2D+1.6(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.8	3	-1....																

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
15	1.2D+1.6(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	1.3...	3	-.8														
16	**Wind Load with Ice**																							
17	1.2D+1.0Di+1.0WLXi	Yes	Y		1	1.2	4	1	5	1														
18	1.2D+1.0Di+1.0WLZi	Yes	Y		1	1.2	4	1			6	1												
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 0 ...	Yes	Y		1	1.2	4	1	5	1	6													
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 30 ...	Yes	Y		1	1.2	4	1	5	.87	6	.5												
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 60 ...	Yes	Y		1	1.2	4	1	5	.5	6	.87												
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 90 ...	Yes	Y		1	1.2	4	1	5		6	1												
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 12...	Yes	Y		1	1.2	4	1	5	-.5	6	.87												
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 15...	Yes	Y		1	1.2	4	1	5	-.87	6	.5												
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 18...	Yes	Y		1	1.2	4	1	5	-1	6													
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 21...	Yes	Y		1	1.2	4	1	5	-.87	6	-.5												
27	1.2D+1.0Di+1.0(WLXi+WLZi) - 24...	Yes	Y		1	1.2	4	1	5	-.5	6	-.87												
28	1.2D+1.0Di+1.0(WLXi+WLZi) - 27...	Yes	Y		1	1.2	4	1	5		6	-1												
29	1.2D+1.0Di+1.0(WLXi+WLZi) - 30...	Yes	Y		1	1.2	4	1	5	.5	6	-.87												
30	1.2D+1.0Di+1.0(WLXi+WLZi) - 33...	Yes	Y		1	1.2	4	1	5	.87	6	-.5												
31	**Maintenance Load (With Service...		Y																					
32	1.2D+1.5Lm1+1.0WLX (service)	Yes	Y		1	1.2	9	1.5	7	1	8													
33	1.2D+1.5Lm1+1.0WLZ (service)	Yes	Y		1	1.2	9	1.5	7		8	1												
34	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	1	8													
35	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	.87	8	.5												
36	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	.5	8	.87												
37	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7		8	1												
38	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	-.5	8	.87												
39	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	-.87	8	.5												
40	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	-1	8													
41	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	-.87	8	-.5												
42	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	-.5	8	-.87												
43	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7		8	-1												
44	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	.5	8	-.87												
45	1.2D+1.5Lm1+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	9	1.5	7	.87	8	-.5												
46	**Maintenance Load (With Service...		Y																					
47	1.2D+1.5Lm2+1.0WLX (service)	Yes	Y		1	1.2	10	1.5	7	1	8													
48	1.2D+1.5Lm2+1.0WLZ (service)	Yes	Y		1	1.2	10	1.5	7		8	1												
49	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	1	8													
50	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	.87	8	.5												
51	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	.5	8	.87												
52	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7		8	1												
53	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	-.5	8	.87												
54	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	-.87	8	.5												
55	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	-1	8													
56	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	-.87	8	-.5												
57	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	-.5	8	-.87												
58	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7		8	-1												
59	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	.5	8	-.87												
60	1.2D+1.5Lm2+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	10	1.5	7	.87	8	-.5												
61	**Maintenance Load (With Service...		Y																					
62	1.2D+1.5Lm3+1.0WLX (service)	Yes	Y		1	1.2	11	1.5	7	1	8													
63	1.2D+1.5Lm3+1.0WLZ (service)	Yes	Y		1	1.2	11	1.5	7		8	1												
64	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	1	8													
65	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	.87	8	.5												
66	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	.5	8	.87												
67	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7		8	1												
68	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	-.5	8	.87												
69	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	-.87	8	.5												
70	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	-1	8													
71	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	-.87	8	-.5												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
