Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

January 28, 2022

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

T-Mobile Northeast LLC – CTHA836A – Eversource Tower Replacement
Tower Share Application
585 Keeney Street
Latitude- 41.743106
Longitude- -72.534928

Dear Ms. Bachman,

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile plans to install antennas and related equipment at the tower site located at 585 Keeney Street, Manchester, Connecticut.

T-Mobile will install six (6) 600/700/1900/2100/5G MHz antennas and six (6) RRUs at the 121' level of the new replacement 125' utility pole tower. Twenty Four (24) Coax cables will also be installed. T-Mobile's equipment cabinets will be placed on an existing 18' X 9' 6" concrete pad within the existing ground facility. Included are plans by Centek Engineering, dated May 3, 2021, depicting the planned changes and attached as **Exhibit A**. Also included is a structural analysis prepared by Centek Engineering, dated January 11, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment. This is attached and detailed in **Exhibit B**.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of T-Mobile's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Steve Stephanou, Town Manager of Manchester, Megan Pilla, Town Planner, as well as the tower and property owner, Connecticut Light & Power (Eversource). Please see the attached letter from Eversource authorizing the proposed shared use of this facility attached as **Exhibit C**.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the utility pole is at 125'; T-Mobile's proposed antennas will be located at a center line height of 121'.

2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. T-Mobile's plans include the installation of an emergency back-up generator; noise associated with this installation is exempt from State and local noise standards. The incremental effect of the proposed changes will be negligible.

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 6.34%, as evidenced by **Exhibit D**.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, T-Mobile respectfully submits that the shared use of this facility satisfies these criteria.

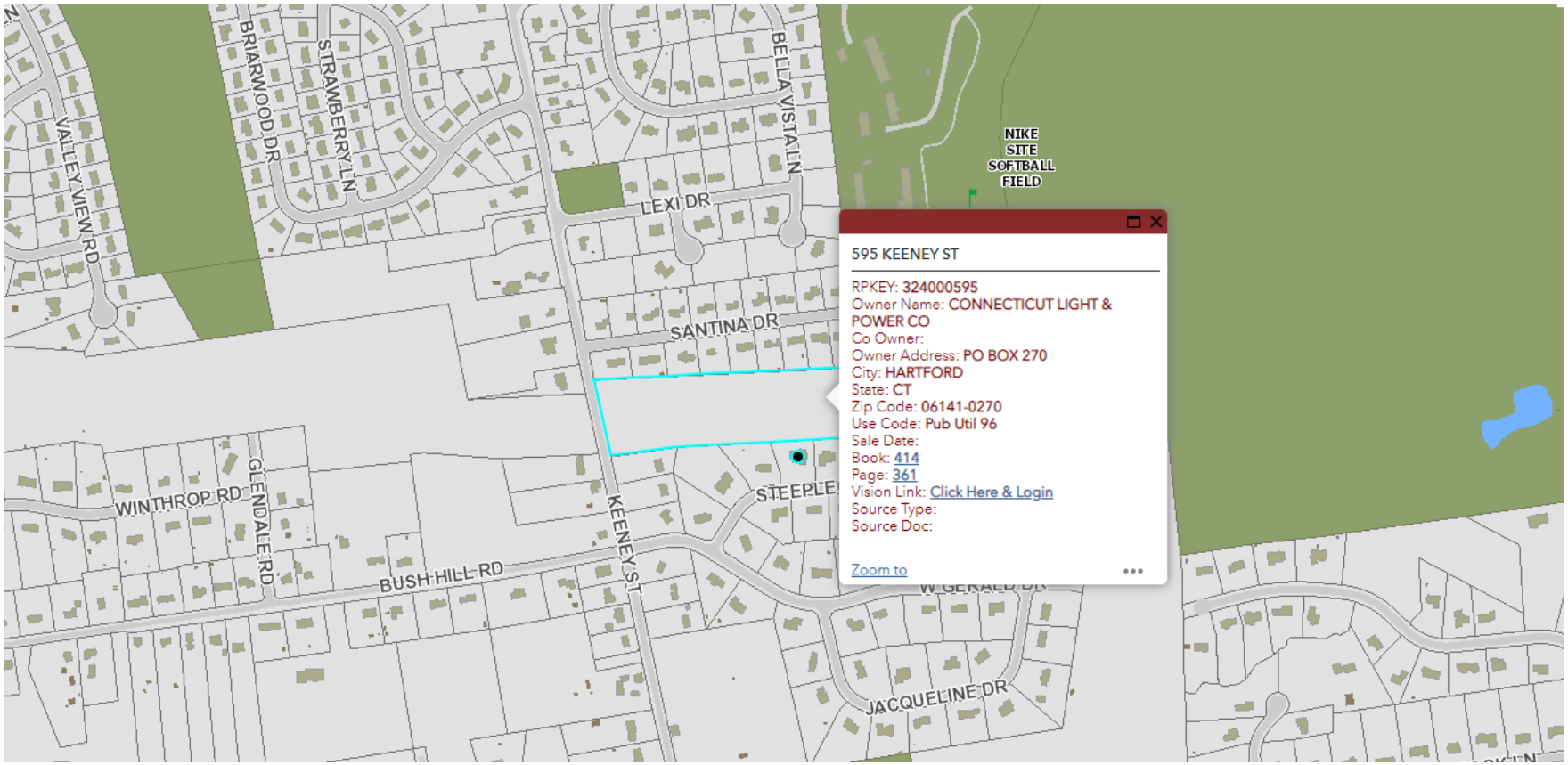
A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting T-Mobile's proposed loading, with the tower modifications/reinforcements as detailed in the structural analysis. The structural analysis is included as **Exhibit B**.
B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this utility tower in Manchester. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as **Exhibit C**, authorizing T-Mobile to file this application for shared use.
C. Environmental Feasibility. The proposed shared use of this facility would have minimal environmental impact. The installation of T-Mobile equipment at the 121' level of the existing 125' tower would have an insignificant visual impact on the area around the tower. T-Mobile's ground equipment would be installed within the existing facility compound. T-Mobile's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by **Exhibit D**, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.
D. Economic Feasibility. T-Mobile will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist T-Mobile with this tower sharing application.
E. Public Safety Concerns. As discussed above, the utility tower is structurally capable of supporting T-Mobile's proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing utility pole. T-Mobile's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Manchester and nearby the facility.

Sincerely,

Eric Breun

Eric Breun
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey
ebreun@transcendwireless.com
201-658-7728

CC: Steve Stephanou – Town Manager
Megan Pila – Town Planner
Eversource (CL&P) – Property Owner


BRIARWOOD DR
STRAWBERRY LN
BELLA VISTA LN
VALLEY VIEW RD
LEXI DR
NIKE
SITE
SOFTBALL
FIELD
SANTINA DR
595 KEENEY ST
RPKEY: 324000595
Owner Name: CONNECTICUT LIGHT & POWER CO
Co Owner:
Owner Address: PO BOX 270
City: HARTFORD
State: CT
Zip Code: 06141-0270
Use Code: Pub Util 96
Sale Date:
Book: 414
Page: 361
Vision Link: Click Here & Login
Source Type:
Source Doc:
Zoom to
STEEPLE
WINTHROP RD
GLENDALE RD
BUSH HILL RD
KEENEY ST
JACQUELINE DR

595 KEENEY STREET

Sales | Print | Map It

Location	595 KEENEY STREET	**Mblu**	68/ 3240/ 595/ /
Acct#	324000595	**Owner**	CONNECTICUT LIGHT & POWER CO
Assessment	$173,744	**Appraisal**	$248,263
PID	8695	**Building Count**	1
DISTRICT	T	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$0	$248,263	$248,263
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$0	$173,744	$173,744

Owner of Record

Owner CONNECTICUT LIGHT & POWER CO
Address PO BOX 270
HARTFORD, CT 06141-0270

Sale Price $0
Certificate C
Book & Page 0414/0361
Sale Date
Instrument

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CONNECTICUT LIGHT & POWER CO	$0	C	0414/0361		

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style:	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	

Building Photo

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 400V
Description Pub Util. 00
Zone RR
Neighborhood 60
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 19.4
Frontage 0
Depth 0
Assessed Value $173,744
Appraised Value $248,263

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	$0	$233,800	$233,800
2015	$0	$269,800	$269,800
2010	$0	$276,600	$276,600

Assessment			
Valuation Year	Improvements	Land	Total
2020	$0	$163,600	$163,600
2015	$0	$188,900	$188,900
2010	$0	$193,600	$193,600

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
MEGAN PILLA - SENIOR PLANNER
41 CENTER STREET
MANCHESTER CT 06040

CT 061 9-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9466 4136

BILLING: P/P

Reference #1: CTHA836A

XOL 22.01.27 NV45 5.0A 01/2022*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
GENERAL MANAGER STEVE STEPHANOU
41 CENTER STREET
MANCHESTER CT 06040

CT 061 9-01

UPS GROUND
TRACKING #: 1Z V25 742 03 9829 7311

BILLING: P/P

Reference #1: CTHA836A

XOL 22.01.27 NV45 5.0A 01/2022*


ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430
1 LBS
1 OF 1
SHIP TO:
EVERSOURCE - CHRISTOPHER GELINAS
107 SELDEN STREET
BERLIN CT 06037
CT 061 9-02
UPS GROUND
TRACKING #: 1Z V25 742 03 9032 2146
BILLING: P/P
Reference #1: CTHA836A
XOL 22.01.27
NV4S 5.0A 01/2022*
TM

Hello, your package has been delivered.

Delivery Date: Thursday, 01/27/2022

Delivery Time: 11:17 AM

Left At: FRONT DESK

Signed by: STEFFANO

TRANSCEND WIRELESS

Tracking Number:	1ZV257420394664136
Ship To:	MEGAN PILLA - SENIOR PLANNER 41 CENTER STREET MANCHESTER, CT 06040 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA836A

Hello, your package has been delivered.

Delivery Date: Thursday, 01/27/2022

Delivery Time: 11:15 AM

Left At: FRONT DESK

Signed by: STEFFANO

TRANSCEND WIRELESS

Tracking Number:	1ZV257420398297311
Ship To:	GENERAL MANAGER STEVE STEPHANOU 41 CENTER STREET MANCHESTER, CT 06040 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA836A

Hello, your package has been delivered.

Delivery Date: Thursday, 01/27/2022

Delivery Time: 10:23 AM

Left At: DOCK

Signed by: KEITH

TRANSCEND WIRELESS

Tracking Number:	1ZV257420390322146
Ship To:	EVERSOURCE - CHRISTOPHER GELINAS 107 SELDEN STREET BERLIN, CT 06037 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CTHA836A

Connecticut Siting Council
Petition Staff Reports

Petition No. 713
Sprint Spectrum, L.P.
595 Keeney Street, Manchester
Staff Report
June 8, 2005

On April 13, 2005, Sprint Spectrum L.P. (Sprint) submitted a petition to the Connecticut Siting Council (Council) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the redesign and replacement an electric transmission structure in Manchester to accommodate telecommunications use. The existing wood H-frame transmission structure is owned by CL&P. A field review was conducted on May 2, 2005 with Council member Colin Tait, staff member Robert Mercier, and Sprint representative Thomas Regan.

Sprint submitted a revised site plan on June 2, 2005. The revised plan transposed the location of the antennas and equipment compound from the outer H-frame pole to the inner H-frame pole to enlarge the buffer, by 20 feet, between the site and an adjacent residence approximately 200 feet to the south.

Sprint, with the agreement of CL&P, proposes to replace an existing 80-foot H-frame transmission structure with a new laminated wood structure approximately 10 feet west of the existing structure. The new H-frame structure would consist of an 80-foot outer pole and a 120-foot inner pole connected by diagonal and horizontal cross beams. The 120-foot pole would accommodate three flush mounted panel antennas owned by Sprint at a centerline height of 117 feet above ground level (agl). The pole would be designed to accommodate three additional flush mounted panel antennas at a centerline height of 107 feet agl.

Sprint would construct a 23-foot by 16-foot equipment compound at the base of the 120-foot pole. The compound would be enclosed by an eight-foot high stockade fence surrounded by evergreen plantings. Sprint would mount four equipment cabinets on a concrete pad within the compound. The site would be accessed by an existing dirt road emanating from Keeney Street. Sprint would construct a new 110-foot dirt/gravel drive off of the existing road to access the compound. No wetlands or watercourses are within or adjacent to the proposed construction area. Soil and erosion controls would be installed prior to construction.

The site is approximately 1,000 feet east of Kenney Street within an existing CL&P transmission line right-of-way containing two separate lines and associated H-frames. Residential areas are located to the north and south. The nearest residence is approximately 200 feet south of the site.

Content Last Modified on 6/9/2005 10:21:13 AM

Sprint Now part of T-Mobile

SPRINT ID: CT33XC538
SITE ID: CTHA836A
EVERSOURCE POLE #29317
39 STEEPLECHASE DRIVE
MANCHESTER, CT 06040

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)

67E998E 6160

T-MOBILE A+L TEMPLATE (PROVIDED BY RFDS)

67D998E_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 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: 39 STEEPLECHASE DRIVE, MANCHESTER, CT 06040

1. GET ON I-91 S IN WINDSOR FROM DAY HILL RD.	4.30 MI.
2. MERGE ONTO I-91 S.	3.60 MI.
3. TAKE EXIT 35A FOR I-291 TOWARD MANCHESTER.	0.60 MI.
4. CONTINUE ONTO I-291 E.	5.60 MI.
5. TAKE THE I-384 E EXIT.	1.90 MI.
6. CONTINUE ONTO I-384.	1.50 MI.
7. TAKE EXIT 2 TOWARD KEENEY ST.	0.30 MI.
8. TURN LEFT ONTO WETHERELL ST.	0.07 MI.
9. TURN RIGHT ONTO KEENEY ST.	1.50 MI.
10. TURN LEFT ONTO W GERALD DR.	0.07 MI.
11. TURN LEFT ONTO STEEPLECHASE DR. DESTINATION WILL BE ON THE LEFT.	0.10 MI.

SITE COORDINATES: LATITUDE: 41° 44' 35.31" N
LONGITUDE: 72° 32' 05.93" W
GROUND ELEVATION: ±400' AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH

VICINITY MAP

NORTH

PROJECT SUMMARY

1. THE PROPOSED UPGRADE SCOPE OF WORK AT THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY GENERALLY INCLUDES THE FOLLOWING:

A. AT THE EXISTING-TO-BE-REMOVED EVERSOUCE MOUNTED ANTENNA SECTORS:
- REMOVE ALL EXISTING SPRINT EQUIPMENT.

B. AT THE PROPOSED EVERSOURCE TOWER MOUNTED ANTENNA SECTORS:
- INSTALL (3) RFS – APXVAALL24_43 U-NA20 ANTENNAS.
- INSTALL (3) COMMSCOPE – VV-65A-R1 ANTENNAS.
- INSTALL (3) BIAS-TEE FOR RET CONTROL.
- INSTALL (24) 1-5/8" COAX CABLES.
- INSTALL NEW PLATFORM MOUNT FOR PROPOSED ANTENNAS/APPURTENANCES.

C. AT THE EXISTING EQUIPMENT PAD AT THE BASE OF THE TOWER:
- REMOVE (1) EXISTING 100A CIRCUIT BREAKER IN EXISTING PPC.
- REMOVE ALL EXISTING SPRINT CABINETS.
- INSTALL (3) ERICSSON – 4460 B25+B66 RADIOS.
- INSTALL (3) ERICSSON – 4480 B71+B85 RADIOS.
- INSTALL (1) ERICSSON BATTERY ENCLOSURE B160.
- INSTALL (1) ERICSSON POWER ENCLOSURE 6160.
- INSTALL AN ICE-BRIDGE FROM THE EXISTING ICE BRIDGE TO THE BASE OF THE PROPOSED TOWER. CONTRACTOR TO VERIFY DIMENSIONS IN FIELD. (TO MATCH EXISTING ICE-BRIDGE)
- INSTALL (1) 150A/2P CIRCUIT BREAKER TO EXISTING 200A PPC.

PROJECT INFORMATION

SPRINT ID:	CT33XC538
SITE ID:	CTHA836A
SITE ADDRESS:	39 STEEPLECHASE DRIVE MANCHESTER, CT 06040
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	KYLE RICHERS TRANSCEND WIRELESS (908) 447-4716
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°-44'-35.31" N LONGITUDE: 72°-32'-05.93" W GROUND ELEVATION: 400'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	01/24/22	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UPDATED STRUCTURAL ANALYSIS
2	12/13/21	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
1	11/22/21	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER RFDS DATED 11/03/2021
0	08/30/21	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

Sprint Now part of T-Mobile
Transcend Wireless

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

SPRINT ID: CT33XC538
SITE ID: CTHA836A
39 STEEPLECHASE DRIVE
MANCHESTER, CT 06040

DATE:	05/03/21
SCALE:	AS NOTED
JOB NO.	21005.27

TITLE SHEET

T-1

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)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 124 MPH (Vasd) (EXPOSURE B/ 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

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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.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS----ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	01/24/22	RTS	TJR	CONSTRUCTION DRAWINGS - REVISED PER UPDATED STRUCTURAL ANALYSIS
2	12/13/21	RTS	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
1	11/22/21	RTS	TJR	CONSTRUCTION DRAWINGS - REVISED PER RFDS DATED 11/03/2021
0	08/30/21	RTS	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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SITE ID: CTHA836A
39 STEEPLECHASE DRIVE
MANCHESTER, CT 06040

DATE: 05/03/21
SCALE: AS NOTED
JOB NO. 21005.27

GENERAL NOTES AND SPECIFICATIONS

N-1

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

ANTENNA AND APPURTENANCE SCHEDULE

SECTOR	PROPOSED ANTENNAS	DIMENSIONS (L x W x D) (INCHES)	ANTENNA ℄ HEIGHT (FEET)	AZIMUTH	PROPOSED RADIOS	PROPOSED APPURTENANCES	PROPOSED CABLES
A1	RFS – APXVAALL24_43–U–NA20	95.9 x 24 x 8.5	121	50°	ERICSSON – 4480 B71 + B85	ANDREW – SMART BIAS–TEE	(8) 1–5/8" COAX CABLES
A2	COMMSCOPE – VV–65A–R1	55.9 x 13 x 3.2	121	50°	ERICSSON – 4460 B25 + B66		
B1	RFS – APXVAALL24_43–U–NA20	95.9 x 24 x 8.5	121	170°	ERICSSON – 4480 B71 + B85	ANDREW – SMART BIAS–TEE	(8) 1–5/8" COAX CABLES
B2	COMMSCOPE – VV–65A–R1	55.9 x 13 x 3.2	121	170°	ERICSSON – 4460 B25 + B66		
C1	RFS – APXVAALL24_43–U–NA20	95.9 x 24 x 8.5	121	300°	ERICSSON – 4480 B71 + B85	ANDREW – SMART BIAS–TEE	(8) 1–5/8" COAX CABLES
C2	COMMSCOPE – VV–65A–R1	55.9 x 13 x 3.2	121	300°	ERICSSON – 4460 B25 + B66		

1 / C–1 **SITE LOCATION PLAN**
SCALE: NOT TO SCALE

TRUE NORTH

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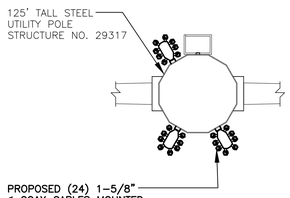
SITE LOCATION PLAN

C–1

Sheet No. 3 of 9

EQUIPMENT GROUNDING NOTE:

ALL (E/P) EQUIPMENT TO BE BONDED TO THE EXISTING GROUNDING SYSTEM. IF AN EXISTING GROUNDING SYSTEM IS NOT PRESENT OR OPERATIONAL, THE CONTRACTOR IS TO CONTACT THE ENGINEER OF RECORD.



