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

October 4, 2018

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

RE: **Notice of Exempt Modification for T-Mobile Crown Site BU: 842873**
T-Mobile Site ID: CTFF531A
30 Oliver Terrace, Shelton, CT 06484
Latitude: 41° 17' 38.21"/ Longitude: -73° 6' 25.83"

Dear Ms. Bachman:

T-Mobile currently maintains ten (10) antennas at the 120 foot level of the existing 140-foot self-support tower at 30 Oliver Terrace in Shelton, CT. The tower is owned by Crown Castle. The property is owned by Brennan Realty LLC. T-Mobile now intends to remove and replace six (6) of their existing antennas with six (6) new antennas, add three (3) RRUs, swap out two (2) lines of coax with (2) hybrid fiber lines, remove a DUS41 unit from the ground and add (1) BB5216 unit to existing cabinet. T-Mobile will also be adding (3) tie backs to the existing antenna platform.

This facility was approved by the by the Connecticut Siting Council on in Petition 608 on March 25, 2003. There were no conditions listed in this approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j- 73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Mark A. Lauretti, Mayor, City of Shelton, Rick Schultz, AICP, Planning & Zoning Administrator, as well as the property owner, and Crown Castle is the tower 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 Mark A. Lauretti, Mayor
City Hall, Room 202
54 Hill Street
Shelton CT, 06484

Rick Schultz, AICP, Planning & Zoning Administrator
City Hall, Third Floor
54 Hill Street
Shelton CT, 06484

Brennan Realty LLC
70 Platt Road
PO Box 788
Shelton, CT 06484

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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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Petition No. 608
AT&T Wireless PCS, LLC
Shelton, Connecticut
Staff Report
March 25, 2003

On February 4, 2003, Connecticut Siting Council (Council) member Gerald Heffernan and Robert Mercier of Council staff met with AT&T Wireless PCS, Inc. (AT&T) representative Christopher Fisher at 70 Platt Road in Shelton to review this petition. AT&T proposes to replace an existing 75-foot monopole with a 100-foot monopole 275 feet west of its existing location. AT&T is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the tower replacement and relocation.

The existing monopole is owned by the John J. Brennan Construction Company and is located adjacent to an office/garage building. The existing monopole, with a base diameter of 8 inches tapering to 4 inches at the top, has limited structural capability and supports one whip antenna extending to a height of 81 feet above ground level. The proposed 100-foot replacement tower would be located approximately 275 feet west of the existing tower, adjacent to a warehouse building in an area used for equipment storage.

The new tower would have a base diameter of 3.5 feet tapering to 1.5 feet at the top and would be designed to support three antenna platforms and the whip antenna. AT&T would place 6 panel antennas at the 95-foot level of the tower. The whip antenna would be placed at the top of the tower and would extend to a height of 107 feet above ground level. Nextel and Sprint intend on locating on the tower at the 85-foot and 75-foot levels at a future date. The existing monopole would be removed once the new tower is operational.

AT&T would install equipment cabinets on a concrete pad within a fenced compound at the base of the tower. Compound expansion would be necessary to accommodate future carriers. Utilities would be installed underground from a utility pole on Oliver Terrace, an abutting street.

The proposed site is located in an industrial and commercial area adjacent to Route 8. A residence is located approximately 200 feet north of the proposed tower site. A band of mature trees along the north property boundary would provide some screening of views from Platt Road and the adjacent residence.

The worst-case power density for the telecommunications operations at the site has been calculated to be 4.3% of the applicable standard for uncontrolled environments.

City of Shelton
Property Listing Report

Parcel ID 77.-23

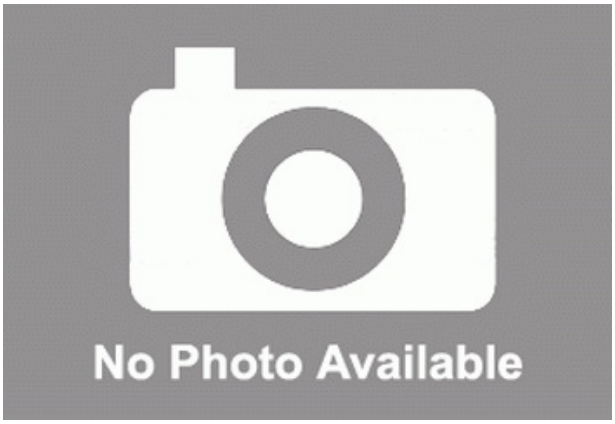
Account 5998

Property Information

Owner	BRENNAN REALTY LLC
Address	30 OLIVER TERR
Mailing Address	PO BOX 788 70 PLATT , RD 06484
Land Use	- RESIDENTIAL
Land Class	3-2

Census Tract	1102
Neighborhood	
Zoning	IA-2
Acreage	1.18
Utilities	GAS/ELECTRIC
Lot Setting/ Desc	/

Photo



PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings		
Outbuildings		
Improvements		
Extras		
Land		
Total	238000	166600
Previous		

Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Total Rooms	
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

EXTERIOR WALLS:	
Primary	
Secondary	
INTERIOR WALLS:	
Primary	
Secondary	
FLOORS:	
Primary	
Secondary	
HEATING/AC:	
Heating Type	
Heating Fuel	
AC Type	

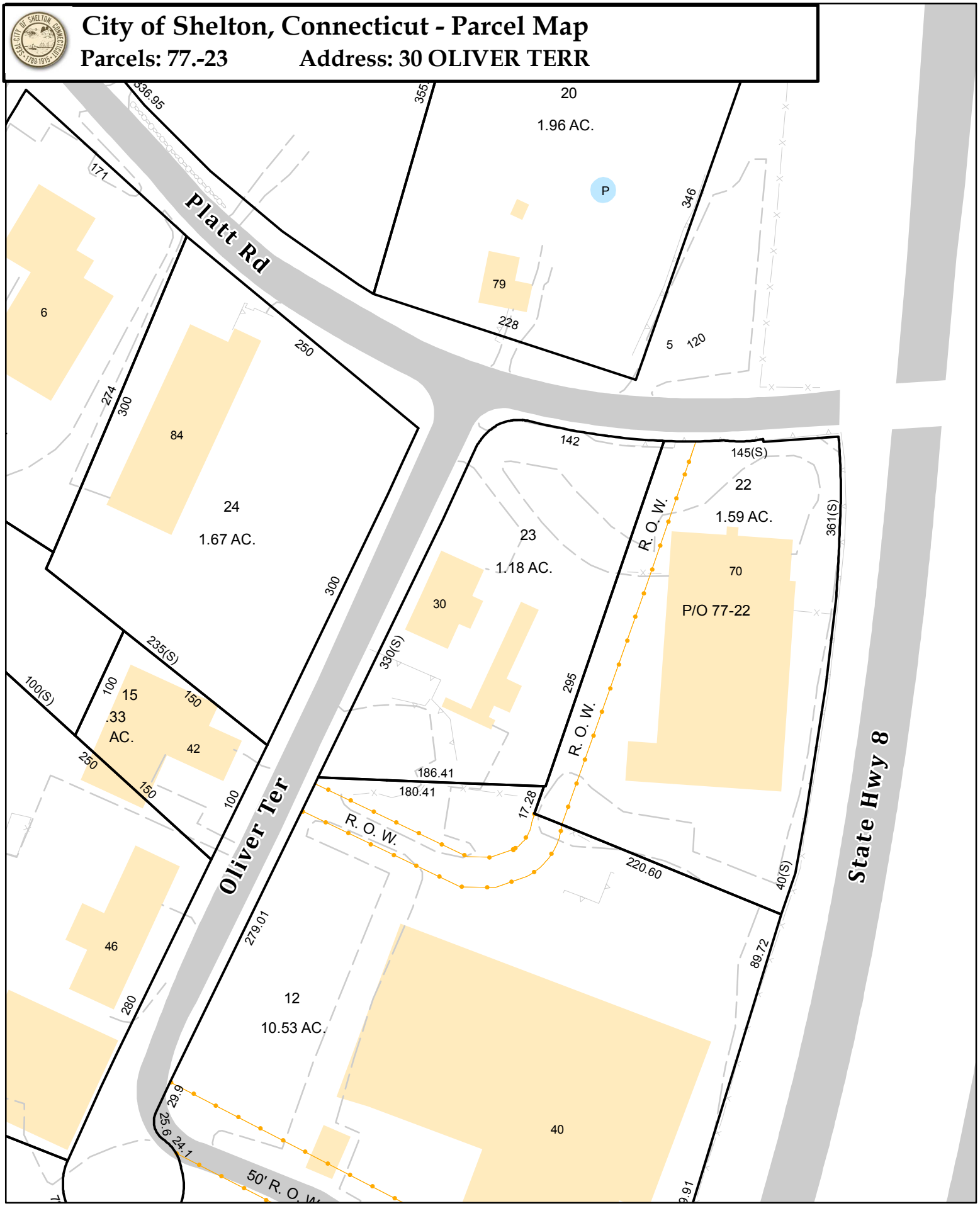
BUILDING AREA:

Effective Building Area	
Gross Building Area	
Total Living Area	

SALES HISTORY:

Sale Date	20040702
Sale Price	0
Book/ Page	2400/316-2

Report Created On 12/9/2016


City of Shelton, Connecticut - Parcel Map
Parcels: 77.-23 Address: 30 OLIVER TERR
Platt Rd
Oliver Ter
State Hwy 8
R. O. W.
50' R. O. W.
20
1.96 AC.
24
1.67 AC.
23
1.18 AC.
22
1.59 AC.
15
.33
AC.
12
10.53 AC.
P/O 77-22
336.95
355
346
171
250
274
300
142
145(S)
361(S)
330(S)
295
235(S)
100(S)
186.41
180.41
17.28
220.60
40(S)
279.01
89.72
280
29.9
25.6
24.1
228
120
N
Approximate Scale: 1:1,200
0
100
200
Feet
Map Produced
October 2014
Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The City of Shelton and its mapping contractors assume
no legal responsibility for the information contained herein.

CROWN CASTLE

T · · Mobile ·

NORTHEAST, LLC.

CROWN SITE NAME:

SHELTON NE

SITE ID#: 842873

APP ID #: 444514

L600 UPGRADE

T–MOBILE SITE I.D. NUMBER:

CTFF531A

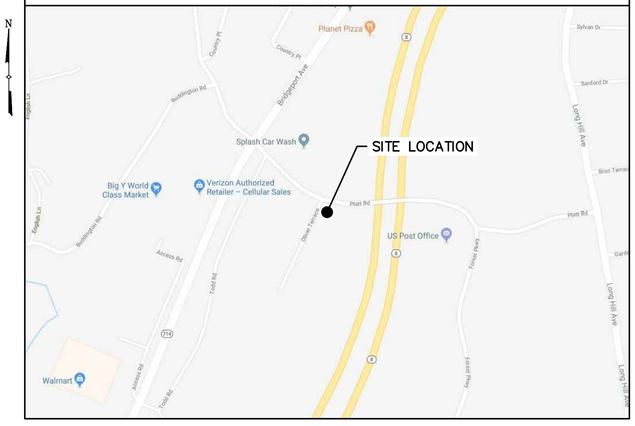
T–MOBILE SITE NAME:

SHELTON_RT8-AT&T

CONFIGURATION:

67D94DB

VICINITY MAP



PROJECT SUMMARY

T–MOBILE SITE NUMBER:	CTFF531A
SITE ADDRESS:	30 OLIVER TERRACE SHELTON, CT 06484
COUNTY:	FAIRFIELD
APPLICANT:	T–MOBILE NORTHEAST LLC. 103 MONARCH DR. LIVERPOOL, NY 13088
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	140'±
ANTENNA RAD CENTER:	120'±
LATITUDE: (NAD 83)	41° 17' 38.21" N
LONGITUDE: (NAD 83)	73° 06' 25.83" W
GRADE ELEVATION:	313'± AMSL

CONSTRUCTION MANAGER:	CROWN CASTLE 3 CORPORATE PARK DR. SUITE 101 CLIFTON PARK, NY 12065
CONTACT: PHONE:	JASON D'AMICO (860) 209–0104
PROJECT MANAGER:	CROWN CASTLE 3 CORPORATE PARK DR. SUITE 101 CLIFTON PARK, NY 12065
CONTACT: PHONE:	WILL STONE (518) 373–3543
ENGINEER:	TECTONIC ENGINEERING CONSULTANTS 1279 ROUTE 300 NEWBURGH, NY 12550
CONTACT: PHONE:	STEVEN MATTHEWS (518) 783–1630

SHEET INDEX

SHEET NO	DESCRIPTION	REV NO	REVISION DATE
T–1	TITLE SHEET	1	9/28/18
A–1	OVERALL SITE PLAN	1	9/28/18
A–2	ELEVATION & ANTENNA PLANS	1	9/28/18
A–3	ANTENNA DETAILS & RF DIAGRAM	1	9/28/18
A–4	ANTENNA MOUNTING DETAILS	1	9/28/18
A–5	NOTES	1	9/28/18
E–1	ONE–LINE POWER DIAGRAM & NOTES	1	9/28/18
G–1	GROUNDING DETAILS & NOTES	1	9/28/18

THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL ITEMS HAVE BEEN ADDRESSED AND EACH OF THE DRAWINGS HAS BEEN REVISED AND ISSUED "FOR CONSTRUCTION".

PROJECT SCOPE OF WORK

THE PROPOSED WORK CONSISTS OF:

- REMOVE (6) EXISTING T–MOBILE PANEL ANTENNAS
- REMOVE (1) EXISTING T–MOBILE DUS41 UNIT
- REMOVE (2) EXISTING T–MOBILE COAX CABLES
- INSTALL (6) PROPOSED T–MOBILE ANTENNAS
- INSTALL (3) PROPOSED T–MOBILE RRUS 4449 (B71+B12)
- INSTALL (2) PROPOSED T–MOBILE 6X12 HYBRID CABLES
- INSTALL (3) PROPOSED T–MOBILE TIEBACKS
- INSTALL (1) PROPOSED T–MOBILE BB 5216 UNIT IN EXISTING CABINET

CONFIGURATION
67D94DB
REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM

SITE DIRECTIONS

DIRECTIONS: (FROM WOBURN, MA):

TAKE I–84 S. TAKE EXIT 57 FOR CT–15 S. CONTINUE ONTO CT–15 S/US–5 S. TAKE EXIT 86 FOR I–91 S. TAKE EXIT 17 FOR CT–15 S. TAKE EXIT 58 FOR CT–34 W. TURN LEFT ONTO MAIN ST. TURN LEFT ONTO CT–8 S. TAKE EXIT 13 FOR BRIDGEPORT AVE. TURN LEFT ONTO BRIDGEPORT AVE. TURN LEFT ONTO PLATT RD. TURN RIGHT ONTO OLIVER TERRACE. SITE WILL BE ON THE LEFT.

APPLICABLE CODES

DESIGN CRITERIA:

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

1. 2016 CT STATE BUILDING CODE (IBC 2012)
2. ACCESSIBILITY CODE ADA 2015. BASED ON ICC/ANSI A117.1–LATEST EDITION
3. 2014 NATIONAL ELECTRIC CODE
4. FIRE/LIFE SAFETY CODE – IFC 2015
5. ENERGY CODE IECC 2012

811 DigSafe MA ME NH RI VT

CROWN CASTLE
3 CORPORATE PARK DR. STE 101
CLIFTON PARK, NY 12065

T · · Mobile ·
NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
36 British American Blvd. Phone: (518) 783-1630
Suite 101 (800) 829-6531
Latham, NY 12110
www.tectonicengineering.com

WORK ORDER NUMBER	DRAWN BY
9166.34	TRR

NO.	DATE	ISSUE
0	9/4/18	FOR COMMENT
1	9/28/18	FOR CONSTRUCTION

RELEASED BY	DATE

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

0 1 2 3
ORIGINAL SIZE IN INCHES

CROWN SITE INFORMATION

SITE ID #: 842873
APP ID #: 444514
SHELTON NE

T–MOBILE SITE INFORMATION

SITE ID #: CTFF531A
SHELTON_RT8–AT&T

SITE ADDRESS

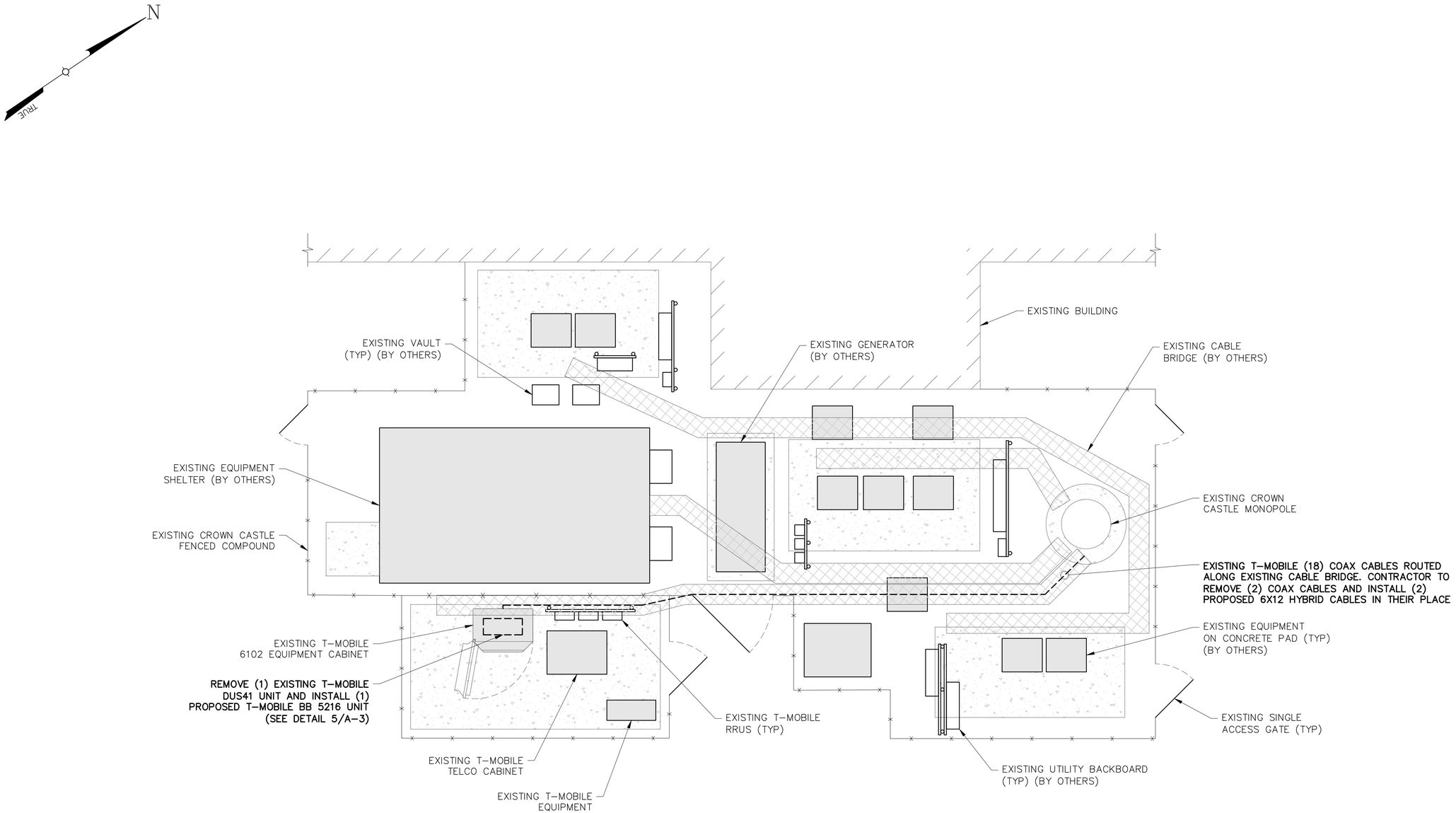
30 OLIVER TERRACE
CITY OF SHELTON
FAIRFIELD COUNTY
CT 06484

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTE:

SITE INFORMATION BASED ON DRAWINGS BY CROWN CASTLE AND DRAWINGS BY MCGOWAN ENGINEERING. DATED 2/19/10.

1 / A-1 OVERALL SITE PLAN

SCALE: 1" = 8' (11x17 SIZE)
1" = 4' (22x34 SIZE)

CONFIGURATION
67D94DB
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM

CROWN CASTLE
3 CORPORATE PARK DR. STE 101
CLIFTON PARK, NY 12065

T-Mobile
NORTHEAST LLC
103 MONARCH DRIVE
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ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

0 1 2 3
ORIGINAL SIZE IN INCHES

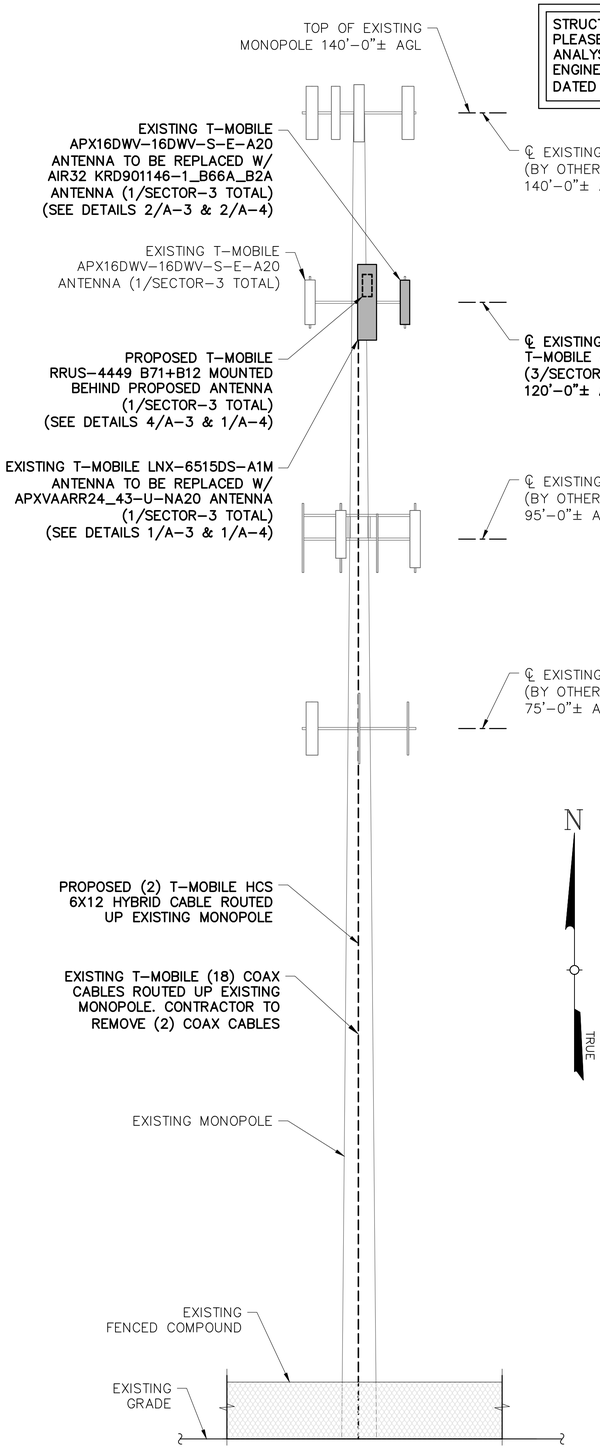
CROWN SITE INFORMATION
SITE ID #: 842873
APP ID #: 444514
SHELTON NE

T-MOBILE SITE INFORMATION
SITE ID #: CTFF531A
SHELTON_RT8-AT&T

SITE ADDRESS
30 OLIVER TERRACE
CITY OF SHELTON
FAIRFIELD COUNTY
CT 06484

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
A-1



1 A-2 ELEVATION
SCALE: 1/16" = 1' (11x17 SIZE)
1/8" = 1' (22x34 SIZE)

STRUCTURAL NOTE:
PLEASE REFER TO STRUCTURAL ANALYSIS REPORT BY JACOBS ENGINEERING GROUP, INC., DATED 8/22/18.

ANTENNA AND CABLE SCHEDULE

SECTOR MARK	SECTOR	STATUS	ANTENNA DATA	MECHANICAL DOWN TILT	ELECTRICAL DOWN TILT	AZIMUTH (TRUE NORTH)	ANTENNA ℄ HEIGHT (AGL)	TMA/ RRU	CABLE	JUMPER TYPE	CABLE LENGTH
A-1 L2100/L1900	LEFT ALPHA	REPLACEMENT	AIR32 KRD901146-1_B66A_B2A 56.6" x 12.9" x 8.7", 143 LBS	0°	2°	50°	120'	0/0	EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"
A-2 L700/L600	CENTER ALPHA	REPLACEMENT	APXVAARR24_43-U-NA20 95.9" x 24" x 8.7", 176 LBS	0°	2°	50°	120'	0/1	JUMPERS FROM RRU	DC FIBER	16'-0"
A-3 G1900/U2100	RIGHT ALPHA	EXISTING	APX16DWV-16DWV-S-E-A20 55.9" x 13" x 3.15", 40.7 LBS	0°	2°	50°	120'	2/0	EXISTING (4) 7/8" COAX & EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"
B-1 L2100/L1900	LEFT BETA	REPLACEMENT	AIR32 KRD901146-1_B66A_B2A 56.6" x 12.9" x 8.7", 143 LBS	0°	2°	200°	120'	0/0	EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"
B-2 L700/L600	CENTER BETA	REPLACEMENT	APXVAARR24_43-U-NA20 95.9" x 24" x 8.7", 176 LBS	0°	2°	200°	120'	0/1	JUMPERS FROM RRU	DC FIBER	16'-0"
B-3 G1900/U2100	RIGHT BETA	EXISTING	APX16DWV-16DWV-S-E-A20 55.9" x 13" x 3.15", 40.7 LBS	0°	2°	200°	120'	2/0	EXISTING (4) 7/8" COAX & EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"
G-1 L2100/L1900	LEFT GAMMA	REPLACEMENT	AIR32 KRD901146-1_B66A_B2A 56.6" x 12.9" x 8.7", 143 LBS	0°	2°	300°	120'	0/0	EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"
G-2 L700/L600	CENTER GAMMA	REPLACEMENT	APXVAARR24_43-U-NA20 95.9" x 24" x 8.7", 176 LBS	0°	2°	300°	120'	0/1	JUMPERS FROM RRU	DC FIBER	16'-0"
G-3 G1900/U2100	RIGHT GAMMA	EXISTING	APX16DWV-16DWV-S-E-A20 55.9" x 13" x 3.15", 40.7 LBS	0°	2°	300°	120'	2/0	EXISTING (4) 7/8" COAX & EXISTING SHARED HYBRID FIBER TRUNK	DC FIBER	170'-0"
										7/8" COAX	170'-0"

NOTE:
- INFORMATION BASED ON CROWN CASTLE APPLICATION #444514 REVISION 0, DATED 7/10/18.
- INFORMATION BASED ON RFDS, DATED 5/5/18.

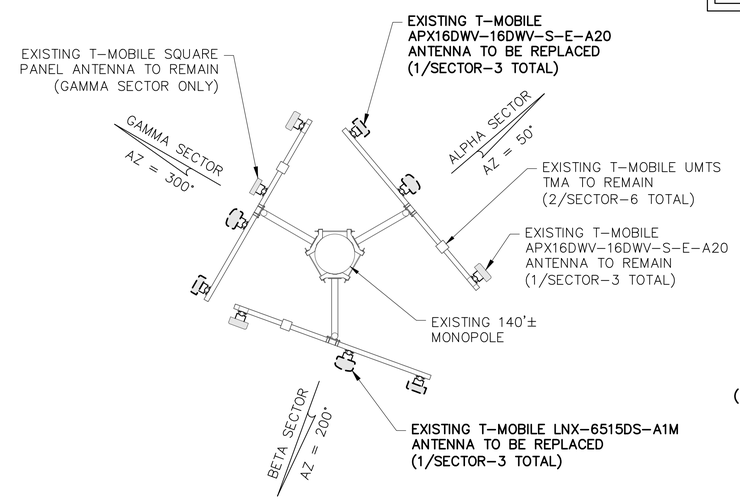
RRH AND HYBRID SCHEDULE

SECTOR	STATUS	UNITS	UNIT DATA	# OF UNITS	CABLE TYPE	# OF CABLES	CABLE LENGTH
ALPHA	PROPOSED	RRUS 4449	28" x 15" x 10", 74 LBS	1	PROPOSED SHARED HYBRID FIBER TRUNK	1	170'-0"
BETA	PROPOSED	RRUS 4449	28" x 15" x 10", 74 LBS	1	PROPOSED SHARED HYBRID FIBER TRUNK	1	170'-0"
GAMMA	PROPOSED	RRUS 4449	28" x 15" x 10", 74 LBS	1	PROPOSED SHARED HYBRID FIBER TRUNK	1	170'-0"

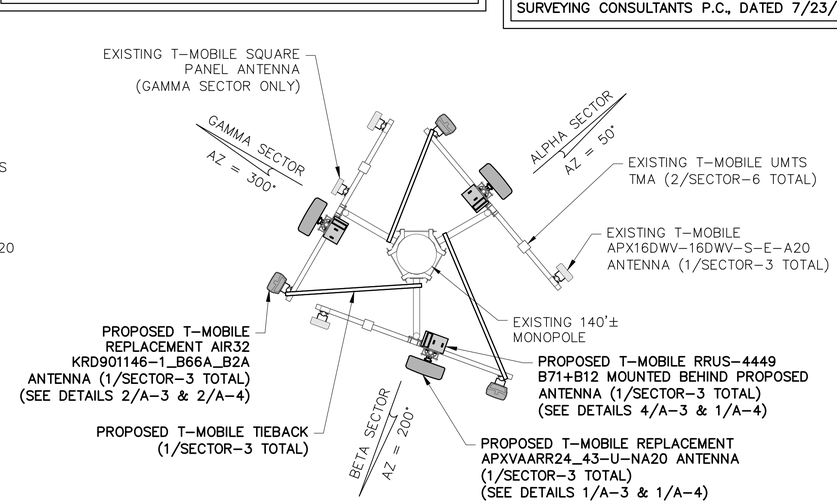
N
TRUE

NORTH NOTE: NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

STRUCTURAL NOTE:
PLEASE REFER TO MOUNT STRUCTURAL ANALYSIS REPORT PREPARED BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C., DATED 7/23/18.



2 A-2 ANTENNA PLAN (EXISTING)
SCALE: 1/4" = 1'-0" (22x34 SIZE)
1/8" = 1'-0" (11x17 SIZE)



3 A-2 ANTENNA PLAN (PROPOSED)
SCALE: 1/4" = 1'-0" (22x34 SIZE)
1/8" = 1'-0" (11x17 SIZE)

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

0 1 2 3
ORIGINAL SIZE IN INCHES

CROWN SITE INFORMATION
SITE ID #: 842873
APP ID #: 444514
SHELTON NE

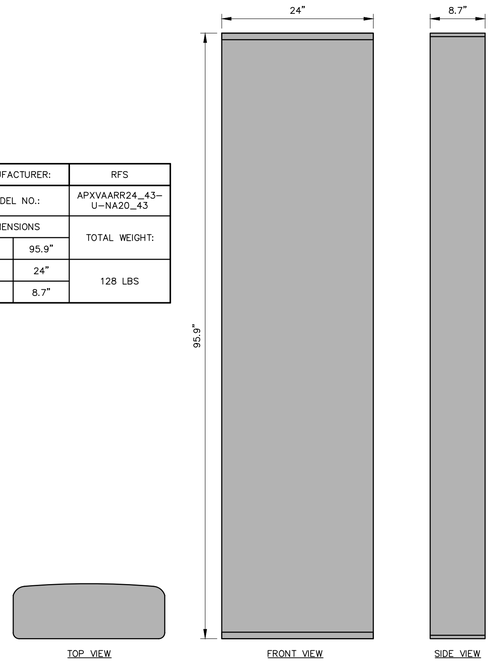
T-MOBILE SITE INFORMATION
SITE ID #: CTFF531A
SHELTON_RT8-AT&T

SITE ADDRESS
30 OLIVER TERRACE
CITY OF SHELTON
FAIRFIELD COUNTY
CT 06484

SHEET TITLE
ELEVATION & ANTENNA PLANS

SHEET NUMBER
A-2

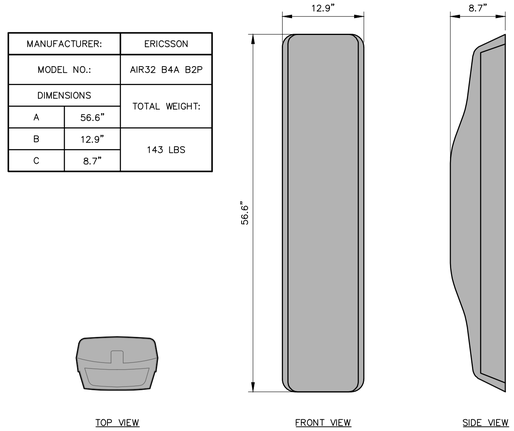
MANUFACTURER:		RFS
MODEL NO.:		APXVAARR24_43-U-NA20_43
DIMENSIONS		TOTAL WEIGHT:
A	95.9"	
B	24"	128 LBS
C	8.7"	



1 / A-3 RFS ANTENNA DETAIL

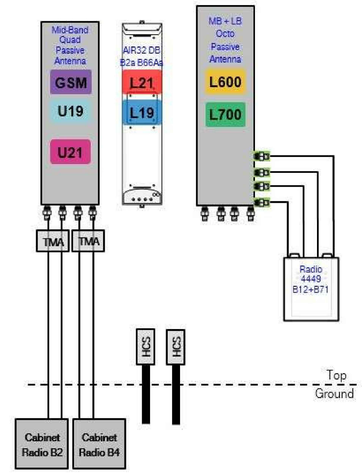
SCALE: 1" = 1'-0" (22x34 SIZE)
2" = 1'-0" (11x17 SIZE)

MANUFACTURER:		ERICSSON
MODEL NO.:		AIR32 B4A B2P
DIMENSIONS		TOTAL WEIGHT:
A	56.6"	
B	12.9"	143 LBS
C	8.7"	



2 / A-3 AIR32 ANTENNA DETAIL

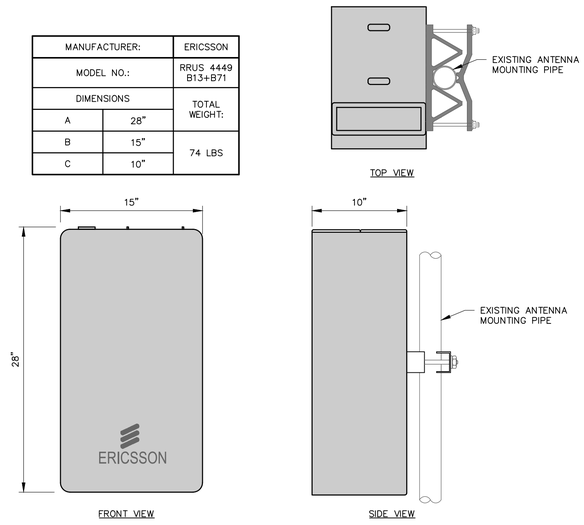
SCALE: 1" = 1'-0" (22x34 SIZE)
2" = 1'-0" (11x17 SIZE)



3 / A-3 RF DIAGRAM

SCALE: NTS

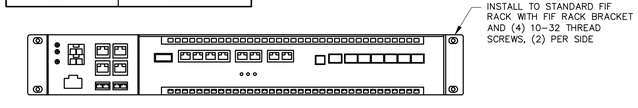
MANUFACTURER:		ERICSSON
MODEL NO.:		RRUS 4449 B13+B71
DIMENSIONS		TOTAL WEIGHT:
A	28"	
B	15"	74 LBS
C	10"	



4 / A-3 RRUS-4449 DETAIL

SCALE: 1-1/2" = 1'-0" (22x34 SIZE)
3" = 1'-0" (11x17 SIZE)

MANUFACTURER:	ERICSSON
MODEL NO.:	5216 BASE UNIT
DIMENSIONS (HxWxD):	2.8"x19"x13.78"
WEIGHT	23LBS



*INSTALLED INSIDE EXISTING CABINET

5 / A-3 5216 BASEBAND UNIT DETAIL

SCALE: NTS (22x34 SIZE)
NTS (11x17 SIZE)

CONFIGURATION

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FAIRFIELD COUNTY
CT 06484

SHEET TITLE

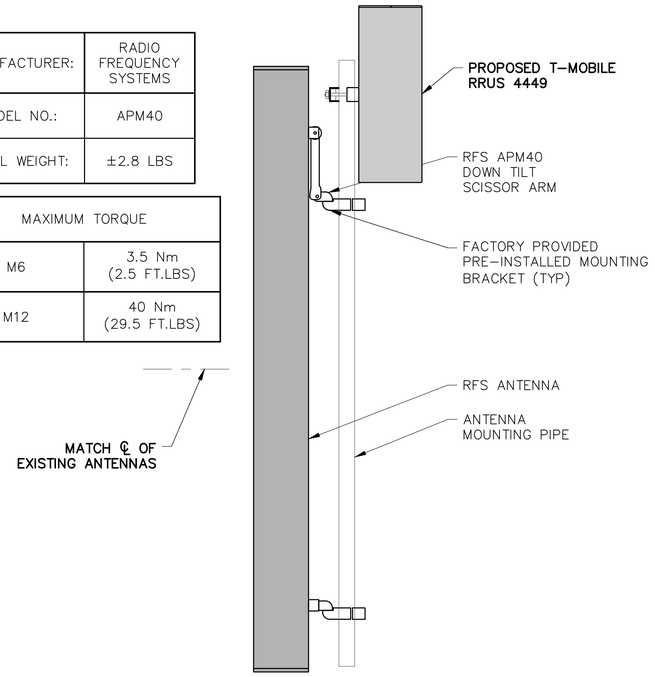
ANTENNA DETAILS
& RF DIAGRAM

SHEET NUMBER

A-3

MANUFACTURER:	RADIO FREQUENCY SYSTEMS
MODEL NO.:	APM40
TOTAL WEIGHT:	±2.8 LBS

MAXIMUM TORQUE	
M6	3.5 Nm (2.5 FT.LBS)
M12	40 Nm (29.5 FT.LBS)



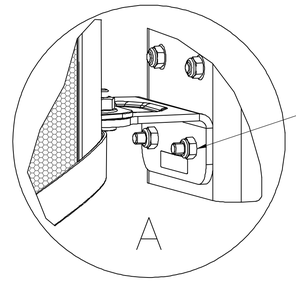
1 / A-4 MOUNTING DETAIL

SCALE: NTS (22x34 SIZE)
NTS (11x17 SIZE)

MANUFACTURER:	KATHREIN
MODEL NO.:	85010084
TOTAL WEIGHT:	±28.7 LBS

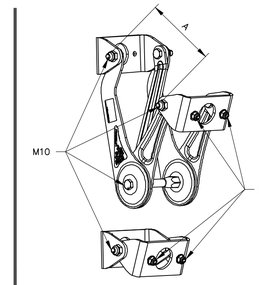
MAXIMUM TORQUE	
M10	50Nm (36.88 FT.LBS)

HANG ANTENNA ON BRACKET STUDS AND SECURE WITH NUTS. ADJUST LOWER CARRIER AS SHOWN IN DETAIL A

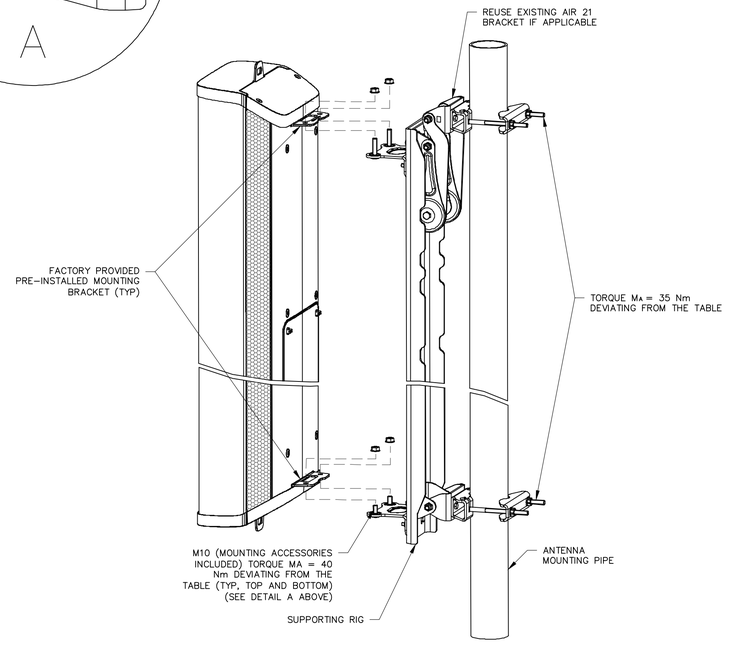


ATTENTION: LOOSEN BOTH SCREWS TO ADJUST THE LOWER CARRIER AND RESECURE THEM AFTERWARDS

SCREW SIZE	TORQUE
M8	20Nm
M10	50Nm



∢	A mm
1°	69
2°	79
3°	93
4°	110
5°	129
6°	149
7°	169
8°	190
9°	211
10°	232
11°	253
12°	275
13°	296
14°	318
15°	340
16°	362
17°	383



2 / A-4 AIR32 ANTENNA MOUNTING DETAIL

SCALE: NTS (22x34 SIZE)
NTS (11x17 SIZE)

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FAIRFIELD COUNTY
CT 06484

SHEET TITLE
ANTENNA MOUNTING DETAILS

SHEET NUMBER
A-4

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE STATE BUILDING CODE, LATEST VERSION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. DIMENSIONS SHOWN ARE TO FINISH SURFACES, UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE AUTHORIZED REPRESENTATIVE OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
6. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE "NOTICE TO PROCEED," CONTRACTOR WILL CONTACT THE CONSTRUCTION MANAGER OF RECORD A MINIMUM OF 48 HOURS PRIOR TO WORK START.
8. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
9. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
10. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
12. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
14. CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE OWNER.
15. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
16. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, AND PIPING. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
17. REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
18. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
19. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
20. PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
21. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO AT COMPLETION OF CONSTRUCTION.
22. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY. ANY WORK, MATERIALS OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO T-MOBILE.

STRUCTURAL NOTES

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
2. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.
3. STRUCTURAL STEEL BEAMS SHALL CONFORM TO ASTM A992 (FY=50KSI). STRUCTURAL STEEL PLATES AND ANGLES SHALL CONFORM TO ASTM A36.
4. ROUND AND SQUARE HOLLOW STRUCTURAL SECTIONS (HSS) CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 "PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED WELDED AND SEAMLESS", TYPE E OR S, GRADE B.
6. CONNECTIONS: WELD OR BOLT CONNECTIONS, AS INDICATED:
   A. CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CITED AISC SPECIFICATION.
   B. STRUCTURAL BOLTS SHALL CONFORM TO THE LATEST ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS".
   C. WHERE THE REACTION VALUES OF BEAMS, BRACING, STRUTS, ETC., ARE NOT SHOWN ON THE DRAWINGS THE CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE END REACTION DERIVED FROM THE TABLES AND FORMULA OF UNIFORM LOAD CONSTANTS IN PART 2, NINTH EDITION, OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN MEMBER SIZE, SPAN AND YIELD STRENGTH.
   D. MINIMUM 3/16" FILLET E70-XX WELD SHALL APPLY UNLESS NOTED.
   E. MINIMUM 1/2" DIA. A325 BOLTS SHALL APPLY UNLESS NOTED.
   F. MINIMUM SIZE OF CLIP ANGLES SHALL BE L3X3X3/8" UNLESS NOTED.
   G. ALL GUSSET PLATES SHALL BE 3/8" THICK UNLESS NOTED.
   H. ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS.
7. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. BOLTS SHALL BE 3/4 INCH DIA. UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
9. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. SLEEVE ANCHORS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 3, CLASS 3, AS MANUFACTURED BY HILTI FASTENING SYSTEMS OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE (3) INCHES.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE FOUR (4) INCHES.
15. EPOXY ANCHORING SYSTEM SHALL BE THE HILTI HY-70 FOR MASONRY CONSTRUCTION WITH HOLLOW BRICK OR BLOCK & THE HILTI HIT HY200 INJECTION ADHESIVE ANCHOR FOR GROUT FILLED CONCRETE MASONRY UNITS AND CONCRETE. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2"ø STAINLESS STEEL ANCHOR ROD W/NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE FOR THE HY-70 ONLY & AN EPOXY ADHESIVE (6" MIN EMBEDMENT). THE INSTALLATION PROCEDURE SHALL BE AS FOLLOWS:
   A. DRILL THE HOLE USING MANUFACTURER RECOMMENDED DRILL BIT UP TO SPECIFIED DEPTH. HAMMERING IS NOT PERMITTED.
   B. CLEAN THE HOLE USING NYLON BRUSH AND/OR COMPRESSED AIR. THE HOLE SHOULD BE CLEAR OF ANY LOOSE MATERIAL. IF WET, THE MASONRY SHOULD BE ALLOWED TO DRY FULLY BEFORE ANCHOR INSTALLATION.
   C. INSERT SPECIFIED SCREEN TUBE INTO THE HOLE.
   D. FILL THE SCREEN TUBE COMPLETELY WITH ADHESIVE, BEGINNING AT THE BOTTOM END.
   E. INSERT ANCHOR ROD OR INTERNALLY THREADED INSERT INTO THE ADHESIVE-FILLED SCREEN TUBE, TWISTING SLIGHTLY.
   F. LOAD FASTENER ONLY AFTER MANUFACTURER SPECIFIED CURE TIME HAS ELAPSED.
16. GRATING SHALL BE GALVANIZED WELDED STEEL BAR GRATING TYPE W/BA WITH 1-1/4" BEARING BARS AT 1-3/16" OC. FASTEN TO SUPPORTING MEMBERS WITH SADDLE-TYPE CLIPS AT 2'-0" O.C. AND BAND ALL EXPOSED EDGES.
17. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
18. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED.
19. SUBMIT DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
20. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
21. ALL WORK SHALL BE INSPECTED BY THE ENGINEER DURING AND AT THE COMPLETION OF CONSTRUCTION.
22. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED BEHIND AND ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.

SITE NOTES

1. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWING.
2. RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
3. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. CARE SHALL BE TAKEN TO RETAIN NATURAL GROWTH AND PREVENT DAMAGE TO TREES WITHIN AND OUTSIDE THE LIMITS OF CONSTRUCTION AND SPECIFIED WORK AREAS CAUSED BY EQUIPMENT AND MATERIALS. ANY DAMAGE TO THIS NATURAL GROWTH SHALL BE RESTORED AT THE EXPENSE OF THE CONTRACTOR.
6. ALL AREAS DISTURBED BY THE CONTRACTOR WITHOUT AUTHORIZATION SHALL BE RESTORED BY THE CONTRACTOR.
7. IN THE EVENT THE CONTRACTOR DAMAGES AN EXISTING UTILITY SERVICE CAUSING AN INTERRUPTION IN SAID SERVICE, HE SHALL IMMEDIATELY COMMENCE WORK TO RESTORE SERVICE AND MAY NOT CEASE HIS WORK OPERATION UNTIL SERVICE IS RESTORED.

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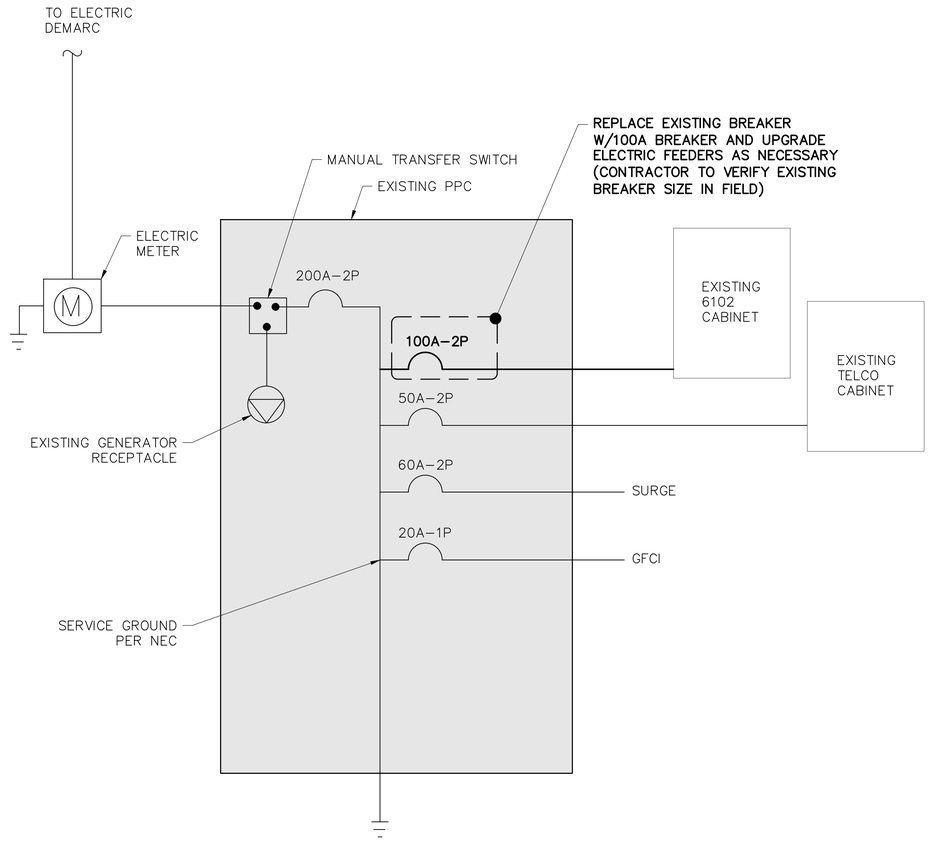
SHEET NUMBER
A-5



NOTE:
THE ABOVE DIAGRAM IS GENERIC AND ANY ELECTRICAL WORK SHALL BE COMPLETED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH NEC STANDARDS.

1 / E–1 ONE–LINE POWER DIAGRAM

SCALE: NTS

SITE NOTES

1. CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES (U.L.) AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION. AND SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
4. CONTRACTOR TO COORDINATE WITH SITE OWNER FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
5. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
6. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
7. METER SOCKETS AMPERES, VOLTAGE AND NUMBER OF PHASES SHALL BE NOTED AND SHALL BE MANUFACTURED BY SQUARE "D" COMPANY, SANGAMO OR APPROVED EQUAL. METER SOCKET SHALL BE APPROVED BY UTILITY COMPANY PRIOR TO INSTALLATION.
8. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM WITH TYPE THHN INSULATION UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL CONDUCTORS SHALL BE COPPER.
10. USE T–TAP CONNECTIONS ON ALL MULTI–CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
11. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J–BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
12. CONDUIT:
    A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR.
    B. INTERMEDIATE METAL CONDUIT SHALL BE U.L. LABEL, FITTINGS SHALL BE THREADED ALUMINUM OR STEEL AND SHALL BE USED FOR ALL EXTERIOR RUNS. THREADLESS COUPLINGS AND CONNECTORS SHALL NOT BE USED.
    C. ELECTRICAL METALLIC TUBING (EMT) SHALL HAVE U.L. LABEL, FITTINGS SHALL BE NO SET SCREW OR CRIMP TYPE FITTINGS SHALL BE USED. GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
    D. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL HAVE FULL SIZE GROUND WIRE.
    E. CONDUIT SHALL BE SIZED PER THE NEC AND AS SHOWN.
    F. CONDUIT RUNS MAY BE SURFACE MOUNTED IN CEILINGS OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH OWNER PRIOR TO INSTALLING.
    G. ALL CONDUIT ONLY (C.O.) RUNS SHALL HAVE A PULL WIRE OR ROPE.
13. COVERPLATES SHALL BE BRUSHED STAINLESS STEEL FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, AND SHALL HAVE ENGRAVED LETTERING WHERE INDICATED WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA #WPD–8 LIFT COVERPLATES.
14. REFER TO MANUFACTURERS MANUAL FOR RECOMMENDED FUSE AND WIRE SIZES.
15. ALL FINAL CONNECTIONS TO THE EQUIPMENT ARE TO BE OF FLEXIBLE WEATHERPROOF CONDUIT TO MEET APPLICABLE CODES.
16. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
17. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2, UNLESS OTHERWISE NOTED.
18. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE CONSTRUCTION MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
19. PROVIDE CONSTRUCTION MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH GAINING APPROVALS AND PAYING ALL FEES ASSESSED BY UTILITY COMPANY FOR ELECTRICAL SERVICE.

CONFIGURATION
67D94DB
REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM

CROWN CASTLE
3 CORPORATE PARK DR. STE 101
CLIFTON PARK, NY 12065

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

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36 British American Blvd. Phone: (518) 783-1630
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Latham, NY 12110
www.tectonicengineering.com

WORK ORDER NUMBER	DRAWN BY
9166.34	TRR

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0	9/4/18	FOR COMMENT
1	9/28/18	FOR CONSTRUCTION

RELEASED BY	DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

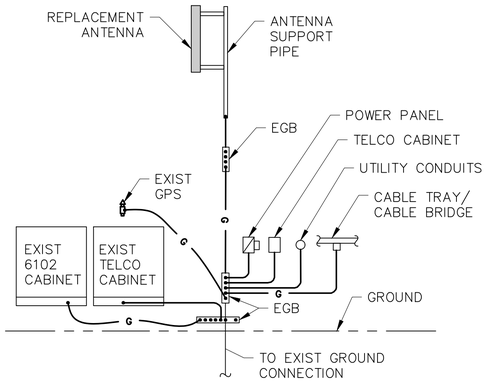
CROWN SITE INFORMATION
SITE ID #: 842873
APP ID #: 444514
SHELTON NE

T–MOBILE SITE INFORMATION
SITE ID #: CTFF531A
SHELTON_RT8–AT&T

SITE ADDRESS
30 OLIVER TERRACE
CITY OF SHELTON
FAIRFIELD COUNTY
CT 06484

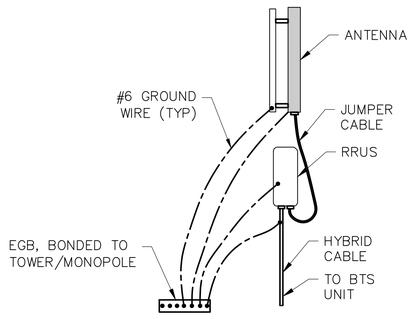
SHEET TITLE
ONE–LINE POWER DIAGRAM & NOTES

SHEET NUMBER
E-1



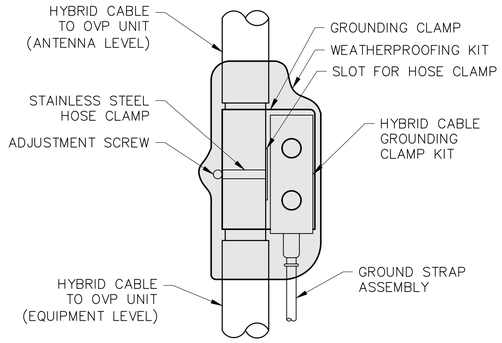
1 G-1 GROUNDING RISER DIAGRAM

SCALE: NTS



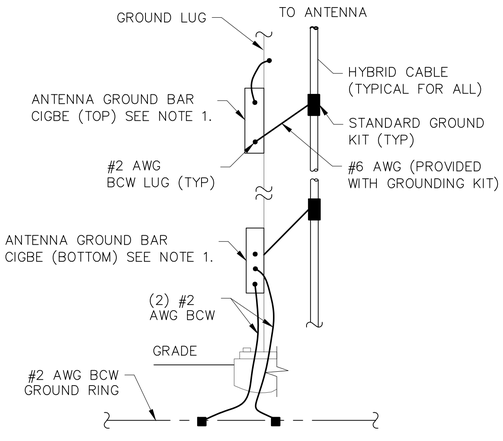
2 G-1 HYBRID CABLE CONNECTION DETAIL

SCALE: NTS



3 G-1 HYBRID CABLE GROUNDING DETAIL

SCALE: NTS

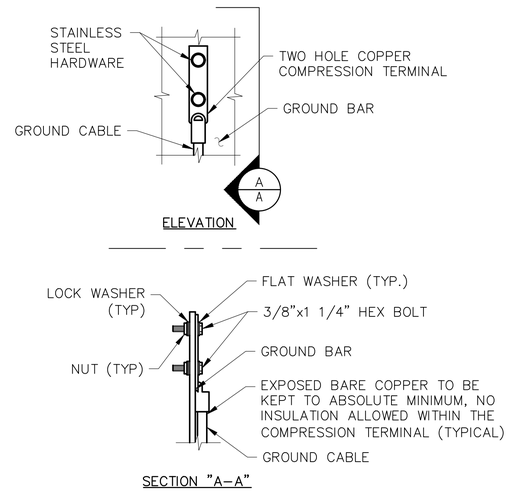


NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS UNIT IF REQUIRED.