72	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	-.5	8	-.87												
73	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7		8	-1												
74	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	.5	8	-.87												
75	1.2D+1.5Lm3+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	11	1.5	7	.87	8	-.5												
76	**Maintenance Load (With Service...		Y																					
77	1.2D+1.5Lm4+1.0WLX (service)	Yes	Y		1	1.2	12	1.5	7	1	8													
78	1.2D+1.5Lm4+1.0WLZ (service)	Yes	Y		1	1.2	12	1.5	7		8	1												
79	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	1	8													
80	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	.87	8	.5												
81	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	.5	8	.87												
82	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7		8	1												
83	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	-.5	8	.87												
84	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	-.87	8	.5												
85	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	-1	8													
86	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	-.87	8	-.5												
87	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	-.5	8	-.87												
88	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7		8	-1												
89	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	.5	8	-.87												
90	1.2D+1.5Lm4+1.0(WLX+WLZ, Ser...	Yes	Y		1	1.2	12	1.5	7	.87	8	-.5												
91	**Maintenance Load** Location 1																							
92	1.2D+1.5Lv1	Yes	Y		1	1.2	13	1.5																
93	**Maintenance Load** Location 2																							
94	1.2D+1.5Lv2	Yes	Y		1	1.2	14	1.5																
95	**Maintenance Load** Location 3																							
96	1.2D+1.5Lv3	Yes	Y		1	1.2	15	1.5																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N6	max	1120.076	10	1839.577	25	2407.394	2	808.815	45	0	1	1083.498	30
2		min	-2185.007	2	748.312	2	-2837.574	10	-1212.536	84	0	1	450.634	5
3	N5	max	1431.242	17	75.04	96	1403.924	78	147.74	87	0	1	44.946	96
4		min	-436.986	10	-126.44	83	-872.315	43	-132.885	44	0	1	-105.194	83
5	N63A	max	1073.614	15	20.599	23	1214.647	9	0	1	0	1	0	1
6		min	-1066.651	9	8.887	2	-1226.947	15	0	1	0	1	0	1
7	N64B	max	2111.79	2	20.553	26	1620.594	10	0	1	0	1	0	1
8		min	-2020.297	10	8.314	2	-1700.729	2	0	1	0	1	0	1
9	Totals:	max	2267.896	2	1858.891	30	1232.622	3						
10		min	-2267.896	10	801.008	10	-1232.623	13						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	She...	Loc...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
1	M14	PIPE_2.5	.558	3.618	10	.126	3.2...		10 29547...	50715	3596....	3596....	...	H1-1b
2	M35A	PIPE_2.0	.463	2.317	2	.073	2.5...		90 23226...	32130	1871....	1871....	...	H1-1b
3	M15	PIPE_2.5	.445	3.947	2	.080	3.6...		2 29547...	50715	3596....	3596....	...	H1-1b
4	M30A	.625 x 3.5"	.391	.398	84	.263	.398	y	84 66476...	68906...	897.2...	5024....	...	H1-1b
5	M19	PIPE_2.0	.360	0	2	.157	2.5		32 31128...	32130	1871....	1871....	...	H1-1b
6	M35	PIPE_2.0	.338	2.527	39	.064	2.5...		39 23226...	32130	1871....	1871....	...	H1-1b
7	M31A	.625 x 3.5"	.335	.398	84	.243	0	y	83 66476...	68906...	897.2...	5024....	...	H1-1b
8	M24	.625 Dia.	.333	3.333	81	.025	0		9 4354....	9664....	100.6...	100.6...	1	H1-1a
9	M33	.625 x 3.5"	.312	.398	45	.212	.398	y	44 66476...	68906...	897.2...	5024....	...	H1-1b
10	M17	PIPE_2.0	.297	.197	84	.128	.132		84 31128...	32130	1871....	1871....	...	H1-1b
11	M32	.625 x 3.5"	.263	.398	32	.197	.398	y	32 66476...	68906...	897.2...	5024....	...	H1-1b
12	M16	PIPE_2.0	.242	.197	83	.193	2.5		85 31128...	32130	1871....	1871....	...	H1-1b
13	M34	PIPE_2.0	.238	2.527	15	.067	2.5...		9 23226...	32130	1871....	1871....	...	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	She...	Loc...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
14	M18	PIPE_2.0	.237	.197	44	.102	.132		45	31128...	32130	1871....	1871....	...	H1-1b
15	M37	PIPE_2.0	.206	5.476	9	.050	2.5...		8	23226...	32130	1871....	1871....	...	H1-1b
16	M27	.625 Dia.	.187	3.333	45	.029	3.3...		10	4354....	9664....	100.6...	100.6...	1	H1-1b
17	M30	.75 Dia.	.162	0	80	.014	0		81	3679....	13916...	173.9...	173.9...	...	H1-1b
18	M28	.75 Dia.	.134	3.959	45	.011	0		81	3679....	13916...	173.9...	173.9...	...	H1-1b
19	M36A	PIPE_2.0	.106	4.35	2	.002	4.35		27	25608...	32130	1871....	1871....	...	H1-1...
20	M35C	PIPE_2.0	.063	4.3	15	.002	4.3		26	25741...	32130	1871....	1871....	...	H1-1...
21	M25	.625 Dia.	.056	0	23	.010	0		3	4354....	9664....	100.6...	100.6...	...	H1-1b
22	M26	.625 Dia.	.044	0	13	.010	0		3	4354....	9664....	100.6...	100.6...	...	H1-1b
23	M29	.75 Dia.	.009	3.959	83	.024	0		9	3679....	13916...	173.9...	173.9...	...	H1-1...
24	M31	.75 Dia.	.000	0	1	.000	0		1	3679....	13916...	173.9...	173.9...	1	H1-1a

