10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

January 15, 2021

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
1201 Boston Post Road, Milford, CT 06460
Latitude: 41.23656000
Longitude: -73.03394400
T-Mobile Site#: CT11002A – Anchor

Dear Ms. Bachman:

T-Mobile currently maintains eight (8) antennas at the 43-foot and 41-foot level of the existing 25-foot rooftop at 1201 Boston Post Road, Milford, CT. The building is owned by Connecticut Post Limited Partnership. T-Mobile now intends to remove the existing antennas and replace with eight (8) new 600/700/1900/2100/2500 MHz antennas. The new antennas will be installed at the same 43-foot and 41-foot level of the tower.

Planned Modifications:
Tower:

Remove
(18) 1-5/8" Coax
(4) 3x6 1-5/8" Hybrid Cables

Remove and Replace:
(3) AIR 21 antennas for (3) RFS APXVAA4L24_43-U-NA20 600/700/1900/2100 MHz antennas
(4) AIR 32 antennas for (4) AIR 6449 B41 2500 MHz antennas
(1) LNX 6515DS-A1M for (1) RFS APXVAA4L24_43-U-NA20 600/700/1900/2100 MHz antennas
(4) Ericsson RRUS11B12 for (4) Ericsson Radio 4449 RRU

Install New:
(8) Ericsson Radio 4415 B66 RRU
(4) Radio 4424 B25 RRU
(4) Commscope SDX1926Q-43
(6) 6x12 1-5/8" Hybrid

Ground:
<u>Install New:</u> 6160 Cabinet and B160 Battery Cabinet

This facility was most recently approved by the Siting Council in Petition No. 1363 on April 26, 2019. This proposed modification complies with the conditions of that approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor -Benjamin Blake, Elected Official, and David Sulkis, City Planner for the City of Milford, as well as the owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

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

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

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

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

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

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

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

Sincerely,

Kyle Richers
Transcend Wireless
Cell: 908-447-4716
Email: krichers@transcendwireless.com

Attachments
cc: Benjamin Blake– Mayor - City of Milford
David Sulkis– City Planner – City of Milford
Connecticut Post Limited Partnership – Owner

View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialogue box that appears. Note: If your browser does not support this function, select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a scheduled Pickup
   - Your driver will pickup your shipment(s) as usual.

   Customers without a scheduled Pickup
   - Schedule a Pickup on ups.com to have a UPS driver pickup all of your packages.
   - Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. To find the location nearest you, please visit the 'Locations' Quick link at ups.com.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY NJ 07446-1130

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH NJ 07430-1325

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY NJ 07446-1925

FOLD HERE

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS 1 OF 1

SHIP TO:
BENJAMIN BLAKE
CITY OF MILFORD
110 RIVER STREET
MILFORD CT 06460

CT 066 7-55

UPS GROUND
TRACKING #: 1Z V25 742 42 9306 7399

BILLING: P/P
SIGNATURE REQUIRED

Reference #1: CT11002A CSC EO

XOL 20.12.11 NV45 42.0A 01/2021*

View/Print Label

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UPS Access Point™	UPS Access Point™	UPS Access Point™
MICHAELS STORE # 7773	THE UPS STORE	THE UPS STORE
75 INTERSTATE SHOP CTR	115 FRANKLIN TPKE	120 E MAIN ST
RAMSEY NJ 07446-1130	MAHWAH NJ 07430-1325	RAMSEY NJ 07446-1925

FOLD HERE

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS 1 OF 1

SHIP TO:
DAVID SULKIS
CITY OF MILFORD
70 WEST RIVER STREET
MILFORD CT 06460

CT 066 7-55

UPS GROUND
TRACKING #: 1Z V25 742 42 9002 9408

BILLING: P/P
SIGNATURE REQUIRED

Reference #1: CT11002A CSC ZO

XOL 20.12.11 NV45 42.0A 01/2021*

View/Print Label

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UPS Access Point™	UPS Access Point™	UPS Access Point™
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RAMSEY NJ 07446-1130	MAHWAH NJ 07430-1325	RAMSEY NJ 07446-1925

FOLD HERE

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1 LBS 1 OF 1

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

SHIP TO:
CT POST LIMITED PARTNERSHIP
SUITE 410
3520 PIEDMONT ROAD
ATLANTA GA 30305

GA 303 9-02

UPS GROUND
TRACKING #: 1Z V25 742 42 9179 5418

BILLING: P/P
SIGNATURE REQUIRED

Reference #1: CT11002A CSC Owner

XOL 20.12.11 NV45 42.0A 01/2021*

TM

City of Milford, CT

Property Listing Report

Map Block Lot	089 812 40A	Bldg #	1	Sec #	1	PID	109963	Account	024362

Property Information

Property Location	1201 BOSTON POST RD
Owner	CONNECTICUT POST LTD PARTNERSH
Co-Owner	C/O MARVIN F POER & COMPANY
Mailing Address	3520 PIEDMONT RD NE STE 410 ATLANTA GA 30305
Land Use	434V CELL TOWER MDL-00
Land Class	I
Zoning Code	SCD
Census Tract	

Neighborhood	
Acreage	0
Utilities	All Public,Public Sewer
Lot Setting/Desc	UNKNOWN UNKNOWN
Book / Page	01044/0160
Fire District	2

Photo

Sketch

Primary Construction Details

Year Built	0
Building Desc.	CELL TOWER
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	NA

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Gar	
Fireplaces	

(*Industrial / Commercial Details)

Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

Report Created On 11/20/2020

City of Milford, CT

Property Listing Report

Map Block Lot	089 812 40A	Bldg #	1	Sec #	1	PID	109963	Account	024362

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements		
Outbuildings	337500	236250
Land	0	0
Total	337500	236250

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	0	0

Outbuilding and Extra Features

Type	Description
CEL TWR SITE	1 UNITS

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
CONNECTICUT POST LTD PARTNERSH	01044/0160	1979-12-07	0

Report Created On 11/20/2020

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

April 26, 2019

Jesse A. Langer, Esq.
Updike, Kelly & Spellacy, P.C.
8 Frontage Road
East Haven, CT 06512

RE: **PETITION NO. 1363** – T-Mobile Northeast, LLC petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed modification of an existing rooftop wireless telecommunications facility and associated equipment located at the Connecticut Post Mall, 1201 Boston Post Road, Milford, Connecticut.

Dear Attorney Langer:

At a public meeting held on April 25, 2019, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Approval of any minor project changes be delegated to Council staff;

2. Install a Radio Frequency Notice sign and a Radio Frequency Guidelines sign at the roof top access point in accordance with the recommendation contained within the radio frequency emission analysis report prepared by EBI Consulting, dated December 24, 2018;

3. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

4. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Milford;

5. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

6. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function;

7. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;

8. If the facility ceases to provide wireless services for a period of one year the Petitioner shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Petitioner may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period; and

9. This Declaratory Ruling may be transferred or partially transferred, provided both the facility owner/operator/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. The Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer. Both the facility owner/operator/transferor and the transferee shall provide the Council with a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated March 12, 2019 and additional information received on April 12, 2019.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,

Melanie Bachman
Executive Director

MAB/RDM/lm

Enclosure: Staff Report dated April 25, 2019

c: The Honorable Benjamin G. Blake, Mayor, City of Milford
David Sulkis, City Planner, City of Milford
Connecticut Post Limited Partnership, property owner

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

Petition No. 1363
T-Mobile Northeast, LLC
1201 Boston Post Road, Milford
Rooftop Wireless Telecommunications Facility

Staff Report
April 25, 2019

On March 19, 2019, the Connecticut Siting Council (Council) received a petition from T-Mobile Northeast LLC (T-Mobile) for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed modification of an existing rooftop wireless telecommunications facility at the Connecticut Post Mall, 1201 Boston Post Road, Milford. The modified facility would improve T-Mobile's wireless service to the surrounding area.

The Council submitted interrogatories to T-Mobile on April 3, 2019. T-Mobile submitted responses on April 12, 2019.

The mall is located on a 75-acre parcel in a Shopping Center Design District near Interstate 95 and Route 1. T-Mobile currently maintains four antenna sectors on the roof of the mall, approved by the Council on September 1, 2016 (Petition 1245). Three sectors (alpha, beta and gamma) consist of two roof masts that extend to a height of 45 feet above ground level (agl). Three panel antennas are flush-mounted on each mast. The two masts, and associated radio equipment, are mounted on a roof frame located in the northeast portion of the roof. The fourth sector (delta) consists of two antennas mounted on pipe masts attached to a parapet in the central section of the roof. The antennas do not extend above the parapet.

The mall roof consists of various sections and heights. The portion of the roof with the two existing masts extends to a height of 25.6 feet agl, including the parapet. The delta sector is mounted on a different portion of the building, on a roof parapet at a centerline height of 41 feet agl.

T-Mobile proposes to modify its existing installation, as follows;

a) Replace one existing roof mast with a new 30-foot tall roof mast and base frame. The new mast would extend to a height of approximately 54 feet agl.
b) Relocate three antennas from the old mast to the new roof mast, mounted at a centerline height of 43 feet agl.
c) Install three new antennas on the new mast at a centerline height of 50 feet agl.
d) Modify the delta sector on the parapet by replacing one antenna with two new panel antennas.

No modifications are proposed for the second roof mast or for the existing radio equipment located on the roof frame. A new cable would be installed along an existing roof-top cable run to connect the delta sector to the roof frame.

A Professional Engineer duly licensed in the State of Connecticut has certified that the existing roof and parapet wall are adequate to support the proposed loading.

The proposed project will occur within and on the existing building and no ground disturbance is necessary. Access to the facility would continue to be through the existing building.

Although the existing roof mast is being replaced by a taller roof mast (approximately 10 feet), visibility of the mast and antennas would be minimal and generally confined to interior mall roads and parking lots. All antennas would be flush-mounted on the mast. The pipe mast would be painted a non-contrasting color. The delta sector parapet wall installation would have limited visibility due to its isolated location and its attachment to the side of the building.

The installation would not be a hazard to air navigation and no registration to the Federal Aviation Administration is required.

The highest calculated power density level for T-Mobile's proposed antennas would be 10.1 percent of the applicable public exposure limit established by the Federal Communications Commission at ground level with a -10 dB off-beam adjustment. To provide notice to rooftop workers, the radio-frequency report recommends the installation of a Radio Frequency Notice sign and a Radio Frequency Guidelines sign at the roof top access point.

T-Mobile anticipates construction to occur in the summer of 2019. T-Mobile would coordinate with the property owner to ensure that construction does not disrupt normal business operations. Necessary crane work would occur either overnight or in the early morning.

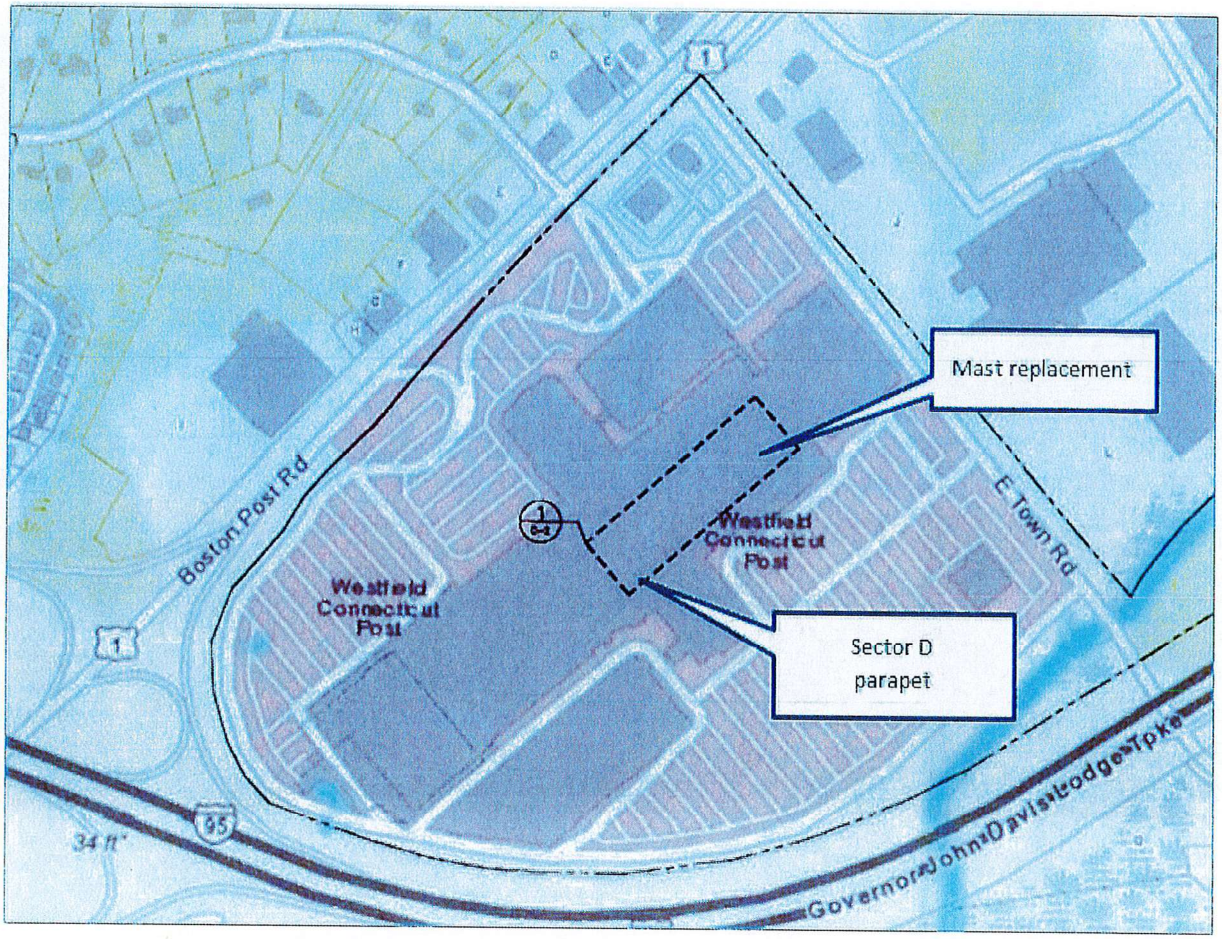
Notice was provided to the City of Milford, the property owner, and abutting property owners on or about March 12, 2019. No comments have been received to date.

T-Mobile contends that this proposed project would not have a substantial adverse environmental impact.

If approved, staff recommends the following conditions:

1. Approval of any minor project changes be delegated to Council staff; and
2. Install a Radio Frequency Notice sign and a Radio Frequency Guidelines sign at the roof top access point in accordance with the recommendation contained within the radio frequency emission analysis report prepared by EBI Consulting, dated December 24, 2018.

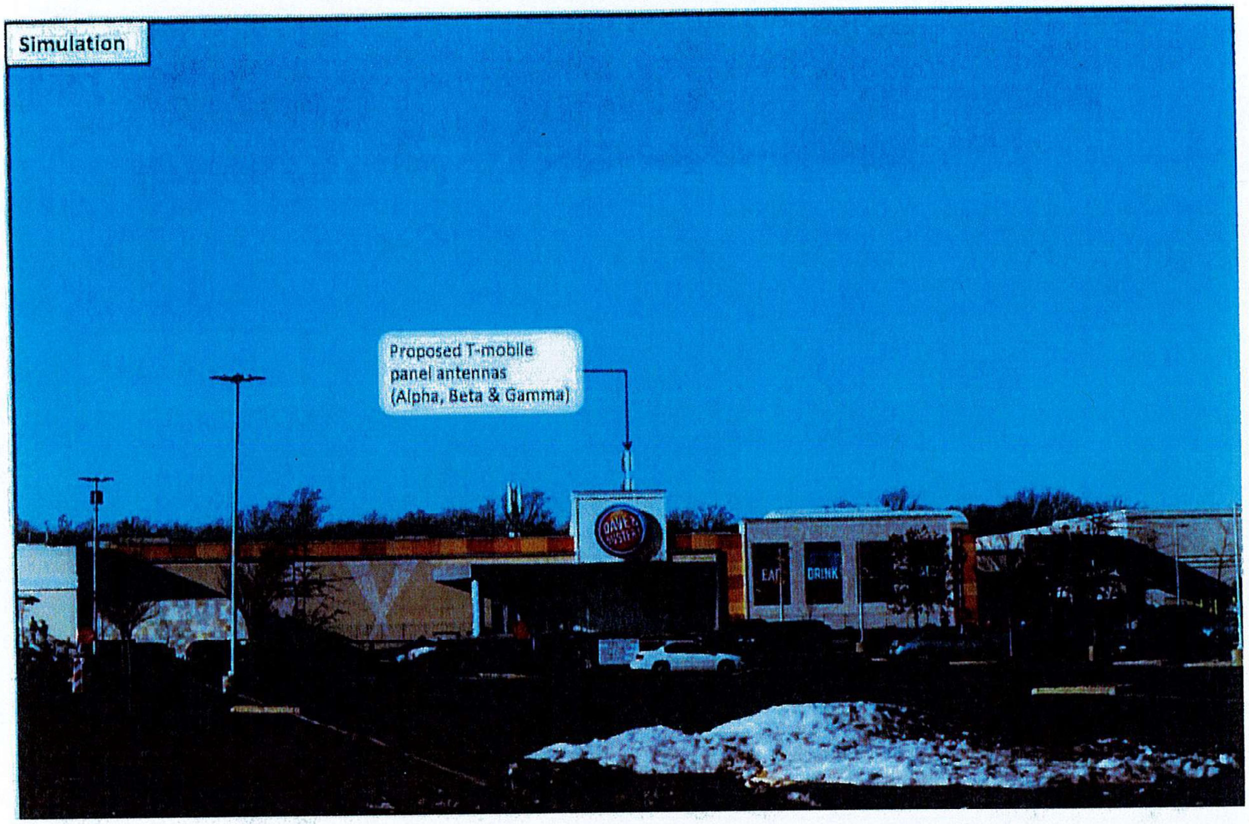
Project Location



(no scale)

Photo-simulation

(parking lot east side of mall)



T-Mobile

WIRELESS COMMUNICATIONS FACILITY

MILFORD/I-95/1
SITE ID: CT11002A
1201 BOSTON POST RD.
MILFORD, CT 06460

T-MOBILE RF CONFIGURATION

4Sec-67D5A5998C__1xAIR+1QO+1OP

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002
TO: 1201 BOSTON POST ROAD, MILFORD, CT 06460

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	
2.	TURN RIGHT ONTO DAY HILL RD.	0.30 MI.
3.	TAKE THE 1ST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187. CONTINUE TO FOLLOW CT-187.	0.14 MI.
4.	STAY STRAIGHT TO GO ONTO BLUE HILLS AVE/CT-187.	0.64 MI.
5.	TURN LEFT ONTO OLD WINDSOR RD/CT-305. CONTINUE TO FOLLOW CT-305.	1.24 MI.
6.	MERGE ONTO I-91 S TOWARD HARTFORD.	2.33 MI.
7.	KEEP RIGHT TOWARD NY CITY.	44.03 MI.
8.	MERGE ONTO I-95 S VIA THE EXIT ON THE LEFT TOWARD NY CITY.	0.21 MI.
9.	MERGE ONTO BOSTON POST RD/US-1 N VIA EXIT 39B.	8.53 MI.
10.	1201 BOSTON POST RD, MILFORD, CT 06460-2763, 1201 BOSTON POST RD IS ON THE RIGHT.	0.29 MI.