4 G-1 ANTENNA CABLE GROUNDING

SCALE: NTS



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.
4. ALL GROUND LUGS MUST NE HEAT SHRUNK AT WIRE/LUG CONNECTION.

5 G-1 GROUNDING BAR CONN. DETAIL

SCALE: NTS

GROUNDING NOTES

1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
2. ALL GROUNDING WORK SHALL BE IN ACCORDANCE WITH T–MOBILE STANDARD PRACTICE.
3. ALL BUS CONNECTORS SHALL BE TWO–HOLE, LONG–BARREL TYPE COMPRESSION LUGS, T&B OR EQUAL, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL LUGS SHALL BE ATTACHED TO BUSSES USING BOLTS, NUTS, AND LOCK WASHERS. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED.
4. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, T&B #TBM 8 OR EQUIVALENT.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON–OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
6. ALL COPPER BUSSES SHALL BE CLEANED, POLISHED, AND A NON–OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
7. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8–INCH NOMINAL RADIUS.
8. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2. ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS, OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
10. ALL ROOF TOP ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 GROUND WIRE CONNECTED TO THE NEAREST GROUND BUS. ALL CONNECTIONS ARE TO BE CAD–WELDED IF POSSIBLE.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.
13. ALL EXPOSED #2 WIRE MUST BE TINN NOT BTW.
14. TECTONIC TAKES NO RESPONSIBILITY OR LIABILITY FOR THE GROUNDING SYSTEM AS SHOWN ON THIS SITE. THIS IS A STANDARD GROUNDING SYSTEM.

CONFIGURATION
67D94DB
REFER TO LATEST T–MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM

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

0 1 2 3

ORIGINAL SIZE IN INCHES

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SHELTON NE

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30 OLIVER TERRACE
CITY OF SHELTON
FAIRFIELD COUNTY
CT 06484

SHEET TITLE

GROUNDING DETAILS & NOTES

SHEET NUMBER

G-1

Date: **August 22, 2018**

James Klein
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
770-701-2500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CTFF531A
	Carrier Site Name:	Shelton_Rt8-AT&T
Crown Castle Designation:	**Crown Castle BU Number:**	842873
	Crown Castle Site Name:	SHELTON NE
	Crown Castle JDE Job Number:	510431
	Crown Castle Work Order Number:	1608229
	Crown Castle Application Number:	444514 Rev. 0
Engineering Firm Designation:	**Jacobs Engineering Group, Inc. Project Number:**	1608229
Site Data:	**30 Oliver Terrace, SHELTON, Fairfield County, CT**	
	Latitude *41° 17' 38.21"*, Longitude *-73° 6' 25.83"*	
	140 Foot - Monopole Tower	

Dear James Klein,

Jacobs Engineering Group, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity**

The analysis has been performed in accordance with the TIA-222-H Standard and 2016 Connecticut State Building Code. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2012 International Building Code. Exposure category B and Risk Category II were used in this analysis.

Structural analysis prepared by:

Kelvin Klein Lagata
Structural Engineer

Respectfully submitted by:

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

8/22/18

Craig A. Thomas, P.E.
Project Manager

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 101.58 ft Monopole tower designed by FWT, Inc. in January of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. A 38.42 ft tower extension was added by Paul J. Ford and Company in October of 2004 bringing the total tower height to 140 ft.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

Building Code:	2012 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	120.0	3	ericsson	AIR32 DB B66Aa B2a w/ Mount Pipe	17 1	1-5/8 1-3/8
		3	ericsson	KRY 112 144/1		
		3	ericsson	KRY 112 489/2		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APX16DWV-16DWVS-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	T-Arm Mount [TA 602-3]		
		3	site pro 1	STK-U Stiff Arm		

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)
138.0	145.0	1	andrew	DB636-C	14 2	1-5/8 1-1/4
	140.0	3	alcatel lucent	AWS4 (B66) 4X45 RRH		
		3	alcatel lucent	RRH2X60-700		
		3	alcatel lucent	RRH2X60-PCS		
		3	amphenol	BXA-80063-6BF-EDIN-4 w/ Mount Pipe		
		6	andrew	HBXX-6516DS-A2M w/ Mount Pipe		
		3	css	X7C-FRO-660-VR0 w/ Mount Pipe		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
	138.0	1	tower mounts	Platform Mount [LP 403-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
129.0	129.0	6	cci antennas	HPA-65R-BUU-H6	6 1 2	1-5/8 3/8 3/4
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS-11		
		1	tower mounts	Platform Mount [LP 301-1]		
73.0	75.0	3	alcatel lucent	1900MHZ 4X40W RRH	3	1-5/8
		3	alcatel lucent	RRH2x50-800		
		3	alcatel lucent	TD-RRH8X20-25		
		3	commscope	DT465B-2XR w/ Mount Pipe		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
	73.0	1	tower mounts	Platform Mount [LP 1201-1]		
50.0	50.0	1	pctel	GPS-TMG-HR-26NCM	-	-
		1	tower mounts	Pipe Mount [PM 601-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., Inc.	4529442	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Dewberry-Goodkind, Inc.	4598376	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FWT, Inc.	4598387	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T Group	4858944	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Associates	5461041	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Associates	5461043	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Velocitel	5785413	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Jacobs Engineering Group, Inc.	5963243	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Jacobs Engineering Group, Inc.	6087139	CCISITES
4-POST-MODIFICATION INSPECTION	B+T Group	5095590	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	5994609	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel	6086125	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel	6231105	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.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) The existing base plate grout was not considered in this analysis.
4) Specifications of the weld connecting the tower shaft to the base plate have not been provided to Jacobs and as a result are outside the scope of this report.
5) Porthole details and weld specifications were not provided to Jacobs prior to this analysis and as a result are outside the scope of this report.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP14.296x13.161x0.1875	Pole	15.8%	Pass
135 - 130	Pole	TP15.431x14.296x0.1875	Pole	27.5%	Pass
130 - 125	Pole	TP16.566x15.431x0.1875	Pole	42.5%	Pass
125 - 120	Pole	TP17.701x16.566x0.1875	Pole	54.9%	Pass
120 - 115	Pole	TP18.836x17.701x0.1875	Pole	71.3%	Pass
115 - 114.75	Pole + Reinf.	TP18.893x18.836x0.4625	Reinf. 9 Tension Rupture	52.9%	Pass
114.75 - 109.75	Pole + Reinf.	TP20.027x18.893x0.45	Reinf. 9 Tension Rupture	64.0%	Pass
109.75 - 104.75	Pole + Reinf.	TP21.162x20.027x0.425	Reinf. 9 Tension Rupture	73.6%	Pass
104.75 - 101.58	Pole + Reinf.	TP21.882x21.162x0.4188	Reinf. 9 Tension Rupture	79.2%	Pass
101.58 - 101.33	Pole	TP21.939x21.882x0.3125	Pole	59.6%	Pass
101.33 - 96.33	Pole	TP23.074x21.939x0.3125	Pole	63.6%	Pass
96.33 - 91.33	Pole	TP24.209x23.074x0.3125	Pole	66.6%	Pass
91.33 - 91	Pole	TP24.284x24.209x0.3125	Pole	66.8%	Pass
91 - 90.75	Pole + Reinf.	TP24.34x24.284x0.6	Reinf. 8 Tension Rupture	57.9%	Pass
90.75 - 85.75	Pole + Reinf.	TP25.475x24.34x0.5875	Reinf. 8 Tension Rupture	61.4%	Pass
85.75 - 80.75	Pole + Reinf.	TP26.61x25.475x0.5625	Reinf. 8 Tension Rupture	64.4%	Pass
80.75 - 75.75	Pole + Reinf.	TP27.745x26.61x0.55	Reinf. 8 Tension Rupture	67.2%	Pass
75.75 - 70.75	Pole + Reinf.	TP28.88x27.745x0.5438	Reinf. 8 Tension Rupture	70.7%	Pass
70.75 - 69.98	Pole + Reinf.	TP29.055x28.88x0.5313	Reinf. 3 Tension Rupture	74.3%	Pass
69.98 - 69.73	Pole + Reinf.	TP29.112x29.055x0.5313	Reinf. 3 Tension Rupture	74.5%	Pass
69.73 - 64.73	Pole + Reinf.	TP30.247x29.112x0.525	Reinf. 3 Tension Rupture	78.0%	Pass
64.73 - 63	Pole + Reinf.	TP30.64x30.247x0.5188	Reinf. 3 Tension Rupture	79.1%	Pass
63 - 62.75	Pole + Reinf.	TP30.696x30.64x0.7	Reinf. 3 Tension Rupture	61.1%	Pass
62.75 - 59.08	Pole + Reinf.	TP31.53x30.696x0.6875	Reinf. 3 Tension Rupture	63.1%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
59.08 - 58.82	Pole + Reinf.	TP31.589x31.53x0.625	Reinf. 4 Tension Rupture	64.6%	Pass
58.82 - 58.67	Pole + Reinf.	TP31.623x31.589x0.625	Reinf. 4 Tension Rupture	64.7%	Pass
58.67 - 53.67	Pole + Reinf.	TP32.758x31.623x0.6125	Reinf. 4 Tension Rupture	67.1%	Pass
53.67 - 53	Pole + Reinf.	TP33.913x32.758x0.6125	Reinf. 4 Tension Rupture	67.4%	Pass
53 - 47.58	Pole + Reinf.	TP33.515x32.285x0.6375	Reinf. 2 Tension Rupture	71.7%	Pass
47.58 - 42.58	Pole + Reinf.	TP34.65x33.515x0.625	Reinf. 2 Tension Rupture	73.9%	Pass
42.58 - 39.67	Pole + Reinf.	TP35.311x34.65x0.6125	Reinf. 2 Tension Rupture	75.1%	Pass
39.67 - 39.42	Pole + Reinf.	TP35.368x35.311x0.8125	Reinf. 2 Tension Rupture	58.3%	Pass
39.42 - 34.42	Pole + Reinf.	TP36.503x35.368x0.7875	Reinf. 2 Tension Rupture	60.0%	Pass
34.42 - 32.5	Pole + Reinf.	TP36.939x36.503x0.7875	Reinf. 2 Tension Rupture	60.7%	Pass
32.5 - 32.25	Pole + Reinf.	TP36.995x36.939x0.6125	Reinf. 6 Tension Rupture	75.1%	Pass
32.25 - 31.41	Pole + Reinf.	TP37.186x36.995x0.6	Reinf. 6 Tension Rupture	75.4%	Pass
31.41 - 31.16	Pole + Reinf.	TP37.243x37.186x0.775	Reinf. 1 Tension Rupture	61.1%	Pass
31.16 - 29	Pole + Reinf.	TP37.733x37.243x0.7625	Reinf. 1 Tension Rupture	61.8%	Pass
29 - 28.65	Pole + Reinf.	TP37.813x37.733x0.675	Reinf. 1 Tension Rupture	73.6%	Pass
28.65 - 28.42	Pole + Reinf.	TP37.865x37.813x0.675	Reinf. 1 Tension Rupture	73.6%	Pass
28.42 - 23.5	Pole + Reinf.	TP38.982x37.865x0.6625	Reinf. 1 Tension Rupture	75.2%	Pass
23.5 - 23.25	Pole + Reinf.	TP39.039x38.982x0.7875	Reinf. 1 Tension Rupture	61.5%	Pass
23.25 - 23	Pole + Reinf.	TP39.095x39.039x0.7875	Reinf. 1 Tension Rupture	61.6%	Pass
23 - 22.75	Pole + Reinf.	TP39.152x39.095x0.65	Reinf. 1 Tension Rupture	74.8%	Pass
22.75 - 17.75	Pole + Reinf.	TP40.287x39.152x0.6375	Reinf. 1 Tension Rupture	76.3%	Pass
17.75 - 12.75	Pole + Reinf.	TP41.422x40.287x0.625	Reinf. 1 Tension Rupture	77.7%	Pass
12.75 - 7.75	Pole + Reinf.	TP42.558x41.422x0.6125	Reinf. 1 Tension Rupture	79.0%	Pass
7.75 - 2.75	Pole + Reinf.	TP43.693x42.558x0.6	Reinf. 1 Tension Rupture	80.2%	Pass
2.75 - 0	Pole + Reinf.	TP44.317x43.693x0.6	Reinf. 1 Tension Rupture	80.9%	Pass
				Summary	
			Pole	71.3%	Pass
			Reinforcement	80.9%	Pass
			Overall	80.9%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolt	101.58	85.9	Pass
1	Flange Plate	101.58	54.7	Pass
1	Anchor Rods	0	66.1	Pass
1	Base Plate	0	55.3	Pass
1	Base Foundation Structural	0	52.7	Pass
1	Base Foundation Soil Interaction	0	68.2	Pass

Structure Rating (max from all components) =	85.9%

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

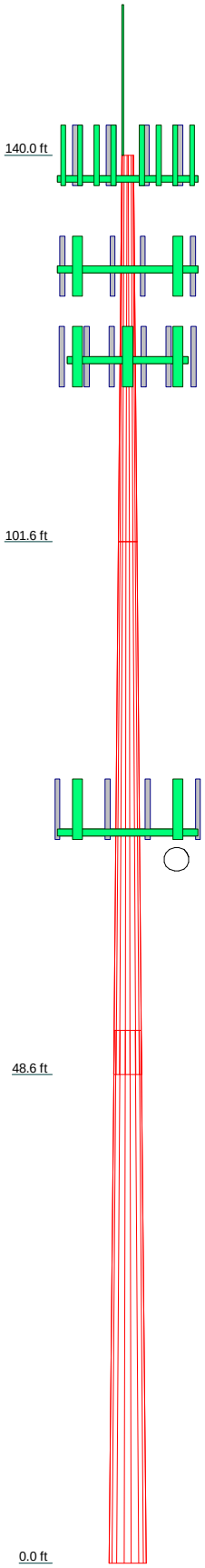
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	38.4200	18	0.1875		13.1610	21.8820		1.3
2	53.0000	18	0.3125	4.4200	21.8820	33.9130	A572-65	4.9
3	53.0000	18	0.3125		32.2847	44.3170		6.8
								13.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15'	140	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	RADIO 4449 B12/B71	120
DB636-C	138	RADIO 4449 B12/B71	120
AWS4 (B66) 4X45 RRH	138	RADIO 4449 B12/B71	120
AWS4 (B66) 4X45 RRH	138	T-Arm Mount [TA 602-3]	120
AWS4 (B66) 4X45 RRH	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	DT465B-2XR w/ Mount Pipe	73
(2) DB-T1-6Z-8AB-0Z	138	DT465B-2XR w/ Mount Pipe	73
Platform Mount [LP 403-1]	138	DT465B-2XR w/ Mount Pipe	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
RRUS 32 B2	129	TD-RRH8X20-25	73
RRUS 32 B2	129	TD-RRH8X20-25	73
RRUS 32 B2	129	TD-RRH8X20-25	73
RRUS-11	129	Platform Mount [LP 1201-1]	73
RRUS-11	129	10'x3" Pipe Mount	73
RRUS-11	129	10'x3" Pipe Mount	73
Platform Mount [LP 301-1]	129	10'x3" Pipe Mount	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
KRY 112 489/2	120	GPS-TMG-HR-26NCM	50
KRY 112 489/2	120	Pipe Mount [PM 601-1]	50
KRY 112 489/2	120		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

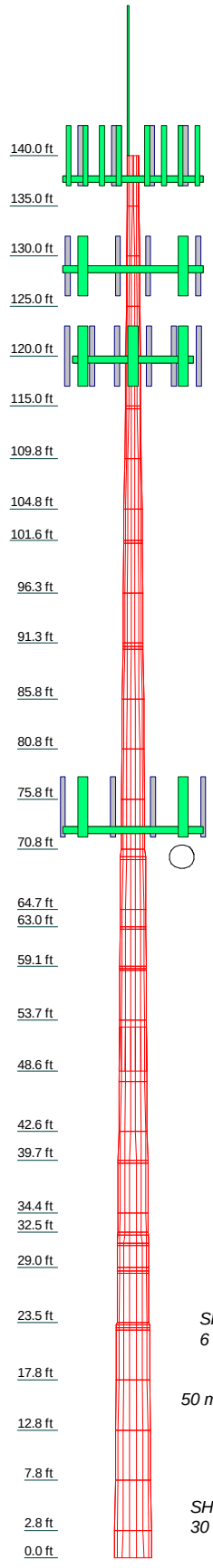
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S

Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

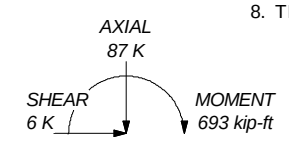
Job: ***SHELTON NE***			
Project: ***BU#842873 WO#1608229***			
Client: Crown Castle	Drawn by: Kelvin Klein Lagata		App'd:
Code: TIA-222-H	Date: 08/22/18		Scale: NTS
Path:			Dwg No. E-1

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	18	0.1875		13.1610	14.2960		0.1
2	5.0000	18	0.1875		14.2960	15.4309		0.1
3	5.0000	18	0.1875		15.4309	16.5659		0.2
4	5.0000	18	0.1875		16.5659	17.7008		0.2
5	5.0000	18	0.1875		17.7008	18.8358		0.2
6	5.0000	18	0.4500		18.8358	20.0275		0.4
7	5.0000	18	0.4250		20.0275	21.1624		0.4
8	5.0000	18	0.3125		21.1624	22.2087		0.3
9	5.0000	18	0.3125		22.2087	23.0738		0.4
10	5.0000	18	0.3125		23.0738	24.3237		0.4
11	5.0000	18	0.3125		24.3237	25.4754		0.7
12	5.0000	18	0.5625		25.4754	26.6104		0.7
13	5.0000	18	0.5500		26.6104	27.7454		0.8
14	5.0000	18	0.5437		27.7454	28.8804		0.8
15	5.0000	18	0.5250		28.8804	30.0154		0.8
16	5.0000	18	0.5063		30.0154	31.1504		0.8
17	5.0000	18	0.4875		31.1504	32.2854		0.8
18	5.0000	18	0.4688		32.2854	33.4204		0.8
19	5.0000	18	0.4500		33.4204	34.5554		0.8
20	5.0000	18	0.4313		34.5554	35.6904		0.8
21	5.0000	18	0.4125		35.6904	36.8254		0.8
22	5.0000	18	0.3938		36.8254	37.9604		0.3
23	5.0000	18	0.3750		37.9604	39.0954		0.8
24	5.0000	18	0.3563		39.0954	40.2304		0.8
25	5.0000	18	0.3375		40.2304	41.3654		0.8
26	5.0000	18	0.3188		41.3654	42.5004		0.8
27	5.0000	18	0.6125		42.5004	43.6354		1.0
28	5.9000	18	0.6125	4.4200	43.6354	44.7576		1.1
29	5.0000	18	0.6375		44.7576	45.8926		1.1
30	5.0000	18	0.6250		45.8926	47.0276		1.1
31	5.0000	18	0.6250		47.0276	48.1626		0.6
32	5.0000	18	0.6250		48.1626	49.2976		1.4
33	5.0000	18	0.6250		49.2976	50.4326		0.5
34	5.0000	18	0.6250		50.4326	51.5676		0.5
35	5.0000	18	0.6250		51.5676	52.7026		0.5
36	5.0000	18	0.6250		52.7026	53.8376		0.5
37	5.0000	18	0.6250		53.8376	54.9726		0.5
38	5.0000	18	0.6250		54.9726	56.1076		0.5
39	5.0000	18	0.6250		56.1076	57.2426		0.5
40	5.0000	18	0.6250		57.2426	58.3776		0.5
41	5.0000	18	0.6250		58.3776	59.5126		1.3
42	5.0000	18	0.6250		59.5126	60.6476		0.5
43	5.0000	18	0.6250		60.6476	61.7826		0.5
44	5.0000	18	0.6250		61.7826	62.9176		0.5
45	5.0000	18	0.6250		62.9176	64.0526		1.5
46	5.0000	18	0.6250		64.0526	65.1876		1.5
47	5.0000	18	0.6125		65.1876	66.3226		1.5
48	5.0000	18	0.6000		66.3226	67.4576		1.5
49	5.0000	18	0.6000		67.4576	68.5926		0.8
	2.7500		0.6000		68.5926	69.7276		24.4

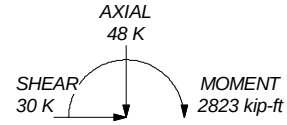
A572-65



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 1 kip-ft
REACTIONS - 125 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15'	140	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	KRY 112 144/1	120
(2) HBXX-6516DS-A2M w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	AIR32 DB B66Aa B2a w/ Mount Pipe	120
X7C-FRO-660-VR0 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	APXVAARR24_43-U-NA20 w/ Mount Pipe	120
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	138	RADIO 4449 B12/B71	120
DB636-C	138	RADIO 4449 B12/B71	120
AWS4 (B66) 4X45 RRH	138	RADIO 4449 B12/B71	120
AWS4 (B66) 4X45 RRH	138	T-Arm Mount [TA 602-3]	120
AWS4 (B66) 4X45 RRH	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	APXVSPP18-C-A20 w/ Mount Pipe	73
RRH2X60-PCS	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	1900MHZ 4X40W RRH	73
RRH2X60-700	138	DT465B-2XR w/ Mount Pipe	73
(2) DB-T1-6Z-8AB-0Z	138	DT465B-2XR w/ Mount Pipe	73
Platform Mount [LP 403-1]	138	DT465B-2XR w/ Mount Pipe	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
(2) HPA-65R-BUU-H6	129	RRH2x50-800	73
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RRUS 32 B2	129	TD-RRH8X20-25	73
RRUS 32 B2	129	TD-RRH8X20-25	73
RRUS-11	129	Platform Mount [LP 1201-1]	73
RRUS-11	129	10'x3" Pipe Mount	73
RRUS-11	129	10'x3" Pipe Mount	73
Platform Mount [LP 301-1]	129	10'x3" Pipe Mount	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	120	L3x3x1/4	73
KRY 112 489/2	120	GPS-TMG-HR-26NCM	50
KRY 112 489/2	120	Pipe Mount [PM 601-1]	50
KRY 112 489/2	120		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S

Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

Job: **SHELTON NE**			
Project: **BU#842873 WO#1608229**			
Client: Crown Castle	Drawn by: Kelvin Klein Lagata	App'd:	
Code: TIA-222-H	Date: 08/22/18	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1) Tower is located in Fairfield County, Connecticut.
2) Tower base elevation above sea level: 311.0000 ft.
3) Basic wind speed of 125 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height 0.0000 ft.
9) Nominal ice thickness of 1.5000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.00 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) 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	

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	140.0000-135.0000	5.0000	0.00	18	13.1610	14.2960	0.1875	0.7500	A572-65 (65 ksi)
L2	135.0000-130.0000	5.0000	0.00	18	14.2960	15.4309	0.1875	0.7500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	130.0000-125.0000	5.0000	0.00	18	15.4309	16.5659	0.1875	0.7500	A572-65 (65 ksi)
L4	125.0000-120.0000	5.0000	0.00	18	16.5659	17.7008	0.1875	0.7500	A572-65 (65 ksi)
L5	120.0000-115.0000	5.0000	0.00	18	17.7008	18.8358	0.1875	0.7500	A572-65 (65 ksi)
L6	115.0000-114.7500	0.2500	0.00	18	18.8358	18.8925	0.4625	1.8500	A572-65 (65 ksi)
L7	114.7500-109.7500	5.0000	0.00	18	18.8925	20.0275	0.4500	1.8000	A572-65 (65 ksi)
L8	109.7500-104.7500	5.0000	0.00	18	20.0275	21.1624	0.4250	1.7000	A572-65 (65 ksi)
L9	104.7500-101.5800	3.1700	0.00	18	21.1624	21.8820	0.4188	1.6750	A572-65 (65 ksi)
L10	101.5800-101.3300	0.2500	0.00	18	21.8820	21.9387	0.3125	1.2500	A572-65 (65 ksi)
L11	101.3300-96.3300	5.0000	0.00	18	21.9387	23.0738	0.3125	1.2500	A572-65 (65 ksi)
L12	96.3300-91.3300	5.0000	0.00	18	23.0738	24.2087	0.3125	1.2500	A572-65 (65 ksi)
L13	91.3300-91.0000	0.3300	0.00	18	24.2087	24.2837	0.3125	1.2500	A572-65 (65 ksi)
L14	91.0000-90.7500	0.2500	0.00	18	24.2837	24.3404	0.6000	2.4000	A572-65 (65 ksi)
L15	90.7500-85.7500	5.0000	0.00	18	24.3404	25.4754	0.5875	2.3500	A572-65 (65 ksi)
L16	85.7500-80.7500	5.0000	0.00	18	25.4754	26.6104	0.5625	2.2500	A572-65 (65 ksi)
L17	80.7500-75.7500	5.0000	0.00	18	26.6104	27.7454	0.5500	2.2000	A572-65 (65 ksi)
L18	75.7500-70.7500	5.0000	0.00	18	27.7454	28.8804	0.5437	2.1750	A572-65 (65 ksi)
L19	70.7500-69.9800	0.7700	0.00	18	28.8804	29.0552	0.5313	2.1250	A572-65 (65 ksi)
L20	69.9800-69.7300	0.2500	0.00	18	29.0552	29.1120	0.5313	2.1250	A572-65 (65 ksi)
L21	69.7300-64.7300	5.0000	0.00	18	29.1120	30.2469	0.5250	2.1000	A572-65 (65 ksi)
L22	64.7300-63.0000	1.7300	0.00	18	30.2469	30.6397	0.5188	2.0750	A572-65 (65 ksi)
L23	63.0000-62.7500	0.2500	0.00	18	30.6397	30.6964	0.7000	2.8000	A572-65 (65 ksi)
L24	62.7500-59.0800	3.6700	0.00	18	30.6964	31.5295	0.6875	2.7500	A572-65 (65 ksi)
L25	59.0800-58.8200	0.2600	0.00	18	31.5295	31.5885	0.6250	2.5000	A572-65 (65 ksi)
L26	58.8200-58.6700	0.1500	0.00	18	31.5885	31.6226	0.6250	2.5000	A572-65 (65 ksi)
L27	58.6700-53.6700	5.0000	0.00	18	31.6226	32.7576	0.6125	2.4500	A572-65 (65 ksi)
L28	53.6700-48.5800	5.0900	4.42	18	32.7576	33.9130	0.6125	2.4500	A572-65 (65 ksi)
L29	48.5800-47.5800	5.4200	0.00	18	32.2847	33.5151	0.6375	2.5500	A572-65 (65 ksi)
L30	47.5800-42.5800	5.0000	0.00	18	33.5151	34.6503	0.6250	2.5000	A572-65 (65 ksi)
L31	42.5800-39.6700	2.9100	0.00	18	34.6503	35.3109	0.6125	2.4500	A572-65 (65 ksi)
L32	39.6700-39.4200	0.2500	0.00	18	35.3109	35.3677	0.8125	3.2500	A572-65 (65 ksi)
L33	39.4200-34.4200	5.0000	0.00	18	35.3677	36.5028	0.7875	3.1500	A572-65 (65 ksi)
L34	34.4200-32.5000	1.9200	0.00	18	36.5028	36.9387	0.7875	3.1500	A572-65 (65 ksi)
L35	32.5000-32.2500	0.2500	0.00	18	36.9387	36.9954	0.6125	2.4500	A572-65 (65 ksi)
L36	32.2500-31.4100	0.8400	0.00	18	36.9954	37.1861	0.6000	2.4000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L37	31.4100-31.1600	0.2500	0.00	18	37.1861	37.2429	0.7750	3.1000	A572-65 (65 ksi)
L38	31.1600-29.0000	2.1600	0.00	18	37.2429	37.7333	0.7625	3.0500	A572-65 (65 ksi)
L39	29.0000-28.6500	0.3500	0.00	18	37.7333	37.8127	0.6750	2.7000	A572-65 (65 ksi)
L40	28.6500-28.4200	0.2300	0.00	18	37.8127	37.8649	0.6750	2.7000	A572-65 (65 ksi)
L41	28.4200-23.5000	4.9200	0.00	18	37.8649	38.9819	0.6625	2.6500	A572-65 (65 ksi)
L42	23.5000-23.2500	0.2500	0.00	18	38.9819	39.0387	0.7875	3.1500	A572-65 (65 ksi)
L43	23.2500-23.0000	0.2500	0.00	18	39.0387	39.0954	0.7875	3.1500	A572-65 (65 ksi)
L44	23.0000-22.7500	0.2500	0.00	18	39.0954	39.1522	0.6500	2.6000	A572-65 (65 ksi)
L45	22.7500-17.7500	5.0000	0.00	18	39.1522	40.2873	0.6375	2.5500	A572-65 (65 ksi)
L46	17.7500-12.7500	5.0000	0.00	18	40.2873	41.4224	0.6250	2.5000	A572-65 (65 ksi)
L47	12.7500-7.7500	5.0000	0.00	18	41.4224	42.5576	0.6125	2.4500	A572-65 (65 ksi)
L48	7.7500-2.7500	5.0000	0.00	18	42.5576	43.6927	0.6000	2.4000	A572-65 (65 ksi)
L49	2.7500-0.0000	2.7500		18	43.6927	44.3170	0.6000	2.4000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.3351	7.7209	164.1788	4.6056	6.6858	24.5564	328.5737	3.8612	1.9863	10.594
	14.4876	8.3963	211.1466	5.0085	7.2623	29.0742	422.5710	4.1989	2.1861	11.659
L2	14.4876	8.3963	211.1466	5.0085	7.2623	29.0742	422.5710	4.1989	2.1861	11.659
	15.6400	9.0717	266.3129	5.4114	7.8389	33.9732	532.9762	4.5367	2.3858	12.724
L3	15.6400	9.0717	266.3129	5.4114	7.8389	33.9732	532.9762	4.5367	2.3858	12.724
	16.7925	9.7472	330.3372	5.8143	8.4155	39.2536	661.1090	4.8745	2.5856	13.79
L4	16.7925	9.7472	330.3372	5.8143	8.4155	39.2536	661.1090	4.8745	2.5856	13.79
	17.9450	10.4226	403.8790	6.2172	8.9920	44.9153	808.2895	5.2123	2.7853	14.855
L5	17.9450	10.4226	403.8790	6.2172	8.9920	44.9153	808.2895	5.2123	2.7853	14.855
	19.0974	11.0981	487.5980	6.6201	9.5686	50.9583	975.8376	5.5501	2.9851	15.921
L6	19.0550	26.9715	1150.3132	6.5225	9.5686	120.2178	2302.1400	13.4883	2.5011	5.408
	19.1126	27.0548	1161.0047	6.5427	9.5974	120.9707	2323.5372	13.5300	2.5111	5.429
L7	19.1146	26.3415	1131.9263	6.5471	9.5974	117.9409	2265.3420	13.1732	2.5331	5.629
	20.2670	27.9625	1354.0273	6.9500	10.1740	133.0875	2709.8362	13.9839	2.7328	6.073
L8	20.2709	26.4428	1283.7088	6.9589	10.1740	126.1759	2569.1067	13.2239	2.7768	6.534
	21.4233	27.9738	1519.8426	7.3618	10.7505	141.3739	3041.6850	13.9895	2.9766	7.004
L9	21.4243	27.5707	1498.8463	7.3640	10.7505	139.4208	2999.6649	13.7880	2.9876	7.135
	22.1550	28.5271	1660.2965	7.6195	11.1161	149.3602	3322.7776	14.2662	3.1142	7.437
L10	22.1714	21.3942	1257.5192	7.6572	11.1161	113.1264	2516.6931	10.6992	3.3012	10.564
	22.2290	21.4505	1267.4711	7.6773	11.1449	113.7267	2536.6099	10.7273	3.3112	10.596
L11	22.2290	21.4505	1267.4711	7.6773	11.1449	113.7267	2536.6099	10.7273	3.3112	10.596
	23.3815	22.5763	1477.6879	8.0802	11.7215	126.0668	2957.3202	11.2903	3.5110	11.235
L12	23.3815	22.5763	1477.6879	8.0802	11.7215	126.0668	2957.3202	11.2903	3.5110	11.235
	24.5340	23.7021	1709.9510	8.4832	12.2980	139.0425	3422.1519	11.8533	3.7107	11.874
L13	24.5340	23.7021	1709.9510	8.4832	12.2980	139.0425	3422.1519	11.8533	3.7107	11.874
	24.6101	23.7764	1726.0825	8.5098	12.3361	139.9213	3454.4362	11.8905	3.7239	11.917
L14	24.5657	45.1032	3196.2598	8.4077	12.3361	259.0981	6396.7254	22.5559	3.2179	5.363
	24.6233	45.2112	3219.2912	8.4278	12.3649	260.3566	6442.8185	22.6099	3.2279	5.38
L15	24.6253	44.2926	3157.2045	8.4323	12.3649	255.3354	6318.5633	22.1505	3.2499	5.532
	25.7778	46.4091	3631.7632	8.8352	12.9415	280.6291	7268.3052	23.2090	3.4497	5.872
L16	25.7816	44.4789	3487.7093	8.8441	12.9415	269.4979	6980.0078	22.2437	3.4937	6.211
	26.9341	46.5053	3986.4429	9.2470	13.5181	294.8969	7978.1313	23.2571	3.6934	6.566
L17	26.9361	45.4937	3903.4695	9.2514	13.5181	288.7590	7812.0754	22.7512	3.7154	6.755
	28.0886	47.4750	4436.0241	9.6544	14.0947	314.7306	8877.8852	23.7420	3.9152	7.119

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L18	28.0895	46.9463	4388.6391	9.6566	14.0947	311.3687	8783.0529	23.4776	3.9262	7.221
	29.2421	48.9052	4961.2330	10.0595	14.6712	338.1602	9928.9940	24.4572	4.1260	7.588
L19	29.2440	47.8020	4853.5991	10.0640	14.6712	330.8239	9713.5847	23.9055	4.1480	7.808
	29.4215	48.0967	4943.9300	10.1260	14.7600	334.9537	9894.3654	24.0529	4.1787	7.866
L20	29.4215	48.0967	4943.9300	10.1260	14.7600	334.9537	9894.3654	24.0529	4.1787	7.866
	29.4791	48.1924	4973.4975	10.1461	14.7889	336.3000	9953.5392	24.1008	4.1887	7.885
L21	29.4801	47.6359	4918.2108	10.1484	14.7889	332.5616	9842.8932	23.8225	4.1997	7.999
	30.6326	49.5272	5527.5868	10.5513	15.3655	359.7413	11062.4470	24.7683	4.3995	8.38
L22	30.6335	48.9479	5465.2285	10.5535	15.3655	355.6829	10937.6483	24.4786	4.4105	8.502
	31.0323	49.5945	5684.6895	10.6929	15.5649	365.2238	11376.8590	24.8019	4.4796	8.635
L23	31.0043	66.5199	7533.2608	10.6286	15.5649	483.9888	15076.4341	33.2663	4.1606	5.944
	31.0620	66.6460	7576.1795	10.6487	15.5938	485.8464	15162.3279	33.3293	4.1706	5.958
L24	31.0639	65.4832	7450.1967	10.6532	15.5938	477.7673	14910.1965	32.7478	4.1926	6.098
	31.9098	67.3011	8088.0658	10.9489	16.0170	504.9680	16186.7740	33.6569	4.3392	6.312
L25	31.9195	61.3068	7397.5780	10.9711	16.0170	461.8583	14804.8900	30.6592	4.4492	7.119
	31.9794	61.4239	7440.0417	10.9920	16.0470	463.6416	14889.8732	30.7178	4.4596	7.135
L26	31.9794	61.4239	7440.0417	10.9920	16.0470	463.6416	14889.8732	30.7178	4.4596	7.135
	32.0140	61.4914	7464.6137	11.0041	16.0643	464.6720	14939.0496	30.7516	4.4656	7.145
L27	32.0159	60.2859	7324.1749	11.0086	16.0643	455.9296	14657.9871	30.1487	4.4876	7.327
	33.1684	62.4924	8158.1858	11.4115	16.6408	490.2507	16327.1064	31.2522	4.6873	7.653
L28	33.1684	62.4924	8158.1858	11.4115	16.6408	490.2507	16327.1064	31.2522	4.6873	7.653
	34.3417	64.7387	9069.9048	11.8217	17.2278	526.4690	18151.7440	32.3755	4.8907	7.985
L29	33.7033	64.0357	8102.6819	11.2347	16.4006	494.0477	16216.0255	32.0239	4.5601	7.153
	33.9338	66.5254	9085.0297	11.6716	17.0257	533.6071	18182.0137	33.2690	4.7767	7.493
L30	33.9357	65.2458	8917.0549	11.6760	17.0257	523.7412	17845.8430	32.6291	4.7987	7.678
	35.0884	67.4976	9872.5395	12.0790	17.6023	560.8654	19758.0695	33.7552	4.9984	7.998
L31	35.0903	66.1720	9685.7557	12.0834	17.6023	550.2541	19384.2563	33.0923	5.0204	8.197
	35.7611	67.4563	10260.7493	12.3179	17.9379	572.0138	20535.0000	33.7346	5.1367	8.386
L32	35.7303	88.9671	13377.1891	12.2469	17.9379	745.7483	26771.9803	44.4920	4.7847	5.889
	35.7879	89.1134	13443.3217	12.2671	17.9668	748.2324	26904.3326	44.5652	4.7947	5.901
L33	35.7918	86.4340	13057.9817	12.2760	17.9668	726.7850	26133.1455	43.2252	4.8387	6.144
	36.9444	89.2713	14386.5768	12.6789	18.5434	775.8320	28792.0839	44.6441	5.0385	6.398
L34	36.9444	89.2713	14386.5768	12.6789	18.5434	775.8320	28792.0839	44.6441	5.0385	6.398
	37.3870	90.3608	14919.7761	12.8337	18.7648	795.0917	29859.1841	45.1890	5.1152	6.496
L35	37.4140	70.6208	11773.6087	12.8958	18.7648	627.4289	23562.7093	35.3171	5.4232	8.854
	37.4717	70.7312	11828.8805	12.9159	18.7937	629.4073	23673.3257	35.3723	5.4332	8.871
L36	37.4736	69.3115	11599.4221	12.9204	18.7937	617.1980	23214.1070	34.6623	5.4552	9.092
	37.6672	69.6746	11782.7117	12.9881	18.8906	623.7355	23580.9274	34.8439	5.4888	9.148

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L37	37.6402	89.5659	15001.9860	12.9260	18.8906	794.1527	30023.7120	44.7915	5.1808	6.685
	37.6979	89.7055	15072.2490	12.9461	18.9194	796.6562	30164.3305	44.8613	5.1907	6.698
L38	37.6998	88.2889	14844.4023	12.9505	18.9194	784.6132	29708.3373	44.1529	5.2127	6.836
	38.1977	89.4757	15451.1068	13.1246	19.1685	806.0676	30922.5446	44.7464	5.2991	6.95
L39	38.2112	79.3955	13775.3758	13.1557	19.1685	718.6465	27568.8776	39.7053	5.4531	8.079
	38.2919	79.5657	13864.1758	13.1839	19.2089	721.7593	27746.5944	39.7904	5.4670	8.099
L40	38.2919	79.5657	13864.1758	13.1839	19.2089	721.7593	27746.5944	39.7904	5.4670	8.099
	38.3449	79.6776	13922.7373	13.2024	19.2354	723.8084	27863.7945	39.8464	5.4762	8.113
L41	38.3469	78.2284	13678.6923	13.2069	19.2354	711.1211	27375.3834	39.1216	5.4982	8.299
	39.4811	80.5771	14948.1193	13.6034	19.8028	754.8485	29915.9077	40.2962	5.6948	8.596
L42	39.4618	95.4679	17595.2001	13.5590	19.8028	888.5205	35213.5525	47.7430	5.4748	6.952
	39.5194	95.6097	17673.7554	13.5792	19.8316	891.1898	35370.7663	47.8140	5.4848	6.965
L43	39.5194	95.6097	17673.7554	13.5792	19.8316	891.1898	35370.7663	47.8140	5.4848	6.965
	39.5770	95.7516	17752.5441	13.5993	19.8605	893.8631	35528.4474	47.8849	5.4948	6.978
L44	39.5983	79.3167	14811.2430	13.6481	19.8605	745.7649	29641.9750	39.6659	5.7368	8.826
	39.6559	79.4338	14876.9367	13.6683	19.8893	747.9868	29773.4488	39.7245	5.7468	8.841
L45	39.6578	77.9316	14605.0574	13.6727	19.8893	734.3171	29229.3325	38.9732	5.7688	9.049
	40.8105	80.2284	15934.8363	14.0757	20.4659	778.6024	31890.6400	40.1218	5.9686	9.362
L46	40.8124	78.6801	15637.1685	14.0801	20.4659	764.0578	31294.9128	39.3475	5.9906	9.585
	41.9650	80.9319	17018.5570	14.4831	21.0426	808.7671	34059.5074	40.4736	6.1903	9.905
L47	41.9669	79.3376	16693.5207	14.4875	21.0426	793.3205	33409.0072	39.6763	6.2123	10.143
	43.1196	81.5443	18125.6146	14.8905	21.6192	838.4021	36275.0793	40.7799	6.4121	10.469
L48	43.1215	79.9040	17771.5829	14.8949	21.6192	822.0264	35566.5501	39.9596	6.4341	10.724
	44.2742	82.0657	19253.3431	15.2979	22.1959	867.4286	38532.0203	41.0406	6.6339	11.057
L49	44.2742	82.0657	19253.3431	15.2979	22.1959	867.4286	38532.0203	41.0406	6.6339	11.057
	44.9081	83.2547	20102.3430	15.5195	22.5130	892.9201	40231.1371	41.6352	6.7438	11.24

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
L1 140.0000-135.0000				1	1	1			
L2 135.0000-130.0000				1	1	1			
L3 130.0000-125.0000				1	1	1			
L4 125.0000-120.0000				1	1	1			
L5 120.0000-115.0000				1	1	1			

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
L6 115.0000-114.7500				1	1	0.910459			
L7 114.7500-109.7500				1	1	0.90506			
L8 109.7500-104.7500				1	1	0.928842			
L9 104.7500-101.5800				1	1	0.925837			
L10 101.5800-101.3300				1	1	1			
L11 101.3300-96.3300				1	1	1			
L12 96.3300-91.3300				1	1	1			
L13 91.3300-91.0000				1	1	1			
L14 91.0000-90.7500				1	1	0.925286			
L15 90.7500-85.7500				1	1	0.925661			
L16 85.7500-80.7500				1	1	0.947954			
L17 80.7500-75.7500				1	1	0.952304			
L18 75.7500-70.7500				1	1	0.947475			
L19 70.7500-69.9800				1	1	0.951412			
L20 69.9800-69.7300				1	1	0.950691			
L21 69.7300-64.7300				1	1	0.9478			
L22 64.7300-63.0000				1	1	0.954368			
L23 63.0000-62.7500				1	1	0.981128			
L24 62.7500-59.0800				1	1	0.983857			
L25 59.0800-58.8200				1	1	0.999823			
L26 58.8200-58.6700				1	1	0.999274			
L27 58.6700-53.6700				1	1	1.00128			
L28 53.6700-48.5800				1	1	0.99897			
L29 48.5800-47.5800				1	1	0.940602			
L30 47.5800-42.5800				1	1	0.943735			
L31 42.5800-39.6700				1	1	0.954027			
L32 39.6700-39.4200				1	1	0.924799			
L33 39.4200-34.4200				1	1	0.935777			
L34 34.4200-32.5000				1	1	0.929278			
L35 32.5000-32.2500				1	1	0.944082			
L36 32.2500-31.4100				1	1	0.961112			
L37 31.4100-31.1600				1	1	0.93943			

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
L38 31.1600-29.0000				1	1	0.947279			
L39 29.0000-28.6500				1	1	0.990842			
L40 28.6500-28.4200				1	1	0.990101			
L41 28.4200-23.5000				1	1	0.992797			
L42 23.5000-23.2500				1	1	1.02556			
L43 23.2500-23.0000				1	1	1.02463			
L44 23.0000-22.7500				1	1	1.08475			
L45 22.7500-17.7500				1	1	1.08804			
L46 17.7500-12.7500				1	1	1.09249			
L47 12.7500-7.7500				1	1	1.0981			
L48 7.7500-2.7500				1	1	1.10484			
L49 2.7500-0.0000				1	1	1.0965			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 5/8	B	No	Surface Ar (CaAa)	140.0000 - 0.0000	1	1	0.500 0.500	0.8800		0.40
*										
*										
Existing Flat Plates										
5.75'' x 1'' Flat Plate (G)	A	No	Surface Af (CaAa)	33.3000 - 0.5000	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	B	No	Surface Af (CaAa)	33.3000 - 0.5000	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	C	No	Surface Af (CaAa)	33.3000 - 0.5000	1	1	0.500 0.500	5.7500	13.5000	0.00
***										
5.75'' x 1'' Flat Plate (G)	A	No	Surface Af (CaAa)	50.5800 - 30.5800	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	B	No	Surface Af (CaAa)	50.5800 - 30.5800	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	C	No	Surface Af (CaAa)	50.5800 - 30.5800	1	1	0.500 0.500	5.7500	13.5000	0.00
***										
5.75'' x 1'' Flat Plate (G)	A	No	Surface Af (CaAa)	72.0000 - 57.0000	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	B	No	Surface Af (CaAa)	72.0000 - 57.0000	1	1	0.500 0.500	5.7500	13.5000	0.00
5.75'' x 1'' Flat Plate (G)	C	No	Surface Af (CaAa)	72.0000 - 57.0000	1	1	0.500 0.500	5.7500	13.5000	0.00
***										
Aero MP304	A	No	Surface Af (CaAa)	60.5000 - 0.5000	1	1	0.000 0.000	4.7800	12.7800	0.00
Aero MP304	B	No	Surface Af (CaAa)	60.5000 - 0.5000	1	1	0.000 0.000	4.7800	12.7800	0.00
Aero MP304	C	No	Surface Af (CaAa)	60.5000 - 0.5000	1	1	0.000 0.000	4.7800	12.7800	0.00
***										

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	41.6700 - 26.6700	1	1	0.200 0.200	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	41.6700 - 26.6700	1	1	0.200 0.200	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	41.6700 - 26.6700	1	1	0.200 0.200	6.0000	14.0000	0.00
***										
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.300 0.300	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	25.5000 - 0.5000	1	1	-0.200 -0.200	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.200 0.200	6.0000	14.0000	0.00
***										
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	65.0000 - 50.0000	1	1	0.200 0.200	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	65.0000 - 50.0000	1	1	0.300 0.300	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	65.0000 - 50.0000	1	1	0.200 0.200	6.0000	14.0000	0.00
***										
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	93.0000 - 68.0000	1	1	0.300 0.300	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	93.0000 - 68.0000	1	1	0.300 0.300	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	93.0000 - 68.0000	1	1	0.300 0.300	6.0000	14.0000	0.00
***										
4.5" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	117.0000 - 102.0000	1	1	0.300 0.300	4.5000	11.0000	0.00
4.5" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	117.0000 - 102.0000	1	1	0.300 0.300	4.5000	11.0000	0.00
4.5" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	117.0000 - 102.0000	1	1	0.300 0.300	4.5000	11.0000	0.00
Proposed Flat Plates										
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	31.0000 - 21.0000	1	1	-0.200 -0.200	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	31.0000 - 21.0000	1	1	-0.200 -0.200	6.0000	14.0000	0.00
*										
*										
*										
HB158-1-08U8-S8J18(1-5/8)	B	No	Surface Ar (CaAa)	138.0000 - 0.0000	2	1	0.340 0.340	1.9800		1.30
LDF7-50A(1-5/8)	B	No	Surface Ar (CaAa)	120.0000 - 0.0000	18	6	-0.120 0.100	1.9800		0.82
*										
***										
**										
*										

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
*									
*									
*									
*									
** FACE A **									
HB158-21U6M48-30F(1-5/8)	A	No	No	Inside Pole	73.0000 - 0.0000	3	No Ice 1/2" Ice	0.0000 0.0000	2.39 2.39

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.0000	2.39
							2" Ice	0.0000	2.39
*									
** FACE B **									
AVA6-50(1-1/4)	B	No	No	Inside Pole	138.0000 - 0.0000	2	No Ice	0.0000	0.46
							1/2" Ice	0.0000	0.46
							1" Ice	0.0000	0.46
							2" Ice	0.0000	0.46
LDF7-50A(1-5/8)	B	No	No	Inside Pole	138.0000 - 0.0000	12	No Ice	0.0000	0.82
							1/2" Ice	0.0000	0.82
							1" Ice	0.0000	0.82
							2" Ice	0.0000	0.82
*									
** FACE C **									
AL7-50(1-5/8)	C	No	No	Inside Pole	129.0000 - 0.0000	6	No Ice	0.0000	0.52
							1/2" Ice	0.0000	0.52
							1" Ice	0.0000	0.52
							2" Ice	0.0000	0.52
FB-L98B-034-XXXXXX(3/8)	C	No	No	Inside Pole	129.0000 - 0.0000	1	No Ice	0.0000	0.05
							1/2" Ice	0.0000	0.05
							1" Ice	0.0000	0.05
							2" Ice	0.0000	0.05
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	129.0000 - 0.0000	2	No Ice	0.0000	0.58
							1/2" Ice	0.0000	0.58
							1" Ice	0.0000	0.58
							2" Ice	0.0000	0.58
***									
**									
*									

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 K
L1	140.0000-135.0000	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	1.034	0.000	0.0421
		C	0.000	0.000	0.000	0.000	0.0000
L2	135.0000-130.0000	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	1.430	0.000	0.0688
		C	0.000	0.000	0.000	0.000	0.0000
L3	130.0000-125.0000	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	1.430	0.000	0.0688
		C	0.000	0.000	0.000	0.000	0.0174
L4	125.0000-120.0000	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	1.430	0.000	0.0688
		C	0.000	0.000	0.000	0.000	0.0217
L5	120.0000-115.0000	A	0.000	0.000	1.500	0.000	0.0000
		B	0.000	0.000	8.870	0.000	0.1426
		C	0.000	0.000	1.500	0.000	0.0217
L6	115.0000-114.7500	A	0.000	0.000	0.188	0.000	0.0000
		B	0.000	0.000	0.556	0.000	0.0071
		C	0.000	0.000	0.188	0.000	0.0011
L7	114.7500-109.7500	A	0.000	0.000	3.750	0.000	0.0000
		B	0.000	0.000	11.120	0.000	0.1426
		C	0.000	0.000	3.750	0.000	0.0217
L8	109.7500-104.7500	A	0.000	0.000	3.750	0.000	0.0000
		B	0.000	0.000	11.120	0.000	0.1426
		C	0.000	0.000	3.750	0.000	0.0217
L9	104.7500-101.5800	A	0.000	0.000	2.063	0.000	0.0000
		B	0.000	0.000	6.735	0.000	0.0904
		C	0.000	0.000	2.063	0.000	0.0138

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 K
L10	101.5800-101.3300	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	0.368	0.000	0.0071
		C	0.000	0.000	0.000	0.000	0.0011
L11	101.3300-96.3300	A	0.000	0.000	0.000	0.000	0.0000
		B	0.000	0.000	7.370	0.000	0.1426
		C	0.000	0.000	0.000	0.000	0.0217
L12	96.3300-91.3300	A	0.000	0.000	1.670	0.000	0.0000
		B	0.000	0.000	9.040	0.000	0.1426
		C	0.000	0.000	1.670	0.000	0.0217
L13	91.3300-91.0000	A	0.000	0.000	0.330	0.000	0.0000
		B	0.000	0.000	0.816	0.000	0.0094
		C	0.000	0.000	0.330	0.000	0.0014
L14	91.0000-90.7500	A	0.000	0.000	0.250	0.000	0.0000
		B	0.000	0.000	0.619	0.000	0.0071
		C	0.000	0.000	0.250	0.000	0.0011
L15	90.7500-85.7500	A	0.000	0.000	5.000	0.000	0.0000
		B	0.000	0.000	12.370	0.000	0.1426
		C	0.000	0.000	5.000	0.000	0.0217
L16	85.7500-80.7500	A	0.000	0.000	5.000	0.000	0.0000
		B	0.000	0.000	12.370	0.000	0.1426
		C	0.000	0.000	5.000	0.000	0.0217
L17	80.7500-75.7500	A	0.000	0.000	5.000	0.000	0.0000
		B	0.000	0.000	12.370	0.000	0.1426
		C	0.000	0.000	5.000	0.000	0.0217
L18	75.7500-70.7500	A	0.000	0.000	6.198	0.000	0.0161
		B	0.000	0.000	13.568	0.000	0.1426
		C	0.000	0.000	6.198	0.000	0.0217
L19	70.7500-69.9800	A	0.000	0.000	1.508	0.000	0.0055
		B	0.000	0.000	2.643	0.000	0.0220
		C	0.000	0.000	1.508	0.000	0.0033
L20	69.9800-69.7300	A	0.000	0.000	0.490	0.000	0.0018
		B	0.000	0.000	0.858	0.000	0.0071
		C	0.000	0.000	0.490	0.000	0.0011
L21	69.7300-64.7300	A	0.000	0.000	6.792	0.000	0.0359
		B	0.000	0.000	14.162	0.000	0.1426
		C	0.000	0.000	6.792	0.000	0.0217
L22	64.7300-63.0000	A	0.000	0.000	3.388	0.000	0.0124
		B	0.000	0.000	5.938	0.000	0.0493
		C	0.000	0.000	3.388	0.000	0.0075
L23	63.0000-62.7500	A	0.000	0.000	0.490	0.000	0.0018
		B	0.000	0.000	0.858	0.000	0.0071
		C	0.000	0.000	0.490	0.000	0.0011
L24	62.7500-59.0800	A	0.000	0.000	8.318	0.000	0.0263
		B	0.000	0.000	13.728	0.000	0.1047
		C	0.000	0.000	8.318	0.000	0.0159
L25	59.0800-58.8200	A	0.000	0.000	0.716	0.000	0.0019
		B	0.000	0.000	1.100	0.000	0.0074
		C	0.000	0.000	0.716	0.000	0.0011
L26	58.8200-58.6700	A	0.000	0.000	0.413	0.000	0.0011
		B	0.000	0.000	0.634	0.000	0.0043
		C	0.000	0.000	0.413	0.000	0.0007
L27	58.6700-53.6700	A	0.000	0.000	10.584	0.000	0.0359
		B	0.000	0.000	17.954	0.000	0.1426
		C	0.000	0.000	10.584	0.000	0.0217
L28	53.6700-48.5800	A	0.000	0.000	9.642	0.000	0.0365
		B	0.000	0.000	17.144	0.000	0.1452
		C	0.000	0.000	9.642	0.000	0.0221
L29	48.5800-47.5800	A	0.000	0.000	1.755	0.000	0.0072
		B	0.000	0.000	3.229	0.000	0.0285
		C	0.000	0.000	1.755	0.000	0.0043
L30	47.5800-42.5800	A	0.000	0.000	8.775	0.000	0.0359
		B	0.000	0.000	16.145	0.000	0.1426
		C	0.000	0.000	8.775	0.000	0.0217
L31	42.5800-39.6700	A	0.000	0.000	7.107	0.000	0.0209
		B	0.000	0.000	11.396	0.000	0.0830
		C	0.000	0.000	7.107	0.000	0.0126
L32	39.6700-39.4200	A	0.000	0.000	0.689	0.000	0.0018
		B	0.000	0.000	1.057	0.000	0.0071
		C	0.000	0.000	0.689	0.000	0.0011