1A / C-2 COAX CABLE PLAN
SCALE: NOT TO SCALE

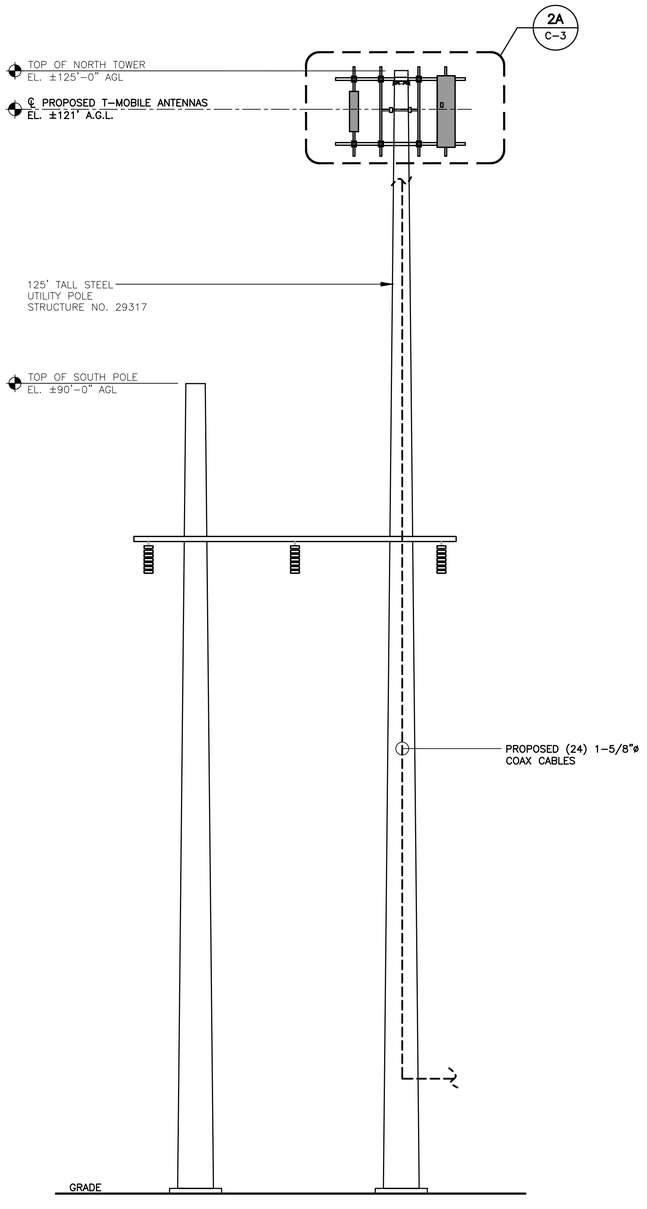
STRUCTURAL COMPLIANCE

TOWER AND TOWER FOUNDATION

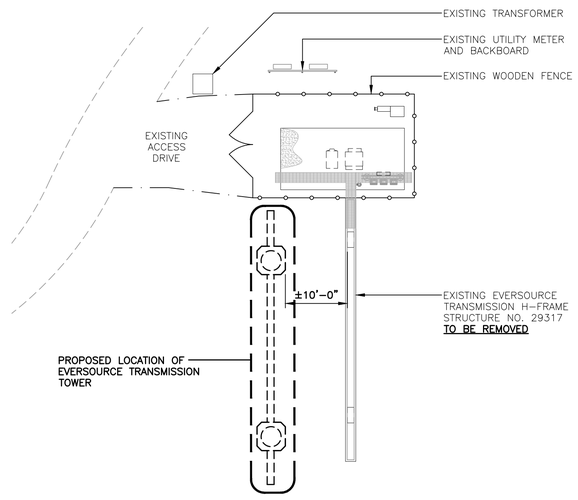
A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 21005.27) DATED 01/11/22 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

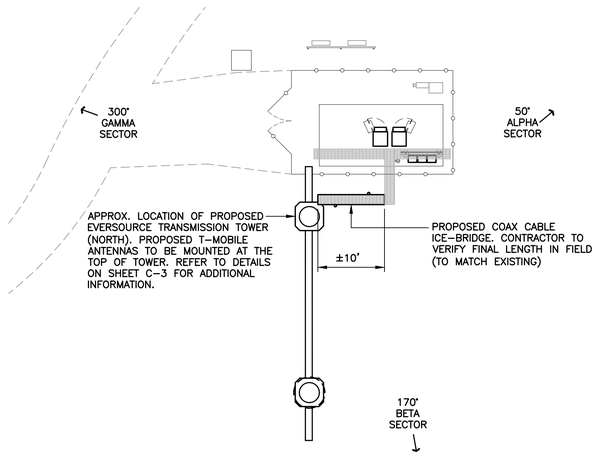
NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



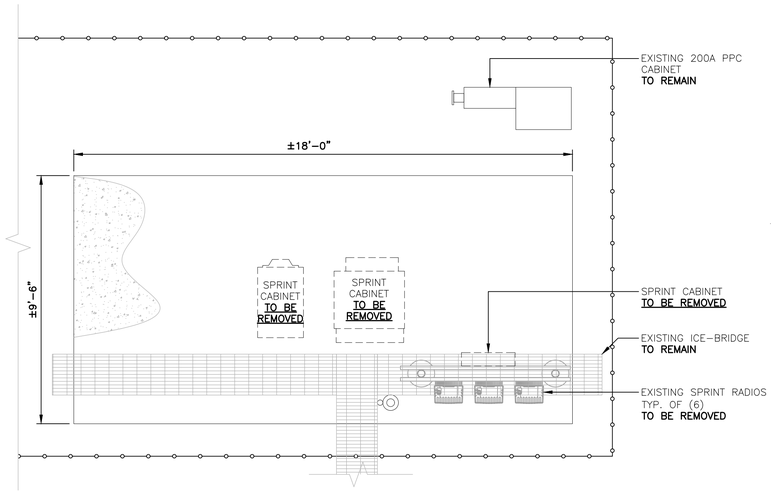
1 / C-2 PROPOSED TOWER ELEVATION
SCALE: 1" = 10'



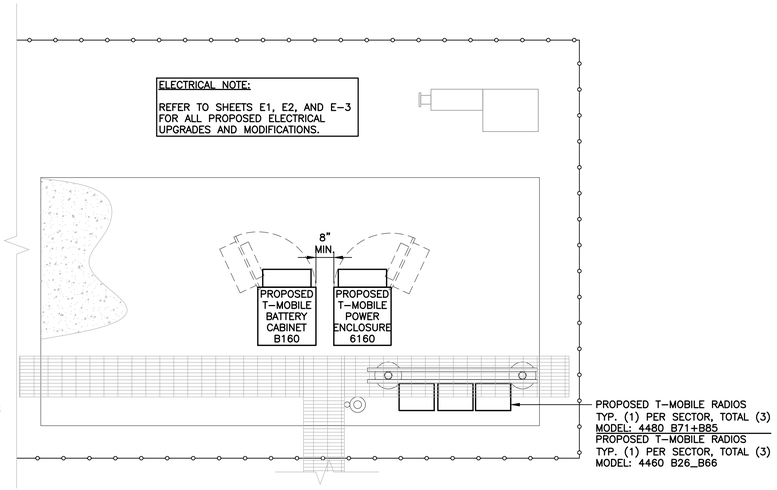
2 / C-2 EXISTING COMPOUND PLAN
SCALE: 3/32" = 1'
TRUE NORTH



2A / C-2 PROPOSED COMPOUND PLAN
SCALE: 3/32" = 1'
TRUE NORTH



3 / C-2 EXISTING EQUIPMENT PLAN
SCALE: 3/8" = 1'
TRUE NORTH



3A / C-2 PROPOSED EQUIPMENT PLAN
SCALE: 3/8" = 1'
TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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JOB NO.	21005.27

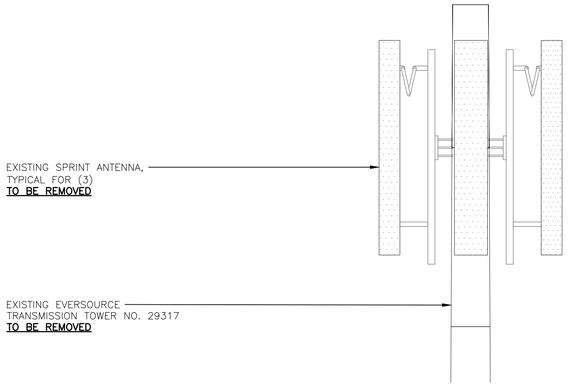
COMPOUND PLAN, EQUIPMENT PLAN, AND ELEVATION

C-2

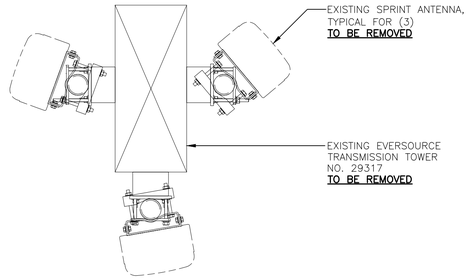
Sheet No. 4 of 9

EQUIPMENT GROUNDING NOTE:

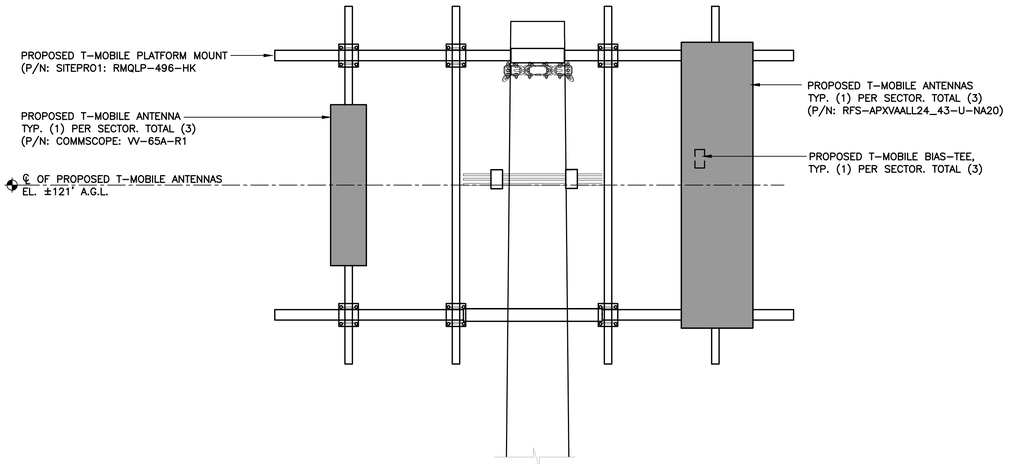
ALL (E/P) EQUIPMENT TO BE BONDED TO THE EXISTING GROUNDING SYSTEM. IF AN EXISTING GROUNDING SYSTEM IS NOT PRESENT OR OPERATIONAL, THE CONTRACTOR IS TO CONTACT THE ENGINEER OF RECORD.



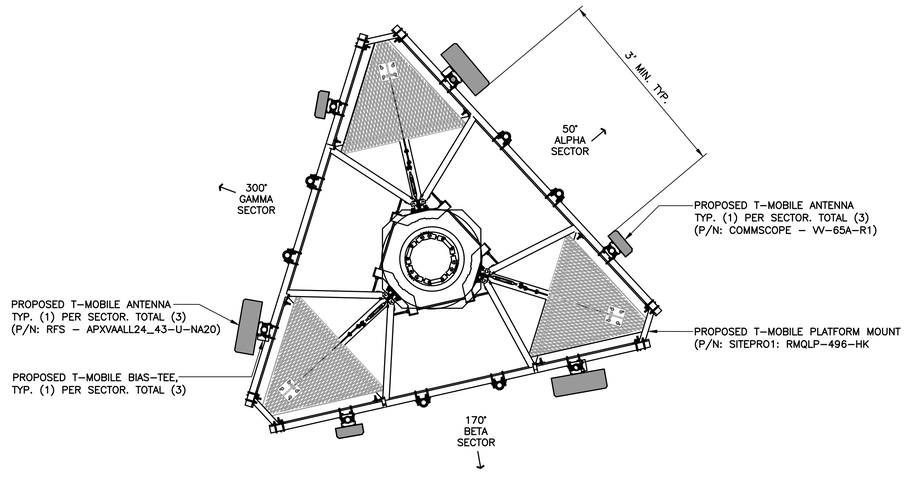
1A / C-3 **EXISTING ANTENNA ELEVATION**
SCALE: 1/2" = 1'



1 / C-3 **EXISTING ANTENNA PLAN** TRUE NORTH
SCALE: 1" = 1'



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



2 / C-3 **PROPOSED ANTENNA PLAN** TRUE NORTH
SCALE: 1" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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ANTENNA PLANS AND ELEVATIONS

C-3

Sheet No. 5 of 9

APXVAALL24_43-U-NA20

VV-65A-R1

ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT		DIMENSIONS	WEIGHT
MAKE: MODEL:	RFS APXVAALL24_43-U-NA20	95.9"L x 24.0"W x 8.5"D	±150 LBS.
MAKE: MODEL:	COMMSCOPE VV-65A-R1	54.7"L x 12.08"W x 4.6"D	±23 LBS.

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

1 / C-4 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE

RADIO 4460 B25+B66

RADIO 4480 B71+B85

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4460 B25+B66	19.6"L x 15.7"W x 12.1"D	±109 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
MAKE: ERICSSON MODEL: RADIO 4480 B71+B85	21.8"L x 15.7"W x 7.5"D	±84 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.

2 / C-4 **PROPOSED RRU DETAIL**
SCALE: NOT TO SCALE

ANDREW SMART BIAS-TEE		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: ATSBT-TOP-FM-4G	5.63"L x 3.7"W x 2"D	±1.7 LBS.

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

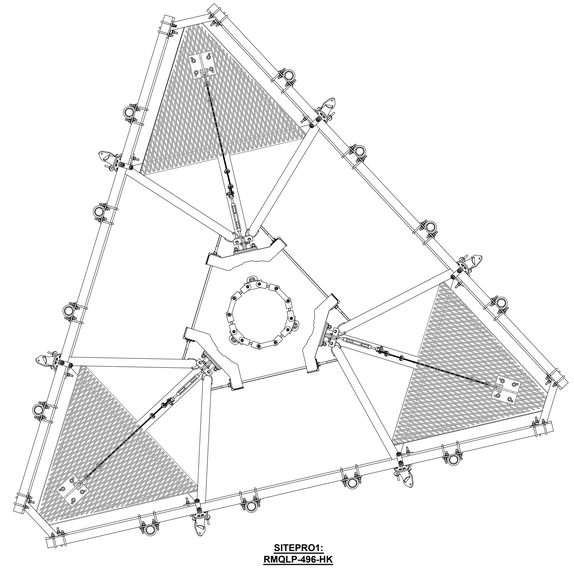
3 / C-4 **PROPOSED BIAS-TEE DETAIL**
SCALE: NOT TO SCALE

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-4 **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-4 **BATTERY B160 CABINET DETAIL**
SCALE: NOT TO SCALE



SITEPRO1:
RMQLP-496-HK

6 / C-4 **PLATFORM ANTENNA MOUNT DETAILS**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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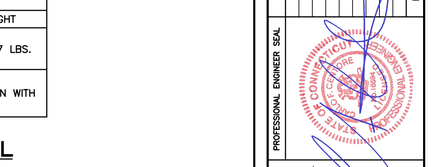

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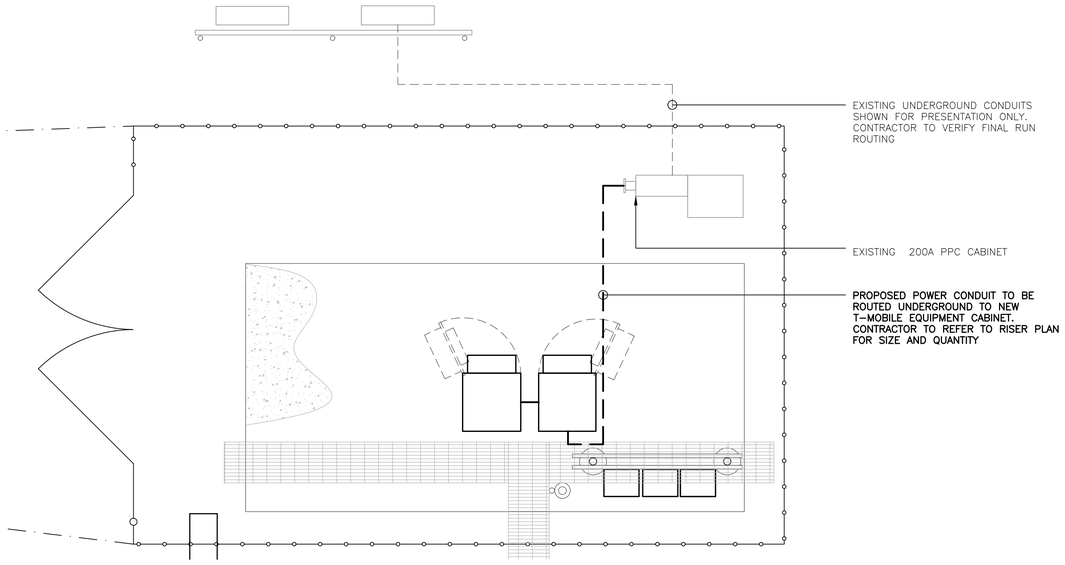
TYPICAL EQUIPMENT DETAILS

C-4

Sheet No. 6 of 9

EQUIPMENT GROUNDING NOTE:

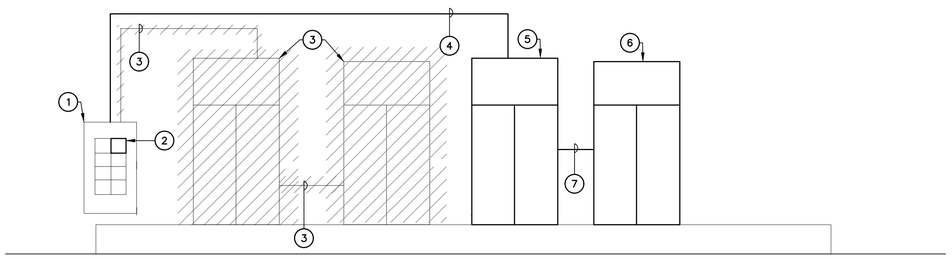
ALL (E/P) EQUIPMENT IS TO BE BONDED TO THE EXISTING GROUNDING SYSTEM. IF AN EXISTING GROUNDING SYSTEM IS NOT PRESENT OR IS NOT OPERATIONAL, THE CONTRACTOR IS TO CONTACT THE ENGINEER OF RECORD.



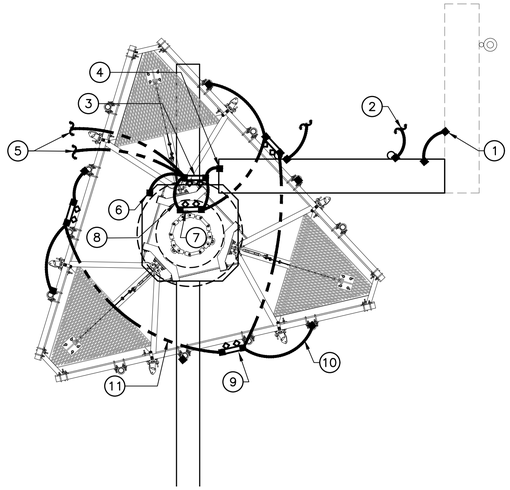
1 / E-1 **ELECTRICAL CONDUIT ROUTING PLAN**
SCALE: 3/8" = 1'

RISER DIAGRAM NOTES

1. EXISTING 200A, PPC CABINET TO REMAIN.
2. NEW 150A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
3. EXISTING CABINETS AND ASSOCIATED CONDUITS AND CONDUCTORS TO BE REMOVED.
4. (3) 1/0 AWG, (1) #6 AWG GROUND, 1-1/2" CONDUIT.
5. NEW T-MOBILE EQUIPMENT CABINET
6. NEW T-MOBILE BATTERY CABINET
7. DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.



2 / E-1 **ELECTRICAL POWER RISER DIAGRAM**
SCALE: NOT TO SCALE



3 / E-1 **ELECTRICAL GROUNDING PLAN**
SCALE: 5" = 5'

GROUNDING PLAN NOTES

1. BOND NEW ICE-BRIDGE SECTION TO EXISTING ICE-BRIDGE SECTION.
2. ICE BRIDGE POST AND COVER. BOND EACH SECTION AND SUPPORT TO COMPOUND GROUND RING TYP.
3. LOWER TOWER MOUNTED GROUND BAR.
4. BOND GROUND BAR TO ICE BRIDGE.
5. BOND LOWER TOWER MOUNTED GROUND BAR TO TOWER GROUND RING (BY OTHERS). TYP. OF 2
6. BOND LOWER TOWER MOUNTED GROUND BAR TO TOWER STEEL.
7. UPPER TOWER MOUNTED GROUND BAR.
8. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2 GROUND LEADS)
9. SECTOR GROUND BAR.
10. BOND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR. (TYPICAL)
11. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.