SITE COORDINATES: LATITUDE: 41°-14'-11.28" N; LONGITUDE: 73°-02'-02.74" W; GROUND ELEVATION: 45'± AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH

VICINITY MAP

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE EXISTING NORTEL CABINET.
2. INSTALL EMERSON CABINET.
3. REMOVE EXISTING 3106 CABINET AND RELOCATE AAV TO EMERSON CABINET.
4. ADD (1) BB6630 FOR L2100 AND L1900 TO RBS6102.
5. ADD (1) BB6630 FOR L600, L700 AND N600 TO RBS6102.
6. INSTALL (1) ENCLOSURE 6160 CABINET.
7. INSTALL (1) iXRe ROUTER, (2) BB6630 FOR L2500, (1) BB6648 FOR N2500 AND (2) PSU4813 VOLTAGE BOOSTER TO ENCLOSURE 6160
8. INSTALL (1) BATTERY CABINET B160.
9. REMOVE ALL EXISTING COAXIAL CABLES.
10. REMOVE ALL 3X6 HYBRID CABLES.
11. INSTALL (6) 6X12 HYBRID CABLES.
12. REMOVE (2) ANTENNAS PER SECTOR, TOTAL (8).
13. REMOVE (1) RRUS11 B12 PER SECTOR, TOTAL (4).
14. INSTALL (1) RFS ANTENNA PER SECTOR, TOTAL (4).
15. INSTALL (1) ERICSSON ANTENNA PER SECTOR, TOTAL (4).
16. INSTALL (1) RADIO 4449 B71+B85, (1) RADIO 4415 B66A, (1) RADIO 4424 B25 PER SECTOR, TOTAL (3) EACH.
17. INSTALL (2) DUAL SWIVEL MOUNT KITS PER SECTOR, TOTAL (8)

PROJECT INFORMATION

SITE NAME:	MILFORD/I-95/1
SITE ID:	CT11002A
SITE ADDRESS:	1201 BOSTON POST ROAD, MILFORD, CT 06460
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-14'-11.28" N LONGITUDE: 73°-02'-02.74" W GROUND ELEVATION: 45'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	GENERAL NOTES AND SPECIFICATIONS	0
C-1	SITE LOCATION PLAN	0
C-2	COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION	0
C-3	ANTENNA PLANS	0
C-4	ANTENNA ELEVATIONS	0
C-5	TYPICAL EQUIPMENT DETAILS	0
C-6	TYPICAL EQUIPMENT DETAILS	0
E-1	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
MILFORD/I-95/1
SITE ID: CT11002A
1201 BOSTON POST ROAD, MILFORD, CT 06460

DATE: 10/13/20
SCALE: AS NOTED
JOB NO. 20143.03

TITLE SHEET

T-1

Sheet No. 1 of 9

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:
   - RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
   - ULTIMATE DESIGN SPEED (OTHER STRUCTURE): 125 MPH (Vasd) (EXPOSURE C/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA–222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD–OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS–BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND IT'S COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS, ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE OWNER'S CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1–800–922–4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
18. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
19. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
20. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

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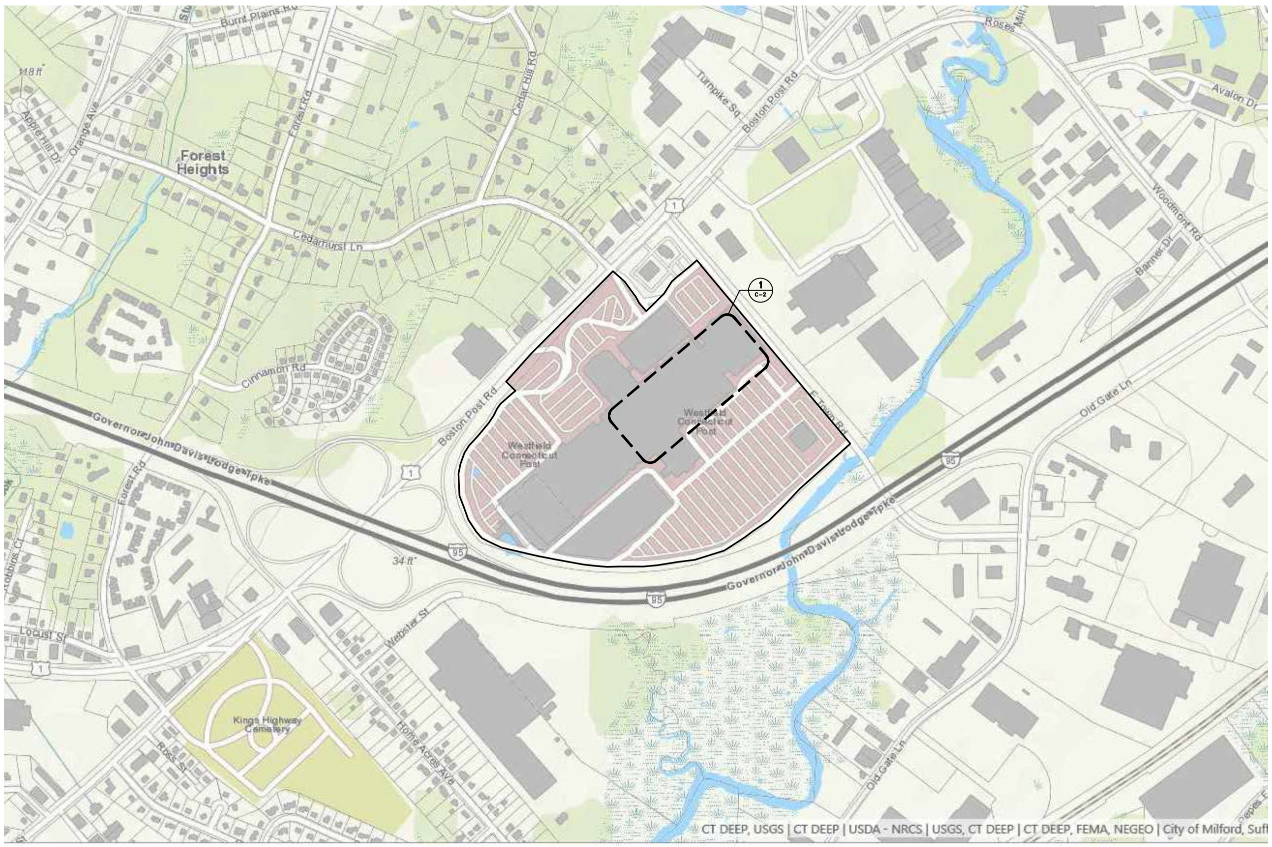
GENERAL NOTES AND SPECIFICATIONS

N-1

NOTE:
ALL COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	ANTENNA	SIZE (INCHES) (L x W x H)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA / DIPLEXER (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	PROPOSED	RFS - APXVAA4L24_43-U-NA20	95,9 x 24,0 x 8,50	43	75	(P) RRU 4449 B71 + B85 (1), (P) RRUS 4415 B66A (2), (P) RRU 4424 B25 (1)	(P) COMMSCOPE - SDX1926Q-43 (1)	(4) 6X12 HYBRID CABLE
A2	PROPOSED	ERICSSON - AIR6449 B41	33,1 x 20,6 x 8,60	43	75			
B1	PROPOSED	RFS - APXVAA4L24_43-U-NA20	95,9 x 24,0 x 8,50	43	190	(P) RRU 4449 B71 + B85 (1), (P) RRUS 4415 B66A (2), (P) RRU 4424 B25 (1)	(P) COMMSCOPE - SDX1926Q-43 (1)	
B2	PROPOSED	ERICSSON - AIR6449 B41	33,1 x 20,6 x 8,60	43	190			
C1	PROPOSED	RFS - APXVAA4L24_43-U-NA20	95,9 x 24,0 x 8,50	43	320	(P) RRU 4449 B71 + B85 (1), (P) RRUS 4415 B66A (2), (P) RRU 4424 B25 (1)	(P) COMMSCOPE - SDX1926Q-43 (1)	
C2	PROPOSED	ERICSSON - AIR6449 B41	33,1 x 20,6 x 8,60	43	320			
D1	PROPOSED	ERICSSON - AIR6449 B41	33,1 x 20,6 x 8,60	41	250			(2) 6X12 HYBRID CABLE
D2	PROPOSED	RFS - APXVAA4L24_43-U-NA20	95,9 x 24,0 x 8,50	41	250	(P) RRU 4449 B71 + B85 (1), (P) RRUS 4415 B66A (2), (P) RRU 4424 B25 (1)	(P) COMMSCOPE - SDX1926Q-43 (1)	



1 / C-1 **SITE LOCATION PLAN**
SCALE: NOT TO SCALE
TRUE NORTH

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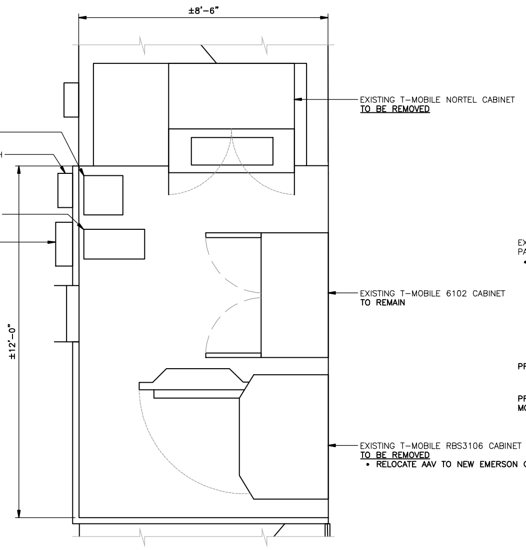
SITE LOCATION PLAN

C-1

Sheet No. 3 of 9

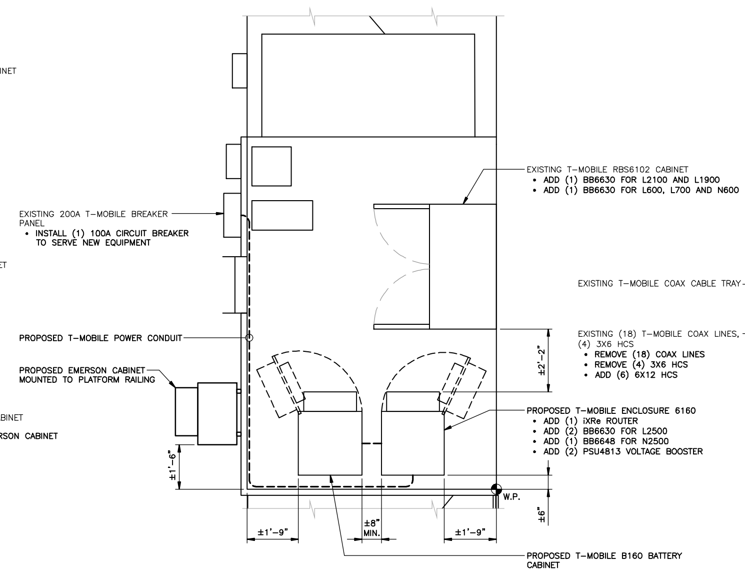
LEGEND

W.P. DENOTES WORKING POINT.



3 / C-2 **EXISTING EQUIPMENT PLAN**

SCALE: 1/2" = 1'



4 / C-2 **PROPOSED EQUIPMENT PLAN**

SCALE: 1/2" = 1'

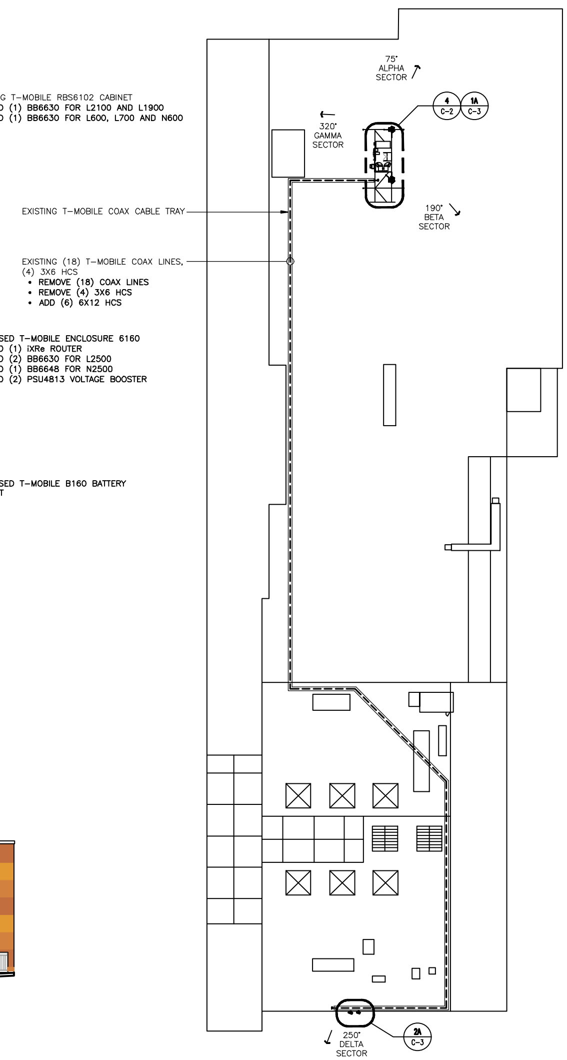
STRUCTURAL COMPLIANCE

ANTENNA MOUNTS & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS AND EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

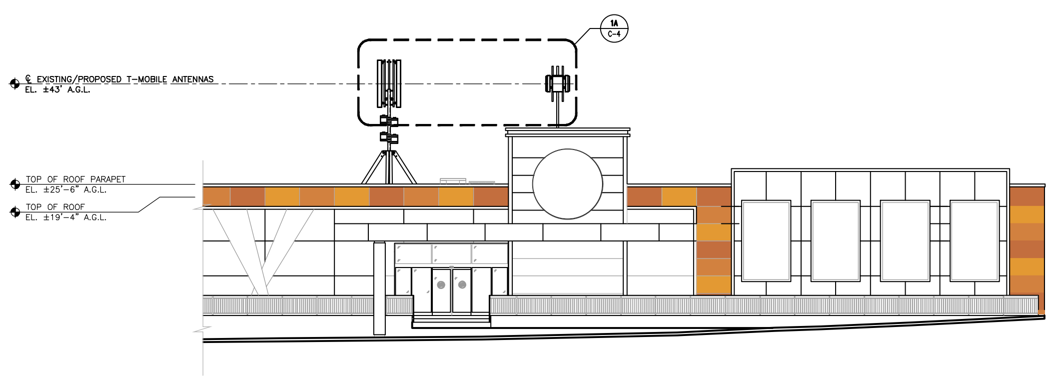
REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20143.03) DATED 11/16/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



1 / C-2 **PARTIAL COMPOUND PLAN - PROPOSED**

SCALE: 1" = 30'



2 / C-2 **SOUTH ELEVATION - PROPOSED**

SCALE: 1" = 10'

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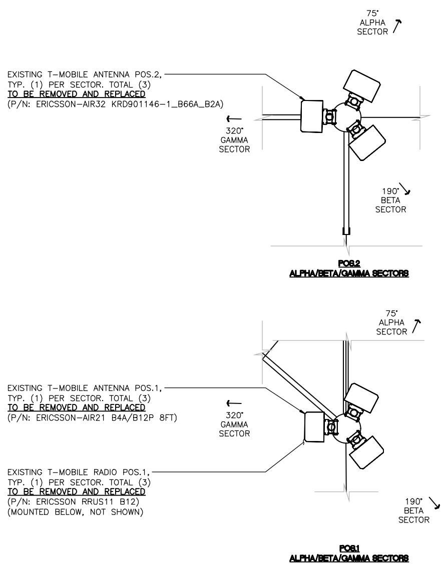
COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION

C-2

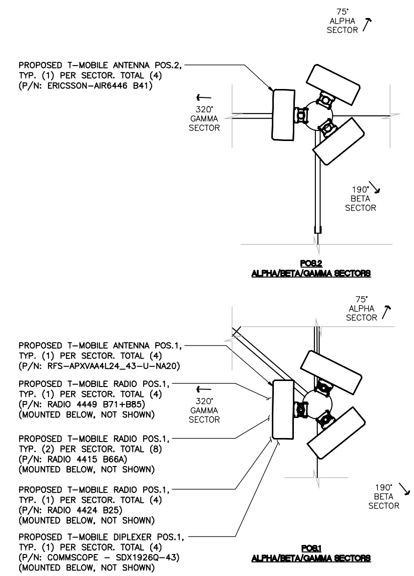
Sheet No. 4 of 9



1 / C-3 **EQUIPMENT AND ANTENNA PLAN - EXISTING**

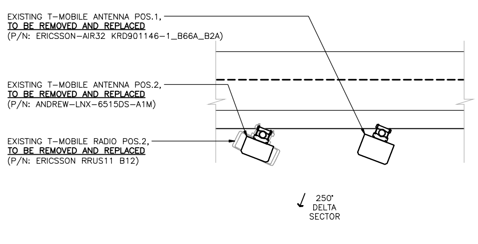
SCALE: 1/2" = 1'

TRUE NORTH



1A / C-3 **EQUIPMENT AND ANTENNA PLAN - PROPOSED**

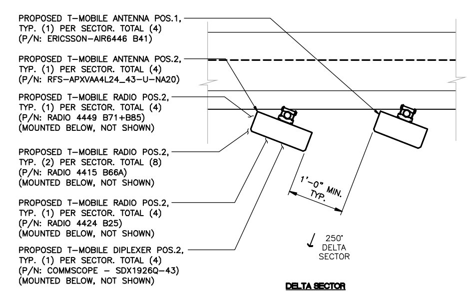
SCALE: 1/2" = 1'



2 / C-3 **EQUIPMENT AND ANTENNA PLAN - EXISTING**

SCALE: 1/2" = 1'

TRUE NORTH



2A / C-3 **EQUIPMENT AND ANTENNA PLAN - PROPOSED**

SCALE: 1/2" = 1'

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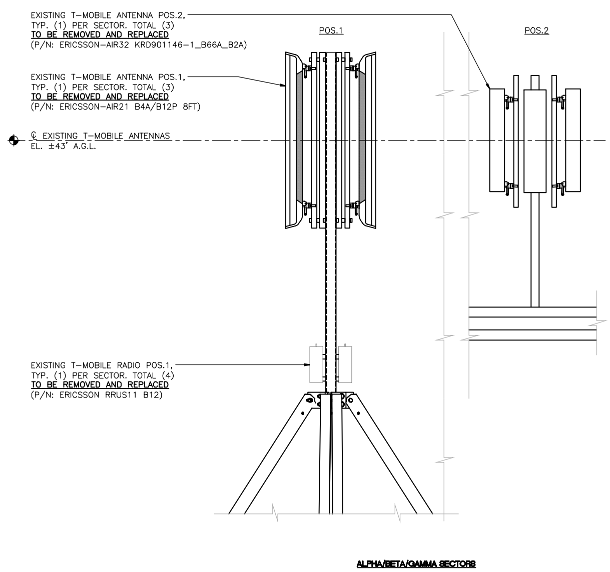
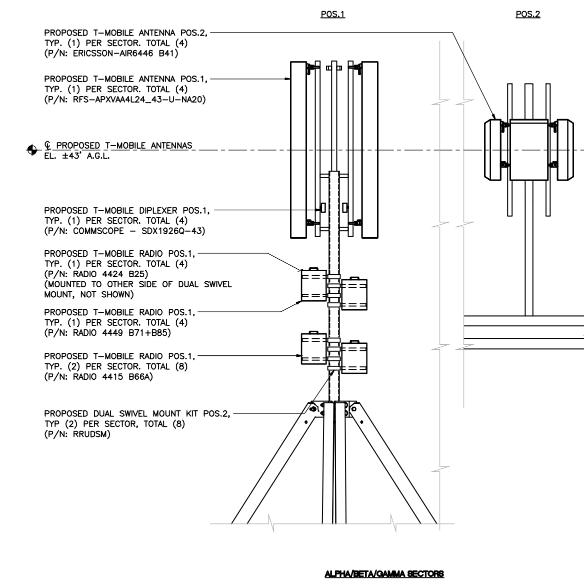
ANTENNA PLANS