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 K
L33	39.4200-34.4200	A	0.000	0.000	13.775	0.000	0.0359
		B	0.000	0.000	21.145	0.000	0.1426
		C	0.000	0.000	13.775	0.000	0.0217
L34	34.4200-32.5000	A	0.000	0.000	6.056	0.000	0.0138
		B	0.000	0.000	8.886	0.000	0.0548
		C	0.000	0.000	6.056	0.000	0.0083
L35	32.5000-32.2500	A	0.000	0.000	0.928	0.000	0.0018
		B	0.000	0.000	1.297	0.000	0.0071
		C	0.000	0.000	0.928	0.000	0.0011
L36	32.2500-31.4100	A	0.000	0.000	3.119	0.000	0.0060
		B	0.000	0.000	4.357	0.000	0.0240
		C	0.000	0.000	3.119	0.000	0.0036
L37	31.4100-31.1600	A	0.000	0.000	0.928	0.000	0.0018
		B	0.000	0.000	1.297	0.000	0.0071
		C	0.000	0.000	0.928	0.000	0.0011
L38	31.1600-29.0000	A	0.000	0.000	8.331	0.000	0.0155
		B	0.000	0.000	9.690	0.000	0.0616
		C	0.000	0.000	8.331	0.000	0.0094
L39	29.0000-28.6500	A	0.000	0.000	1.283	0.000	0.0025
		B	0.000	0.000	1.480	0.000	0.0100
		C	0.000	0.000	1.283	0.000	0.0015
L40	28.6500-28.4200	A	0.000	0.000	0.843	0.000	0.0016
		B	0.000	0.000	0.973	0.000	0.0066
		C	0.000	0.000	0.843	0.000	0.0010
L41	28.4200-23.5000	A	0.000	0.000	16.872	0.000	0.0353
		B	0.000	0.000	19.637	0.000	0.1403
		C	0.000	0.000	16.872	0.000	0.0213
L42	23.5000-23.2500	A	0.000	0.000	0.917	0.000	0.0018
		B	0.000	0.000	1.057	0.000	0.0071
		C	0.000	0.000	0.917	0.000	0.0011
L43	23.2500-23.0000	A	0.000	0.000	0.917	0.000	0.0018
		B	0.000	0.000	1.057	0.000	0.0071
		C	0.000	0.000	0.917	0.000	0.0011
L44	23.0000-22.7500	A	0.000	0.000	0.917	0.000	0.0018
		B	0.000	0.000	1.057	0.000	0.0071
		C	0.000	0.000	0.917	0.000	0.0011
L45	22.7500-17.7500	A	0.000	0.000	15.371	0.000	0.0359
		B	0.000	0.000	21.145	0.000	0.1426
		C	0.000	0.000	15.371	0.000	0.0217
L46	17.7500-12.7500	A	0.000	0.000	13.775	0.000	0.0359
		B	0.000	0.000	21.145	0.000	0.1426
		C	0.000	0.000	13.775	0.000	0.0217
L47	12.7500-7.7500	A	0.000	0.000	13.775	0.000	0.0359
		B	0.000	0.000	21.145	0.000	0.1426
		C	0.000	0.000	13.775	0.000	0.0217
L48	7.7500-2.7500	A	0.000	0.000	13.775	0.000	0.0359
		B	0.000	0.000	21.145	0.000	0.1426
		C	0.000	0.000	13.775	0.000	0.0217
L49	2.7500-0.0000	A	0.000	0.000	6.199	0.000	0.0197
		B	0.000	0.000	10.252	0.000	0.0784
		C	0.000	0.000	6.199	0.000	0.0119

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 K
L1	140.0000-135.0000	A	1.730	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	3.802	0.000	0.1167
		C		0.000	0.000	0.000	0.000	0.0000
L2	135.0000-130.0000	A	1.724	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	4.877	0.000	0.1742
		C		0.000	0.000	0.000	0.000	0.0000
L3	130.0000-125.0000	A	1.717	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	4.864	0.000	0.1736
		C		0.000	0.000	0.000	0.000	0.0174

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 K
L4	125.0000-120.0000	A	1.710	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	4.850	0.000	0.1730
		C		0.000	0.000	0.000	0.000	0.0217
L5	120.0000-115.0000	A	1.703	0.000	0.000	2.154	0.000	0.0231
		B		0.000	0.000	16.544	0.000	0.4271
		C		0.000	0.000	2.154	0.000	0.0448
L6	115.0000-114.7500	A	1.699	0.000	0.000	0.269	0.000	0.0029
		B		0.000	0.000	0.988	0.000	0.0230
		C		0.000	0.000	0.269	0.000	0.0040
L7	114.7500-109.7500	A	1.695	0.000	0.000	5.380	0.000	0.0574
		B		0.000	0.000	19.745	0.000	0.4601
		C		0.000	0.000	5.380	0.000	0.0791
L8	109.7500-104.7500	A	1.688	0.000	0.000	5.374	0.000	0.0571
		B		0.000	0.000	19.714	0.000	0.4583
		C		0.000	0.000	5.374	0.000	0.0787
L9	104.7500-101.5800	A	1.681	0.000	0.000	2.953	0.000	0.0312
		B		0.000	0.000	12.031	0.000	0.2849
		C		0.000	0.000	2.953	0.000	0.0450
L10	101.5800-101.3300	A	1.678	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	0.715	0.000	0.0200
		C		0.000	0.000	0.000	0.000	0.0011
L11	101.3300-96.3300	A	1.674	0.000	0.000	0.000	0.000	0.0000
		B		0.000	0.000	14.295	0.000	0.3988
		C		0.000	0.000	0.000	0.000	0.0217
L12	96.3300-91.3300	A	1.665	0.000	0.000	2.226	0.000	0.0220
		B		0.000	0.000	16.493	0.000	0.4192
		C		0.000	0.000	2.226	0.000	0.0436
L13	91.3300-91.0000	A	1.660	0.000	0.000	0.440	0.000	0.0043
		B		0.000	0.000	1.380	0.000	0.0305
		C		0.000	0.000	0.440	0.000	0.0058
L14	91.0000-90.7500	A	1.660	0.000	0.000	0.333	0.000	0.0033
		B		0.000	0.000	1.045	0.000	0.0231
		C		0.000	0.000	0.333	0.000	0.0044
L15	90.7500-85.7500	A	1.655	0.000	0.000	6.655	0.000	0.0652
		B		0.000	0.000	20.889	0.000	0.4607
		C		0.000	0.000	6.655	0.000	0.0869
L16	85.7500-80.7500	A	1.645	0.000	0.000	6.645	0.000	0.0647
		B		0.000	0.000	20.848	0.000	0.4585
		C		0.000	0.000	6.645	0.000	0.0864
L17	80.7500-75.7500	A	1.635	0.000	0.000	6.635	0.000	0.0642
		B		0.000	0.000	20.805	0.000	0.4562
		C		0.000	0.000	6.635	0.000	0.0859
L18	75.7500-70.7500	A	1.624	0.000	0.000	8.148	0.000	0.0953
		B		0.000	0.000	22.282	0.000	0.4693
		C		0.000	0.000	8.148	0.000	0.1009
L19	70.7500-69.9800	A	1.618	0.000	0.000	1.957	0.000	0.0248
		B		0.000	0.000	4.130	0.000	0.0792
		C		0.000	0.000	1.957	0.000	0.0226
L20	69.9800-69.7300	A	1.617	0.000	0.000	0.635	0.000	0.0080
		B		0.000	0.000	1.341	0.000	0.0257
		C		0.000	0.000	0.635	0.000	0.0073
L21	69.7300-64.7300	A	1.611	0.000	0.000	8.708	0.000	0.1224
		B		0.000	0.000	22.798	0.000	0.4743
		C		0.000	0.000	8.708	0.000	0.1082
L22	64.7300-63.0000	A	1.602	0.000	0.000	4.253	0.000	0.0551
		B		0.000	0.000	9.118	0.000	0.1764
		C		0.000	0.000	4.253	0.000	0.0502
L23	63.0000-62.7500	A	1.600	0.000	0.000	0.614	0.000	0.0080
		B		0.000	0.000	1.317	0.000	0.0255
		C		0.000	0.000	0.614	0.000	0.0072
L24	62.7500-59.0800	A	1.595	0.000	0.000	10.600	0.000	0.1330
		B		0.000	0.000	20.904	0.000	0.3892
		C		0.000	0.000	10.600	0.000	0.1226
L25	59.0800-58.8200	A	1.590	0.000	0.000	0.928	0.000	0.0112
		B		0.000	0.000	1.657	0.000	0.0293
		C		0.000	0.000	0.928	0.000	0.0105
L26	58.8200-58.6700	A	1.589	0.000	0.000	0.535	0.000	0.0065
		B		0.000	0.000	0.956	0.000	0.0169
		C		0.000	0.000	0.535	0.000	0.0061

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 K
L27	58.6700-53.6700	A	1.582	0.000	0.000	13.792	0.000	0.1751
		B		0.000	0.000	27.788	0.000	0.5220
		C		0.000	0.000	13.792	0.000	0.1609
L28	53.6700-48.5800	A	1.567	0.000	0.000	12.738	0.000	0.1628
		B		0.000	0.000	26.938	0.000	0.5133
		C		0.000	0.000	12.738	0.000	0.1484
L29	48.5800-47.5800	A	1.558	0.000	0.000	2.382	0.000	0.0304
		B		0.000	0.000	5.171	0.000	0.0993
		C		0.000	0.000	2.382	0.000	0.0276
L30	47.5800-42.5800	A	1.547	0.000	0.000	11.870	0.000	0.1502
		B		0.000	0.000	25.754	0.000	0.4911
		C		0.000	0.000	11.870	0.000	0.1360
L31	42.5800-39.6700	A	1.533	0.000	0.000	9.362	0.000	0.1102
		B		0.000	0.000	17.416	0.000	0.3073
		C		0.000	0.000	9.362	0.000	0.1020
L32	39.6700-39.4200	A	1.527	0.000	0.000	0.900	0.000	0.0103
		B		0.000	0.000	1.591	0.000	0.0272
		C		0.000	0.000	0.900	0.000	0.0096
L33	39.4200-34.4200	A	1.517	0.000	0.000	17.975	0.000	0.2055
		B		0.000	0.000	31.760	0.000	0.5412
		C		0.000	0.000	17.975	0.000	0.1913
L34	34.4200-32.5000	A	1.502	0.000	0.000	7.895	0.000	0.0870
		B		0.000	0.000	13.170	0.000	0.2150
		C		0.000	0.000	7.895	0.000	0.0816
L35	32.5000-32.2500	A	1.497	0.000	0.000	1.211	0.000	0.0129
		B		0.000	0.000	1.897	0.000	0.0295
		C		0.000	0.000	1.211	0.000	0.0122
L36	32.2500-31.4100	A	1.495	0.000	0.000	4.067	0.000	0.0433
		B		0.000	0.000	6.370	0.000	0.0991
		C		0.000	0.000	4.067	0.000	0.0410
L37	31.4100-31.1600	A	1.492	0.000	0.000	1.210	0.000	0.0129
		B		0.000	0.000	1.895	0.000	0.0294
		C		0.000	0.000	1.210	0.000	0.0122
L38	31.1600-29.0000	A	1.486	0.000	0.000	10.600	0.000	0.1159
		B		0.000	0.000	14.372	0.000	0.2360
		C		0.000	0.000	10.600	0.000	0.1098
L39	29.0000-28.6500	A	1.480	0.000	0.000	1.626	0.000	0.0180
		B		0.000	0.000	2.208	0.000	0.0371
		C		0.000	0.000	1.626	0.000	0.0170
L40	28.6500-28.4200	A	1.478	0.000	0.000	1.068	0.000	0.0118
		B		0.000	0.000	1.451	0.000	0.0243
		C		0.000	0.000	1.068	0.000	0.0111
L41	28.4200-23.5000	A	1.464	0.000	0.000	21.504	0.000	0.2365
		B		0.000	0.000	29.648	0.000	0.5034
		C		0.000	0.000	21.504	0.000	0.2225
L42	23.5000-23.2500	A	1.449	0.000	0.000	1.173	0.000	0.0125
		B		0.000	0.000	1.584	0.000	0.0260
		C		0.000	0.000	1.173	0.000	0.0118
L43	23.2500-23.0000	A	1.448	0.000	0.000	1.172	0.000	0.0125
		B		0.000	0.000	1.584	0.000	0.0260
		C		0.000	0.000	1.172	0.000	0.0118
L44	23.0000-22.7500	A	1.446	0.000	0.000	1.172	0.000	0.0125
		B		0.000	0.000	1.583	0.000	0.0260
		C		0.000	0.000	1.172	0.000	0.0118
L45	22.7500-17.7500	A	1.428	0.000	0.000	19.922	0.000	0.2116
		B		0.000	0.000	31.558	0.000	0.5137
		C		0.000	0.000	19.922	0.000	0.1975
L46	17.7500-12.7500	A	1.388	0.000	0.000	17.940	0.000	0.1872
		B		0.000	0.000	31.308	0.000	0.5015
		C		0.000	0.000	17.940	0.000	0.1730
L47	12.7500-7.7500	A	1.334	0.000	0.000	17.778	0.000	0.1797
		B		0.000	0.000	30.970	0.000	0.4852
		C		0.000	0.000	17.778	0.000	0.1655
L48	7.7500-2.7500	A	1.248	0.000	0.000	17.519	0.000	0.1680
		B		0.000	0.000	30.429	0.000	0.4598
		C		0.000	0.000	17.519	0.000	0.1538
L49	2.7500-0.0000	A	1.091	0.000	0.000	7.672	0.000	0.0700
		B		0.000	0.000	14.493	0.000	0.2174
		C		0.000	0.000	7.672	0.000	0.0622

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.0000-135.0000	1.5212	0.4945	2.2492	0.8540
L2	135.0000-130.0000	2.0213	0.5785	2.8188	0.9412
L3	130.0000-125.0000	2.0307	0.5828	2.8797	0.9642
L4	125.0000-120.0000	2.0391	0.5866	2.9351	0.9852
L5	120.0000-115.0000	4.3395	-1.8898	4.1521	-1.2517
L6	115.0000-114.7500	2.6879	-1.1692	3.3179	-0.9980
L7	114.7500-109.7500	2.7273	-1.1850	3.3781	-1.0140
L8	109.7500-104.7500	2.8002	-1.2143	3.4904	-1.0442
L9	104.7500-101.5800	3.0257	-1.3102	3.7527	-1.1199
L10	101.5800-101.3300	6.2080	-2.6867	5.5299	-1.6487
L11	101.3300-96.3300	6.2622	-2.7077	5.5965	-1.6663
L12	96.3300-91.3300	4.7410	-2.0468	4.7118	-1.3999
L13	91.3300-91.0000	2.6616	-1.1482	3.5388	-1.0503
L14	91.0000-90.7500	2.6668	-1.1503	3.5460	-1.0523
L15	90.7500-85.7500	2.6989	-1.1633	3.5963	-1.0663
L16	85.7500-80.7500	2.7587	-1.1875	3.6902	-1.0927
L17	80.7500-75.7500	2.8168	-1.2110	3.7817	-1.1187
L18	75.7500-70.7500	2.5949	-1.1143	3.5648	-1.0539
L19	70.7500-69.9800	2.0378	-0.8745	2.9232	-0.8640
L20	69.9800-69.7300	2.0426	-0.8765	2.9305	-0.8662
L21	69.7300-64.7300	2.5291	-1.0506	3.5497	-1.0168
L22	64.7300-63.0000	1.9532	-0.3238	2.9262	-0.3552
L23	63.0000-62.7500	1.9619	-0.3246	2.9398	-0.3563
L24	62.7500-59.0800	1.8165	-0.2992	2.7188	-0.3284
L25	59.0800-58.8200	1.6224	-0.2661	2.4244	-0.2919
L26	58.8200-58.6700	1.6239	-0.2663	2.4267	-0.2921
L27	58.6700-53.6700	1.9495	-0.3179	2.8447	-0.3411
L28	53.6700-48.5800	2.1720	-0.5225	3.0967	-0.5289
L29	48.5800-47.5800	2.3928	-1.0231	3.2882	-0.9737
L30	47.5800-42.5800	2.4197	-1.0341	3.3260	-0.9879
L31	42.5800-39.6700	2.0333	-0.8684	2.8687	-0.8535
L32	39.6700-39.4200	1.8985	-0.8106	2.7024	-0.8046
L33	39.4200-34.4200	1.9183	-0.8187	2.7307	-0.8142
L34	34.4200-32.5000	1.7727	-0.7562	2.5466	-0.7609
L35	32.5000-32.2500	1.5846	-0.6758	2.3004	-0.6878
L36	32.2500-31.4100	1.5881	-0.6773	2.3053	-0.6896
L37	31.4100-31.1600	1.5919	-0.6789	2.3105	-0.6914
L38	31.1600-29.0000	1.3828	0.3067	2.1608	0.2140
L39	29.0000-28.6500	1.4297	0.4073	2.2410	0.3026
L40	28.6500-28.4200	1.4313	0.4080	2.2433	0.3032
L41	28.4200-23.5000	1.3255	-0.3213	2.1619	-0.4457
L42	23.5000-23.2500	1.0097	-1.3571	1.8068	-1.4906
L43	23.2500-23.0000	1.0106	-1.3584	1.8082	-1.4923
L44	23.0000-22.7500	1.0113	-1.3596	1.8094	-1.4937
L45	22.7500-17.7500	1.3310	-2.3390	2.1553	-2.3851
L46	17.7500-12.7500	1.5454	-2.9822	2.3868	-2.9692
L47	12.7500-7.7500	1.5700	-3.0379	2.4156	-3.0354
L48	7.7500-2.7500	1.5943	-3.0929	2.4339	-3.1056
L49	2.7500-0.0000	1.9303	-3.0730	2.8145	-3.0917

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 5/8	135.00 - 140.00	1.0000	1.0000
L1	56	HB158-1-08U8-S8J18(1-5/8)	135.00 - 138.00	1.0000	1.0000
L2	1	Safety Line 5/8	130.00 - 135.00	1.0000	1.0000
L2	56	HB158-1-08U8-S8J18(1-5/8)	130.00 - 135.00	1.0000	1.0000
L3	1	Safety Line 5/8	125.00 - 130.00	1.0000	1.0000
L3	56	HB158-1-08U8-S8J18(1-5/8)	125.00 - 130.00	1.0000	1.0000
L4	1	Safety Line 5/8	120.00 - 125.00	1.0000	1.0000
L4	56	HB158-1-08U8-S8J18(1-5/8)	120.00 - 125.00	1.0000	1.0000
L5	1	Safety Line 5/8	115.00 - 120.00	1.0000	1.0000
L5	37	4.5" x 1" Flat Plate (G)	115.00 - 117.00	1.0000	1.0000
L5	38	4.5" x 1" Flat Plate (G)	115.00 - 117.00	1.0000	1.0000
L5	39	4.5" x 1" Flat Plate (G)	115.00 - 117.00	1.0000	1.0000
L5	56	HB158-1-08U8-S8J18(1-5/8)	115.00 - 120.00	1.0000	1.0000
L5	57	LDF7-50A(1-5/8)	115.00 - 120.00	1.0000	1.0000
L6	1	Safety Line 5/8	114.75 - 115.00	1.0000	1.0000
L6	37	4.5" x 1" Flat Plate (G)	114.75 - 115.00	1.0000	1.0000
L6	38	4.5" x 1" Flat Plate (G)	114.75 - 115.00	1.0000	1.0000
L6	39	4.5" x 1" Flat Plate (G)	114.75 - 115.00	1.0000	1.0000
L6	56	HB158-1-08U8-S8J18(1-5/8)	114.75 - 115.00	1.0000	1.0000
L6	57	LDF7-50A(1-5/8)	114.75 - 115.00	1.0000	1.0000
L7	1	Safety Line 5/8	109.75 - 114.75	1.0000	1.0000
L7	37	4.5" x 1" Flat Plate (G)	109.75 - 114.75	1.0000	1.0000
L7	38	4.5" x 1" Flat Plate (G)	109.75 - 114.75	1.0000	1.0000
L7	39	4.5" x 1" Flat Plate (G)	109.75 - 114.75	1.0000	1.0000
L7	56	HB158-1-08U8-S8J18(1-5/8)	109.75 - 114.75	1.0000	1.0000
L7	57	LDF7-50A(1-5/8)	109.75 - 114.75	1.0000	1.0000
L8	1	Safety Line 5/8	104.75 - 109.75	1.0000	1.0000
L8	37	4.5" x 1" Flat Plate (G)	104.75 - 109.75	1.0000	1.0000
L8	38	4.5" x 1" Flat Plate (G)	104.75 - 109.75	1.0000	1.0000
L8	39	4.5" x 1" Flat Plate (G)	104.75 - 109.75	1.0000	1.0000
L8	56	HB158-1-08U8-S8J18(1-5/8)	104.75 - 109.75	1.0000	1.0000
L8	57	LDF7-50A(1-5/8)	104.75 - 109.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	1	Safety Line 5/8	101.58 - 104.75	1.0000	1.0000
L9	37	4.5" x 1" Flat Plate (G)	102.00 - 104.75	1.0000	1.0000
L9	38	4.5" x 1" Flat Plate (G)	102.00 - 104.75	1.0000	1.0000
L9	39	4.5" x 1" Flat Plate (G)	102.00 - 104.75	1.0000	1.0000
L9	56	HB158-1-08U8-S8J18(1-5/8)	101.58 - 104.75	1.0000	1.0000
L9	57	LDF7-50A(1-5/8)	101.58 - 104.75	1.0000	1.0000
L10	1	Safety Line 5/8	101.33 - 101.58	1.0000	1.0000
L10	56	HB158-1-08U8-S8J18(1-5/8)	101.33 - 101.58	1.0000	1.0000
L10	57	LDF7-50A(1-5/8)	101.33 - 101.58	1.0000	1.0000
L11	1	Safety Line 5/8	96.33 - 101.33	1.0000	1.0000
L11	56	HB158-1-08U8-S8J18(1-5/8)	96.33 - 101.33	1.0000	1.0000
L11	57	LDF7-50A(1-5/8)	96.33 - 101.33	1.0000	1.0000
L12	1	Safety Line 5/8	91.33 - 96.33	1.0000	1.0000
L12	33	6" x 1" Flat Plate (G)	91.33 - 93.00	1.0000	1.0000
L12	34	6" x 1" Flat Plate (G)	91.33 - 93.00	1.0000	1.0000
L12	35	6" x 1" Flat Plate (G)	91.33 - 93.00	1.0000	1.0000
L12	56	HB158-1-08U8-S8J18(1-5/8)	91.33 - 96.33	1.0000	1.0000
L12	57	LDF7-50A(1-5/8)	91.33 - 96.33	1.0000	1.0000
L13	1	Safety Line 5/8	91.00 - 91.33	1.0000	1.0000
L13	33	6" x 1" Flat Plate (G)	91.00 - 91.33	1.0000	1.0000
L13	34	6" x 1" Flat Plate (G)	91.00 - 91.33	1.0000	1.0000
L13	35	6" x 1" Flat Plate (G)	91.00 - 91.33	1.0000	1.0000
L13	56	HB158-1-08U8-S8J18(1-5/8)	91.00 - 91.33	1.0000	1.0000
L13	57	LDF7-50A(1-5/8)	91.00 - 91.33	1.0000	1.0000
L14	1	Safety Line 5/8	90.75 - 91.00	1.0000	1.0000
L14	33	6" x 1" Flat Plate (G)	90.75 - 91.00	1.0000	1.0000
L14	34	6" x 1" Flat Plate (G)	90.75 - 91.00	1.0000	1.0000
L14	35	6" x 1" Flat Plate (G)	90.75 - 91.00	1.0000	1.0000
L14	56	HB158-1-08U8-S8J18(1-5/8)	90.75 - 91.00	1.0000	1.0000
L14	57	LDF7-50A(1-5/8)	90.75 - 91.00	1.0000	1.0000
L15	1	Safety Line 5/8	85.75 - 90.75	1.0000	1.0000
L15	33	6" x 1" Flat Plate (G)	85.75 - 90.75	1.0000	1.0000
L15	34	6" x 1" Flat Plate (G)	85.75 - 90.75	1.0000	1.0000
L15	35	6" x 1" Flat Plate (G)	85.75 - 90.75	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L15	56	HB158-1-08U8-S8J18(1-5/8)	85.75 - 90.75	1.0000	1.0000
L15	57	LDF7-50A(1-5/8)	85.75 - 90.75	1.0000	1.0000
L16	1	Safety Line 5/8	80.75 - 85.75	1.0000	1.0000
L16	33	6" x 1" Flat Plate (G)	80.75 - 85.75	1.0000	1.0000
L16	34	6" x 1" Flat Plate (G)	80.75 - 85.75	1.0000	1.0000
L16	35	6" x 1" Flat Plate (G)	80.75 - 85.75	1.0000	1.0000
L16	56	HB158-1-08U8-S8J18(1-5/8)	80.75 - 85.75	1.0000	1.0000
L16	57	LDF7-50A(1-5/8)	80.75 - 85.75	1.0000	1.0000
L17	1	Safety Line 5/8	75.75 - 80.75	1.0000	1.0000
L17	33	6" x 1" Flat Plate (G)	75.75 - 80.75	1.0000	1.0000
L17	34	6" x 1" Flat Plate (G)	75.75 - 80.75	1.0000	1.0000
L17	35	6" x 1" Flat Plate (G)	75.75 - 80.75	1.0000	1.0000
L17	56	HB158-1-08U8-S8J18(1-5/8)	75.75 - 80.75	1.0000	1.0000
L17	57	LDF7-50A(1-5/8)	75.75 - 80.75	1.0000	1.0000
L18	1	Safety Line 5/8	70.75 - 75.75	1.0000	1.0000
L18	13	5.75" x 1" Flat Plate (G)	70.75 - 72.00	1.0000	1.0000
L18	14	5.75" x 1" Flat Plate (G)	70.75 - 72.00	1.0000	1.0000
L18	15	5.75" x 1" Flat Plate (G)	70.75 - 72.00	1.0000	1.0000
L18	33	6" x 1" Flat Plate (G)	70.75 - 75.75	1.0000	1.0000
L18	34	6" x 1" Flat Plate (G)	70.75 - 75.75	1.0000	1.0000
L18	35	6" x 1" Flat Plate (G)	70.75 - 75.75	1.0000	1.0000
L18	56	HB158-1-08U8-S8J18(1-5/8)	70.75 - 75.75	1.0000	1.0000
L18	57	LDF7-50A(1-5/8)	70.75 - 75.75	1.0000	1.0000
L19	1	Safety Line 5/8	69.98 - 70.75	1.0000	1.0000
L19	13	5.75" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	14	5.75" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	15	5.75" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	33	6" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	34	6" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	35	6" x 1" Flat Plate (G)	69.98 - 70.75	1.0000	1.0000
L19	56	HB158-1-08U8-S8J18(1-5/8)	69.98 - 70.75	1.0000	1.0000
L19	57	LDF7-50A(1-5/8)	69.98 - 70.75	1.0000	1.0000
L20	1	Safety Line 5/8	69.73 - 69.98	1.0000	1.0000
L20	13	5.75" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L20	14	5.75" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000
L20	15	5.75" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000
L20	33	6" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000
L20	34	6" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000
L20	35	6" x 1" Flat Plate (G)	69.73 - 69.98	1.0000	1.0000
L20	56	HB158-1-08U8-S8J18(1-5/8)	69.73 - 69.98	1.0000	1.0000
L20	57	LDF7-50A(1-5/8)	69.73 - 69.98	1.0000	1.0000
L21	1	Safety Line 5/8	64.73 - 69.73	1.0000	1.0000
L21	13	5.75" x 1" Flat Plate (G)	64.73 - 69.73	1.0000	1.0000
L21	14	5.75" x 1" Flat Plate (G)	64.73 - 69.73	1.0000	1.0000
L21	15	5.75" x 1" Flat Plate (G)	64.73 - 69.73	1.0000	1.0000
L21	29	6" x 1" Flat Plate (G)	64.73 - 65.00	1.0000	1.0000
L21	30	6" x 1" Flat Plate (G)	64.73 - 65.00	1.0000	1.0000
L21	31	6" x 1" Flat Plate (G)	64.73 - 65.00	1.0000	1.0000
L21	33	6" x 1" Flat Plate (G)	68.00 - 69.73	1.0000	1.0000
L21	34	6" x 1" Flat Plate (G)	68.00 - 69.73	1.0000	1.0000
L21	35	6" x 1" Flat Plate (G)	68.00 - 69.73	1.0000	1.0000
L21	56	HB158-1-08U8-S8J18(1-5/8)	64.73 - 69.73	1.0000	1.0000
L21	57	LDF7-50A(1-5/8)	64.73 - 69.73	1.0000	1.0000
L22	1	Safety Line 5/8	63.00 - 64.73	1.0000	1.0000
L22	13	5.75" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	14	5.75" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	15	5.75" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	29	6" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	30	6" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	31	6" x 1" Flat Plate (G)	63.00 - 64.73	1.0000	1.0000
L22	56	HB158-1-08U8-S8J18(1-5/8)	63.00 - 64.73	1.0000	1.0000
L22	57	LDF7-50A(1-5/8)	63.00 - 64.73	1.0000	1.0000
L23	1	Safety Line 5/8	62.75 - 63.00	1.0000	1.0000
L23	13	5.75" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000
L23	14	5.75" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000
L23	15	5.75" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000
L23	29	6" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000
L23	30	6" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L23	31	6" x 1" Flat Plate (G)	62.75 - 63.00	1.0000	1.0000
L23	56	HB158-1-08U8-S8J18(1-5/8)	62.75 - 63.00	1.0000	1.0000
L23	57	LDF7-50A(1-5/8)	62.75 - 63.00	1.0000	1.0000
L24	1	Safety Line 5/8	59.08 - 62.75	1.0000	1.0000
L24	13	5.75" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	14	5.75" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	15	5.75" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	17	Aero MP304	59.08 - 60.50	1.0000	1.0000
L24	18	Aero MP304	59.08 - 60.50	1.0000	1.0000
L24	19	Aero MP304	59.08 - 60.50	1.0000	1.0000
L24	29	6" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	30	6" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	31	6" x 1" Flat Plate (G)	59.08 - 62.75	1.0000	1.0000
L24	56	HB158-1-08U8-S8J18(1-5/8)	59.08 - 62.75	1.0000	1.0000
L24	57	LDF7-50A(1-5/8)	59.08 - 62.75	1.0000	1.0000
L25	1	Safety Line 5/8	58.82 - 59.08	1.0000	1.0000
L25	13	5.75" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	14	5.75" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	15	5.75" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	17	Aero MP304	58.82 - 59.08	1.0000	1.0000
L25	18	Aero MP304	58.82 - 59.08	1.0000	1.0000
L25	19	Aero MP304	58.82 - 59.08	1.0000	1.0000
L25	29	6" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	30	6" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	31	6" x 1" Flat Plate (G)	58.82 - 59.08	1.0000	1.0000
L25	56	HB158-1-08U8-S8J18(1-5/8)	58.82 - 59.08	1.0000	1.0000
L25	57	LDF7-50A(1-5/8)	58.82 - 59.08	1.0000	1.0000
L26	1	Safety Line 5/8	58.67 - 58.82	1.0000	1.0000
L26	13	5.75" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	14	5.75" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	15	5.75" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	17	Aero MP304	58.67 - 58.82	1.0000	1.0000
L26	18	Aero MP304	58.67 - 58.82	1.0000	1.0000
L26	19	Aero MP304	58.67 - 58.82	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	29	6" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	30	6" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	31	6" x 1" Flat Plate (G)	58.67 - 58.82	1.0000	1.0000
L26	56	HB158-1-08U8-S8J18(1-5/8)	58.67 - 58.82	1.0000	1.0000
L26	57	LDF7-50A(1-5/8)	58.67 - 58.82	1.0000	1.0000
L27	1	Safety Line 5/8	53.67 - 58.67	1.0000	1.0000
L27	13	5.75" x 1" Flat Plate (G)	57.00 - 58.67	1.0000	1.0000
L27	14	5.75" x 1" Flat Plate (G)	57.00 - 58.67	1.0000	1.0000
L27	15	5.75" x 1" Flat Plate (G)	57.00 - 58.67	1.0000	1.0000
L27	17	Aero MP304	53.67 - 58.67	1.0000	1.0000
L27	18	Aero MP304	53.67 - 58.67	1.0000	1.0000
L27	19	Aero MP304	53.67 - 58.67	1.0000	1.0000
L27	29	6" x 1" Flat Plate (G)	53.67 - 58.67	1.0000	1.0000
L27	30	6" x 1" Flat Plate (G)	53.67 - 58.67	1.0000	1.0000
L27	31	6" x 1" Flat Plate (G)	53.67 - 58.67	1.0000	1.0000
L27	56	HB158-1-08U8-S8J18(1-5/8)	53.67 - 58.67	1.0000	1.0000
L27	57	LDF7-50A(1-5/8)	53.67 - 58.67	1.0000	1.0000
L28	1	Safety Line 5/8	48.58 - 53.67	1.0000	1.0000
L28	9	5.75" x 1" Flat Plate (G)	48.58 - 50.58	1.0000	1.0000
L28	10	5.75" x 1" Flat Plate (G)	48.58 - 50.58	1.0000	1.0000
L28	11	5.75" x 1" Flat Plate (G)	48.58 - 50.58	1.0000	1.0000
L28	17	Aero MP304	48.58 - 53.67	1.0000	1.0000
L28	18	Aero MP304	48.58 - 53.67	1.0000	1.0000
L28	19	Aero MP304	48.58 - 53.67	1.0000	1.0000
L28	29	6" x 1" Flat Plate (G)	50.00 - 53.67	1.0000	1.0000
L28	30	6" x 1" Flat Plate (G)	50.00 - 53.67	1.0000	1.0000
L28	31	6" x 1" Flat Plate (G)	50.00 - 53.67	1.0000	1.0000
L28	56	HB158-1-08U8-S8J18(1-5/8)	48.58 - 53.67	1.0000	1.0000
L28	57	LDF7-50A(1-5/8)	48.58 - 53.67	1.0000	1.0000
L30	1	Safety Line 5/8	42.58 - 47.58	1.0000	1.0000
L30	9	5.75" x 1" Flat Plate (G)	42.58 - 47.58	1.0000	1.0000
L30	10	5.75" x 1" Flat Plate (G)	42.58 - 47.58	1.0000	1.0000
L30	11	5.75" x 1" Flat Plate (G)	42.58 - 47.58	1.0000	1.0000
L30	17	Aero MP304	42.58 - 47.58	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L30	18	Aero MP304	42.58 - 47.58	1.0000	1.0000
L30	19	Aero MP304	42.58 - 47.58	1.0000	1.0000
L30	56	HB158-1-08U8-S8J18(1-5/8)	42.58 - 47.58	1.0000	1.0000
L30	57	LDF7-50A(1-5/8)	42.58 - 47.58	1.0000	1.0000
L31	1	Safety Line 5/8	39.67 - 42.58	1.0000	1.0000
L31	9	5.75" x 1" Flat Plate (G)	39.67 - 42.58	1.0000	1.0000
L31	10	5.75" x 1" Flat Plate (G)	39.67 - 42.58	1.0000	1.0000
L31	11	5.75" x 1" Flat Plate (G)	39.67 - 42.58	1.0000	1.0000
L31	17	Aero MP304	39.67 - 42.58	1.0000	1.0000
L31	18	Aero MP304	39.67 - 42.58	1.0000	1.0000
L31	19	Aero MP304	39.67 - 42.58	1.0000	1.0000
L31	21	6" x 1" Flat Plate (G)	39.67 - 41.67	1.0000	1.0000
L31	22	6" x 1" Flat Plate (G)	39.67 - 41.67	1.0000	1.0000
L31	23	6" x 1" Flat Plate (G)	39.67 - 41.67	1.0000	1.0000
L31	56	HB158-1-08U8-S8J18(1-5/8)	39.67 - 42.58	1.0000	1.0000
L31	57	LDF7-50A(1-5/8)	39.67 - 42.58	1.0000	1.0000
L32	1	Safety Line 5/8	39.42 - 39.67	1.0000	1.0000
L32	9	5.75" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	10	5.75" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	11	5.75" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	17	Aero MP304	39.42 - 39.67	1.0000	1.0000
L32	18	Aero MP304	39.42 - 39.67	1.0000	1.0000
L32	19	Aero MP304	39.42 - 39.67	1.0000	1.0000
L32	21	6" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	22	6" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	23	6" x 1" Flat Plate (G)	39.42 - 39.67	1.0000	1.0000
L32	56	HB158-1-08U8-S8J18(1-5/8)	39.42 - 39.67	1.0000	1.0000
L32	57	LDF7-50A(1-5/8)	39.42 - 39.67	1.0000	1.0000
L33	1	Safety Line 5/8	34.42 - 39.42	1.0000	1.0000
L33	9	5.75" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	10	5.75" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	11	5.75" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	17	Aero MP304	34.42 - 39.42	1.0000	1.0000
L33	18	Aero MP304	34.42 - 39.42	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	19	Aero MP304	34.42 - 39.42	1.0000	1.0000
L33	21	6" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	22	6" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	23	6" x 1" Flat Plate (G)	34.42 - 39.42	1.0000	1.0000
L33	56	HB158-1-08U8-S8J18(1-5/8)	34.42 - 39.42	1.0000	1.0000
L33	57	LDF7-50A(1-5/8)	34.42 - 39.42	1.0000	1.0000
L34	1	Safety Line 5/8	32.50 - 34.42	1.0000	1.0000
L34	5	5.75" x 1" Flat Plate (G)	32.50 - 33.30	1.0000	1.0000
L34	6	5.75" x 1" Flat Plate (G)	32.50 - 33.30	1.0000	1.0000
L34	7	5.75" x 1" Flat Plate (G)	32.50 - 33.30	1.0000	1.0000
L34	9	5.75" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	10	5.75" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	11	5.75" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	17	Aero MP304	32.50 - 34.42	1.0000	1.0000
L34	18	Aero MP304	32.50 - 34.42	1.0000	1.0000
L34	19	Aero MP304	32.50 - 34.42	1.0000	1.0000
L34	21	6" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	22	6" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	23	6" x 1" Flat Plate (G)	32.50 - 34.42	1.0000	1.0000
L34	56	HB158-1-08U8-S8J18(1-5/8)	32.50 - 34.42	1.0000	1.0000
L34	57	LDF7-50A(1-5/8)	32.50 - 34.42	1.0000	1.0000
L35	1	Safety Line 5/8	32.25 - 32.50	1.0000	1.0000
L35	5	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	6	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	7	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	9	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	10	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	11	5.75" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	17	Aero MP304	32.25 - 32.50	1.0000	1.0000
L35	18	Aero MP304	32.25 - 32.50	1.0000	1.0000
L35	19	Aero MP304	32.25 - 32.50	1.0000	1.0000
L35	21	6" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	22	6" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000
L35	23	6" x 1" Flat Plate (G)	32.25 - 32.50	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L35	56	HB158-1-08U8-S8J18(1-5/8)	32.25 - 32.50	1.0000	1.0000
L35	57	LDF7-50A(1-5/8)	32.25 - 32.50	1.0000	1.0000
L36	1	Safety Line 5/8	31.41 - 32.25	1.0000	1.0000
L36	5	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	6	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	7	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	9	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	10	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	11	5.75" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	17	Aero MP304	31.41 - 32.25	1.0000	1.0000
L36	18	Aero MP304	31.41 - 32.25	1.0000	1.0000
L36	19	Aero MP304	31.41 - 32.25	1.0000	1.0000
L36	21	6" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	22	6" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	23	6" x 1" Flat Plate (G)	31.41 - 32.25	1.0000	1.0000
L36	56	HB158-1-08U8-S8J18(1-5/8)	31.41 - 32.25	1.0000	1.0000
L36	57	LDF7-50A(1-5/8)	31.41 - 32.25	1.0000	1.0000
L37	1	Safety Line 5/8	31.16 - 31.41	1.0000	1.0000
L37	5	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	6	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	7	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	9	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	10	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	11	5.75" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	17	Aero MP304	31.16 - 31.41	1.0000	1.0000
L37	18	Aero MP304	31.16 - 31.41	1.0000	1.0000
L37	19	Aero MP304	31.16 - 31.41	1.0000	1.0000
L37	21	6" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	22	6" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	23	6" x 1" Flat Plate (G)	31.16 - 31.41	1.0000	1.0000
L37	56	HB158-1-08U8-S8J18(1-5/8)	31.16 - 31.41	1.0000	1.0000
L37	57	LDF7-50A(1-5/8)	31.16 - 31.41	1.0000	1.0000
L38	1	Safety Line 5/8	29.00 - 31.16	1.0000	1.0000
L38	5	5.75" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L38	6	5.75" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000
L38	7	5.75" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000
L38	9	5.75" x 1" Flat Plate (G)	30.58 - 31.16	1.0000	1.0000
L38	10	5.75" x 1" Flat Plate (G)	30.58 - 31.16	1.0000	1.0000
L38	11	5.75" x 1" Flat Plate (G)	30.58 - 31.16	1.0000	1.0000
L38	17	Aero MP304	29.00 - 31.16	1.0000	1.0000
L38	18	Aero MP304	29.00 - 31.16	1.0000	1.0000
L38	19	Aero MP304	29.00 - 31.16	1.0000	1.0000
L38	21	6" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000
L38	22	6" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000
L38	23	6" x 1" Flat Plate (G)	29.00 - 31.16	1.0000	1.0000
L38	41	6" x 1" Flat Plate (G)	29.00 - 31.00	1.0000	1.0000
L38	42	6" x 1" Flat Plate (G)	29.00 - 31.00	1.0000	1.0000
L38	56	HB158-1-08U8-S8J18(1-5/8)	29.00 - 31.16	1.0000	1.0000
L38	57	LDF7-50A(1-5/8)	29.00 - 31.16	1.0000	1.0000
L39	1	Safety Line 5/8	28.65 - 29.00	1.0000	1.0000
L39	5	5.75" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	6	5.75" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	7	5.75" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	17	Aero MP304	28.65 - 29.00	1.0000	1.0000
L39	18	Aero MP304	28.65 - 29.00	1.0000	1.0000
L39	19	Aero MP304	28.65 - 29.00	1.0000	1.0000
L39	21	6" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	22	6" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	23	6" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	41	6" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	42	6" x 1" Flat Plate (G)	28.65 - 29.00	1.0000	1.0000
L39	56	HB158-1-08U8-S8J18(1-5/8)	28.65 - 29.00	1.0000	1.0000
L39	57	LDF7-50A(1-5/8)	28.65 - 29.00	1.0000	1.0000
L40	1	Safety Line 5/8	28.42 - 28.65	1.0000	1.0000
L40	5	5.75" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	6	5.75" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	7	5.75" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	17	Aero MP304	28.42 - 28.65	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L40	18	Aero MP304	28.42 - 28.65	1.0000	1.0000
L40	19	Aero MP304	28.42 - 28.65	1.0000	1.0000
L40	21	6" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	22	6" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	23	6" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	41	6" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	42	6" x 1" Flat Plate (G)	28.42 - 28.65	1.0000	1.0000
L40	56	HB158-1-08U8-S8J18(1-5/8)	28.42 - 28.65	1.0000	1.0000
L40	57	LDF7-50A(1-5/8)	28.42 - 28.65	1.0000	1.0000
L41	1	Safety Line 5/8	23.50 - 28.42	1.0000	1.0000
L41	5	5.75" x 1" Flat Plate (G)	23.50 - 28.42	1.0000	1.0000
L41	6	5.75" x 1" Flat Plate (G)	23.50 - 28.42	1.0000	1.0000
L41	7	5.75" x 1" Flat Plate (G)	23.50 - 28.42	1.0000	1.0000
L41	17	Aero MP304	23.50 - 28.42	1.0000	1.0000
L41	18	Aero MP304	23.50 - 28.42	1.0000	1.0000
L41	19	Aero MP304	23.50 - 28.42	1.0000	1.0000
L41	21	6" x 1" Flat Plate (G)	26.67 - 28.42	1.0000	1.0000
L41	22	6" x 1" Flat Plate (G)	26.67 - 28.42	1.0000	1.0000
L41	23	6" x 1" Flat Plate (G)	26.67 - 28.42	1.0000	1.0000
L41	25	6" x 1" Flat Plate (G)	23.50 - 25.50	1.0000	1.0000
L41	26	6" x 1" Flat Plate (G)	23.50 - 25.50	1.0000	1.0000
L41	27	6" x 1" Flat Plate (G)	23.50 - 25.50	1.0000	1.0000
L41	41	6" x 1" Flat Plate (G)	23.50 - 28.42	1.0000	1.0000
L41	42	6" x 1" Flat Plate (G)	23.50 - 28.42	1.0000	1.0000
L41	56	HB158-1-08U8-S8J18(1-5/8)	23.50 - 28.42	1.0000	1.0000
L41	57	LDF7-50A(1-5/8)	23.50 - 28.42	1.0000	1.0000
L42	1	Safety Line 5/8	23.25 - 23.50	1.0000	1.0000
L42	5	5.75" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	6	5.75" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	7	5.75" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	17	Aero MP304	23.25 - 23.50	1.0000	1.0000
L42	18	Aero MP304	23.25 - 23.50	1.0000	1.0000
L42	19	Aero MP304	23.25 - 23.50	1.0000	1.0000
L42	25	6" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L42	26	6" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	27	6" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	41	6" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	42	6" x 1" Flat Plate (G)	23.25 - 23.50	1.0000	1.0000
L42	56	HB158-1-08U8-S8J18(1-5/8)	23.25 - 23.50	1.0000	1.0000
L42	57	LDF7-50A(1-5/8)	23.25 - 23.50	1.0000	1.0000
L43	1	Safety Line 5/8	23.00 - 23.25	1.0000	1.0000
L43	5	5.75" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	6	5.75" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	7	5.75" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	17	Aero MP304	23.00 - 23.25	1.0000	1.0000
L43	18	Aero MP304	23.00 - 23.25	1.0000	1.0000
L43	19	Aero MP304	23.00 - 23.25	1.0000	1.0000
L43	25	6" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	26	6" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	27	6" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	41	6" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	42	6" x 1" Flat Plate (G)	23.00 - 23.25	1.0000	1.0000
L43	56	HB158-1-08U8-S8J18(1-5/8)	23.00 - 23.25	1.0000	1.0000
L43	57	LDF7-50A(1-5/8)	23.00 - 23.25	1.0000	1.0000
L44	1	Safety Line 5/8	22.75 - 23.00	1.0000	1.0000
L44	5	5.75" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	6	5.75" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	7	5.75" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	17	Aero MP304	22.75 - 23.00	1.0000	1.0000
L44	18	Aero MP304	22.75 - 23.00	1.0000	1.0000
L44	19	Aero MP304	22.75 - 23.00	1.0000	1.0000
L44	25	6" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	26	6" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	27	6" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	41	6" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	42	6" x 1" Flat Plate (G)	22.75 - 23.00	1.0000	1.0000
L44	56	HB158-1-08U8-S8J18(1-5/8)	22.75 - 23.00	1.0000	1.0000
L44	57	LDF7-50A(1-5/8)	22.75 - 23.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L45	1	Safety Line 5/8	17.75 - 22.75	1.0000	1.0000
L45	5	5.75" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	6	5.75" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	7	5.75" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	17	Aero MP304	17.75 - 22.75	1.0000	1.0000
L45	18	Aero MP304	17.75 - 22.75	1.0000	1.0000
L45	19	Aero MP304	17.75 - 22.75	1.0000	1.0000
L45	25	6" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	26	6" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	27	6" x 1" Flat Plate (G)	17.75 - 22.75	1.0000	1.0000
L45	41	6" x 1" Flat Plate (G)	21.00 - 22.75	1.0000	1.0000
L45	42	6" x 1" Flat Plate (G)	21.00 - 22.75	1.0000	1.0000
L45	56	HB158-1-08U8-S8J18(1-5/8)	17.75 - 22.75	1.0000	1.0000
L45	57	LDF7-50A(1-5/8)	17.75 - 22.75	1.0000	1.0000
L46	1	Safety Line 5/8	12.75 - 17.75	1.0000	1.0000
L46	5	5.75" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	6	5.75" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	7	5.75" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	17	Aero MP304	12.75 - 17.75	1.0000	1.0000
L46	18	Aero MP304	12.75 - 17.75	1.0000	1.0000
L46	19	Aero MP304	12.75 - 17.75	1.0000	1.0000
L46	25	6" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	26	6" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	27	6" x 1" Flat Plate (G)	12.75 - 17.75	1.0000	1.0000
L46	56	HB158-1-08U8-S8J18(1-5/8)	12.75 - 17.75	1.0000	1.0000
L46	57	LDF7-50A(1-5/8)	12.75 - 17.75	1.0000	1.0000
L47	1	Safety Line 5/8	7.75 - 12.75	1.0000	1.0000
L47	5	5.75" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	6	5.75" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	7	5.75" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	17	Aero MP304	7.75 - 12.75	1.0000	1.0000
L47	18	Aero MP304	7.75 - 12.75	1.0000	1.0000
L47	19	Aero MP304	7.75 - 12.75	1.0000	1.0000
L47	25	6" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	26	6" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	27	6" x 1" Flat Plate (G)	7.75 - 12.75	1.0000	1.0000
L47	56	HB158-1-08U8-S8J18(1-5/8)	7.75 - 12.75	1.0000	1.0000
L47	57	LDF7-50A(1-5/8)	7.75 - 12.75	1.0000	1.0000
L48	1	Safety Line 5/8	2.75 - 7.75	1.0000	1.0000
L48	5	5.75" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000
L48	6	5.75" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000
L48	7	5.75" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	17	Aero MP304	2.75 - 7.75	1.0000	1.0000
L48	18	Aero MP304	2.75 - 7.75	1.0000	1.0000
L48	19	Aero MP304	2.75 - 7.75	1.0000	1.0000
L48	25	6" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000
L48	26	6" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000
L48	27	6" x 1" Flat Plate (G)	2.75 - 7.75	1.0000	1.0000
L48	56	HB158-1-08U8-S8J18(1-5/8)	2.75 - 7.75	1.0000	1.0000
L48	57	LDF7-50A(1-5/8)	2.75 - 7.75	1.0000	1.0000
L49	1	Safety Line 5/8	0.00 - 2.75	1.0000	1.0000
L49	5	5.75" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	6	5.75" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	7	5.75" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	17	Aero MP304	0.50 - 2.75	1.0000	1.0000
L49	18	Aero MP304	0.50 - 2.75	1.0000	1.0000
L49	19	Aero MP304	0.50 - 2.75	1.0000	1.0000
L49	25	6" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	26	6" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	27	6" x 1" Flat Plate (G)	0.50 - 2.75	1.0000	1.0000
L49	56	HB158-1-08U8-S8J18(1-5/8)	0.00 - 2.75	1.0000	1.0000
L49	57	LDF7-50A(1-5/8)	0.00 - 2.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 2"x15'	C	From Leg	0.0000 0.0000 7.5000	0.000	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.0000 4.5250 6.0667 9.2000	3.0000 4.5250 6.0667 9.2000	0.0800 0.1031 0.1358 0.2303
*									
** Level 138ft **									
(2) HBXX-6516DS-A2M w/ Mount Pipe	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.6558 6.0642 6.4748 7.3223	4.5251 5.2049 5.8567 7.1980	0.0497 0.0990 0.1544 0.2870
(2) HBXX-6516DS-A2M w/ Mount Pipe	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.6558 6.0642 6.4748 7.3223	4.5251 5.2049 5.8567 7.1980	0.0497 0.0990 0.1544 0.2870
(2) HBXX-6516DS-A2M w/ Mount Pipe	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.6558 6.0642 6.4748 7.3223	4.5251 5.2049 5.8567 7.1980	0.0497 0.0990 0.1544 0.2870
X7C-FRO-660-VR0 w/ Mount Pipe	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	9.7864 10.3601 10.8989 11.9990	7.5292 8.7153 9.6153 11.4489	0.0606 0.1387 0.2250 0.4259
X7C-FRO-660-VR0 w/ Mount Pipe	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice	9.7864 10.3601 10.8989 11.9990	7.5292 8.7153 9.6153 11.4489	0.0606 0.1387 0.2250 0.4259

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* *K*
						2" Ice			
X7C-FRO-660-VR0 w/ Mount Pipe	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	9.7864 10.3601 10.8989 11.9990	7.5292 8.7153 9.6153 11.4489	0.0606 0.1387 0.2250 0.4259
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.4998 8.0328 8.5348 9.5641	5.6302 6.7191 7.5606 9.2937	0.0437 0.1029 0.1695 0.3290
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.4998 8.0328 8.5348 9.5641	5.6302 6.7191 7.5606 9.2937	0.0437 0.1029 0.1695 0.3290
BXA-80063-6BF-EDIN-4 w/ Mount Pipe	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.4998 8.0328 8.5348 9.5641	5.6302 6.7191 7.5606 9.2937	0.0437 0.1029 0.1695 0.3290
DB636-C	A	From Leg	4.0000 0.0000 7.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3750 3.3542 4.3500 5.5813	2.3750 3.3542 4.3500 5.5813	0.0300 0.0477 0.0717 0.1388
AWS4 (B66) 4X45 RRH	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.0640 0.0844 0.1078 0.1650
AWS4 (B66) 4X45 RRH	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.0640 0.0844 0.1078 0.1650
AWS4 (B66) 4X45 RRH	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.0640 0.0844 0.1078 0.1650
RRH2X60-PCS	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7233 1.9015 2.0870 2.4804	0.0550 0.0754 0.0987 0.1552
RRH2X60-PCS	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7233 1.9015 2.0870 2.4804	0.0550 0.0754 0.0987 0.1552
RRH2X60-PCS	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7233 1.9015 2.0870 2.4804	0.0550 0.0754 0.0987 0.1552
RRH2X60-700	A	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.5002 3.7609 4.0285 4.5849	1.8157 2.0519 2.2894 2.7852	0.0600 0.0827 0.1091 0.1734
RRH2X60-700	B	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285 4.5849	1.8157 2.0519 2.2894 2.7852	0.0600 0.0827 0.1091 0.1734