[illegible]

[illegible]

[illegible]

[illegible]

ASCE 7 Hazards Report

Address:
No Address at This Location

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

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

Wind

Results:

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

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

Date Accessed: Wed Aug 29 2018

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

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

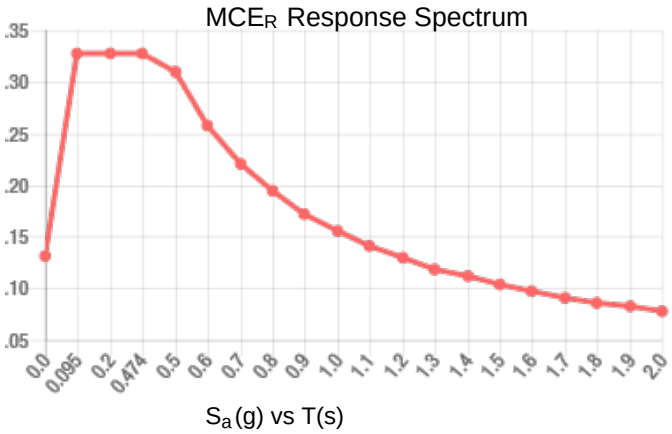
Seismic

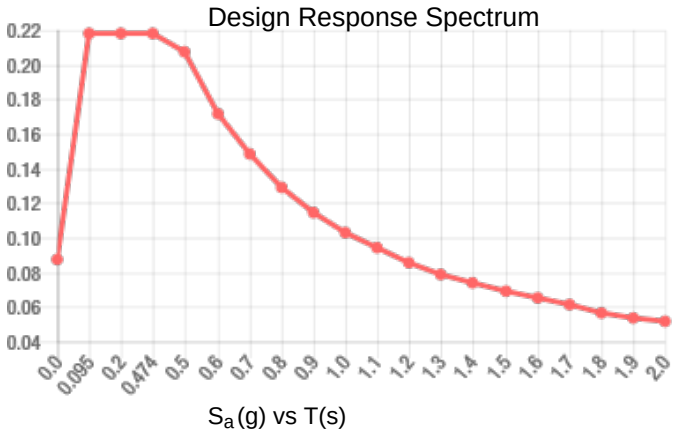
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.204	S_{DS} :	0.218
S_1 :	0.065	S_{D1} :	0.103
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.110
S_{MS} :	0.327	PGA_M :	0.174
S_{M1} :	0.155	F_{PGA} :	1.580
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Aug 29 2018

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

Ice

Results:

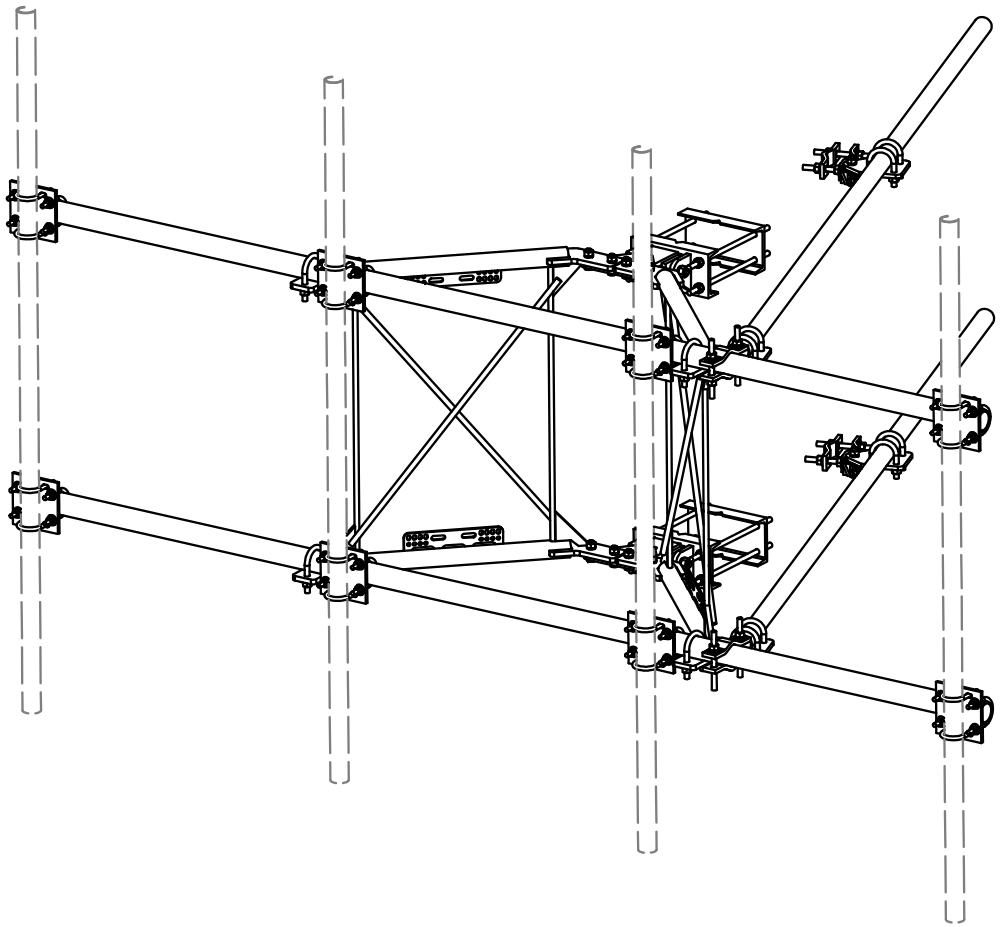
Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph

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

Date Accessed: Wed Aug 29 2018

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

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



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	2	X-HDPMW	HEAVY DUTY PIPE MOUNT WELDMENT		18.61	37.21
3	2	X-HDPMBP	HEAVY DUTY PIPE MOUNT BACKING PLATE	12 in	13.44	26.89
4	2	X-VFAPL3	VFA-HD PIVOT PLATE	24 in	9.69	19.38
5	1	X-LPB	LOWER PIVOT BRACKET		8.84	8.84
6	1	X-UPB	UPPER PIVOT BRACKET		8.84	8.84
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
9	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
10	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
11	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.42	19.36
12	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
13	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
14	6	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	2.87
15	6	G34LW	3/4" HDG LOCKWASHER		0.04	0.26
16	6	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	1.27
17	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
18	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
19	8	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	5.58
20	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
21	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
22	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
23	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
24	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
25	20	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.41
26	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
27	70	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.09
28	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
29	16	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	10.00
30	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
31	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
32	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	682.94

TOLERANCE NOTES

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ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