C-3

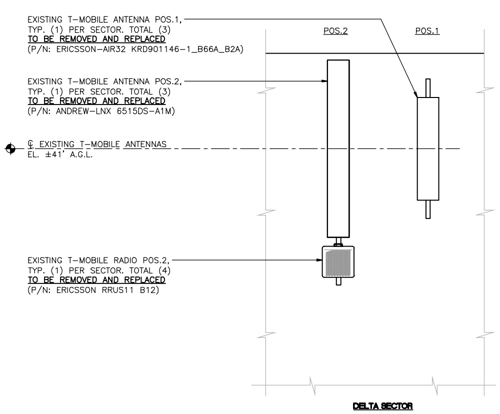
Sheet No. 5 of 9



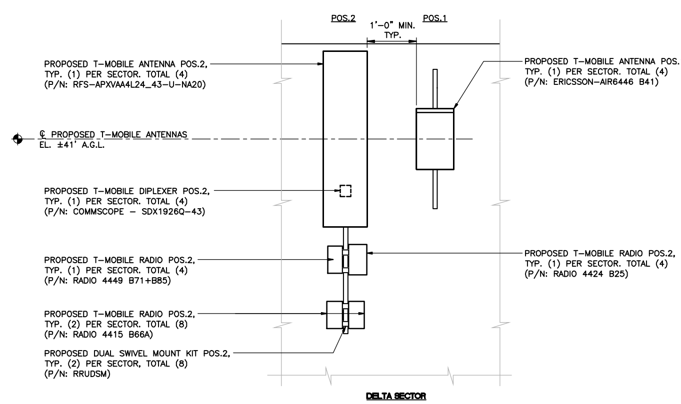
1 C-4 ANTENNA ELEVATION - EXISTING
SCALE: 3/8" = 1'



1A C-4 ANTENNA ELEVATION - PROPOSED
SCALE: 3/8" = 1'



2 C-4 ANTENNA ELEVATION - EXISTING
SCALE: 3/8" = 1'



2A C-4 ANTENNA ELEVATION - PROPOSED
SCALE: 3/8" = 1'

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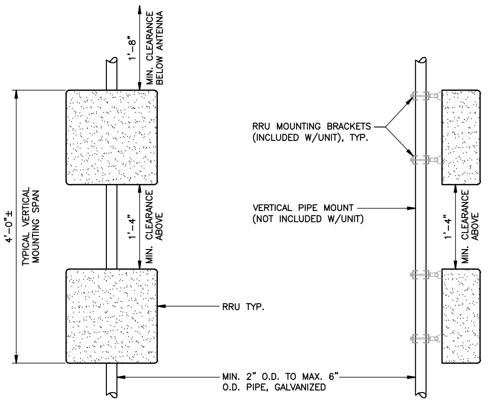
ANTENNA ELEVATIONS

C-4

Sheet No. 6 of 9



FRONT ELEVATION

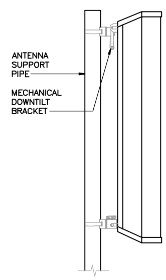
SIDE ELEVATION

NOTES:

1. T-MOBILE SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 (C-5) TYPICAL RRU MOUNTING DETAIL

SCALE: NOT TO SCALE



SIDE

AIR6449

APXVAA4L24_43-U-NA20

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6449 B41	33.1"L x 20.6"W x 8.6"D	±104 LBS.
MAKE: RFS MODEL: APXVAA4L24_43-U-NA20	95.9"L x 24.0"W x 8.5"D	±172 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 (C-5) PROPOSED ANTENNA DETAIL

SCALE: NOT TO SCALE

RADIO 4424 B25

RADIO 4415 B25

RADIO 4449 B71+B85

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4415 B25	16.5"L x 13.4"W x 5.9"D	±46 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4449 B71+B85	14.9"L x 13.2"W x 5.4"D	±74 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4424 B25	16.5"L x 13.5"W x 9.6"D	±86 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 (C-5) PROPOSED RRU DETAIL

SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160 CABINET	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 (C-5) ENCLOSURE 6160 CABINET DETAIL

SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY B160 CABINET	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 (C-5) BATTERY B160 CABINET DETAIL

SCALE: NOT TO SCALE

DIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: SDX1926Q-43(E14F05P86)	4.2"L x 7.0"W x 3.0"D	–

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 (C-5) PROPOSED DIPLEXER DETAIL

SCALE: NOT TO SCALE

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(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

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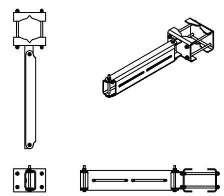
WIRELESS COMMUNICATIONS FACILITY
MILFORD/I-95/1
SITE ID: CT11002A
1201 BOSTON POST ROAD,
MILFORD, CT 06460

DATE: 10/13/20
SCALE: AS NOTED
JOB NO. 20143.03

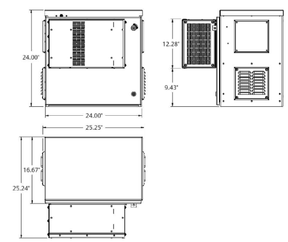
TYPICAL EQUIPMENT DETAILS

C-5



RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

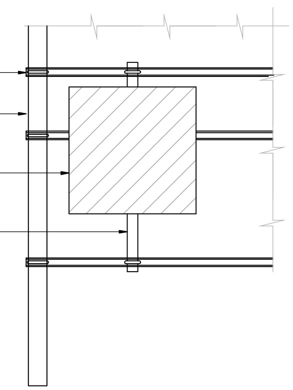
1 (C-6) RRH DUAL SWIVEL MOUNT DETAIL
SCALE: NOT TO SCALE



EMERSON CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: EMERSON MODEL: COMPACT 2416	24"L x 24"W x 16"D	±64 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 (C-6) PROPOSED EMERSON CABINET DETAIL
SCALE: NOT TO SCALE



3 (C-6) TYPICAL EMERSON CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE

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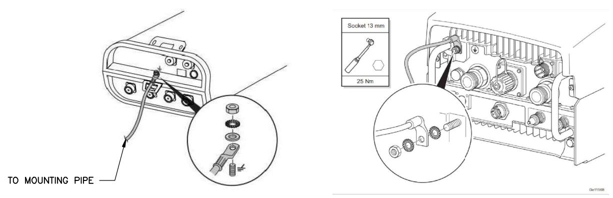
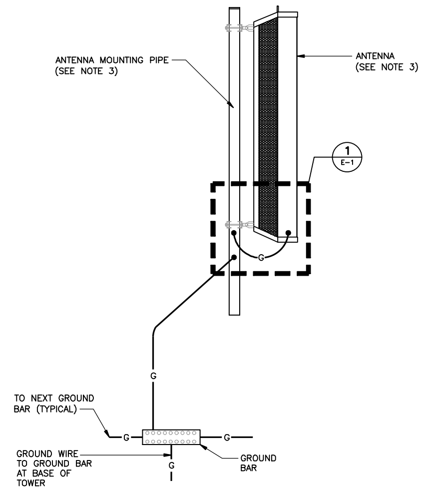
TYPICAL EQUIPMENT DETAILS

C-6

Sheet No. 8 of 9



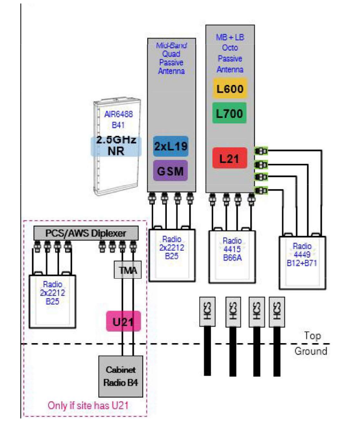
1 TYPICAL ANTENNA/RRU GROUNDING DETAILS
E-1
SCALE: NOT TO SCALE



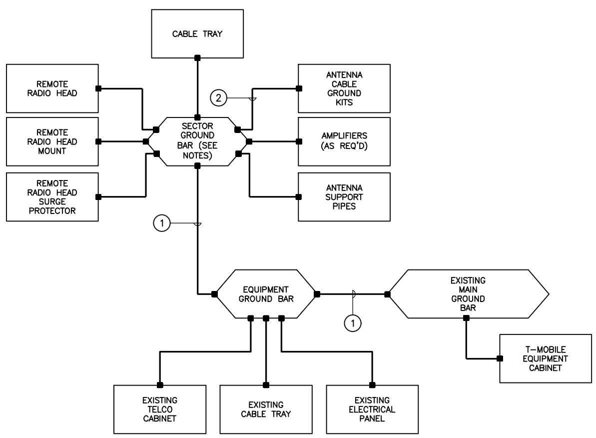
NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

2 TYPICAL ANTENNA GROUNDING DETAIL
E-1
SCALE: NOT TO SCALE



3 PROPOSED PLUMBING DIAGRAM
E-1
SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

(1) #2 AWG

(2) #6 AWG

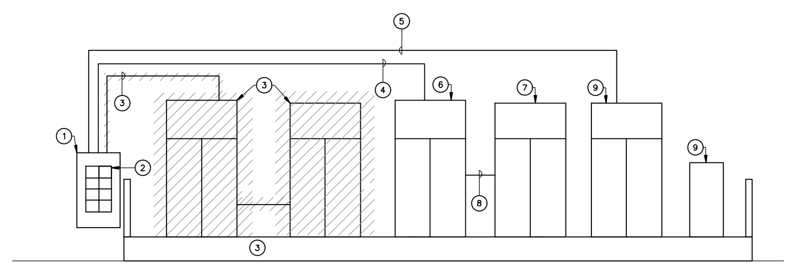
GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

4 TYPICAL GROUNDING SCHEMATIC DETAIL
E-1
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

1. EXISTING 200A, PPC CABINET TO REMAIN.
2. NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
3. EXISTING CABINETS AND ASSOCIATED CONDUITS AND CONDUCTORS TO BE REMOVED.
4. (3) #1 AWG, (1) #8 AWG GROUND, 1-1/4" CONDUIT.
5. EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
6. NEW T-MOBILE EQUIPMENT CABINET
7. NEW T-MOBILE BATTERY CABINET
8. DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.
9. EXISTING CABINET TO REMAIN.



5 ELECTRICAL POWER RISER DIAGRAM
E-1
SCALE: NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 9 of 9

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Structural Analysis Report

Antenna Frames & Equipment Platform

Proposed T-Mobile
Equipment Upgrade-Anchor

Site Ref: CT11002A

1201 Boston Post Road
Milford, CT

CENTEK Project No. 20143.03

~~Date: October 21, 2020~~
Rev 2: November 16, 2020

Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

SECTION 1 - REPORT

- INTRODUCTION
- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
- ANTENNA AND EQUIPMENT INSTALLATION SUMMARY
- ANALYSIS
- DESIGN LOADING
- RESULTS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- WIND LOAD CALCULATION
- RISA3D OUTPUT REPORT-EAST ANTENNA MAST
- RISA3D OUTPUT REPORT-SOUTH ANTENNA MAST
- RISA3D OUTPUT REPORT- DELTA SECTOR
- RISA3D OUTPUT REPORT- EQUIPMENT PLATFORM

SECTION 4 – REFERENCE MATERIAL

- RF DATA SHEET

Introduction

The purpose of this structural analysis report (SAR) is to summarize the results, of the impacted structural components, by the modified equipment upgrade proposed by T-Mobile on the existing host rooftop located in Milford, CT.

The T-Mobile antennas are mounted on antenna masts attached to the equipment platform (Alpha/Beta/Gamma) and on the exterior of a penthouse (Delta Sector). The T-Mobile equipment cabinets are mounted on a steel dunnage platform on the roof of the building.

The antenna mounts structure geometry and member size information were obtained from previous CDs/structural report and a site visit performed by Centek personnel on October 6, 2020.

The existing roof framing consists of steel beams/joist and columns. The existing equipment platform bears directly over the host building bearing walls at (3) locations and steel columns at (3) locations.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel platform carries the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Proposed reinforcement and support steel will be properly installed and maintained.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Alpha Sector	~~(1) Ericsson AIR32 Antenna~~ ~~(1) Ericsson AIR21 Antenna~~ **(1) Ericsson AIR6449 Antenna** **(1) RFS APXVAA4L24_43-U-NA20** ~~(1) Ericsson RRUS11 B12~~ **(1) Ericsson 4449 RRU** **(2) Ericsson 4415 RRU** **(1) Ericsson 4424 RRU** **(1) Commscope SDX1926Q-43 Diplexer**	43-ft	Antenna Masts Attached to Steel Dunnage
Beta Sector	~~(1) Ericsson AIR32 Antenna~~ ~~(1) Ericsson AIR21 Antenna~~ **(1) Ericsson AIR6449 Antenna** **(1) RFS APXVAA4L24_43-U-NA20** ~~(1) Ericsson RRUS11 B12~~ **(1) Ericsson 4449 RRU** **(2) Ericsson 4415 RRU** **(1) Ericsson 4424 RRU** **(1) Commscope SDX1926Q-43 Diplexer**	43-ft	Antenna Masts Attached to Steel Dunnage
Gamma Sector	~~(1) Ericsson AIR32 Antenna~~ ~~(1) Ericsson AIR21 Antenna~~ **(1) Ericsson AIR6449 Antenna** **(1) RFS APXVAA4L24_43-U-NA20** ~~(1) Ericsson RRUS11 B12~~ **(1) Ericsson 4449 RRU** **(2) Ericsson 4415 RRU** **(1) Ericsson 4424 RRU** **(1) Commscope SDX1926Q-43 Diplexer**	43-ft	Antenna Masts Attached to Steel Dunnage
Delta Sector	~~(1) Ericsson AIR32 Antenna~~ ~~(1) Andrew LNX6515DS Antenna~~ **(1) Ericsson AIR6449 Antenna** **(1) RFS APXVAA4L24_43-U-NA20** ~~(1) Ericsson RRUS11 B12~~ **(1) Ericsson 4449 RRU** **(2) Ericsson 4415 RRU** **(1) Ericsson 4424 RRU** **(1) Commscope SDX1926Q-43 Diplexer**	41-ft	Antenna Masts Attached to Building Façade

Equipment Platform	~~(1) Nortel Cabinet~~	~~1200 lbs.~~	-	Steel dunnage platform on building roof
	~~(1) Ericsson 3106~~	~~2600 lbs~~	-	
	(1) Ericsson 6102	860 lbs.	-	
	(1) BBU Battery Cabinet	860 lbs.	-	
	(1) AAV Cabinet	65 lbs.	-	
	(1) Ericsson B160	1883 lbs.	-	
	(1) Ericsson 6160	1200 lbs.	-	

Equipment – Indicates equipment to be installed.
~~Equipment~~ – Indicates equipment to be removed.

Analysis

The antenna frames and equipment platform were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the equipment platform and antenna mounts considering the worst case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”.

Wind Speed:	V_{ult} = 125 mph	*Appendix N of the 2018 CT State Building Code*
Risk Category:	II	*2015 IBC; Table 1604.05*
Exposure Category:	Surface Roughness C	*ASCE 7-10; Section 26.7.2*
Ground Snow Load	30 psf	*Appendix N of the 2018 CT State Building Code*
Dead Load	Equipment and framing self-weight	*Identified within SAR design calculations*
Live Load	20 psf	*ASCE 7-10; Table 4-1 “Roofs – All Other Construction”*

Reference Standards

2015 International Building Code:

1. ACI 318-14, *Building Code Requirements for Structural Concrete*.
2. ACI 530-13, *Building Code Requirements for Masonry Structures*.
3. AISC 360-10, *Specification for Structural Steel Buildings*
4. AWS D1.1 – 00, *Structural Welding Code – Steel*.
5. AF&PA-12, Span Tables for Joists and Rafters.
6. ANSI/AWC NDS-2015, National Design Specifications (NDS) for Wood Construction – with 2012 Supplement.

Results

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D.