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* *K*
						2" Ice			
RRH2X60-700	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.5002 3.7609 4.0285 4.5849	1.8157 2.0519 2.2894 2.7852	0.0600 0.0827 0.1091 0.1734
(2) DB-T1-6Z-8AB-0Z	C	From Leg	4.0000 0.0000 2.0000	0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.8000 5.0704 5.3481 5.9259	2.0000 2.1926 2.3926 2.8148	0.0440 0.0801 0.1202 0.2130
Platform Mount [LP 403-1]	C	None		0.000	138.0000	No Ice 1/2" Ice 1" Ice 2" Ice	18.8500 24.3000 29.7500 40.6500	18.8500 24.3000 29.7500 40.6500	1.5000 1.7966 2.0931 2.6862
*									
** Level 129ft **									
(2) HPA-65R-BUU-H6	A	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	9.6578 10.1285 10.6062 11.5826	6.4500 6.9134 7.3843 8.3078	0.0510 0.1140 0.1834 0.3421
(2) HPA-65R-BUU-H6	B	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	9.6578 10.1285 10.6062 11.5826	6.4500 6.9134 7.3843 8.3078	0.0510 0.1140 0.1834 0.3421
(2) HPA-65R-BUU-H6	C	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	9.6578 10.1285 10.6062 11.5826	6.4500 6.9134 7.3843 8.3078	0.0510 0.1140 0.1834 0.3421
RRUS 32 B2	A	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.7313 2.9531 3.1823 3.6628	1.6681 1.8552 2.0493 2.4585	0.0529 0.0740 0.0982 0.1571
RRUS 32 B2	B	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.7313 2.9531 3.1823 3.6628	1.6681 1.8552 2.0493 2.4585	0.0529 0.0740 0.0982 0.1571
RRUS 32 B2	C	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.7313 2.9531 3.1823 3.6628	1.6681 1.8552 2.0493 2.4585	0.0529 0.0740 0.0982 0.1571
RRUS-11	A	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.5217 2.7187 2.9231 3.3543	1.0680 1.2106 1.3606 1.6828	0.0550 0.0743 0.0966 0.1506
RRUS-11	B	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.5217 2.7187 2.9231 3.3543	1.0680 1.2106 1.3606 1.6828	0.0550 0.0743 0.0966 0.1506
RRUS-11	C	From Face	4.0000 0.0000 0.0000	0.000	129.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.5217 2.7187 2.9231 3.3543	1.0680 1.2106 1.3606 1.6828	0.0550 0.0743 0.0966 0.1506
Platform Mount [LP 301-1]	C	None		0.000	129.0000	No Ice 	30.1000 40.8000	30.1000 40.8000	1.5885 2.0292

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 K
						1/2" Ice	51.5000	51.5000	2.4699
						1" Ice	72.9000	72.9000	3.3512
						2" Ice			
*									
** Level 120ft **									
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.2332 7.7120 8.1762 9.1301	3.7823 4.6432 5.3818 6.9091	0.0637 0.1147 0.1725 0.3119
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.2332 7.7120 8.1762 9.1301	3.7823 4.6432 5.3818 6.9091	0.0637 0.1147 0.1725 0.3119
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.2332 7.7120 8.1762 9.1301	3.7823 4.6432 5.3818 6.9091	0.0637 0.1147 0.1725 0.3119
KRY 112 489/2	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.5592 0.6579 0.7640 0.9984	0.3651 0.4484 0.5420 0.7524	0.0154 0.0205 0.0271 0.0458
KRY 112 489/2	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.5592 0.6579 0.7640 0.9984	0.3651 0.4484 0.5420 0.7524	0.0154 0.0205 0.0271 0.0458
KRY 112 489/2	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.5592 0.6579 0.7640 0.9984	0.3651 0.4484 0.5420 0.7524	0.0154 0.0205 0.0271 0.0458
KRY 112 144/1	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.3523 0.4284 0.5119 0.7011	0.1617 0.2195 0.2846 0.4372	0.0110 0.0141 0.0184 0.0315
KRY 112 144/1	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.3523 0.4284 0.5119 0.7011	0.1617 0.2195 0.2846 0.4372	0.0110 0.0141 0.0184 0.0315
KRY 112 144/1	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.3523 0.4284 0.5119 0.7011	0.1617 0.2195 0.2846 0.4372	0.0110 0.0141 0.0184 0.0315
AIR32 DB B66Aa B2a w/ Mount Pipe	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.1267 0.1876 0.2555 0.4150
AIR32 DB B66Aa B2a w/ Mount Pipe	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.1267 0.1876 0.2555 0.4150
AIR32 DB B66Aa B2a w/ Mount Pipe	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.1267 0.1876 0.2555 0.4150

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 K
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.4801 21.2306 21.9900 23.4441	11.0240 12.5496 14.0992 16.4509	0.1608 0.2971 0.4442 0.7751
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.4801 21.2306 21.9900 23.4441	11.0240 12.5496 14.0992 16.4509	0.1608 0.2971 0.4442 0.7751
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	20.4801 21.2306 21.9900 23.4441	11.0240 12.5496 14.0992 16.4509	0.1608 0.2971 0.4442 0.7751
RADIO 4449 B12/B71	A	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.6500 1.8104 1.9781 2.3359	1.3000 1.4448 1.5970 1.9237	0.0750 0.0922 0.1121 0.1608
RADIO 4449 B12/B71	B	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.6500 1.8104 1.9781 2.3359	1.3000 1.4448 1.5970 1.9237	0.0750 0.0922 0.1121 0.1608
RADIO 4449 B12/B71	C	From Face	4.0000 0.0000 0.0000	0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.6500 1.8104 1.9781 2.3359	1.3000 1.4448 1.5970 1.9237	0.0750 0.0922 0.1121 0.1608
T-Arm Mount [TA 602-3]	C	None		0.000	120.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.5900 15.4400 19.2900 26.9900	11.5900 15.4400 19.2900 26.9900	0.7743 0.9904 1.2064 1.6385
*									
** Level 99ft **									
*									
** Level 95ft **									
*									
** Level 73ft **									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.0000 0.0000 2.0000	0.000	73.0000	No Ice 1/2" Ice 1" Ice 2" Ice	8.2619 8.8215 9.3462 10.4181	6.9458 8.1266 9.0212 10.8440	0.0826 0.1506 0.2265 0.4060
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	4.0000 0.0000 2.0000	0.000	73.0000	No Ice 1/2" Ice 1" Ice 2" Ice	8.2619 8.8215 9.3462 10.4181	6.9458 8.1266 9.0212 10.8440	0.0826 0.1506 0.2265 0.4060
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.0000 0.0000 2.0000	0.000	73.0000	No Ice 1/2" Ice 1" Ice 2" Ice	8.2619 8.8215 9.3462 10.4181	6.9458 8.1266 9.0212 10.8440	0.0826 0.1506 0.2265 0.4060
1900MHZ 4X40W RRH	A	From Face	4.0000 0.0000 2.0000	0.000	73.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3218 2.5266 2.7388 3.1855	2.2360 2.4385 2.6485 3.0906	0.0595 0.0826 0.1090 0.1722
1900MHZ 4X40W RRH	B	From Face	4.0000 0.0000 2.0000	0.000	73.0000	No Ice 1/2" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.0595 0.0826 0.1090

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* *K*
						1" Ice	3.1855	3.0906	0.1722
						2" Ice			
1900MHZ 4X40W RRH	C	From Face	4.0000	0.000	73.0000	No Ice	2.3218	2.2360	0.0595
			0.0000			1/2"	2.5266	2.4385	0.0826
			2.0000			Ice	2.7388	2.6485	0.1090
						1" Ice	3.1855	3.0906	0.1722
						2" Ice			
DT465B-2XR w/ Mount Pipe	A	From Face	4.0000	0.000	73.0000	No Ice	9.3360	7.6339	0.0835
			0.0000			1/2"	9.9051	8.8197	0.1600
			2.0000			Ice	10.4391	9.7184	0.2446
						1" Ice	11.5301	11.5435	0.4420
						2" Ice			
DT465B-2XR w/ Mount Pipe	B	From Face	4.0000	0.000	73.0000	No Ice	9.3360	7.6339	0.0835
			0.0000			1/2"	9.9051	8.8197	0.1600
			2.0000			Ice	10.4391	9.7184	0.2446
						1" Ice	11.5301	11.5435	0.4420
						2" Ice			
DT465B-2XR w/ Mount Pipe	C	From Face	4.0000	0.000	73.0000	No Ice	9.3360	7.6339	0.0835
			0.0000			1/2"	9.9051	8.8197	0.1600
			2.0000			Ice	10.4391	9.7184	0.2446
						1" Ice	11.5301	11.5435	0.4420
						2" Ice			
RRH2x50-800	A	From Face	4.0000	0.000	73.0000	No Ice	2.1342	1.7894	0.0500
			0.0000			1/2"	2.3195	1.9631	0.0713
			2.0000			Ice	2.5123	2.1442	0.0956
						1" Ice	2.9201	2.5287	0.1541
						2" Ice			
RRH2x50-800	B	From Face	4.0000	0.000	73.0000	No Ice	2.1342	1.7894	0.0500
			0.0000			1/2"	2.3195	1.9631	0.0713
			2.0000			Ice	2.5123	2.1442	0.0956
						1" Ice	2.9201	2.5287	0.1541
						2" Ice			
RRH2x50-800	C	From Face	4.0000	0.000	73.0000	No Ice	2.1342	1.7894	0.0500
			0.0000			1/2"	2.3195	1.9631	0.0713
			2.0000			Ice	2.5123	2.1442	0.0956
						1" Ice	2.9201	2.5287	0.1541
						2" Ice			
TD-RRH8X20-25	A	From Face	4.0000	0.000	73.0000	No Ice	4.0455	1.5326	0.0700
			0.0000			1/2"	4.2975	1.7122	0.0971
			2.0000			Ice	4.5570	1.8987	0.1278
						1" Ice	5.0981	2.2929	0.2005
						2" Ice			
TD-RRH8X20-25	B	From Face	4.0000	0.000	73.0000	No Ice	4.0455	1.5326	0.0700
			0.0000			1/2"	4.2975	1.7122	0.0971
			2.0000			Ice	4.5570	1.8987	0.1278
						1" Ice	5.0981	2.2929	0.2005
						2" Ice			
TD-RRH8X20-25	C	From Face	4.0000	0.000	73.0000	No Ice	4.0455	1.5326	0.0700
			0.0000			1/2"	4.2975	1.7122	0.0971
			2.0000			Ice	4.5570	1.8987	0.1278
						1" Ice	5.0981	2.2929	0.2005
						2" Ice			
Platform Mount [LP 1201-1]	C	None		0.000	73.0000	No Ice	23.1000	23.1000	2.1000
						1/2"	26.8000	26.8000	2.5000
						Ice	30.5000	30.5000	2.9000
						1" Ice	37.9000	37.9000	3.7000
						2" Ice			
10'x3" Pipe Mount	A	From Face	4.0000	0.000	73.0000	No Ice	3.0000	3.0000	0.0200
			0.0000			1/2"	4.0333	4.0333	0.0418
			0.0000			Ice	5.0269	5.0269	0.0701
						1" Ice	6.2574	6.2574	0.1472
						2" Ice			
10'x3" Pipe Mount	B	From Face	4.0000	0.000	73.0000	No Ice	3.0000	3.0000	0.0200
			0.0000			1/2"	4.0333	4.0333	0.0418
			0.0000			Ice	5.0269	5.0269	0.0701

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 K
						1" Ice	6.2574	6.2574	0.1472
						2" Ice			
10'x3" Pipe Mount	C	From Face	4.0000	0.000	73.0000	No Ice	3.0000	3.0000	0.0200
			0.0000			1/2"	4.0333	4.0333	0.0418
			0.0000			Ice	5.0269	5.0269	0.0701
						1" Ice	6.2574	6.2574	0.1472
						2" Ice			
L3x3x1/4	A	From Leg	4.0000	0.000	73.0000	No Ice	2.7000	0.0750	0.0000
			0.0000			1/2"	3.3204	0.1120	0.0250
			0.0000			Ice	3.9481	0.1565	0.0576
						1" Ice	5.2259	0.2676	0.1464
						2" Ice			
L3x3x1/4	B	From Leg	4.0000	0.000	73.0000	No Ice	2.7000	0.0750	0.0000
			0.0000			1/2"	3.3204	0.1120	0.0250
			0.0000			Ice	3.9481	0.1565	0.0576
						1" Ice	5.2259	0.2676	0.1464
						2" Ice			
L3x3x1/4	C	From Leg	4.0000	0.000	73.0000	No Ice	2.7000	0.0750	0.0000
			0.0000			1/2"	3.3204	0.1120	0.0250
			0.0000			Ice	3.9481	0.1565	0.0576
						1" Ice	5.2259	0.2676	0.1464
						2" Ice			
*									
** Level 50ft **									
GPS-TMG-HR-26NCM	C	From Leg	1.0000	0.000	50.0000	No Ice	0.1333	0.1333	0.0006
			0.0000			1/2"	0.1826	0.1826	0.0024
			0.0000			Ice	0.2393	0.2393	0.0051
						1" Ice	0.3748	0.3748	0.0141
						2" Ice			
Pipe Mount [PM 601-1]	C	From Leg	0.5000	0.000	50.0000	No Ice	3.0000	0.9000	0.0650
			0.0000			1/2"	3.7400	1.1200	0.0791
			0.0000			Ice	4.4800	1.3400	0.0933
						1" Ice	5.9600	1.7800	0.1215
						2" Ice			
***									
**									
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice

Comb. No.	Description
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 135	Pole	Max Tension	42	0.0000	0.00	-0.00
			Max. Compression	26	-9.0787	1.62	-0.35
			Max. Mx	20	-2.8432	28.77	-0.61
			Max. My	14	-2.8725	0.87	-27.83
			Max. Vy	20	-5.9572	28.77	-0.61
			Max. Vx	2	-5.8410	-0.13	27.63
			Max. Torque	14			-0.77
L2	135 - 130	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-9.6214	1.55	-0.29
			Max. Mx	20	-3.1006	59.09	-1.11
			Max. My	14	-3.1292	1.38	-57.56
			Max. Vy	20	-6.1805	59.09	-1.11
			Max. Vx	2	-6.0642	-0.65	57.39
			Max. Torque	14			-0.77
L3	130 - 125	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-16.3697	1.47	-0.23
			Max. Mx	20	-5.6137	105.56	-1.62
			Max. My	14	-5.6490	1.90	-103.42
			Max. Vy	20	-10.1611	105.56	-1.62
			Max. Vx	2	-10.0426	-1.17	103.29
			Max. Torque	14			-0.77
L4	125 - 120	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-16.9873	1.37	-0.16
			Max. Mx	20	-5.9872	156.86	-2.14
			Max. My	14	-6.0203	2.42	-154.11
			Max. Vy	8	10.3763	-156.02	1.98
			Max. Vx	2	-10.2579	-1.70	154.03
			Max. Torque	14			-0.77

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	120 - 115	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-24.4785	1.04	0.04
			Max. Mx	20	-8.6458	228.40	-2.61
			Max. My	2	-8.6687	-2.31	225.11
			Max. Vy	8	14.4329	-227.74	2.56
			Max. Vx	2	-14.3129	-2.31	225.11
			Max. Torque	14			-0.77
L6	115 - 114.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-24.5460	1.02	0.05
			Max. Mx	20	-8.6968	232.00	-2.63
			Max. My	2	-8.7192	-2.34	228.69
			Max. Vy	8	14.4478	-231.36	2.59
			Max. Vx	2	-14.3280	-2.34	228.69
			Max. Torque	14			-0.77
L7	114.75 - 109.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-25.8985	0.68	0.26
			Max. Mx	20	-9.4180	305.30	-3.10
			Max. My	2	-9.4392	-2.96	301.54
			Max. Vy	8	14.9216	-304.85	3.18
			Max. Vx	2	-14.8016	-2.96	301.54
			Max. Torque	14			-0.77
L8	109.75 - 104.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-27.2735	0.31	0.49
			Max. Mx	20	-10.1734	380.95	-3.57
			Max. My	2	-10.1932	-3.59	376.76
			Max. Vy	8	15.3960	-380.71	3.77
			Max. Vx	2	-15.2760	-3.59	376.76
			Max. Torque	14			-0.77
L9	104.75 - 101.58	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-28.1442	0.07	0.63
			Max. Mx	20	-10.6668	430.14	-3.87
			Max. My	2	-10.6856	-3.99	425.67
			Max. Vy	8	15.6948	-430.03	4.14
			Max. Vx	2	-15.5748	-3.99	425.67
			Max. Torque	14			-0.77
L10	101.58 - 101.33	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-28.2010	0.05	0.64
			Max. Mx	20	-10.7111	434.06	-3.89
			Max. My	2	-10.7298	-4.02	429.57
			Max. Vy	8	15.7025	-433.96	4.17
			Max. Vx	2	-15.5827	-4.02	429.57
			Max. Torque	14			-0.77
L11	101.33 - 96.33	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-29.3536	-0.34	0.88
			Max. Mx	8	-11.4545	-513.17	4.77
			Max. My	2	-11.4730	-4.65	508.13
			Max. Vy	8	15.9511	-513.17	4.77
			Max. Vx	2	-15.8315	-4.65	508.13
			Max. Torque	14			-0.77
L12	96.33 - 91.33	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-30.6038	-0.75	1.12
			Max. Mx	8	-12.2380	-593.59	5.36
			Max. My	2	-12.2544	-5.29	587.91
			Max. Vy	8	16.1923	-593.59	5.36
			Max. Vx	2	-16.0732	-5.29	587.91
			Max. Torque	14			-0.77
L13	91.33 - 91	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-30.6961	-0.78	1.14
			Max. Mx	8	-12.2989	-598.94	5.40
			Max. My	2	-12.3150	-5.33	593.22
			Max. Vy	8	16.2169	-598.94	5.40
			Max. Vx	2	-16.0979	-5.33	593.22
			Max. Torque	14			-0.77

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L14	91 - 90.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-30.7844	-0.80	1.15
			Max. Mx	8	-12.3559	-603.00	5.43
			Max. My	2	-12.3718	-5.37	597.25
			Max. Vy	8	16.2427	-603.00	5.43
			Max. Vx	2	-16.1237	-5.37	597.25
			Max. Torque	14			-0.77
L15	90.75 - 85.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-32.5585	-1.22	1.40
			Max. Mx	8	-13.4420	-685.69	6.02
			Max. My	2	-13.4570	-6.01	679.29
			Max. Vy	8	16.7974	-685.69	6.02
			Max. Vx	2	-16.6784	-6.01	679.29
			Max. Torque	14			-0.77
L16	85.75 - 80.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-34.3626	-1.65	1.65
			Max. Mx	8	-14.5639	-771.14	6.62
			Max. My	2	-14.5778	-6.65	764.10
			Max. Vy	8	17.3504	-771.14	6.62
			Max. Vx	2	-17.2315	-6.65	764.10
			Max. Torque	14			-0.77
L17	80.75 - 75.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-36.1963	-2.10	1.92
			Max. Mx	8	-15.7145	-859.36	7.21
			Max. My	2	-15.7274	-7.30	851.67
			Max. Vy	8	17.9047	-859.36	7.21
			Max. Vx	2	-17.7860	-7.30	851.67
			Max. Torque	14			-0.77
L18	75.75 - 70.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-46.3445	-2.56	2.19
			Max. Mx	8	-20.5601	-962.74	7.81
			Max. My	2	-20.5725	-7.96	954.42
			Max. Vy	8	22.1091	-962.74	7.81
			Max. Vx	2	-21.9979	-7.96	954.42
			Max. Torque	14			-0.77
L19	70.75 - 69.98	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-46.6676	-2.63	2.23
			Max. Mx	8	-20.7543	-979.81	7.91
			Max. My	2	-20.7662	-8.06	971.40
			Max. Vy	8	22.1947	-979.81	7.91
			Max. Vx	2	-22.0887	-8.06	971.40
			Max. Torque	14			-0.77
L20	69.98 - 69.73	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-46.7727	-2.66	2.24
			Max. Mx	8	-20.8225	-985.37	7.94
			Max. My	2	-20.8342	-8.09	976.93
			Max. Vy	8	22.2189	-985.37	7.94
			Max. Vx	2	-22.1147	-8.09	976.93
			Max. Torque	14			-0.77
L21	69.73 - 64.73	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-48.7688	-3.13	2.52
			Max. Mx	8	-22.0759	-1097.89	8.54
			Max. My	2	-22.0850	-8.75	1088.95
			Max. Vy	8	22.7511	-1097.89	8.54
			Max. Vx	2	-22.6800	-8.75	1088.95
			Max. Torque	14			-0.77
L22	64.73 - 63	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-49.5062	-3.30	2.62
			Max. Mx	8	-22.5113	-1137.44	8.75
			Max. My	2	-22.5196	-8.98	1128.38
			Max. Vy	8	22.9545	-1137.44	8.75
			Max. Vx	2	-22.8947	-8.98	1128.38

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			-0.77
L23	63 - 62.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-49.6315	-3.33	2.63
			Max. Mx	8	-22.6102	-1143.19	8.79
			Max. My	2	-22.6181	-9.02	1134.10
			Max. Vy	8	22.9688	-1143.19	8.79
			Max. Vx	2	-22.9108	-9.02	1134.10
			Max. Torque	14			-0.77
L24	62.75 - 59.08	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-51.5208	-3.69	2.83
			Max. Mx	8	-23.8000	-1228.40	9.23
			Max. My	2	-23.8064	-9.51	1219.10
			Max. Vy	8	23.4255	-1228.40	9.23
			Max. Vx	2	-23.3910	-9.51	1219.10
			Max. Torque	14			-0.77
L25	59.08 - 58.82	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-51.6560	-3.72	2.85
			Max. Mx	8	-23.8895	-1234.50	9.26
			Max. My	2	-23.8958	-9.54	1225.19
			Max. Vy	8	23.4500	-1234.50	9.26
			Max. Vx	2	-23.4172	-9.54	1225.19
			Max. Torque	14			-0.77
L26	58.82 - 58.67	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-51.7340	-3.74	2.86
			Max. Mx	8	-23.9374	-1238.02	9.28
			Max. My	2	-23.9436	-9.56	1228.70
			Max. Vy	8	23.4694	-1238.02	9.28
			Max. Vx	2	-23.4376	-9.56	1228.70
			Max. Torque	14			-0.77
L27	58.67 - 53.67	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-54.2167	-4.24	3.13
			Max. Mx	8	-25.4968	-1356.95	9.89
			Max. My	2	-25.5020	-10.23	1347.44
			Max. Vy	8	24.0615	-1356.95	9.89
			Max. Vx	2	-24.0404	-10.23	1347.44
			Max. Torque	14			-0.77
L28	53.67 - 48.58	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-54.5470	-4.31	3.17
			Max. Mx	8	-25.7136	-1373.11	9.97
			Max. My	2	-25.7187	-10.32	1363.57
			Max. Vy	8	24.1328	-1373.11	9.97
			Max. Vx	2	-24.1134	-10.32	1363.57
			Max. Torque	14			-0.77
L29	48.58 - 47.58	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-58.7674	-4.65	3.36
			Max. Mx	8	-28.5941	-1506.05	10.63
			Max. My	2	-28.5995	-11.00	1496.35
			Max. Vy	8	24.9153	-1506.05	10.63
			Max. Vx	2	-24.8771	-11.00	1496.35
			Max. Torque	14			-0.82
L30	47.58 - 42.58	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-61.2039	-5.16	3.66
			Max. Mx	8	-30.1979	-1631.98	11.40
			Max. My	2	-30.2016	-11.83	1622.10
			Max. Vy	8	25.4223	-1631.98	11.40
			Max. Vx	2	-25.4138	-11.83	1622.10
			Max. Torque	14			-0.82
L31	42.58 - 39.67	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-62.7052	-5.46	3.83
			Max. Mx	8	-31.1410	-1706.46	11.84
			Max. My	2	-31.1443	-12.31	1696.53

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	25.7406	-1706.46	11.84
			Max. Vx	2	-25.7371	-12.31	1696.53
			Max. Torque	14			-0.82
L32	39.67 - 39.42	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-62.8559	-5.49	3.85
			Max. Mx	8	-31.2538	-1712.91	11.88
			Max. My	2	-31.2570	-12.35	1702.96
			Max. Vy	8	25.7548	-1712.91	11.88
			Max. Vx	2	-25.7514	-12.35	1702.96
			Max. Torque	14			-0.82
L33	39.42 - 34.42	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-65.8629	-6.01	4.15
			Max. Mx	8	-33.2328	-1843.26	12.64
			Max. My	2	-33.2357	-13.18	1833.23
			Max. Vy	8	26.3396	-1843.26	12.64
			Max. Vx	2	-26.3353	-13.18	1833.23
			Max. Torque	14			-0.82
L34	34.42 - 32.5	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-67.0523	-6.20	4.26
			Max. Mx	8	-33.9974	-1894.09	12.93
			Max. My	2	-34.0001	-13.50	1884.03
			Max. Vy	8	26.5714	-1894.09	12.93
			Max. Vx	2	-26.5710	-13.50	1884.03
			Max. Torque	14			-0.82
L35	32.5 - 32.25	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-67.1949	-6.23	4.28
			Max. Mx	8	-34.0953	-1900.74	12.97
			Max. My	2	-34.0979	-13.54	1890.68
			Max. Vy	8	26.5830	-1900.74	12.97
			Max. Vx	2	-26.5840	-13.54	1890.68
			Max. Torque	14			-0.82
L36	32.25 - 31.41	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-67.6739	-6.31	4.32
			Max. Mx	8	-34.3739	-1923.13	13.10
			Max. My	2	-34.3763	-13.68	1913.06
			Max. Vy	8	26.6822	-1923.13	13.10
			Max. Vx	2	-26.6874	-13.68	1913.06
			Max. Torque	14			-0.82
L37	31.41 - 31.16	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-67.8342	-6.34	4.34
			Max. Mx	8	-34.4823	-1929.81	13.14
			Max. My	2	-34.4846	-13.72	1919.74
			Max. Vy	8	26.7033	-1929.81	13.14
			Max. Vx	2	-26.7099	-13.72	1919.74
			Max. Torque	14			-0.82
L38	31.16 - 29	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-69.2103	-6.53	4.44
			Max. Mx	8	-35.3524	-1987.82	13.47
			Max. My	2	-35.3546	-14.08	1977.74
			Max. Vy	8	26.9621	-1987.82	13.47
			Max. Vx	2	-26.9713	-14.08	1977.74
			Max. Torque	14			-0.82
L39	29 - 28.65	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-69.4228	-6.56	4.45
			Max. Mx	8	-35.4935	-1997.27	13.52
			Max. My	2	-35.4956	-14.14	1987.18
			Max. Vy	8	26.9939	-1997.27	13.52
			Max. Vx	2	-27.0031	-14.14	1987.18
			Max. Torque	14			-0.82
L40	28.65 - 28.42	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-69.5624	-6.59	4.46
			Max. Mx	8	-35.5836	-2003.49	13.56
			Max. My	2	-35.5856	-14.18	1993.40
			Max. Vy	8	27.0188	-2003.49	13.56

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-27.0280	-14.18	1993.40
			Max. Torque	14			-0.82
L41	28.42 - 23.5	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-72.5026	-7.02	4.71
			Max. Mx	8	-37.4781	-2137.89	14.31
			Max. My	2	-37.4798	-15.00	2127.79
			Max. Vy	8	27.5691	-2137.89	14.31
			Max. Vx	2	-27.5840	-15.00	2127.79
			Max. Torque	14			-0.82
L42	23.5 - 23.25	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-72.6731	-7.04	4.72
			Max. Mx	8	-37.6038	-2144.79	14.35
			Max. My	2	-37.6054	-15.05	2134.69
			Max. Vy	8	27.5859	-2144.79	14.35
			Max. Vx	2	-27.6008	-15.05	2134.69
			Max. Torque	14			-0.82
L43	23.25 - 23	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-72.8436	-7.06	4.74
			Max. Mx	8	-37.7194	-2151.70	14.38
			Max. My	2	-37.7210	-15.09	2141.60
			Max. Vy	8	27.6153	-2151.70	14.38
			Max. Vx	2	-27.6302	-15.09	2141.60
			Max. Torque	14			-0.82
L44	23 - 22.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-73.0018	-7.08	4.75
			Max. Mx	8	-37.8233	-2158.61	14.42
			Max. My	2	-37.8249	-15.13	2148.51
			Max. Vy	8	27.6441	-2158.61	14.42
			Max. Vx	2	-27.6589	-15.13	2148.51
			Max. Torque	14			-0.82
L45	22.75 - 17.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-76.0841	-7.55	5.10
			Max. Mx	8	-39.9040	-2298.34	15.18
			Max. My	2	-39.9052	-15.97	2288.24
			Max. Vy	8	28.1991	-2298.34	15.18
			Max. Vx	2	-28.2133	-15.97	2288.24
			Max. Torque	14			-0.82
L46	17.75 - 12.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-79.1279	-8.05	5.48
			Max. Mx	8	-42.0193	-2440.79	15.94
			Max. My	2	-42.0203	-16.80	2430.68
			Max. Vy	8	28.7372	-2440.79	15.94
			Max. Vx	2	-28.7508	-16.80	2430.68
			Max. Torque	14			-0.82
L47	12.75 - 7.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-82.1586	-8.54	5.86
			Max. Mx	8	-44.1618	-2585.93	16.70
			Max. My	2	-44.1624	-17.64	2575.81
			Max. Vy	8	29.2770	-2585.93	16.70
			Max. Vx	2	-29.2900	-17.64	2575.81
			Max. Torque	14			-0.82
L48	7.75 - 2.75	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-85.1488	-9.03	6.22
			Max. Mx	8	-46.3314	-2733.77	17.46
			Max. My	2	-46.3316	-18.48	2723.64
			Max. Vy	8	29.8183	-2733.77	17.46
			Max. Vx	2	-29.8308	-18.48	2723.64
			Max. Torque	14			-0.82
L49	2.75 - 0	Pole	Max Tension	1	0.0000	0.00	0.00
			Max. Compression	26	-86.7053	-9.28	6.40
			Max. Mx	8	-47.5347	-2816.23	17.87
			Max. My	2	-47.5347	-18.94	2806.08
			Max. Vy	8	30.1139	-2816.23	17.87
			Max. Vx	2	-30.1262	-18.94	2806.08
			Max. Torque	14			-0.82

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	29	86.7053	-5.4877	3.1683
	Max. H_x	20	47.5492	30.0911	-0.1286
	Max. H_z	2	47.5492	-0.1286	30.1034
	Max. M_x	2	2806.08	-0.1286	30.1034
	Max. M_z	8	2816.23	-30.0911	0.1286
	Max. Torsion	2	0.79	-0.1286	30.1034
	Min. Vert	17	35.6619	15.1298	-25.9483
	Min. H_x	8	47.5492	-30.0911	0.1286
	Min. H_z	14	47.5492	0.1286	-29.7666
	Min. M_x	14	-2762.16	0.1286	-29.7666
	Min. M_z	20	-2810.42	30.0911	-0.1286
	Min. Torsion	14	-0.82	0.1286	-29.7666

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	39.6243	0.0000	0.0000	-1.50	-2.36	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	47.5492	0.1286	-30.1034	-2806.08	-18.94	-0.79
0.9 Dead+1.0 Wind 0 deg - No Ice	35.6619	0.1286	-30.1034	-2775.77	-17.98	-0.78
1.2 Dead+1.0 Wind 30 deg - No Ice	47.5492	15.1298	-25.9483	-2429.03	-1422.74	-0.70
0.9 Dead+1.0 Wind 30 deg - No Ice	35.6619	15.1298	-25.9483	-2402.66	-1406.81	-0.69
1.2 Dead+1.0 Wind 60 deg - No Ice	47.5492	25.9820	-15.0007	-1400.28	-2425.06	-0.44
0.9 Dead+1.0 Wind 60 deg - No Ice	35.6619	25.9820	-15.0007	-1384.87	-2398.45	-0.43
1.2 Dead+1.0 Wind 90 deg - No Ice	47.5492	30.0911	-0.1286	-17.87	-2816.23	-0.05
0.9 Dead+1.0 Wind 90 deg - No Ice	35.6619	30.0911	-0.1286	-17.19	-2785.46	-0.06
1.2 Dead+1.0 Wind 120 deg - No Ice	47.5492	26.0498	14.8913	1383.51	-2434.47	0.36
0.9 Dead+1.0 Wind 120 deg - No Ice	35.6619	26.0498	14.8913	1369.26	-2407.81	0.35
1.2 Dead+1.0 Wind 150 deg - No Ice	47.5492	14.8663	25.7493	2409.08	-1394.88	0.68
0.9 Dead+1.0 Wind 150 deg - No Ice	35.6619	14.8663	25.7493	2383.87	-1379.30	0.67
1.2 Dead+1.0 Wind 180 deg - No Ice	47.5492	-0.1286	29.7666	2762.16	13.09	0.82
0.9 Dead+1.0 Wind 180 deg - No Ice	35.6619	-0.1286	29.7666	2733.14	13.63	0.81
1.2 Dead+1.0 Wind 210 deg - No Ice	47.5492	-15.1298	25.9483	2425.33	1416.91	0.73
0.9 Dead+1.0 Wind 210 deg - No Ice	35.6619	-15.1298	25.9483	2399.91	1402.47	0.72
1.2 Dead+1.0 Wind 240 deg - No Ice	47.5492	-26.2488	15.1548	1411.38	2444.89	0.44
0.9 Dead+1.0 Wind 240 deg - No Ice	35.6619	-26.2488	15.1548	1396.78	2419.52	0.43
1.2 Dead+1.0 Wind 270 deg - No Ice	47.5492	-30.0911	0.1286	14.15	2810.42	0.02
0.9 Dead+1.0 Wind 270 deg - No Ice	35.6619	-30.0911	0.1286	14.43	2781.14	0.03
1.2 Dead+1.0 Wind 300 deg - No Ice	47.5492	-25.9278	-14.8209	-1372.88	2403.78	-0.39

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 300 deg - No Ice	35.6619	-25.9278	-14.8209	-1357.81	2378.85	-0.38
1.2 Dead+1.0 Wind 330 deg - No Ice	47.5492	-14.8663	-25.7493	-2412.81	1389.04	-0.68
0.9 Dead+1.0 Wind 330 deg - No Ice	35.6619	-14.8663	-25.7493	-2386.64	1374.95	-0.67
1.2 Dead+1.0 Ice+1.0 Temp	86.7053	0.0000	-0.0000	-6.40	-9.28	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.7053	0.0259	-6.2919	-682.18	-12.57	-0.24
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.7053	3.1833	-5.4618	-593.24	-351.83	-0.24
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	86.7053	5.4877	-3.1683	-347.08	-599.33	-0.17
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.7053	6.3217	-0.0259	-9.65	-688.76	-0.06
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.7053	5.4618	3.1235	328.62	-596.15	0.07
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	86.7053	3.1385	5.4360	577.11	-346.32	0.18
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	86.7053	-0.0259	6.2919	669.23	-6.21	0.24
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	86.7053	-3.1833	5.4618	580.29	333.05	0.24
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	86.7053	-5.4877	3.1683	334.13	580.56	0.17
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	86.7053	-6.3217	0.0259	-3.29	669.99	0.05
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	86.7053	-5.4618	-3.1235	-341.57	577.38	-0.08
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	86.7053	-3.1385	-5.4360	-590.06	327.54	-0.18
Dead+Wind 0 deg - Service	39.6243	0.0265	-6.2083	-576.75	-5.70	-0.17
Dead+Wind 30 deg - Service	39.6243	3.1202	-5.3514	-499.42	-293.65	-0.15
Dead+Wind 60 deg - Service	39.6243	5.3583	-3.0936	-288.39	-499.25	-0.09
Dead+Wind 90 deg - Service	39.6243	6.2057	-0.0265	-4.82	-579.49	-0.01
Dead+Wind 120 deg - Service	39.6243	5.3723	3.0711	282.63	-501.18	0.08
Dead+Wind 150 deg - Service	39.6243	3.0659	5.3103	492.98	-287.93	0.14
Dead+Wind 180 deg - Service	39.6243	-0.0265	6.1389	565.40	0.86	0.17
Dead+Wind 210 deg - Service	39.6243	-3.1202	5.3514	496.33	288.82	0.15
Dead+Wind 240 deg - Service	39.6243	-5.4133	3.1254	288.35	499.69	0.09
Dead+Wind 270 deg - Service	39.6243	-6.2057	0.0265	1.74	574.66	0.01
Dead+Wind 300 deg - Service	39.6243	-5.3471	-3.0566	-282.77	491.23	-0.08
Dead+Wind 330 deg - Service	39.6243	-3.0659	-5.3103	-496.07	283.10	-0.14

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.0000	-39.6243	0.0000	0.0000	39.6243	0.0000	0.000%
2	0.1286	-47.5492	-30.1034	-0.1286	47.5492	30.1034	0.000%
3	0.1286	-35.6619	-30.1034	-0.1286	35.6619	30.1034	0.000%
4	15.1298	-47.5492	-25.9483	-15.1298	47.5492	25.9483	0.000%
5	15.1298	-35.6619	-25.9483	-15.1298	35.6619	25.9483	0.000%
6	25.9820	-47.5492	-15.0007	-25.9820	47.5492	15.0007	0.000%
7	25.9820	-35.6619	-15.0007	-25.9820	35.6619	15.0007	0.000%
8	30.0911	-47.5492	-0.1286	-30.0911	47.5492	0.1286	0.000%
9	30.0911	-35.6619	-0.1286	-30.0911	35.6619	0.1286	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
10	26.0498	-47.5492	14.8913	-26.0498	47.5492	-14.8913	0.000%
11	26.0498	-35.6619	14.8913	-26.0498	35.6619	-14.8913	0.000%
12	14.8663	-47.5492	25.7493	-14.8663	47.5492	-25.7493	0.000%
13	14.8663	-35.6619	25.7493	-14.8663	35.6619	-25.7493	0.000%
14	-0.1286	-47.5492	29.7666	0.1286	47.5492	-29.7666	0.000%
15	-0.1286	-35.6619	29.7666	0.1286	35.6619	-29.7666	0.000%
16	-15.1298	-47.5492	25.9483	15.1298	47.5492	-25.9483	0.000%
17	-15.1298	-35.6619	25.9483	15.1298	35.6619	-25.9483	0.000%
18	-26.2488	-47.5492	15.1548	26.2488	47.5492	-15.1548	0.000%
19	-26.2488	-35.6619	15.1548	26.2488	35.6619	-15.1548	0.000%
20	-30.0911	-47.5492	0.1286	30.0911	47.5492	-0.1286	0.000%
21	-30.0911	-35.6619	0.1286	30.0911	35.6619	-0.1286	0.000%
22	-25.9278	-47.5492	-14.8209	25.9278	47.5492	14.8209	0.000%
23	-25.9278	-35.6619	-14.8209	25.9278	35.6619	14.8209	0.000%
24	-14.8663	-47.5492	-25.7493	14.8663	47.5492	25.7493	0.000%
25	-14.8663	-35.6619	-25.7493	14.8663	35.6619	25.7493	0.000%
26	0.0000	-86.7053	0.0000	-0.0000	86.7053	0.0000	0.000%
27	0.0259	-86.7053	-6.2919	-0.0259	86.7053	6.2919	0.000%
28	3.1833	-86.7053	-5.4618	-3.1833	86.7053	5.4618	0.000%
29	5.4877	-86.7053	-3.1683	-5.4877	86.7053	3.1683	0.000%
30	6.3217	-86.7053	-0.0259	-6.3217	86.7053	0.0259	0.000%
31	5.4618	-86.7053	3.1235	-5.4618	86.7053	-3.1235	0.000%
32	3.1385	-86.7053	5.4360	-3.1385	86.7053	-5.4360	0.000%
33	-0.0259	-86.7053	6.2919	0.0259	86.7053	-6.2919	0.000%
34	-3.1833	-86.7053	5.4618	3.1833	86.7053	-5.4618	0.000%
35	-5.4877	-86.7053	3.1683	5.4877	86.7053	-3.1683	0.000%
36	-6.3217	-86.7053	0.0259	6.3217	86.7053	-0.0259	0.000%
37	-5.4618	-86.7053	-3.1235	5.4618	86.7053	3.1235	0.000%
38	-3.1385	-86.7053	-5.4360	3.1385	86.7053	5.4360	0.000%
39	0.0265	-39.6243	-6.2083	-0.0265	39.6243	6.2083	0.000%
40	3.1202	-39.6243	-5.3514	-3.1202	39.6243	5.3514	0.000%
41	5.3583	-39.6243	-3.0936	-5.3583	39.6243	3.0936	0.000%
42	6.2057	-39.6243	-0.0265	-6.2057	39.6243	0.0265	0.000%
43	5.3723	-39.6243	3.0711	-5.3723	39.6243	-3.0711	0.000%
44	3.0659	-39.6243	5.3103	-3.0659	39.6243	-5.3103	0.000%
45	-0.0265	-39.6243	6.1389	0.0265	39.6243	-6.1389	0.000%
46	-3.1202	-39.6243	5.3514	3.1202	39.6243	-5.3514	0.000%
47	-5.4133	-39.6243	3.1254	5.4133	39.6243	-3.1254	0.000%
48	-6.2057	-39.6243	0.0265	6.2057	39.6243	-0.0265	0.000%
49	-5.3471	-39.6243	-3.0566	5.3471	39.6243	3.0566	0.000%
50	-3.0659	-39.6243	-5.3103	3.0659	39.6243	5.3103	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00029700
3	Yes	5	0.00000001	0.00012231
4	Yes	6	0.00000001	0.00078024
5	Yes	6	0.00000001	0.00023755
6	Yes	6	0.00000001	0.00079098
7	Yes	6	0.00000001	0.00024256
8	Yes	5	0.00000001	0.00039237
9	Yes	5	0.00000001	0.00016263
10	Yes	6	0.00000001	0.00078325
11	Yes	6	0.00000001	0.00024121
12	Yes	6	0.00000001	0.00076313
13	Yes	6	0.00000001	0.00023440
14	Yes	5	0.00000001	0.00074515
15	Yes	5	0.00000001	0.00033499
16	Yes	6	0.00000001	0.00080434
17	Yes	6	0.00000001	0.00024663
18	Yes	6	0.00000001	0.00078335
19	Yes	6	0.00000001	0.00023876
20	Yes	5	0.00000001	0.00029891
21	Yes	5	0.00000001	0.00011915
22	Yes	6	0.00000001	0.00075703
23	Yes	6	0.00000001	0.00023339
24	Yes	6	0.00000001	0.00078767
25	Yes	6	0.00000001	0.00024321
26	Yes	4	0.00000001	0.00087810
27	Yes	7	0.00000001	0.00022693
28	Yes	7	0.00000001	0.00026099
29	Yes	7	0.00000001	0.00026242
30	Yes	7	0.00000001	0.00022812
31	Yes	7	0.00000001	0.00025543
32	Yes	7	0.00000001	0.00025414
33	Yes	7	0.00000001	0.00022368
34	Yes	7	0.00000001	0.00025493
35	Yes	7	0.00000001	0.00025476
36	Yes	7	0.00000001	0.00022521
37	Yes	7	0.00000001	0.00025499
38	Yes	7	0.00000001	0.00025509
39	Yes	4	0.00000001	0.00093575
40	Yes	5	0.00000001	0.00018887
41	Yes	5	0.00000001	0.00019880
42	Yes	4	0.00000001	0.00086291
43	Yes	5	0.00000001	0.00019241
44	Yes	5	0.00000001	0.00018045
45	Yes	4	0.00000001	0.00096694
46	Yes	5	0.00000001	0.00020224
47	Yes	5	0.00000001	0.00018842
48	Yes	4	0.00000001	0.00085167
49	Yes	5	0.00000001	0.00017968
50	Yes	5	0.00000001	0.00019549

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	20.693	40	1.636	0.006
L2	135 - 130	19.002	40	1.616	0.005
L3	130 - 125	17.348	40	1.560	0.004
L4	125 - 120	15.761	40	1.479	0.003
L5	120 - 115	14.269	40	1.373	0.002
L6	115 - 114.75	12.896	40	1.247	0.002
L7	114.75 - 109.75	12.831	40	1.244	0.002

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	109.75 - 104.75	11.561	40	1.181	0.001
L9	104.75 - 101.58	10.361	40	1.110	0.001
L10	101.58 - 101.33	9.640	40	1.062	0.001
L11	101.33 - 96.33	9.585	40	1.057	0.001
L12	96.33 - 91.33	8.530	40	0.957	0.001
L13	91.33 - 91	7.582	40	0.855	0.001
L14	91 - 90.75	7.523	40	0.849	0.001
L15	90.75 - 85.75	7.478	40	0.846	0.001
L16	85.75 - 80.75	6.622	40	0.790	0.001
L17	80.75 - 75.75	5.824	40	0.733	0.001
L18	75.75 - 70.75	5.086	40	0.676	0.000
L19	70.75 - 69.98	4.408	40	0.619	0.000
L20	69.98 - 69.73	4.308	40	0.611	0.000
L21	69.73 - 64.73	4.277	40	0.608	0.000
L22	64.73 - 63	3.671	40	0.549	0.000
L23	63 - 62.75	3.475	40	0.530	0.000
L24	62.75 - 59.08	3.448	40	0.527	0.000
L25	59.08 - 58.82	3.055	40	0.495	0.000
L26	58.82 - 58.67	3.028	40	0.492	0.000
L27	58.67 - 53.67	3.013	40	0.491	0.000
L28	53.67 - 48.58	2.524	40	0.442	0.000
L29	53 - 47.58	2.463	40	0.435	0.000
L30	47.58 - 42.58	1.984	40	0.404	0.000
L31	42.58 - 39.67	1.587	42	0.355	0.000
L32	39.67 - 39.42	1.379	42	0.327	0.000
L33	39.42 - 34.42	1.362	42	0.325	0.000
L34	34.42 - 32.5	1.042	42	0.287	0.000
L35	32.5 - 32.25	0.929	42	0.273	0.000
L36	32.25 - 31.41	0.915	42	0.271	0.000
L37	31.41 - 31.16	0.868	42	0.263	0.000
L38	31.16 - 29	0.855	42	0.261	0.000
L39	29 - 28.65	0.740	42	0.244	0.000
L40	28.65 - 28.42	0.723	42	0.241	0.000
L41	28.42 - 23.5	0.711	42	0.239	0.000
L42	23.5 - 23.25	0.486	42	0.198	0.000
L43	23.25 - 23	0.475	42	0.196	0.000
L44	23 - 22.75	0.465	42	0.194	0.000
L45	22.75 - 17.75	0.455	42	0.192	0.000
L46	17.75 - 12.75	0.276	42	0.149	0.000
L47	12.75 - 7.75	0.142	42	0.107	0.000
L48	7.75 - 2.75	0.052	42	0.065	0.000
L49	2.75 - 0	0.007	42	0.023	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	Lightning Rod 2"x15'	40	20.693	1.636	0.006	7198
138.0000	(2) HBXX-6516DS-A2M w/ Mount Pipe	40	20.015	1.630	0.006	7198
129.0000	(2) HPA-65R-BUU-H6	40	17.025	1.545	0.004	3934
120.0000	APX16DWV-16DWVS-E-A20 w/ Mount Pipe	40	14.269	1.373	0.002	2464
73.0000	APXVSPP18-C-A20 w/ Mount Pipe	40	4.706	0.645	0.000	5029
50.0000	GPS-TMG-HR-26NCM	40	2.193	0.417	0.000	8354

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	100.901	18	7.964	0.027
L2	135 - 130	92.635	18	7.873	0.023
L3	130 - 125	84.560	18	7.611	0.018
L4	125 - 120	76.817	18	7.224	0.014
L5	120 - 115	69.542	18	6.713	0.010
L6	115 - 114.75	62.850	18	6.095	0.007
L7	114.75 - 109.75	62.532	18	6.081	0.007
L8	109.75 - 104.75	56.343	18	5.771	0.006
L9	104.75 - 101.58	50.498	18	5.421	0.006
L10	101.58 - 101.33	46.984	18	5.188	0.005
L11	101.33 - 96.33	46.714	18	5.164	0.005
L12	96.33 - 91.33	41.575	18	4.670	0.004
L13	91.33 - 91	36.952	18	4.174	0.003
L14	91 - 90.75	36.665	18	4.141	0.003
L15	90.75 - 85.75	36.449	18	4.128	0.003
L16	85.75 - 80.75	32.274	18	3.857	0.003
L17	80.75 - 75.75	28.387	18	3.578	0.002
L18	75.75 - 70.75	24.790	18	3.299	0.002
L19	70.75 - 69.98	21.484	18	3.021	0.002
L20	69.98 - 69.73	21.000	18	2.978	0.002
L21	69.73 - 64.73	20.845	18	2.964	0.002
L22	64.73 - 63	17.892	18	2.680	0.002
L23	63 - 62.75	16.939	18	2.583	0.001
L24	62.75 - 59.08	16.804	18	2.572	0.001
L25	59.08 - 58.82	14.890	18	2.412	0.001
L26	58.82 - 58.67	14.759	18	2.400	0.001
L27	58.67 - 53.67	14.684	18	2.393	0.001
L28	53.67 - 48.58	12.305	18	2.154	0.001
L29	53 - 47.58	12.005	18	2.122	0.001
L30	47.58 - 42.58	9.672	18	1.970	0.001
L31	42.58 - 39.67	7.735	18	1.731	0.001
L32	39.67 - 39.42	6.722	18	1.593	0.001
L33	39.42 - 34.42	6.639	18	1.584	0.001
L34	34.42 - 32.5	5.078	18	1.399	0.001
L35	32.5 - 32.25	4.530	18	1.330	0.001
L36	32.25 - 31.41	4.460	18	1.319	0.001
L37	31.41 - 31.16	4.232	18	1.280	0.001
L38	31.16 - 29	4.165	18	1.271	0.001
L39	29 - 28.65	3.608	18	1.191	0.001
L40	28.65 - 28.42	3.521	18	1.177	0.001
L41	28.42 - 23.5	3.465	18	1.167	0.001
L42	23.5 - 23.25	2.367	18	0.964	0.000
L43	23.25 - 23	2.317	18	0.956	0.000
L44	23 - 22.75	2.267	18	0.947	0.000
L45	22.75 - 17.75	2.218	18	0.937	0.000
L46	17.75 - 12.75	1.346	18	0.728	0.000
L47	12.75 - 7.75	0.692	18	0.521	0.000
L48	7.75 - 2.75	0.255	18	0.316	0.000
L49	2.75 - 0	0.032	18	0.111	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	Lightning Rod 2"x15'	18	100.901	7.964	0.030	1613
138.0000	(2) HBXX-6516DS-A2M w/ Mount Pipe	18	97.583	7.940	0.029	1613
129.0000	(2) HPA-65R-BUU-H6	18	82.980	7.541	0.019	856
120.0000	APX16DWV-16DWVS-E-A20 w/ Mount Pipe	18	69.542	6.713	0.011	525

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
73.0000	APXVSPP18-C-A20 w/ Mount Pipe	18	22.936	3.146	0.002	1037
50.0000	GPS-TMG-HR-26NCM	18	10.690	2.031	0.001	1717