GENERAL GROUNDING NOTES

1. EXISTING COMPOUND GROUND RING SHOULD BE CONNECTED TO THE NEW TOWER GROUND RING BEING INSTALLED BY OTHERS.
2. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
3. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR).
4. BOND CABLE TRAY AND ICE BRIDGE SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
5. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
6. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
7. ALL BONDS TO TOWER SHALL BE MADE IN STRICT ACCORDANCE WITH SPECIFICATIONS OF TOWER MANUFACTURER OR STRUCTURAL ENGINEER.
8. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
9. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
10. COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
11. ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
12. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
13. COORDINATE WITH EVERSOURCE TRANSMISSION DEPARTMENT REPRESENTATIVE TO DETERMINE ADDITIONAL GROUNDING REQUIREMENTS. PROVIDE ALL REQUIRED ELEMENTS TO MEET EVERSOURCE APPROVAL.
14. COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	01/24/22	RYS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UPDATED STRUCTURAL ANALYSIS
2	12/13/21	RYS	TJR	CONSTRUCTION DRAWINGS – REVISED PER CLIENT COMMENTS
1	11/22/21	RYS	TJR	CONSTRUCTION DRAWINGS – REVISED PER RFDS DATED 11/03/2021
0	08/30/21	RYS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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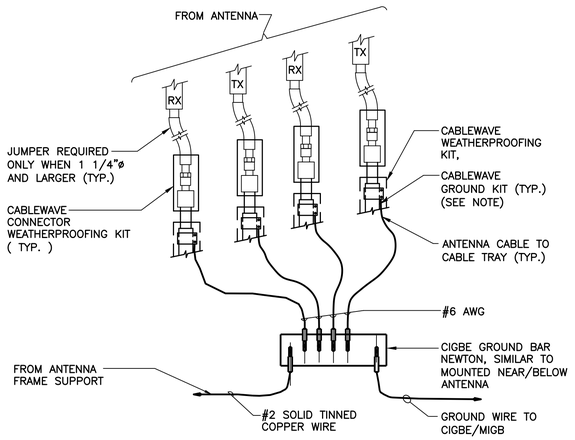
DATE: 05/03/21
SCALE: AS NOTED
JOB NO. 21005.27

ELECTRICAL RISER, ROUTING, AND GROUNDING

E-1

Sheet No. 7 of 9

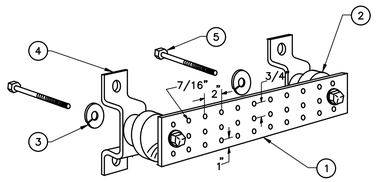


NOTES:

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

1 E-2 CONNECTION OF GROUND WIRES TO GROUND BAR

SCALE: NOT TO SCALE

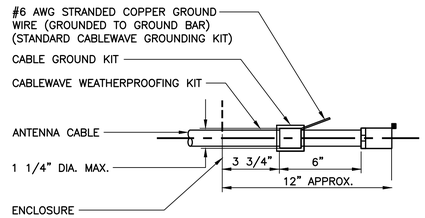


NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

2 E-2 GROUND BAR DETAIL

SCALE: NOT TO SCALE

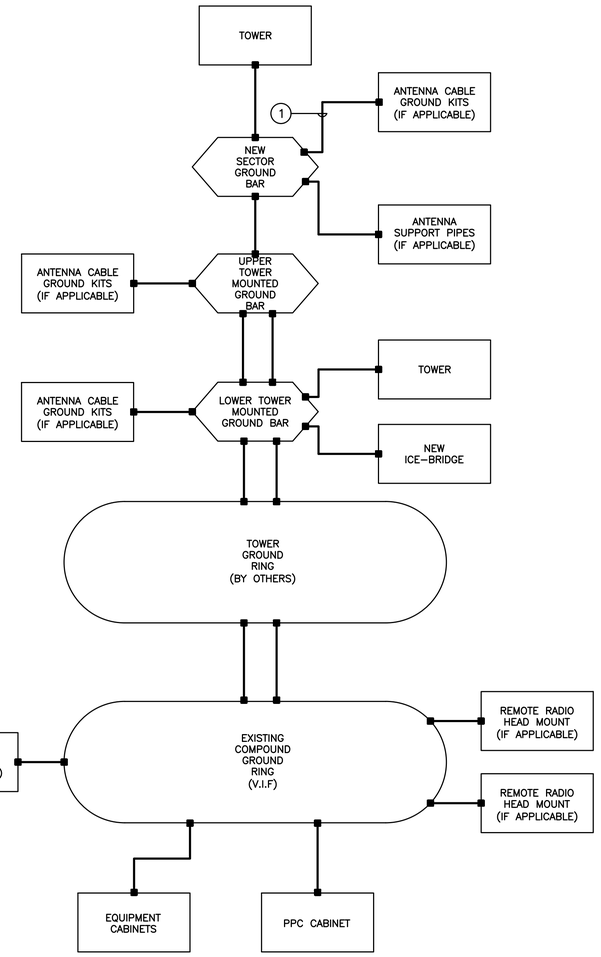


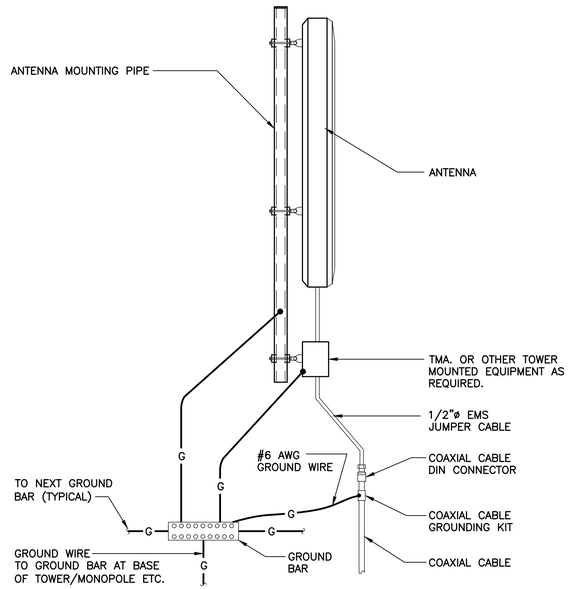
NOTES:

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

3 E-2 ANTENNA CABLE GROUNDING DETAIL

SCALE: NOT TO SCALE

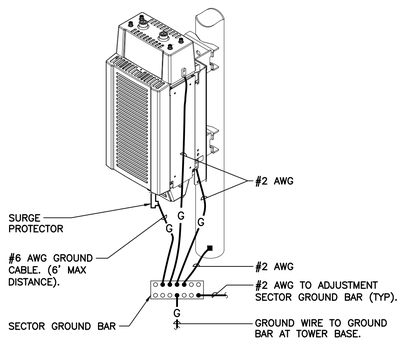




4 E-2 TYPICAL ANTENNA GROUNDING DETAIL

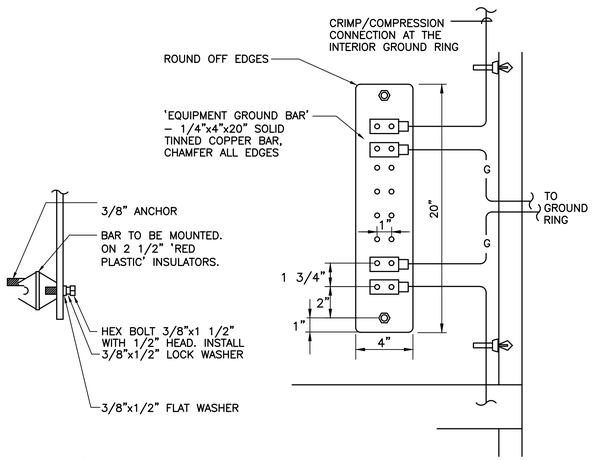
SCALE: NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



5 E-2 RRH POLE MOUNT GROUNDING

SCALE: NOT TO SCALE



6 E-2 EQUIPMENT GROUND BAR DETAIL

SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

#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. BOND CABLE TRAY SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
7. COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
8. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
9. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

7 E-2 ELECTRICAL SCHEMATIC DIAGRAM

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	01/24/22	RYS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UPDATED STRUCTURAL ANALYSIS
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MANCHESTER, CT 06040

DATE: 05/03/21
SCALE: AS NOTED
JOB NO. 21005.27

TYPICAL ELECTRICAL DETAILS

E-2

Sheet No. 8 of 9

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.1. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL 150A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT
2. EXISTING 100A CIRCUIT BREAKER TO BE REMOVED
3. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS AND EQUIPMENTS AS INDICATED OR NOTED ON PLANS.
4. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
5. GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, GROUND BARS, ETC

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR THE SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

M. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

N. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	08/30/21	RYS	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
1	11/22/21	RYS	TJR	CONSTRUCTION DRAWINGS - REVISED PER RFDS DATED 11/03/2021
2	12/13/21	RYS	TJR	CONSTRUCTION DRAWINGS - REVISED PER CLIENT COMMENTS
3	01/24/22	RYS	TJR	CONSTRUCTION DRAWINGS - REVISED PER UPDATED STRUCTURAL ANALYSIS

PROFESSIONAL ENGINEER SEAL

Sprint T-Mobile Transcend Wireless

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Centered on Solutions℠
(203) 488-0580
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63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

SPRINT ID: CT33XC538
SITE ID: CTHA836A
39 STEEPLECHASE DRIVE
MANCHESTER, CT 06040

DATE: 05/03/21
SCALE: AS NOTED
JOB NO. 21005.27

ELECTRICAL SPECIFICATIONS

E-3

Sheet No. 9 of 9

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Utility Pole

T-Mobile Site Ref: CTHA836A

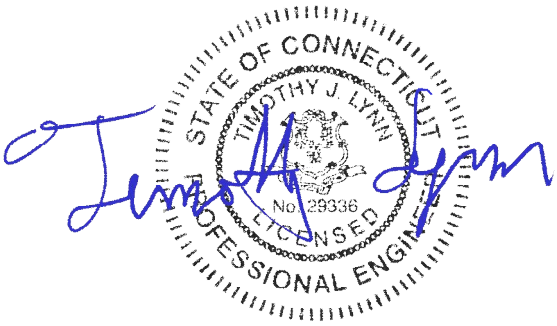
Eversource Structure No. 29317
125' Tall Electric Transmission Pole

39 Steeplechase Drive
Manchester, CT

CENTEK Project No. 21005.27

~~Date: December 1, 2021~~
Rev 2: January 11, 2022

Max Stress Ratio = 48.3%



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

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- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAMS
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Introduction

The purpose of this report is to analyze the 125' utility pole located in Manchester, CT for the proposed antenna and equipment installation by T-Mobile.

The proposed loads consist of the following:

- **T-MOBILE (Proposed):**
  Antennas: Three (3) Commscope VV-65A-R1 panel antennas, three (3) RFS APXVAALL24_43 panel antennas and three (3) ATSBT-TOP-FM-4G Bias Tees mounted on platform with handrail kit p/n RMQLP-496-HK to the utility pole with a RAD center elevation of 121-ft above grade.
  Coax Cables: Twenty-Four (24) 1-5/8" ∅ coax cables mounted to the outside of the pole as indicated in Section 4 of this report.

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE Manual No. 48-05, "Design of Steel Transmission Pole Structures", defines allowable steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

Analysis

Structural analysis of the utility pole was independently completed using the current version of PLSPole computer program licensed to CENTEK Engineering, Inc.

NESC prescribed loads for the proposed wireless equipment were calculated to analyze the utility tower. Section 5 of this report details these loads.

Design Basis

Our analysis was performed in accordance with TIA-222-G, ASCE 48-05, "Design of Steel Transmission Pole Structures", NESC C2-2017 and Eversource Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2017 ~ Construction Grade B, and ASCE Manual No. 48-05.

  Load cases considered:

  Load Case 1: NESC Heavy Wind
  Wind Pressure..... 4.0 psf
  Radial Ice Thickness..... 0.5"
  Vertical Overload Capacity Factor..... 1.50
  Wind Overload Capacity Factor..... 2.50
  Wire Tension Overload Capacity Factor..... 1.65

  Load Case 2: NESC Extreme Wind
  Wind Speed..... 110 mph (1)
  Radial Ice Thickness..... 0"

  Load Case 3: NESC Extreme Ice w/ Wind
  Wind Pressure..... 4.0 psf
  Radial Ice Thickness..... 1.0"
  Vertical Overload Capacity Factor..... 1.0
  Wind Overload Capacity Factor..... 1.0

  Note 1: NESC C2-2017, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

R e s u l t s

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 48-05, "Design of Steel Transmission Pole Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 6 of this report. The analysis results are summarized as follows:

A maximum usage of **48.27%** occurs in the utility pole under the **NESC Extreme** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
RP - Section 2	37.00' -90.00' (AGL)	29.21%	**PASS**
Brace - X1	40.00'-63.00' (AGL)	48.27%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	45.51%	**PASS**

- FOUNDATION AND ANCHORS

The base of the tower is connected to the foundation by means of (8) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure. Review of the foundation consisted of a comparison of the base reactions obtained from the proposed tower analysis and the original foundation design.

BASE REACTIONS:

From PLS-Pole analysis of utility pole based on NESC/NU prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	19.26 kips	130.92 kips	449.17 ft-kips
NESC Extreme Wind	36.68 kips	151.51 kips	854.53 ft-kips
NESC Extreme Ice w/ Wind	12.57 kips	108.13 kips	299.52 ft-kips

Note 1 – 10% increase to be applied to the above tower base reactions for foundation verification per OTRM 051

FLANGE BOLTS AND ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Flange Bolts @ 90’	Tension	28.6%	**PASS**
Flange Plate @ 90’	Bending	24.1%	**PASS**
Flange Bolts @ 37’	Tension	18.7%	**PASS**
Flange Plate @ 37’	Bending	35.9%	**PASS**
Anchor Bolts	Tension	37.8%	**PASS**

FOUNDATION:

Force	Original Design Loading	Proposed Loading	Result
Moment	1831 ft-kips	940 ft-kips	**PASS**
Shear	60 kips	40.4 kips	**PASS**

Note 1: Taken from Eversource drawing 01159-60002p001 dated 10/7/21.

Note 2: 10% increase to PLS tower base reactions used in foundation verification per OTRM 051

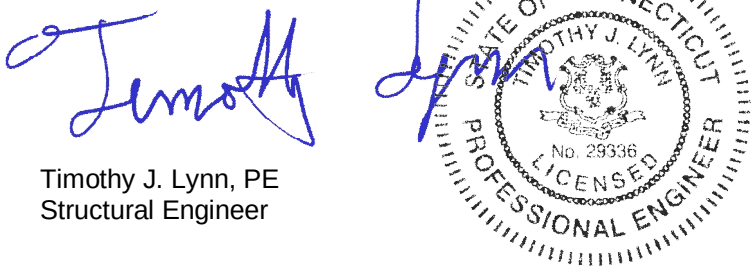
C o n c l u s i o n

This analysis shows that the subject utility pole **is adequate** to support the proposed equipment upgrade.

The analysis is based, in part on the information provided to this office by Eversource and 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

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 are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and drag coefficients) according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Automatic tracking of part numbers and costs

Criteria for Design of PCS Facilities On or Extending Above Metal Electric Transmission Towers & Analysis of Transmission Towers Supporting PCS Masts (1)

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as "masts"), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA-222-G covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required strength.

ANSI Standard C2-2017 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the NU effort in "unifying" both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 50-year recurrence (2% annual probability). The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA 222-G:

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource Design Criteria”. This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2017 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A
Eversource Design Criteria

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 x Gust Response Factor Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
		*Only for structures installed after 2007						

determined from NESC applied loading conditions (not TIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource Design Criteria." This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.

b) Conductors and related devices and hardware (wire loads will be provided by Eversource).

c) Electric Transmission Structure

i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower. ii)

ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	See Below Table

iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

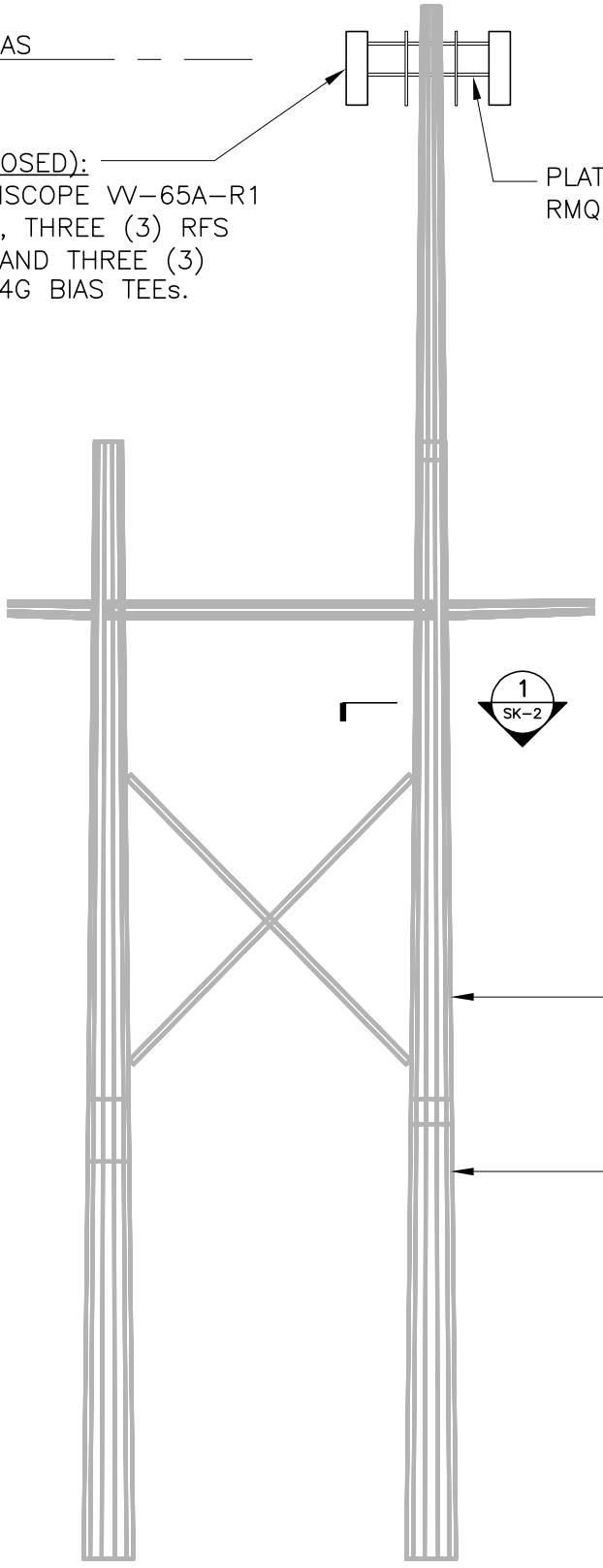
Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource Design Criteria" are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

℄ T-MOBILE ANTENNAS
EL. ±121'-0" AGL

T-MOBILE (PROPOSED):
THREE (3) COMMSCOPE VV-65A-R1 PANEL ANTENNAS, THREE (3) RFS APXVAALL24_43 AND THREE (3) ATSBT-TOP-FM-4G BIAS TEEs.

PLATFORM (SITEPRO P/N RMQLP-496-HK)



125' TALL STEEL UTILITY POLE STRUCTURE NO. 29317

PROPOSED (24) 1-5/8" ø COAX CABLES MOUNTED ON EXISITNG CLUSTER SUPPORT BRACKETS

1 / SK-1 TOWER + MAST ELEVATION

SCALE: NOT TO SCALE

REVISIONS		
00	12/1/21	ISSUED FOR REVIEW

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CTHA836A
STRUCTURE 29317

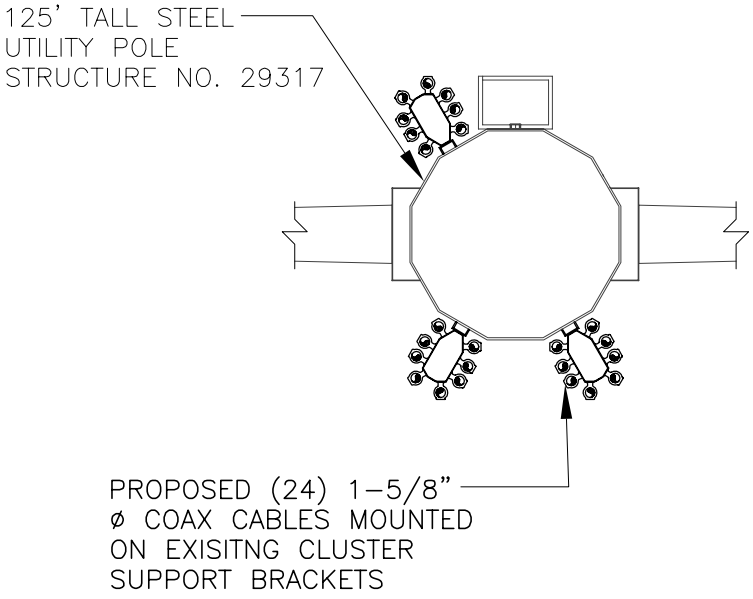
39 STEEPLECHASE DRIVE
MANCHESTER, CT

PROJECT NO:	21005.27
DRAWN BY:	TJL
CHECKED BY:	CAG
SCALE:	AS NOTED
DATE:	12/1/21

TOWER AND MAST ELEVATION

SK-1

DWG. 1 OF 2



1 / SK-2 COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	12/1/21	ISSUED FOR REVIEW

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CTHA836A
STRUCTURE 29317

39 STEEPLECHASE DRIVE
MANCHESTER, CT

PROJECT NO:	21005.27
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	12/1/21

FEEDLINE PLAN

SK-2

DWG. 2 OF 2

CENTEK engineering
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Branford, CT 06405 F: (203) 488-8587

Subject: Loads - Structure #29317

Location: Manchester, CT

Rev. 1: 1/3/22

Prepared by: T.J.L Checked by: C.F.C.
Job No. 21005.27

Basic Components

Heavy Wind Pressure =	$p := 4.00$	psf	(User Input NESC 2017 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2017 Figure 250-2(e))
Radial Ice Thickness =	$Ir := 0.50$	in	(User Input)
Radial Ice Density =	$Id := 56.0$	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	$TME := 125$	ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.00$		(User Input - Only for NESC Extreme wind case)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.326$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.303$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.824$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.852$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 35$ psf (NESC 2017 Section 250.C.2)

NESC Extreme Ice w/ Wind Components

Heavy Wind Pressure =	$p_{ex} := 4.0$	psf	(User Input NESC 2017 Figure 250-3 & Table 250-4)
Radial Ice Thickness =	$Ir_{ex} := 1.0$	in	(User Input NESC 2017 Figure 250-3)