SITE PRO 1
A valmont COMPANY

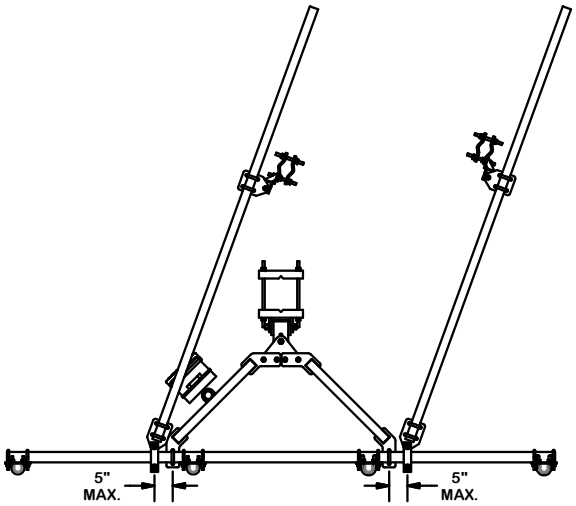
Engineering Support Team:
1-888-753-7446

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

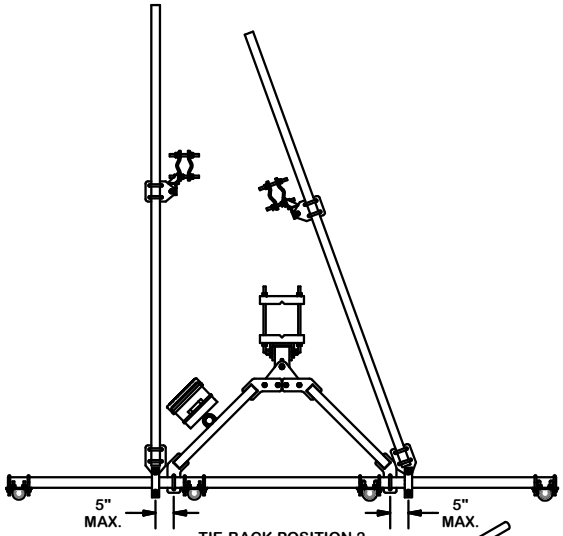
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 8/4/2017	VFA12-HD

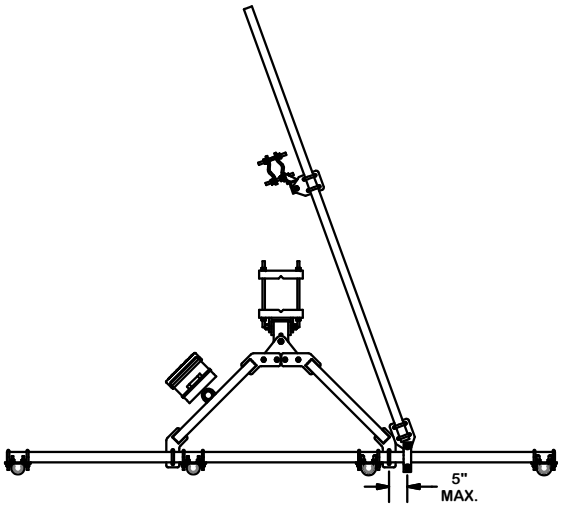
TIE-BACK POSITIONS



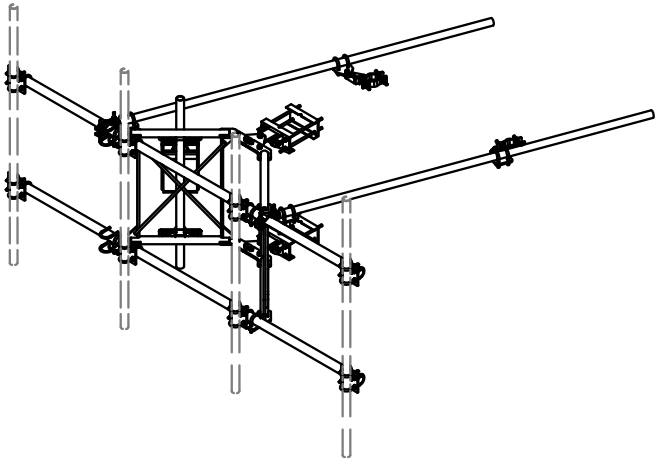
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

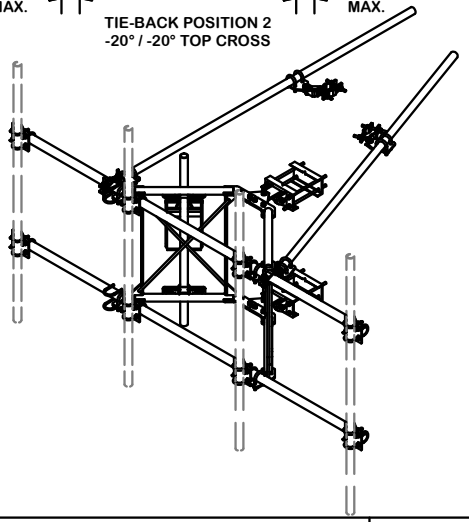


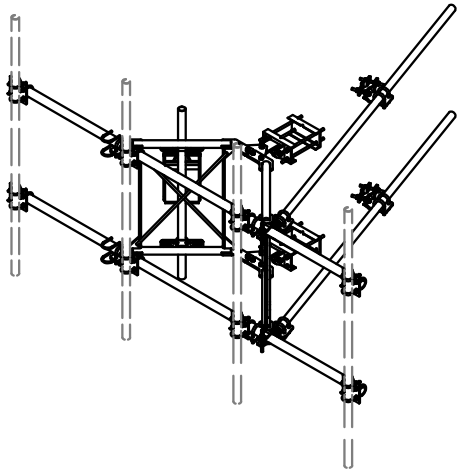
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