The following table provides a summary of structural components impacted by the proposed upgrade along with associated member percent capacity and PASS/FAIL result:

Location	Component	Capacity (%)	Result
South Antenna Mast	HSS5.563X0.258 Vertical Member	78%	**PASS**
	L4X4X3/8 Bracing Member	30%	**PASS**
	Pipe 2.5 STD. Antenna Mast	15%	**PASS**
East Antenna Mast	Pipe 4.0X Antenna Mast	87%	**PASS**
	L5X5X5/16 Bracing Member	8%	**PASS**
Delta Sector	Pipe 2.5 STD. Antenna Mast	28%	**PASS**
Equipment Platform	W12X26 Platform Member	51%	**PASS**
	W8X13 Platform Member	30%	**PASS**
	HSS7.00X0.188 Platform Post	39%	**PASS**

Conclusion

This analysis shows that the subject antenna mounts and equipment platform **have sufficient capacity** to support the proposed modified antenna configuration.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

Prepared by:

Luke Amiot
Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

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

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

Design Wind Load on Other Structures: (Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 125$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := C$		(User Input)	
Height Above Grade =	$Z := 43$	ft	(User Input)	
Structure Type =	Structuretype := Square_Chimney		(User Input)	
Structure Height =	$Height := 8$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 2$	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = (Table 26.9-1)

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 9.5$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 500$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.2$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.2$$

Exposure Constant = (Table 26.9-1)

$$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 15$$

Exposure Coefficient = (Table 29.3-1)

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.06$$

Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 38.15$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{otherwise} \end{cases} = 15$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.228$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_z := l \cdot \left(\frac{z}{33}\right)^{E} = 427.057$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \left(\frac{Width + Height}{L_z}\right)^{0.63}}} = 0.972$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left[\frac{(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q)}{1 + 1.7 \cdot g_v \cdot I_z}\right] = 0.91$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.35$	(Fig 29.5-1 - 29.5-3)

Wind Force = $F := q_z \cdot G \cdot C_f = 47$ psf

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 133$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 238$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 160$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 133$	lbs

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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAA4L24_43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 169$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 749$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 265$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 169$	lbs

Development of Wind & Ice Load on Antennas

Antenna Model =	Ericsson AIR6449		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 33.1$	in	(User Input)
Antenna Width =	$W_{ant} := 20.6$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 104$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna = $SA_{ant} := \dfrac{L_{ant} \cdot W_{ant}}{144} = 4.7$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 4.7$ sf

Total Antenna Wind Force = $F_{ant} := F \cdot A_{ant} = 222$ lbs

Wind Load (Side)

Surface Area for One Antenna = $SA_{ant} := \dfrac{L_{ant} \cdot T_{ant}}{144} = 2$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2$ sf

Total Antenna Wind Force = $F_{ant} := F \cdot A_{ant} = 93$ lbs

Gravity Load (without ice)

Weight of All Antennas = $WT_{ant} \cdot N_{ant} = 104$ lbs

Development of Wind & Ice Load on RRHs

RRUS Data:

RRUS Model =	Ericsson 4449 B71B12		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRH} := 14.9$	in	(User Input)
RRUS Width =	$W_{RRH} := 13.2$	in	(User Input)
RRUS Thickness =	$T_{RRH} := 10.4$	in	(User Input)
RRUS Weight =	$WT_{RRH} := 74$	lbs	(User Input)
Number of RRUS's =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH = $SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.4$ sf

RRH Projected Surface Area = $A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.4$ sf

Total RRH Wind Force = $F_{RRH} := F \cdot A_{RRH} = 64$ lbs

Wind Load (Side)

Surface Area for One RRH = $SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.1$ sf

RRH Projected Surface Area = $A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.1$ sf

Total RRH Wind Force = $F_{RRH} := F \cdot A_{RRH} = 50$ lbs

Gravity Load (without ice)

Weight of All RRHs = $WT_{RRH} \cdot N_{RRH} = 74$ lbs

Development of Wind & Ice Load on RRHs

RRUS Data:

RRUS Model =	Ericsson 4415		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRH} := 16.5$	in	(User Input)
RRUS Width =	$W_{RRH} := 13.4$	in	(User Input)
RRUS Thickness =	$T_{RRH} := 5.9$	in	(User Input)
RRUS Weight =	$WT_{RRH} := 46$	lbs	(User Input)
Number of RRUS's =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.5$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.5$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 72$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.7$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.7$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 32$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 46$	lbs

Development of Wind & Ice Load on RRHs

RRUS Data:

RRUS Model =	Ericsson 4424		
RRUS Shape =	Flat		(User Input)
RRUS Height =	$L_{RRH} := 17.1$	in	(User Input)
RRUS Width =	$W_{RRH} := 14.4$	in	(User Input)
RRUS Thickness =	$T_{RRH} := 11.3$	in	(User Input)
RRUS Weight =	$WT_{RRH} := 86$	lbs	(User Input)
Number of RRUS's =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH = $SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.7$ sf

RRH Projected Surface Area = $A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.7$ sf

Total RRH Wind Force = $F_{RRH} := F \cdot A_{RRH} = 80$ lbs

Wind Load (Side)

Surface Area for One RRH = $SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.3$ sf

RRH Projected Surface Area = $A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.3$ sf

Total RRH Wind Force = $F_{RRH} := F \cdot A_{RRH} = 63$ lbs

Gravity Load (without ice)

Weight of All RRHs = $WT_{RRH} \cdot N_{RRH} = 86$ lbs

Development of Wind & Ice Load on Equipment

Equipment Model =	Ericsson RBS 6102		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 57.1$	in	(User Input)
Equipment Width =	$W_{Eq} := 51.2$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 27.6$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 860$	lbs	(User Input)
Number of Bearing Points =	$N_{BP} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 20.3$ sf

Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}\right]}{\left(\frac{T_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 492$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{(F \cdot SA_{Eq})}{(N_{BP})} = 238$ lbs

Wind Load (Side)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 10.9$ sf

Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}\right]}{\left(\frac{W_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 143$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{(F \cdot SA_{Eq})}{(N_{BP})} = 128$ lbs

Gravity Load (without ice)

Weight of All Equipment = $\frac{WT_{Eq}}{N_{BP}} = 215$ lbs

Development of Wind & Ice Load on Equipment

Equipment Model =	Ericsson B160 Battery Cabinet		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 63$	in	(User Input)
Equipment Width =	$W_{Eq} := 26$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 26$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 1883$	lbs	(User Input)
Number of Bearing Points =	$N_{BP} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 11.4$ sf

Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2} \right]}{\left(\frac{T_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 323$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{\left(F \cdot SA_{Eq}\right)}{\left(N_{BP}\right)} = 133$ lbs

Wind Load (Side)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 11.4$ sf

Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2} \right]}{\left(\frac{W_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 323$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{\left(F \cdot SA_{Eq}\right)}{\left(N_{BP}\right)} = 133$ lbs

Gravity Load (without ice)

Weight of All Equipment = $\frac{WT_{Eq}}{N_{BP}} = 471$ lbs

Development of Wind & Ice Load on Equipment

Equipment Model =	Ericsson 6160		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 63$	in	(User Input)
Equipment Width =	$W_{Eq} := 26$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 26$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 1200$	lbs	(User Input)
Number of Bearing Points =	$N_{BP} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 11.4$ sf

Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}\right]}{\left(\frac{T_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 323$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{(F \cdot SA_{Eq})}{(N_{BP})} = 133$ lbs

Wind Load (Side)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 11.4$ sf

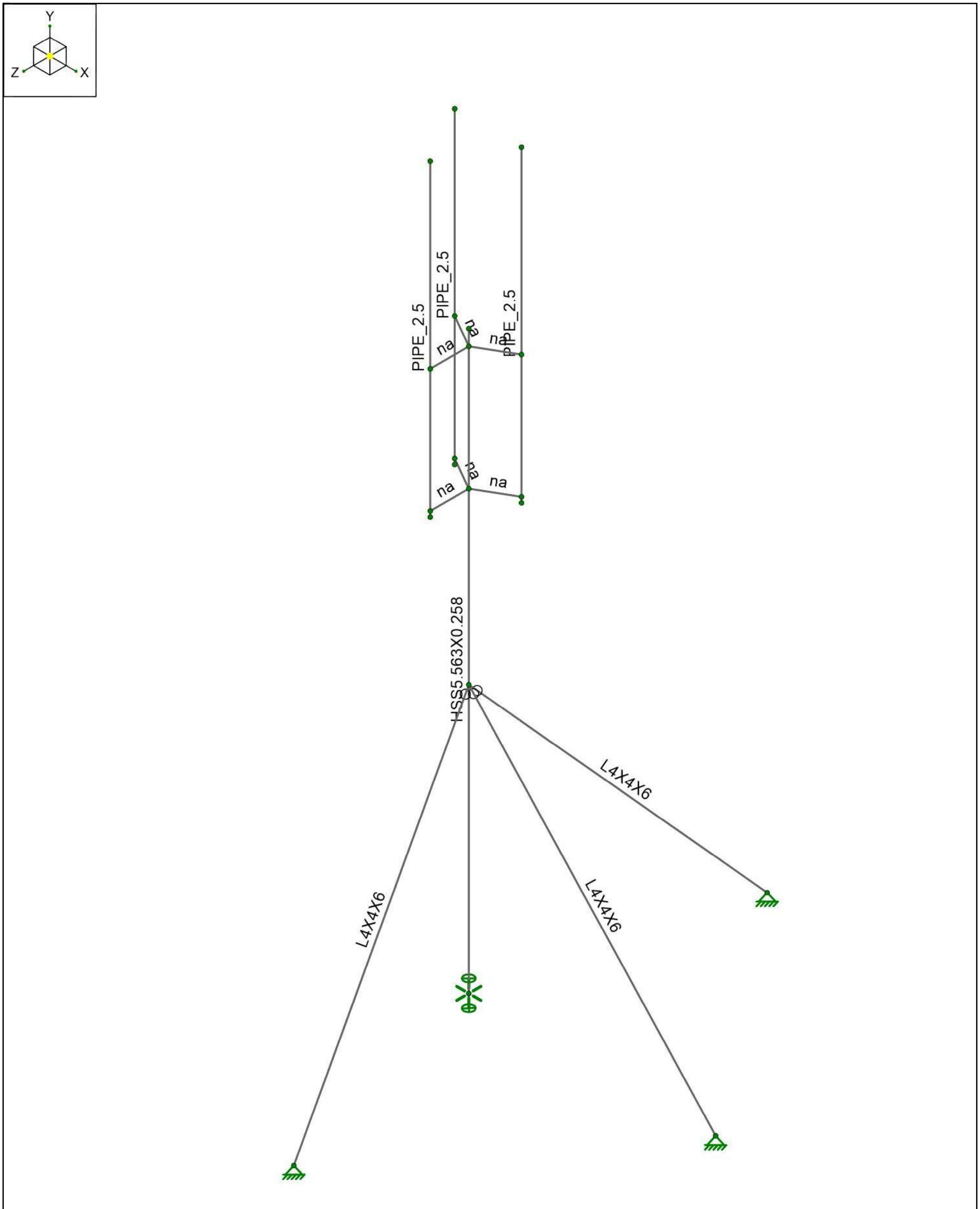
Total Equipment Wind Force (Vert) = $F_{Eq} := \frac{\left[F \cdot SA_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}\right]}{\left(\frac{W_{Eq}}{12}\right) \cdot \frac{N_{BP}}{2}} = 323$ lbs

Total Equipment Wind Force (Horz) = $F_{Eq} := \frac{(F \cdot SA_{Eq})}{(N_{BP})} = 133$ lbs

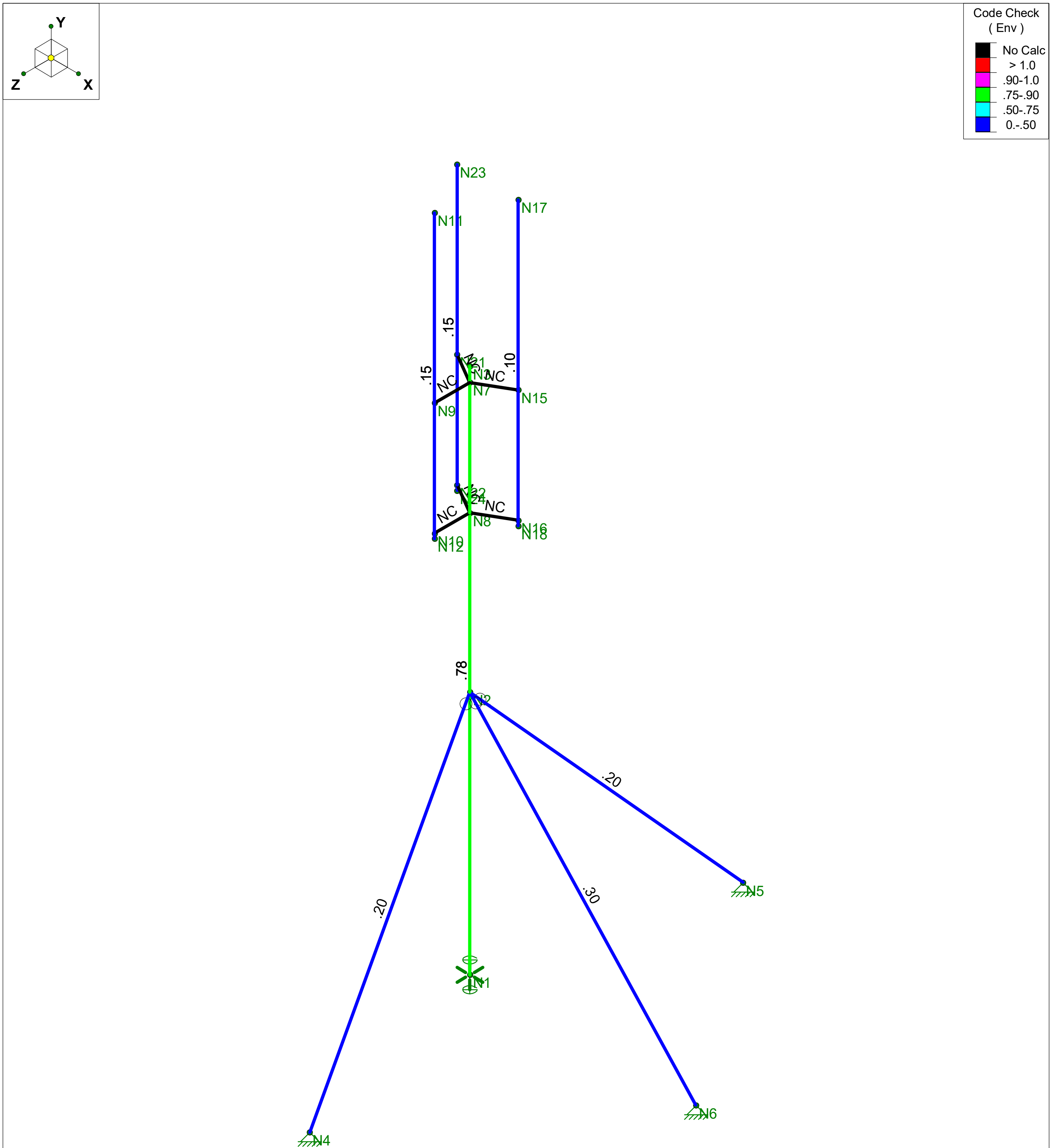
Gravity Load (without ice)

Weight of All Equipment = $\frac{WT_{Eq}}{N_{BP}} = 300$ lbs

Antenna Sectors/Platform



Centek Engineering	CT11002A - Antenna Mount (South)	SK-2
LAA		Oct 21, 2020
20143.03		Antenna Mount.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
LAA	CT11002A - Antenna Mount (South)	Nov 16, 2020 at 2:19 PM
20143.03	Unity Check	Antenna Mount.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Pipe Mast	HSS5.563X0.258	Beam	Pipe	A53 Grade B	Typical	4.01	14.2	14.2	28.5
2	Brace	L4X4X6	Beam	Pipe	A36 Gr.36	Typical	2.86	4.32	4.32	.141
3	Antenna Mast	PIPE_2.5	Beam	Pipe	A53 Grade B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Pipe Mast	18.67			Lbyy						Lateral
2	M2	Brace	11.747			Lbyy						Lateral
3	M3	Brace	11.797			Lbyy						Lateral
4	M4	Brace	11.747			Lbyy						Lateral
5	M7	Antenna Mast	10			Lbyy						Lateral
6	M10	Antenna Mast	10			Lbyy						Lateral
7	M13	Antenna Mast	10			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N3			Pipe Mast	Beam	Pipe	A53 Gra...	Typical
2	M2	N2	N4			Brace	Beam	Pipe	A36 Gr.36	Typical
3	M3	N2	N6			Brace	Beam	Pipe	A36 Gr.36	Typical
4	M4	N2	N5			Brace	Beam	Pipe	A36 Gr.36	Typical
5	M5	N9	N7			RIGID	None	None	RIGID	Typical
6	M6	N10	N8			RIGID	None	None	RIGID	Typical
7	M7	N12	N11			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
8	M8	N15	N7			RIGID	None	None	RIGID	Typical
9	M9	N16	N8			RIGID	None	None	RIGID	Typical
10	M10	N18	N17			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
11	M11	N21	N7			RIGID	None	None	RIGID	Typical
12	M12	N22	N8			RIGID	None	None	RIGID	Typical
13	M13	N24	N23			Antenna Mast	Beam	Pipe	A53 Gra...	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	0	8.67	0	0	
3	N3	0	18.67	0	0	
4	N4	2	0	7.67	0	
5	N5	2	0	-7.67	0	
6	N6	8	0	0	0	
7	N7	0	18.17	0	0	
8	N8	0	14.17	0	0	
9	N9	0	18.17	1.25	0	
10	N10	0	14.17	1.25	0	
11	N11	0	24	1.25	0	
12	N12	0	14	1.25	0	
13	N15	1.082532	18.17	-.625	0	
14	N16	1.082532	14.17	-.625	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
15	N17	1.082532	24	-.625	0	
16	N18	1.082532	14	-.625	0	
17	N21	-1.082532	18.17	-.625	0	
18	N22	-1.082532	14.17	-.625	0	
19	N23	-1.082532	24	-.625	0	
20	N24	-1.082532	14	-.625	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction		Reaction	
2	N4	Reaction	Reaction	Reaction			
3	N6	Reaction	Reaction	Reaction			
4	N5	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.222	11
2	M7	Y	-.169	%50
3	M10	Y	-.169	%50
4	M13	Y	-.169	%50
5	M1	Y	-.258	6
6	M1	Y	-.138	4

Member Point Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.192	11
2	M7	X	.265	%50
3	M10	X	.265	%50
4	M13	X	.749	%50
5	M1	X	.24	6
6	M1	X	.96	4

Member Point Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.192	11
2	M7	Z	.749	%50
3	M10	Z	.265	%50
4	M13	Z	.265	%50
5	M1	Z	.24	6
6	M1	Z	.216	4

Member Distributed Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.023	.023	0	16

Member Distributed Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.023	.023	0	16

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Weight of Equipment	DL					6			
3	Wind X-Direction	WLX					6	1		
4	Wind Z-Direction	WLZ					6	1		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																				
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1																
3	IBC 16-10 (a)	Yes	Y		DL	1	RLL	1																		
4	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1																
5	IBC 16-10 (c)	Yes	Y		DL	1	RL	1																		
6	IBC 16-11 (a)	Yes	Y		DL	1	LL	.75	LLS	.75	RLL	.75														
7	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75												
8	IBC 16-11 (c)	Yes	Y		DL	1	LL	.75	LLS	.75	RL	.75														
9	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																		
10	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																		
11	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																		
12	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																		
13	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RLL	.75												
14	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RLL	.75												
15	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RLL	.75												
16	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RLL	.75												
17	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75										
18	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75										
19	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75										
20	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75										
21	IBC 16-13 (c) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RL	.75												
22	IBC 16-13 (c) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RL	.75												
23	IBC 16-13 (c) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RL	.75												
24	IBC 16-13 (c) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RL	.75												
25	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																		
26	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																		
27	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																		
28	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																		

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	.612	9	4.123	11	.85	10	0	28	.182	25	0	28
2		min	-.611	11	-1.898	25	-.855	12	0	1	-.181	27	0	1
3	N4	max	.258	28	1.539	10	.99	28	0	28	0	28	0	28
4		min	-.342	10	-1.084	28	-1.311	10	0	1	0	1	0	1
5	N6	max	2.505	11	2.556	25	0	12	0	28	0	28	0	28