Shape Factors

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Open Lattice =	$Cd_{OL} := 3.2$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

Overload Factors for Wind Loads:

NESC Heavy Loading =	**2.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Loads - Structure #29317

Location: Manchester, CT

Rev. 1: 1/3/22

Prepared by: T.J.L Checked by: C.F.C.
Job No. 21005.27

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Commscope VV-65A-R1		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 54.724$	in	(User Input)
Antenna Width =	$W_{ant} := 12.087$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.646$	in	(User Input)
Antenna Weight =	$WT_{ant} := 30$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 90$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3073$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 1044$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 34$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 102$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 2238$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 73$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant1} := W_{ICE.exant} \cdot N_{ant} = 218$ lbs

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 5.1$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.2$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 97$ lbs

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.6$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 13.8$ sf

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 772$ lbs

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \frac{(L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex})}{144} = 5.5$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 16.6$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant1} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 107$ lbs

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Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAALL24_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 =	$WT_{ant} := 150$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant2} := WT_{ant} \cdot N_{ant} = 450$	lbs

Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 19564$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 3450$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 112$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 335$	lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna =	$V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 7163$	cu in
Weight of Extreme Ice on Each Antenna =	$W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 232$	lbs
Weight of Extreme Ice on All Antennas =	$Wt_{ice.ex.ant2} := W_{ICE.exant} \cdot N_{ant} = 696$	lbs

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 16.8$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 323$	lbs

Wind Load (NESC Extreme)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 48$	sf
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2686$	lbs

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice =	$SA_{ICE.exant} := \frac{\left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right)}{144} = 17.7$	sf
Antenna Projected Surface Area w/ Extreme Ice =	$A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 53$	sf
Total Antenna Wind Force w/ Extreme Ice =	$Fi_{ex.ant2} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 339$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	ATSBT-TOP-FM4G Bias Tee		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 6$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$ cu in

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 52$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 2$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 5$ lbs

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 132$ cu in

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := \frac{V_{ice.ex}}{1728} \cdot Id = 4$ lbs

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant3} := W_{ICE.exant} \cdot N_{ant} = 13$ lbs

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 0.2$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0.6$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 4$ lbs

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 0.4$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 24$ lbs

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \frac{(L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex})}{144} = 0.3$ sf

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 0.9$ sf

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant3} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 6$ lbs

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Subject: Loads - Structure #29317

Location: Manchester, CT

Rev. 1: 1/3/22

Prepared by: T.J.L Checked by: C.F.C.
Job No. 21005.27

Development of Wind & Ice Load on Antenna Mounts

Mount Data:

Mount Type:	RMQLP-496-HK		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 39.3$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 48.2$	sf	(User Input)
Mount Projected Surface Area w/ Extreme Ice =	$CdAa_{ice.ex} := 56.7$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 2500$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 3000$	lbs	(User Input)
Mount Weight w/ Extreme Ice =	$WT_{mnt.ice.ex} := 3500$	lbs	(User Input)

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := WT_{mnt} = 2500$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := \left(WT_{mnt.ice} - WT_{mnt}\right) = 500$ lbs

Gravity Load (extreme ice only)

Weight of Ice on All Mounts = $Wt_{ice.ex.mnt1} := \left(WT_{mnt.ice.ex} - WT_{mnt}\right) = 1000$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 193$ lbs

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 1376$ lbs

Wind Load (NESC Extreme Ice w/ Wind)

Total Mount Wind Force w/ Extreme Ice = $Fi_{ex.mnt1} := p_{ex} \cdot CdAa_{ice.ex} = 227$ lbs

Total Equipment Loads:

NESC Heavy Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 5982$$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{mnt1}\right)\cdot 2.5 = 1543$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{mnt1}\right) = 3046$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{mnt1}\right) = 4859$

NESC Extreme Ice w/ Wind Vertical =

$$NESC_{ice.ex} := Wt_{ant1} + Wt_{ice.ex.ant1} + Wt_{ant2} + Wt_{ice.ex.ant2} + Wt_{ant3} + Wt_{ice.ex.ant3} + Wt_{mnt1} + Wt_{ice.ex.mnt1} = 4973$$

NESC Extreme Ice w/ Wind Trasnsverse = $\left(Fi_{ex.ant1} + Fi_{ex.ant2} + Fi_{ex.ant3} + Fi_{ex.mnt1}\right) = 679$

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Subject:	Coax Cable on Pole #29317
Location:	Manchester, CT
Rev. 0: 12/1/21	Prepared by: T.J.L Checked by: C.F.C. Job No. 21005.27

Coax Cable on CL&P Pole

Coaxial Cable Span	$Coax_{Span} := 10ft$	*(User Input)*
Heavy Wind Pressure =	$p := 4 \cdot psf$	*(User Input)*
Radial Ice Thickness =	$Ir := 0.5 \cdot in$	*(User Input)*
Radial Ice Density =	$Id := 56 \cdot pcf$	*(User Input)*
Extreme Ice w/ Wind Pressure =	$p_{ex} := 4 \cdot psf$	*(User Input)*
Extreme Radial Ice Thickness =	$Ir_{ex} := 1.0 \cdot in$	*(User Input)*

Basic Windspeed =	$V := 110$	mph	(User Input NESC 2017 Figure 250-2(e))
Height to Top of Coax Above Grade =	$TC := 125$	ft	(User Input)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{0.67TC}{900}\right)^{\frac{2}{9.5}} = 1.219$		(NESC 2017 Table 250-2)
Exposure Factor =	$Es := 0.346\left[\frac{33}{(0.67 \cdot TC)}\right]^{\frac{1}{7}} = 0.303$		(NESC 2017 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TC}{220}\right)} = 0.824$		(NESC 2017 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.852$		(NESC 2017 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 32.2$	psf	(NESC 2017 Section 250.C.2)

Diameter of Coax Cable =	$D_{coax} := 1.98 \cdot in$	*(User Input)*
Weight of Coax Cable =	$W_{coax} := 1.04 \cdot plf$	*(User Input)*
Number of Coax Cables =	$N_{coax} := 24$	*(User Input)*
Number of Projected Coax Cables =	$NP_{coax} := 8$	*(User Input)*

Shape Factor = $Cd_{coax} := 1.6$ *(User Input)*

Overload Factor for NESC Heavy Wind Transverse Load = $OF_{HWT} := 2.5$ *(User Input)*

Overload Factor for NESC Heavy Wind Vertical Load = $OF_{HWV} := 1.5$ *(User Input)*

Overload Factor for NESC Extreme Wind Transverse Load = $OF_{EWT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Wind Vertical Load = $OF_{EWV} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Ice w/ Wind Transverse Load = $OF_{EIT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Ice w/ Wind Vertical Load = $OF_{EIV} := 1.0$ *(User Input)*

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 15.84 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 16.84 \cdot in$

Wind Area with Extreme Ice = $A_{ice.ex} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir_{ex}\right) = 17.84 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.027\,ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 36.359 \cdot plf$

Extreme Ice Area per Liner Ft = $Ai_{coax.ex} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir_{ex}\right)^2 - D_{coax}^2\right] = 0.065\,ft^2$

Weight of Extreme Ice on All Coax Cables = $W_{ice.ex} := Ai_{coax.ex} \cdot Id \cdot N_{coax} = 87.378 \cdot plf$

Heavy Wind Vertical Load =

$$Heavy\_WInd_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HWV}\right]}$$

Heavy Wind Transverse Load =

$$Heavy\_Wind_{Trans} := \overrightarrow{\left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT}\right)}$$

$Heavy\_WInd_{Vert} = 920\,lb$ $Heavy\_Wind_{Trans} = 225\,lb$

Extreme Wind Vertical Load =

$$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$$

Extreme Wind Transverse Load =

$$Extreme\_Wind_{Trans} := \overrightarrow{\left[\left(qz \cdot psf \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EWT}\right]}$$

$Extreme\_Wind_{Vert} = 250\,lb$ $Extreme\_Wind_{Trans} = 680\,lb$

Extreme Ice w/ Wind Vertical Load =

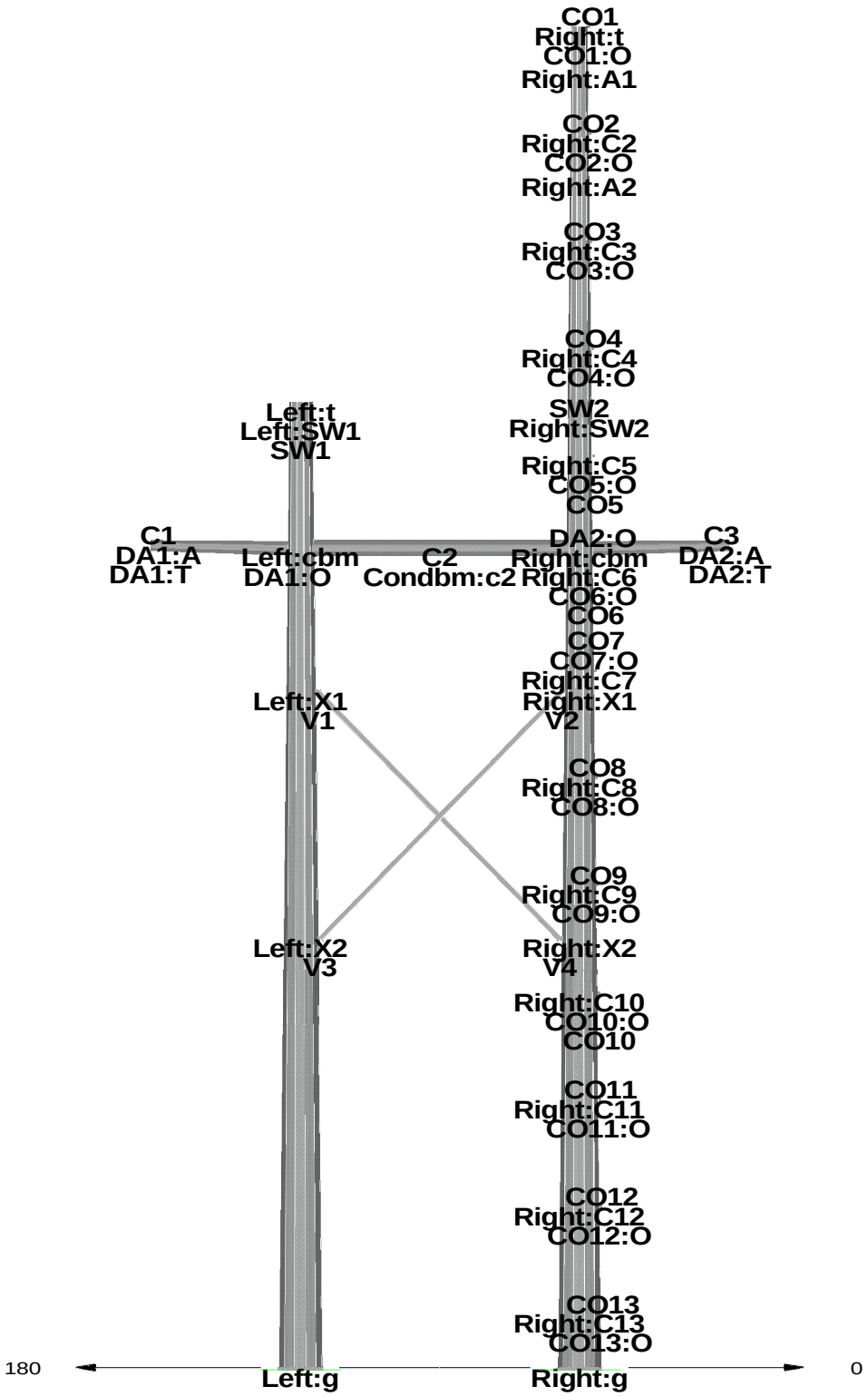
$$Extreme\_Ice_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice.ex}\right) \cdot Coax_{Span} \cdot OF_{EIV}\right]}$$

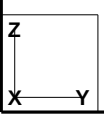
Extreme Ice w/ Wind Transverse Load =

$$Extreme\_Ice_{Trans} := \overrightarrow{\left(p_{ex} \cdot A_{ice.ex} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{EIT}\right)}$$

$Extreme\_Ice_{Vert} = 1123\,lb$ $Extreme\_Ice_{Trans} = 95\,lb$

Centek Engineering Inc, Project: "001-Lline 310_Str 29317_90-125ft"
PLS-POLE Version 16.81, 12:28:54 PM Wednesday, December 01, 2021
Undeformed geometry displayed





10 (ft)

Project Name : Dashiell - Colgreen North Shore 92/34.5kV Substation
Project Notes:
Project File : J:\Jobs\2100500.WI\27_CTHA836A_CT33XC538\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\001-Lline 310_Str 29317_90-125ft.pol
Date run : 10:15:22 AM Monday, January 03, 2022
by : PLS-POLE Version 16.81
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: J:\Jobs\2100500.WI\27_CTHA836A_CT33XC538\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\001-Lline 310_Str 29317_90-125ft.lca

*** Analysis Results:

Maximum element usage is 48.27% for Brace "X1" in load case "NESC 250C"
Maximum insulator usage is 41.19% for Clamp "T" in load case "NESC 250B"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
NESC 250B	Right:g	130.92	19.26	449.17	0.00
NESC 250B	Left:g	-4.57	12.32	326.93	0.00
NESC 250C	Right:g	151.51	36.68	854.53	0.00
NESC 250C	Left:g	-88.05	28.53	714.99	0.00
NESC 250D	Right:g	108.13	12.57	299.52	0.00
NESC 250D	Left:g	10.36	7.09	199.33	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC 250B	Right:g	-0.13	-19.26	-130.92	19.26	449.12	-6.67	449.17	0.28	0.00
NESC 250B	Left:g	-0.13	-12.32	4.57	12.32	326.87	-6.26	326.93	0.27	0.00
NESC 250C	Right:g	-0.03	-36.68	-151.51	36.68	854.53	-1.73	854.53	0.05	0.00
NESC 250C	Left:g	-0.04	-28.53	88.05	28.53	714.98	-1.76	714.99	0.05	0.00
NESC 250D	Right:g	-0.05	-12.57	-108.13	12.57	299.50	-2.76	299.52	0.12	0.00
NESC 250D	Left:g	-0.05	-7.09	-10.36	7.09	199.32	-2.57	199.33	0.12	0.00

Summary of Tip Deflections For All Load Cases:

Note: positive tip load results in positive deflection

Load Case	Joint Label	Long. Defl. (in)	Tran. Defl. (in)	Vert. Defl. (in)	Resultant Defl. (in)	Long. Rot. (deg)	Tran. Rot. (deg)	Twist (deg)
NESC 250B	Right:t	0.14	5.85	-0.10	5.86	0.01	-0.61	-0.00
NESC 250B	Left:t	0.07	1.19	-0.00	1.19	0.01	-0.05	-0.00
NESC 250C	Right:t	0.04	12.60	-0.18	12.60	0.00	-1.40	-0.00

NESC 250C	Left:t	0.02	2.68	0.04	2.68	0.00	-0.20	-0.00
NESC 250D	Right:t	0.06	3.57	-0.07	3.57	0.00	-0.35	-0.00
NESC 250D	Left:t	0.03	0.72	-0.01	0.72	0.00	-0.02	-0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)
Right	1	2617	NESC 250C	26.42	243.35
Right	2	7056	NESC 250C	29.21	410.13
Right	3	6559	NESC 250C	27.49	854.53
Left	1	7056	NESC 250C	19.15	332.16
Left	2	6559	NESC 250C	22.01	714.99

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Right	29.21	NESC 250C	78.6	13	17221.8
Left	22.01	NESC 250C	1.7	21	14604.7

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
DA1	44.78	NESC 250D	76.5	1	734.7
DA2	44.98	NESC 250D	76.5	1	734.7

Summary of Tubular X-Arm Usages:

Tubular X-Arm Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Condbm	44.96	NESC 250C	76.4	6	1717.8

Summary of Brace Usages:

Brace Label	Maximum Usage %	Load Case	Weight (lbs)
X1	48.27	NESC 250C	612.3
X2	34.13	NESC 250C	612.3

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC 250B	44.86	DA2	Tubular Davit

NESC 250C	48.27	X1	Brace
NESC 250D	44.98	DA2	Tubular Davit

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Steel Pole Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	18.78	Right	75.7	14
NESC 250C	29.21	Right	78.6	13
NESC 250D	14.99	Right	75.7	14

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC 250B	Right	19	22.430	129.934	449.121	-6.671	13.792	21.751	2	54.823	1.182	27.58
NESC 250C	Right	19	22.430	150.516	854.528	-1.728	22.753	35.884	2	91.475	1.518	45.51
NESC 250D	Right	19	22.430	107.136	299.504	-2.759	9.854	15.540	2	39.006	0.999	19.71
NESC 250B	Left	19	22.430	5.564	326.870	-6.262	7.065	11.142	2	28.871	0.846	14.13
NESC 250C	Left	19	22.430	89.044	714.984	-1.757	17.800	28.072	2	71.947	1.342	35.60
NESC 250D	Left	19	22.430	9.375	199.316	-2.569	4.484	7.071	2	18.267	0.674	8.97

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Tubular Davit Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	44.86	DA2	76.5	1
NESC 250C	20.45	DA2	76.5	1
NESC 250D	44.98	DA2	76.5	1

Summary of Tubular X-Arm Usages by Load Case:

Load Case	Maximum Tubular X-Arm Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	33.11	Condbm	76.4	6
NESC 250C	44.96	Condbm	76.4	6
NESC 250D	26.20	Condbm	76.4	6

Summary of Brace Usages by Load Case:

Load Case	Maximum Usage %	Brace Label
NESC 250B	26.74	X1
NESC 250C	48.27	X1
NESC 250D	18.96	X1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)

```
-------------------------------------------
         T      Clamp   41.19 NESC 250B    0.0
        FC      Clamp    0.00 NESC 250B    0.0
       sw1 Suspension    7.38 NESC 250D  100.0
       sw2 Suspension    7.38 NESC 250D  100.0
        c1 Suspension   31.79 NESC 250B  100.0
        c2 Suspension   31.79 NESC 250B  100.0
        c3 Suspension   31.79 NESC 250B  100.0
       CO1       Post   22.46 NESC 250D    1.0
       CO2       Post   22.46 NESC 250D    1.0
       CO3       Post   22.46 NESC 250D    1.0
       CO4       Post   22.46 NESC 250D    1.0
       CO5       Post   22.46 NESC 250D    1.0
       CO6       Post   22.46 NESC 250D    1.0
       CO7       Post   22.46 NESC 250D    1.0
       CO8       Post   22.46 NESC 250D    1.0
       CO9       Post   22.46 NESC 250D    1.0
      CO10       Post   22.46 NESC 250D    1.0
      CO11       Post   22.46 NESC 250D    1.0
      CO12       Post   22.46 NESC 250D    1.0
      CO13       Post   22.46 NESC 250D    1.0

*** Weight of structure (lbs):
    Weight of Braces:                  1224.6
    Weight of Tubular Davit Arms:      1469.4
    Weight of Tubular X-Arms:          1717.8
    Weight of Steel Poles:            31826.5
    Weight of Suspensions:              500.0
    Weight of Posts:                     13.0
    Total:                            36751.3


*** End of Report
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**************************************************************************
*                                                                        *
*                              PLS-POLE                                  *
*                   POLE AND FRAME ANALYSIS AND DESIGN                   *
*               Copyright Power Line Systems 1999-2021                   *
*                                                                        *
**************************************************************************
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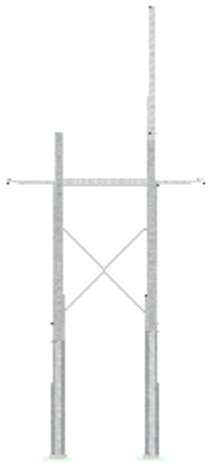
Project Name : Dashiell - Colgreen North Shore 92/34.5kV Substation
Project Notes:
Project File : J:\Jobs\2100500.WI\27_CTHA836A_CT33XC538\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\001-Lline 310_Str 29317_90-125ft.pol
Date run : 10:15:22 AM Monday, January 03, 2022
by : PLS-POLE Version 16.81
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

The model has 0 warnings.



Modeling options:
  Offset Arms from Pole/Mast: Yes
  Offset Braces from Pole/Mast: Yes
  Offset Guys from Pole/Mast: Yes
  Offset Posts from Pole/Mast: Yes
  Offset Strains from Pole/Mast: Yes
  Use Alternate Convergence Process: No
  Steel poles and tubular arms checked with ASCE/SEI 48-05

Vang Connectivity:

Vang Label	Attach Label	Tip Label	Azimuth (deg)	Length (ft)	Measured Relative To
V1	Left:X1	V1	0	0.25	Face
V2	Right:X1	V2	180	0.25	Face

V3	Left:X2	V3	0	0.25	Face
V4	Right:X2	V4	180	0.25	Face

Default Modulus of Elasticity for Steel = 29000.00 (ksi)
Default Weight Density for Steel = 490.00 (lbs/ft^3)

Steel Pole Properties:

Steel Pole Property	Stock Number	Length	Default Embedded Length	Base Plate	Shape	Tip Diameter	Base Diameter	Taper	Default Drag Coef.	Tubes	Modulus of Elasticity Override	Weight Density Override	Shape Base	Strength Type	Distance From Tip	Ultimate Trans. Load	Ultimate Long. Load
		(ft)	(ft)			(in)	(in)	(in/ft)			(ksi)	(lbs/ft^3)			(ft)	(kips)	(kips)
90ft h-frame		90.00	0	Yes	12F	0	48	0.239	1.3	2 tubes	0	0	Calculated		0.000	0.0000	0.0000
Galvanized Steel																	
125ft h-frame		125.00	0	Yes	12F	18	48	0	1.6	3 tubes	0	0	Calculated		0.000	0.0000	0.0000
Galvanized Steel																	

Steel Tubes Properties:

Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap or Butt Offset (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
90ft h-frame	1	53	0.375	0.000	0.000	0.000	65.000	0.000	7056	28.22	0.23900	26.49	39.16	4.801	0.000
90ft h-frame	2	37	0.375	0.000	0.000	0.000	65.000	0.000	6559	19.13	0.23900	39.16	48.00	0.000	0.000

Steel Tubes Properties:

Pole Property	Tube No.	Length (ft)	Thickness (in)	Lap Length (ft)	Lap Factor	Lap Gap or Butt Offset (in)	Yield Stress (ksi)	Moment Cap. Override (ft-k)	Tube Weight (lbs)	Center of Gravity (ft)	Calculated Taper (in/ft)	Tube Top Diameter (in)	Tube Bot. Diameter (in)	1.5x Diam. Lap Length (ft)	Actual Overlap (ft)
125ft h-frame	1	35	0.3125	0.000	0.000	0.000	65.000	0.000	2617	18.62	0.23900	18.00	26.36	3.217	0.000
125ft h-frame	2	53	0.375	0.000	0.000	0.000	65.000	0.000	7056	28.22	0.23900	26.49	39.16	4.801	0.000
125ft h-frame	3	37	0.375	0.000	0.000	0.000	65.000	0.000	6559	19.13	0.23900	39.16	48.00	0.000	0.000

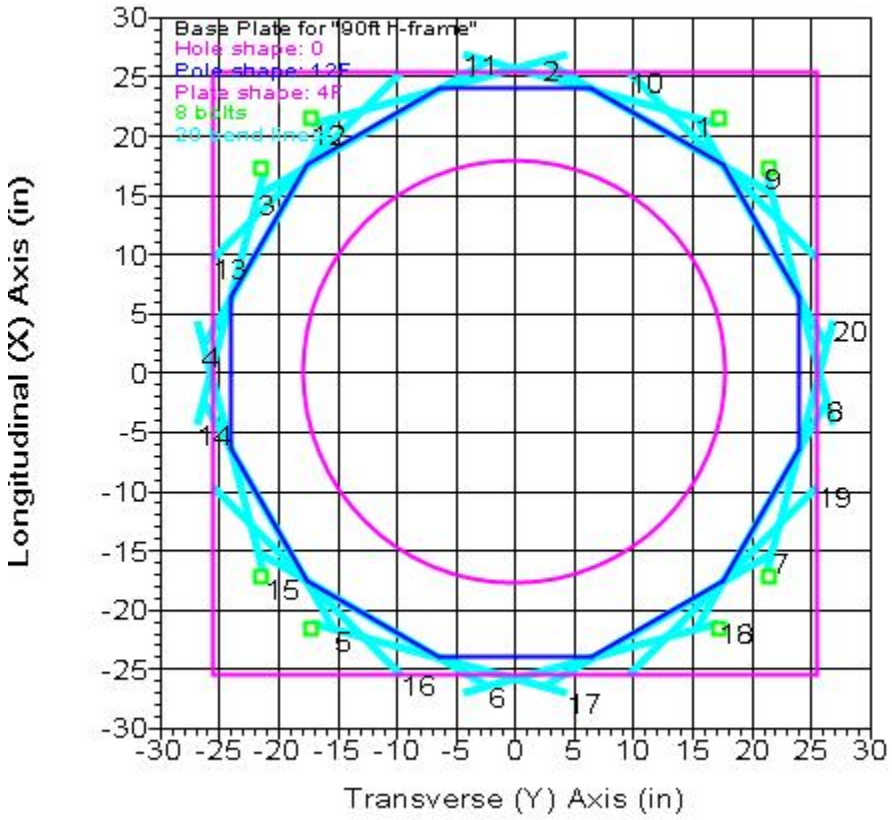
Base Plate Properties:

Pole Property	Plate Diam. (in)	Plate Shape	Plate Thick. (in)	Plate Weight (lbs)	Bend Line Length Override (in)	Hole Diam. (in)	Hole Shape	Steel Density (lbs/ft^3)	Steel Yield Stress (ksi)	Bolt Diam. (in)	Bolt Pattern Diam. (in)	Num. Of Bolts	Bolt Cage X Inertia (in^4)	Bolt Cage Y Inertia (in^4)
125ft h-frame	51.000	4F	2.250	990	22.430	36.000	0	490.00	50.000	2.250	55.250	8	12084.14	12084.14
90ft h-frame	51.000	4F	2.250	990	22.430	36.000	0	490.00	50.000	2.250	55.250	8	12084.14	12084.14

Base Plate Bolt Coordinates for Property "90ft h-frame":

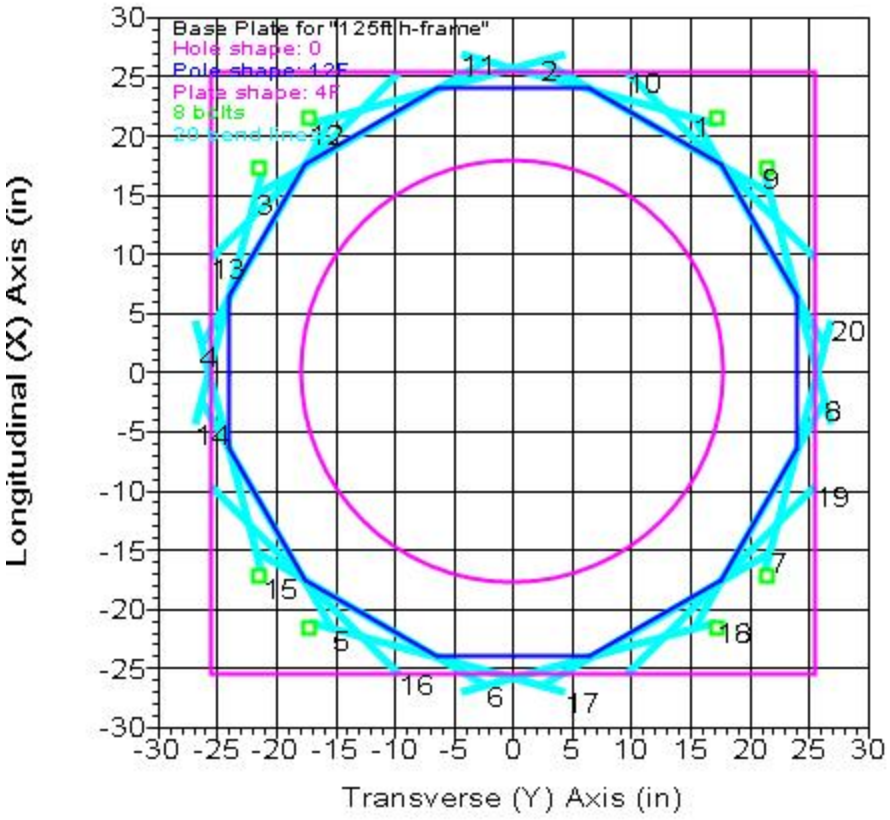
Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)

0.6244	0.7783	0
0.7783	0.6244	0



Base Plate Bolt Coordinates for Property "125ft h-frame":

Bolt X Coord.	Bolt Y Coord.	Bolt Angle (deg)
0.6244	0.7783	0
0.7783	0.6244	0



Steel Pole Connectivity:

Pole Label	Tip Joint	Base Joint	X of Base (ft)	Y of Base (ft)	Z of Base (ft)	Inclin. About X (deg)	Inclin. About Y (deg)	Property Set	Attach. Labels	Base Connect	Embed % Override	Embed C. Override (ft)
Right			0	13	0	0	0	125ft h-frame	18 labels	Fixed	0.00	0
Left			0	-13	0	0	0	90ft h-frame	4 labels	Fixed	0.00	0

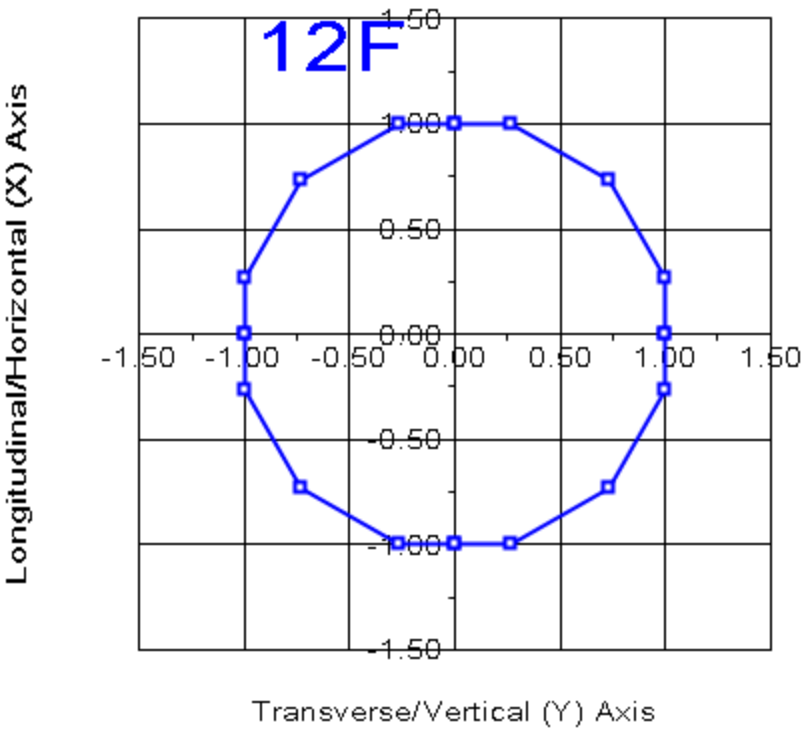
Relative Attachment Labels for Steel Pole "Right":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
Right:SW2	36.50	0.00
Right:cbm	48.58	0.00
Right:X1	62.00	0.00
Right:X2	85.00	0.00

Right:A1	4.00	0.00
Right:A2	14.00	0.00
Right:C2	10.00	0.00
Right:C3	20.00	0.00
Right:C4	30.00	0.00
Right:C5	40.00	0.00
Right:C6	50.00	0.00
Right:C7	60.00	0.00
Right:C8	70.00	0.00
Right:C9	80.00	0.00
Right:C10	90.00	0.00
Right:C11	100.00	0.00
Right:C12	110.00	0.00
Right:C13	120.00	0.00

Relative Attachment Labels for Steel Pole "Left":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
Left:SW1	1.50	0.00
Left:cbm	13.58	0.00
Left:X1	27.00	0.00
Left:X2	50.00	0.00



Pole Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	T-Moment Inertia (in^4)	L-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	T-Moment Capacity (ft-k)	L-Moment Capacity (ft-k)
Right	Right:t	Right:t Ori	0.00	18.00	17.77	711.86	711.86	0.00	12.8	65.00	65.00	428.43	428.43
Right	Right:A1	Right:A1 End	4.00	18.96	18.73	833.62	833.62	0.00	13.6	65.00	65.00	476.41	476.41
Right	Right:A1	Right:A1 Ori	4.00	18.96	18.73	833.62	833.62	0.00	13.6	65.00	65.00	476.41	476.41
Right	#Right:0	Tube 1 End	7.00	19.67	19.45	933.52	933.52	0.00	14.2	65.00	65.00	514.06	514.06
Right	#Right:0	Tube 1 Ori	7.00	19.67	19.45	933.52	933.52	0.00	14.2	65.00	65.00	514.06	514.06
Right	Right:C2	Right:C2 End	10.00	20.39	20.17	1041.11	1041.11	0.00	14.8	65.00	65.00	553.15	553.15
Right	Right:C2	Right:C2 Ori	10.00	20.39	20.17	1041.11	1041.11	0.00	14.8	65.00	65.00	553.15	553.15
Right	Right:A2	Right:A2 End	14.00	21.35	21.13	1197.00	1197.00	0.00	15.6	65.00	65.00	607.49	607.49
Right	Right:A2	Right:A2 Ori	14.00	21.35	21.13	1197.00	1197.00	0.00	15.6	65.00	65.00	607.49	607.49
Right	#Right:1	Tube 1 End	17.00	22.06	21.86	1323.61	1323.61	0.00	16.2	65.00	65.00	649.92	649.92
Right	#Right:1	Tube 1 Ori	17.00	22.06	21.86	1323.61	1323.61	0.00	16.2	65.00	65.00	649.92	649.92
Right	Right:C3	Right:C3 End	20.00	22.78	22.58	1458.85	1458.85	0.00	16.9	65.00	65.00	693.78	693.78
Right	Right:C3	Right:C3 Ori	20.00	22.78	22.58	1458.85	1458.85	0.00	16.9	65.00	65.00	693.78	693.78
Right	#Right:2	Tube 1 End	25.00	23.97	23.78	1704.20	1704.20	0.00	17.9	65.00	65.00	770.06	770.06
Right	#Right:2	Tube 1 Ori	25.00	23.98	23.78	1704.20	1704.20	0.00	17.9	65.00	65.00	770.06	770.06
Right	Right:C4	Right:C4 End	30.00	25.17	24.98	1975.62	1975.62	0.00	18.9	65.00	65.00	850.32	850.32
Right	Right:C4	Right:C4 Ori	30.00	25.17	24.98	1975.62	1975.62	0.00	18.9	65.00	65.00	850.32	850.32

Right	#Right:3	SpliceT	End	35.00	26.36	26.18	2274.44	2274.44	0.00	19.9	65.00	65.00	934.56	934.56
Right	#Right:3	SpliceT	Ori	35.00	26.49	31.49	2749.18	2749.18	0.00	16.2	65.00	65.00	1124.30	1124.30
Right	Right:SW2	Right:SW2	End	36.50	26.85	31.92	2863.95	2863.95	0.00	16.5	65.00	65.00	1155.60	1155.60
Right	Right:SW2	Right:SW2	Ori	36.50	26.85	31.92	2863.95	2863.95	0.00	16.5	65.00	65.00	1155.60	1155.60
Right	Right:C5	Right:C5	End	40.00	27.68	32.93	3144.06	3144.06	0.00	17.1	65.00	65.00	1230.29	1230.29
Right	Right:C5	Right:C5	Ori	40.00	27.69	32.93	3144.06	3144.06	0.00	17.1	65.00	65.00	1230.29	1230.29
Right	#Right:4	Tube 2	End	44.29	28.71	34.17	3511.73	3511.73	0.00	17.8	65.00	65.00	1325.07	1325.07
Right	#Right:4	Tube 2	Ori	44.29	28.71	34.17	3511.73	3511.73	0.00	17.8	65.00	65.00	1325.07	1325.07
Right	Right:cbm	Right:cbm	End	48.58	29.74	35.40	3906.99	3906.99	0.00	18.6	65.00	65.00	1423.37	1423.37
Right	Right:cbm	Right:cbm	Ori	48.58	29.74	35.40	3906.99	3906.99	0.00	18.6	65.00	65.00	1423.37	1423.37
Right	Right:C6	Right:C6	End	50.00	30.07	35.81	4043.74	4043.74	0.00	18.8	65.00	65.00	1456.60	1456.60
Right	Right:C6	Right:C6	Ori	50.00	30.08	35.81	4043.74	4043.74	0.00	18.8	65.00	65.00	1456.60	1456.60
Right	#Right:5	Tube 2	End	55.00	31.27	37.25	4551.70	4551.70	0.00	19.7	65.00	65.00	1576.91	1576.91
Right	#Right:5	Tube 2	Ori	55.00	31.27	37.25	4551.70	4551.70	0.00	19.7	65.00	65.00	1576.91	1576.91
Right	Right:C7	Right:C7	End	60.00	32.46	38.69	5100.51	5100.51	0.00	20.5	65.00	65.00	1702.00	1702.00
Right	Right:C7	Right:C7	Ori	60.00	32.47	38.69	5100.51	5100.51	0.00	20.5	65.00	65.00	1702.00	1702.00
Right	Right:X1	Right:X1	End	62.00	32.94	39.27	5331.82	5331.82	0.00	20.9	65.00	65.00	1753.37	1753.37
Right	Right:X1	Right:X1	Ori	62.00	32.94	39.27	5331.82	5331.82	0.00	20.9	65.00	65.00	1753.37	1753.37
Right	#Right:6	Tube 2	End	66.00	33.90	40.42	5815.23	5815.23	0.00	21.5	65.00	65.00	1858.41	1858.41
Right	#Right:6	Tube 2	Ori	66.00	33.90	40.42	5815.23	5815.23	0.00	21.5	65.00	65.00	1858.41	1858.41
Right	Right:C8	Right:C8	End	70.00	34.85	41.57	6327.00	6327.00	0.00	22.2	65.00	65.00	1966.50	1966.50
Right	Right:C8	Right:C8	Ori	70.00	34.86	41.57	6327.00	6327.00	0.00	22.2	65.00	65.00	1966.50	1966.50
Right	#Right:7	Tube 2	End	75.00	36.05	43.02	7007.85	7007.85	0.00	23.1	65.00	65.00	2105.92	2105.92
Right	#Right:7	Tube 2	Ori	75.00	36.05	43.02	7007.85	7007.85	0.00	23.1	65.00	65.00	2105.92	2105.92
Right	Right:C9	Right:C9	End	80.00	37.24	44.46	7735.88	7735.88	0.00	23.9	65.00	65.00	2250.11	2250.11
Right	Right:C9	Right:C9	Ori	80.00	37.25	44.46	7735.88	7735.88	0.00	23.9	65.00	65.00	2250.11	2250.11
Right	Right:X2	Right:X2	End	85.00	38.44	45.90	8512.65	8512.65	0.00	24.8	65.00	65.00	2399.07	2399.07
Right	Right:X2	Right:X2	Ori	85.00	38.44	45.90	8512.65	8512.65	0.00	24.8	65.00	65.00	2399.07	2399.07
Right	#Right:8	SpliceT	End	88.00	39.16	46.76	9002.78	9002.78	0.00	25.3	65.00	65.00	2490.74	2490.74
Right	#Right:8	SpliceT	Ori	88.00	39.16	46.76	9002.78	9002.78	0.00	25.3	65.00	65.00	2490.74	2490.74
Right	Right:C10	Right:C10	End	90.00	39.63	47.34	9339.76	9339.76	0.00	25.6	65.00	65.00	2552.81	2552.81
Right	Right:C10	Right:C10	Ori	90.00	39.64	47.34	9339.76	9339.76	0.00	25.6	65.00	65.00	2552.81	2552.81
Right	#Right:9	Tube 3	End	95.00	40.83	48.78	10218.78	10218.78	0.00	26.5	65.00	65.00	2711.32	2711.32
Right	#Right:9	Tube 3	Ori	95.00	40.83	48.78	10218.79	10218.79	0.00	26.5	65.00	65.00	2711.32	2711.32
Right	Right:C11	Right:C11	End	100.00	42.02	50.22	11151.30	11151.30	0.00	27.3	65.00	65.00	2874.61	2874.61
Right	Right:C11	Right:C11	Ori	100.00	42.03	50.22	11151.30	11151.30	0.00	27.3	65.00	65.00	2874.61	2874.61
Right	#Right:10	Tube 3	End	105.00	43.22	51.66	12138.89	12138.89	0.00	28.2	65.00	65.00	3042.68	3042.68
Right	#Right:10	Tube 3	Ori	105.00	43.22	51.66	12138.90	12138.90	0.00	28.2	65.00	65.00	3042.68	3042.68
Right	Right:C12	Right:C12	End	110.00	44.41	53.10	13183.14	13183.14	0.00	29.1	65.00	65.00	3215.52	3215.52
Right	Right:C12	Right:C12	Ori	110.00	44.42	53.10	13183.14	13183.14	0.00	29.1	65.00	65.00	3215.52	3215.52