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A valmont COMPANY
Engineering Support Team:
1-888-753-7446

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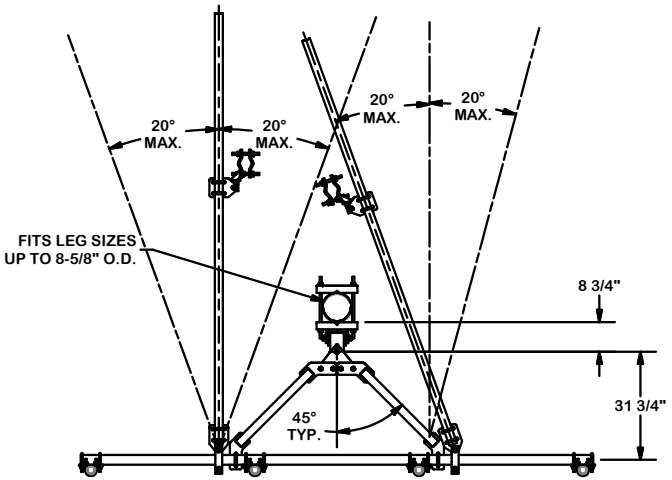
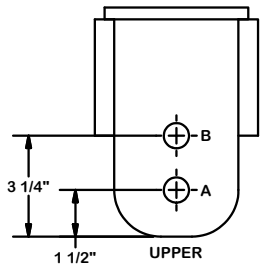
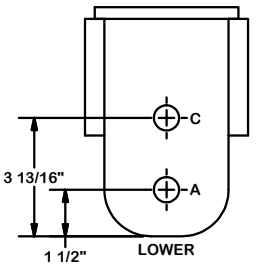
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 8/4/2017	VFA12-HD

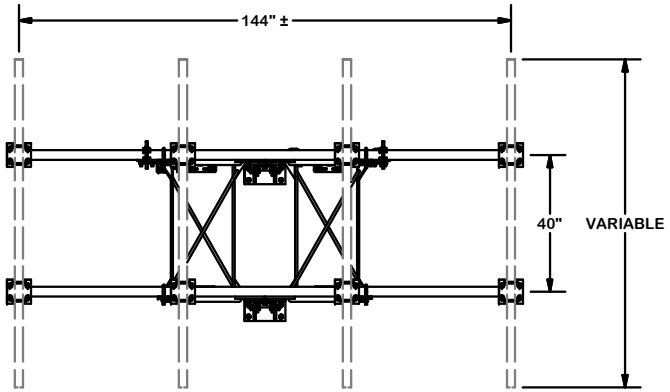


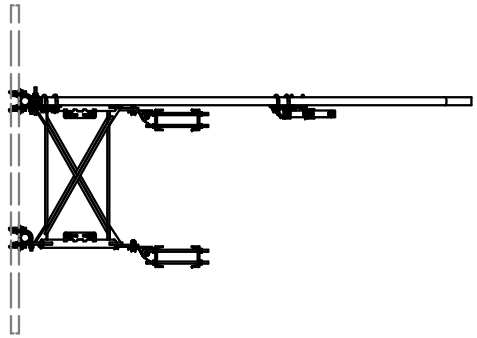




NOTES:

1. USE HOLE "A' IN UPPER AND LOWER BRACKETS FOR STRAIGHT LEGS.
2. USE HOLE "A" IN UPPER BRACKET AND HOLE "C" IN LOWER BRACKET FOR 2" IN 20' TAPER LEGS (3.309°)
3. USE HOLE "B" IN UPPER BRACKET AND HOLE "C" IN LOWER BRACKET FOR 6" IN 20' TAPER LEGS. (0.827°)