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	f P_n K	Ratio $\frac{P_u}{f P_n}$
L1	140 - 139	TP14.296x13.161x0.1875	5.0000	0.0000	0.0	7.8559	-0.1125	583.6570	0.000
	139 - 138					7.9910	-0.1494	593.6940	0.000
	138 - 137					8.1261	-2.7490	603.7300	0.005
	137 - 136					8.2612	-2.7895	613.7660	0.005
	136 - 135					8.3963	-2.8312	623.8030	0.005
L2	135 - 134	TP15.4309x14.296x0.1875	5.0000	0.0000	0.0	8.5314	-2.8805	633.8390	0.005
	134 - 133					8.6665	-2.9310	643.8750	0.005
	133 - 132					8.8016	-2.9826	653.9120	0.005
	132 - 131					8.9367	-3.0353	663.9480	0.005
	131 - 130					9.0717	-3.0890	673.9850	0.005
L3	130 - 129	TP16.5659x15.4309x0.1875	5.0000	0.0000	0.0	9.2068	-3.1479	684.0210	0.005
	129 - 128					9.3419	-5.3969	694.0570	0.008
	128 - 127					9.4770	-5.4630	704.0940	0.008
	127 - 126					9.6121	-5.5308	714.1300	0.008
	126 - 125					9.7472	-5.6002	724.1660	0.008
L4	125 - 124	TP17.7008x16.5659x0.1875	5.0000	0.0000	0.0	9.8823	-5.6723	734.2030	0.008
	124 - 123					10.0174	-5.7459	744.2390	0.008
	123 - 122					10.1524	-5.8209	754.2760	0.008
	122 - 121					10.2875	-5.8972	764.3120	0.008
	121 - 120					10.4226	-5.9748	774.3480	0.008
L5	120 - 119	TP18.8358x17.7008x0.1875	5.0000	0.0000	0.0	10.5577	-8.1974	784.3850	0.010
	119 - 118					10.6928	-8.3034	792.9000	0.010
	118 - 117					10.8279	-8.4114	800.4750	0.011
	117 - 116					10.9630	-8.5212	807.9890	0.011
	116 - 115					11.0981	-8.6327	815.4420	0.011
L6	115 - 114.75 (6)	TP18.8925x18.8358x0.4625	0.2500	0.0000	0.0	27.0548	-8.6839	2010.0400	0.004
L7	114.75 - 113.75	TP20.0275x18.8925x0.45	5.0000	0.0000	0.0	26.6657	-8.8205	1981.1300	0.004
	113.75 - 112.75					26.9899	-8.9643	2005.2100	0.004
	112.75 - 111.75					27.3141	-9.1098	2029.3000	0.004
	111.75 - 110.75					27.6383	-9.2569	2053.3900	0.005
	110.75 - 109.75					27.9625	-9.4056	2077.4800	0.005
L8	109.75 - 108.75	TP21.1624x20.0275x0.425	5.0000	0.0000	0.0	26.7490	-9.5534	1987.3100	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	f P_n K	Ratio $\frac{P_u}{f P_n}$
	108.75 - 107.75					27.0552	-9.7032	2010.0600	0.005
	107.75 - 106.75					27.3614	-9.8545	2032.8100	0.005
	106.75 - 105.75					27.6676	-10.0073	2055.5600	0.005
	105.75 - 104.75					27.9738	-10.1616	2078.3100	0.005
L9	104.75 - 103.693	TP21.882x21.1624x0.4188	3.1700	0.0000	0.0	27.8895	-10.3242	2072.0500	0.005
	103.693 - 102.637					28.2083	-10.4890	2095.7300	0.005
	102.637 - 101.58					28.5271	-10.6554	2119.4200	0.005
L10	101.58 - 101.33 (10)	TP21.9388x21.882x0.3125	0.2500	0.0000	0.0	21.4505	-10.6999	1593.6700	0.007
L11	101.33 - 100.33	TP23.0738x21.9388x0.3125	5.0000	0.0000	0.0	21.6757	-10.8387	1610.4000	0.007
	100.33 - 99.33					21.9008	-10.9889	1627.1200	0.007
	99.33 - 98.33					22.1260	-11.1402	1643.8500	0.007
	98.33 - 97.33					22.3512	-11.2926	1660.5800	0.007
	97.33 - 96.33					22.5763	-11.4462	1677.3100	0.007
L12	96.33 - 95.33	TP24.2088x23.0738x0.3125	5.0000	0.0000	0.0	22.8015	-11.6009	1694.0400	0.007
	95.33 - 94.33					23.0266	-11.7568	1710.7600	0.007
	94.33 - 93.33					23.2518	-11.9137	1727.4900	0.007
	93.33 - 92.33					23.4769	-12.0717	1744.2200	0.007
	92.33 - 91.33					23.7021	-12.2307	1760.9500	0.007
L13	91.33 - 91 (13)	TP24.2837x24.2088x0.3125	0.3300	0.0000	0.0	23.7764	-12.2918	1766.4700	0.007
L14	91 - 90.75 (14)	TP24.3404x24.2837x0.6	0.2500	0.0000	0.0	45.2112	-12.3488	3358.9700	0.004
L15	90.75 - 89.75	TP25.4754x24.3404x0.5875	5.0000	0.0000	0.0	44.7159	-12.5579	3322.1700	0.004
	89.75 - 88.75					45.1392	-12.7747	3353.6200	0.004
	88.75 - 87.75					45.5625	-12.9932	3385.0700	0.004
	87.75 - 86.75					45.9858	-13.2134	3416.5200	0.004
	86.75 - 85.75					46.4091	-13.4353	3447.9600	0.004
L16	85.75 - 84.75	TP26.6104x25.4754x0.5625	5.0000	0.0000	0.0	44.8842	-13.6562	3334.6700	0.004
	84.75 - 83.75					45.2894	-13.8790	3364.7800	0.004
	83.75 - 82.75					45.6947	-14.1036	3394.8900	0.004
	82.75 - 81.75					46.1000	-14.3298	3425.0000	0.004
	81.75 - 80.75					46.5053	-14.5577	3455.1100	0.004
L17	80.75 - 79.75	TP27.7454x26.6104x0.55	5.0000	0.0000	0.0	45.8899	-14.7845	3409.3900	0.004
	79.75 - 78.75					46.2862	-15.0131	3438.8300	0.004
	78.75 - 77.75					46.6825	-15.2433	3468.2700	0.004
	77.75 - 76.75					47.0788	-15.4752	3497.7200	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	f P_n K	Ratio $\frac{P_u}{f P_n}$
	76.75 - 75.75					47.4750	-15.7088	3527.1600	0.004
L18	75.75 - 74.75	TP28.8804x27.7454x0.5438	5.0000	0.0000	0.0	47.3381	-15.9449	3516.9800	0.005
	74.75 - 73.75					47.7299	-16.1827	3546.0900	0.005
	73.75 - 72.75					48.1216	-20.0628	3575.2000	0.006
	72.75 - 71.75					48.5134	-20.3075	3604.3000	0.006
	71.75 - 70.75					48.9052	-20.5539	3633.4100	0.006
L19	70.75 - 69.98 (19)	TP29.0552x28.8804x0.5313	0.7700	0.0000	0.0	48.0967	-20.7479	3573.3500	0.006
L20	69.98 - 69.73 (20)	TP29.112x29.0552x0.5313	0.2500	0.0000	0.0	48.1924	-20.8161	3580.4600	0.006
L21	69.73 - 68.73	TP30.247x29.112x0.525	5.0000	0.0000	0.0	48.0141	-21.0566	3567.2100	0.006
	68.73 - 67.73					48.3924	-21.3072	3595.3100	0.006
	67.73 - 66.73					48.7706	-21.5594	3623.4200	0.006
	66.73 - 65.73					49.1489	-21.8132	3651.5200	0.006
	65.73 - 64.73					49.5272	-22.0686	3679.6200	0.006
L22	64.73 - 63 (22)	TP30.6397x30.247x0.5188	1.7300	0.0000	0.0	49.5945	-22.5042	3684.6200	0.006
L23	63 - 62.75 (23)	TP30.6964x30.6397x0.7	0.2500	0.0000	0.0	66.6460	-22.6032	4951.4700	0.005
L24	62.75 - 61.5267	TP31.5295x30.6964x0.6875	3.6700	0.0000	0.0	66.0892	-22.9910	4910.0900	0.005
	61.5267 - 60.3033					66.6951	-23.3906	4955.1100	0.005
	60.3033 - 59.08					67.3011	-23.7934	5000.1400	0.005
L25	59.08 - 58.82 (25)	TP31.5885x31.5295x0.625	0.2600	0.0000	0.0	61.4239	-23.8830	4563.4900	0.005
L26	58.82 - 58.67 (26)	TP31.6226x31.5885x0.625	0.1500	0.0000	0.0	61.4914	-23.9309	4568.5100	0.005
L27	58.67 - 57.67	TP32.7576x31.6226x0.6125	5.0000	0.0000	0.0	60.7272	-24.2325	4511.7300	0.005
	57.67 - 56.67					61.1685	-24.5444	4544.5100	0.005
	56.67 - 55.67					61.6098	-24.8583	4577.3000	0.005
	55.67 - 54.67					62.0511	-25.1741	4610.0900	0.005
	54.67 - 53.67					62.4924	-25.4917	4642.8800	0.005
L28	53.67 - 53	TP33.913x32.7576x0.6125	5.0900	0.0000	0.0	62.7881	-25.7087	4664.8400	0.006
	53 - 48.58					64.7387	-14.0789	4809.7600	0.003
L29	53 - 48.58	TP33.5151x32.2847x0.6375	5.4200	0.0000	0.0	66.0661	-14.1786	4908.3800	0.003
	48.58 - 47.58					66.5254	-28.5890	4942.5100	0.006
L30	47.58 - 46.58	TP34.6503x33.5151x0.625	5.0000	0.0000	0.0	65.6962	-28.9059	4880.9000	0.006
	46.58 - 45.58					66.1465	-29.2248	4914.3600	0.006
	45.58 - 44.58					66.5969	-29.5455	4947.8200	0.006
	44.58 - 43.58					67.0473	-29.8681	4981.2800	0.006
	43.58 - 42.58					67.4976	-30.1924	5014.7400	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	f P_n K	Ratio $\frac{P_u}{f P_n}$
L31	42.58 - 41.125	TP35.3109x34.6503x0.6125	2.9100	0.0000	0.0	66.8141	-30.6596	4963.9600	0.006
	41.125 - 39.67					67.4563	-31.1358	5011.6700	0.006
L32	39.67 - 39.42 (32)	TP35.3677x35.3109x0.8125	0.2500	0.0000	0.0	89.1134	-31.2487	6620.6800	0.005
L33	39.42 - 38.42	TP36.5028x35.3677x0.7875	5.0000	0.0000	0.0	87.0014	-31.6350	6463.7700	0.005
	38.42 - 37.42					87.5689	-32.0300	6505.9300	0.005
	37.42 - 36.42					88.1364	-32.4272	6548.0900	0.005
	36.42 - 35.42					88.7038	-32.8266	6590.2500	0.005
	35.42 - 34.42					89.2713	-33.2283	6632.4100	0.005
L34	34.42 - 32.5 (34)	TP36.9387x36.5028x0.7875	1.9200	0.0000	0.0	90.3608	-33.9929	6713.3500	0.005
L35	32.5 - 32.25 (35)	TP36.9954x36.9387x0.6125	0.2500	0.0000	0.0	70.7312	-34.0910	5254.9700	0.006
L36	32.25 - 31.41 (36)	TP37.1861x36.9954x0.6	0.8400	0.0000	0.0	69.6746	-34.3695	5176.4800	0.007
L37	31.41 - 31.16 (37)	TP37.2429x37.1861x0.775	0.2500	0.0000	0.0	89.7055	-34.4779	6664.6700	0.005
L38	31.16 - 30.08	TP37.7333x37.2429x0.7625	2.1600	0.0000	0.0	88.8823	-34.9083	6603.5100	0.005
	30.08 - 29					89.4757	-35.3484	6647.6000	0.005
L39	29 - 28.65 (39)	TP37.8127x37.7333x0.675	0.3500	0.0000	0.0	79.5657	-35.4897	5911.3400	0.006
L40	28.65 - 28.42 (40)	TP37.8649x37.8127x0.675	0.2300	0.0000	0.0	79.6776	-35.5798	5919.6500	0.006
L41	28.42 - 27.19	TP38.9819x37.8649x0.6625	4.9200	0.0000	0.0	78.8155	-36.0416	5855.6000	0.006
	27.19 - 25.96					79.4027	-36.5164	5899.2300	0.006
	25.96 - 24.73					79.9899	-36.9942	5942.8500	0.006
	24.73 - 23.5					80.5771	-37.4751	5986.4800	0.006
L42	23.5 - 23.25 (42)	TP39.0387x38.9819x0.7875	0.2500	0.0000	0.0	95.6097	-37.6008	7103.3300	0.005
L43	23.25 - 23 (43)	TP39.0954x39.0387x0.7875	0.2500	0.0000	0.0	95.7516	-37.7165	7113.8700	0.005
L44	23 - 22.75 (44)	TP39.1522x39.0954x0.65	0.2500	0.0000	0.0	79.4338	-37.8205	5901.5400	0.006
L45	22.75 - 21.75	TP40.2873x39.1522x0.6375	5.0000	0.0000	0.0	78.3909	-38.2262	5824.0500	0.007
	21.75 - 20.75					78.8503	-38.6419	5858.1800	0.007
	20.75 - 19.75					79.3097	-39.0596	5892.3100	0.007
	19.75 - 18.75					79.7690	-39.4795	5926.4400	0.007
	18.75 - 17.75					80.2284	-39.9015	5960.5700	0.007
L46	17.75 - 16.75	TP41.4224x40.2873x0.625	5.0000	0.0000	0.0	79.1305	-40.3203	5879.0000	0.007
	16.75 - 15.75					79.5808	-40.7414	5912.4600	0.007
	15.75 - 14.75					80.0312	-41.1646	5945.9200	0.007
	14.75 - 13.75					80.4815	-41.5899	5979.3800	0.007
	13.75 - 12.75					80.9319	-42.0173	6012.8400	0.007
L47	12.75 - 11.75	TP42.5576x41.4224x0.6125	5.0000	0.0000	0.0	79.7789	-42.4416	5927.1700	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	f P_n K	Ratio $\frac{P_u}{f P_n}$
	11.75 - 10.75					80.2203	-42.8682	5959.9700	0.007
	10.75 - 9.75					80.6616	-43.2969	5992.7600	0.007
	9.75 - 8.75					81.1030	-43.7276	6025.5500	0.007
	8.75 - 7.75					81.5443	-44.1603	6058.3400	0.007
L48	7.75 - 6.75	TP43.6927x42.5576x0.6	5.0000	0.0000	0.0	80.3363	-44.5902	5968.5900	0.007
	6.75 - 5.75					80.7687	-45.0223	6000.7100	0.008
	5.75 - 4.75					81.2010	-45.4564	6032.8300	0.008
	4.75 - 3.75					81.6334	-45.8926	6064.9500	0.008
	3.75 - 2.75					82.0657	-46.3308	6097.0700	0.008
L49	2.75 - 1.375	TP44.317x43.6927x0.6	2.7500	0.0000	0.0	82.6602	-46.9288	6141.2400	0.008
	1.375 - 0					83.2547	-47.5345	6185.4000	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	f M_{nx} kip-ft	Ratio $\frac{M_{ux}}{f M_{nx}}$	M_{uy} kip-ft	f M_{ny} kip-ft	Ratio $\frac{M_{uy}}{f M_{ny}}$
L1	140 - 139	TP14.296x13.161x0.1875	1.25	157.44	0.008	0.00	157.44	0.000
	139 - 138		1.46	162.94	0.009	0.00	162.94	0.000
	138 - 137		17.10	168.53	0.101	0.00	168.53	0.000
	137 - 136		23.05	174.22	0.132	0.00	174.22	0.000
	136 - 135		29.04	180.01	0.161	0.00	180.01	0.000
L2	135 - 134	TP15.4309x14.296x0.1875	35.08	185.88	0.189	0.00	185.88	0.000
	134 - 133		41.15	191.85	0.215	0.00	191.85	0.000
	133 - 132		47.28	197.92	0.239	0.00	197.92	0.000
	132 - 131		53.44	204.08	0.262	0.00	204.08	0.000
	131 - 130		59.65	210.34	0.284	0.00	210.34	0.000
L3	130 - 129	TP16.5659x15.4309x0.1875	65.91	216.69	0.304	0.00	216.69	0.000
	129 - 128		75.97	223.13	0.340	0.00	223.13	0.000
	128 - 127		86.08	229.67	0.375	0.00	229.67	0.000
	127 - 126		96.23	236.30	0.407	0.00	236.30	0.000
	126 - 125		106.42	243.03	0.438	0.00	243.03	0.000
L4	125 - 124	TP17.7008x16.5659x0.1875	116.66	249.85	0.467	0.00	249.85	0.000
	124 - 123		126.93	256.77	0.494	0.00	256.77	0.000
	123 - 122		137.25	263.78	0.520	0.00	263.78	0.000
	122 - 121		147.62	270.88	0.545	0.00	270.88	0.000
	121 - 120		158.02	278.08	0.568	0.00	278.08	0.000
L5	120 - 119	TP18.8358x17.7008x0.1875	172.31	285.38	0.604	0.00	285.38	0.000
	119 - 118		186.63	292.20	0.639	0.00	292.20	0.000
	118 - 117		201.00	298.76	0.673	0.00	298.76	0.000
	117 - 116		215.40	305.37	0.705	0.00	305.37	0.000
	116 - 115		229.84	312.02	0.737	0.00	312.02	0.000
L6	115 - 114.75 (6)	TP18.8925x18.8358x0.4625	233.46	748.96	0.312	0.00	748.96	0.000
L7	114.75 - 113.75	TP20.0275x18.8925x0.45	247.99	748.50	0.331	0.00	748.50	0.000
	113.75 - 112.75		262.62	767.03	0.342	0.00	767.03	0.000
	112.75 - 111.75		277.33	785.79	0.353	0.00	785.79	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	f M_{nx} kip-ft	Ratio $\frac{M_{ux}}{f M_{nx}}$	M_{uy} kip-ft	f M_{ny} kip-ft	Ratio $\frac{M_{uy}}{f M_{ny}}$
	111.75 - 110.75		292.14	804.77	0.363	0.00	804.77	0.000
	110.75 - 109.75		307.05	823.98	0.373	0.00	823.98	0.000
L8	109.75 - 108.75	TP21.1624x20.0275x0.425	322.05	799.58	0.403	0.00	799.58	0.000
	108.75 - 107.75		337.14	818.18	0.412	0.00	818.18	0.000
	107.75 - 106.75		352.33	837.00	0.421	0.00	837.00	0.000
	106.75 - 105.75		367.61	856.03	0.429	0.00	856.03	0.000
	105.75 - 104.75		382.99	875.28	0.438	0.00	875.28	0.000
L9	104.75 - 103.693	TP21.882x21.1624x0.4188	399.34	883.47	0.452	0.00	883.47	0.000
	103.693 - 102.637		415.80	903.98	0.460	0.00	903.98	0.000
	102.637 - 101.58		432.36	924.73	0.468	0.00	924.73	0.000
L10	101.58 - 101.33 (10)	TP21.9388x21.882x0.3125	436.29	704.11	0.620	0.00	704.11	0.000
L11	101.33 - 100.33	TP23.0738x21.9388x0.3125	452.05	719.08	0.629	0.00	719.08	0.000
	100.33 - 99.33		467.85	734.20	0.637	0.00	734.20	0.000
	99.33 - 98.33		483.71	749.48	0.645	0.00	749.48	0.000
	98.33 - 97.33		499.61	764.92	0.653	0.00	764.92	0.000
	97.33 - 96.33		515.56	780.51	0.661	0.00	780.51	0.000
L12	96.33 - 95.33	TP24.2088x23.0738x0.3125	531.56	796.26	0.668	0.00	796.26	0.000
	95.33 - 94.33		547.61	812.17	0.674	0.00	812.17	0.000
	94.33 - 93.33		563.70	828.24	0.681	0.00	828.24	0.000
	93.33 - 92.33		579.84	844.47	0.687	0.00	844.47	0.000
	92.33 - 91.33		596.03	860.85	0.692	0.00	860.85	0.000
L13	91.33 - 91 (13)	TP24.2837x24.2088x0.3125	601.39	866.29	0.694	0.00	866.29	0.000
L14	91 - 90.75 (14)	TP24.3404x24.2837x0.6	605.46	1611.93	0.376	0.00	1611.93	0.000
L15	90.75 - 89.75	TP25.4754x24.3404x0.5875	621.78	1611.58	0.386	0.00	1611.58	0.000
	89.75 - 88.75		638.22	1642.60	0.389	0.00	1642.60	0.000
	88.75 - 87.75		654.76	1673.92	0.391	0.00	1673.92	0.000
	87.75 - 86.75		671.42	1705.53	0.394	0.00	1705.53	0.000
	86.75 - 85.75		688.19	1737.44	0.396	0.00	1737.44	0.000
L16	85.75 - 84.75	TP26.6104x25.4754x0.5625	705.06	1699.42	0.415	0.00	1699.42	0.000
	84.75 - 83.75		722.05	1730.58	0.417	0.00	1730.58	0.000
	83.75 - 82.75		739.14	1762.03	0.419	0.00	1762.03	0.000
	82.75 - 81.75		756.35	1793.77	0.422	0.00	1793.77	0.000
	81.75 - 80.75		773.67	1825.78	0.424	0.00	1825.78	0.000
L17	80.75 - 79.75	TP27.7454x26.6104x0.55	791.10	1819.38	0.435	0.00	1819.38	0.000
	79.75 - 78.75		808.63	1851.27	0.437	0.00	1851.27	0.000
	78.75 - 77.75		826.28	1883.43	0.439	0.00	1883.43	0.000
	77.75 - 76.75		844.04	1915.87	0.441	0.00	1915.87	0.000
	76.75 - 75.75		861.91	1948.58	0.442	0.00	1948.58	0.000
L18	75.75 - 74.75	TP28.8804x27.7454x0.5438	879.89	1960.39	0.449	0.00	1960.39	0.000
	74.75 - 73.75		897.99	1993.29	0.451	0.00	1993.29	0.000
	73.75 - 72.75		921.28	2026.47	0.455	0.00	2026.47	0.000
	72.75 - 71.75		943.25	2059.91	0.458	0.00	2059.91	0.000
	71.75 - 70.75		965.33	2093.63	0.461	0.00	2093.63	0.000
L19	70.75 - 69.98 (19)	TP29.0552x28.8804x0.5313	982.41	2073.78	0.474	0.00	2073.78	0.000
L20	69.98 - 69.73 (20)	TP29.112x29.0552x0.5313	987.97	2082.12	0.475	0.00	2082.12	0.000
L21	69.73 - 68.73	TP30.247x29.112x0.525	1010.28	2092.10	0.483	0.00	2092.10	0.000
	68.73 - 67.73		1032.71	2125.49	0.486	0.00	2125.49	0.000
	67.73 - 66.73		1055.24	2159.14	0.489	0.00	2159.14	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	f M_{nx} kip-ft	Ratio $\frac{M_{ux}}{f M_{nx}}$	M_{uy} kip-ft	f M_{ny} kip-ft	Ratio $\frac{M_{uy}}{f M_{ny}}$
	66.73 - 65.73		1077.89	2193.07	0.491	0.00	2193.07	0.000
	65.73 - 64.73		1100.64	2227.25	0.494	0.00	2227.25	0.000
L22	64.73 - 63 (22)	TP30.6397x30.247x0.518 8	1140.28	2261.19	0.504	0.00	2261.19	0.000
L23	63 - 62.75 (23)	TP30.6964x30.6397x0.7	1146.03	3008.00	0.381	0.00	3008.00	0.000
L24	62.75 - 61.5267	TP31.5295x30.6964x0.68 75	1174.31	3013.59	0.390	0.00	3013.59	0.000
	61.5267 - 60.3033		1202.77	3069.73	0.392	0.00	3069.73	0.000
	60.3033 - 59.08		1231.40	3126.38	0.394	0.00	3126.38	0.000
L25	59.08 - 58.82 (25)	TP31.5885x31.5295x0.62 5	1237.52	2870.53	0.431	0.00	2870.53	0.000
L26	58.82 - 58.67 (26)	TP31.6226x31.5885x0.62 5	1241.04	2876.90	0.431	0.00	2876.90	0.000
L27	58.67 - 57.67	TP32.7576x31.6226x0.61 25	1264.63	2864.66	0.441	0.00	2864.66	0.000
	57.67 - 56.67		1288.33	2906.84	0.443	0.00	2906.84	0.000
	56.67 - 55.67		1312.15	2949.34	0.445	0.00	2949.34	0.000
	55.67 - 54.67		1336.08	2992.15	0.447	0.00	2992.15	0.000
	54.67 - 53.67		1360.12	3035.27	0.448	0.00	3035.27	0.000
L28	53.67 - 53	TP33.913x32.7576x0.612 5	1376.29	3064.32	0.449	0.00	3064.32	0.000
	53 - 48.58		749.91	3259.50	0.230	0.00	3259.50	0.000
L29	53 - 48.58	TP33.5151x32.2847x0.63 75	734.79	3257.80	0.226	0.00	3257.80	0.000
	48.58 - 47.58		1509.61	3303.69	0.457	0.00	3303.69	0.000
L30	47.58 - 46.58	TP34.6503x33.5151x0.62 5	1534.63	3287.95	0.467	0.00	3287.95	0.000
	46.58 - 45.58		1559.74	3333.61	0.468	0.00	3333.61	0.000
	45.58 - 44.58		1584.97	3379.57	0.469	0.00	3379.57	0.000
	44.58 - 43.58		1610.31	3425.86	0.470	0.00	3425.86	0.000
	43.58 - 42.58		1635.75	3472.46	0.471	0.00	3472.46	0.000
L31	42.58 - 41.125	TP35.3109x34.6503x0.61 25	1672.97	3473.79	0.482	0.00	3473.79	0.000
	41.125 - 39.67		1710.41	3541.48	0.483	0.00	3541.48	0.000
L32	39.67 - 39.42 (32)	TP35.3677x35.3109x0.81 25	1716.87	4632.49	0.371	0.00	4632.49	0.000
L33	39.42 - 38.42	TP36.5028x35.3677x0.78 75	1742.76	4559.65	0.382	0.00	4559.65	0.000
	38.42 - 37.42		1768.78	4619.98	0.383	0.00	4619.98	0.000
	37.42 - 36.42		1794.90	4680.72	0.383	0.00	4680.72	0.000
	36.42 - 35.42		1821.15	4741.84	0.384	0.00	4741.84	0.000
	35.42 - 34.42		1847.51	4803.37	0.385	0.00	4803.37	0.000
L34	34.42 - 32.5 (34)	TP36.9387x36.5028x0.78 75	1898.44	4922.61	0.386	0.00	4922.61	0.000
L35	32.5 - 32.25 (35)	TP36.9954x36.9387x0.61 25	1905.11	3896.82	0.489	0.00	3896.82	0.000
L36	32.25 - 31.41 (36)	TP37.1861x36.9954x0.6	1927.55	3861.70	0.499	0.00	3861.70	0.000
L37	31.41 - 31.16 (37)	TP37.2429x37.1861x0.77 5	1934.25	4932.30	0.392	0.00	4932.30	0.000
L38	31.16 - 30.08	TP37.7333x37.2429x0.76 25	1963.26	4923.93	0.399	0.00	4923.93	0.000
	30.08 - 29		1992.39	4990.57	0.399	0.00	4990.57	0.000
L39	29 - 28.65 (39)	TP37.8127x37.7333x0.67 5	2001.87	4468.59	0.448	0.00	4468.59	0.000
L40	28.65 - 28.42 (40)	TP37.8649x37.8127x0.67 5	2008.09	4481.27	0.448	0.00	4481.27	0.000
L41	28.42 - 27.19	TP38.9819x37.8649x0.66 25	2041.51	4469.65	0.457	0.00	4469.65	0.000
	27.19 - 25.96		2075.08	4537.08	0.457	0.00	4537.08	0.000
	25.96 - 24.73		2108.82	4605.02	0.458	0.00	4605.02	0.000
	24.73 - 23.5		2142.72	4673.46	0.458	0.00	4673.46	0.000
L42	23.5 - 23.25 (42)	TP39.0387x38.9819x0.78 75	2149.63	5517.57	0.390	0.00	5517.57	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	f M_{nx} kip-ft	Ratio $\frac{M_{ux}}{f M_{nx}}$	M_{uy} kip-ft	f M_{ny} kip-ft	Ratio $\frac{M_{uy}}{f M_{ny}}$
L43	23.25 - 23 (43)	TP39.0954x39.0387x0.7875	2156.55	5534.13	0.390	0.00	5534.13	0.000
L44	23 - 22.75 (44)	TP39.1522x39.0954x0.6575	2163.47	4630.98	0.467	0.00	4630.98	0.000
L45	22.75 - 21.75	TP40.2873x39.1522x0.6375	2191.24	4600.53	0.476	0.00	4600.53	0.000
	21.75 - 20.75		2219.13	4655.05	0.477	0.00	4655.05	0.000
	20.75 - 19.75		2247.12	4709.88	0.477	0.00	4709.88	0.000
	19.75 - 18.75		2275.22	4765.04	0.477	0.00	4765.04	0.000
	18.75 - 17.75		2303.44	4820.52	0.478	0.00	4820.52	0.000
L46	17.75 - 16.75	TP41.4224x40.2873x0.625	2331.77	4785.21	0.487	0.00	4785.21	0.000
	16.75 - 15.75		2360.21	4840.25	0.488	0.00	4840.25	0.000
	15.75 - 14.75		2388.77	4895.61	0.488	0.00	4895.61	0.000
	14.75 - 13.75		2417.43	4951.29	0.488	0.00	4951.29	0.000
	13.75 - 12.75		2446.22	5007.28	0.489	0.00	5007.28	0.000
L47	12.75 - 11.75	TP42.5576x41.4224x0.6125	2475.11	4966.85	0.498	0.00	4966.85	0.000
	11.75 - 10.75		2504.11	5022.37	0.499	0.00	5022.37	0.000
	10.75 - 9.75		2533.22	5078.18	0.499	0.00	5078.18	0.000
	9.75 - 8.75		2562.46	5134.32	0.499	0.00	5134.32	0.000
	8.75 - 7.75		2591.80	5190.76	0.499	0.00	5190.76	0.000
L48	7.75 - 6.75	TP43.6927x42.5576x0.6	2621.26	5144.98	0.509	0.00	5144.98	0.000
	6.75 - 5.75		2650.82	5200.90	0.510	0.00	5200.90	0.000
	5.75 - 4.75		2680.51	5257.13	0.510	0.00	5257.13	0.000
	4.75 - 3.75		2710.30	5313.64	0.510	0.00	5313.64	0.000
	3.75 - 2.75		2740.21	5370.47	0.510	0.00	5370.47	0.000
L49	2.75 - 1.375	TP44.317x43.6927x0.6	2781.52	5449.09	0.510	0.00	5449.09	0.000
	1.375 - 0		2823.03	5528.29	0.511	0.00	5528.29	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	f V_n K	Ratio $\frac{V_u}{f V_n}$	Actual T_u kip-ft	f T_n kip-ft	Ratio $\frac{T_u}{f T_n}$
L1	140 - 139	TP14.296x13.161x0.1875	0.1911	137.8720	0.001	0.00	154.89	0.000
	139 - 138		0.2338	140.2430	0.002	0.00	160.34	0.000
	138 - 137		5.9294	142.6130	0.042	0.44	165.88	0.003
	137 - 136		5.9724	144.9840	0.041	0.44	171.52	0.003
	136 - 135		6.0156	147.3550	0.041	0.44	177.26	0.002
L2	135 - 134	TP15.4309x14.296x0.1875	6.0596	149.7260	0.040	0.44	183.09	0.002
	134 - 133		6.1039	152.0970	0.040	0.44	189.01	0.002
	133 - 132		6.1485	154.4670	0.040	0.44	195.02	0.002
	132 - 131		6.1935	156.8380	0.039	0.44	201.13	0.002
	131 - 130		6.2389	159.2090	0.039	0.44	207.34	0.002
L3	130 - 129	TP16.5659x15.4309x0.1875	6.2847	161.5800	0.039	0.44	213.64	0.002
	129 - 128		10.0908	163.9510	0.062	0.44	220.03	0.002
	128 - 127		10.1343	166.3210	0.061	0.44	226.52	0.002
	127 - 126		10.1777	168.6920	0.060	0.44	233.10	0.002
	126 - 125		10.2210	171.0630	0.060	0.44	239.78	0.002
L4	125 - 124	TP17.7008x16.5659x0.1875	10.2639	173.4340	0.059	0.44	246.55	0.002
	124 - 123		10.3069	175.8050	0.059	0.44	253.41	0.002
	123 - 122		10.3498	178.1750	0.058	0.44	260.37	0.002
	122 - 121		10.3927	180.5460	0.058	0.44	267.42	0.002
	121 - 120		10.4357	182.9170	0.057	0.44	274.57	0.002
L5	120 - 119	TP18.8358x17.7008x0.1875	14.3354	185.2880	0.077	0.44	281.81	0.002
	119 - 118		14.3754	187.6590	0.077	0.44	289.15	0.002
	118 - 117		14.4149	190.0290	0.076	0.44	296.58	0.001
	117 - 116		14.4540	192.4000	0.075	0.44	304.10	0.001
	116 - 115		14.4928	194.7710	0.074	0.44	311.72	0.001

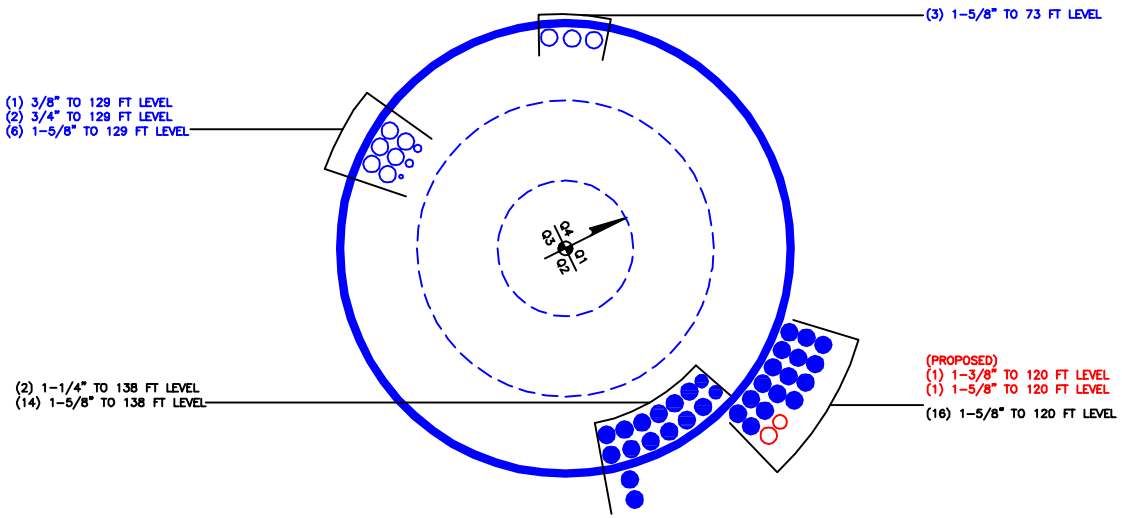
Section No.	Elevation ft	Size	Actual V_u K	f V_n K	Ratio $\frac{V_u}{f V_n}$	Actual T_u kip-ft	f T_n kip-ft	Ratio $\frac{T_u}{f T_n}$
L6	115 - 114.75 (6)	TP18.8925x18.8358x0.4625	14.5135	474.8120	0.031	0.44	728.37	0.001
L7	114.75 - 113.75	TP20.0275x18.8925x0.45	14.6036	467.9830	0.031	0.44	728.70	0.001
	113.75 - 112.75		14.6970	473.6720	0.031	0.44	746.97	0.001
	112.75 - 111.75		14.7912	479.3620	0.031	0.44	765.47	0.001
	111.75 - 110.75		14.8860	485.0520	0.031	0.44	784.19	0.001
	110.75 - 109.75		14.9816	490.7420	0.031	0.44	803.14	0.001
L8	109.75 - 108.75	TP21.1624x20.0275x0.425	15.0753	469.4440	0.032	0.44	780.65	0.001
	108.75 - 107.75		15.1695	474.8180	0.032	0.44	799.02	0.001
	107.75 - 106.75		15.2643	480.1920	0.032	0.44	817.61	0.001
	106.75 - 105.75		15.3597	485.5660	0.032	0.44	836.40	0.001
	105.75 - 104.75		15.4559	490.9400	0.031	0.44	855.42	0.001
L9	104.75 - 103.693	TP21.882x21.1624x0.4188	15.5550	489.4610	0.032	0.44	863.91	0.001
	103.693 - 102.637		15.6544	495.0550	0.032	0.44	884.17	0.000
	102.637 - 101.58		15.7545	500.6500	0.031	0.44	904.68	0.000
L10	101.58 - 101.33 (10)	TP21.9388x21.882x0.3125	15.7656	376.4570	0.042	0.44	692.52	0.001
L11	101.33 - 100.33	TP23.0738x21.9388x0.3125	15.8166	380.4080	0.042	0.44	707.35	0.001
	100.33 - 99.33		15.8649	384.3600	0.041	0.44	722.34	0.001
	99.33 - 98.33		15.9133	388.3110	0.041	0.44	737.48	0.001
	98.33 - 97.33		15.9618	392.2630	0.041	0.44	752.78	0.001
	97.33 - 96.33		16.0104	396.2140	0.040	0.44	768.24	0.001
L12	96.33 - 95.33	TP24.2088x23.0738x0.3125	16.0584	400.1660	0.040	0.44	783.86	0.001
	95.33 - 94.33		16.1064	404.1170	0.040	0.44	799.63	0.001
	94.33 - 93.33		16.1546	408.0690	0.040	0.44	815.56	0.001
	93.33 - 92.33		16.2029	412.0200	0.039	0.44	831.65	0.001
	92.33 - 91.33		16.2514	415.9720	0.039	0.44	847.89	0.001
L13	91.33 - 91 (13)	TP24.2837x24.2088x0.3125	16.2771	417.2760	0.039	0.44	853.28	0.001
L14	91 - 90.75 (14)	TP24.3404x24.2837x0.6	16.3064	793.4570	0.021	0.44	1567.32	0.000
L15	90.75 - 89.75	TP25.4754x24.3404x0.5875	16.4144	784.7650	0.021	0.44	1568.28	0.000
	89.75 - 88.75		16.5238	792.1940	0.021	0.44	1598.86	0.000
	88.75 - 87.75		16.6340	799.6220	0.021	0.44	1629.74	0.000
	87.75 - 86.75		16.7449	807.0510	0.021	0.44	1660.92	0.000
	86.75 - 85.75		16.8565	814.4800	0.021	0.44	1692.38	0.000
L16	85.75 - 84.75	TP26.6104x25.4754x0.5625	16.9659	787.7170	0.022	0.44	1657.52	0.000
	84.75 - 83.75		17.0758	794.8300	0.021	0.44	1688.28	0.000
	83.75 - 82.75		17.1863	801.9420	0.021	0.44	1719.33	0.000
	82.75 - 81.75		17.2975	809.0550	0.021	0.44	1750.65	0.000
	81.75 - 80.75		17.4094	816.1680	0.021	0.44	1782.26	0.000
L17	80.75 - 79.75	TP27.7454x26.6104x0.55	17.5190	805.3680	0.022	0.44	1777.28	0.000
	79.75 - 78.75		17.6292	812.3230	0.022	0.44	1808.78	0.000
	78.75 - 77.75		17.7400	819.2780	0.022	0.44	1840.53	0.000
	77.75 - 76.75		17.8515	826.2320	0.022	0.44	1872.58	0.000
	76.75 - 75.75		17.9636	833.1870	0.022	0.44	1904.90	0.000
L18	75.75 - 74.75	TP28.8804x27.7454x0.5438	18.0770	830.7840	0.022	0.44	1917.26	0.000
	74.75 - 73.75		18.1909	837.6590	0.022	0.44	1949.78	0.000
	73.75 - 72.75		21.9529	844.5350	0.026	0.44	1982.56	0.000
	72.75 - 71.75		22.0645	851.4100	0.026	0.44	2015.62	0.000

Section No.	Elevation ft	Size	Actual V_u K	f V_n K	Ratio $\frac{V_u}{f V_n}$	Actual T_u kip-ft	f T_n kip-ft	Ratio $\frac{T_u}{f T_n}$
	71.75 - 70.75		22.1767	858.2860	0.026	0.44	2048.95	0.000
L19	70.75 - 69.98 (19)	TP29.0552x28.8804x0.5313	22.2676	844.0980	0.026	0.44	2030.73	0.000
L20	69.98 - 69.73 (20)	TP29.112x29.0552x0.5313	22.2952	845.7770	0.026	0.44	2038.97	0.000
L21	69.73 - 68.73	TP30.247x29.112x0.525	22.4102	842.6480	0.027	0.44	2049.54	0.000
	68.73 - 67.73		22.5209	849.2860	0.027	0.44	2082.57	0.000
	67.73 - 66.73		22.6321	855.9250	0.026	0.44	2115.86	0.000
	66.73 - 65.73		22.7439	862.5630	0.026	0.44	2149.41	0.000
	65.73 - 64.73		22.8562	869.2020	0.026	0.44	2183.22	0.000
L22	64.73 - 63 (22)	TP30.6397x30.247x0.5188	23.0591	870.3830	0.026	0.44	2217.53	0.000
L23	63 - 62.75 (23)	TP30.6964x30.6397x0.7	23.0752	1169.6400	0.020	0.44	2930.83	0.000
L24	62.75 - 61.5267	TP31.5295x30.6964x0.6875	23.2293	1159.8600	0.020	0.44	2938.28	0.000
	61.5267 - 60.3033		23.3788	1170.5000	0.020	0.44	2993.68	0.000
	60.3033 - 59.08		23.5290	1181.1300	0.020	0.44	3049.58	0.000
L25	59.08 - 58.82 (25)	TP31.5885x31.5295x0.625	23.5544	1077.9900	0.022	0.44	2806.29	0.000
L26	58.82 - 58.67 (26)	TP31.6226x31.5885x0.625	23.5760	1079.1700	0.022	0.44	2812.59	0.000
L27	58.67 - 57.67	TP32.7576x31.6226x0.6125	23.6902	1065.7600	0.022	0.44	2802.28	0.000
	57.67 - 56.67		23.8026	1073.5100	0.022	0.44	2843.97	0.000
	56.67 - 55.67		23.9155	1081.2500	0.022	0.44	2885.97	0.000
	55.67 - 54.67		24.0288	1089.0000	0.022	0.44	2928.28	0.000
	54.67 - 53.67		24.1427	1096.7400	0.022	0.44	2970.91	0.000
L28	53.67 - 53	TP33.913x32.7576x0.6125	24.2126	1101.9300	0.022	0.44	2999.63	0.000
	53 - 48.58		12.7526	1136.1600	0.011	0.22	3192.62	0.000
L29	53 - 48.58	TP33.5151x32.2847x0.6375	12.1618	1159.4600	0.010	0.22	3187.13	0.000
	48.58 - 47.58		25.0090	1167.5200	0.021	0.44	3232.50	0.000
L30	47.58 - 46.58	TP34.6503x33.5151x0.625	25.1155	1152.9700	0.022	0.44	3218.85	0.000
	46.58 - 45.58		25.2222	1160.8700	0.022	0.44	3263.99	0.000
	45.58 - 44.58		25.3293	1168.7800	0.022	0.44	3309.44	0.000
	44.58 - 43.58		25.4369	1176.6800	0.022	0.44	3355.21	0.000
	43.58 - 42.58		25.5450	1184.5800	0.022	0.44	3401.29	0.000
L31	42.58 - 41.125	TP35.3109x34.6503x0.6125	25.7090	1172.5900	0.022	0.44	3404.57	0.000
	41.125 - 39.67		25.8679	1183.8600	0.022	0.44	3471.53	0.000
L32	39.67 - 39.42 (32)	TP35.3677x35.3109x0.8125	25.8821	1563.9400	0.017	0.44	4512.80	0.000
L33	39.42 - 38.42	TP36.5028x35.3677x0.7875	26.0032	1526.8800	0.017	0.44	4446.06	0.000
	38.42 - 37.42		26.1181	1536.8300	0.017	0.44	4505.60	0.000
	37.42 - 36.42		26.2335	1546.7900	0.017	0.44	4565.53	0.000
	36.42 - 35.42		26.3493	1556.7500	0.017	0.44	4625.86	0.000
	35.42 - 34.42		26.4655	1566.7100	0.017	0.44	4686.59	0.000
L34	34.42 - 32.5 (34)	TP36.9387x36.5028x0.7875	26.7011	1585.8300	0.017	0.44	4804.29	0.000
L35	32.5 - 32.25 (35)	TP36.9954x36.9387x0.6125	26.7135	1241.3300	0.022	0.44	3823.13	0.000
L36	32.25 - 31.41 (36)	TP37.1861x36.9954x0.6	26.8173	1222.7900	0.022	0.44	3790.41	0.000
L37	31.41 - 31.16 (37)	TP37.2429x37.1861x0.775	26.8393	1574.3300	0.017	0.44	4816.48	0.000
L38	31.16 - 30.08	TP37.7333x37.2429x0.7625	26.9688	1559.8800	0.017	0.44	4810.80	0.000
	30.08 - 29		27.0901	1570.3000	0.017	0.44	4876.63	0.000
L39	29 - 28.65 (39)	TP37.8127x37.7333x0.675	27.1196	1396.3800	0.019	0.44	4377.90	0.000
L40	28.65 - 28.42 (40)	TP37.8649x37.8127x0.675	27.1429	1398.3400	0.019	0.44	4390.45	0.000

Section No.	Elevation ft	Size	Actual V_u K	f V_n K	Ratio $\frac{V_u}{f V_n}$	Actual T_u kip-ft	f T_n kip-ft	Ratio $\frac{T_u}{f T_n}$
L41	28.42 - 27.19	TP38.9819x37.8649x0.6625	27.2865	1383.2100	0.020	0.44	4381.25	0.000
	27.19 - 25.96		27.4181	1393.5200	0.020	0.44	4447.96	0.000
	25.96 - 24.73		27.5503	1403.8200	0.020	0.44	4515.18	0.000
	24.73 - 23.5		27.6831	1414.1300	0.020	0.44	4582.89	0.000
L42	23.5 - 23.25 (42)	TP39.0387x38.9819x0.7875	27.6991	1677.9500	0.017	0.44	5391.82	0.000
L43	23.25 - 23 (43)	TP39.0954x39.0387x0.7875	27.7285	1680.4400	0.017	0.44	5408.17	0.000
L44	23 - 22.75 (44)	TP39.1522x39.0954x0.6575	27.7571	1394.0600	0.020	0.44	4543.18	0.000
L45	22.75 - 21.75	TP40.2873x39.1522x0.6375	27.8790	1375.7600	0.020	0.44	4515.33	0.000
	21.75 - 20.75		27.9910	1383.8200	0.020	0.44	4569.30	0.000
	20.75 - 19.75		28.1034	1391.8800	0.020	0.44	4623.58	0.000
	19.75 - 18.75		28.2160	1399.9500	0.020	0.44	4678.19	0.000
	18.75 - 17.75		28.3291	1408.0100	0.020	0.44	4733.12	0.000
L46	17.75 - 16.75	TP41.4224x40.2873x0.625	28.4414	1388.7400	0.020	0.44	4700.46	0.000
	16.75 - 15.75		28.5537	1396.6400	0.020	0.44	4754.98	0.000
	15.75 - 14.75		28.6664	1404.5500	0.020	0.44	4809.80	0.000
	14.75 - 13.75		28.7795	1412.4500	0.020	0.44	4864.94	0.000
	13.75 - 12.75		28.8929	1420.3500	0.020	0.44	4920.40	0.000
L47	12.75 - 11.75	TP42.5576x41.4224x0.6125	29.0056	1400.1200	0.021	0.44	4882.68	0.000
	11.75 - 10.75		29.1183	1407.8700	0.021	0.44	4937.68	0.000
	10.75 - 9.75		29.2313	1415.6100	0.021	0.44	4992.98	0.000
	9.75 - 8.75		29.3447	1423.3600	0.021	0.44	5048.60	0.000
	8.75 - 7.75		29.4584	1431.1000	0.021	0.44	5104.52	0.000
L48	7.75 - 6.75	TP43.6927x42.5576x0.6	29.5714	1409.9000	0.021	0.44	5061.51	0.000
	6.75 - 5.75		29.6844	1417.4900	0.021	0.44	5116.93	0.000
	5.75 - 4.75		29.7977	1425.0800	0.021	0.44	5172.64	0.000
	4.75 - 3.75		29.9114	1432.6700	0.021	0.44	5228.66	0.000
	3.75 - 2.75		30.0254	1440.2500	0.021	0.44	5284.98	0.000
L49	2.75 - 1.375	TP44.317x43.6927x0.6	30.1817	1450.6900	0.021	0.44	5362.92	0.000
	1.375 - 0		30.3325	1461.1200	0.021	0.44	5441.43	0.000

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842873 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

28/10/16	UPDATED PER WORK ORDER 1319726	CRW
04/05/17	UPDATED PER WORK ORDER 1387569	GL
27/07/17	UPDATED PER WORK ORDER 1438800	DM
28/11/17	UPDATED PER WORK ORDER 1466530	BM
04/12/17	UPDATED PER WORK ORDER 1467472	PB
12/12/17	UPDATED PER WORK ORDER 1500720	ADE
18/12/17	UPDATED PER WORK ORDER 1503429	CRW
13/06/18	UPDATED PER WORK ORDER 1588726	SLS
26/07/18	UPDATED PER WORK ORDER 1606228	AT

DRAWN BY: MMM
CHECKED BY: AGT
DRAWING DATE: 27/03/14

SITE NUMBER:
SITE NAME:

SITE NAME

SHELTON NE

BUSINESS UNIT NUMBER

842873

SITE ADDRESS

30 OLIVER TERRACE
SHELTON, CT 06484
FAIRFIELD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING	1" = 1'-0"	1

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 842873

Work Order: 1608229

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	140	38.42	0	18	13.161	21.882	0.1875	Auto	A572-65
2	101.58	53	4.42	18	21.88	33.913	0.3125	Auto	A572-65
3	53	53	0	18	32.28	44.317	0.3125	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	31.41	plate	PL 5.75" x 1"	3	X						X						X					
2	32.5	48.66	plate	PL 5.75" x 1"	3						X						X						X
3	58.92	70.08	plate	PL 5.75" x 1" (Lu 16)	3						X						X						X
4	0	59.08	channel	MP3-04 (1.25in)	3				X						X						X		
5	0	23.5	plate	CCI-SFP-060100	3		X							X								X	
6	28.67	39.67	plate	CCI-SFP-060100	3			X						X						X			
7	52	63	plate	CCI-SFP-060100	3			X						X					X				
8	70	91	plate	CCI-SFP-060100	3		X						X						X				
9	101.58	115	plate	CCI-AFP-045100	3		X						X						X				
10	23	29	plate	CCI-SFP-060100	2					X						X							
11																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.75	1	5.75	0.5	23.000	23.000	14.000	4.438	1.2500	A572-65
2	5.75	1	5.75	0.5	23.000	23.000	14.000	4.438	1.2500	A572-65
3	5.75	1	5.75	0.5	23.000	23.000	16.000	4.438	1.2500	A572-65
4	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
5	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
8	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
10	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	140 - 135	5		18	13.161	14.296	0.1875	A572-65	1.000
2	135 - 130	5		18	14.296	15.431	0.1875	A572-65	1.000
3	130 - 125	5		18	15.431	16.566	0.1875	A572-65	1.000
4	125 - 120	5		18	16.566	17.701	0.1875	A572-65	1.000
5	120 - 115	5		18	17.701	18.836	0.1875	A572-65	1.000
6	115 - 114.75	0.25		18	18.836	18.893	0.4625	A572-65	0.910
7	114.75 - 109.75	5		18	18.893	20.027	0.45	A572-65	0.905
8	109.75 - 104.75	5		18	20.027	21.162	0.425	A572-65	0.929
9	104.75 - 101.58	3.17	0	18	21.162	21.882	0.41875	A572-65	0.926
10	101.58 - 101.33	0.25		18	21.882	21.939	0.3125	A572-65	1.000
11	101.33 - 96.33	5		18	21.939	23.074	0.3125	A572-65	1.000
12	96.33 - 91.33	5		18	23.074	24.209	0.3125	A572-65	1.000
13	91.33 - 91	0.33		18	24.209	24.284	0.3125	A572-65	1.000
14	91 - 90.75	0.25		18	24.284	24.340	0.6	A572-65	0.925
15	90.75 - 85.75	5		18	24.340	25.475	0.5875	A572-65	0.926
16	85.75 - 80.75	5		18	25.475	26.610	0.5625	A572-65	0.948
17	80.75 - 75.75	5		18	26.610	27.745	0.55	A572-65	0.952
18	75.75 - 70.75	5		18	27.745	28.880	0.54375	A572-65	0.947
19	70.75 - 69.98	0.77		18	28.880	29.055	0.53125	A572-65	0.951
20	69.98 - 69.73	0.25		18	29.055	29.112	0.53125	A572-65	0.951
21	69.73 - 64.73	5		18	29.112	30.247	0.525	A572-65	0.948
22	64.73 - 63	1.73		18	30.247	30.640	0.51875	A572-65	0.954
23	63 - 62.75	0.25		18	30.640	30.696	0.7	A572-65	0.981
24	62.75 - 59.08	3.67		18	30.696	31.530	0.6875	A572-65	0.984
25	59.08 - 58.82	0.26		18	31.530	31.589	0.625	A572-65	1.000
26	58.82 - 58.67	0.15		18	31.589	31.623	0.625	A572-65	0.999
27	58.67 - 53.67	5		18	31.623	32.758	0.6125	A572-65	1.001
28	53.67 - 53	5.09	4.42	18	32.758	33.913	0.6125	A572-65	0.999
29	53 - 47.58	5.42		18	32.285	33.515	0.6375	A572-65	0.941
30	47.58 - 42.58	5		18	33.515	34.650	0.625	A572-65	0.944
31	42.58 - 39.67	2.91		18	34.650	35.311	0.6125	A572-65	0.954
32	39.67 - 39.42	0.25		18	35.311	35.368	0.8125	A572-65	0.925
33	39.42 - 34.42	5		18	35.368	36.503	0.7875	A572-65	0.936
34	34.42 - 32.5	1.92		18	36.503	36.939	0.7875	A572-65	0.929
35	32.5 - 32.25	0.25		18	36.939	36.995	0.6125	A572-65	0.944
36	32.25 - 31.41	0.84		18	36.995	37.186	0.6	A572-65	0.961
37	31.41 - 31.16	0.25		18	37.186	37.243	0.775	A572-65	0.939
38	31.16 - 29	2.16		18	37.243	37.733	0.7625	A572-65	0.947
39	29 - 28.65	0.35		18	37.733	37.813	0.675	A572-65	0.991
40	28.65 - 28.42	0.23		18	37.813	37.865	0.675	A572-65	0.990
41	28.42 - 23.5	4.92		18	37.865	38.982	0.6625	A572-65	0.993
42	23.5 - 23.25	0.25		18	38.982	39.039	0.7875	A572-65	1.026
43	23.25 - 23	0.25		18	39.039	39.095	0.7875	A572-65	1.025
44	23 - 22.75	0.25		18	39.095	39.152	0.65	A572-65	1.085
45	22.75 - 17.75	5		18	39.152	40.287	0.6375	A572-65	1.088
46	17.75 - 12.75	5		18	40.287	41.422	0.625	A572-65	1.092
47	12.75 - 7.75	5		18	41.422	42.558	0.6125	A572-65	1.098
48	7.75 - 2.75	5		18	42.558	43.693	0.6	A572-65	1.105
49	2.75 - 0	2.75		18	43.693	44.317	0.6	A572-65	1.096

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	2.83	29.04	6.02
2	135 - 130	3.09	59.65	6.24
3	130 - 125	5.60	106.42	10.22
4	125 - 120	5.97	158.02	10.44
5	120 - 115	8.63	229.84	14.49
6	115 - 114.75	8.68	233.46	14.51
7	114.75 - 109.75	9.41	307.05	14.98
8	109.75 - 104.75	10.16	382.99	15.46
9	104.75 - 101.58	10.66	432.36	15.75
10	101.58 - 101.33	10.70	436.29	15.77
11	101.33 - 96.33	11.45	515.56	16.01
12	96.33 - 91.33	12.23	596.03	16.25
13	91.33 - 91	12.29	601.39	16.28
14	91 - 90.75	12.35	605.46	16.31
15	90.75 - 85.75	13.44	688.19	16.86
16	85.75 - 80.75	14.56	773.67	17.41
17	80.75 - 75.75	15.71	861.91	17.96
18	75.75 - 70.75	20.55	965.33	22.18
19	70.75 - 69.98	20.75	982.41	22.27
20	69.98 - 69.73	20.82	987.97	22.30
21	69.73 - 64.73	22.07	1100.65	22.86
22	64.73 - 63	22.50	1140.28	23.06
23	63 - 62.75	22.60	1146.04	23.08
24	62.75 - 59.08	23.79	1231.40	23.53
25	59.08 - 58.82	23.88	1237.51	23.55
26	58.82 - 58.67	23.93	1241.04	23.58
27	58.67 - 53.67	25.49	1360.12	24.14
28	53.67 - 53	25.71	1376.29	24.21
29	53 - 47.58	28.59	1509.61	25.01
30	47.58 - 42.58	30.19	1635.75	25.55
31	42.58 - 39.67	31.14	1710.41	25.87
32	39.67 - 39.42	31.25	1716.86	25.88
33	39.42 - 34.42	33.23	1847.51	26.47
34	34.42 - 32.5	33.99	1898.45	26.70
35	32.5 - 32.25	34.09	1905.11	26.71
36	32.25 - 31.41	34.37	1927.55	26.82
37	31.41 - 31.16	34.48	1934.25	26.84
38	31.16 - 29	35.35	1992.39	27.09
39	29 - 28.65	35.49	2001.86	27.12
40	28.65 - 28.42	35.58	2008.09	27.14
41	28.42 - 23.5	37.48	2142.72	27.68
42	23.5 - 23.25	37.60	2149.63	27.70
43	23.25 - 23	37.72	2156.55	27.73
44	23 - 22.75	37.82	2163.47	27.76
45	22.75 - 17.75	39.90	2303.44	28.33
46	17.75 - 12.75	42.02	2446.21	28.89
47	12.75 - 7.75	44.16	2591.80	29.46
48	7.75 - 2.75	46.33	2740.21	30.03
49	2.75 - 0	47.53	2823.03	30.33