Right	#Right:11	Tube 3	End	115.00	45.61	54.54	14285.62	14285.62	0.00	29.9	65.00	64.93	3389.53	3389.53
Right	#Right:11	Tube 3	Ori	115.00	45.61	54.54	14285.62	14285.62	0.00	29.9	65.00	64.93	3389.53	3389.53
Right	Right:C13	Right:C13	End	120.00	46.80	55.98	15447.92	15447.92	0.00	30.8	65.00	64.09	3525.68	3525.68
Right	Right:C13	Right:C13	Ori	120.00	46.81	55.98	15447.92	15447.92	0.00	30.8	65.00	64.09	3525.68	3525.68
Right	Right:g	Right:g	End	125.00	48.00	57.42	16671.61	16671.61	0.00	31.6	65.00	63.26	3661.79	3661.79
Left	Left:t	Left:t	Ori	0.00	26.49	31.49	2749.18	2749.18	0.00	16.2	65.00	65.00	1124.30	1124.30
Left	Left:SW1	Left:SW1	End	1.50	26.85	31.92	2863.95	2863.95	0.00	16.5	65.00	65.00	1155.60	1155.60
Left	Left:SW1	Left:SW1	Ori	1.50	26.85	31.92	2863.95	2863.95	0.00	16.5	65.00	65.00	1155.60	1155.60
Left	#Left:12	Tube 1	End	6.50	28.04	33.36	3269.50	3269.50	0.00	17.4	65.00	65.00	1263.02	1263.02
Left	#Left:12	Tube 1	Ori	6.50	28.04	33.36	3269.50	3269.50	0.00	17.4	65.00	65.00	1263.02	1263.02
Left	#Left:13	Tube 1	End	10.04	28.89	34.38	3578.79	3578.79	0.00	18.0	65.00	65.00	1342.00	1342.00
Left	#Left:13	Tube 1	Ori	10.04	28.89	34.38	3578.79	3578.79	0.00	18.0	65.00	65.00	1342.00	1342.00
Left	Left:cbm	Left:cbm	End	13.58	29.74	35.40	3906.99	3906.99	0.00	18.6	65.00	65.00	1423.37	1423.37
Left	Left:cbm	Left:cbm	Ori	13.58	29.74	35.40	3906.99	3906.99	0.00	18.6	65.00	65.00	1423.37	1423.37
Left	#Left:14	Tube 1	End	18.58	30.93	36.84	4403.66	4403.66	0.00	19.4	65.00	65.00	1542.33	1542.33
Left	#Left:14	Tube 1	Ori	18.58	30.93	36.84	4403.66	4403.66	0.00	19.4	65.00	65.00	1542.33	1542.33
Left	#Left:15	Tube 1	End	22.79	31.94	38.06	4852.96	4852.96	0.00	20.1	65.00	65.00	1646.16	1646.16
Left	#Left:15	Tube 1	Ori	22.79	31.94	38.06	4852.96	4852.96	0.00	20.1	65.00	65.00	1646.16	1646.16

Left	Left:X1	Left:X1 End	27.00	32.94	39.27	5331.82	5331.82	0.00	20.9	65.00	65.00	1753.37	1753.37
Left	Left:X1	Left:X1 Ori	27.00	32.94	39.27	5331.82	5331.82	0.00	20.9	65.00	65.00	1753.37	1753.37
Left	#Left:16	Tube 1 End	32.00	34.14	40.71	5940.48	5940.48	0.00	21.7	65.00	65.00	1885.15	1885.15
Left	#Left:16	Tube 1 Ori	32.00	34.14	40.71	5940.48	5940.48	0.00	21.7	65.00	65.00	1885.15	1885.15
Left	#Left:17	Tube 1 End	37.00	35.33	42.15	6593.78	6593.78	0.00	22.6	65.00	65.00	2021.69	2021.69
Left	#Left:17	Tube 1 Ori	37.00	35.33	42.15	6593.78	6593.78	0.00	22.6	65.00	65.00	2021.70	2021.70
Left	#Left:18	Tube 1 End	42.00	36.53	43.59	7293.31	7293.31	0.00	23.4	65.00	65.00	2163.02	2163.02
Left	#Left:18	Tube 1 Ori	42.00	36.53	43.59	7293.31	7293.31	0.00	23.4	65.00	65.00	2163.02	2163.02
Left	#Left:19	Tube 1 End	46.00	37.48	44.74	7887.28	7887.28	0.00	24.1	65.00	65.00	2279.52	2279.52
Left	#Left:19	Tube 1 Ori	46.00	37.48	44.74	7887.28	7887.28	0.00	24.1	65.00	65.00	2279.52	2279.52
Left	Left:X2	Left:X2 End	50.00	38.44	45.90	8512.65	8512.65	0.00	24.8	65.00	65.00	2399.07	2399.07
Left	Left:X2	Left:X2 Ori	50.00	38.44	45.90	8512.65	8512.65	0.00	24.8	65.00	65.00	2399.07	2399.07
Left	#Left:20	SpliceT End	53.00	39.16	46.76	9002.78	9002.78	0.00	25.3	65.00	65.00	2490.74	2490.74
Left	#Left:20	SpliceT Ori	53.00	39.16	46.76	9002.78	9002.78	0.00	25.3	65.00	65.00	2490.74	2490.74
Left	#Left:21	Tube 2 End	58.00	40.35	48.20	9860.84	9860.84	0.00	26.2	65.00	65.00	2647.34	2647.34
Left	#Left:21	Tube 2 Ori	58.00	40.35	48.20	9860.85	9860.85	0.00	26.2	65.00	65.00	2647.34	2647.34
Left	#Left:22	Tube 2 End	63.00	41.55	49.64	10771.77	10771.77	0.00	27.0	65.00	65.00	2808.72	2808.72
Left	#Left:22	Tube 2 Ori	63.00	41.55	49.64	10771.78	10771.78	0.00	27.0	65.00	65.00	2808.72	2808.72
Left	#Left:23	Tube 2 End	68.00	42.74	51.08	11737.15	11737.15	0.00	27.9	65.00	65.00	2974.88	2974.88
Left	#Left:23	Tube 2 Ori	68.00	42.74	51.08	11737.15	11737.15	0.00	27.9	65.00	65.00	2974.88	2974.88
Left	#Left:24	Tube 2 End	73.00	43.94	52.53	12758.54	12758.54	0.00	28.7	65.00	65.00	3145.81	3145.81
Left	#Left:24	Tube 2 Ori	73.00	43.94	52.53	12758.54	12758.54	0.00	28.7	65.00	65.00	3145.81	3145.81
Left	#Left:25	Tube 2 End	78.00	45.13	53.97	13837.54	13837.54	0.00	29.6	65.00	65.00	3321.51	3321.51
Left	#Left:25	Tube 2 Ori	78.00	45.13	53.97	13837.54	13837.54	0.00	29.6	65.00	65.00	3321.51	3321.51
Left	#Left:26	Tube 2 End	83.00	46.33	55.41	14975.72	14975.72	0.00	30.4	65.00	64.43	3471.22	3471.22
Left	#Left:26	Tube 2 Ori	83.00	46.33	55.41	14975.72	14975.72	0.00	30.4	65.00	64.43	3471.22	3471.22
Left	#Left:27	Tube 2 End	86.50	47.16	56.42	15808.50	15808.50	0.00	31.0	65.00	63.84	3566.53	3566.53
Left	#Left:27	Tube 2 Ori	86.50	47.16	56.42	15808.51	15808.51	0.00	31.0	65.00	63.84	3566.53	3566.53
Left	Left:g	Left:g End	90.00	48.00	57.42	16671.61	16671.61	0.00	31.6	65.00	63.26	3661.79	3661.79

Brace Properties:

Brace Property	Stock Number	Cross Section	Length	Depth	Width	Weight	Unit Wt. (If Unknown)	Modulus of Elasticity	Drag Coef.	Strength Check	Use Steel	Tension Capacity	Compres. Capacity	Net Area	Design Normal Stress	X-Moment Of Inertia	Z-Moment Of Inertia	Unbraced Length Ratio-X	Unbraced Length Ratio-Z	Texture
		Area	(ft)	(in)	(in)	(lbs)	(lbs/ft)	(ksi)		Type	S.F.	(lbs)	(lbs)	(in^2)	(ksi)	(in^4)	(in^4)			
HSS6x6x1/4(XBRACE)		5.24	0	6	6	0	19.02	29000	1.6	Calculated	Yes	0	0	3.93	46	28.6	28.6	0.5	0.5	

Brace Connectivity:

Brace Label	Origin Label	End Label	Brace Property Set	Element Type
X1	V1	V4	HSS6x6x1/4(XBRACE)	Standard
X2	V2	V3	HSS6x6x1/4(XBRACE)	Standard

Tubular Davit Properties:

Davit Steel	Stock Number	Thickness	Base	Tip	Taper	Drag	Modulus	Geometry	Strength	Vertical	Tension	Compres.	Long. Weight	Yield Steel	Texture

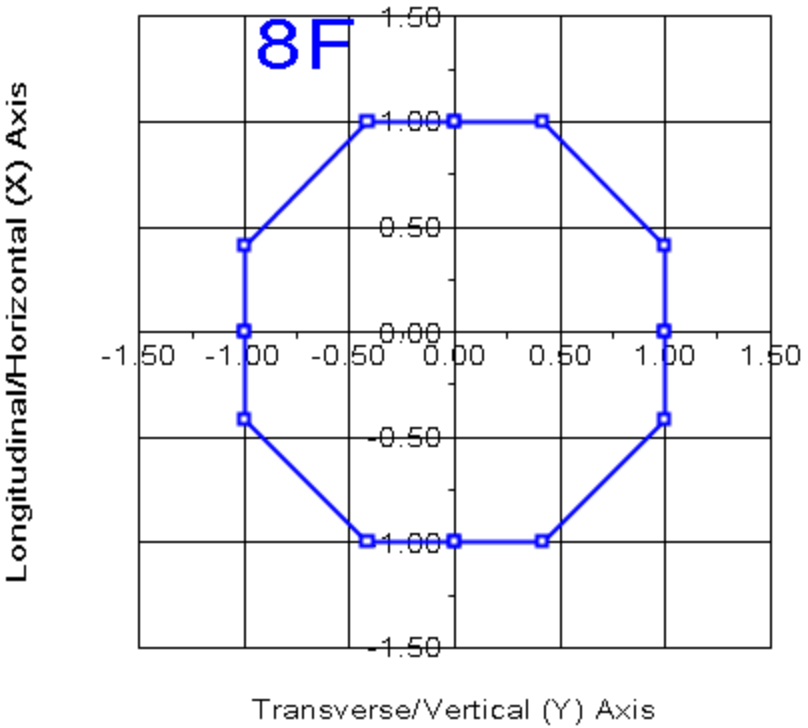
Property Label	Shape	Diameter or Depth (in)	Diameter or Depth (in)	(in)	Coef. (in/ft)	of Elasticity (ksi)	Check Type	Capacity (lbs)	Capacity (lbs)	Capacity (lbs)	Capacity (lbs)	Stress (ksi)	Density Override (lbs/ft^3)	Shape At End
13FT DA ARM1	8F	0.375	16	12	0	1.4	29000 2 points	Calculated	0	0	0	0	65	0

Intermediate Joints for Davit Property "13FT DA ARM1":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
A	12	-0.235
T	12.75	-0.25

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
DA1	Left:cbm	13FT DA ARM1	180
DA2	Right:cbm	13FT DA ARM1	0



Tubular Davit Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
DA1	DA1:O	Origin	0.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
DA1	#DA1:0	End	5.00	14.43	17.47	456.42	456.42	0.00	11.8	65.00	65.00	342.62	342.62
DA1	#DA1:0	Origin	5.00	14.43	17.47	456.42	456.42	0.00	11.8	65.00	65.00	342.62	342.62
DA1	#DA1:1	End	8.50	13.33	16.10	357.63	357.63	0.00	10.6	65.00	65.00	290.57	290.57
DA1	#DA1:1	Origin	8.50	13.33	16.10	357.63	357.63	0.00	10.6	65.00	65.00	290.57	290.57
DA1	DA1:A	End	12.00	12.24	14.74	274.24	274.24	0.00	9.4	65.00	65.00	242.81	242.81
DA1	DA1:A	Origin	12.00	12.24	14.74	274.24	274.24	0.00	9.4	65.00	65.00	242.81	242.81
DA1	DA1:T	End	12.75	12.00	14.45	258.25	258.25	0.00	9.1	65.00	65.00	233.14	233.14
DA2	DA2:O	Origin	0.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
DA2	#DA2:0	End	5.00	14.43	17.47	456.42	456.42	0.00	11.8	65.00	65.00	342.62	342.62
DA2	#DA2:0	Origin	5.00	14.43	17.47	456.42	456.42	0.00	11.8	65.00	65.00	342.62	342.62
DA2	#DA2:1	End	8.50	13.33	16.10	357.63	357.63	0.00	10.6	65.00	65.00	290.57	290.57
DA2	#DA2:1	Origin	8.50	13.33	16.10	357.63	357.63	0.00	10.6	65.00	65.00	290.57	290.57
DA2	DA2:A	End	12.00	12.24	14.74	274.24	274.24	0.00	9.4	65.00	65.00	242.81	242.81
DA2	DA2:A	Origin	12.00	12.24	14.74	274.24	274.24	0.00	9.4	65.00	65.00	242.81	242.81
DA2	DA2:T	End	12.75	12.00	14.45	258.25	258.25	0.00	9.1	65.00	65.00	233.14	233.14

Tubular X-Arm Properties:

Cross Arm Property Label	Stock Number	Steel Shape	Thickness (in)	Diameter or Depth (in)	Length (ft)	Modulus of Elasticity (ksi)	Drag Coef.	Geometry	Strength Check Type	Vertical Capacity (lbs)	Trans. Capacity (lbs)	Long. Capacity (lbs)	Steel Yield Stress (ksi)	Weight Density Override (lbs/ft^3)	Texture
cond 26-frame		8F	0.375	16	26	29000	1.6	1 point	Calculated	0	0	0	65	0	

Joints Relative to the Origin for Cross Arm Property "cond 26-frame":

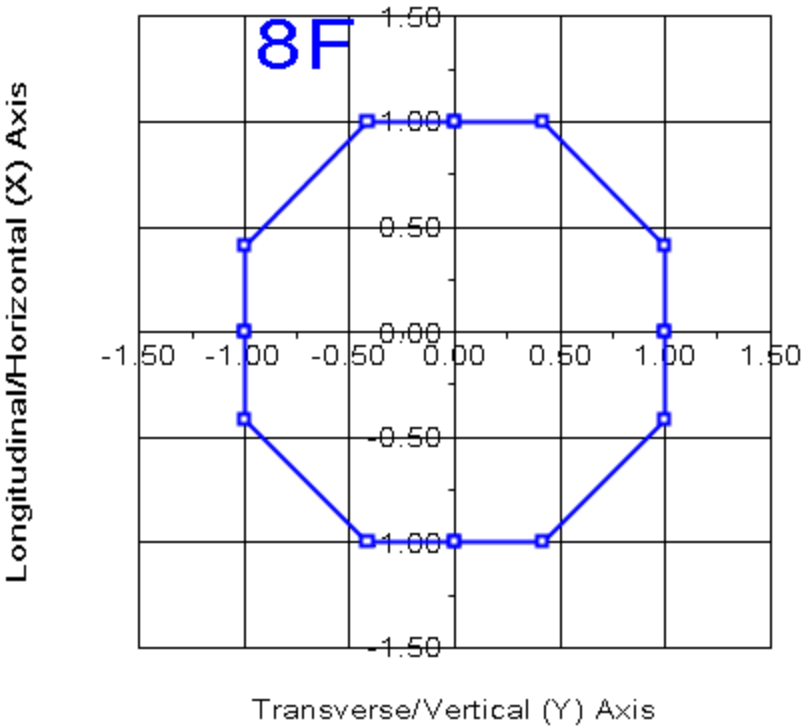
Joint Label	Offset (ft)
c2	13

Tubular X-Arm Connectivity:

X-Arm Label	X-Arm Property Set	Azimuth (deg)	Slope (deg)	Attach. Labels	Connects
Condbm	cond 26-frame	0	0		3 connections

X-Arm Connections for "Condbm":

Attach Label	Offset (ft)	Connect At	Connection Code Type
Condbm:O	0.000	Left:cbm	Fixed
Condbm:c2	13.000		Pinned X
Condbm:E	26.000	Right:cbm	Fixed



Tubular X-Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
Condbm	Condbm:O	Origin	0.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:0	End	5.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:0	Origin	5.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:1	End	9.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:1	Origin	9.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	Condbm:c2	End	13.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	Condbm:c2	Origin	13.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:2	End	18.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:2	Origin	18.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:3	End	22.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	#sCondbm:3	Origin	22.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38
Condbm	Condbm:E	End	26.00	16.00	19.42	626.78	626.78	0.00	13.5	65.00	65.00	424.38	424.38

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)	Hardware Capacity (lbs)	Notes
static		1.5e+04	0	

Clamp Insulator Connectivity:

Clamp Label	Structure Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
T	Right:A1	static	No Limit
FC	Right:A2	static	No Limit

Suspension Properties:

Label	Stock Number	Length (ft)	Weight (lbs)	Wind Area (ft^2)	Tension Capacity (lbs)	Top Rect Width (ft)	Top Rect Height (ft)	Bot. Rect Width (ft)	Bot. Rect Height (ft)	Vert. Rect Width (ft)	Vert. Rect Height (ft)	Hardware Capacity (lbs)	Notes	Draw	Rigid
Suspension1		0.25	100	10	5e+04	0	0	0	0	0	0	0		Sheds	No

Suspension Insulator Connectivity:

Suspension Label	Structure Attach	Tip Label	Property Set	Cond. 1 Minimum Swing (deg)	Cond. 1 Maximum Swing (deg)	Cond. 2 Minimum Swing (deg)	Cond. 2 Maximum Swing (deg)	Cond. 3 Minimum Swing (deg)	Cond. 3 Maximum Swing (deg)	Cond. 4 Minimum Swing (deg)	Cond. 4 Maximum Swing (deg)	Min. Required Vertical Load (uplift) (lbs)
sw1	Left:SW1	SW1	Suspension1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
sw2	Right:SW2	SW2	Suspension1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
c1	DA1:A	C1	Suspension1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
c2	Condbm:c2	C2	Suspension1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
c3	DA2:A	C3	Suspension1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit

Post Properties:

Label	Stock Number	Has Brace	Horz. Projection (ft)	Vert. Projection (ft)	Weight (lbs)	Interaction Capacity	Cantilever Capacity (lbs)	Tension Capacity (lbs)	Comp. Capacity (lbs)	Long. Stiffness (lbs/ft)	Vert. Stiffness (lbs/ft)	Hardware Capacity (lbs)	Notes	Draw
ins		No	0.25	0	1		5000	5000	1e+04	0	0	0		Sheds

Post Insulator Connectivity:

Post Label	Structure Attach	Tip Label	Property Set	Azimuth (deg)	Brace Attach	Min. Required Vertical Load (uplift) (lbs)
CO1	Right:t	CO1	ins	0		No Limit
CO2	Right:C2	CO2	ins	0		No Limit
CO3	Right:C3	CO3	ins	0		No Limit
CO4	Right:C4	CO4	ins	0		No Limit
CO5	Right:C5	CO5	ins	0		No Limit

CO6	Right:C6	CO6	ins	0	No Limit
CO7	Right:C7	CO7	ins	0	No Limit
CO8	Right:C8	CO8	ins	0	No Limit
CO9	Right:C9	CO9	ins	0	No Limit
CO10	Right:C10	CO10	ins	0	No Limit
CO11	Right:C11	CO11	ins	0	No Limit
CO12	Right:C12	CO12	ins	0	No Limit
CO13	Right:C13	CO13	ins	0	No Limit

*** Loads Data

Loads from file: J:\Jobs\2100500.WI\27_CTHA836A_CT33XC538\05_Structural\Tower Analysis\Backup Documentation\Rev (1)\Calcs\PLS-Pole\001-Lline 310_Str 29317_90-125ft.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):
  Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
  Ground elevation shift 0.00 (ft)
  Z of ground with shift 0.00 (ft)
  Z of structure top (highest joint) 125.00 (ft)
  Structure height 125.00 (ft)
  Structure height above ground 125.00 (ft)

Vector Load Cases:

Load Case Description	Dead Load	Wind Area	SF for Steel Poles	SF for Wood Poles	SF for Conc. Poles	SF for Conc. Pole Ult.	SF for Conc. Pole First Crack	SF for Guys Zero Tens.	SF for Non Tubular Arms and Towers	SF for Braces and Tubular Arms	SF for Insuls.	SF For Hardware	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Deflection Limit % or (ft)
NESC 250B	1.5000	2.5000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	19 loads	Wind on All	4	0	0.500	57.000	0.0	No Limit	0
NESC 250C	1.0000	1.0000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	19 loads	NESC 2017	31	0	0.000	57.000	60.0	No Limit	0