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REVISION HISTORY

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	CEK 1/25/2017		VFA12-HD

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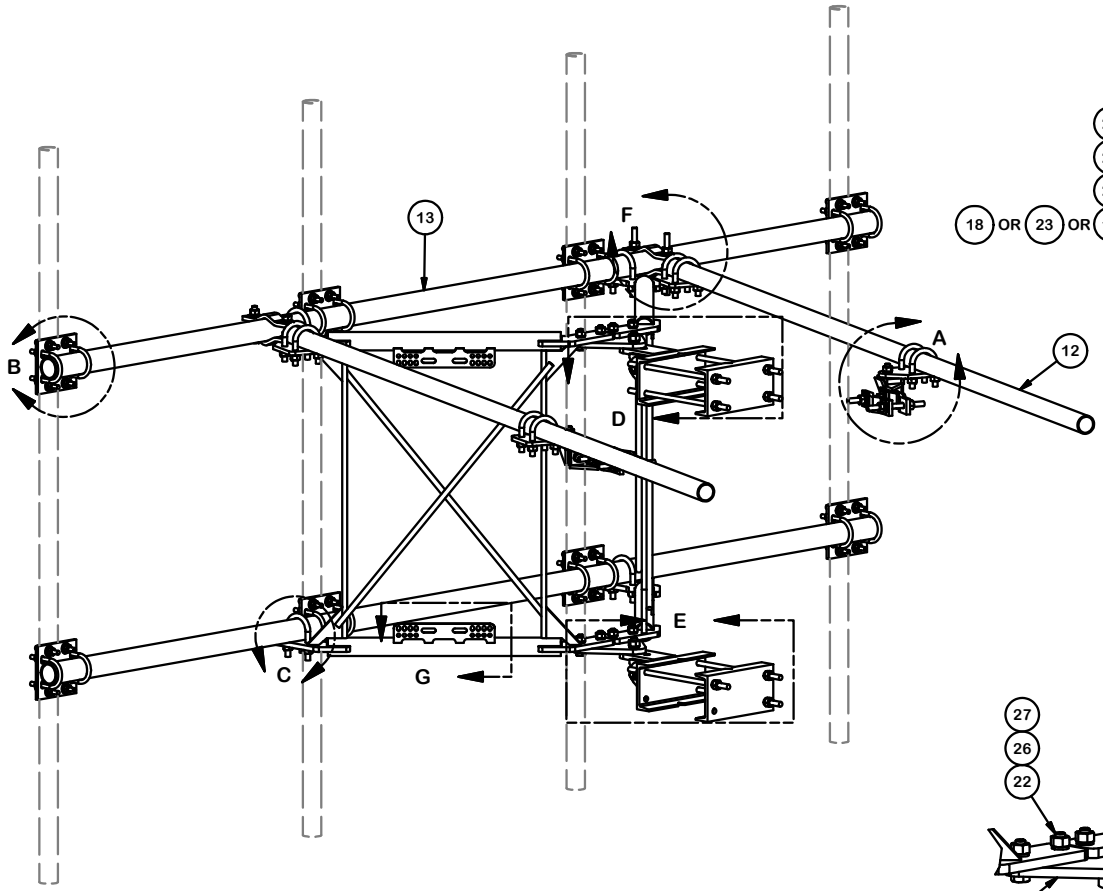
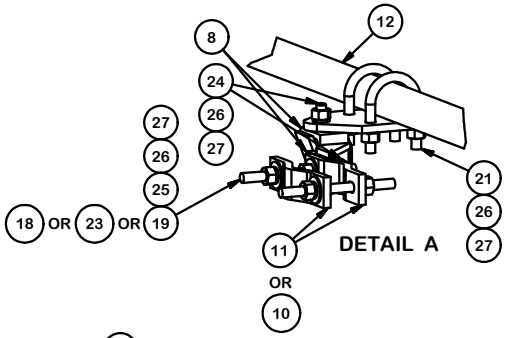
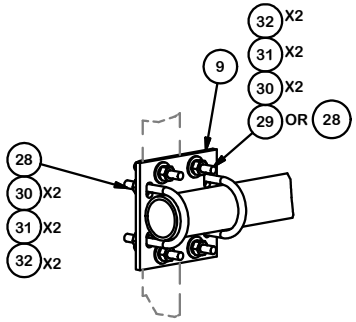
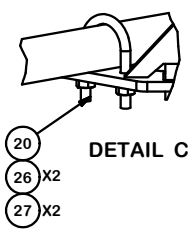
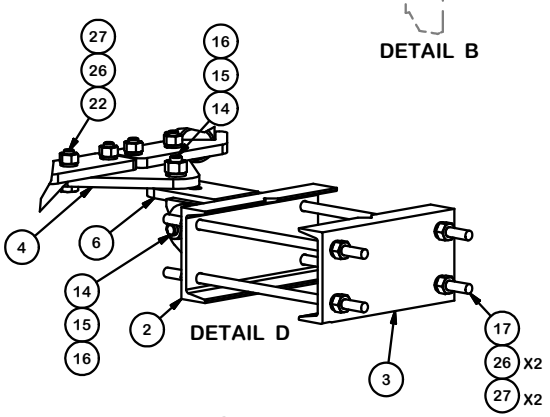
81	02	CUSTOMER	BMC 8/4/2017	VFA12-HD

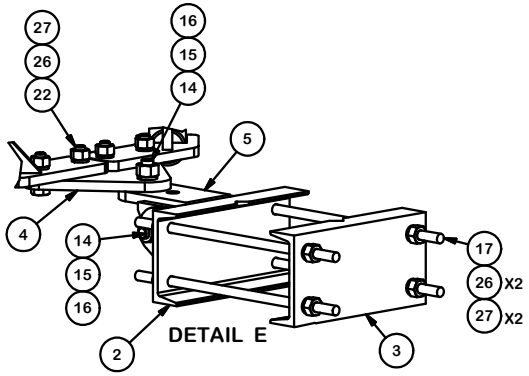


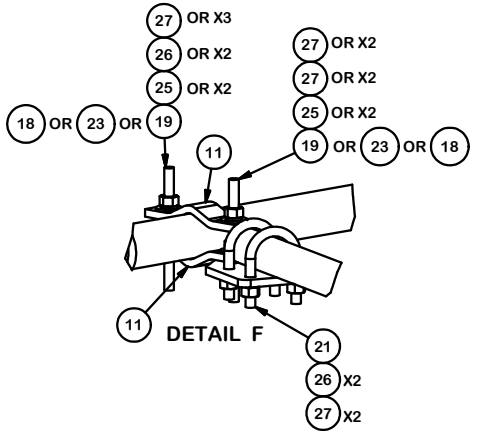


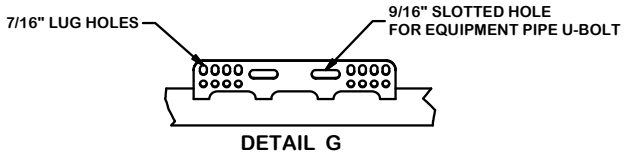












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B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