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP14.296x13.161x0.1875	Pole	15.8%	Pass
135 - 130	Pole	TP15.431x14.296x0.1875	Pole	27.5%	Pass
130 - 125	Pole	TP16.566x15.431x0.1875	Pole	42.5%	Pass
125 - 120	Pole	TP17.701x16.566x0.1875	Pole	54.9%	Pass
120 - 115	Pole	TP18.836x17.701x0.1875	Pole	71.3%	Pass
115 - 114.75	Pole + Reinf.	TP18.893x18.836x0.4625	Reinf. 9 Tension Rupture	52.9%	Pass
114.75 - 109.75	Pole + Reinf.	TP20.027x18.893x0.45	Reinf. 9 Tension Rupture	64.0%	Pass
109.75 - 104.75	Pole + Reinf.	TP21.162x20.027x0.425	Reinf. 9 Tension Rupture	73.6%	Pass
104.75 - 101.58	Pole + Reinf.	TP21.882x21.162x0.4188	Reinf. 9 Tension Rupture	79.2%	Pass
101.58 - 101.33	Pole	TP21.939x21.882x0.3125	Pole	59.6%	Pass
101.33 - 96.33	Pole	TP23.074x21.939x0.3125	Pole	63.6%	Pass
96.33 - 91.33	Pole	TP24.209x23.074x0.3125	Pole	66.6%	Pass
91.33 - 91	Pole	TP24.284x24.209x0.3125	Pole	66.8%	Pass
91 - 90.75	Pole + Reinf.	TP24.34x24.284x0.6	Reinf. 8 Tension Rupture	57.9%	Pass
90.75 - 85.75	Pole + Reinf.	TP25.475x24.34x0.5875	Reinf. 8 Tension Rupture	61.4%	Pass
85.75 - 80.75	Pole + Reinf.	TP26.61x25.475x0.5625	Reinf. 8 Tension Rupture	64.4%	Pass
80.75 - 75.75	Pole + Reinf.	TP27.745x26.61x0.55	Reinf. 8 Tension Rupture	67.2%	Pass
75.75 - 70.75	Pole + Reinf.	TP28.88x27.745x0.5438	Reinf. 8 Tension Rupture	70.7%	Pass
70.75 - 69.98	Pole + Reinf.	TP29.055x28.88x0.5313	Reinf. 3 Tension Rupture	74.3%	Pass
69.98 - 69.73	Pole + Reinf.	TP29.112x29.055x0.5313	Reinf. 3 Tension Rupture	74.5%	Pass
69.73 - 64.73	Pole + Reinf.	TP30.247x29.112x0.525	Reinf. 3 Tension Rupture	78.0%	Pass
64.73 - 63	Pole + Reinf.	TP30.64x30.247x0.5188	Reinf. 3 Tension Rupture	79.1%	Pass
63 - 62.75	Pole + Reinf.	TP30.696x30.64x0.7	Reinf. 3 Tension Rupture	61.1%	Pass
62.75 - 59.08	Pole + Reinf.	TP31.53x30.696x0.6875	Reinf. 3 Tension Rupture	63.1%	Pass
59.08 - 58.82	Pole + Reinf.	TP31.589x31.53x0.625	Reinf. 4 Tension Rupture	64.6%	Pass
58.82 - 58.67	Pole + Reinf.	TP31.623x31.589x0.625	Reinf. 4 Tension Rupture	64.7%	Pass
58.67 - 53.67	Pole + Reinf.	TP32.758x31.623x0.6125	Reinf. 4 Tension Rupture	67.1%	Pass
53.67 - 53	Pole + Reinf.	TP33.913x32.758x0.6125	Reinf. 4 Tension Rupture	67.4%	Pass
53 - 47.58	Pole + Reinf.	TP33.515x32.285x0.6375	Reinf. 2 Tension Rupture	71.7%	Pass
47.58 - 42.58	Pole + Reinf.	TP34.65x33.515x0.625	Reinf. 2 Tension Rupture	73.9%	Pass
42.58 - 39.67	Pole + Reinf.	TP35.311x34.65x0.6125	Reinf. 2 Tension Rupture	75.1%	Pass
39.67 - 39.42	Pole + Reinf.	TP35.368x35.311x0.8125	Reinf. 2 Tension Rupture	58.3%	Pass
39.42 - 34.42	Pole + Reinf.	TP36.503x35.368x0.7875	Reinf. 2 Tension Rupture	60.0%	Pass
34.42 - 32.5	Pole + Reinf.	TP36.939x36.503x0.7875	Reinf. 2 Tension Rupture	60.7%	Pass
32.5 - 32.25	Pole + Reinf.	TP36.995x36.939x0.6125	Reinf. 6 Tension Rupture	75.1%	Pass
32.25 - 31.41	Pole + Reinf.	TP37.186x36.995x0.6	Reinf. 6 Tension Rupture	75.4%	Pass
31.41 - 31.16	Pole + Reinf.	TP37.243x37.186x0.775	Reinf. 1 Tension Rupture	61.1%	Pass
31.16 - 29	Pole + Reinf.	TP37.733x37.243x0.7625	Reinf. 1 Tension Rupture	61.8%	Pass
29 - 28.65	Pole + Reinf.	TP37.813x37.733x0.675	Reinf. 1 Tension Rupture	73.6%	Pass
28.65 - 28.42	Pole + Reinf.	TP37.865x37.813x0.675	Reinf. 1 Tension Rupture	73.6%	Pass
28.42 - 23.5	Pole + Reinf.	TP38.982x37.865x0.6625	Reinf. 1 Tension Rupture	75.2%	Pass
23.5 - 23.25	Pole + Reinf.	TP39.039x38.982x0.7875	Reinf. 1 Tension Rupture	61.5%	Pass
23.25 - 23	Pole + Reinf.	TP39.095x39.039x0.7875	Reinf. 1 Tension Rupture	61.6%	Pass
23 - 22.75	Pole + Reinf.	TP39.152x39.095x0.65	Reinf. 1 Tension Rupture	74.8%	Pass
22.75 - 17.75	Pole + Reinf.	TP40.287x39.152x0.6375	Reinf. 1 Tension Rupture	76.3%	Pass
17.75 - 12.75	Pole + Reinf.	TP41.422x40.287x0.625	Reinf. 1 Tension Rupture	77.7%	Pass
12.75 - 7.75	Pole + Reinf.	TP42.558x41.422x0.6125	Reinf. 1 Tension Rupture	79.0%	Pass
7.75 - 2.75	Pole + Reinf.	TP43.693x42.558x0.6	Reinf. 1 Tension Rupture	80.2%	Pass
2.75 - 0	Pole + Reinf.	TP44.317x43.693x0.6	Reinf. 1 Tension Rupture	80.9%	Pass
				Summary	
			Pole	71.3%	Pass
			Reinforcement	80.9%	Pass
			Overall	80.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*										
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
140 - 135	211	n/a	211	8.40	n/a	8.40	15.8%										
135 - 130	266	n/a	266	9.07	n/a	9.07	27.5%										
130 - 125	330	n/a	330	9.75	n/a	9.75	42.5%										
125 - 120	404	n/a	404	10.42	n/a	10.42	54.9%										
120 - 115	487	n/a	487	11.10	n/a	11.10	71.3%										
115 - 114.75	492	680	1172	11.13	13.50	24.63	29.9%									52.9%	
114.75 - 109.75	587	758	1345	11.81	13.50	25.31	36.8%									64.0%	
109.75 - 104.75	694	841	1534	12.48	13.50	25.98	43.1%									73.6%	
104.75 - 101.58	767	896	1663	12.91	13.50	26.41	46.9%									79.2%	
101.58 - 101.33	1267	n/a	1267	21.45	n/a	21.45	59.6%										
101.33 - 96.33	1477	n/a	1477	22.58	n/a	22.58	63.6%										
96.33 - 91.33	1709	n/a	1709	23.70	n/a	23.70	66.6%										
91.33 - 91	1726	n/a	1726	23.78	n/a	23.78	66.8%										
91 - 90.75	1738	1473	3210	23.83	18.00	41.83	35.8%								57.9%		
90.75 - 85.75	1996	1605	3601	24.96	18.00	42.96	37.9%								61.4%		
85.75 - 80.75	2278	1743	4021	26.08	18.00	44.08	39.9%								64.4%		
80.75 - 75.75	2586	1887	4473	27.21	18.00	45.21	41.6%								67.2%		
75.75 - 70.75	2921	2037	4957	28.33	18.00	46.33	43.9%								70.7%		
70.75 - 69.98	2975	1972	4947	28.51	17.25	45.76	45.1%			74.3%							
69.98 - 69.73	2992	1980	4972	28.56	17.25	45.81	45.2%			74.5%							
69.73 - 64.73	3360	2130	5490	29.69	17.25	46.94	47.5%			78.0%							
64.73 - 63	3494	2183	5677	30.08	17.25	47.33	48.3%			79.1%							
63 - 62.75	3520	4069	7589	30.14	35.25	65.39	37.9%			61.1%				56.3%			
62.75 - 59.08	3817	4283	8100	30.96	35.25	66.21	39.4%			63.1%				58.1%			
59.08 - 58.82	3836	3575	7411	31.02	30.39	61.41	43.0%				64.6%			63.1%			
58.82 - 58.67	3848	3583	7431	31.05	30.39	61.44	43.1%				64.7%			63.2%			
58.67 - 53.67	4282	3833	8115	32.18	30.39	62.57	45.2%				67.1%			65.7%			
53.67 - 53	4342	3867	8209	32.33	30.39	62.72	45.5%				67.4%			66.0%			
53 - 47.58	4585	4469	9054	32.93	29.64	62.57	45.0%		71.7%		67.3%						
47.58 - 42.58	5072	4764	9836	34.06	29.64	63.70	46.8%		73.9%		69.3%						
42.58 - 39.67	5370	4941	10311	34.71	29.64	64.35	47.8%		75.1%		70.4%						
39.67 - 39.42	5396	7960	13356	34.77	47.64	82.41	37.2%		58.3%		54.7%		56.9%				
39.42 - 34.42	5938	8460	14398	35.89	47.64	83.53	38.7%		60.0%		56.3%		58.5%				
34.42 - 32.5	6155	8656	14811	36.33	47.64	83.97	39.2%		60.7%		56.9%		59.2%				
32.5 - 32.25	6183	5544	11728	36.38	30.39	66.77	49.8%				72.2%		75.1%				
32.25 - 31.41	6280	5600	11880	36.57	30.39	66.96	50.1%				72.5%		75.4%				
31.41 - 31.16	6309	8794	15104	36.63	47.64	84.27	39.6%	61.1%			57.3%		59.6%				
31.16 - 29	6564	9019	15584	37.12	47.64	84.76	40.3%	61.8%			58.0%		60.3%				
29 - 28.65	6667	7167	13834	37.19	41.64	78.83	49.4%	73.6%			72.5%						60.7%
28.65 - 28.42	6695	7186	13881	37.25	41.64	78.89	49.4%	73.6%			72.5%						60.8%
28.42 - 23.5	7308	7603	14911	38.35	41.64	79.99	51.0%	75.2%			74.0%						62.2%
23.5 - 23.25	7299	10570	17870	38.41	59.64	98.05	41.8%	61.5%			57.7%	56.1%					57.2%
23.25 - 23	7331	10600	17931	38.47	59.64	98.11	41.8%	61.6%			57.7%	56.2%					57.3%
23 - 22.75	7349	7433	14783	38.52	47.64	86.16	50.1%	74.8%			66.7%	58.9%					
22.75 - 17.75	8012	7855	15867	39.65	47.64	87.29	51.6%	76.3%			68.1%	60.2%					
17.75 - 12.75	8714	8288	17002	40.77	47.64	88.41	53.1%	77.7%			69.3%	61.4%					
12.75 - 7.75	9456	8733	18189	41.90	47.64	89.54	54.6%	79.0%			70.6%	62.6%					
7.75 - 2.75	10238	9190	19428	43.03	47.64	90.67	56.0%	80.2%			71.7%	63.7%					
2.75 - 0	10687	9446	20132	43.65	47.64	91.29	56.8%	80.9%			72.3%	64.3%					

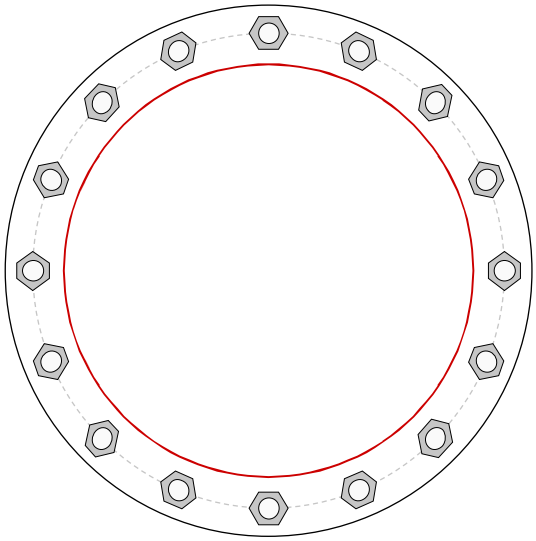
Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

Monopole Base Plate Connection

Site Info	
BU #	842873
Site Name	SHELTON NE
Order #	444514 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	2823.03
Axial Force (kips)	47.53
Shear Force (kips)	30.33



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75; Fy=75 ksi, Fu=100 ksi) on 51" BC
pos. (deg): 0, 45, 90, 135, 180, 225, 270, 315, 67.5, 157.5, 247.5, 337

GROUP 2: (4) 2-1/4" ø bolts (F1554-105; Fy=105 ksi, Fu=125 ksi) on 51" BC

Base Plate Data

57" OD x 2.25" Plate (A607-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

44.317" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-ft)*

GROUP 1:		
Pu = 168.9	ϕPn = 243.75	**Stress Rating**
Vu = 1.9	ϕVn = 73.13	**66.1%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu = 168.74	ϕPn = 341.25	**Stress Rating**
Vu = 1.9	ϕVn = 102.38	**47.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	31.37	
Allowable Stress (ksi):	54	
Stress Ratio:	**55.3%**	**Pass**

Monopole Flange Plate Connection

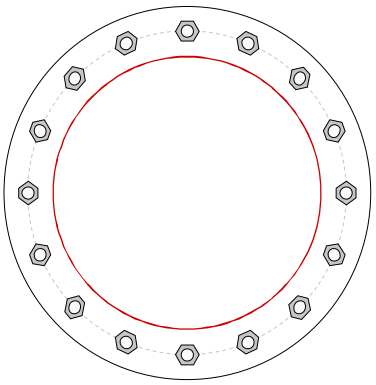
Elevation = 101.58 ft.

BU #	842873
Site Name	SHELTON NE
Order #	444514 Rev. 0

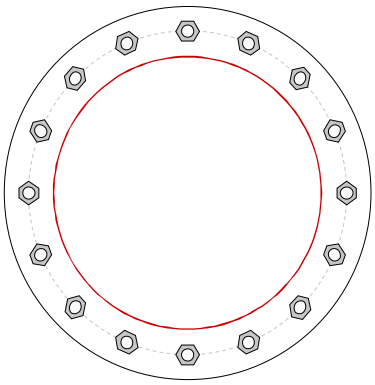
TIA-222 Revision	H

Applied Loads	
Moment (kip-ft)	432.36
Axial Force (kips)	10.66
Shear Force (kips)	15.75

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(16) 1" ø bolts (A325; Fy=92 ksi, Fu=120 ksi) on 26" BC

Top Plate Data

30" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

30" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

21.882" x 0.1875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

21.882" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	49.19	
Allowable (kips)	54.53	
Stress Ratio:	85.9%	Pass

Top Plate Capacity

Max Stress (ksi):	25.82	
Allowable Stress (ksi):	45.00	
Stress Ratio:	54.7%	Pass
Tension Side Stress Ratio:	42.6%	Pass

Bottom Plate Capacity

Max Stress (ksi):	25.82	
Allowable Stress (ksi):	45.00	
Stress Ratio:	54.7%	Pass
Tension Side Stress Ratio:	42.6%	Pass

Drilled Pier Foundation

BU # :	842873
Site Name:	SHELTON NE
Order Number:	444514 Rev. 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2823	
Axial Force (kips)	48	
Shear Force (kips)	30	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	14	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 14' below grade		
Pier Diameter	6	ft
Rebar Quantity	26	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	3.78	-
Soil Safety Factor	1.86	-
Max Moment (kip-ft)	2969.53	-
Rating*	*68.2%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	318.06	-
End Bearing (kips)	254.47	-
Weight of Concrete (kips)	73.80	-
Total Capacity (kips)	572.53	-
Axial (kips)	121.80	-
Rating*	*20.3%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	3.81	-
Critical Moment (kip-ft)	2969.51	-
Critical Moment Capacity	5370.37	-
Rating*	*52.7%*	-

Soil Interaction Rating*	**68.2%**
Structural Foundation Rating*	**52.7%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑

Soil Profile				
Groundwater Depth	n/a	ft	# of Layers	2

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	165	150			0.000	0.000					Cohesionless
2	3	14	11	165	150	4		2.045	2.045			12		Cohesive

Date: **July 23, 2018**

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

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

Tectonic
1279 Route 300
Newburgh, NY 12553
(845) -567-6656

Subject:	**Mount Structural Analysis Report**	
Carrier Designation:	**T-Mobile Tower Equipment**	
	Carrier Site Number:	CTFF531A
	Carrier Site Name:	Shelton_Rt8-AT&T
Crown Castle Designation:	**Crown Castle BU Number:**	842873
	Crown Castle Site Name	SHELTON NE
	Crown Castle JDE Job Number:	510431
	Crown Castle PO Number:	1219457
	Crown Castle Application Number:	444514
Engineering Firm Designation:	**Tectonic Project Number:**	9500.842873
Site Data:	**30 Olive Terrace, Shelton, Fairfield County, CT 06484** **Latitude 41° 17' 38.21" Longitude -73° 6' 25.83"**	
Structure Information:	**Tower Height & Type:**	**140 ft Monopole**
	Mount Elevation:	**120 ft**
	Mount Type:	**12.5 ft T-Arm Mount**

Dear Charles,

Tectonic Engineering & Surveying Consultants P.C. (Tectonic) is pleased to submit this **"Mount Structural 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:

T-arm Mount (Typical of 3) **Sufficient***

***Sufficient upon completion of the changes listed in the "Recommendations" section of this report**

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 and Appendix N 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 1.000 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: Mahesh Chillarge\ KZ

Respectfully Submitted by:

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

TABLE OF CONTENTS

1) INTRODUCTION

The existing antenna mounting system can be categorized as T-Arm mount installed at the 120 ft elevation above ground level. The design and mount manufacturer information for the mounts are not available. The member sizes for the analysis have therefore, been based on historical data and site photos.

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 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 the end of the standoff arm with 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
120	120	3	RFS/Celwave	APXVAARR24_43-U-NA20	-	1
		3	Ericsson	AIR32 DB B66AA B2A		
		3	Ericsson	RADIO 4449 B12/B71		

Note:
1) To be mounted on existing mount.

Table 2 - Existing Antenna and Cable Information

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
120	120	3	RFS/Celwave	APX16DWV-16DWVS-E-A20	T-Arm	1
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	KRY 112 489/2		
		3	Commscope	LNX-6515DS-A1M	-	2
		3	RFS/Celwave	APX16PV-16PVL		

Notes:
1) Existing Equipment.
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	FDH Velocitel	5785406	CCISITES
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.
4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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 (T-Arm; Alpha & Beta Sectors)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	120	62	Pass
1	Mount pipe	120	69	Pass
1	Standoff Tube	120	35	Pass
1	Stiffarm	120	05	Pass

Table 4(b) - Mount Component Stresses vs. Capacity (T-Arm; Gamma Sector)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	120	57	Pass
1	Mount pipe	120	69	Pass
1	Standoff Tube	120	37	Pass
1	Stiffarm	120	04	Pass

Structure Rating (max from all components) =	69%

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

4.1) Recommendations

The existing T-Arm mount will have sufficient capacity to support the existing and proposed loading once, the additional stiff-arm as indicated in the analysis report is installed.

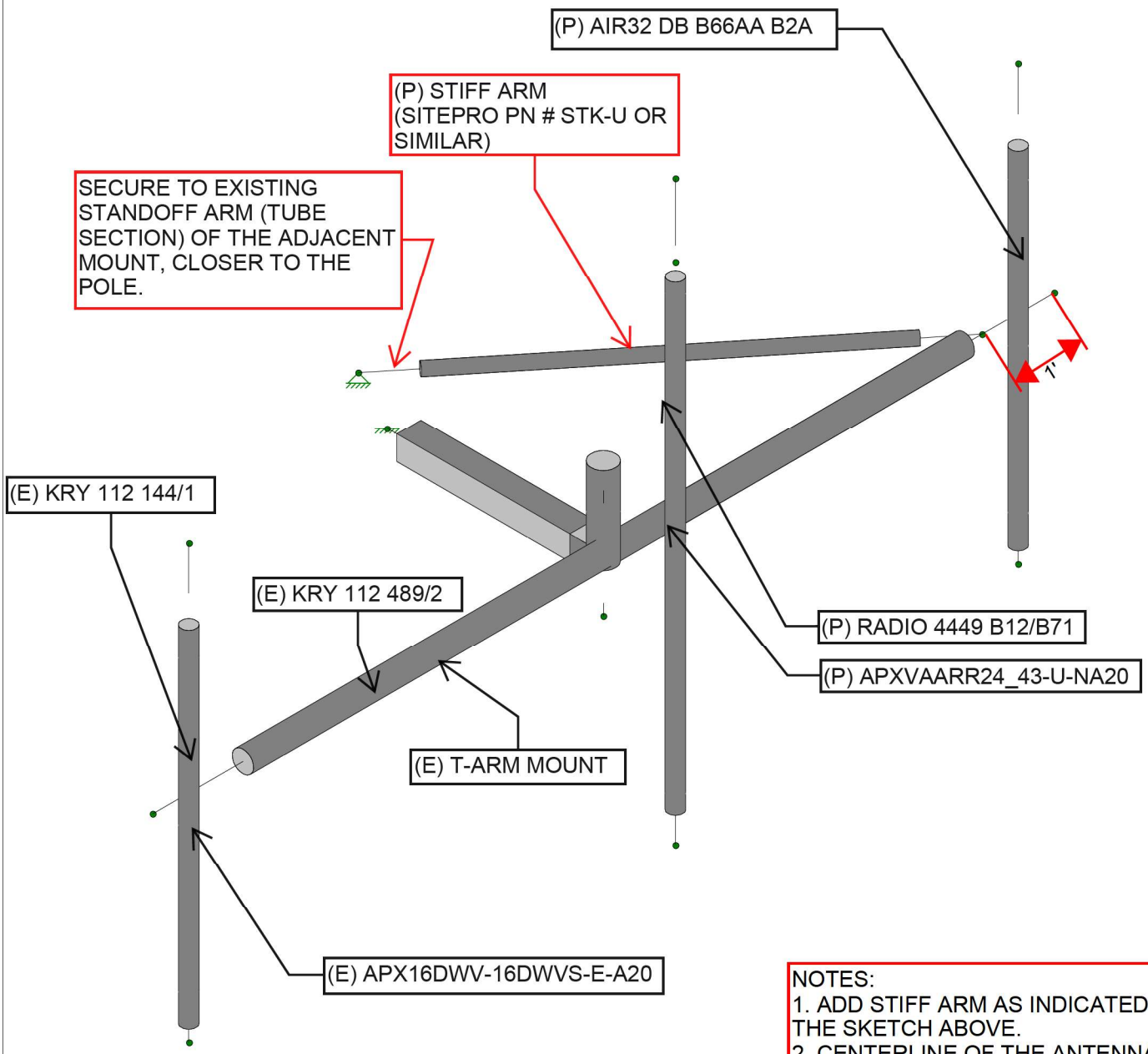
The structural analysis is solely based on the review of the photos and documents referenced above. The contractor shall therefore, field verify existing conditions and notify the design engineer of any discrepancies prior to installation of the proposed upgrade.

APPENDIX A

WIRE FRAME AND RENDERED MODELS

ALPHA & BETA SECTOR

ALPHA SECTOR ANALYSIS

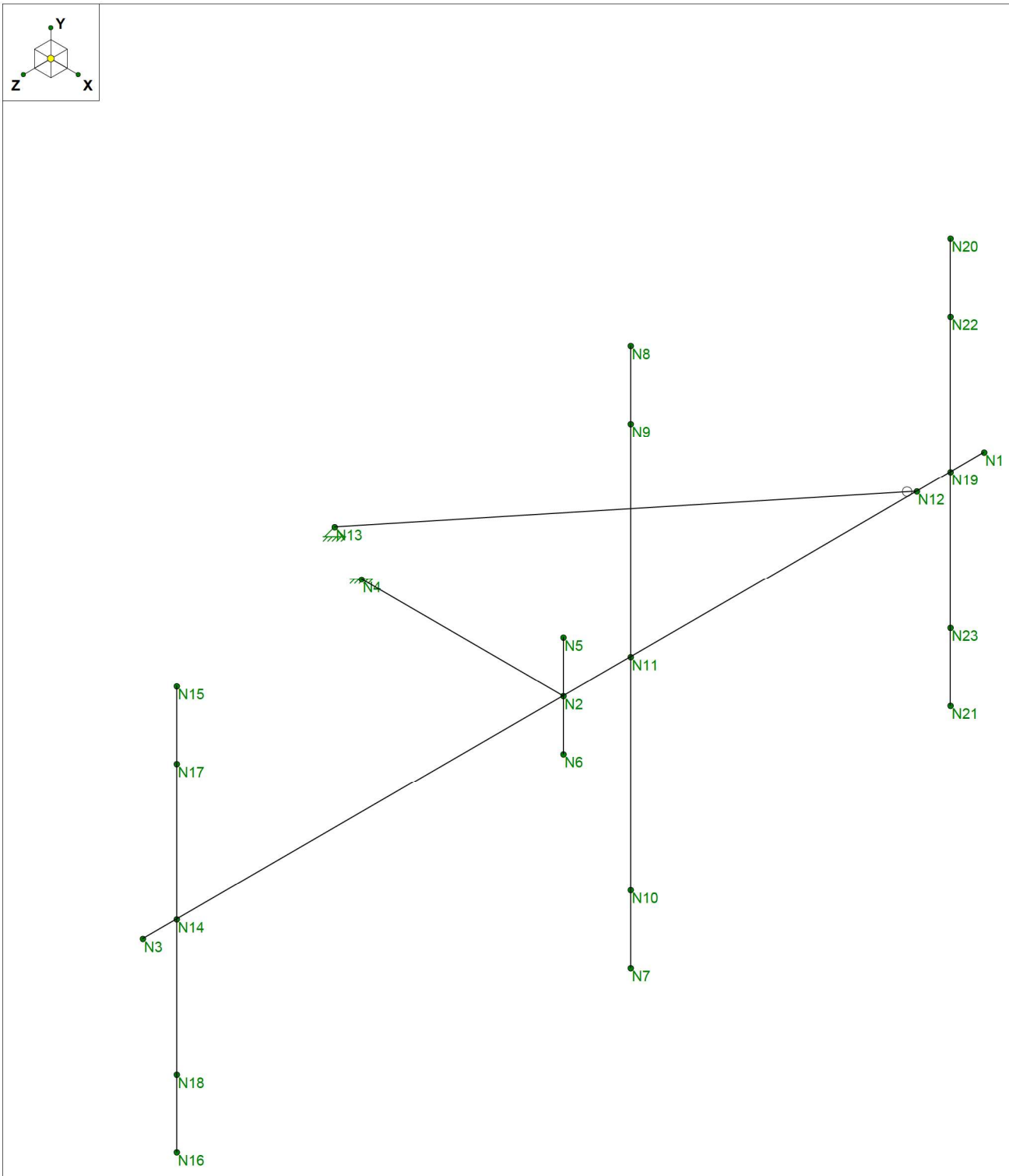


NOTES:
1. ADD STIFF ARM AS INDICATED IN THE SKETCH ABOVE.
2. CENTERLINE OF THE ANTENNAS (VERTICAL) SHOULD MATCH WITH THE CENTERLINE OF THE MOUNT. THAT IS, NO OFFSET HAS BEEN CONSIDERED IN ACCORDANCE WITH THE ORDER FORM.

(E) EXISTING
(P) PROPOSED

ALPHA SECTOR IS CONSIDERED FOR DETAILED ANALYSIS
BETA IS SIMILAR

Tectonic	Alpha & Beta Sector	SK - 1
SM		July 23, 2018 at 1:49 PM
9500.842873		9500.842873 Mount Analysis- Alph...



Tectonic	Alpha & Beta Sector	SK - 2
SM		July 23, 2018 at 1:49 PM
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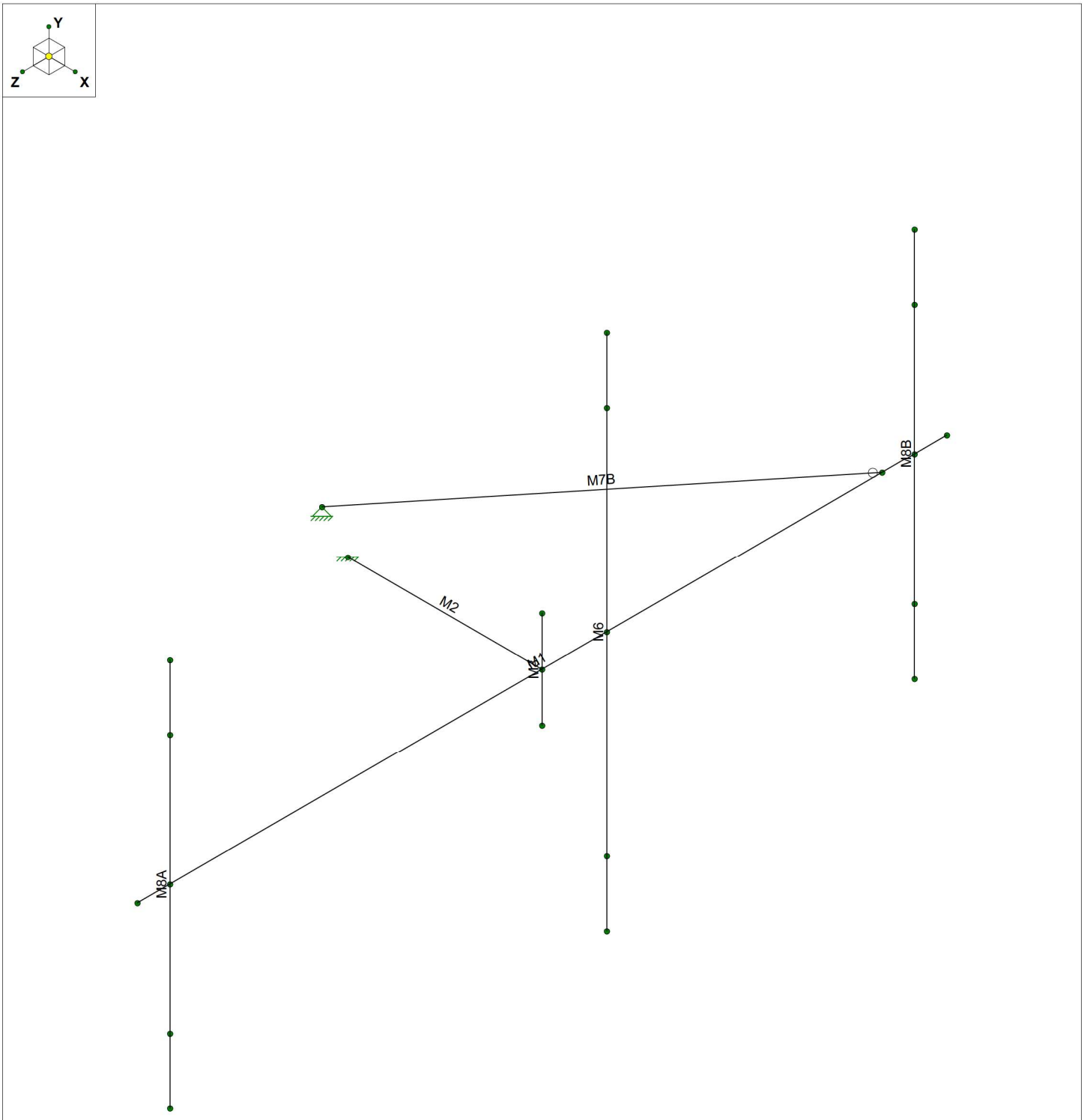
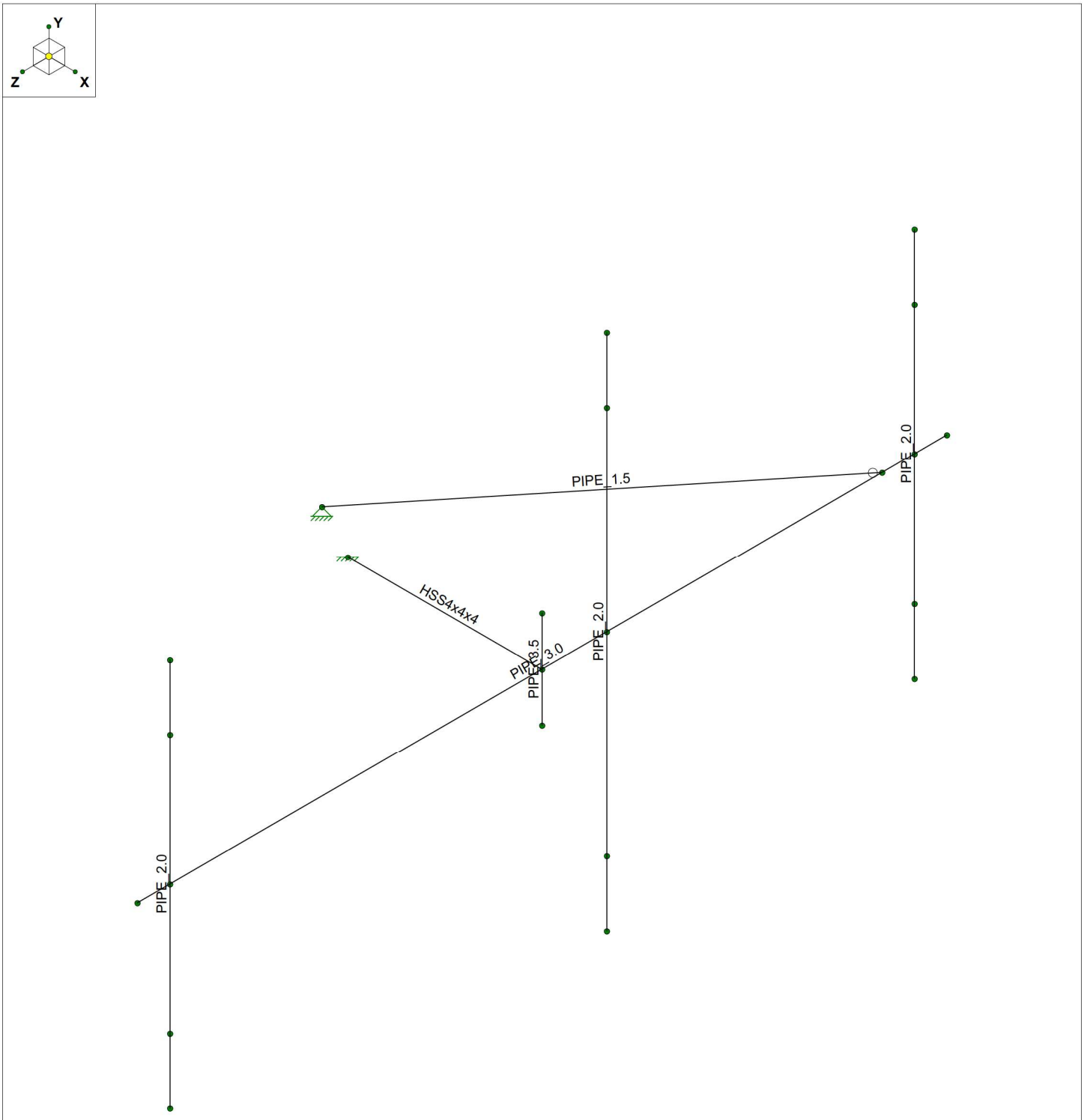


Tectonic	Alpha & Beta Sector	SK - 3
SM		July 23, 2018 at 1:50 PM
9500.842873		9500.842873 Mount Analysis- Alph...



Tectonic	Alpha & Beta Sector	SK - 4
SM		July 23, 2018 at 1:50 PM
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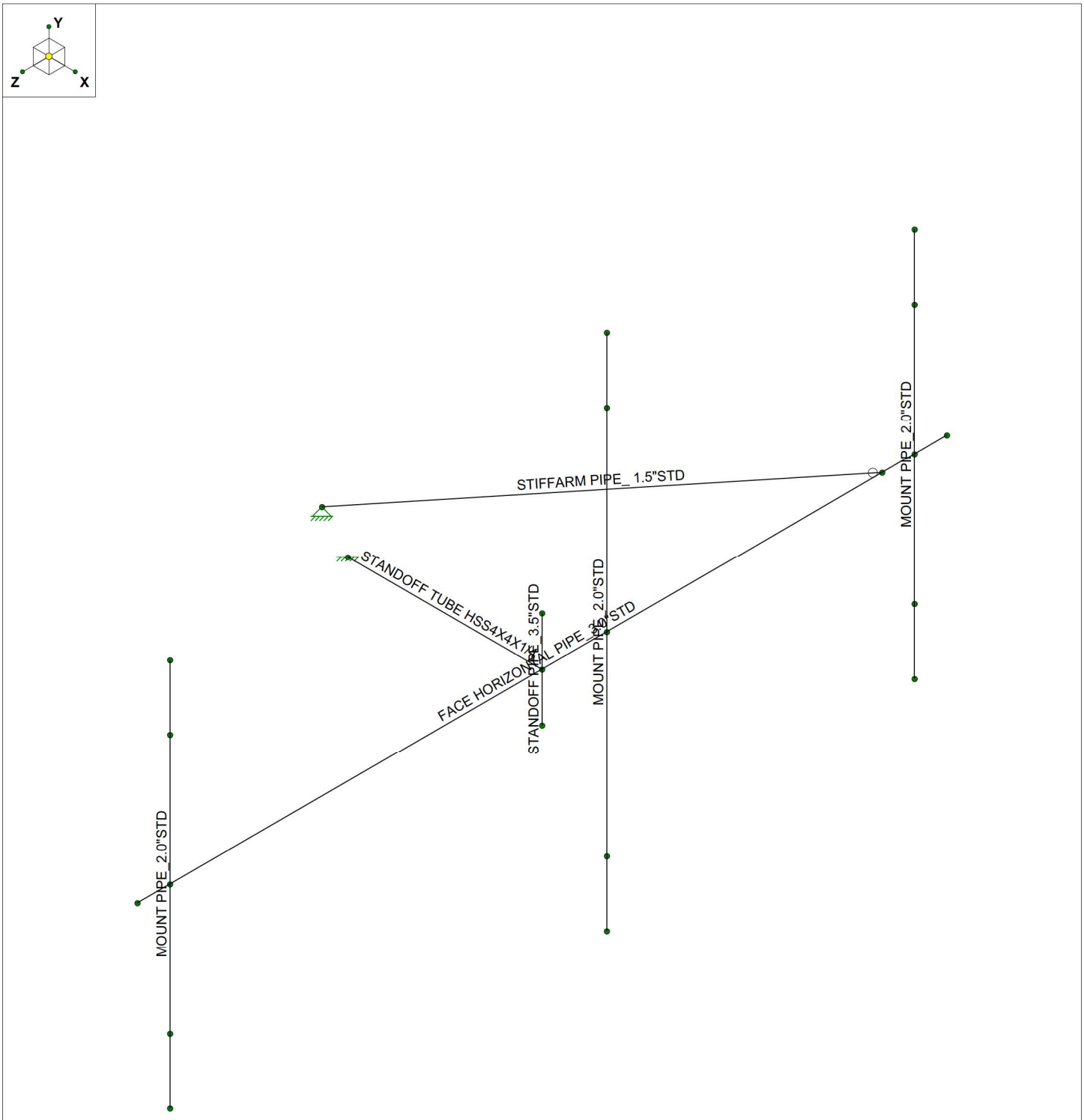

Tectonic	Alpha & Beta Sector	SK - 5
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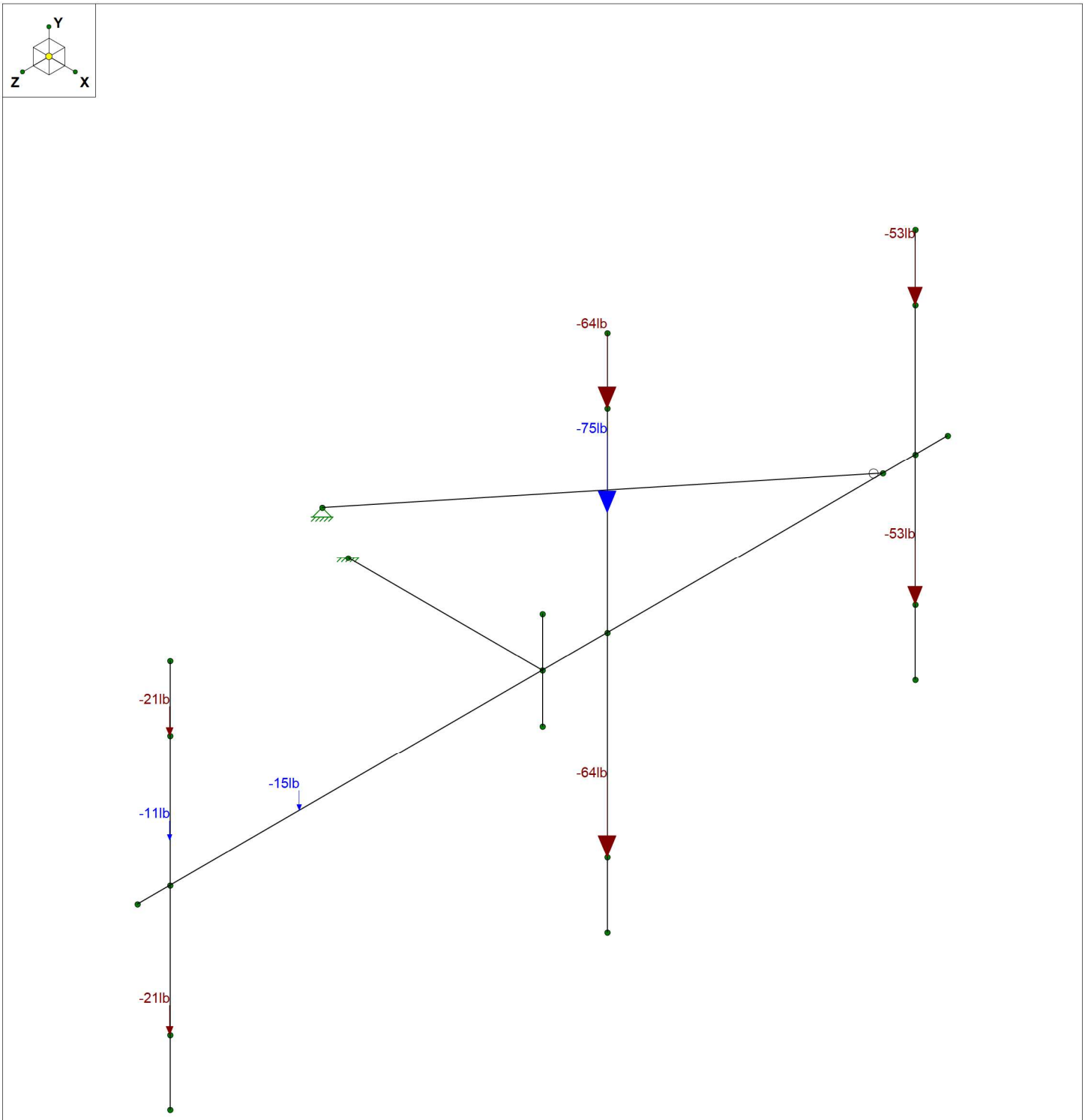
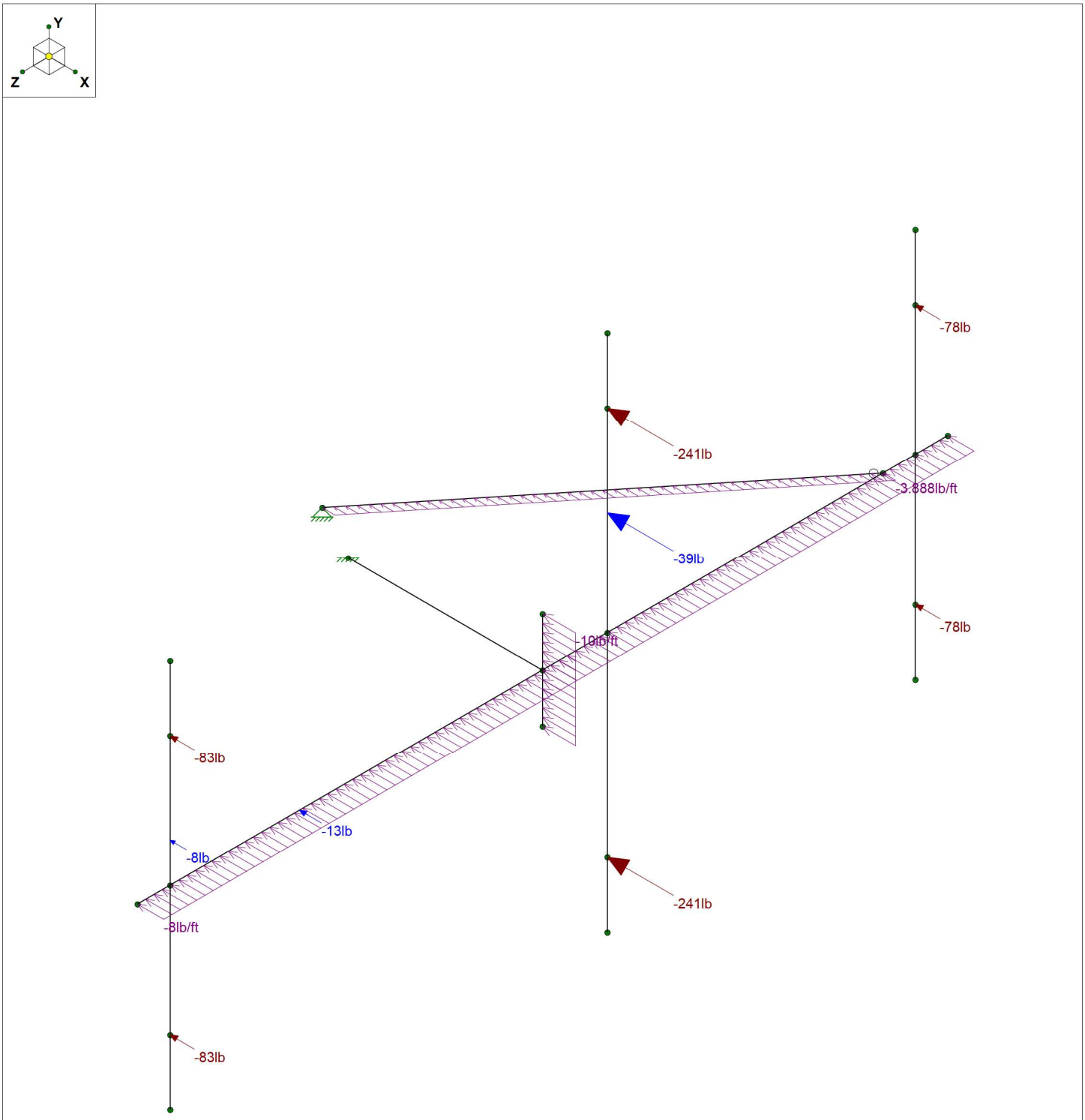


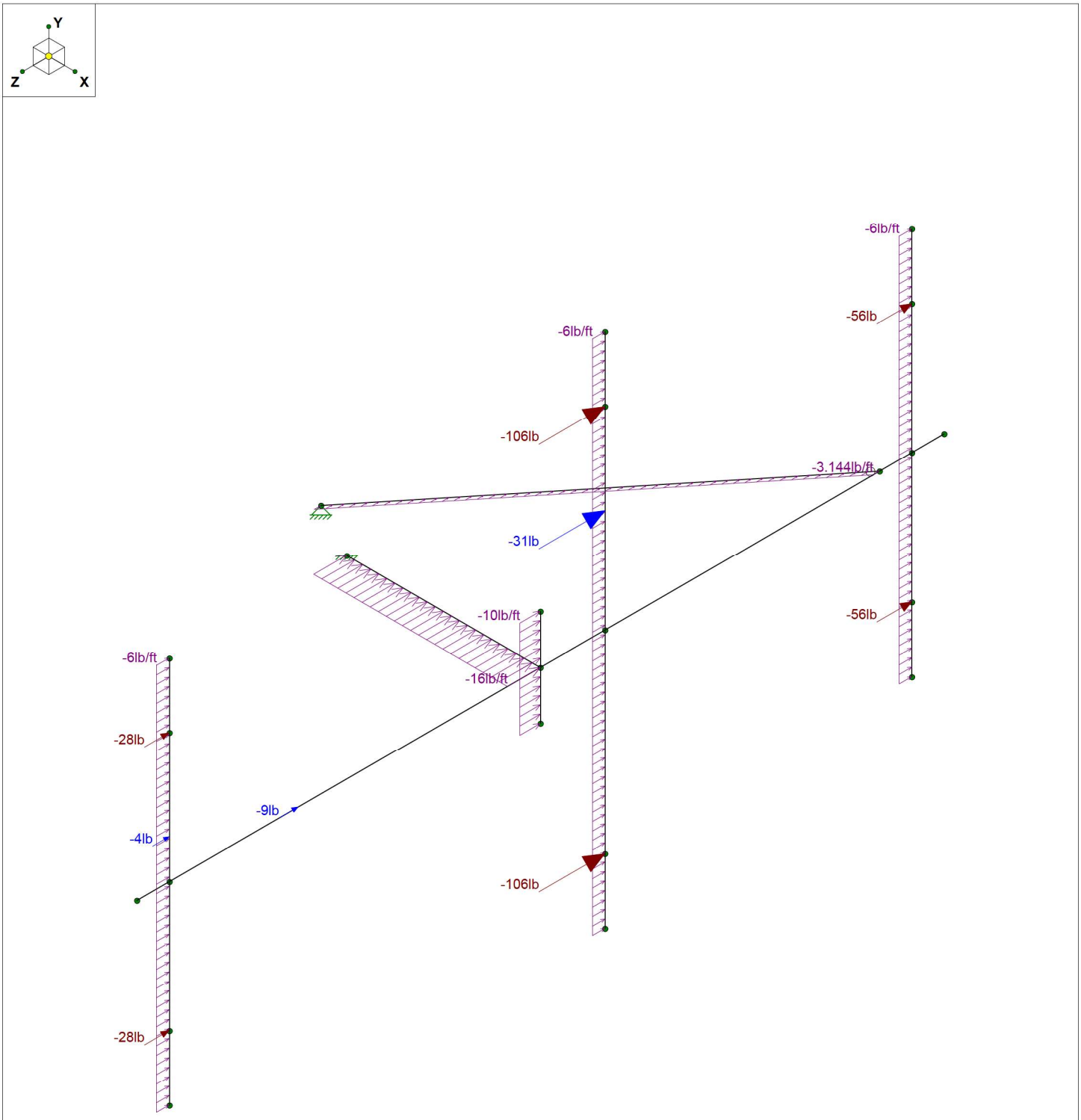
Loads: BLC 1, DEAD LOAD

Tectonic	Alpha & Beta Sector	SK - 6
SM		July 23, 2018 at 1:51 PM
9500.842873		9500.842873 Mount Analysis- Alph...



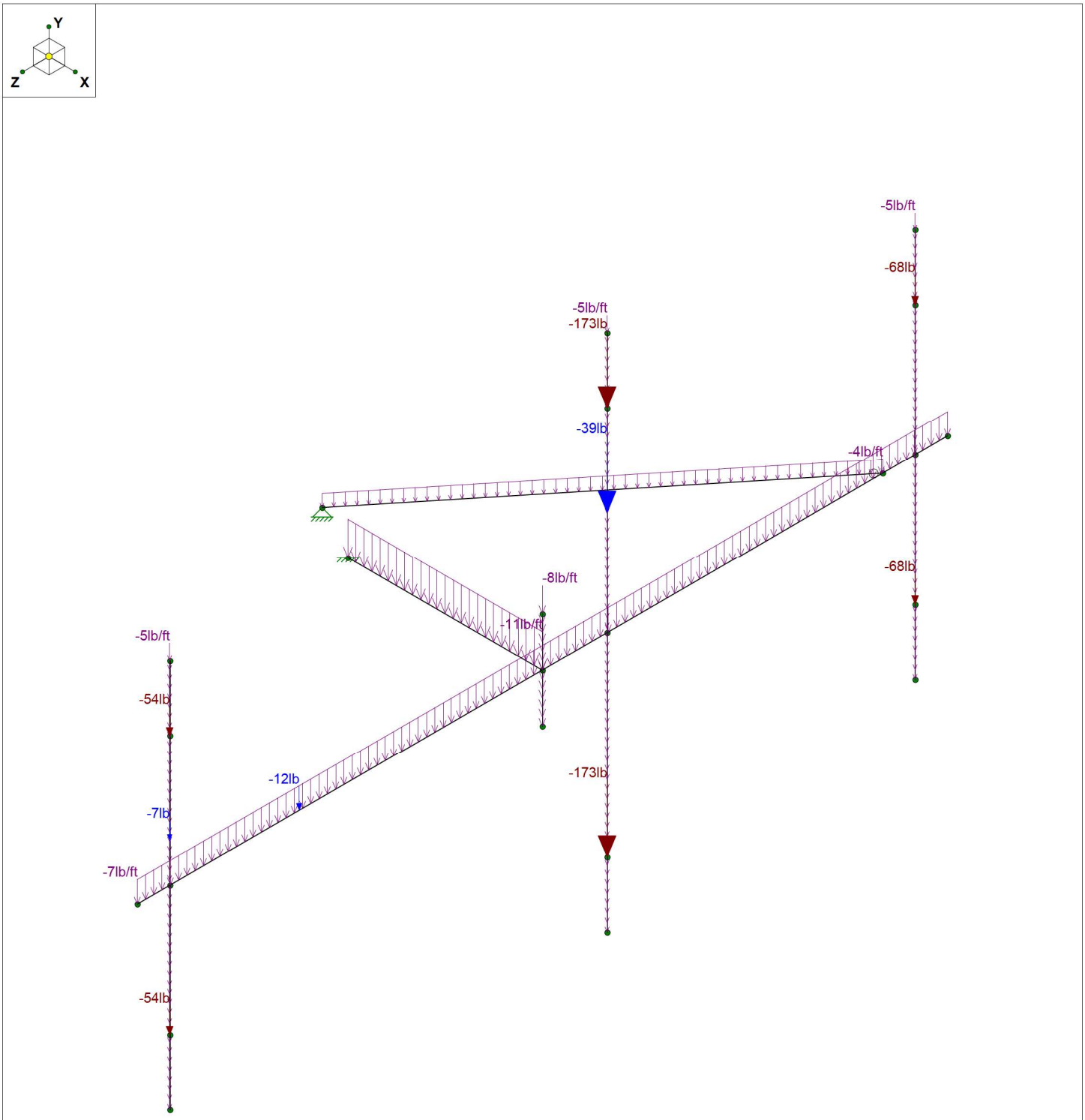
Loads: BLC 2, WIND X

Tectonic	Alpha & Beta Sector	SK - 7
SM		July 23, 2018 at 1:51 PM
9500.842873		9500.842873 Mount Analysis- Alph...