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
6		min	-2.326	25	-2.657	11	0	10	0	1	0	1	0	1
7	N5	max	.257	26	1.542	12	1.313	12	0	28	0	28	0	28
8		min	-.343	12	-1.082	26	-.987	26	0	1	0	1	0	1
9	Totals:	max	1.823	11	1.888	12	1.377	28						
10		min	-1.823	9	1.133	25	-1.377	26						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	0	28	0	28	0	28	4.885e-03	12	0	28	3.867e-03	9
2		min	0	1	0	1	0	1	-4.857e-03	10	0	1	-3.819e-03	11
3	N2	max	.013	25	.002	25	.006	10	1.061e-02	10	7.1e-04	27	9.824e-03	11
4		min	-.016	11	-.004	11	-.006	12	-1.066e-02	12	-7.154e-04	9	-9.813e-03	9
5	N3	max	2.596	9	.002	25	2.68	10	2.579e-02	10	1.356e-03	27	2.502e-02	11
6		min	-2.598	11	-.005	11	-2.696	12	-2.595e-02	12	-1.366e-03	9	-2.505e-02	9
7	N4	max	0	28	0	28	0	28	3.23e-04	27	3.957e-03	25	3.765e-03	11
8		min	0	1	0	1	0	1	-2.064e-03	9	-4.674e-03	11	-4.078e-03	9
9	N5	max	0	28	0	28	0	28	2.023e-03	9	4.722e-03	27	5.294e-03	11
10		min	0	1	0	1	0	1	-6.332e-04	27	-5.463e-03	9	-4.128e-03	25
11	N6	max	0	28	0	28	0	28	4.56e-03	26	4.954e-03	28	1.117e-03	11
12		min	0	1	0	1	0	1	-5.376e-03	12	-5.669e-03	10	5.269e-04	25
13	N7	max	2.446	9	.002	25	2.525	10	2.579e-02	10	1.356e-03	27	2.502e-02	11
14		min	-2.448	11	-.005	11	-2.54	12	-2.595e-02	12	-1.366e-03	9	-2.505e-02	9
15	N8	max	1.228	9	.002	25	1.271	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
16		min	-1.231	11	-.005	11	-1.279	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
17	N9	max	2.426	9	.387	12	2.525	10	2.579e-02	10	1.356e-03	27	2.502e-02	11
18		min	-2.427	11	-.389	10	-2.54	12	-2.595e-02	12	-1.366e-03	9	-2.505e-02	9
19	N10	max	1.21	9	.386	12	1.271	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
20		min	-1.213	11	-.387	10	-1.279	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
21	N11	max	4.208	9	.387	12	4.388	10	2.677e-02	10	1.356e-03	27	2.555e-02	11
22		min	-4.207	11	-.389	10	-4.415	12	-2.693e-02	12	-1.366e-03	9	-2.559e-02	9
23	N12	max	1.159	9	.386	12	1.219	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
24		min	-1.163	11	-.387	10	-1.226	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
25	N15	max	2.456	9	.32	11	2.525	10	2.579e-02	10	1.356e-03	27	2.502e-02	11
26		min	-2.458	11	-.324	9	-2.54	12	-2.595e-02	12	-1.366e-03	9	-2.505e-02	9
27	N16	max	1.237	9	.319	11	1.271	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
28		min	-1.24	11	-.323	9	-1.279	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
29	N17	max	4.239	9	.32	11	4.36	10	2.633e-02	10	1.356e-03	27	2.555e-02	11
30		min	-4.238	11	-.324	9	-4.386	12	-2.65e-02	12	-1.366e-03	9	-2.559e-02	9
31	N18	max	1.186	9	.319	11	1.219	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
32		min	-1.189	11	-.323	9	-1.226	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
33	N21	max	2.456	9	.327	9	2.525	10	2.579e-02	10	1.356e-03	27	2.502e-02	11
34		min	-2.458	11	-.33	11	-2.54	12	-2.595e-02	12	-1.366e-03	9	-2.505e-02	9
35	N22	max	1.237	9	.326	9	1.271	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
36		min	-1.24	11	-.328	11	-1.279	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9
37	N23	max	4.268	9	.327	9	4.36	10	2.633e-02	10	1.356e-03	27	2.598e-02	11
38		min	-4.267	11	-.33	11	-4.386	12	-2.65e-02	12	-1.366e-03	9	-2.602e-02	9
39	N24	max	1.186	9	.326	9	1.219	10	2.569e-02	10	1.16e-03	27	2.492e-02	11
40		min	-1.189	11	-.328	11	-1.226	12	-2.585e-02	12	-1.169e-03	9	-2.495e-02	9

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	Pnc/...	Pnt/o...	Mnyy...	Mnzz...	Cb	Eqn
1	M1	HSS5.563X0.2...	.778	8....	11	.075	8....		9	40.684	84.042	11.876	11.876	1.4...	H1-...
2	M2	L4X4X6	.195	6....	10	.002	11...	y	...	13.128	61.653	2.926	5.327	1.1...	H2-1
3	M3	L4X4X6	.304	6....	9	.002	0	y	...	13.017	61.653	2.926	5.321	1.1...	H2-1
4	M4	L4X4X6	.196	6....	12	.002	11...	y	...	13.128	61.653	2.926	5.327	1.1...	H2-1
5	M7	PIPE_2.5	.154	4....	12	.045	4....		...	14.886	33.743	2.393	2.393	1.68	H1-...
6	M10	PIPE_2.5	.100	.208	9	.016	4....		...	14.886	33.743	2.393	2.393	3.3...	H1-...
7	M13	PIPE_2.5	.154	4....	9	.045	4....		9	14.886	33.743	2.393	2.393	4.11	H1-...

Mast Connection to Frame:

Design Reactions:

Axial =	Axial := –1.9·kips	(User Input)
Shear =	Shear := 0.9·kips	(User Input)
Moment =	Moment := 0·kips·ft	(User Input)

Bolt Data:

Use ASTM A325

Number of Bolts =	N := 4	(User Input)
Distance Between Bolts x-dir=	S_x := 9·in	(User Input)
Distance Between Bolts x-dir=	S_y := 3.5·in	(User Input)
Bolt Ultimate Strength =	F_u := 120·ksi	(User Input)
Bolt Yield Strength =	F_y := 92·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 0.625·in	(User Input)
Threads per Inch =	n := 11	(User Input)

Base Plate Data:

Base Plate Steel =	A36	(User Input)
Allowable Yield Stress =	F_y := 36·ksi	(User Input)
Base Plate Width =	Pl_w := 12·in	(User Input)
Base Plate Length =	Pl_L := 6.5·in	(User Input)
Base Plate Thickness =	Pl_t := 0.5·in	(User Input)
Pole Diameter =	D_p := 5.625·in	(User Input)

Base Plate Data:

Weld Grade	E70XX	(User Input)
Weld Yield Stress =	F_{yw} := 70·ksi	(User Input)
Weld Size =	sw := 0.25·in	(User Input)

Bolt Analysis:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.307 \cdot in^2$

Tensile Force Horizontal = $T_x := \frac{Moment}{S_x \cdot \frac{N}{2}} - \frac{Axial}{N} = 0.5 \cdot kips$

Tensile Force Horizontal = $T_y := \frac{Moment}{S_y \cdot \frac{N}{2}} - \frac{Axial}{N} = 0.5 \cdot kips$

Spacing Diagonal = $S_d := \sqrt{S_x^{\,2} + S_y^{\,2}} = 9.7 \cdot in$

Tensile Force Diagonal = $T_D := \frac{Moment}{S_d} - \frac{Axial}{N} = 0.5 \cdot kips$

Maximum Tensile Force = $T_{Max} := \max(T_x, T_y, T_D) = 0.5 \cdot kips$

Allowable Tensile Force = $T_{ALL} := \frac{(0.75 \cdot F_u \cdot A_g)}{2} = 13.8 \cdot kips$

Bolt % of Capacity = $\frac{T_{Max}}{T_{ALL}} = 3 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Base Plate Check:

Allowable Bending Stress = $F_b := \frac{F_y}{1.67} = 21.557 \cdot ksi$

Moment Arm = $K := \frac{(S_x - D_p)}{2} = 1.69 \cdot in$

Moment in Base Plate = $M := K \cdot T_x \cdot 2 = 1.6 \cdot kips \cdot in$

Section Modulus = $S_Z := \frac{1}{4} \cdot Pl_L \cdot Pl_t^2 = 0.41 \cdot in^3$

Bending Stress = $f_b := \frac{M}{S_Z} = 3.95 \cdot ksi$

Condition2 := if($f_b < F_b$, "OK" , "Overstressed")

Condition2 = "OK"

Base Plate to Mast Weld Check:

Allowable Weld Stress = $F_w := 0.3 \cdot F_{yw} = 21 \cdot ksi$

Weld Area = $A_w := \frac{\pi}{4} \cdot \left[(D_p + 2sw \cdot 0.707)^2 - D_p^2 \right] = 3.22 \cdot in^2$

Weld Moment of Inertia = $I_w := \frac{\pi}{64} \cdot \left[(D_p + 2sw \cdot 0.707)^4 - D_p^4 \right] = 13.57 \cdot in^4$

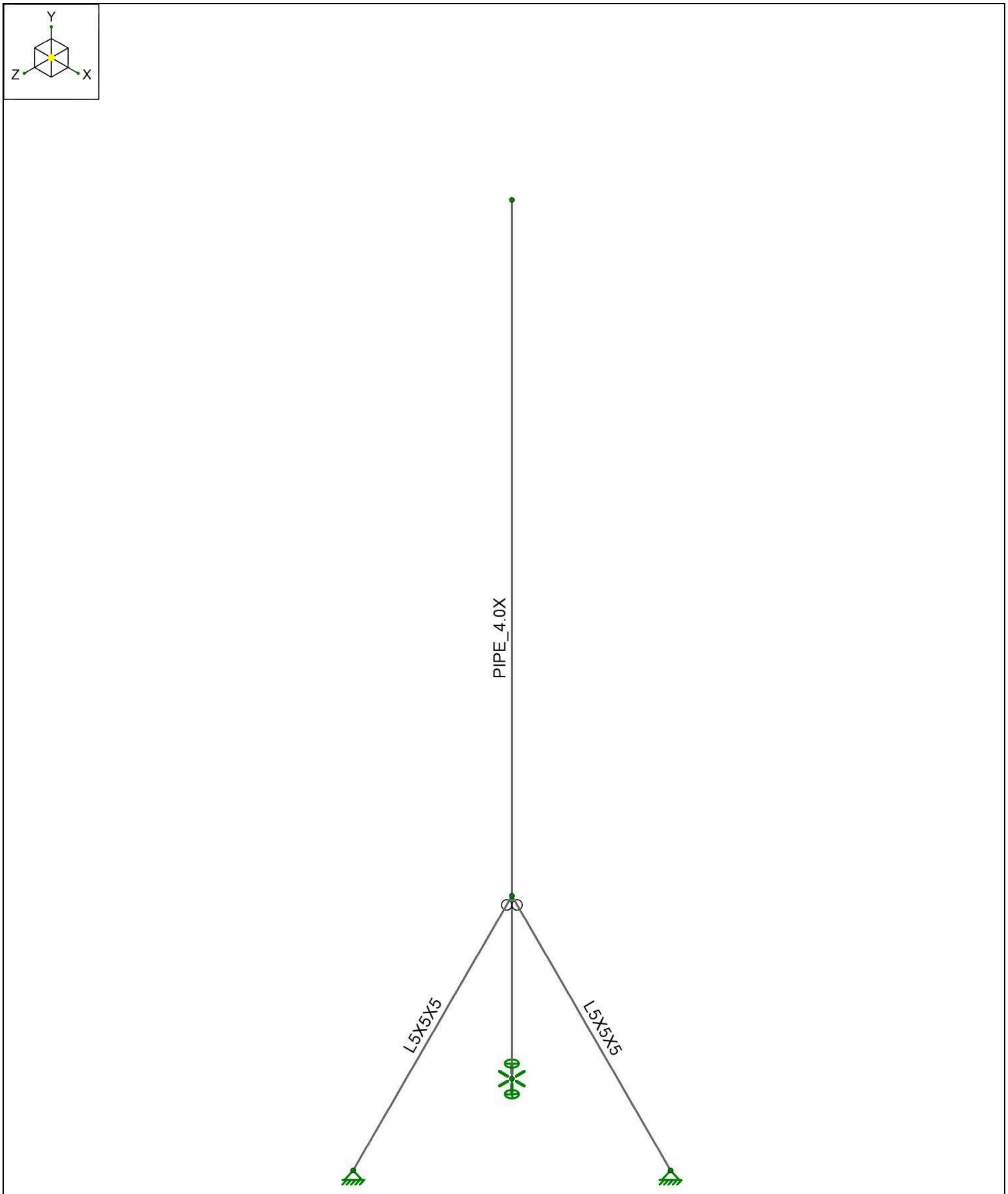
$c := \frac{D_p}{2} + sw \cdot 0.707 = 2.99 \cdot in$

Section Modulus of Weld = $S_w := \frac{I_w}{c} = 4.54 \cdot in^3$

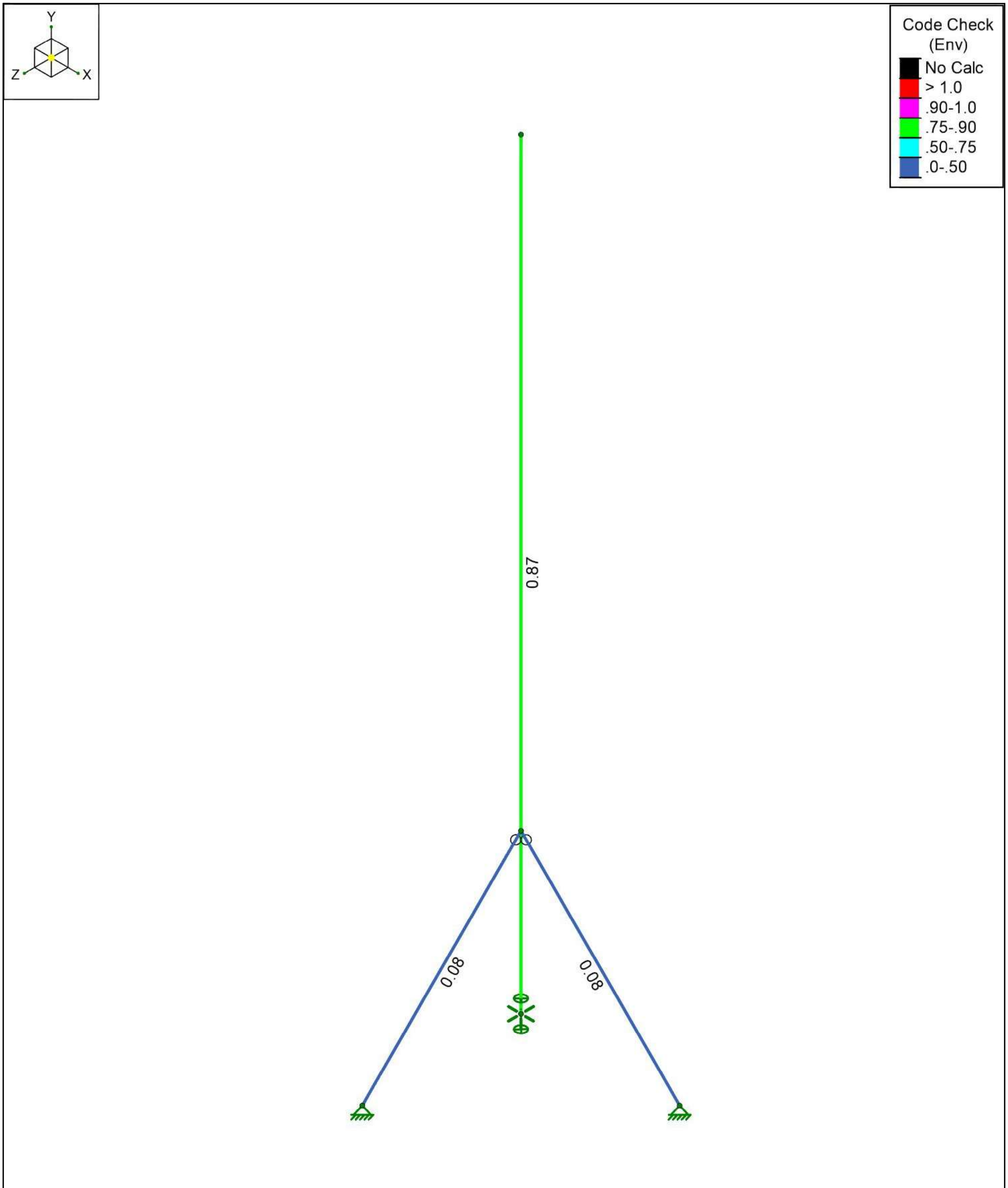
Weld Stress = $f_w := \frac{Moment}{S_w} + \frac{Shear}{A_w} = 0.28 \cdot ksi$

Condition3 := if($f_w < F_w$, "OK" , "Overstressed")

Condition3 = "OK"



Centek Engineering	CT11002A - Antenna Mount (East)	SK-1
LAA		Oct 21, 2020
20143.03		Antenna Mount.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering	CT11002A - Antenna Mount (East)	SK-2
LAA		Oct 21, 2020
20143.03		Antenna Mount.r3d

Nodes

	Label	X [ft]	Y [ft]	Z [ft]	Temp [deg F]	Detach From Dia…
1	N1	0	0	0		
2	N2	0	5	0		
3	N3	0	24	0		
4	N4	0	0	5		
5	N6	5	0	0		

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. C…	Density [k…	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Grad…	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Hot Rolled Member Properties

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp t…	Lcomp…	L-Torqu…	K y-y	K z-z	Cb	Function
1	M1	Pipe Mast	24			Lbyy						Lateral
2	M2	Brace	7.071			Lbyy						Lateral
3	M3	Brace	7.071			Lbyy						Lateral

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]	Inactive [(k, k-ft), (in,…
1	M1	Y	-0.312	21	Active

Member Point Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]	Inactive [(k, k-ft), (in,…
1	M1	X	0.666	21	Active

Member Point Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]	Inactive [(k, k-ft), (in,…
1	M1	Z	0.666	21	Active

Member Distributed Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Start Magnitud…	End Magnitude…	Start Location […	End Location [(…	Inactive [(k, k-f…
1	M1	X	0.018	0.018	0	18	Active

Member Distributed Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Start Magnitud…	End Magnitude…	Start Location […	End Location [(…	Inactive [(k, k-f…
1	M1	Z	0.018	0.018	0	18	Active

Basic Load Cases

	BLC Desc…	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Me…	Surface(P…
1	Self Weight	DL		-1						
2	Weight of…	DL					1			
3	Wind X-Di…	WLX					1	1		
4	Wind Z-Di…	WLZ					1	1		

Load Combinations

	De…	So…	PD…	SR…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…
1	IB…	Yes	Y		DL	1																		
2	IB…	Yes	Y		DL	1	LL	1	LLS	1														
3	IB…	Yes	Y		DL	1	RLL	1																
4	IB…	Yes	Y		DL	1	SL	1	SLN	1														

Load Combinations (Continued)

	De…	So…	PD…	SR…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…	BLC	Fa…
5	IB…	Yes	Y		DL	1	RL	1																
6	IB…	Yes	Y		DL	1	LL	0.75	LLS	0.75	RLL	0.75												
7	IB…	Yes	Y		DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75										
8	IB…	Yes	Y		DL	1	LL	0.75	LLS	0.75	RL	0.75												
9	IB…	Yes	Y		DL	1	WLX	0.6																
10	IB…	Yes	Y		DL	1	WLZ	0.6																
11	IB…	Yes	Y		DL	1	WLX	-0.6																
12	IB…	Yes	Y		DL	1	WLZ	-0.6																
13	IB…	Yes	Y		DL	1	WLX	0.45	LL	0.75	LLS	0.75	RLL	0.75										
14	IB…	Yes	Y		DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RLL	0.75										
15	IB…	Yes	Y		DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RLL	0.75										
16	IB…	Yes	Y		DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RLL	0.75										
17	IB…	Yes	Y		DL	1	WLX	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75								
18	IB…	Yes	Y		DL	1	WLZ	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75								
19	IB…	Yes	Y		DL	1	WLX	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75								
20	IB…	Yes	Y		DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75								
21	IB…	Yes	Y		DL	1	WLX	0.45	LL	0.75	LLS	0.75	RL	0.75										
22	IB…	Yes	Y		DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RL	0.75										
23	IB…	Yes	Y		DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RL	0.75										
24	IB…	Yes	Y		DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RL	0.75										
25	IB…	Yes	Y		DL	0.6	WLX	0.6																
26	IB…	Yes	Y		DL	0.6	WLZ	0.6																
27	IB…	Yes	Y		DL	0.6	WLX	-0.6																
28	IB…	Yes	Y		DL	0.6	WLZ	-0.6																