NESC 250D	1.0000	1.0000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	19 loads	Wind on All	4	0	1.000	57.000	15.0	No Limit	0

Point Loads for Load Case "NESC 250B":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
C1	15116	4920	0	
C2	15116	4920	0	
C3	15116	4920	0	
SW1	2455	1382	0	
SW2	2455	1382	0	
Right:A1	5982	1543	0	
CO1	920	225	0	
CO2	920	225	0	
CO3	920	225	0	
CO4	920	225	0	
CO5	920	225	0	
CO6	920	225	0	
CO7	920	225	0	

CO8	920	225	0
CO9	920	225	0
CO10	920	225	0
CO11	920	225	0
CO12	920	225	0
CO13	920	225	0

Detailed Pole Loading Data for Load Case "NESC 250B":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
Right	Right:t	Right:A1	125.00	121.00	123.00	18.478	8.75e+05	1.600	10.00	0.50	372.66	98.55	47.04	5.33	103.89	0.00
Right	Right:A1		121.00	118.00	119.50	19.314	9.14e+05	1.600	10.00	0.50	292.37	77.26	36.87	4.00	81.26	0.00
Right		Right:C2	118.00	115.00	116.50	20.032	9.48e+05	1.600	10.00	0.50	303.40	80.13	38.24	4.00	84.13	0.00
Right	Right:C2	Right:A2	115.00	111.00	113.00	20.868	9.88e+05	1.600	10.00	0.50	421.69	111.30	53.12	5.33	116.64	0.00
Right	Right:A2		111.00	108.00	109.50	21.705	1.03e+06	1.600	10.00	0.50	329.14	86.82	41.44	4.00	90.82	0.00
Right		Right:C3	108.00	105.00	106.50	22.422	1.06e+06	1.600	10.00	0.50	340.17	89.69	42.81	4.00	93.69	0.00
Right	Right:C3		105.00	100.00	102.50	23.378	1.11e+06	1.600	10.00	0.50	591.47	155.86	74.38	6.67	162.53	0.00
Right		Right:C4	100.00	95.00	97.50	24.573	1.16e+06	1.600	10.00	0.50	622.11	163.83	78.19	6.67	170.49	0.00
Right	Right:C4		95.00	90.00	92.50	25.767	1.22e+06	1.600	10.00	0.50	652.76	171.79	81.99	6.67	178.46	0.00
Right		Right:SW2	90.00	88.50	89.25	26.669	1.26e+06	1.600	10.00	0.50	242.72	53.34	25.46	2.00	55.34	0.00
Right	Right:SW2	Right:C5	88.50	85.00	86.75	27.267	1.29e+06	1.600	10.00	0.50	579.26	127.25	60.73	4.67	131.92	0.00
Right	Right:C5		85.00	80.71	82.85	28.198	1.34e+06	1.600	10.00	0.50	734.85	161.36	77.01	5.72	167.08	0.00
Right		Right:cbm	80.71	76.42	78.56	29.224	1.38e+06	1.600	10.00	0.50	761.94	167.23	79.81	5.72	172.95	0.00
Right	Right:cbm	Right:C6	76.42	75.00	75.71	29.906	1.42e+06	1.600	10.00	0.50	257.53	56.50	26.97	1.89	58.39	0.00
Right	Right:C6		75.00	70.00	72.50	30.673	1.45e+06	1.600	10.00	0.50	932.32	204.49	97.60	6.67	211.16	0.00
Right		Right:C7	70.00	65.00	67.50	31.868	1.51e+06	1.600	10.00	0.50	969.10	212.46	101.40	6.67	219.13	0.00
Right	Right:C7	Right:X1	65.00	63.00	64.00	32.704	1.55e+06	1.600	10.00	0.50	397.93	87.22	41.62	2.67	89.88	0.00
Right	Right:X1		63.00	59.00	61.00	33.421	1.58e+06	1.600	10.00	0.50	813.52	178.25	85.07	5.33	183.59	0.00
Right		Right:C8	59.00	55.00	57.00	34.377	1.63e+06	1.600	10.00	0.50	837.06	183.35	87.51	5.33	188.69	0.00
Right	Right:C8		55.00	50.00	52.50	35.453	1.68e+06	1.600	10.00	0.50	1079.41	236.36	112.81	6.67	243.03	0.00
Right		Right:C9	50.00	45.00	47.50	36.648	1.74e+06	1.600	10.00	0.50	1116.19	244.33	116.61	6.67	251.00	0.00
Right	Right:C9	Right:X2	45.00	40.00	42.50	37.843	1.79e+06	1.600	10.00	0.50	1152.96	252.30	120.41	6.67	258.96	0.00
Right	Right:X2		40.00	37.00	38.50	38.799	1.84e+06	1.600	10.00	0.50	709.43	155.20	74.07	4.00	159.20	0.00
Right		Right:C10	37.00	35.00	36.00	39.396	1.87e+06	1.600	10.00	0.50	480.31	105.06	50.14	2.67	107.73	0.00
Right	Right:C10		35.00	30.00	32.50	40.232	1.9e+06	1.600	10.00	0.50	1226.51	268.23	128.02	6.67	274.90	0.00
Right		Right:C11	30.00	25.00	27.50	41.428	1.96e+06	1.600	10.00	0.50	1263.28	276.20	131.82	6.67	282.86	0.00
Right	Right:C11		25.00	20.00	22.50	42.623	2.02e+06	1.600	10.00	0.50	1300.05	284.17	135.62	6.67	290.83	0.00
Right		Right:C12	20.00	15.00	17.50	43.818	2.07e+06	1.600	10.00	0.50	1336.82	292.13	139.42	6.67	298.80	0.00
Right	Right:C12		15.00	10.00	12.50	45.013	2.13e+06	1.600	10.00	0.50	1373.60	300.10	143.23	6.67	306.77	0.00
Right		Right:C13	10.00	5.00	7.50	46.208	2.19e+06	1.600	10.00	0.50	1410.37	308.07	147.03	6.67	314.73	0.00
Right	Right:C13	Right:g	5.00	0.00	2.50	47.402	2.24e+06	1.600	10.00	0.50	1447.14	316.03	150.83	6.67	322.70	0.00
Left	Left:t	Left:SW1	90.00	88.50	89.25	26.669	1.26e+06	1.300	10.00	0.50	242.74	43.34	25.46	1.63	44.96	0.00
Left	Left:SW1		88.50	83.50	86.00	27.446	1.3e+06	1.300	10.00	0.50	833.04	148.67	87.33	5.42	154.09	0.00
Left			83.50	79.96	81.73	28.467	1.35e+06	1.300	10.00	0.50	612.29	109.22	64.16	3.84	113.06	0.00
Left		Left:cbm	79.96	76.42	78.19	29.313	1.39e+06	1.300	10.00	0.50	630.74	112.47	66.06	3.84	116.31	0.00
Left	Left:cbm		76.42	71.42	73.92	30.334	1.44e+06	1.300	10.00	0.50	921.90	164.32	96.52	5.42	169.73	0.00
Left			71.42	67.21	69.31	31.434	1.49e+06	1.300	10.00	0.50	804.47	143.32	84.19	4.56	147.88	0.00
Left		Left:X1	67.21	63.00	65.10	32.440	1.54e+06	1.300	10.00	0.50	830.52	147.91	86.88	4.56	152.47	0.00
Left	Left:X1		63.00	58.00	60.50	33.540	1.59e+06	1.300	10.00	0.50	1020.58	181.69	106.72	5.42	187.10	0.00
Left			58.00	53.00	55.50	34.735	1.64e+06	1.300	10.00	0.50	1057.35	188.16	110.52	5.42	193.58	0.00
Left			53.00	48.00	50.50	35.930	1.7e+06	1.300	10.00	0.50	1094.12	194.63	114.33	5.42	200.05	0.00
Left			48.00	44.00	46.00	37.006	1.75e+06	1.300	10.00	0.50	901.78	160.37	94.20	4.33	164.70	0.00

Left		Left:X2	44.00	40.00	42.00	37.962	1.8e+06	1.300	10.00	0.50	925.31	164.51	96.63	4.33	168.84	0.00
Left	Left:X2		40.00	37.00	38.50	38.798	1.84e+06	1.300	10.00	0.50	709.43	126.10	74.07	3.25	129.35	0.00
Left			37.00	32.00	34.50	39.754	1.88e+06	1.300	10.00	0.50	1211.80	215.35	126.49	5.42	220.77	0.00
Left			32.00	27.00	29.50	40.949	1.94e+06	1.300	10.00	0.50	1248.57	221.82	130.30	5.42	227.24	0.00
Left			27.00	22.00	24.50	42.144	2e+06	1.300	10.00	0.50	1285.34	228.29	134.10	5.42	233.71	0.00
Left			22.00	17.00	19.50	43.339	2.05e+06	1.300	10.00	0.50	1322.12	234.77	137.90	5.42	240.19	0.00
Left			17.00	12.00	14.50	44.534	2.11e+06	1.300	10.00	0.50	1358.89	241.24	141.70	5.42	246.66	0.00
Left			12.00	7.00	9.50	45.729	2.17e+06	1.300	10.00	0.50	1395.66	247.71	145.51	5.42	253.13	0.00
Left			7.00	3.50	5.25	46.745	2.21e+06	1.300	10.00	0.50	998.84	177.25	104.12	3.79	181.04	0.00
Left		Left:g	3.50	0.00	1.75	47.582	2.25e+06	1.300	10.00	0.50	1016.86	180.42	105.98	3.79	184.22	0.00

Point Loads for Load Case "NESC 250C":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
C1	6516	9102	0	
C2	6516	9102	0	
C3	6516	9102	0	
SW1	638	1772	0	
SW2	638	1772	0	
Right:A1	3046	4859	0	
CO1	250	680	0	
CO2	250	680	0	
CO3	250	680	0	
CO4	250	680	0	
CO5	250	680	0	
CO6	250	680	0	
CO7	250	680	0	
CO8	250	680	0	
CO9	250	680	0	
CO10	250	680	0	
CO11	250	680	0	
CO12	250	680	0	
CO13	250	680	0	

Detailed Pole Loading Data for Load Case "NESC 250C":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
Right	Right:t	Right:A1	125.00	121.00	123.00	18.478	1.57e+06	1.000	32.18	0.00	248.44	198.20	0.00	0.00	198.20	0.00
Right	Right:A1		121.00	118.00	119.50	19.314	1.64e+06	1.000	32.18	0.00	194.91	155.38	0.00	0.00	155.38	0.00
Right		Right:C2	118.00	115.00	116.50	20.032	1.7e+06	1.000	32.18	0.00	202.27	161.15	0.00	0.00	161.15	0.00
Right	Right:C2	Right:A2	115.00	111.00	113.00	20.868	1.77e+06	1.000	32.18	0.00	281.13	223.84	0.00	0.00	223.84	0.00
Right	Right:A2		111.00	108.00	109.50	21.705	1.84e+06	1.000	32.18	0.00	219.43	174.61	0.00	0.00	174.61	0.00
Right		Right:C3	108.00	105.00	106.50	22.422	1.9e+06	1.000	32.18	0.00	226.78	180.37	0.00	0.00	180.37	0.00
Right	Right:C3		105.00	100.00	102.50	23.378	1.99e+06	1.000	32.18	0.00	394.31	313.44	0.00	0.00	313.44	0.00
Right		Right:C4	100.00	95.00	97.50	24.573	2.09e+06	1.000	32.18	0.00	414.74	329.46	0.00	0.00	329.46	0.00
Right	Right:C4		95.00	90.00	92.50	25.767	2.19e+06	1.000	32.18	0.00	435.17	345.49	0.00	0.00	345.49	0.00
Right		Right:SW2	90.00	88.50	89.25	26.669	2.26e+06	1.000	32.18	0.00	161.81	107.27	0.00	0.00	107.27	0.00
Right	Right:SW2	Right:C5	88.50	85.00	86.75	27.267	2.32e+06	1.000	32.18	0.00	386.18	255.91	0.00	0.00	255.91	0.00
Right	Right:C5		85.00	80.71	82.85	28.198	2.39e+06	1.000	32.18	0.00	489.90	324.50	0.00	0.00	324.50	0.00

Right		Right:cbm	80.71	76.42	78.56	29.224	2.48e+06	1.000	32.18	0.00	507.96	336.30	0.00	0.00	336.30	0.00
Right	Right:cbm	Right:C6	76.42	75.00	75.71	29.906	2.54e+06	1.000	32.18	0.00	171.69	113.63	0.00	0.00	113.63	0.00
Right	Right:C6		75.00	70.00	72.50	30.673	2.6e+06	1.000	32.18	0.00	621.55	411.25	0.00	0.00	411.25	0.00
Right		Right:C7	70.00	65.00	67.50	31.868	2.71e+06	1.000	32.18	0.00	646.06	427.27	0.00	0.00	427.27	0.00
Right	Right:C7	Right:X1	65.00	63.00	64.00	32.704	2.78e+06	1.000	32.18	0.00	265.29	175.40	0.00	0.00	175.40	0.00
Right	Right:X1		63.00	59.00	61.00	33.421	2.84e+06	1.000	32.18	0.00	542.35	358.48	0.00	0.00	358.48	0.00
Right		Right:C8	59.00	55.00	57.00	34.377	2.92e+06	1.000	32.18	0.00	558.04	368.74	0.00	0.00	368.74	0.00
Right	Right:C8		55.00	50.00	52.50	35.453	3.01e+06	1.000	32.18	0.00	719.61	475.34	0.00	0.00	475.34	0.00
Right		Right:C9	50.00	45.00	47.50	36.648	3.11e+06	1.000	32.18	0.00	744.13	491.36	0.00	0.00	491.36	0.00
Right	Right:C9	Right:X2	45.00	40.00	42.50	37.843	3.21e+06	1.000	32.18	0.00	768.64	507.38	0.00	0.00	507.38	0.00
Right	Right:X2		40.00	37.00	38.50	38.799	3.3e+06	1.000	32.18	0.00	472.95	312.12	0.00	0.00	312.12	0.00
Right		Right:C10	37.00	35.00	36.00	39.396	3.35e+06	1.000	32.18	0.00	320.20	211.29	0.00	0.00	211.29	0.00
Right	Right:C10		35.00	30.00	32.50	40.232	3.42e+06	1.000	32.18	0.00	817.67	539.43	0.00	0.00	539.43	0.00
Right		Right:C11	30.00	25.00	27.50	41.428	3.52e+06	1.000	32.18	0.00	842.19	555.45	0.00	0.00	555.45	0.00
Right	Right:C11		25.00	20.00	22.50	42.623	3.62e+06	1.000	32.18	0.00	866.70	571.47	0.00	0.00	571.47	0.00
Right		Right:C12	20.00	15.00	17.50	43.818	3.72e+06	1.000	32.18	0.00	891.22	587.50	0.00	0.00	587.50	0.00
Right	Right:C12		15.00	10.00	12.50	45.013	3.82e+06	1.000	32.18	0.00	915.73	603.52	0.00	0.00	603.52	0.00
Right		Right:C13	10.00	5.00	7.50	46.208	3.92e+06	1.000	32.18	0.00	940.25	619.54	0.00	0.00	619.54	0.00
Right	Right:C13	Right:g	5.00	0.00	2.50	47.402	4.03e+06	1.000	32.18	0.00	964.76	635.56	0.00	0.00	635.56	0.00
Left	Left:t	Left:SW1	90.00	88.50	89.25	26.669	2.26e+06	1.000	32.18	0.00	161.83	107.27	0.00	0.00	107.27	0.00
Left	Left:SW1		88.50	83.50	86.00	27.446	2.33e+06	1.000	32.18	0.00	555.36	367.99	0.00	0.00	367.99	0.00
Left			83.50	79.96	81.73	28.467	2.42e+06	1.000	32.18	0.00	408.19	270.34	0.00	0.00	270.34	0.00
Left		Left:cbm	79.96	76.42	78.19	29.313	2.49e+06	1.000	32.18	0.00	420.49	278.38	0.00	0.00	278.38	0.00
Left	Left:cbm		76.42	71.42	73.92	30.334	2.58e+06	1.000	32.18	0.00	614.60	406.71	0.00	0.00	406.71	0.00
Left			71.42	67.21	69.31	31.434	2.67e+06	1.000	32.18	0.00	536.31	354.75	0.00	0.00	354.75	0.00
Left		Left:X1	67.21	63.00	65.10	32.440	2.76e+06	1.000	32.18	0.00	553.68	366.10	0.00	0.00	366.10	0.00
Left	Left:X1		63.00	58.00	60.50	33.540	2.85e+06	1.000	32.18	0.00	680.39	449.70	0.00	0.00	449.70	0.00
Left			58.00	53.00	55.50	34.735	2.95e+06	1.000	32.18	0.00	704.90	465.73	0.00	0.00	465.73	0.00
Left			53.00	48.00	50.50	35.930	3.05e+06	1.000	32.18	0.00	729.42	481.75	0.00	0.00	481.75	0.00
Left			48.00	44.00	46.00	37.006	3.14e+06	1.000	32.18	0.00	601.18	396.94	0.00	0.00	396.94	0.00
Left		Left:X2	44.00	40.00	42.00	37.962	3.22e+06	1.000	32.18	0.00	616.87	407.19	0.00	0.00	407.19	0.00
Left	Left:X2		40.00	37.00	38.50	38.798	3.3e+06	1.000	32.18	0.00	472.95	312.12	0.00	0.00	312.12	0.00
Left			37.00	32.00	34.50	39.754	3.38e+06	1.000	32.18	0.00	807.86	533.02	0.00	0.00	533.02	0.00
Left			32.00	27.00	29.50	40.949	3.48e+06	1.000	32.18	0.00	832.38	549.04	0.00	0.00	549.04	0.00
Left			27.00	22.00	24.50	42.144	3.58e+06	1.000	32.18	0.00	856.90	565.06	0.00	0.00	565.06	0.00
Left			22.00	17.00	19.50	43.339	3.68e+06	1.000	32.18	0.00	881.41	581.09	0.00	0.00	581.09	0.00
Left			17.00	12.00	14.50	44.534	3.78e+06	1.000	32.18	0.00	905.93	597.11	0.00	0.00	597.11	0.00
Left			12.00	7.00	9.50	45.729	3.88e+06	1.000	32.18	0.00	930.44	613.13	0.00	0.00	613.13	0.00
Left			7.00	3.50	5.25	46.745	3.97e+06	1.000	32.18	0.00	665.90	438.73	0.00	0.00	438.73	0.00
Left		Left:g	3.50	0.00	1.75	47.582	4.04e+06	1.000	32.18	0.00	677.91	446.58	0.00	0.00	446.58	0.00

Point Loads for Load Case "NESC 250D":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
C1	15381	3829	0	
C2	15381	3829	0	
C3	15381	3829	0	
SW1	3505	1155	0	
SW2	3505	1155	0	
Right:A1	4973	679	0	
CO1	1123	95	0	
CO2	1123	95	0	
CO3	1123	95	0	
CO4	1123	95	0	
CO5	1123	95	0	
CO6	1123	95	0	

CO7	1123	95	0
CO8	1123	95	0
CO9	1123	95	0
CO10	1123	95	0
CO11	1123	95	0
CO12	1123	95	0
CO13	1123	95	0

Detailed Pole Loading Data for Load Case "NESC 250D":

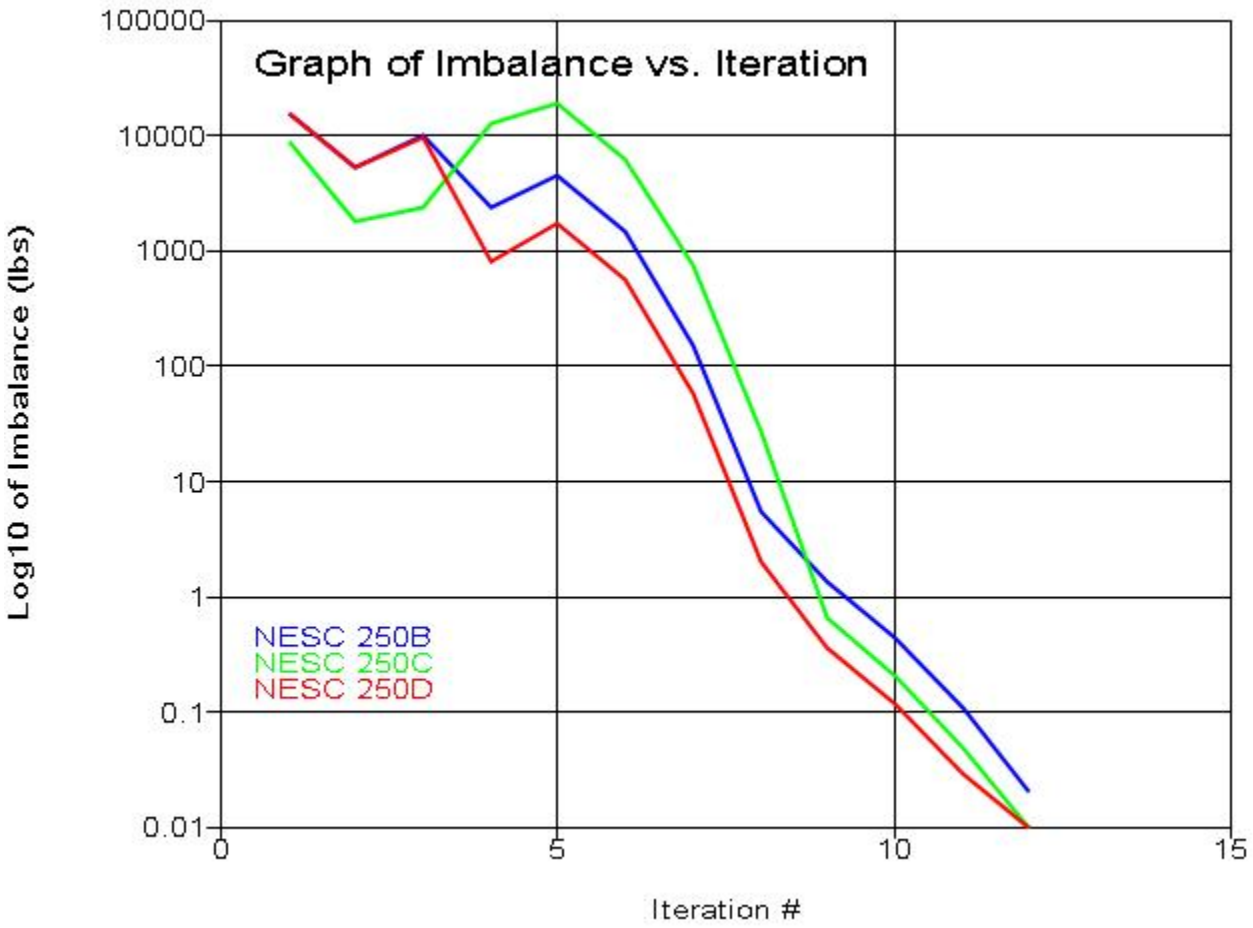
Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
Right	Right:t	Right:A1	125.00	121.00	123.00	18.478	5.53e+05	1.600	4.00	1.00	248.44	39.43	94.07	4.27	43.70	0.00