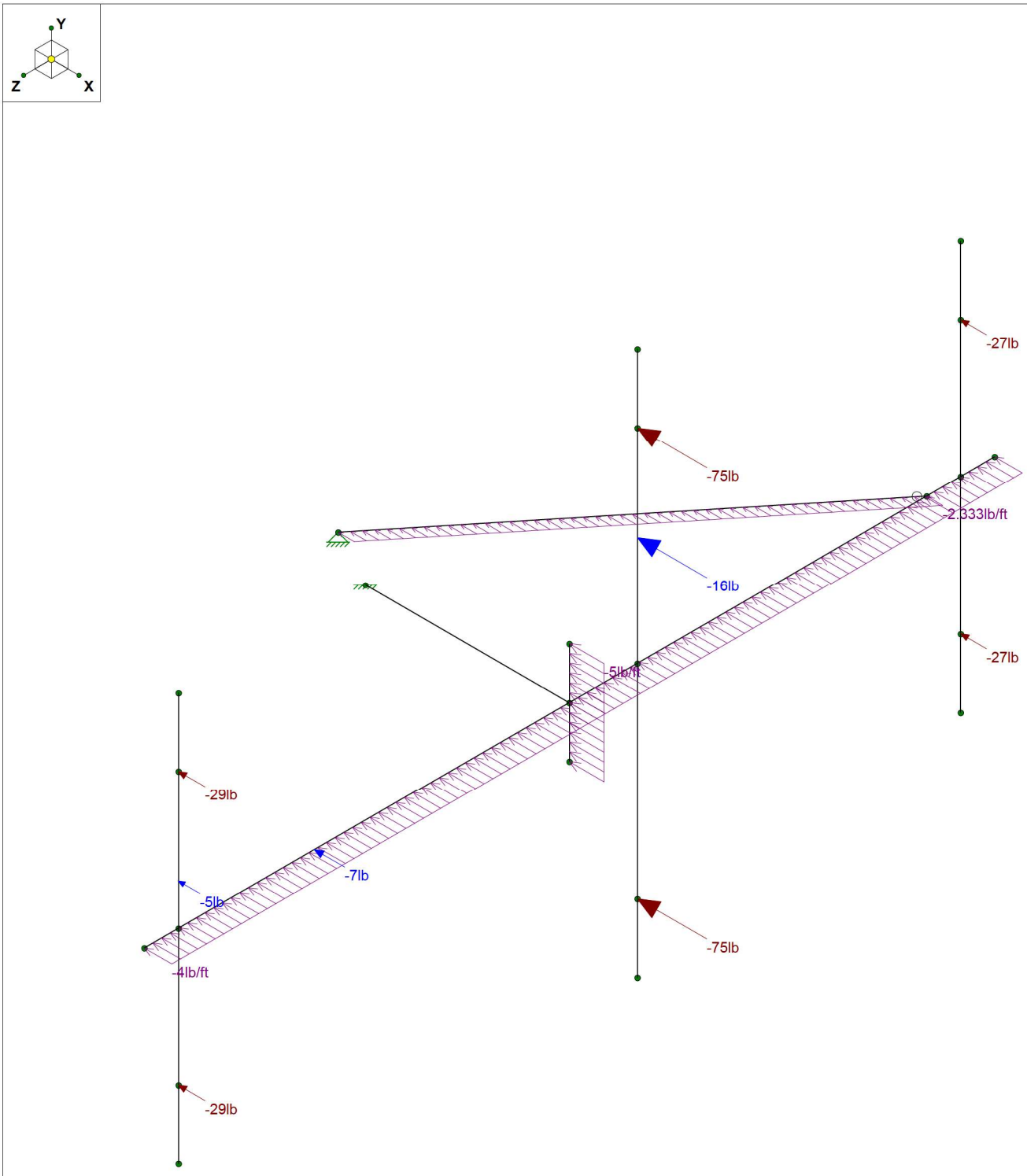
Loads: BLC 3, WIND Z

Tectonic	Alpha & Beta Sector	SK - 8
SM		July 23, 2018 at 1:51 PM
9500.842873		9500.842873 Mount Analysis- Alph...



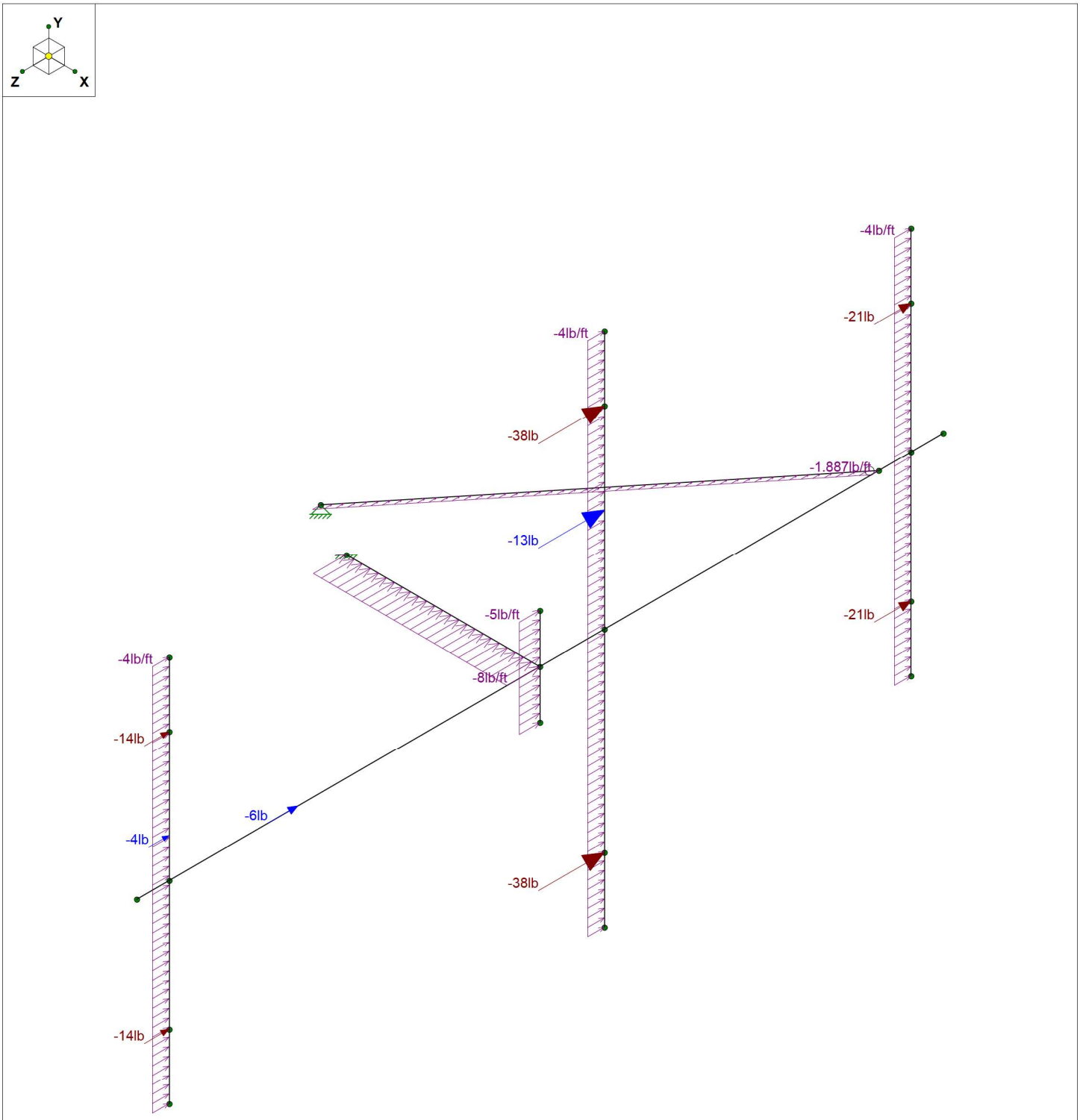
Loads: BLC 4, ICE LOAD

Tectonic	Alpha & Beta Sector	SK - 9
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



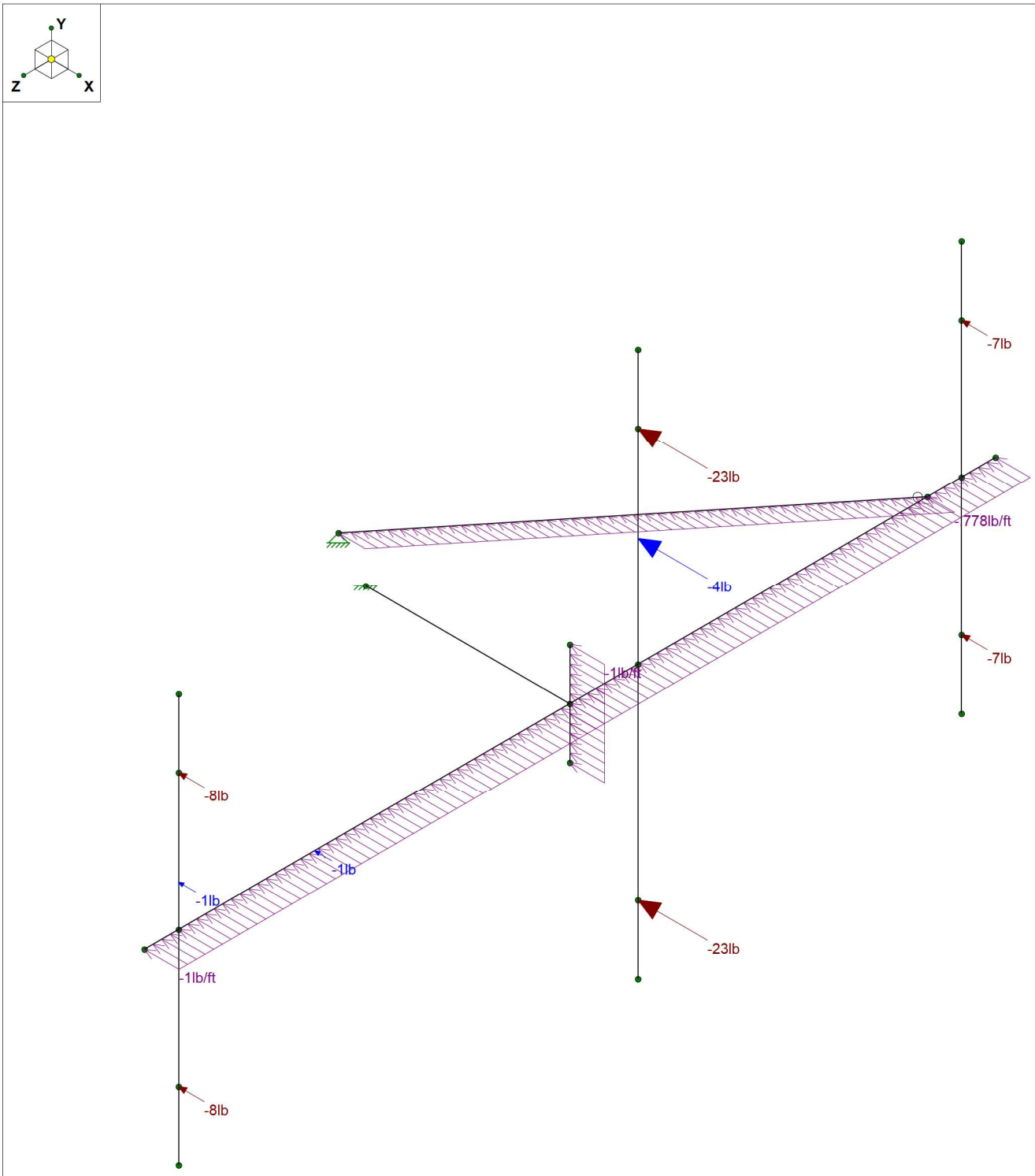
Loads: BLC 5, WIND + ICE IN X

Tectonic	Alpha & Beta Sector	SK - 10
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



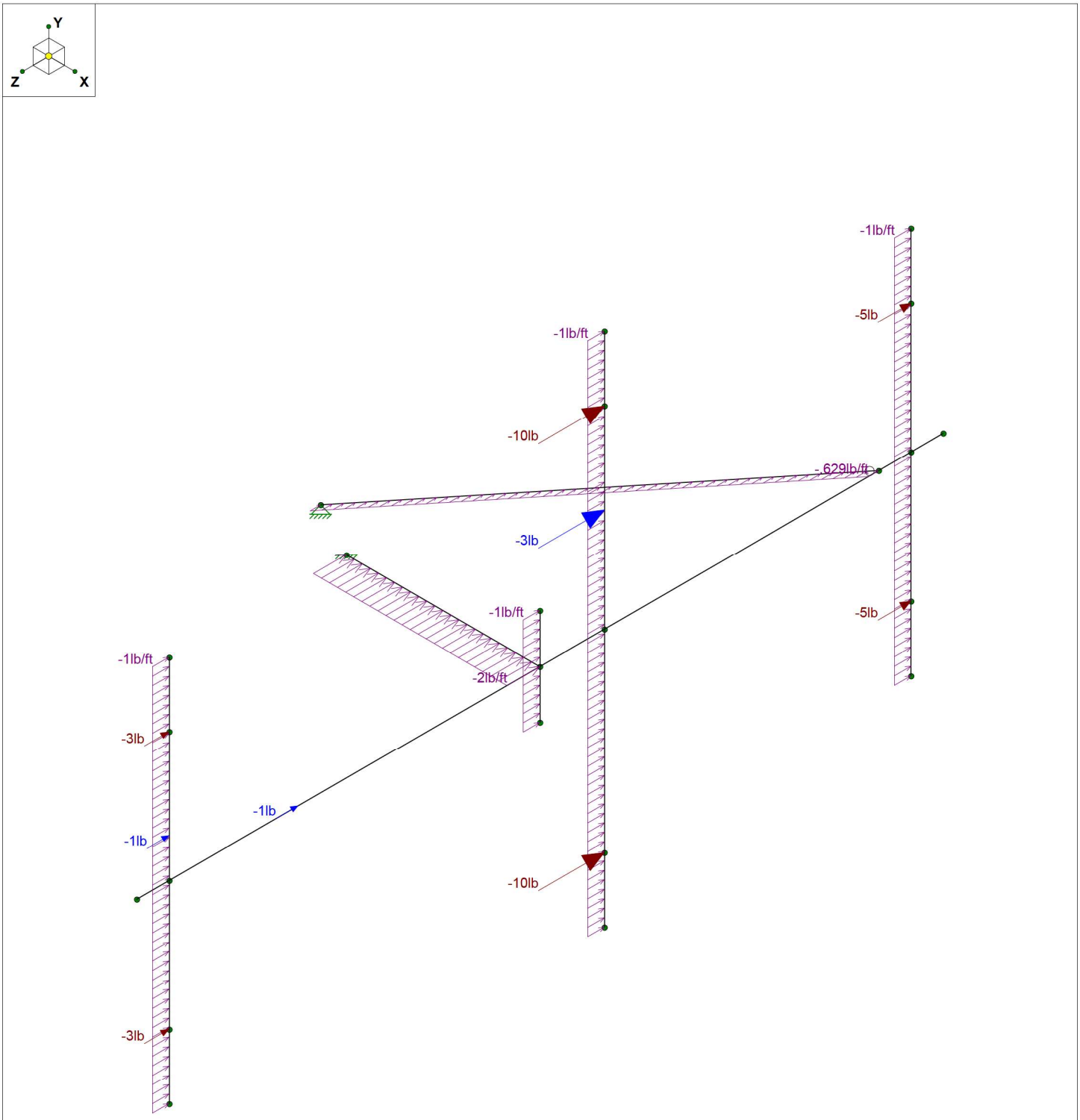
Loads: BLC 6, WIND + ICE IN Z

Tectonic	Alpha & Beta Sector	SK - 11
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



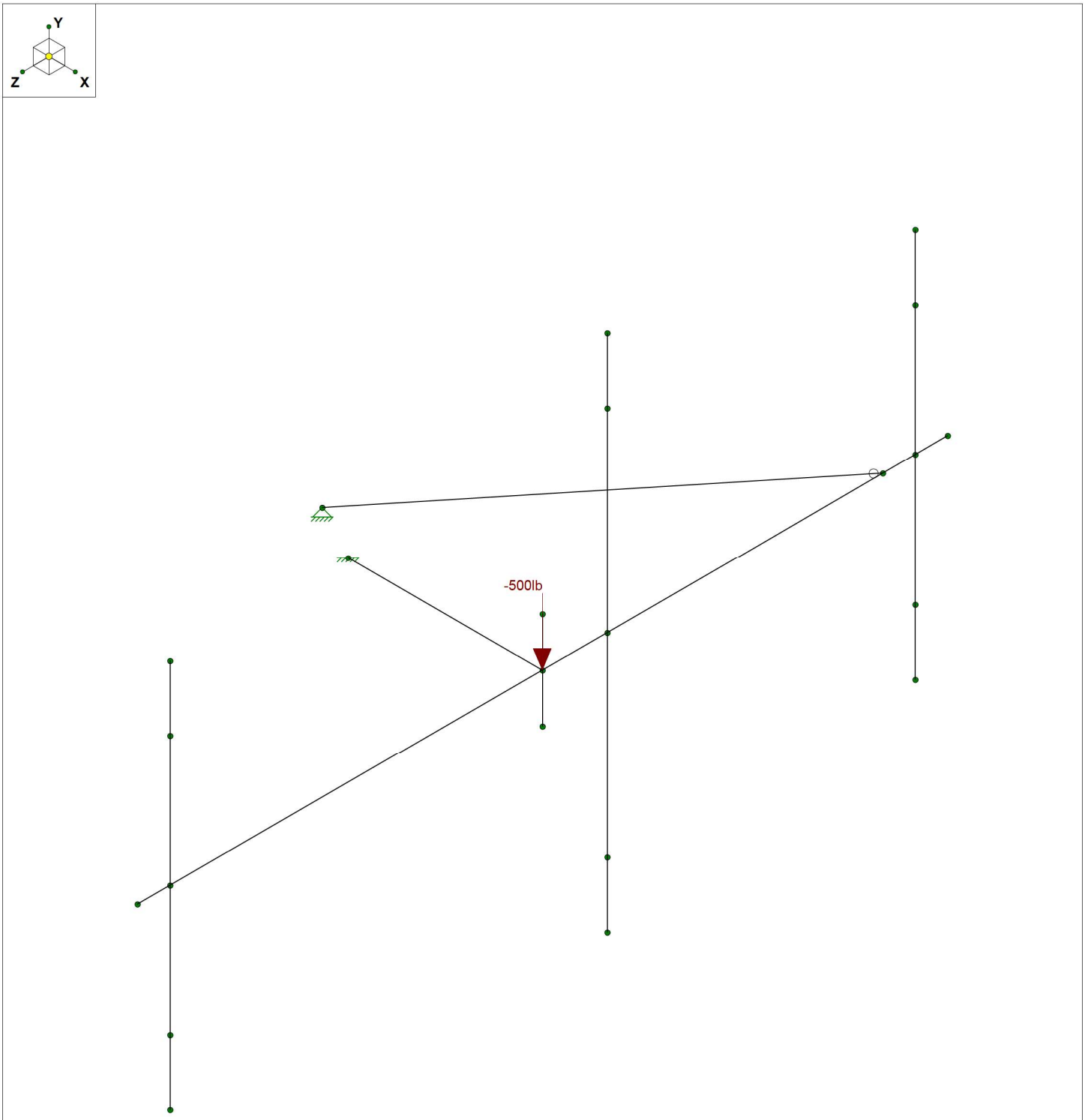
Loads: BLC 7, WIND X Main

Tectonic	Alpha & Beta Sector	SK - 12
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



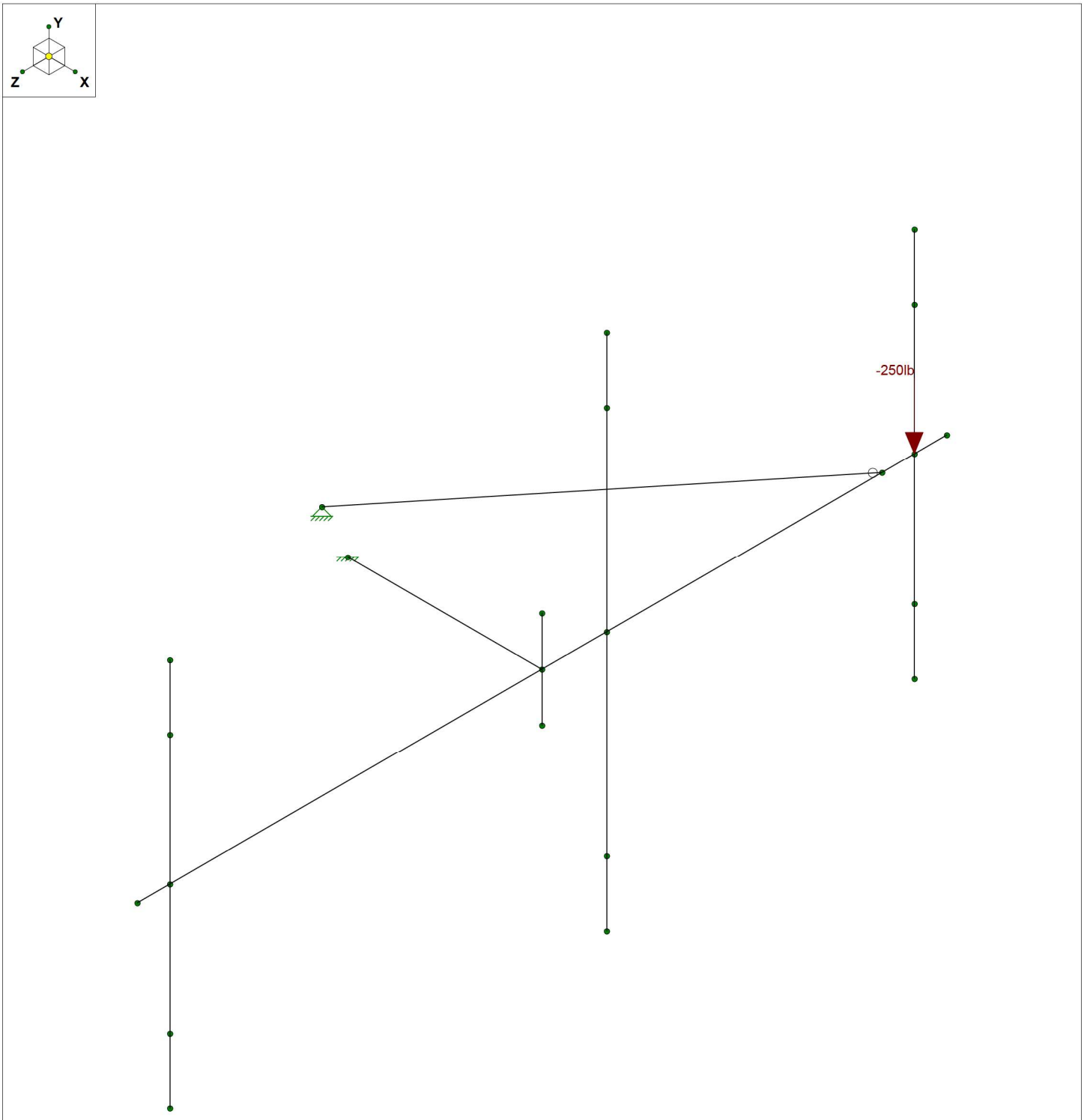
Loads: BLC 8, WIND Z Main

Tectonic	Alpha & Beta Sector	SK - 13
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



Loads: BLC 9, LM1

Tectonic	Alpha & Beta Sector	SK - 15
SM		July 23, 2018 at 1:52 PM
9500.842873		9500.842873 Mount Analysis- Alph...



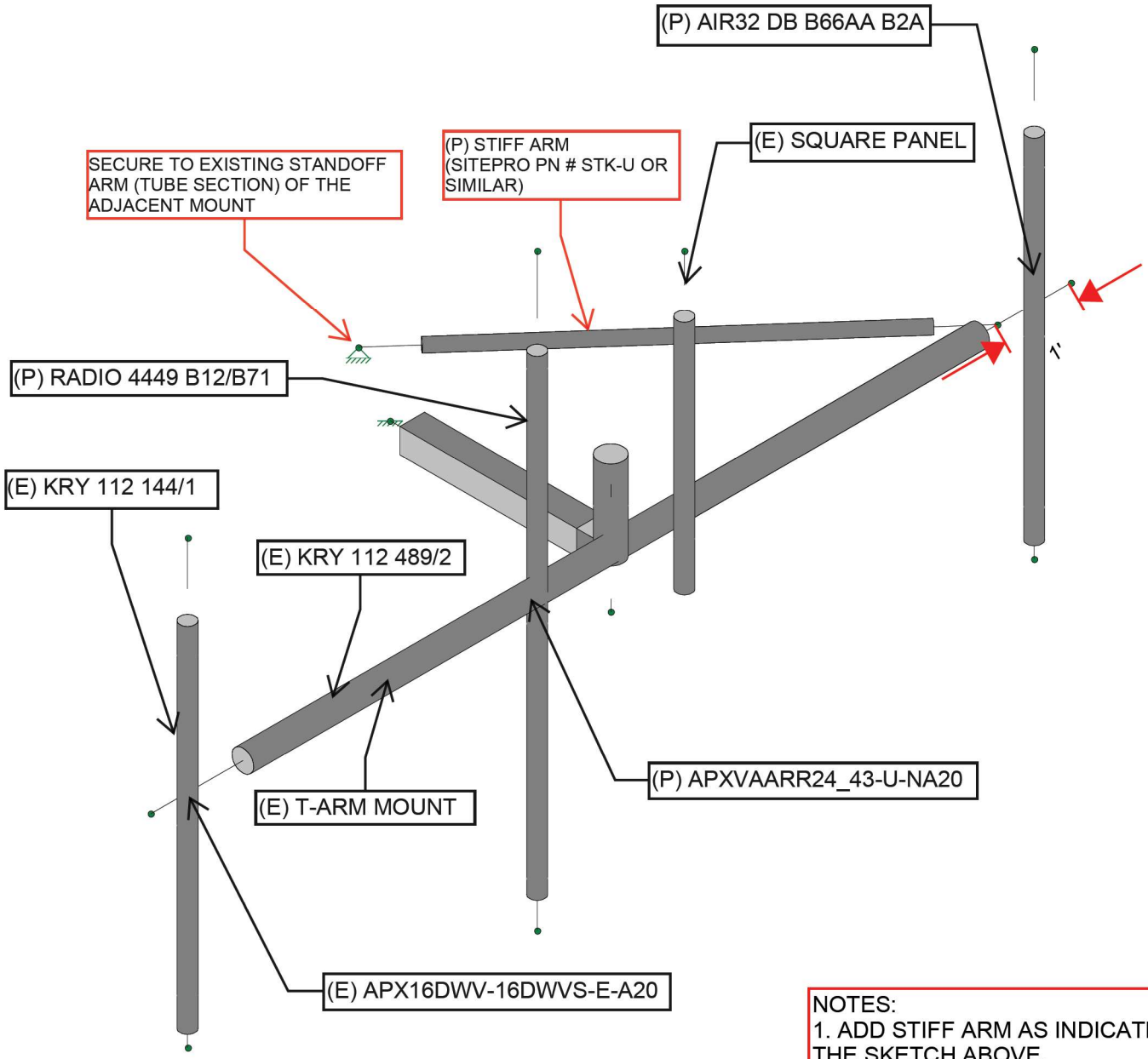
250 LB LIVE LOAD
APPLIED INDIVIDUALLY
AT MOUNT PIPE
LOCATION.
(3 LOCATION TOTAL)

Loads: BLC 10, LV1

Tectonic	Alpha & Beta Sector	SK - 15
SM		July 23, 2018 at 1:53 PM
9500.842873		9500.842873 Mount Analysis- Alph...

GAMMA
SECTOR

GAMMA SECTOR ANALYSIS

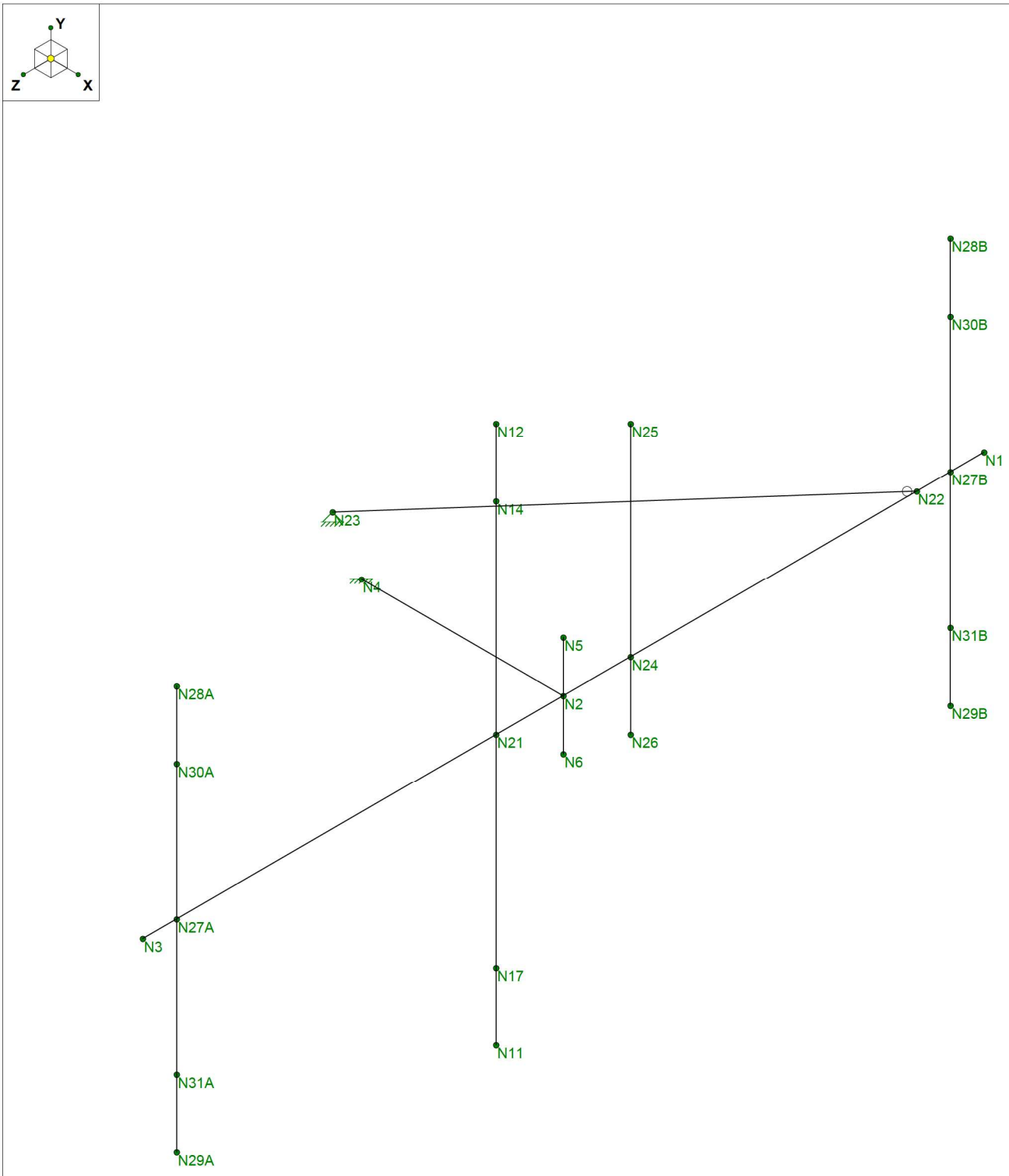


NOTES:
1. ADD STIFF ARM AS INDICATED IN THE SKETCH ABOVE.
2. CENTERLINE OF THE ANTENNAS (VERTICAL) SHOULD MATCH WITH THE CENTERLINE OF THE MOUNT. THAT IS, NO OFFSET HAS BEEN CONSIDERED IN ACCORDANCE WITH THE ORDER FORM.

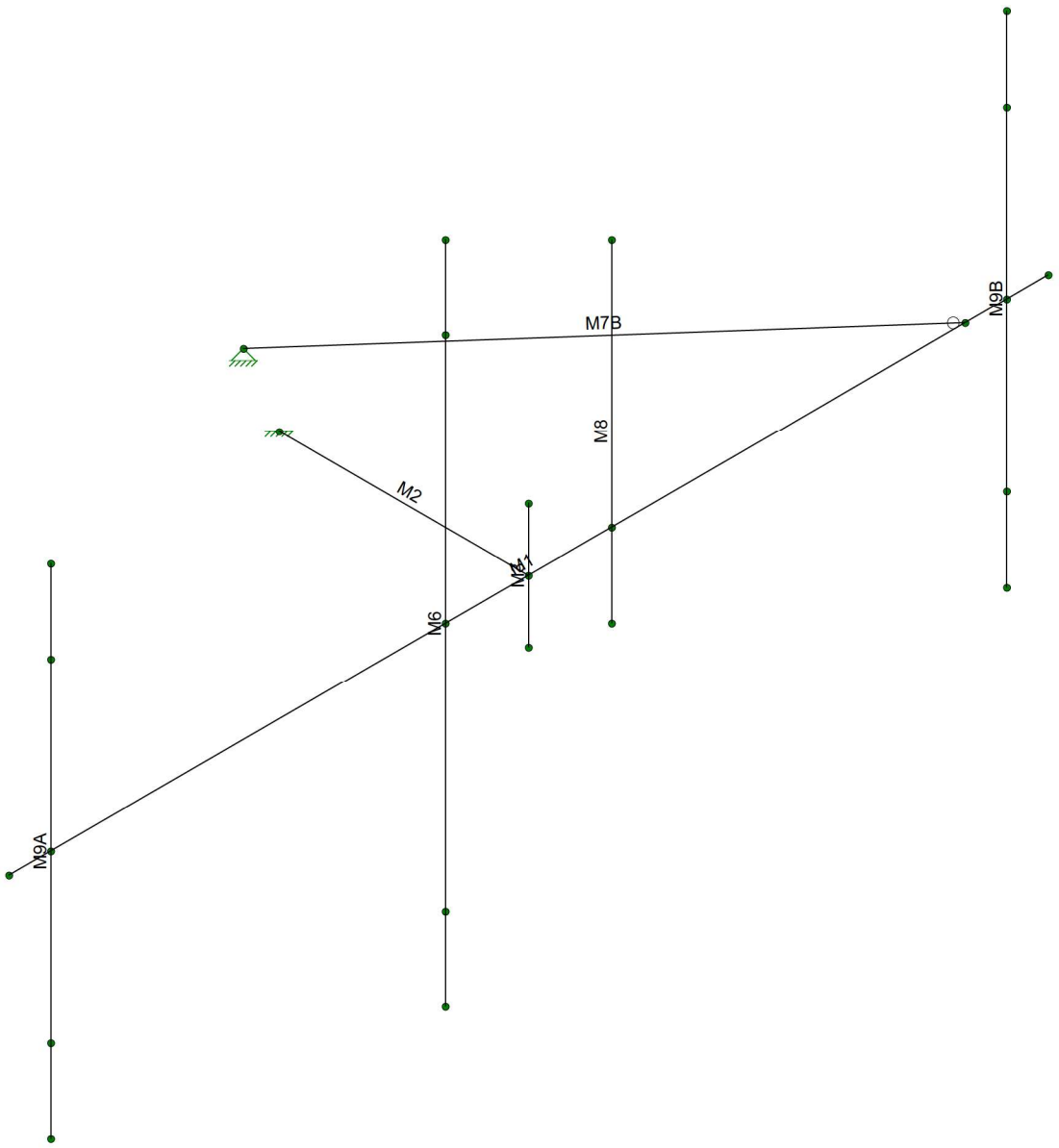
(E) EXISTING
(P) PROPOSED

GAMMA SECTOR IS CONSIDERED FOR DETAILED ANALYSIS

Tectonic	Gamma Sector	SK - 1
SM		July 23, 2018 at 3:14 PM
9500.842873		9500.842873 Mount Analysis- Gam...



Tectonic	Gamma Sector	SK - 2
SM		July 23, 2018 at 3:14 PM
9500.842873		9500.842873 Mount Analysis- Gam...



Tectonic	Gamma Sector	SK - 3
SM		July 23, 2018 at 3:14 PM
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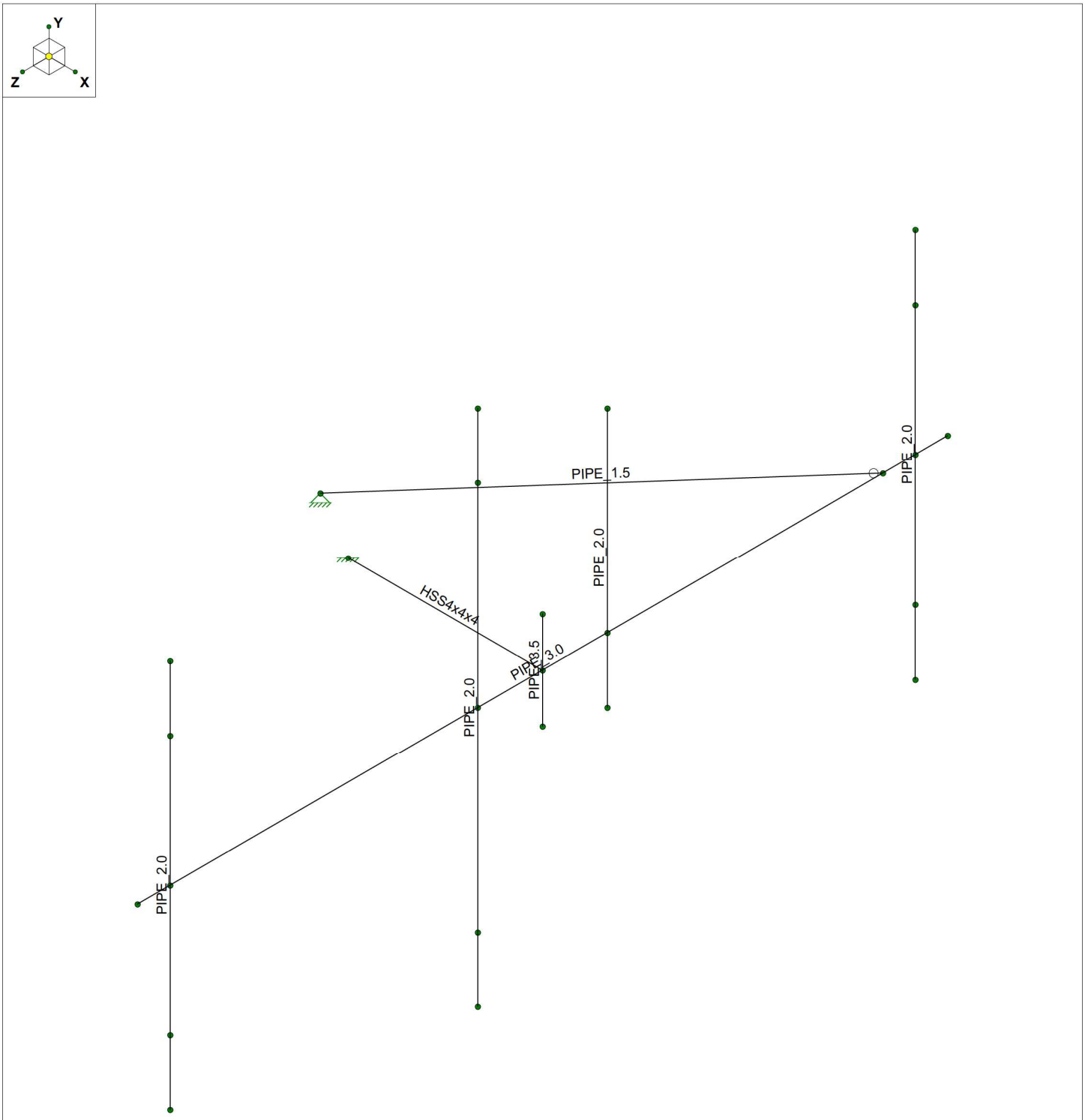

Tectonic	Gamma Sector	SK - 4
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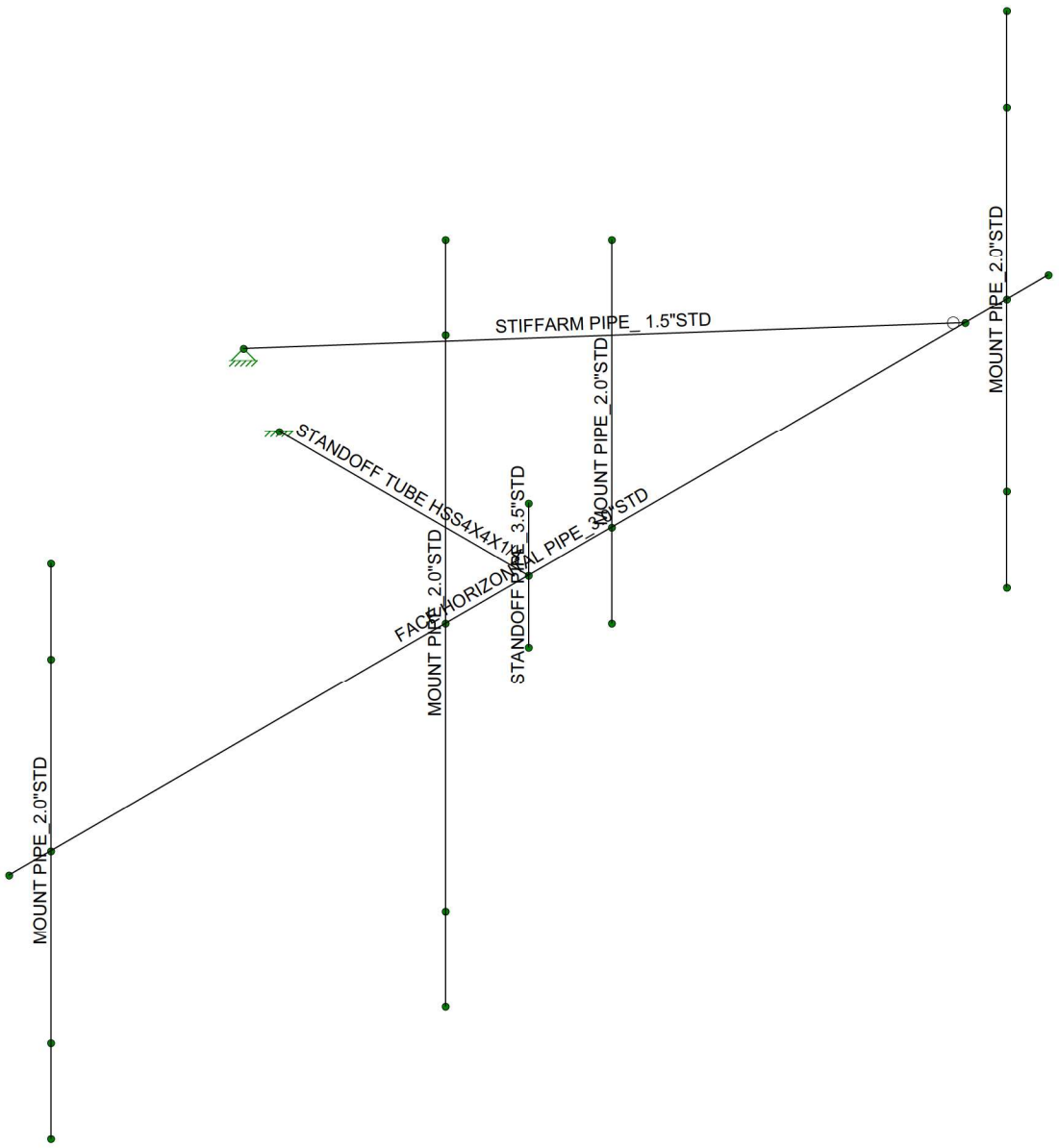

Tectonic	Gamma Sector	SK - 5
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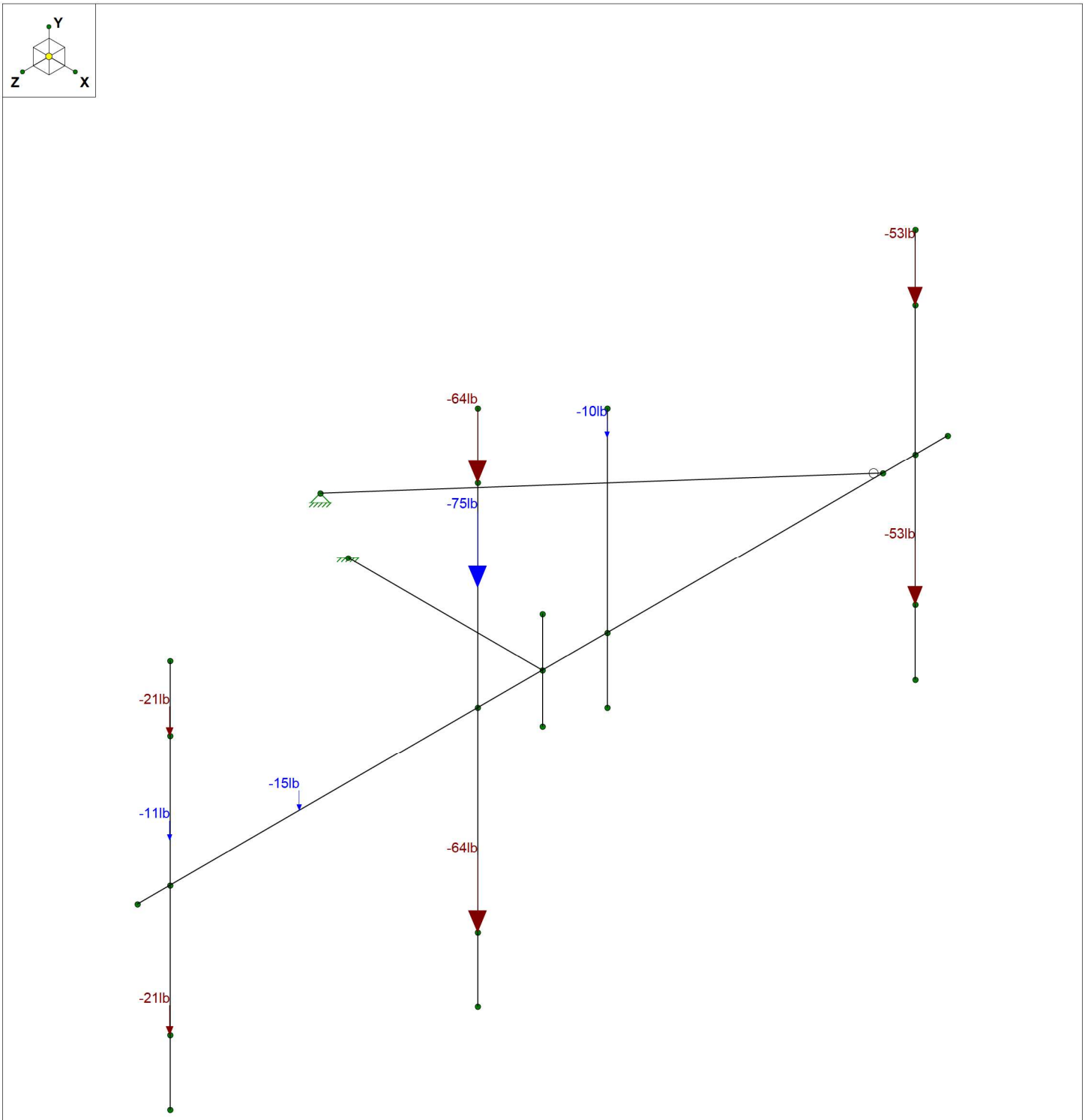
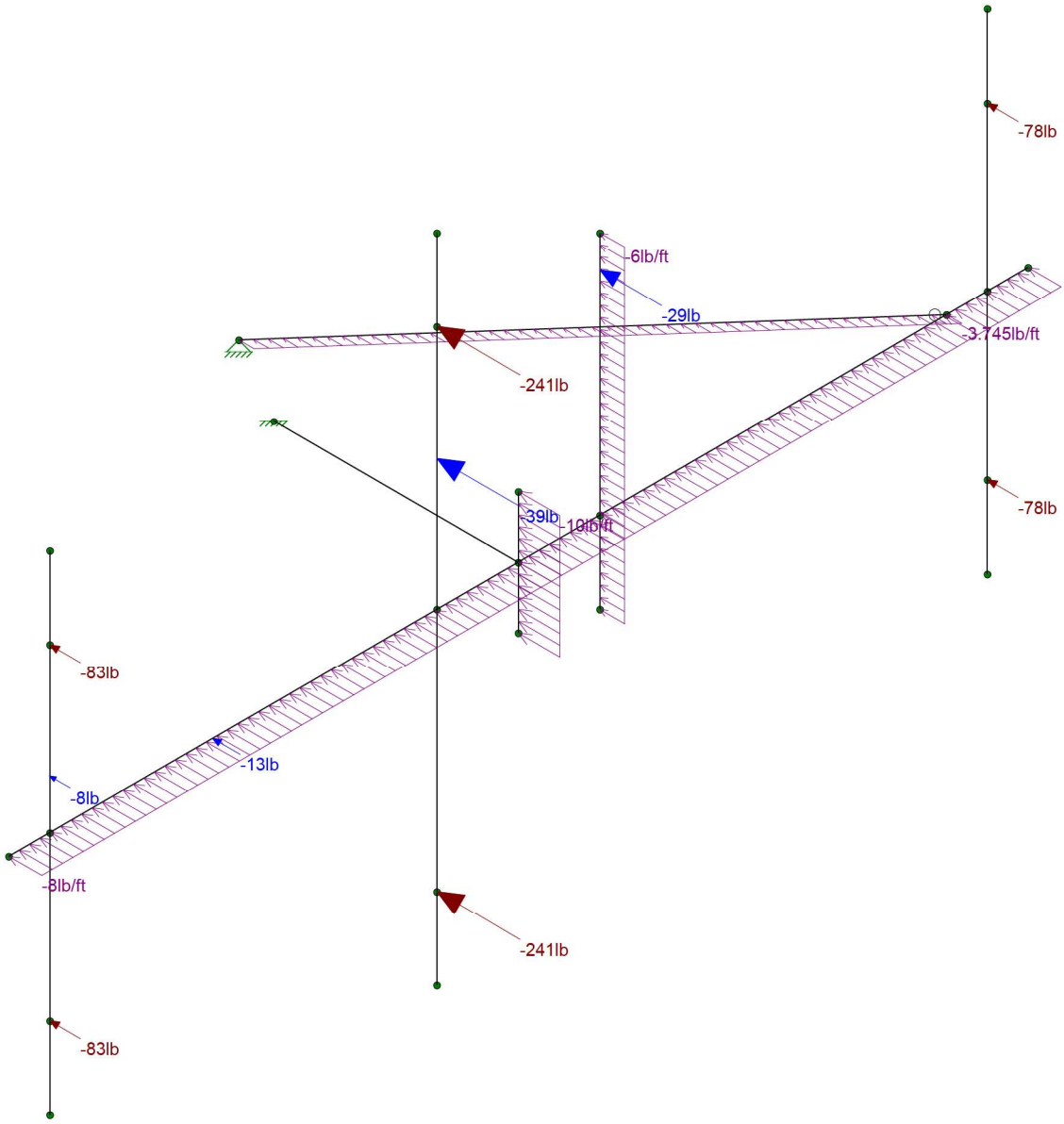


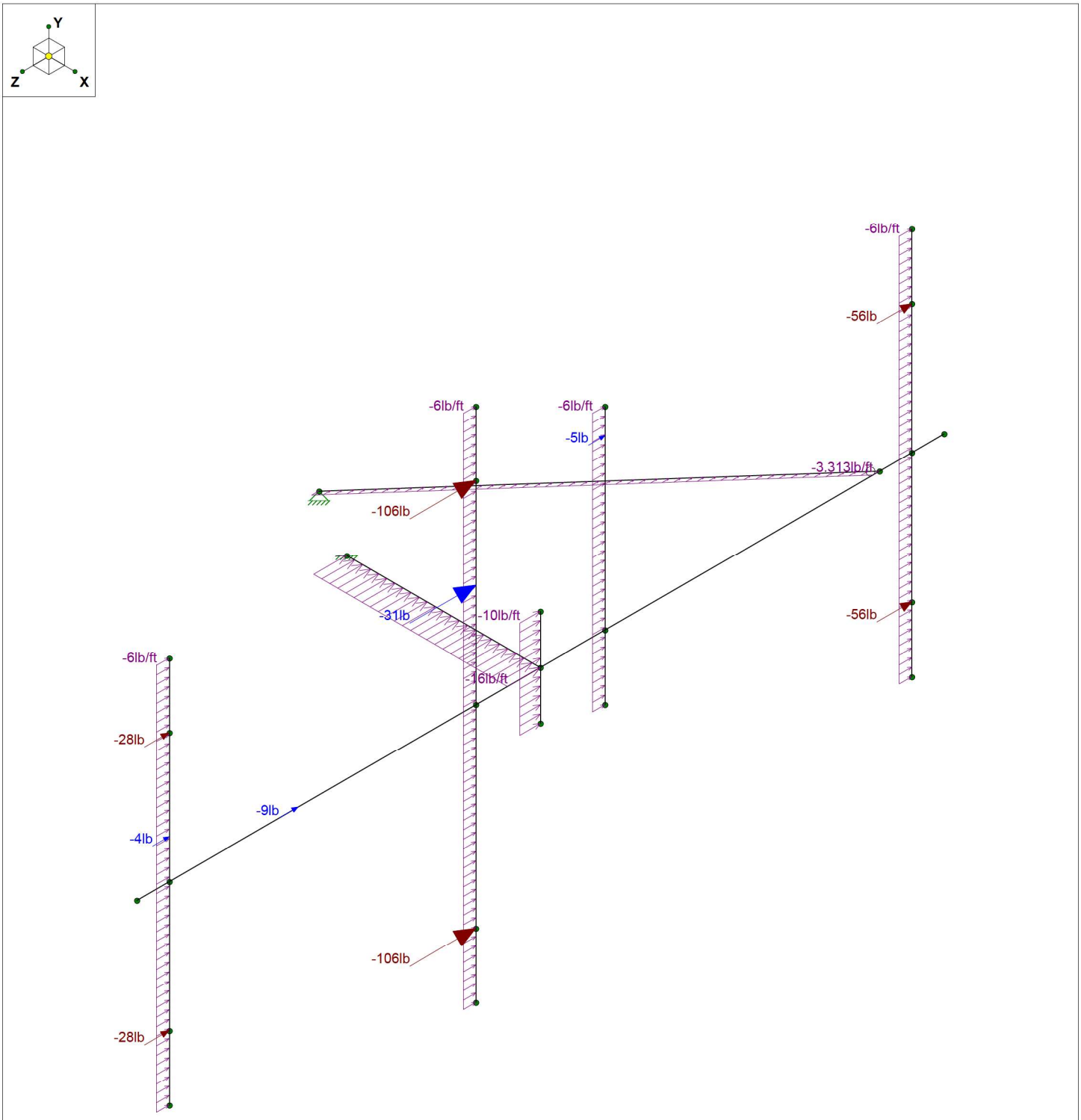
Loads: BLC 1, DEAD LOAD

Tectonic	Gamma Sector	SK - 6
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