Node Reactions

	Node…		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	1.5	9	2.818	12	1.5	10	0	28	0	11	0	28
2		min	-1.501	11	-1.633	25	-1.501	12	0	1	0	9	0	1
3	N4	max	0	12	2.131	10	2.095	12	0	28	0	28	0	28
4		min	0	1	-2.057	12	-2.094	10	0	1	0	1	0	1
5	N6	max	2.095	11	2.131	9	0	11	0	28	0	28	0	28
6		min	-2.094	9	-2.057	11	0	1	0	1	0	1	0	1
7	Totals:	max	0.594	27	0.798	23	0.594	12						
8		min	-0.594	9	0.479	26	-0.594	10						

Asd360

	Member	Shape	Code…	Loc [ft]	LC	Shear…	Loc [ft]	Dir	LC	Pnc/o…	Pnt/o…	Mnyy/…	Mnzz/…	Cb	Eqn
1	M1	PIPE…	0.874	5	12	0.060	5		10	16.527	86.766	9.658	9.658	1.418	H1-1b
2	M2	L5X5X5	0.082	3.609	10	0.001	7.071	y	22	42.425	66.18	4.247	7.872	1.136	H2-1
3	M3	L5X5X5	0.082	3.609	9	0.001	7.071	y	9	42.425	66.18	4.247	7.872	1.136	H2-1

Mast Connection to Frame:

Design Reactions:

Axial =	Axial := –1.6·kips	(User Input)
Shear =	Shear := 1.5·kips	(User Input)
Moment =	Moment := 0·kips·ft	(User Input)

Bolt Data:

Use ASTM A325

Number of Bolts =	N := 4	(User Input)
Distance Between Bolts x-dir=	S_x := 8.5·in	(User Input)
Distance Between Bolts x-dir=	S_y := 4·in	(User Input)
Bolt Ultimate Strength =	F_u := 120·ksi	(User Input)
Bolt Yield Strength =	F_y := 92·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 0.5·in	(User Input)
Threads per Inch =	n := 13	(User Input)

Base Plate Data:

Base Plate Steel =	A36	(User Input)
Allowable Yield Stress =	F_y := 36·ksi	(User Input)
Base Plate Width =	Pl_w := 10.5·in	(User Input)
Base Plate Length =	Pl_L := 6.5·in	(User Input)
Base Plate Thickness =	Pl_t := 0.375·in	(User Input)
Pole Diameter =	D_p := 4.5·in	(User Input)

Base Plate Data:

Weld Grade	E70XX	(User Input)
Weld Yield Stress =	F_{yw} := 70·ksi	(User Input)
Weld Size =	sw := 0.1875·in	(User Input)

Bolt Analysis:

GrossArea of Bolt= $A_g := \frac{\pi}{4} \cdot D^2 = 0.196 \cdot in^2$

Tensile Force Horizontal = $T_x := \frac{Moment}{S_x \cdot \frac{N}{2}} - \frac{Axial}{N} = 0.4 \cdot kips$

Tensile Force Horizontal = $T_y := \frac{Moment}{S_y \cdot \frac{N}{2}} - \frac{Axial}{N} = 0.4 \cdot kips$

Spacing Diagonal = $S_d := \sqrt{{S_x}^2 + {S_y}^2} = 9.4 \cdot in$

Tensile Force Diagonal = $T_D := \frac{Moment}{S_d} - \frac{Axial}{N} = 0.4 \cdot kips$

Maximum Tensile Force = $T_{Max} := max(T_x, T_y, T_D) = 0.4 \cdot kips$

Allowable Tensile Force = $T_{ALL} := \frac{(0.75 \cdot F_u \cdot A_g)}{2} = 8.8 \cdot kips$

Bolt % of Capacity = $\frac{T_{Max}}{T_{ALL}} = 5 \cdot \%$

Condition1 = Condition1 := if$\left(\frac{T_{Max}}{T_{ALL}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Condition1 = "OK"

Base Plate Check:

Allowable Bending Stress = $F_b := \frac{F_y}{1.67} = 21.557 \cdot ksi$

Moment Arm = $K := \frac{(S_x - D_p)}{2} = 2 \cdot in$

Moment in Base Plate = $M := K \cdot T_x \cdot 2 = 1.6 \cdot kips \cdot in$

Section Modulus = $S_Z := \frac{1}{4} \cdot Pl_L \cdot Pl_t^2 = 0.23 \cdot in^3$

Bending Stress = $f_b := \frac{M}{S_Z} = 7 \cdot ksi$

Condition2 := if($f_b < F_b$, "OK", "Overstressed")

Condition2 = "OK"

Base Plate to Mast Weld Check:

Allowable Weld Stress = $F_w := 0.3 \cdot F_{yw} = 21 \cdot ksi$

Weld Area = $A_w := \frac{\pi}{4} \cdot \left[\left(D_p + 2sw \cdot 0.707 \right)^2 - D_p^2 \right] = 1.93 \cdot in^2$

Weld Moment of Inertia = $I_w := \frac{\pi}{64} \cdot \left[\left(D_p + 2sw \cdot 0.707 \right)^4 - D_p^4 \right] = 5.18 \cdot in^4$

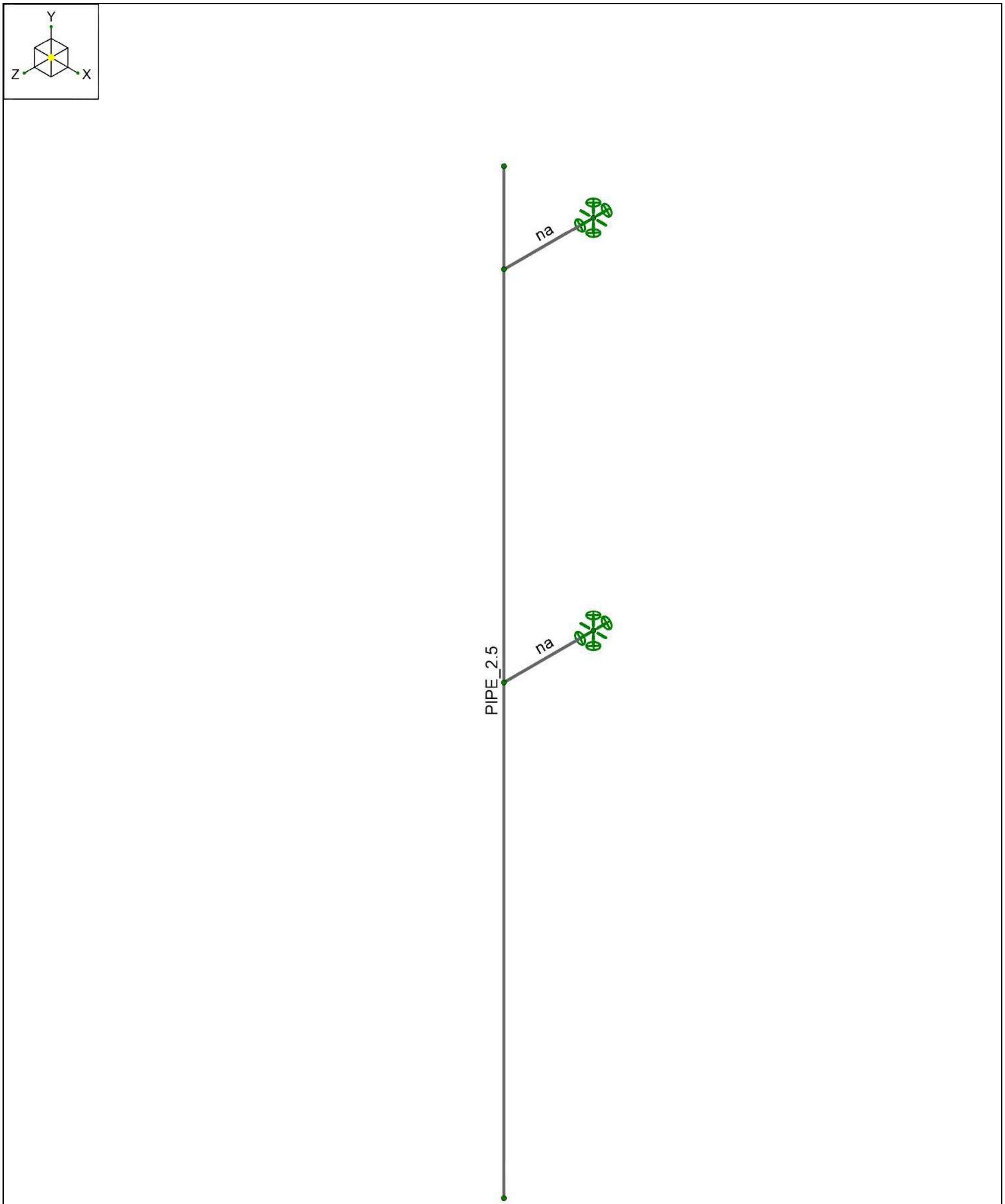
$c := \frac{D_p}{2} + sw \cdot 0.707 = 2.38 \cdot in$

Section Modulus of Weld = $S_w := \frac{I_w}{c} = 2.17 \cdot in^3$

Weld Stress = $f_w := \frac{Moment}{S_w} + \frac{Shear}{A_w} = 0.78 \cdot ksi$

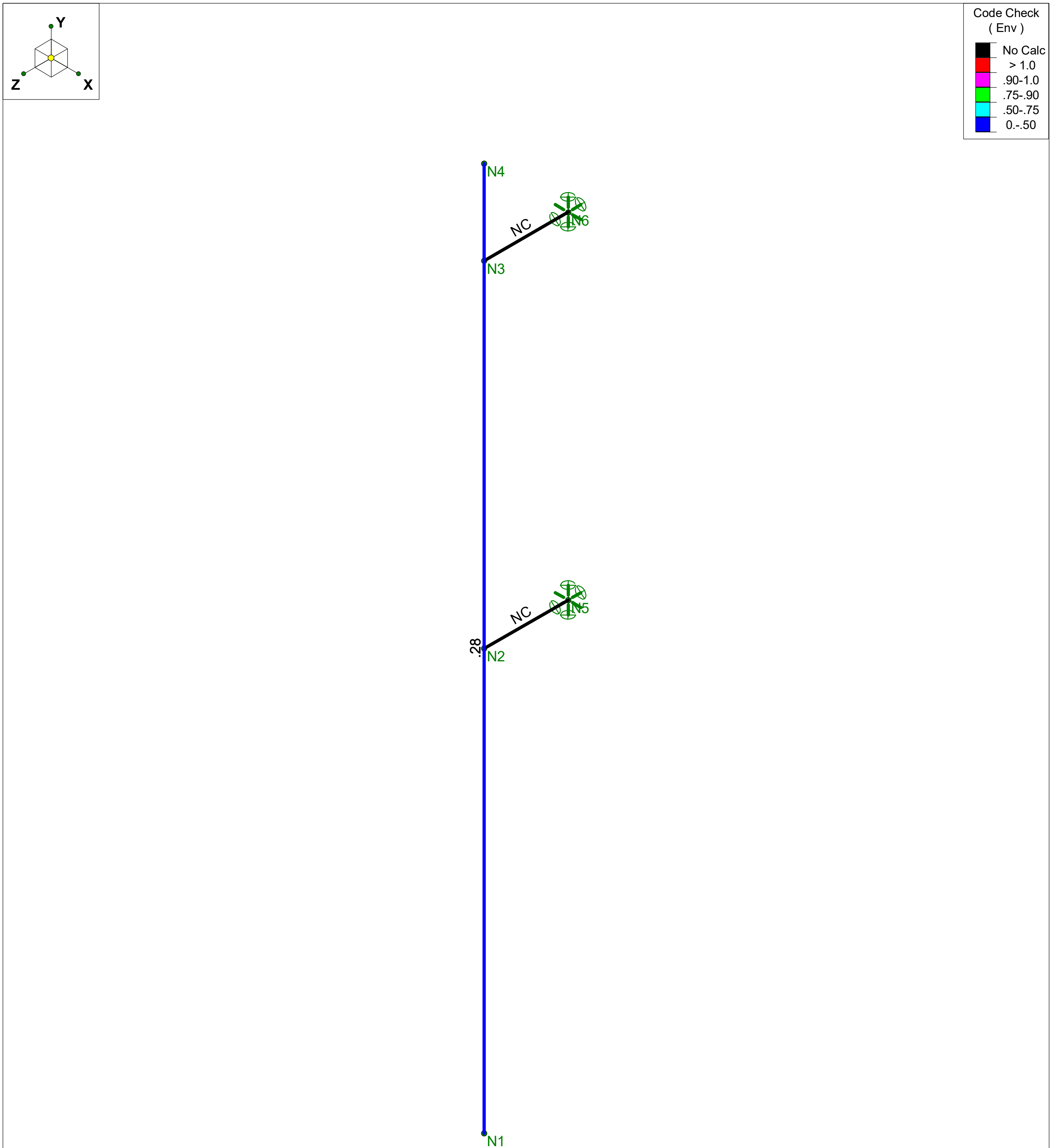
Condition3 := if($f_w < F_w$, "OK", "Overstressed")

Condition3 = "OK"



Envelope Only Solution

Centek Engineering	CT11002A - Antenna Mount (Delta Sector)	SK-1
LAA		Oct 21, 2020
20143.03		Antenna Mount-DELTA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
LAA	CT11002A - Antenna Mount (Delta Sector)	Nov 16, 2020 at 2:20 PM
20143.03	Unity Check	Antenna Mount-DELTA.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Pipe Mast	PIPE_2.5	Beam	Pipe	A53 Grade B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Pipe Mast	10			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N4			Pipe Mast	Beam	Pipe	A53 Gra...	Typical
2	M2	N3	N6			RIGID	None	None	RIGID	Typical
3	M3	N2	N5			RIGID	None	None	RIGID	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	-4	0	0	
2	N2	0	1	0	0	
3	N3	0	5	0	0	
4	N4	0	6	0	0	
5	N5	0	1	-1	0	
6	N6	0	5	-1	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N5	Reaction	Reaction	Reaction		Reaction	Reaction
2	N6	Reaction	Reaction	Reaction		Reaction	Reaction

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.169	7
2	M1	Y	-.074	3
3	M1	Y	-.086	3
4	M1	Y	-.092	1

Member Point Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.265	7
2	M1	X	.064	3
3	M1	X	.08	3
4	M1	X	.144	1

Member Point Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 4 : Wind Z-Direction) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.749	7
2	M1	Z	.05	3
3	M1	Z	.063	3
4	M1	Z	.064	1

Member Distributed Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.012	.012	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Weight of Equipment	DL					4			
3	Wind X-Direction	WLX					4	1		
4	Wind Z-Direction	WLZ					4			

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-10 (a)	Yes	Y		DL	1	RLL	1																
4	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1														
5	IBC 16-10 (c)	Yes	Y		DL	1	RL	1																
6	IBC 16-11 (a)	Yes	Y		DL	1	LL	.75	LLS	.75	RLL	.75												
7	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75										
8	IBC 16-11 (c)	Yes	Y		DL	1	LL	.75	LLS	.75	RL	.75												
9	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
10	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
11	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
12	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
13	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RLL	.75										
14	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RLL	.75										
15	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RLL	.75										
16	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RLL	.75										
17	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
18	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
19	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
20	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
21	IBC 16-13 (c) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	RL	.75										
22	IBC 16-13 (c) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	RL	.75										
23	IBC 16-13 (c) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	RL	.75										
24	IBC 16-13 (c) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	RL	.75										
25	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
26	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
27	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
28	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

Envelope Joint Reactions

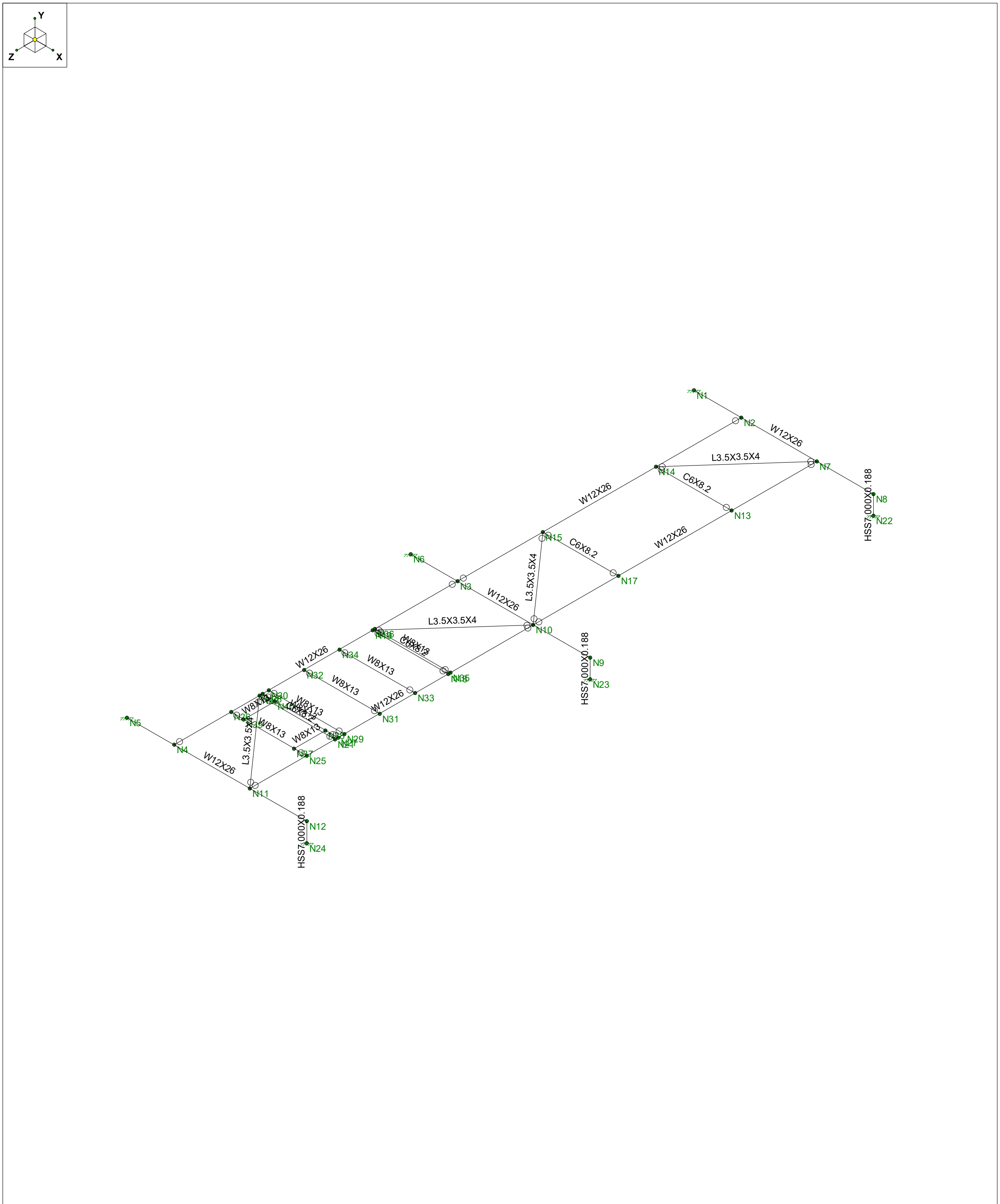
	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N5	max	.303	27	.319	12	.522	12	0	28	.303	27	.517	27
2		min	-.303	9	.063	26	-.332	26	0	1	-.303	9	-.517	25
3	N6	max	.101	27	.317	10	.081	28	0	28	.101	27	.085	27
4		min	-.101	9	.062	28	-.272	10	0	1	-.101	9	-.085	9
5	Totals:	max	.404	27	.476	24	.556	28						
6		min	-.404	9	.285	25	-.556	10						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	.197	25	0	26	.088	26	2.976e-03	12	0	28	4.317e-03	25
2		min	-.197	27	-.014	12	-.154	12	-1.88e-03	26	0	1	-4.317e-03	27
3	N2	max	0	28	0	26	0	28	1.112e-03	12	0	28	0	28
4		min	0	1	-.013	12	0	1	4.67e-06	26	0	1	0	1
5	N3	max	0	28	0	26	0	28	1.106e-03	12	0	28	0	28
6		min	0	1	-.013	12	0	1	-1.265e-05	26	0	1	0	1
7	N4	max	0	25	0	26	.013	12	1.106e-03	12	0	28	5.137e-06	27
8		min	0	11	-.013	12	0	26	-1.265e-05	26	0	1	-5.137e-06	9
9	N5	max	0	28	0	28	0	28	1.112e-03	12	0	28	0	28
10		min	0	1	0	1	0	1	4.67e-06	26	0	1	0	1
11	N6	max	0	28	0	28	0	28	1.106e-03	12	0	28	0	28
12		min	0	1	0	1	0	1	-1.265e-05	26	0	1	0	1