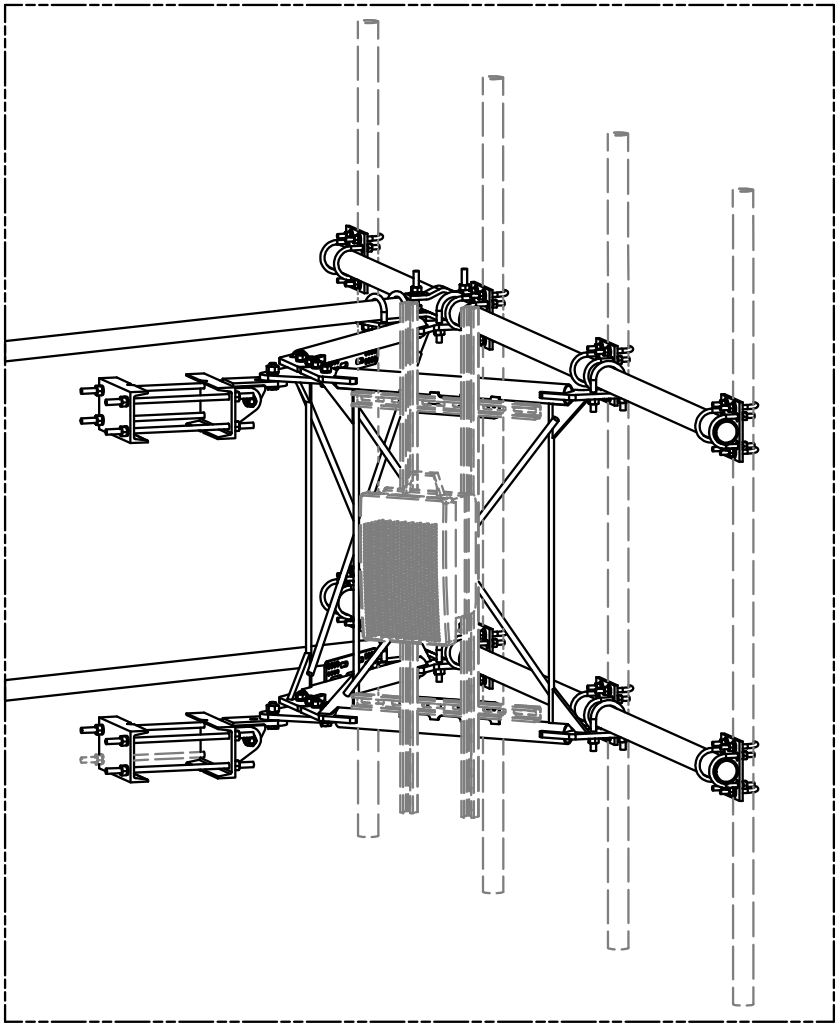
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

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

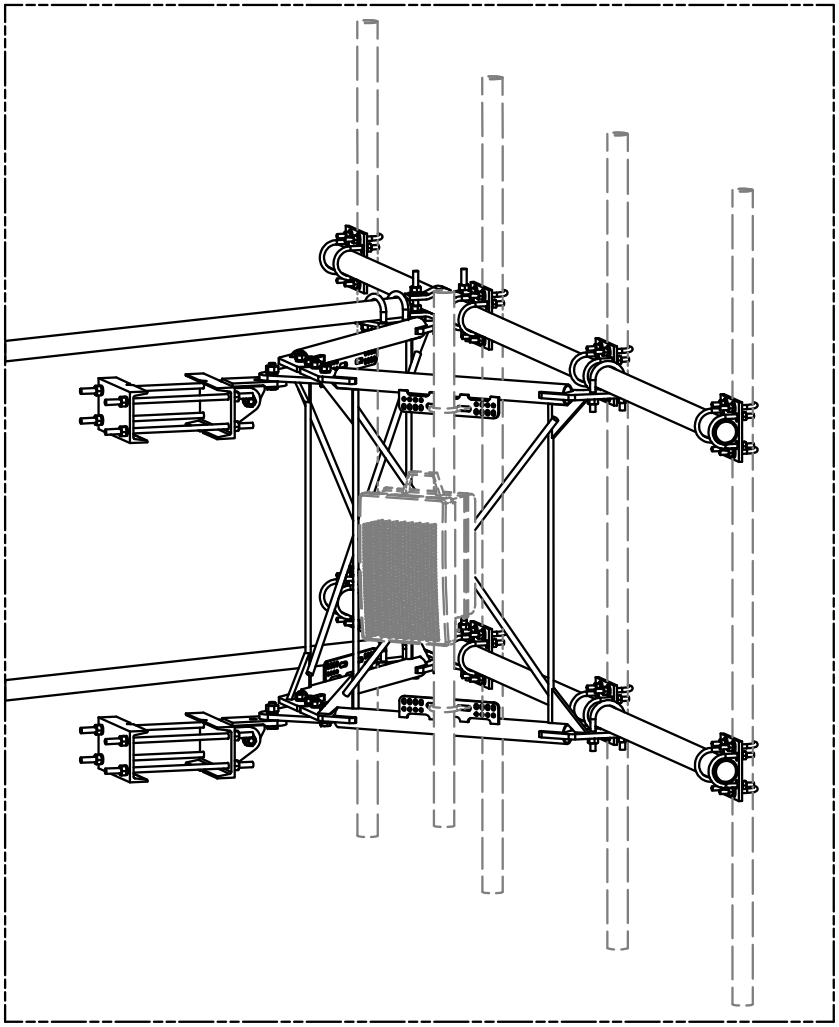
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 8/4/2017	VFA12-HD