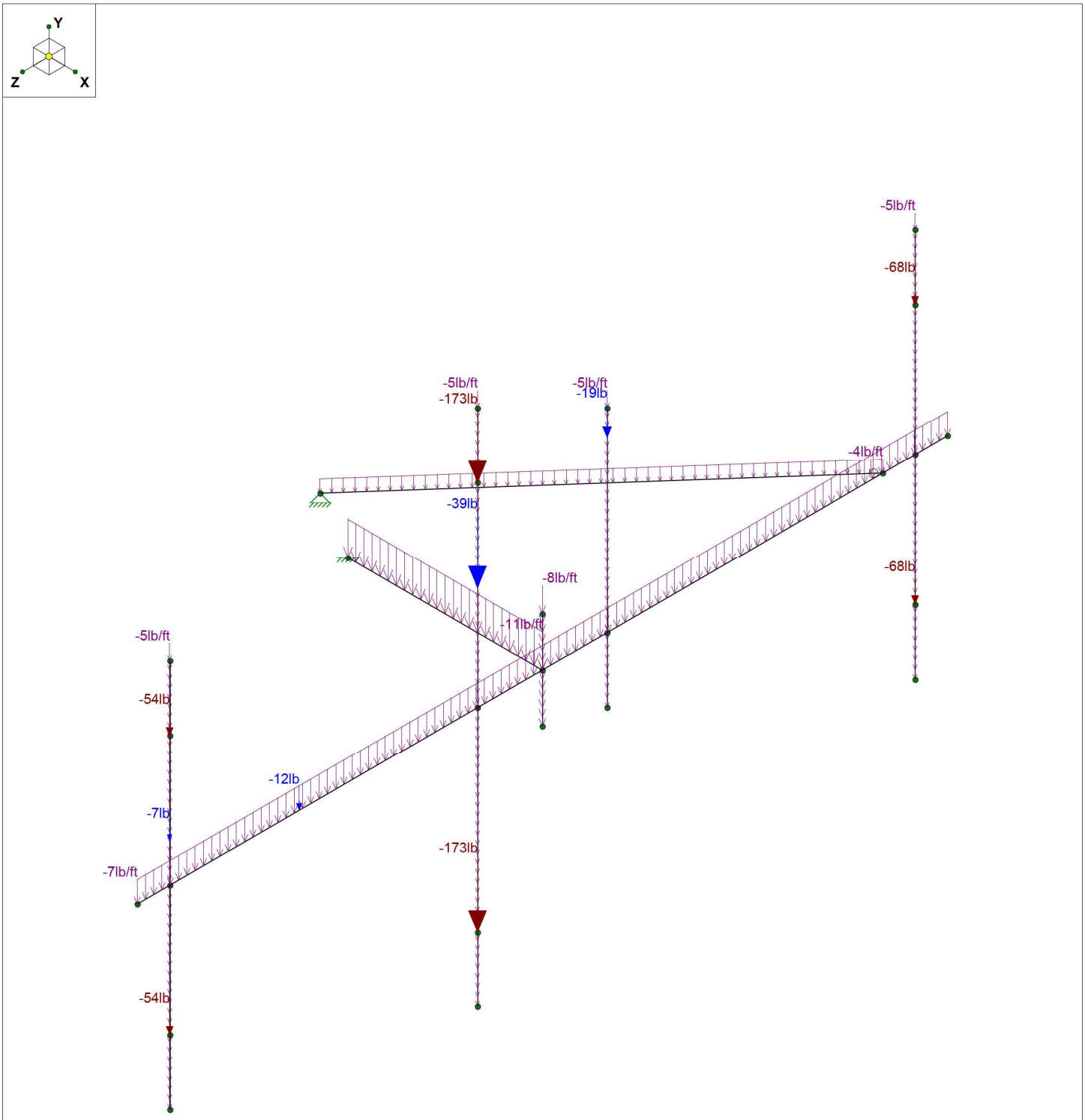
Loads: BLC 2, WIND X

Tectonic	Gamma Sector	SK - 7
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



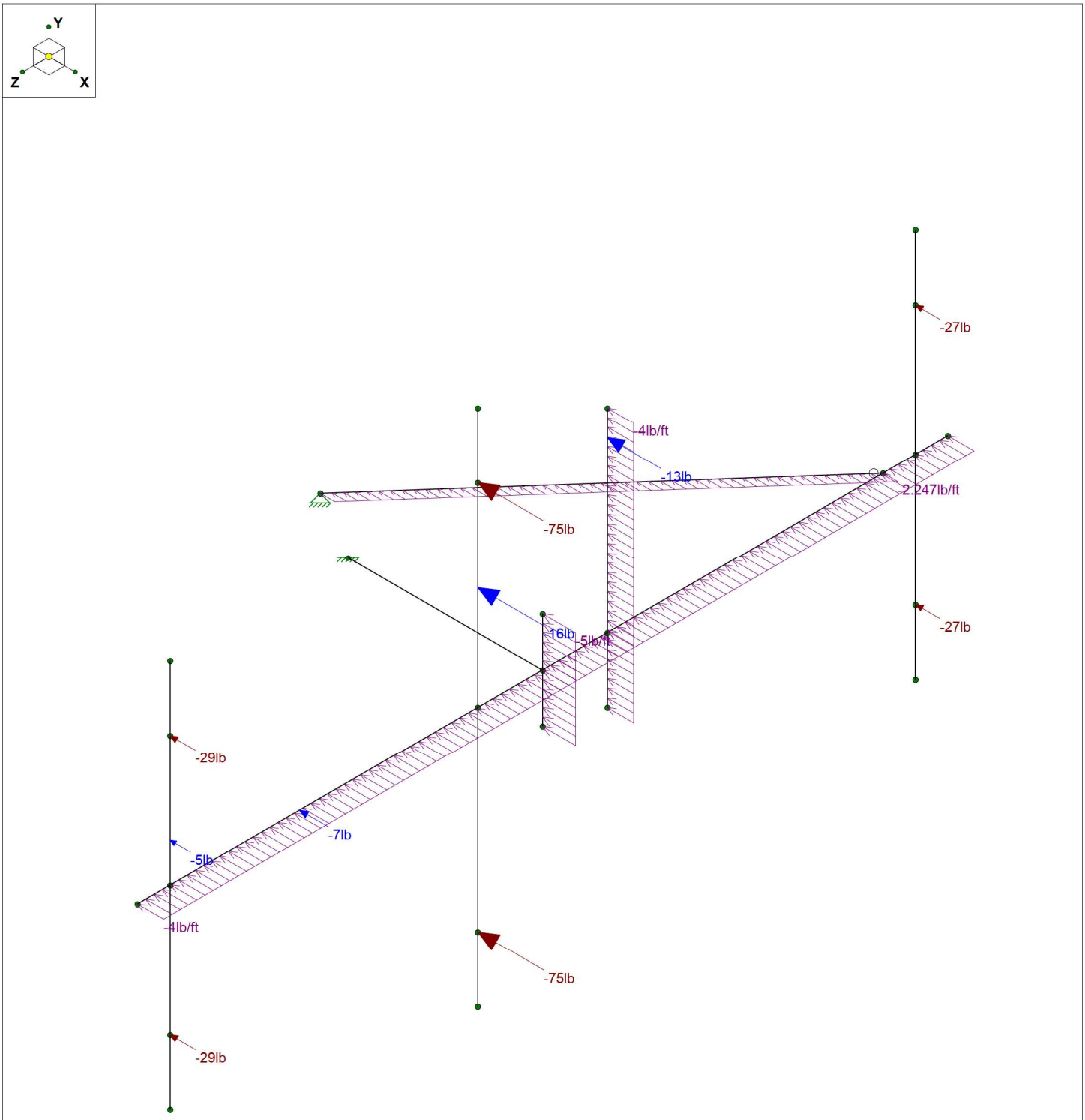
Loads: BLC 3, WIND Z

Tectonic	Gamma Sector	SK - 8
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



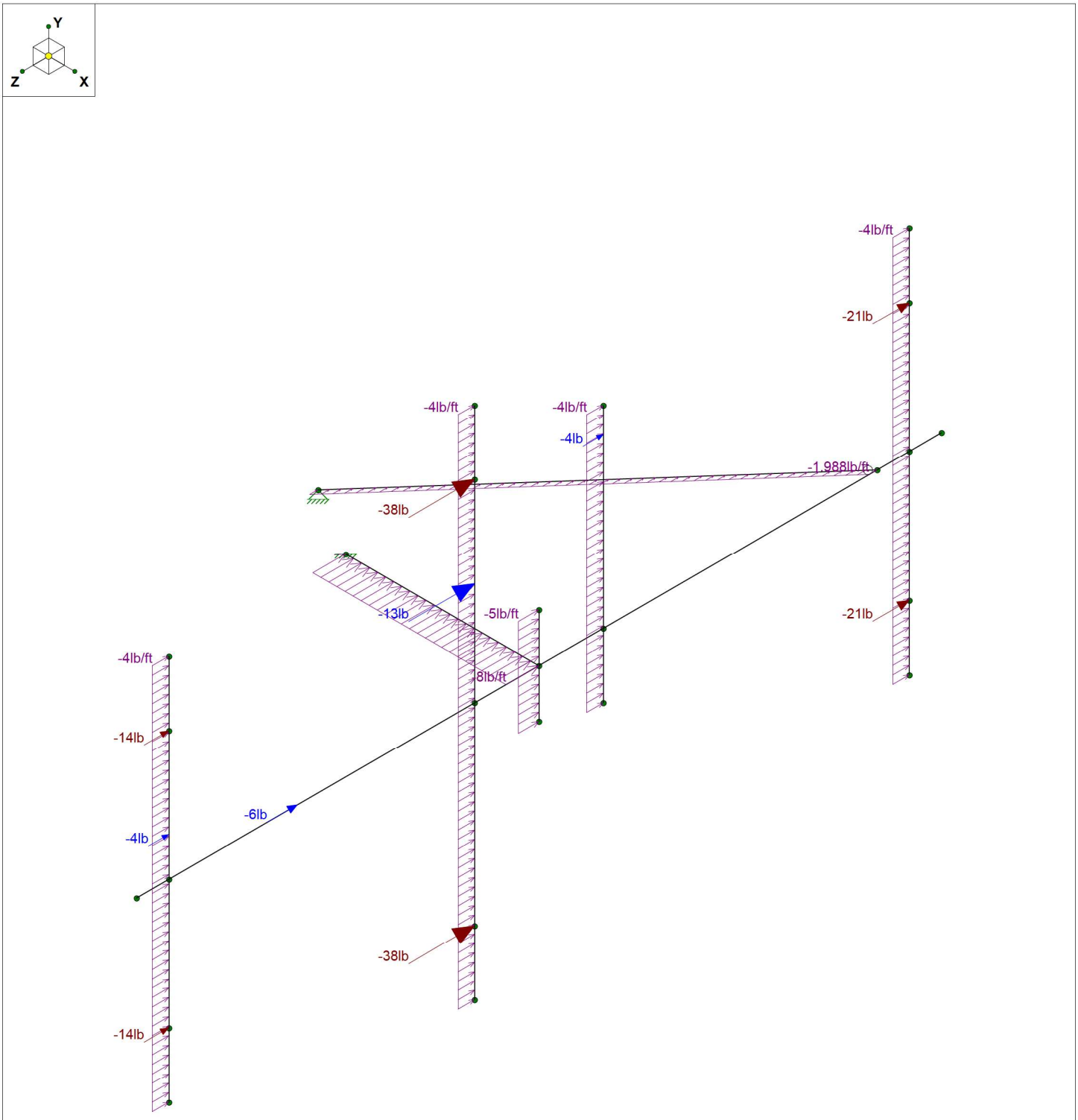
Loads: BLC 4, ICE LOAD

Tectonic	Gamma Sector	SK - 9
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



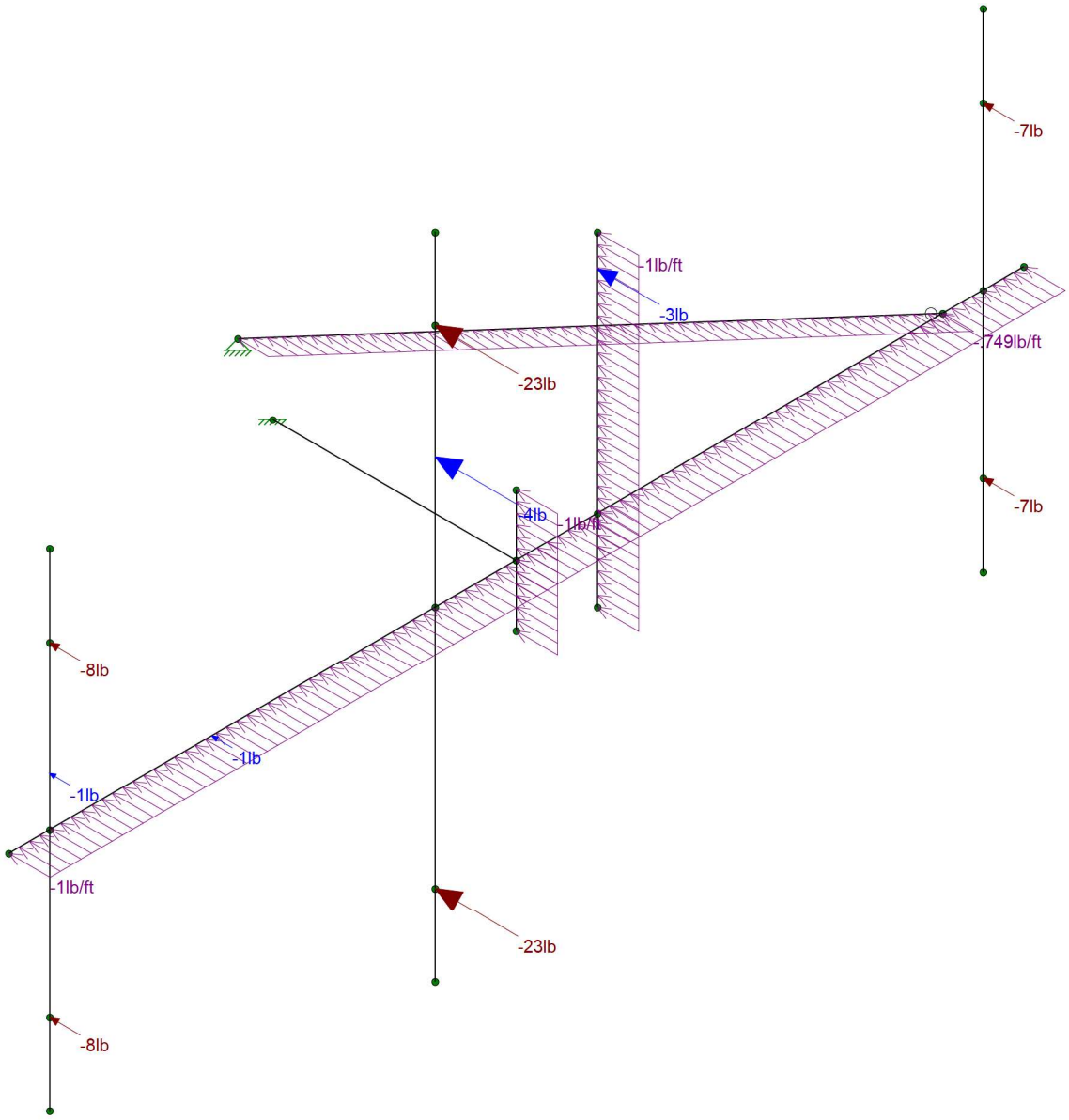
Loads: BLC 5, WIND + ICE IN X

Tectonic	Gamma Sector	SK - 10
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



Loads: BLC 6, WIND + ICE IN Z

Tectonic	Gamma Sector	SK - 11
SM		July 23, 2018 at 3:15 PM
9500.842873		9500.842873 Mount Analysis- Gam...



Loads: BLC 7, WIND X Main

Tectonic	Gamma Sector	SK - 12
SM		July 23, 2018 at 4:23 PM
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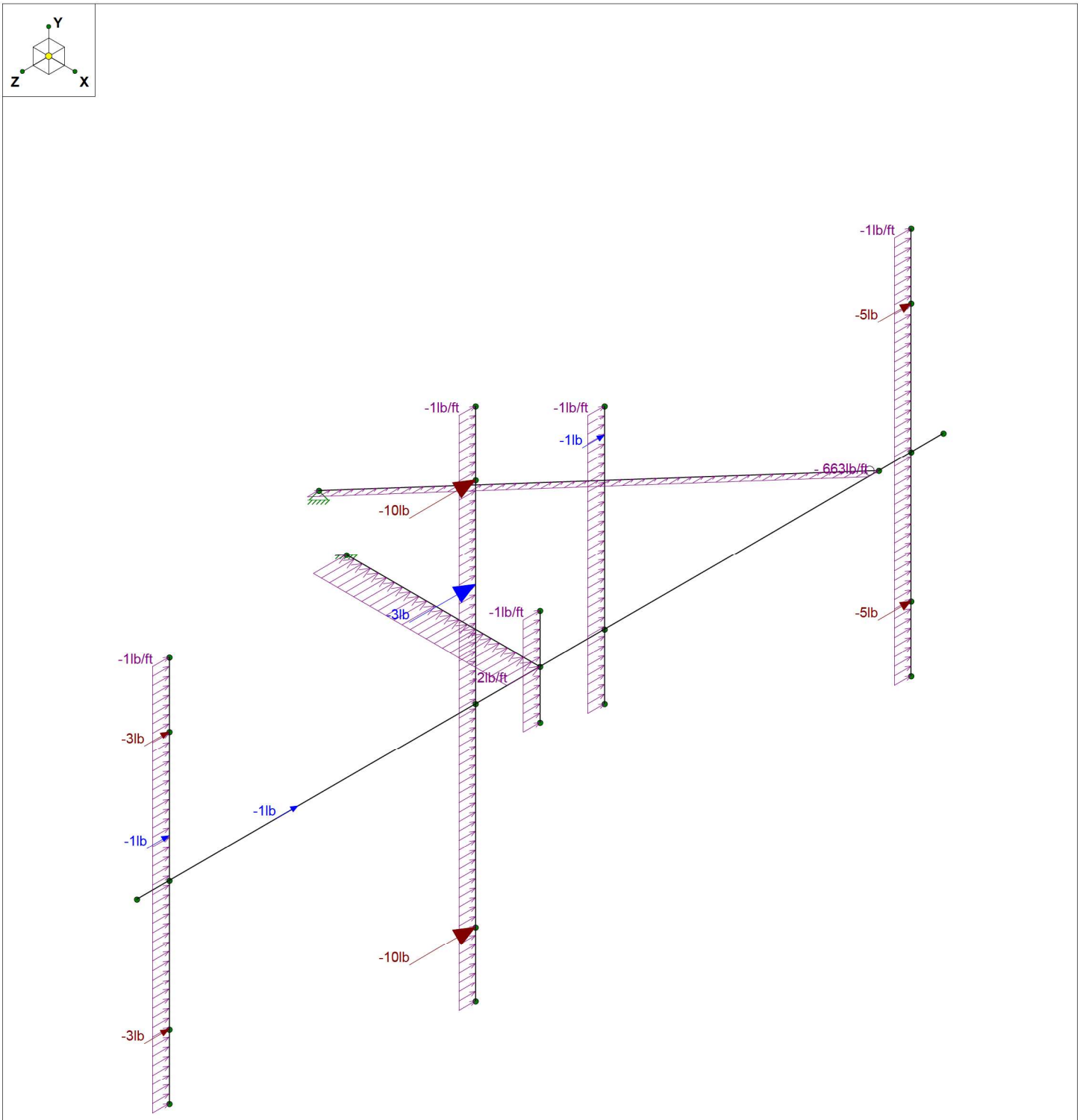
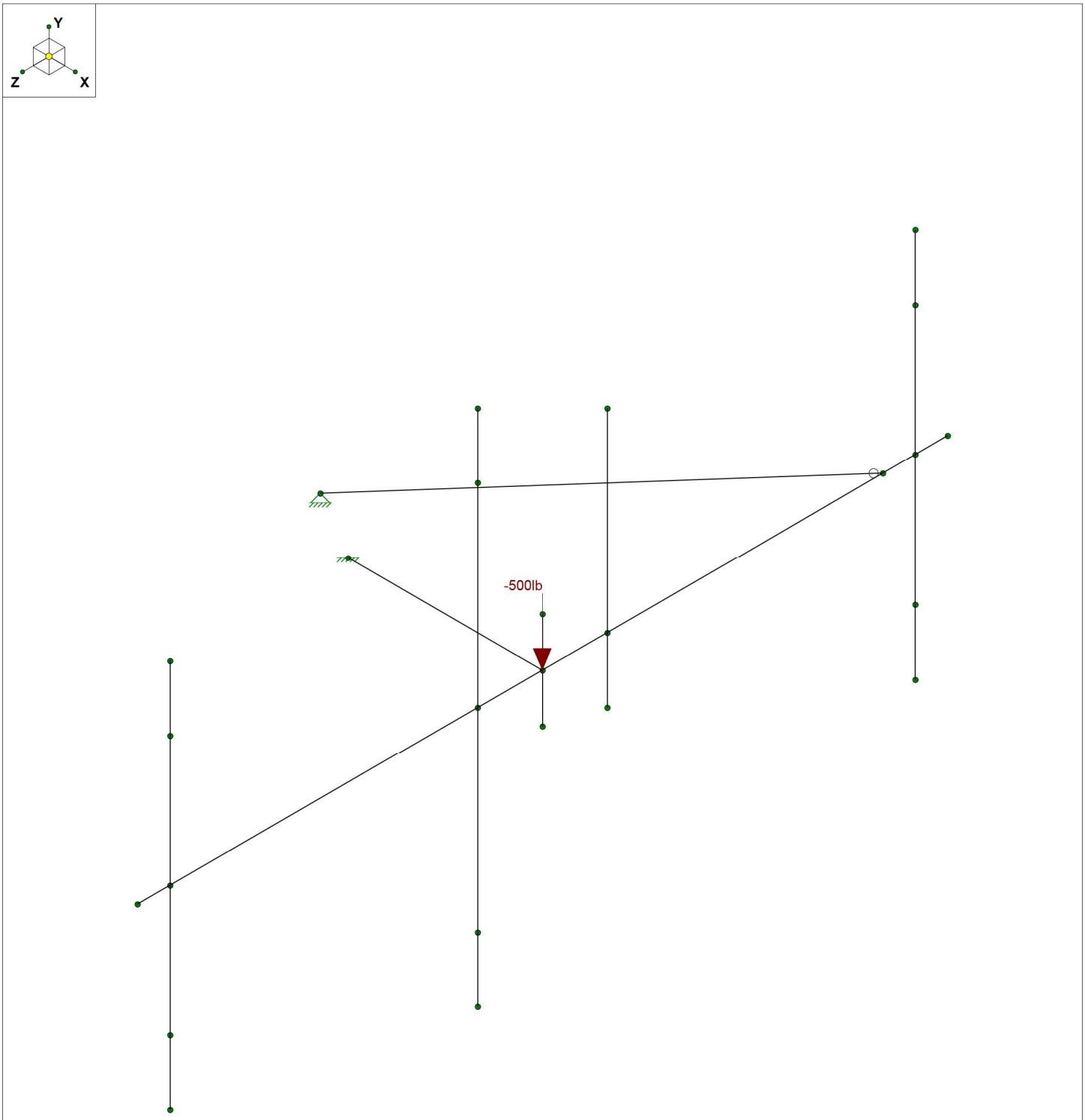


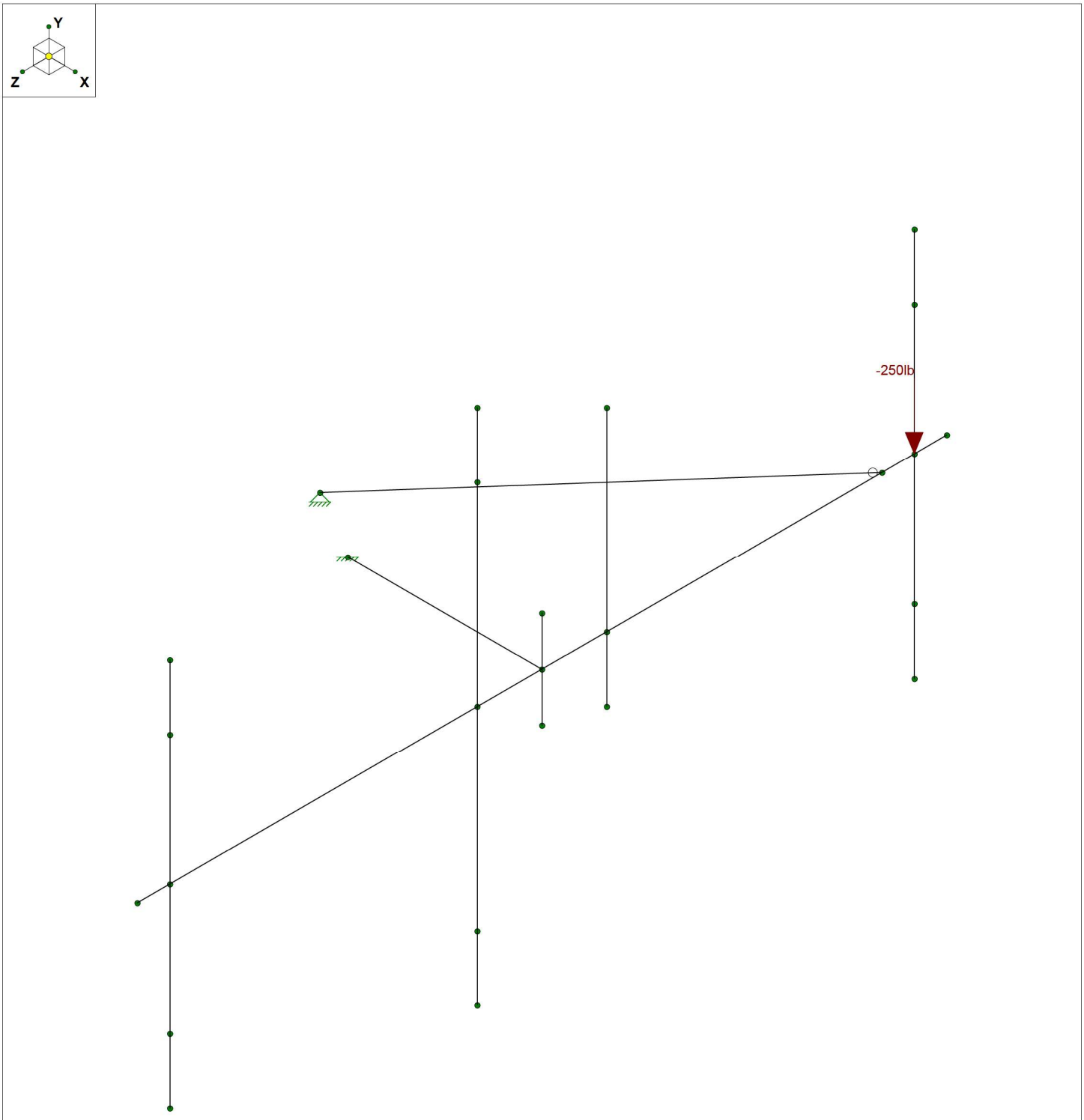
Loads: BLC 8, WIND Z Main

Tectonic	Gamma Sector	SK - 13
SM		July 23, 2018 at 3:16 PM
9500.842873		9500.842873 Mount Analysis- Gam...



Loads: BLC 9, LM1

Tectonic	Gamma Sector	SK - 14
SM		July 23, 2018 at 3:16 PM
9500.842873		9500.842873 Mount Analysis- Gam...



250 LB LIVE LOAD
APPLIED INDIVIDUALLY
AT MOUNT PIPE
LOCATION.
(4 LOCATION TOTAL)

Loads: BLC 10, LV1

Tectonic	Gamma Sector	SK - 15
SM		July 23, 2018 at 3:16 PM
9500.842873		9500.842873 Mount Analysis- Gam...

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Tectonic	Job No.	9500.842873		
	Sheet No.	1	of	3
	Calculated By	SM	Date :	07/23/18
	Checked By	KZ	Date :	07/23/18

WIND AND ICE LOADS PER TIA-222-G

W.O.	9500.842873
Project Name	SHELTON NE
Location	30 Oliver Terrace, Shelton, CT 06484
County	Fairfield

Tower Type	MP	Monopole
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)	120
	Kh	N/A
	Kzt	1.00
	Kz	1.04
	Kiz	1.14
Wind Pressure, qz (psf)	No Ice	23.82
	With Ice	6.33
	Service	2.28
(tiz)	Ice Thk	1.71
Appurtenances (qzGh)	No Ice	23.82
	With Ice	6.33
	Service	2.28

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

Tectonic

Job No.	9500.842873		
Sheet No.	2	of	3
Calculated By	SM	Date :	07/23/18
Checked By	KZ	Date :	07/23/18

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-E-A20	E	3	120	4.99	13.00	3.15	Flat	1.80	1.29	1.31	7.08	5.41	20.99	167	56	41.8	125.4
AIR32 DB B66AA B2A	**P**	**3**	120	4.72	12.90	8.70	Flat	1.38	1.28	3.42	14.14	5.07	19.53	155	112	105.8	317.4
APXVAARR24_43-U-NA20	**P**	**3**	120	7.99	24.00	8.70	Flat	1.53	1.27	5.79	26.67	15.98	60.73	482	212	128.0	384.0
KRY 112 144/1	E	3	120	0.58	6.00	3.00	Flat	1.20	1.20	0.15	0.53	0.29	1.05	8	4	11.0	33.0
KRY 112 489/2	E	3	120	0.92	6.10	3.94	Flat	1.21	1.20	0.30	1.10	0.47	1.68	13	9	15.4	46.2
SQUARE PANEL	E	1	120	1.00	12.00	2.00	Flat	1.36	1.20	0.17	0.23	1.00	1.20	29	5	10.0	10.0
RADIO 4449 B12/B71	**P**	**3**	120	1.25	13.20	10.40	Flat	1.20	1.20	1.08	3.90	1.38	4.95	39	31	75.0	225.0
										$\sum(CaA_A)_T$	53.63	$\sum(CaA_A)_N$	110.12				1141

Note: Appurtenances listed above are to be installed along (3) sectors, except the square panel antenna.

Wind with Ice Load Combinations **Ice Thk=** 1.71 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-E-A20	E	3.00	120.00	5.28	16.41	6.56	Cylindrical	1.49	1.26	2.89	12.88	7.22	27.29	58	27	13.4	107.0
AIR32 DB B66AA B2A	P	3.00	120.00	5.00	16.31	12.11	Cylindrical	1.31	1.25	5.05	19.83	6.80	25.54	54	42	17.0	135.2
APXVAARR24_43-U-NA20	P	3.00	120.00	8.28	27.41	12.11	Cylindrical	1.44	1.25	8.35	36.09	18.91	70.89	150	76	43.6	346.9
KRY 112 144/1	E	3.00	120.00	0.37	9.41	6.41	Cylindrical	1.20	1.20	0.46	1.67	0.68	2.45	5	4	0.9	7.0
KRY 112 489/2	E	3.00	120.00	1.20	9.51	7.35	Cylindrical	1.20	1.20	0.74	2.65	0.95	3.43	7	6	1.5	12.2
SQUARE PANEL	E	1.00	120.00	1.28	15.41	5.41	Cylindrical	1.22	1.20	0.58	0.70	1.65	1.98	13	4	2.3	18.6
RADIO 4449 B12/B71	P	3.00	120.00	1.53	16.61	13.81	Cylindrical	1.20	1.20	1.77	6.36	2.12	7.65	16	13	4.9	39.2
										$\sum(CaA_A)_T$	80.18	$\sum(CaA_A)_N$	139.23				666

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-E-A20	E	3	120	4.99	13	3.15	Flat	1.80	1.29	1.31	7.08	5.41	20.99	16	5
AIR32 DB B66AA B2A	P	3	120	4.72	12.9	8.7	Flat	1.38	1.28	3.42	14.14	5.07	19.53	15	11
APXVAARR24_43-U-NA20	P	3	120	7.99	24	8.7	Flat	1.53	1.27	5.79	26.67	15.98	60.73	46	20
KRY 112 144/1	E	3	120	0.58	6	3	Flat	1.20	1.20	0.15	0.53	0.29	1.05	1	0
KRY 112 489/2	E	3	120	0.92	6.1	3.94	Flat	1.21	1.20	0.30	1.10	0.47	1.68	1	1
SQUARE PANEL	E	1	120	1.00	12	2	Flat	1.36	1.20	0.17	0.23	1.00	1.20	3	1
RADIO 4449 B12/B71	P	3	120	1.25	13.2	10.4	Flat	1.20	1.20	1.08	3.90	1.38	4.95	4	3
										$\sum(CaA_A)_T$	53.63	$\sum(CaA_A)_N$	110.12		

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 9500.842873
Sheet No. 3 of 3
Calculated By SM Date : 07/23/18
Checked By KZ Date : 07/23/18

Existing T-Arm Mount

Mount Center Line= 120 ft

Member sizes and dimensions are based on historical data and photos

Reduction Factor = 1 Section 2.6.9

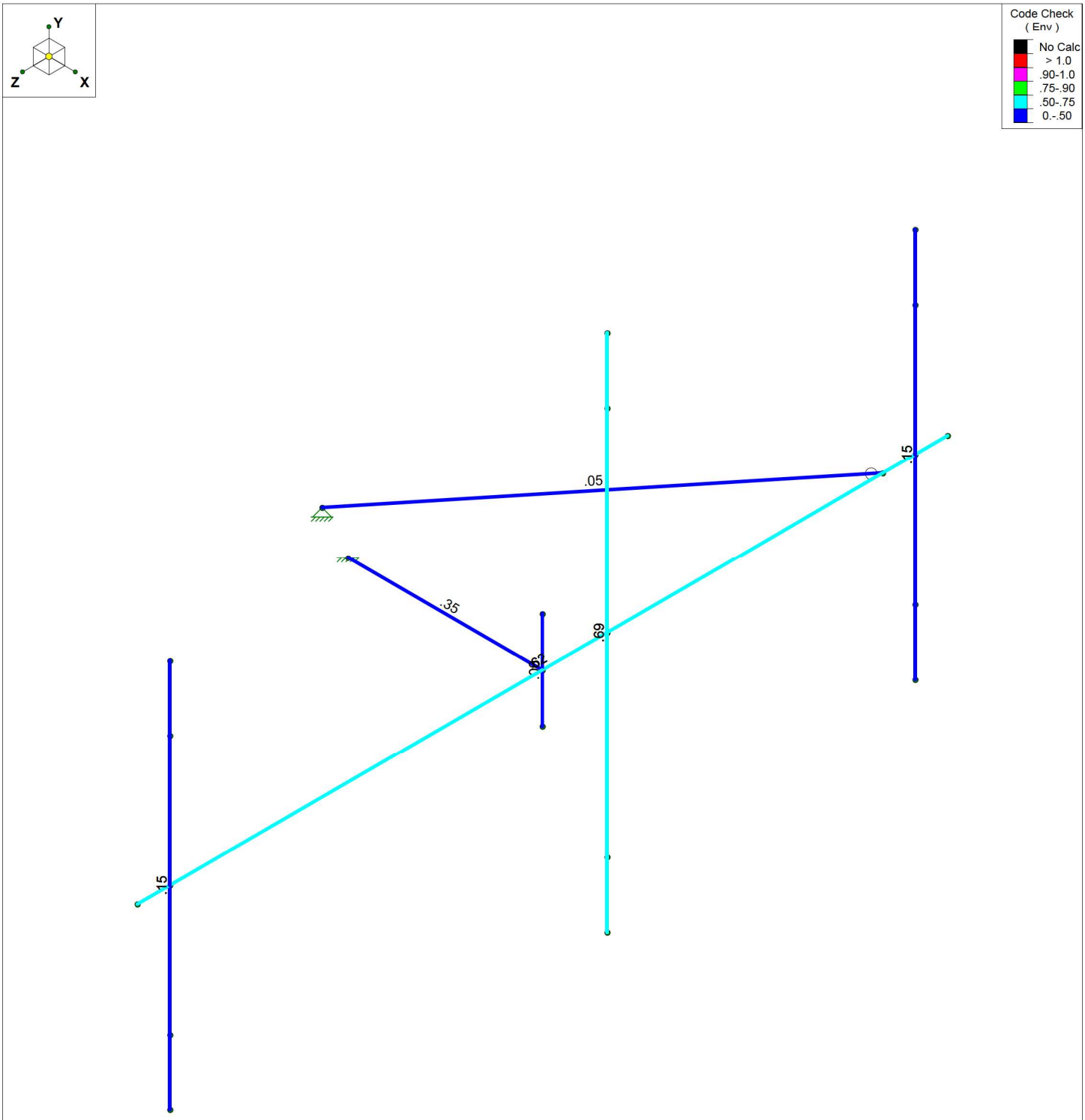
Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical ?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	ServiceWind Force (lbs/ft)
FACE HORIZONTAL PIPE_3.0"STD	3	13.00	3.50	3.50	Cylindrical	1.2	13.65	8.3	35.72	7.3	26.96	4.4	0.8
MOUNT PIPE_2.0"STD	3	8.00	2.40	2.40	Cylindrical	1.2	5.76	5.7	15.07	5.0	13.95	3.7	0.5
MOUNT PIPE_2.0"STD	7	6.00	2.40	2.40	Cylindrical	1.2	10.08	5.7	26.38	5.0	24.42	3.7	0.5
STANDOFF TUBE HSS4X4X1/4	3	3.00	4.00	4.00	Flat	2	6.00	15.9	12.00	10.6	11.12	7.8	1.5
STANDOFF PIPE_3.5"STD	3	1.50	4.00	4.00	Cylindrical	1.2	1.80	9.5	4.71	8.3	3.34	4.7	0.9
STIFFARM PIPE_1.5"STD	3	6.35	1.90	1.90	Cylindrical	1.2	3.62	4.5	9.47	4.0	10.12	3.4	0.4

Note: The members listed above are for three T-arm mounts

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

ALPHA & BETA SECTOR



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic	Alpha & Beta Sector	SK - 16
SM		July 23, 2018 at 1:53 PM
9500.842873		9500.842873 Mount Analysis- Alph...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	FACE HORIZONTAL PIPE_...	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	MOUNT PIPE_2.0"STD	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	STANDOFF TUBE HSS4X4...	HSS4x4x4	Beam	Tube	A500 Gr.B...	Typical	3.37	7.8	7.8	12.8
4	STANDOFF PIPE_3.5"STD	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
5	STIFFARM PIPE_ 1.5"STD	PIPE_1.5	Beam	Pipe	A53 Gr.B	Typical	.749	.293	.293	.586

Basic Load Cases

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

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...
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** Location 1																							
47	1.2D+1.5Lv1	Yes	Y		1	1.2	10	1.5																
48	**Maintenance Load** Location 2																							
49	1.2D+1.5Lv2	Yes	Y		1	1.2	11	1.5																
50	**Maintenance Load** Location 3																							
51	1.2D+1.5Lv3	Yes	Y		1	1.2	12	1.5																

Envelope Joint Reactions

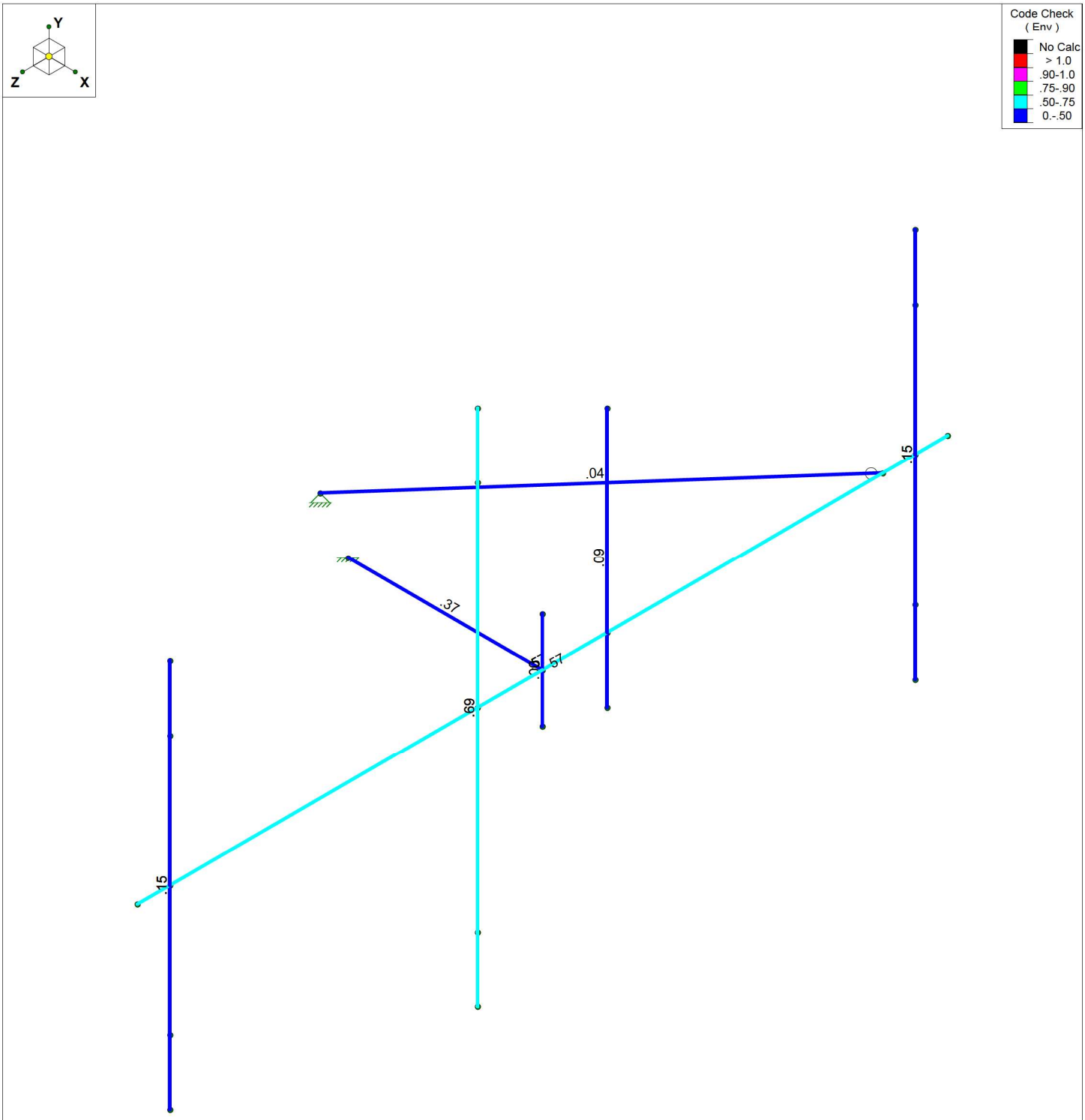
	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N4	max	1246.468	2	1617.815	20	1145.587	6	2787.031	47	2793.069	13	4847.304	25
2		min	-1246.491	10	719.914	10	-1145.721	12	-1528.212	51	-2793.003	3	2052.516	2
3	N13	max	358.185	2	23.806	26	419.3	10	0	1	0	1	0	1
4		min	-358.162	10	6.45	5	-419.048	2	0	1	0	1	0	1
5	Totals:	max	1604.653	2	1638.352	25	1002.141	3						
6		min	-1604.653	10	733.252	2	-1002.141	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	M6	PIPE_2.0	.692	4	2	.060	4		8	14916...	32130	1871....	1871....	...	H1-1b
2	M1	PIPE_3.0	.617	6.25	47	.081	6.25		25	28250...	65205	5748....	5748....	...	H1-1b
3	M2	HSS4x4x4	.348	3	18	.232	3	y	47	13436...	139518	16180...	16180....	...	H1-1b
4	M8A	PIPE_2.0	.151	3	2	.018	3		11	20866...	32130	1871....	1871....	...	H1-1b
5	M8B	PIPE_2.0	.145	3	10	.029	3		3	20866...	32130	1871....	1871....	...	H1-1b
6	M7B	PIPE_1.5	.051	3.075	5	.003	6.15		20	11569...	23593...	1105....	1105....	...	H1-1b
7	M3	PIPE_3.5	.001	.75	9	.001	.75		10	78031...	78750	7953....	7953....	...	H1-1b

MAXIMUM MEMBER STRESS IS AT 69% OF IT'S CAPACITY, THEREFORE, IT IS ADEQUATE TO SUPPORT THE PROPOSED UPGRADE

GAMMA
SECTOR



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic	Gamma Sector	SK - 16
SM		July 23, 2018 at 3:16 PM
9500.842873		9500.842873 Mount Analysis- Gam...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	FACE HORIZONTAL PIPE_...	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	MOUNT PIPE_2.0"STD	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	STANDOFF TUBE HSS4X4...	HSS4x4x4	Beam	Tube	A500 Gr.B...	Typical	3.37	7.8	7.8	12.8
4	STANDOFF PIPE_3.5"STD	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
5	STIFFARM PIPE_ 1.5"STD	PIPE_1.5	Beam	Pipe	A53 Gr.B	Typical	.749	.293	.293	.586

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1	DEAD LOAD	DL		-1.05		6	4			
2	WIND X	WLX				6	4	5		
3	WIND Z	WLZ				6	4	8		
4	ICE LOAD	SL				6	4	8		
5	WIND + ICE IN X	WL+X				6	4	5		
6	WIND + ICE IN Z	WL+Z				6	4	8		
7	WIND X Main	WL+X				6	4	5		
8	WIND Z Main	WL+Z				6	4	8		
9	LM1	OL1				1				
10	LV1	OL2				1				
11	LV2	OL3				1				
12	LV3	OL4				1				
13	LV4	OL5				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....																
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																

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...
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** Location 1																							
47	1.2D+1.5Lv1	Yes	Y		1	1.2	10	1.5																
48	**Maintenance Load** Location 2																							
49	1.2D+1.5Lv2	Yes	Y		1	1.2	11	1.5																
50	**Maintenance Load** Location 3																							
51	1.2D+1.5Lv3	Yes	Y		1	1.2	12	1.5																
52	**Maintenance Load** Location 4																							
53	1.2D+1.5Lv4	Yes	Y		1	1.2	13	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	N4	max	1460.155	2	1685.479	20	1128.452	3	2258.41	47	3162.543	14	5126.089	25
2		min	-1460.126	10	751.272	11	-1128.393	13	-2057.449	53	-3163.282	8	1985.746	2
3	N23	max	238.759	5	22.978	26	244.627	11	0	1	0	1	0	1
4		min	-239.433	11	8.22	5	-243.557	5	0	1	0	1	0	1
5	Totals:	max	1688.054	2	1706.849	25	1050.202	3						
6		min	-1688.054	10	762.747	2	-1050.202	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	M6	PIPE_2.0	.692	4	2	.060	4		12	14916...	32130	1871....	1871....	...	H1-1b
2	M1	PIPE_3.0	.573	6.25	47	.101	6.25		10	28250...	65205	5748....	5748....	...	H1-1b
3	M2	HSS4x4x4	.370	3	23	.195	3	y	47	13436...	139518	16180...	16180...	...	H1-1b
4	M9A	PIPE_2.0	.151	3	2	.018	3		11	20866...	32130	1871....	1871....	...	H1-1b
5	M9B	PIPE_2.0	.145	3	10	.029	3		3	20866...	32130	1871....	1871....	...	H1-1b
6	M8	PIPE_2.0	.088	3	10	.008	3		10	26521...	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
7	M7B	PIPE_1.5	.042	3.075	5	.003	6.1...	20	11567...	23593...	1105....	1105....	...	H1-1b
8	M3	PIPE_3.5	.001	.75	10	.001	.75	10	78031...	78750	7953....	7953....	...	H1-1b

MAXIMUM MEMBER STRESS IS AT 69% OF IT'S CAPACITY, THEREFORE, IT IS ADEQUATE TO SUPPORT THE PROPOSED UPGRADE

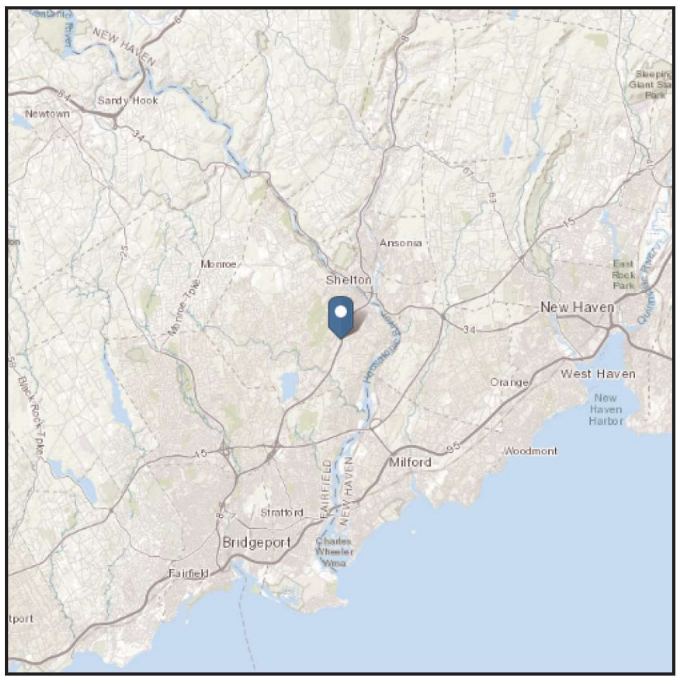
NOTE:
EXISTING CONNECTION INFORMATION WAS NOT MADE AVAILABLE, THEREFORE COULD NOT BE ANALYZED IN DETAIL. HOWEVER, BASED ON THE CURRENT REACTIONS AND STRESS RATIO'S IN THE FRAME MEMBERS, WE EXPECT THE EXISTING CONNECTIONS TO BE ADEQUATE TO SUPPORT THE PROPOSED UPGRADE.

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 311.07 ft (NAVD 88)
Latitude: 41.293947
Longitude: -73.107175



Wind

Results:

Wind Speed:	123 Vmph Use 125 mph in accordance with CT design criteria
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 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 Jul 18 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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

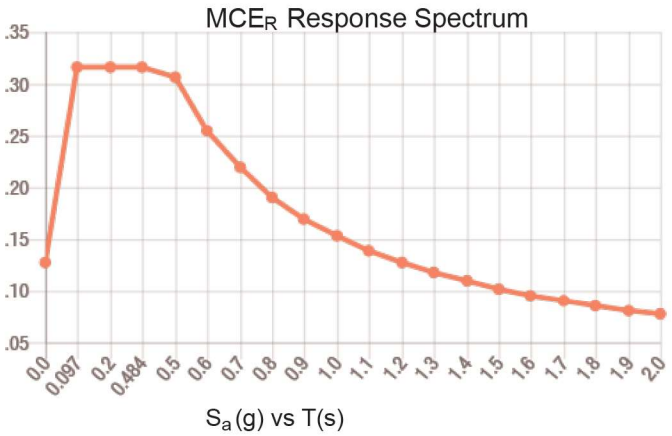
Seismic

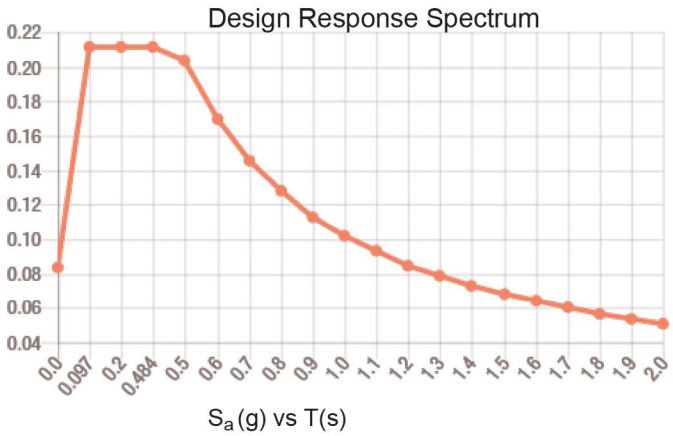
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.198	S_{DS} :	0.211
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.105
S_{MS} :	0.316	PGA_M :	0.167
S_{M1} :	0.153	F_{PGA} :	1.589
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jul 18 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 Jul 18 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.

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTFF531A

Shelton_RT8-AT&T
30 Oliver Terrace
Shelton, CT 06484

October 8, 2018

EBI Project Number: 6218006561

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	14.37 %

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

EBI Consulting
environmental | engineering | due diligence

October 8, 2018

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

Emissions Analysis for Site: **CTFF531A – Shelton_RT8-AT&T**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **30 Oliver Terrace, 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 **30 Oliver Terrace, 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) 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 **Ericsson AIR32 DB B66Aa/B2A** & **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 **120 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:	Ericsson AIR32 DB B66Aa/B2A	Make / Model:	Ericsson AIR32 DB B66Aa/B2A	Make / Model:	Ericsson AIR32 DB B66Aa/B2A
Gain:	15.9 dBd	Gain:	dBd	Gain:	dBd
Height (AGL):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 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	4	Channel Count	4	Channel Count	4
Total TX Power(W):	200	Total TX Power(W):	200	Total TX Power(W):	200
ERP (W):	7,780.90	ERP (W):	7,780.90	ERP (W):	7,780.90
Antenna A1 MPE%	**2.15**	Antenna B1 MPE%	**2.15**	Antenna C1 MPE%	**2.15**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
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:	dBd	Gain:	dBd
Height (AGL):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 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	2	Channel Count	2	Channel Count	2
Total TX Power(W):	55	Total TX Power(W):	55	Total TX Power(W):	55
ERP (W):	2,346.19	ERP (W):	2,346.19	ERP (W):	2,346.19
Antenna A2 MPE%	**0.65**	Antenna B2 MPE%	**0.65**	Antenna C2 MPE%	**0.65**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95 / 13.35 dBd	Gain:	dBd	Gain:	dBd
Height (AGL):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 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 A3 MPE%	**1.61**	Antenna B3 MPE%	**1.61**	Antenna C3 MPE%	**1.61**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.41 %**
AT&T	**2.06** %
MetroPCS	**0.44** %
J. Brennan Constrcn	**2.20** %
Clearwire	**0.39** %
Sprint	**2.64** %
Verizon Wireless	**2.23** %
Site Total MPE %:	**14.37 %**

T-Mobile Sector A Total:	4.41 %
T-Mobile Sector B Total:	4.41 %
T-Mobile Sector C Total:	4.41 %
Site Total:	14.37 %

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 LTE	2	1,556.18	120	8.61	PCS - 1900 MHz	1000.00	0.86%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	120	12.91	AWS - 2100 MHz	1000.00	1.29%
T-Mobile PCS - 1900 MHz GSM	1	639.87	120	1.77	PCS - 1900 MHz	1000.00	0.18%
T-Mobile AWS - 2100 MHz UMTS	1	1,706.32	120	4.72	AWS - 2100 MHz	1000.00	0.47%
T-Mobile 600 MHz LTE	2	788.97	120	4.37	600 MHz	400.00	1.10%
T-Mobile 700 MHz LTE	2	432.54	120	2.40	700 MHz	467.00	0.51%
						Total:	**4.41%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	4.41 %
Sector B:	4.41 %
Sector C:	4.41 %
T-Mobile Maximum MPE % (Per Sector):	4.41 %
Site Total:	14.37 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **14.37%** 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.