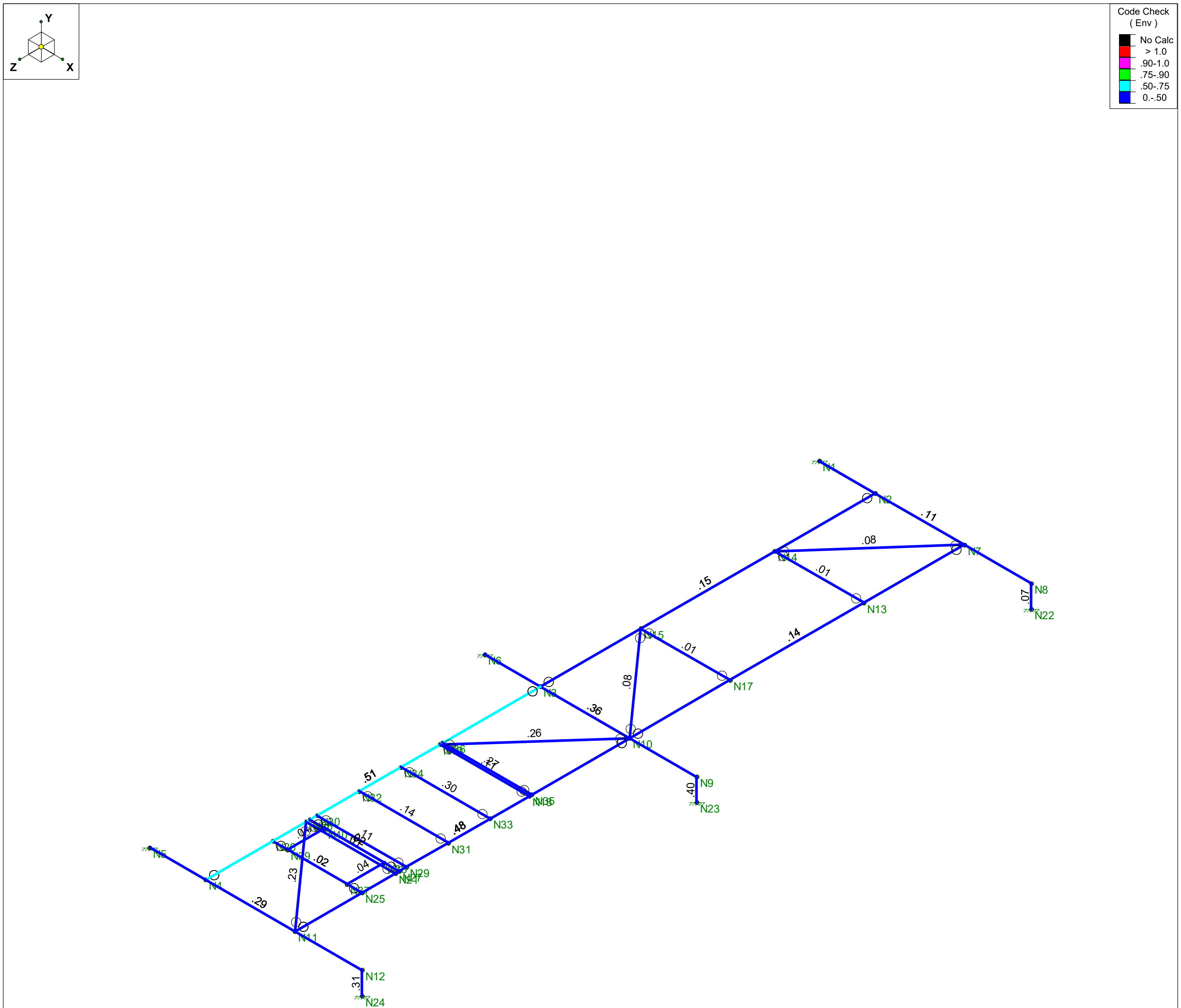
Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	Pnc/...	Pnt/o...	Mnyy...	Mnzz...	Cb	Eqn
1	M1	PIPE_2.5	.276	5	11	.041	5		...	14.886	33.743	2.393	2.393	1.6...	H1-...



Envelope Only Solution

Centek Engineering		
LAA	CT11002A Platform	Oct 22, 2020 at 9:50 AM
20143.03	Member Framing	CT11002A_AMA_Rev0.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
LAA	CT11002A Platform	Oct 22, 2020 at 9:49 AM
20143.03	Unity Check	CT11002A_AMA_Rev0.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	.145
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#6
Footing Top Bar Cover (in)	1.5
Footing Bottom Bar	#6
Footing Bottom Bar Cover (in)	3
Pedestal Bar	#6
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#4

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	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 Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E)W12X35	W12X35	Beam	Wide Flange	A36 Gr.36	Typical	10.3	24.5	285	.741
2	(E) HSS 4X4X1/4	HSS4X4X4	Column	SquareTube	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
3	(E)W12X35_A992	W12X35	Beam	Wide Flange	A992	Typical	10.3	24.5	285	.741
4	(E) Vertical Pipe_2.5	PIPE_2.5	Column	Wide Flange	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
5	(E) L4X4X1/4	L4X4X4	VBrace	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
6	(E) Horizontal_Pipe_...	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	(E)L3X3X3/16	L3X3X3	VBrace	Single Angle	A36 Gr.36	Typical	1.09	.948	.948	.014
8	(E) Antenna Mast Pip...	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
9	(P)Antenna Mast Pip...	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
10	(P) Horizontal_Pipe_...	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
11	(P)L3X3X1/4	L3X3X4	HBrace	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
12	(P)L4X4X1/4	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	W12X26	19			Lbyy						Lateral
2	M2	W12X26	19			Lbyy						Lateral
3	M3	W12X26	19			Lbyy						Lateral
4	M4	W12X26	30			Segment						Lateral
5	M5	W12X26	30			Segment						Lateral
6	M6	W12X26	30			Lbyy						Lateral
7	M7	W12X26	30			Lbyy						Lateral
8	M8	C6X8.2	8			Lbyy						Lateral
9	M9	C6X8.2	8			Lbyy						Lateral
10	M10	C6X8.2	8			Lbyy						Lateral
11	M11	C6X8.2	8			Lbyy						Lateral
12	M12	L3.5X3.5X4	12.042			Lbyy						Lateral
13	M13	L3.5X3.5X4	12.042			Lbyy						Lateral
14	M14	L3.5X3.5X4	12.042			Lbyy						Lateral
15	M15	L3.5X3.5X4	12.042			Lbyy						Lateral
16	M16	HSS7.000X0.188	2			Lbyy						Lateral
17	M17	HSS7.000X0.188	2			Lbyy						Lateral
18	M18	HSS7.000X0.188	2			Lbyy						Lateral
19	M19	W8X13	8			Lbyy						Lateral
20	M20	W8X13	8			Lbyy						Lateral
21	M21	W8X13	8			Lbyy						Lateral
22	M22	W8X13	8			Lbyy						Lateral
23	M23	W8X13	8			Lbyy						Lateral
24	M24	W8X13	8			Lbyy						Lateral
25	M25	W8X13	3.33			Lbyy						Lateral
26	M26	W8X13	3.33			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N5	N12			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
2	M2	N6	N9			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
3	M3	N1	N8			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
4	M4	N4	N3			W12X26	Beam	Wide Flange	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
5	M5	N11	N10			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
6	M6	N10	N7			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
7	M7	N3	N2			W12X26	Beam	Wide Flange	A36 Gr.36	Typical
8	M8	N21	N20			C6X8.2	Beam	Channel	A36 Gr.36	Typical
9	M9	N18	N19			C6X8.2	Beam	Channel	A36 Gr.36	Typical
10	M10	N17	N15			C6X8.2	Beam	Channel	A36 Gr.36	Typical
11	M11	N13	N14			C6X8.2	Beam	Channel	A36 Gr.36	Typical
12	M12	N11	N20			L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N10	N19			L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N10	N15			L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N7	N14			L3.5X3.5X4	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N24	N12			HSS7.000X0.188	Beam	HSS Pipe	A36 Gr.36	Typical
17	M17	N23	N9			HSS7.000X0.188	Beam	HSS Pipe	A36 Gr.36	Typical
18	M18	N22	N8			HSS7.000X0.188	Beam	HSS Pipe	A36 Gr.36	Typical
19	M19	N25	N26			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
20	M20	N27	N28			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
21	M21	N30	N29			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
22	M22	N32	N31			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
23	M23	N34	N33			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
24	M24	N36	N35			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
25	M25	N39	N40			W8X13	Beam	Wide Flange	A36 Gr.36	Typical
26	M26	N37	N38			W8X13	Beam	Wide Flange	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	5	0	0	0	
3	N3	5	0	30	0	
4	N4	5	0	60	0	
5	N5	0	0	60	0	
6	N6	0	0	30	0	
7	N7	13	0	0	0	
8	N8	19	0	0	0	
9	N9	19	0	30	0	
10	N10	13	0	30	0	
11	N11	13	0	60	0	
12	N12	19	0	60	0	
13	N13	13	0	9	0	
14	N14	5	0	9	0	
15	N15	5	0	21	0	
16	N17	13	0	21	0	
17	N18	13	0	39	0	
18	N19	5	0	39	0	
19	N20	5	0	51	0	
20	N21	13	0	51	0	
21	N22	19	-2	0	0	
22	N23	19	-2	30	0	
23	N24	19	-2	60	0	
24	N25	13	0	54	0	
25	N26	5	0	54	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
26	N27	13	0	50.67	0	
27	N28	5	0	50.67	0	
28	N29	13	0	50.003	0	
29	N30	5	0	50.003	0	
30	N31	13	0	46.253	0	
31	N32	5	0	46.253	0	
32	N33	13	0	42.503	0	
33	N34	5	0	42.503	0	
34	N35	13	0	38.753	0	
35	N36	5	0	38.753	0	
36	N37	11.667	0	54	0	
37	N38	11.667	0	50.67	0	
38	N39	6.333	0	54	0	
39	N40	6.333	0	50.67	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N22	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N23	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N24	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 5 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Y	-.215	.5
2	M22	Y	-.215	3
3	M21	Y	-.215	3
4	M21	Y	-.215	.5
5	M24	Y	-.3	1
6	M23	Y	-.3	1
7	M24	Y	-.3	3
8	M23	Y	-.3	3
9	M23	Y	-.471	4
10	M5	Y	-.064	18
11	M24	Y	-.471	4
12	M23	Y	-.471	6
13	M24	Y	-.471	6

Member Point Loads (BLC 6 : Wind X-Direction (46psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M21	X	.238	.5
2	M22	X	.238	.5
3	M22	X	.238	3
4	M21	X	.238	3
5	M21	Y	-.492	3
6	M22	Y	-.492	3

Member Point Loads (BLC 6 : Wind X-Direction (46psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
7	M21	Y	.492	.5
8	M22	Y	.492	.5
9	M23	X	.133	3
10	M23	X	.133	1
11	M24	X	.133	1
12	M24	X	.133	3
13	M23	Y	-.323	3
14	M24	Y	-.323	3
15	M23	Y	.323	1
16	M24	Y	.323	1
17	M23	X	.133	6
18	M24	X	.133	6
19	M23	X	.133	4
20	M24	X	.133	4
21	M23	Y	.323	4
22	M24	Y	.323	4
23	M23	Y	-.323	6
24	M24	Y	-.323	6

Member Point Loads (BLC 7 : Wind Z-Direction (46psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M21	Z	.128	.5
2	M22	Z	.128	.5
3	M21	Z	.128	3
4	M22	Z	.128	3
5	M22	Y	.143	3
6	M22	Y	.143	.5
7	M21	Y	-.143	.5
8	M21	Y	-.143	3
9	M23	Z	.133	1
10	M24	Z	.133	1
11	M24	Z	.133	3
12	M23	Z	.133	3
13	M23	Y	-.323	3
14	M23	Y	-.323	1
15	M24	Y	.323	1
16	M24	Y	.323	3
17	M23	Z	.133	6
18	M24	Z	.133	6
19	M23	Z	.133	4
20	M24	Z	.133	4
21	M23	Y	-.323	4
22	M23	Y	-.323	6
23	M24	Y	.323	6
24	M24	Y	.323	4

Member Distributed Loads (BLC 2 : Grating & Railing (9psf))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M5	Y	-.015	-.015	10	21
2	M24	Y	-.015	-.015	0	%100

Member Distributed Loads (BLC 8 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M9	Y	-.017	-.017	0	1.6
2	M9	Y	-.017	-.017	1.6	3.2
3	M9	Y	-.017	-.017	3.2	4.8
4	M9	Y	-.017	-.017	4.8	6.4
5	M9	Y	-.017	-.018	6.4	8
6	M13	Y	4.458e-5	-.0001338	10.837	11.44
7	M13	Y	-.0001338	-.0004904	11.44	12.042
8	M20	Y	-.003	-.003	2.845e-14	8
9	M21	Y	-.018	-.021	0	1.6
10	M21	Y	-.021	-.022	1.6	3.2
11	M21	Y	-.022	-.021	3.2	4.8
12	M21	Y	-.021	-.021	4.8	6.4
13	M21	Y	-.021	-.022	6.4	8
14	M22	Y	-.043	-.032	0	1.6
15	M22	Y	-.032	-.034	1.6	3.2
16	M22	Y	-.034	-.031	3.2	4.8
17	M22	Y	-.031	-.03	4.8	6.4
18	M22	Y	-.03	-.05	6.4	8
19	M23	Y	-.028	-.031	0	1.6
20	M23	Y	-.031	-.03	1.6	3.2
21	M23	Y	-.03	-.031	3.2	4.8
22	M23	Y	-.031	-.032	4.8	6.4
23	M23	Y	-.032	-.029	6.4	8
24	M24	Y	-.001	-.001	0	1.6
25	M24	Y	-.001	-.001	1.6	3.2
26	M24	Y	-.001	-.001	3.2	4.8
27	M24	Y	-.001	-.001	4.8	6.4
28	M24	Y	-.001	-.001	6.4	8

Member Distributed Loads (BLC 9 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M9	Y	-.04	-.037	0	1.6
2	M9	Y	-.037	-.038	1.6	3.2
3	M9	Y	-.038	-.038	3.2	4.8
4	M9	Y	-.038	-.038	4.8	6.4
5	M9	Y	-.038	-.038	6.4	8
6	M13	Y	9.898e-5	-.0002969	10.837	11.44
7	M13	Y	-.0002969	-.001	11.44	12.042
8	M20	Y	-.007	-.007	2.856e-14	8
9	M21	Y	-.048	-.047	0	1.6
10	M21	Y	-.047	-.046	1.6	3.2
11	M21	Y	-.046	-.048	3.2	4.8
12	M21	Y	-.048	-.047	4.8	6.4
13	M21	Y	-.047	-.039	6.4	8
14	M22	Y	-.111	-.068	0	1.6
15	M22	Y	-.068	-.07	1.6	3.2
16	M22	Y	-.07	-.076	3.2	4.8
17	M22	Y	-.076	-.07	4.8	6.4
18	M22	Y	-.07	-.095	6.4	8
19	M23	Y	-.062	-.07	0	1.6
20	M23	Y	-.07	-.069	1.6	3.2

Member Distributed Loads (BLC 9 : BLC 3 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
21	M23	Y	-.069	-.071	3.2	4.8
22	M23	Y	-.071	-.07	4.8	6.4
23	M23	Y	-.07	-.057	6.4	8
24	M24	Y	-.002	-.002	0	1.6
25	M24	Y	-.002	-.002	1.6	3.2
26	M24	Y	-.002	-.002	3.2	4.8
27	M24	Y	-.002	-.002	4.8	6.4
28	M24	Y	-.002	-.002	6.4	8

Member Distributed Loads (BLC 10 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M9	Y	-.056	-.056	0	1.6
2	M9	Y	-.056	-.056	1.6	3.2
3	M9	Y	-.056	-.055	3.2	4.8
4	M9	Y	-.055	-.057	4.8	6.4
5	M9	Y	-.057	-.06	6.4	8
6	M13	Y	.0001486	-.0004458	10.837	11.44
7	M13	Y	-.0004458	-.002	11.44	12.042
8	M20	Y	-.01	-.01	2.845e-14	8
9	M21	Y	-.059	-.07	0	1.6
10	M21	Y	-.07	-.072	1.6	3.2
11	M21	Y	-.072	-.068	3.2	4.8
12	M21	Y	-.068	-.07	4.8	6.4
13	M21	Y	-.07	-.073	6.4	8
14	M22	Y	-.144	-.106	0	1.6
15	M22	Y	-.106	-.113	1.6	3.2
16	M22	Y	-.113	-.104	3.2	4.8
17	M22	Y	-.104	-.101	4.8	6.4
18	M22	Y	-.101	-.165	6.4	8
19	M23	Y	-.094	-.103	0	1.6
20	M23	Y	-.103	-.102	1.6	3.2
21	M23	Y	-.102	-.103	3.2	4.8
22	M23	Y	-.103	-.106	4.8	6.4
23	M23	Y	-.106	-.098	6.4	8
24	M24	Y	-.004	-.004	0	1.6
25	M24	Y	-.004	-.004	1.6	3.2
26	M24	Y	-.004	-.004	3.2	4.8
27	M24	Y	-.004	-.004	4.8	6.4
28	M24	Y	-.004	-.004	6.4	8

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Grating & Railing (9psf)	DL						2	1	
3	Live Load (20 psf)	LL							1	
4	Snow Load (30 psf)	SL							1	
5	Weight of Equipment	DL					13			
6	Wind X-Direction (46psf)	WLX					24			
7	Wind Z-Direction (46psf)	WLZ					24			
8	BLC 2 Transient Area Loads	None						28		