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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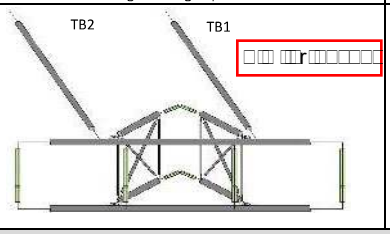
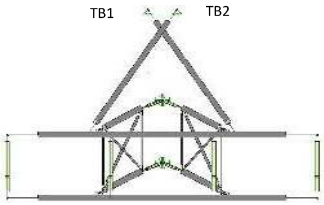
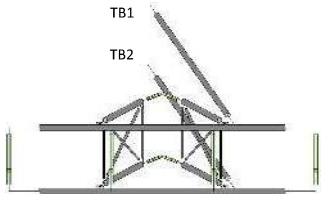
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 8/4/2017	VFA12-HD

Frame P/N	Classification	Ice Condition	Mount Capacity	Tie-Back Position	Tie-Back Reaction (Max Axial Force)		Max Leg Reactions Total Frame Reaction (lbs)		
			Offset (Neg - Pos)		TB1 (Lbs)	TB2 (Lbs)	Vertical Load	Normal Load	Tangential Load
VFA12-HD	M1600A(2800)-4[6]	No Ice	93% - 77%	1	4042	3564	2522	6078	3829
	M1600A(2800)-4[6]	No Ice	92% - 77%	2	5016	5016	2527	6072	5692
	M1600A(2800)-4[6]	No Ice	98% - 96%	3	3853	3792	2528	7526	4192
	M1600A(2800)-4[6]	Ice	93% - 91%	1	4042	3564	12007	10894	3829
	M1600A(2800)-4[6]	Ice	92% -87%	2	5016	5016	12014	10253	5692
	M1600A(2800)-4[6]	Ice	98% - 96%	3	3853	3882	12028	10603	4192
	M15500R(2800)-4[6]	No Ice	93% - 81%	1	4385	4546	3950	6972	4857
	M1600R(2800)-4[6]	No Ice	96% - 81%	2	6094	6094	4051	7160	8924
	M1400R(2800)-4[6]	No Ice	97% - 95%	3	5414	5473	3671	8498	5866
	M1550R(2800)-4[6]	Ice	93% - 90%	1	4385	4546	12006	10288	4857
	M1600R(2800)-4[6]	Ice	96% - 88%	2	6406	6406	12014	10253	8924
	M1400R(2800)-4[6]	Ice	97% - 95%	3	5414	5473	12028	11065	5866

Tie -Back Position 1	Tie-Back Position 2	Tie-Back Position 3
20 deg - 20 deg Top Parallel	-20 deg - 20 deg Top Cross	-20 deg Same Side Stacked
		

EBI Consulting
environmental | engineering | due diligence

RF Emissions Report

November 5, 2018

EBI Project Number: 6218006964

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.68 %

EBI Consulting
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November 5, 2018

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

Emissions Analysis for Site: **CT11203B – Trumbull**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **0 Booth Hill Road, Shelton, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **0 Booth Hill Road, Shelton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 1 GSM channels (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 15 Watts per Channel.

2) 1 UMTS channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

6) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

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

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

9) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

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

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	247 feet	Height (AGL):	247 feet	Height (AGL):	247 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	255	Total TX Power(W):	255	Total TX Power(W):	255
ERP (W):	10,877.78	ERP (W):	10,877.78	ERP (W):	10,877.78
Antenna A1 MPE%	**0.67**	Antenna B1 MPE%	**0.67**	Antenna C1 MPE%	**0.67**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd
Height (AGL):	247 feet	Height (AGL):	247 feet	Height (AGL):	247 feet
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,443.03	ERP (W):	2,443.03	ERP (W):	2,443.03
Antenna A2 MPE%	**0.36**	Antenna B2 MPE%	**0.36**	Antenna C2 MPE%	**0.36**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.03 %**
AT&T	**3.02** %
Clearwire	**0.11** %
Dept. Pub. Safety	**0.14** %
PageNet	**0.13** %
Sprint / Nextel	**1.27** %
Dept. Homeland Security	**0.73** %
Light Squared, Inc.	**0.25** %
Site Total MPE %:	**6.68 %**

T-Mobile Sector A Total:	1.03 %
T-Mobile Sector B Total:	1.03 %
T-Mobile Sector C Total:	1.03 %
Site Total:	6.68 %

T-Mobile Maximum MPE Power Values (Per Sector)

T-Mobile _Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1900 MHz GSM	1	639.87	247	0.40	PCS - 1900 MHz	1000.00	0.04%
T-Mobile PCS - 1900 MHz LTE	2	1,706.32	247	2.11	PCS - 1900 MHz	1000.00	0.21%
T-Mobile AWS - 2100 MHz UMTS	1	1,706.32	247	1.06	AWS - 2100 MHz	1000.00	0.11%
T-Mobile AWS - 2100 MHz LTE	2	2,559.48	247	3.17	AWS - 2100 MHz	1000.00	0.32%
T-Mobile 600 MHz LTE	2	788.97	247	0.98	600 MHz	400.00	0.24%
T-Mobile 700 MHz LTE	2	432.54	247	0.54	700 MHz	467.00	0.11%
						Total:	**1.03%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	1.03 %
Sector B:	1.03 %
Sector C:	1.03 %
T-Mobile Maximum MPE % (Per Sector):	1.03 %
Site Total:	6.68 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.68%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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