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
9	BLC 3 Transient Area Loads	None						28		
10	BLC 4 Transient Area Loads	None						28		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Deflection 3	Yes	Y		DL	1	LL	1																
2	IBC 16-8	Yes	Y		DL	1																		
3	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
4	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	SLN	1														
5	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75										
6	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
7	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
8	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
9	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
10	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75												
11	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75												
12	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75												
13	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75												
14	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
15	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
16	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
17	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
18	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
19	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
20	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
21	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N6	max	3.563	16	4.7	16	.226	9	0	21	.813	7	19.07	17
2		min	.942	18	1.995	18	-.225	19	0	15	-.815	9	8.195	19
3	N1	max	.599	9	.855	9	.222	9	0	21	.797	7	3.369	9
4		min	.339	19	.513	19	-.221	7	0	7	-.799	9	2.02	19
5	N5	max	2.755	16	3.696	16	.227	9	0	17	.818	7	14.899	15
6		min	.616	18	1.424	18	-.227	19	0	19	-.819	9	5.768	21
7	N22	max	-.348	21	.581	7	.091	21	.181	21	.331	9	.191	7
8		min	-.587	7	.348	21	-.092	7	-.183	7	-.333	7	.109	21
9	N23	max	-1.257	20	2.881	14	.09	21	.18	21	.333	9	1.137	14
10		min	-3.329	14	1.17	20	-.091	19	-.182	19	-.335	7	.316	20
11	N24	max	-.853	20	2.238	14	.091	21	.181	21	.333	9	.88	14
12		min	-2.572	14	.808	20	-.091	7	-.182	19	-.335	7	.203	20
13	Totals:	max	1.21	20	14.663	17	.946	21						
14		min	-1.21	6	6.653	18	-.946	7						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	0	21	0	21	0	21	0	21	0	21	0	21
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	0	19	-.006	19	.023	7	1.743e-05	7	4.369e-04	9	-1.221e-04	19
4		min	0	9	-.011	9	-.023	9	-1.124e-05	21	-4.374e-04	7	-2.038e-04	9
5	N3	max	0	18	-.026	19	.024	7	2.478e-05	15	4.43e-04	9	-4.882e-04	19
6		min	-.001	16	-.061	17	-.024	9	-8.351e-06	21	-4.435e-04	7	-1.135e-03	17
7	N4	max	0	18	-.018	21	.024	7	4.914e-06	19	4.448e-04	9	-3.4e-04	21
8		min	0	16	-.048	15	-.024	9	-3.061e-05	17	-4.454e-04	7	-8.803e-04	15
9	N5	max	0	21	0	21	0	21	0	21	0	21	0	21
10		min	0	1	0	1	0	1	0	1	0	1	0	1
11	N6	max	0	21	0	21	0	21	0	21	0	21	0	21
12		min	0	1	0	1	0	1	0	1	0	1	0	1
13	N7	max	0	19	-.01	19	.027	7	4.532e-05	7	3.202e-04	7	1.303e-04	17
14		min	0	9	-.017	9	-.027	9	-2.922e-05	21	-3.201e-04	9	7.813e-05	19
15	N8	max	0	19	0	21	0	7	5.237e-05	7	1.975e-04	7	2.273e-04	9
16		min	0	9	0	7	0	21	-5.183e-05	21	-1.963e-04	9	1.359e-04	19
17	N9	max	-.001	18	0	20	0	19	5.193e-05	19	1.986e-04	7	1.254e-03	14
18		min	-.004	16	0	14	0	21	-5.15e-05	21	-1.975e-04	9	5.383e-04	20
19	N10	max	0	18	-.041	20	.027	7	6.442e-05	15	3.252e-04	7	7.3e-04	17
20		min	-.003	16	-.097	14	-.027	9	-2.171e-05	21	-3.25e-04	9	3.14e-04	19
21	N11	max	0	18	-.029	20	.027	7	1.278e-05	19	3.267e-04	7	5.68e-04	15
22		min	-.002	16	-.075	14	-.027	9	-7.959e-05	17	-3.264e-04	9	2.196e-04	21
23	N12	max	-.001	18	0	20	0	19	5.185e-05	19	1.989e-04	7	9.679e-04	14
24		min	-.003	16	0	14	0	21	-5.188e-05	21	-1.979e-04	9	3.722e-04	20
25	N13	max	.003	21	-.075	20	.027	7	7.812e-04	14	1.285e-05	19	3.102e-04	17
26		min	-.004	7	-.133	14	-.027	9	4.217e-04	20	-2.267e-05	9	1.489e-04	19
27	N14	max	.003	21	-.073	19	.023	7	7.57e-04	17	1.113e-05	19	-1.933e-04	19
28		min	-.004	7	-.127	17	-.023	9	4.248e-04	19	-2.602e-05	9	-4.06e-04	17
29	N15	max	.002	19	-.081	19	.024	7	-3.099e-04	21	1.686e-05	7	-3.32e-04	19
30		min	-.006	9	-.147	17	-.024	9	-5.226e-04	7	-1.57e-05	21	-7.631e-04	17
31	N17	max	.002	19	-.087	20	.027	7	-2.402e-04	18	1.25e-05	19	5.501e-04	17
32		min	-.006	9	-.165	14	-.027	9	-4.127e-04	8	-2.228e-05	9	2.432e-04	19
33	N18	max	.008	18	-.285	20	.027	7	5.035e-03	14	3.343e-04	6	6.764e-04	17
34		min	-.012	8	-.913	14	-.027	9	1.456e-03	20	-3.332e-04	20	2.925e-04	19
35	N19	max	.008	18	-.311	18	.024	7	5.48e-03	16	3.133e-04	18	-3.043e-04	20
36		min	-.011	8	-.941	16	-.024	9	1.726e-03	18	-3.163e-04	8	-7.4e-04	14
37	N20	max	.004	18	-.297	18	.024	7	-1.811e-03	18	3.438e-04	8	-2.467e-04	20
38		min	-.006	8	-.914	16	-.024	9	-5.648e-03	16	-3.37e-04	18	-6.412e-04	14
39	N21	max	.004	18	-.266	20	.027	7	-1.576e-03	20	3.247e-04	8	6.115e-04	15
40		min	-.006	8	-.876	14	-.027	9	-5.263e-03	14	-3.165e-04	18	2.548e-04	21
41	N22	max	0	21	0	21	0	21	0	21	0	21	0	21
42		min	0	1	0	1	0	1	0	1	0	1	0	1
43	N23	max	0	21	0	21	0	21	0	21	0	21	0	21
44		min	0	1	0	1	0	1	0	1	0	1	0	1
45	N24	max	0	21	0	21	0	21	0	21	0	21	0	21
46		min	0	1	0	1	0	1	0	1	0	1	0	1
47	N25	max	.002	19	-.199	20	.027	7	-2.067e-03	20	7.579e-05	8	5.97e-04	15
48		min	-.004	9	-.651	14	-.027	9	-6.978e-03	14	-7.356e-05	18	2.43e-04	21
49	N26	max	.002	19	-.219	18	.024	7	-2.412e-03	18	6.742e-05	8	-2.807e-04	20
50		min	-.004	9	-.671	16	-.024	9	-7.542e-03	16	-5.869e-05	18	-7.187e-04	14
51	N27	max	.005	18	-.272	20	.027	7	-1.512e-03	20	3.605e-04	8	6.131e-04	15
52		min	-.008	8	-.897	14	-.027	9	-5.036e-03	14	-3.52e-04	18	2.56e-04	21

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
53	N28	max	.005	18	-.304	18	.024	7	-1.732e-03	18	3.841e-04	8	-2.483e-04	20
54		min	-.008	8	-.936	16	-.024	9	-5.396e-03	16	-3.766e-04	18	-6.439e-04	14
55	N29	max	.008	18	-.284	20	.027	7	-1.376e-03	20	4.099e-04	8	6.164e-04	15
56		min	-.011	8	-.936	14	-.027	9	-4.554e-03	14	-4.008e-04	18	2.586e-04	21
57	N30	max	.008	18	-.317	18	.024	7	-1.566e-03	18	4.274e-04	8	-2.515e-04	20
58		min	-.011	8	-.978	16	-.024	9	-4.863e-03	16	-4.186e-04	18	-6.494e-04	14
59	N31	max	.025	18	-.327	20	.027	7	-5.015e-04	20	2.272e-04	8	6.351e-04	14
60		min	-.028	8	-1.075	14	-.027	9	-1.459e-03	14	-2.16e-04	18	2.725e-04	20
61	N32	max	.025	18	-.365	18	.024	7	-5.102e-04	18	2.245e-04	8	-2.695e-04	20
62		min	-.028	8	-1.125	16	-.024	9	-1.472e-03	16	-2.135e-04	18	-6.803e-04	14
63	N33	max	.023	18	-.328	20	.027	7	2.e-03	14	2.717e-04	6	6.555e-04	17
64		min	-.027	8	-1.064	14	-.027	9	5.163e-04	20	-2.649e-04	20	2.841e-04	19
65	N34	max	.023	18	-.362	18	.024	7	2.253e-03	16	2.831e-04	6	-2.875e-04	20
66		min	-.027	8	-1.108	16	-.024	9	6.695e-04	18	-2.75e-04	20	-7.112e-04	14
67	N35	max	.007	18	-.281	20	.027	7	5.228e-03	14	3.142e-04	6	6.778e-04	17
68		min	-.011	8	-.897	14	-.027	9	1.517e-03	20	-3.133e-04	20	2.931e-04	19
69	N36	max	.007	18	-.305	18	.024	7	5.686e-03	16	2.906e-04	18	-3.096e-04	20
70		min	-.01	8	-.924	16	-.024	9	1.795e-03	18	-2.95e-04	8	-7.507e-04	14
71	N37	max	.002	19	-.216	20	.027	7	-2.022e-03	20	8.58e-05	8	1.206e-03	8
72		min	-.004	9	-.646	14	-.027	9	-6.154e-03	14	-8.364e-05	18	-6.243e-04	18
73	N38	max	.005	18	-.297	20	.027	7	-2.017e-03	20	7.981e-05	8	1.762e-03	8
74		min	-.008	8	-.891	14	-.027	9	-6.146e-03	14	-7.768e-05	18	-8.488e-04	18
75	N39	max	.002	19	-.23	18	.024	7	-2.217e-03	18	8.15e-05	8	1.107e-03	8
76		min	-.004	9	-.659	16	-.024	9	-6.474e-03	16	-7.924e-05	18	-6.837e-04	18
77	N40	max	.005	18	-.318	18	.024	7	-2.212e-03	18	8.133e-05	8	1.646e-03	8
78		min	-.008	8	-.917	16	-.024	9	-6.465e-03	16	-7.909e-05	18	-9.181e-04	18

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	Pnc/...	Pnt/o...	Mnyy...	Mnzz...	Cb	Eqn
1	M4	W12X26	.512	17.5	16	.081	30	y	...	20.064	164.91	14.677	66.826	1.06	H1-...
2	M5	W12X26	.480	17.5	14	.075	30	y	...	20.064	164.91	14.677	66.826	1.0...	H1-...
3	M17	HSS7.000X0.1...	.397	2	14	.153	0		...	79.989	80.407	14.569	14.569	1.9...	H1-...
4	M2	W12X26	.359	0	17	.116	0	y	...	50.022	164.91	14.677	66.826	2.1...	H1-...
5	M16	HSS7.000X0.1...	.306	2	14	.122	0		...	79.989	80.407	14.569	14.569	1.9...	H1-...
6	M23	W8X13	.299	4	15	.069	0	y	...	41.835	82.778	3.862	18.648	1.16	H1-...
7	M1	W12X26	.290	0	15	.092	0	y	...	50.022	164.91	14.677	66.826	2.1...	H1-...
8	M24	W8X13	.274	4	9	.052	0	y	9	41.835	82.778	3.862	18.797	1.1...	H1-...
9	M13	L3.5X3.5X4	.263	6....	6	.009	12...	y	...	5.793	36.647	1.607	2.389	1.1...	H2-1
10	M12	L3.5X3.5X4	.230	6....	6	.009	0	y	...	5.793	36.647	1.607	2.389	1.1...	H2-1
11	M7	W12X26	.154	14...	9	.012	0	y	...	20.064	164.91	14.677	23.834	1.1...	H1-...
12	M22	W8X13	.139	3	17	.046	0	y	...	41.835	82.778	3.862	18.645	1.16	H1-...
13	M6	W12X26	.138	14...	9	.011	30	y	...	20.064	164.91	14.677	23.922	1.1...	H1-...
14	M21	W8X13	.113	3	15	.035	0	y	...	41.835	82.778	3.862	18.984	1.1...	H1-...
15	M3	W12X26	.111	0	9	.021	0	y	9	50.022	164.91	14.677	66.826	2.1...	H1-...
16	M9	C6X8.2	.108	4	16	.028	8	y	...	11.205	51.521	1.402	7.402	1.1...	H1-...
17	M14	L3.5X3.5X4	.085	6....	9	.005	12...	y	...	5.793	36.647	1.607	2.389	1.1...	H2-1
18	M15	L3.5X3.5X4	.083	6....	7	.004	12...	y	...	5.793	36.647	1.607	2.389	1.1...	H2-1
19	M18	HSS7.000X0.1...	.071	2	7	.049	0		7	79.989	80.407	14.569	14.569	1.9...	H1-...
20	M26	W8X13	.038	3.33	8	.008	1....	z	8	73.547	82.778	3.862	20.479	1.1...	H1-...
21	M25	W8X13	.037	3.33	8	.008	1....	z	8	73.547	82.778	3.862	20.479	1.11	H1-...

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	Pnc/...	Pnt/o...	Mnyy...	Mnzz...	Cb	Eqn
22	M20	W8X13	.023	6....	8	.020	0	y	...	41.835	82.778	3.862	17.846	1.11	H1-...
23	M19	W8X13	.022	6....	8	.016	8	y	...	41.835	82.778	3.862	17.767	1.1...	H1-...
24	M8	C6X8.2	.015	4	8	.005	0	y	8	11.205	51.521	1.402	7.405	1.1...	H1-...
25	M11	C6X8.2	.009	4	9	.002	8	y	...	11.205	51.521	1.402	7.405	1.1...	H1-...
26	M10	C6X8.2	.009	4	7	.003	8	y	...	11.205	51.521	1.402	7.405	1.1...	H1-...

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

T-Mobile Existing Facility

Site ID: CT11002A

Milford / I-95 /1
1201 Boston Post Road (CT Post Mall - KitchenEtc)
Milford, Connecticut 06460

January 13, 2021

EBI Project Number: 6220005911

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**20.93%**

January 13, 2021

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

Emissions Analysis for Site: CT11002A - Milford / I-95 /1

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1201 Boston Post Road (CT Post Mall - KitchenEtc)** in **Milford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 1201 Boston Post Road (CT Post Mall - KitchenEtc) in Milford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. A conservative roof attenuation factor of 10 dB, in which a radiofrequency signal is reduced by a factor of 10 due to intervening roof building materials[1], was also used. It is assumed, for purposes of this analysis, that the roof building material is comprised of a poured concrete and steel underlayment with a rubber fabric roof membrane. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

[1] Based upon wireless signal roof attenuation factors for similar materials cited in Jackman, Swartz, Burton, Head, "CWDP Certified Wireless Design Professional Official Study Guide," Wiley Publishers, 2011, Table 6-3.

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

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

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

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

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

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

12) A conservative roof attenuation factor of 10 dB, in which a radiofrequency signal is reduced by a factor of 10 due to intervening roof building materials, was also used. It is assumed, for purposes of this analysis, that the roof building material is comprised of a poured concrete and steel underlayment with a rubber fabric roof membrane.

13) The antennas used in this modeling are the RFS APXVAA4L24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAA4L24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100

MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APXVAA4L24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAA4L24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector D. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 43 and 41 feet above ground level (AGL).

15) Emissions from additional carriers were not included because emissions data for the site location are not available.

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C	Sector:	D
Antenna #:	1	Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAA4L24_43-U-NA20	Make / Model:	RFS APXVAA4L24_43-U-NA20	Make / Model:	RFS APXVAA4L24_43-U-NA20	Make / Model:	Ericsson AIR 6449
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	15.7 dBd / 15.7 dBd / 16 dBd / 18.6 dBd / 18.6 dBd / 19.8 dBd / 19.8 dBd	Gain:	15.7 dBd / 15.7 dBd / 16 dBd / 18.6 dBd / 18.6 dBd / 19.8 dBd / 19.8 dBd	Gain:	15.7 dBd / 15.7 dBd / 16 dBd / 18.6 dBd / 18.6 dBd / 19.8 dBd / 19.8 dBd	Gain:	22.05 dBd22.05 dBd
Height (AGL):	43 feet	Height (AGL):	43 feet	Height (AGL):	43 feet	Height (AGL):	41 feet
Channel Count:	15	Channel Count:	15	Channel Count:	15	Channel Count:	2
Total TX Power (W):	620 Watts	Total TX Power (W):	620 Watts	Total TX Power (W):	620 Watts	Total TX Power (W):	240 Watts
ERP (W):	5,033.68	ERP (W):	5,033.68	ERP (W):	5,033.68	ERP (W):	3,038.86
Antenna A1 MPE %:	**13.12%**	Antenna B1 MPE %:	**13.12%**	Antenna C1 MPE %:	**13.12%**	Antenna D1 MPE %:	**6.50%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	RFS APXVAA4L24_43-U-NA20
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	15.7 dBd15.7 dBd16 dBd18.6 dBd18.6 dBd19.8 dBd19.8 dBd
Height (AGL):	43 feet	Height (AGL):	43 feet	Height (AGL):	43 feet	Height (AGL):	41 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2	Channel Count:	15
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	620 Watts
ERP (W):	3,038.86	ERP (W):	3,038.86	ERP (W):	3,038.86	ERP (W):	5033.684352230517 1
Antenna A2 MPE %:	**5.91%**	Antenna B2 MPE %:	**5.91%**	Antenna C2 MPE %:	**5.91%**	Antenna D2 MPE %:	**14.43%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector D):	20.93%
no additional carriers	N/A
Site Total MPE % :	20.93%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	19.03%
T-Mobile Sector B Total:	19.03%
T-Mobile Sector C Total:	19.03%
T-Mobile Sector D Total:	20.93%
Site Total MPE % :	20.93%

T-Mobile Maximum MPE Power Values (Sector D)

T-Mobile Frequency Band / Technology (Sector D)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2500 MHz LTE	1	1519.43	41.0	32.50	2500 MHz LTE	1000	3.25%
T-Mobile 2500 MHz NR	1	1519.43	41.0	32.50	2500 MHz NR	1000	3.25%
T-Mobile 600 MHz LTE	2	182.86	41.0	7.82	600 MHz LTE	400	1.96%
T-Mobile 600 MHz NR	1	487.63	41.0	10.43	600 MHz NR	400	2.61%
T-Mobile 700 MHz LTE	2	189.29	41.0	8.10	700 MHz LTE	467	1.73%
T-Mobile 1900 MHz GSM	4	255.34	41.0	21.84	1900 MHz GSM	1000	2.18%
T-Mobile 1900 MHz LTE	2	510.68	41.0	21.84	1900 MHz LTE	1000	2.18%
T-Mobile 2100 MHz UMTS	2	293.17	41.0	12.54	2100 MHz UMTS	1000	1.25%
T-Mobile 2100 MHz LTE	2	586.34	41.0	25.08	2100 MHz LTE	1000	2.51%
						Total:	**20.93%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	19.03%
Sector B:	19.03%
Sector C:	19.03%
Sector D:	20.93%
T-Mobile Maximum MPE % (Sector D):	20.93%
Site Total:	20.93%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.93%** 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 within the allowable 100% threshold standard per the federal government.