Right	Right:A1		121.00	118.00	119.50	19.314	5.78e+05	1.600	4.00	1.00	194.91	30.91	73.75	3.20	34.11	0.00
Right		Right:C2	118.00	115.00	116.50	20.032	6e+05	1.600	4.00	1.00	202.27	32.06	76.49	3.20	35.26	0.00
Right	Right:C2	Right:A2	115.00	111.00	113.00	20.868	6.25e+05	1.600	4.00	1.00	281.13	44.53	106.24	4.27	48.80	0.00
Right	Right:A2		111.00	108.00	109.50	21.705	6.5e+05	1.600	4.00	1.00	219.43	34.74	82.87	3.20	37.94	0.00
Right		Right:C3	108.00	105.00	106.50	22.422	6.71e+05	1.600	4.00	1.00	226.78	35.89	85.61	3.20	39.09	0.00
Right	Right:C3		105.00	100.00	102.50	23.378	7e+05	1.600	4.00	1.00	394.31	62.36	148.77	5.34	67.70	0.00
Right		Right:C4	100.00	95.00	97.50	24.573	7.36e+05	1.600	4.00	1.00	414.74	65.55	156.37	5.34	70.88	0.00
Right	Right:C4		95.00	90.00	92.50	25.767	7.72e+05	1.600	4.00	1.00	435.17	68.74	163.98	5.34	74.07	0.00
Right		Right:SW2	90.00	88.50	89.25	26.669	7.99e+05	1.600	4.00	1.00	161.81	21.34	50.92	1.60	22.94	0.00
Right	Right:SW2	Right:C5	88.50	85.00	86.75	27.267	8.17e+05	1.600	4.00	1.00	386.18	50.92	121.46	3.73	54.65	0.00
Right	Right:C5		85.00	80.71	82.85	28.198	8.44e+05	1.600	4.00	1.00	489.90	64.56	154.02	4.58	69.14	0.00
Right		Right:cbm	80.71	76.42	78.56	29.224	8.75e+05	1.600	4.00	1.00	507.96	66.91	159.62	4.58	71.49	0.00
Right	Right:cbm	Right:C6	76.42	75.00	75.71	29.906	8.96e+05	1.600	4.00	1.00	171.69	22.61	53.93	1.51	24.12	0.00
Right	Right:C6		75.00	70.00	72.50	30.673	9.19e+05	1.600	4.00	1.00	621.55	81.82	195.19	5.34	87.16	0.00
Right		Right:C7	70.00	65.00	67.50	31.868	9.54e+05	1.600	4.00	1.00	646.06	85.01	202.80	5.34	90.34	0.00
Right	Right:C7	Right:X1	65.00	63.00	64.00	32.704	9.79e+05	1.600	4.00	1.00	265.29	34.90	83.25	2.13	37.03	0.00
Right	Right:X1		63.00	59.00	61.00	33.421	1e+06	1.600	4.00	1.00	542.35	71.32	170.15	4.27	75.59	0.00
Right		Right:C8	59.00	55.00	57.00	34.377	1.03e+06	1.600	4.00	1.00	558.04	73.36	175.01	4.27	77.63	0.00
Right	Right:C8		55.00	50.00	52.50	35.453	1.06e+06	1.600	4.00	1.00	719.61	94.57	225.61	5.34	99.91	0.00
Right		Right:C9	50.00	45.00	47.50	36.648	1.1e+06	1.600	4.00	1.00	744.13	97.76	233.22	5.34	103.09	0.00
Right	Right:C9	Right:X2	45.00	40.00	42.50	37.843	1.13e+06	1.600	4.00	1.00	768.64	100.95	240.82	5.34	106.28	0.00
Right	Right:X2		40.00	37.00	38.50	38.799	1.16e+06	1.600	4.00	1.00	472.95	62.10	148.14	3.20	65.30	0.00
Right		Right:C10	37.00	35.00	36.00	39.396	1.18e+06	1.600	4.00	1.00	320.20	42.04	100.28	2.13	44.17	0.00
Right	Right:C10		35.00	30.00	32.50	40.232	1.2e+06	1.600	4.00	1.00	817.67	107.32	256.03	5.34	112.66	0.00
Right		Right:C11	30.00	25.00	27.50	41.428	1.24e+06	1.600	4.00	1.00	842.19	110.51	263.64	5.34	115.85	0.00
Right	Right:C11		25.00	20.00	22.50	42.623	1.28e+06	1.600	4.00	1.00	866.70	113.70	271.24	5.34	119.03	0.00
Right		Right:C12	20.00	15.00	17.50	43.818	1.31e+06	1.600	4.00	1.00	891.22	116.89	278.85	5.34	122.22	0.00
Right	Right:C12		15.00	10.00	12.50	45.013	1.35e+06	1.600	4.00	1.00	915.73	120.07	286.45	5.34	125.41	0.00
Right		Right:C13	10.00	5.00	7.50	46.208	1.38e+06	1.600	4.00	1.00	940.25	123.26	294.05	5.34	128.60	0.00
Right	Right:C13	Right:g	5.00	0.00	2.50	47.402	1.42e+06	1.600	4.00	1.00	964.76	126.45	301.66	5.34	131.78	0.00
Left	Left:t	Left:SW1	90.00	88.50	89.25	26.669	7.99e+05	1.300	4.00	1.00	161.83	17.34	50.92	1.30	18.64	0.00
Left	Left:SW1		88.50	83.50	86.00	27.446	8.22e+05	1.300	4.00	1.00	555.36	59.49	174.66	4.33	63.82	0.00
Left			83.50	79.96	81.73	28.467	8.53e+05	1.300	4.00	1.00	408.19	43.70	128.31	3.07	46.77	0.00
Left		Left:cbm	79.96	76.42	78.19	29.313	8.78e+05	1.300	4.00	1.00	420.49	45.00	132.13	3.07	48.07	0.00
Left	Left:cbm		76.42	71.42	73.92	30.334	9.08e+05	1.300	4.00	1.00	614.60	65.75	193.04	4.33	70.08	0.00
Left			71.42	67.21	69.31	31.434	9.41e+05	1.300	4.00	1.00	536.31	57.35	168.37	3.65	60.99	0.00
Left		Left:X1	67.21	63.00	65.10	32.440	9.72e+05	1.300	4.00	1.00	553.68	59.18	173.76	3.65	62.83	0.00
Left	Left:X1		63.00	58.00	60.50	33.540	1e+06	1.300	4.00	1.00	680.39	72.70	213.44	4.33	77.03	0.00
Left			58.00	53.00	55.50	34.735	1.04e+06	1.300	4.00	1.00	704.90	75.29	221.05	4.33	79.62	0.00
Left			53.00	48.00	50.50	35.930	1.08e+06	1.300	4.00	1.00	729.42	77.88	228.65	4.33	82.21	0.00

Left		48.00	44.00	46.00	37.006	1.11e+06	1.300	4.00	1.00	601.18	64.17	188.40	3.47	67.63	0.00
Left	Left:X2	44.00	40.00	42.00	37.962	1.14e+06	1.300	4.00	1.00	616.87	65.82	193.27	3.47	69.29	0.00
Left	Left:X2	40.00	37.00	38.50	38.798	1.16e+06	1.300	4.00	1.00	472.95	50.46	148.14	2.60	53.06	0.00
Left		37.00	32.00	34.50	39.754	1.19e+06	1.300	4.00	1.00	807.86	86.16	252.99	4.33	90.50	0.00
Left		32.00	27.00	29.50	40.949	1.23e+06	1.300	4.00	1.00	832.38	88.75	260.59	4.33	93.09	0.00
Left		27.00	22.00	24.50	42.144	1.26e+06	1.300	4.00	1.00	856.90	91.34	268.20	4.33	95.68	0.00
Left		22.00	17.00	19.50	43.339	1.3e+06	1.300	4.00	1.00	881.41	93.93	275.80	4.33	98.27	0.00
Left		17.00	12.00	14.50	44.534	1.33e+06	1.300	4.00	1.00	905.93	96.52	283.41	4.33	100.86	0.00
Left		12.00	7.00	9.50	45.729	1.37e+06	1.300	4.00	1.00	930.44	99.11	291.01	4.33	103.45	0.00
Left		7.00	3.50	5.25	46.745	1.4e+06	1.300	4.00	1.00	665.90	70.92	208.23	3.03	73.96	0.00
Left	Left:g	3.50	0.00	1.75	47.582	1.42e+06	1.300	4.00	1.00	677.91	72.19	211.96	3.03	75.22	0.00

*** Analysis Results:

Maximum element usage is 48.27% for Brace "X1" in load case "NESC 250C"
Maximum insulator usage is 41.19% for Clamp "T" in load case "NESC 250B"



*** Analysis Results for Load Case No. 1 "NESC 250B" - Number of iterations in SAPS 12

Equilibrium Joint Positions and Rotations for Load Case "NESC 250B":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
Right:g	0	0	0	0.0000	0.0000	0.0000	0	13	0
Right:t	0.01202	0.4879	-0.007941	-0.6108	0.0088	-0.0010	0.01202	13.49	125
Right:A1	0.01141	0.4453	-0.007705	-0.6086	0.0088	-0.0010	0.01141	13.45	121

Right:C2	0.01049	0.3821	-0.007291	-0.5940	0.0088	-0.0010	0.01049	13.38	115
Right:A2	0.009878	0.3412	-0.007022	-0.5736	0.0087	-0.0010	0.009878	13.34	111
Right:C3	0.008974	0.2832	-0.006648	-0.5318	0.0085	-0.0010	0.008974	13.28	105
Right:C4	0.007517	0.198	-0.006115	-0.4383	0.0081	-0.0010	0.007517	13.2	94.99
Right:SW2	0.006617	0.1521	-0.005837	-0.3691	0.0077	-0.0010	0.006617	13.15	88.49
Right:C5	0.006151	0.1306	-0.005707	-0.3343	0.0075	-0.0010	0.006151	13.13	84.99
Right:cbm	0.005066	0.08738	-0.005431	-0.2377	0.0069	-0.0010	0.005066	13.09	76.41
Right:C6	0.004895	0.0818	-0.005351	-0.2139	0.0068	-0.0010	0.004895	13.08	74.99
Right:C7	0.003761	0.05753	-0.004835	-0.0698	0.0061	-0.0008	0.003761	13.06	65
Right:X1	0.003549	0.05553	-0.004738	-0.0451	0.0060	-0.0007	0.003549	13.06	63
Right:C8	0.002752	0.05367	-0.00423	0.0035	0.0054	-0.0006	0.002752	13.05	55
Right:C9	0.001882	0.05446	-0.003609	-0.0102	0.0046	-0.0004	0.001882	13.05	45
Right:X2	0.001502	0.05259	-0.003303	-0.0388	0.0041	-0.0004	0.001502	13.05	40
Right:C10	0.001162	0.04735	-0.002874	-0.0752	0.0037	-0.0003	0.001162	13.05	35
Right:C11	0.0006048	0.03068	-0.002025	-0.1038	0.0027	-0.0002	0.0006048	13.03	25
Right:C12	0.0002227	0.01318	-0.001195	-0.0867	0.0017	-0.0001	0.0002227	13.01	15
Right:C13	2.596e-05	0.001764	-0.0003929	-0.0355	0.0006	-0.0000	2.596e-05	13	5
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-13	0
Left:t	0.005638	0.09906	-7.21e-05	-0.0547	0.0054	-0.0010	0.005638	-12.9	90
Left:SW1	0.005497	0.09763	-7.119e-05	-0.0547	0.0054	-0.0010	0.005497	-12.9	88.5
Left:cbm	0.004362	0.08672	-1.871e-05	-0.0454	0.0054	-0.0010	0.004362	-12.91	76.42
Left:X1	0.00314	0.06718	0.0003231	-0.0690	0.0050	-0.0007	0.00314	-12.93	63
Left:X2	0.001371	0.04622	0.0002865	-0.0666	0.0037	-0.0003	0.001371	-12.95	40
V1	0.003159	0.06718	-0.001632	-0.0690	0.0050	-0.0007	0.003159	-11.31	63
V2	0.003528	0.05553	-0.003459	-0.0451	0.0060	-0.0007	0.003528	11.43	63
V3	0.001382	0.04622	-0.001866	-0.0666	0.0037	-0.0003	0.001382	-11.1	40
V4	0.001491	0.05259	-0.002049	-0.0388	0.0041	-0.0004	0.001491	11.2	40
DA1:O	0.004341	0.08672	0.0009628	-0.0454	0.0054	-0.0010	0.004341	-14.15	76.42
DA1:A	0.00415	0.08562	-0.07853	0.6240	0.0053	-0.0010	0.00415	-26.15	76.57
DA1:T	0.004138	0.0855	-0.0867	0.6241	0.0053	-0.0010	0.004138	-26.9	76.58
DA2:O	0.005087	0.08737	-0.01057	-0.2377	0.0069	-0.0010	0.005087	14.33	76.41
DA2:A	0.00531	0.08935	-0.1499	-0.9108	0.0069	-0.0010	0.00531	26.33	76.5
DA2:T	0.005324	0.08949	-0.1618	-0.9108	0.0069	-0.0010	0.005324	27.08	76.51
Condbm:O	0.004362	0.08672	-1.871e-05	-0.0454	0.0054	-0.0010	0.004362	-12.91	76.42
Condbm:c2	0.004712	0.08712	-0.004199	0.0509	0.0061	-0.0018	0.004712	0.08712	76.41
Condbm:E	0.005066	0.08738	-0.005431	-0.2377	0.0069	-0.0010	0.005066	13.09	76.41
CO1:O	0.01204	0.4878	-0.01594	-0.6108	0.0088	-0.0010	0.01204	14.24	125
CO1	0.01204	0.4879	-0.01862	-0.6131	0.0088	-0.0010	0.01204	14.49	125
CO2:O	0.0105	0.3821	-0.0161	-0.5940	0.0088	-0.0010	0.0105	14.23	115
CO2	0.01051	0.3821	-0.01871	-0.5964	0.0088	-0.0010	0.01051	14.48	115
CO3:O	0.008989	0.2832	-0.01546	-0.5318	0.0085	-0.0010	0.008989	14.23	105
CO3	0.008993	0.2832	-0.0178	-0.5341	0.0085	-0.0010	0.008993	14.48	105
CO4:O	0.007534	0.198	-0.01414	-0.4383	0.0081	-0.0010	0.007534	14.25	94.99
CO4	0.007538	0.198	-0.01607	-0.4406	0.0081	-0.0010	0.007538	14.5	94.98
CO5:O	0.006171	0.1305	-0.01244	-0.3343	0.0075	-0.0010	0.006171	14.28	84.99
CO5	0.006175	0.1306	-0.01391	-0.3366	0.0075	-0.0010	0.006175	14.53	84.99
CO6:O	0.004916	0.0818	-0.01003	-0.2139	0.0068	-0.0010	0.004916	14.33	74.99
CO6	0.00492	0.08185	-0.01098	-0.2163	0.0068	-0.0010	0.00492	14.58	74.99
CO7:O	0.003778	0.05753	-0.006483	-0.0698	0.0061	-0.0008	0.003778	14.41	64.99
CO7	0.003781	0.05758	-0.006807	-0.0722	0.0061	-0.0008	0.003781	14.66	64.99
CO8:O	0.002767	0.05367	-0.004141	0.0035	0.0054	-0.0006	0.002767	14.51	55
CO8	0.00277	0.05373	-0.004145	0.0011	0.0054	-0.0006	0.00277	14.76	55
CO9:O	0.001893	0.05446	-0.003885	-0.0102	0.0046	-0.0004	0.001893	14.61	45
CO9	0.001895	0.05451	-0.003949	-0.0126	0.0046	-0.0004	0.001895	14.86	45
CO10:O	0.00117	0.04735	-0.005041	-0.0752	0.0037	-0.0003	0.00117	14.7	34.99
CO10	0.001172	0.04741	-0.005388	-0.0776	0.0037	-0.0003	0.001172	14.95	34.99
CO11:O	0.0006105	0.03068	-0.005196	-0.1038	0.0027	-0.0002	0.0006105	14.78	24.99
CO11	0.0006113	0.03073	-0.005668	-0.1062	0.0027	-0.0002	0.0006113	15.03	24.99
CO12:O	0.000226	0.01318	-0.003995	-0.0867	0.0017	-0.0001	0.000226	14.86	15

CO12	0.0002264	0.01323	-0.004392	-0.0890	0.0017	-0.0001	0.0002264	15.11 15
CO13:O	2.705e-05	0.001763	-0.001603	-0.0355	0.0006	-0.0000	2.705e-05	14.95 4.998
CO13	2.719e-05	0.00182	-0.001777	-0.0379	0.0006	-0.0000	2.719e-05	15.2 4.998

Joint Support Reactions for Load Case "NESC 250B":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
Right:g	-0.13	0.0	-19.26	0.0	0.0	-130.92	0.0	0.0	132.33	0.0	449.12	0.0	-6.7	0.0	0.0	0.28	0.0	0.0
Left:g	-0.13	0.0	-12.32	0.0	0.0	4.57	0.0	0.0	13.15	0.0	326.87	0.0	-6.3	0.0	0.0	0.27	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC 250B":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Right	Right:t	Origin	0.00	5.85	0.14	-0.10	0.92	-0.00	-0.0	-1.13	0.29	-0.00	-0.06	0.14	0.01	0.00	0.20	0.3	2
Right	Right:A1	End	4.00	5.34	0.14	-0.09	2.07	-0.01	-0.0	-1.13	0.29	-0.00	-0.06	0.28	0.01	0.00	0.34	0.5	2
Right	Right:A1	Origin	4.00	5.34	0.14	-0.09	2.07	-0.01	-0.0	-7.47	1.99	-0.00	-0.40	0.28	0.06	0.00	0.69	1.1	2
Right	Tube 1	End	7.00	4.96	0.13	-0.09	8.05	-0.02	-0.0	-7.47	1.99	-0.00	-0.38	1.02	0.05	0.00	1.41	2.2	2
Right	Tube 1	Origin	7.00	4.96	0.13	-0.09	8.05	-0.02	-0.0	-7.80	2.08	-0.01	-0.40	1.02	0.06	0.00	1.42	2.2	2
Right	Right:C2	End	10.00	4.59	0.13	-0.09	14.28	-0.04	-0.0	-7.80	2.08	-0.01	-0.39	1.68	0.05	0.00	2.07	3.2	2
Right	Right:C2	Origin	10.00	4.59	0.13	-0.09	15.29	-0.04	-0.0	-9.13	2.41	-0.01	-0.45	1.80	0.06	0.00	2.25	3.5	2
Right	Right:A2	End	14.00	4.09	0.12	-0.08	24.94	-0.08	-0.0	-9.13	2.41	-0.01	-0.43	2.67	0.06	0.00	3.11	4.8	2
Right	Right:A2	Origin	14.00	4.09	0.12	-0.08	24.94	-0.08	-0.0	-9.55	2.52	-0.01	-0.45	2.67	0.06	0.00	3.13	4.8	2
Right	Tube 1	End	17.00	3.74	0.11	-0.08	32.50	-0.12	-0.0	-9.55	2.52	-0.01	-0.44	3.25	0.06	0.00	3.69	5.7	2
Right	Tube 1	Origin	17.00	3.74	0.11	-0.08	32.50	-0.12	-0.0	-9.93	2.61	-0.02	-0.45	3.25	0.06	0.00	3.71	5.7	2
Right	Right:C3	End	20.00	3.40	0.11	-0.08	40.33	-0.16	-0.0	-9.93	2.61	-0.02	-0.44	3.78	0.06	0.00	4.22	6.5	2
Right	Right:C3	Origin	20.00	3.40	0.11	-0.08	41.43	-0.16	-0.0	-11.37	2.97	-0.02	-0.50	3.89	0.07	0.00	4.39	6.8	2
Right	Tube 1	End	25.00	2.86	0.10	-0.08	56.29	-0.26	-0.0	-11.37	2.97	-0.02	-0.48	4.76	0.07	0.00	5.24	8.1	2
Right	Tube 1	Origin	25.00	2.86	0.10	-0.08	56.29	-0.26	-0.0	-12.06	3.13	-0.02	-0.51	4.76	0.07	0.00	5.27	8.1	2
Right	Right:C4	End	30.00	2.38	0.09	-0.07	71.96	-0.37	-0.0	-12.06	3.13	-0.02	-0.48	5.51	0.07	0.00	5.99	9.2	2
Right	Right:C4	Origin	30.00	2.38	0.09	-0.07	73.15	-0.37	-0.0	-13.70	3.53	-0.03	-0.55	5.60	0.08	0.00	6.15	9.5	2
Right	SpliceT	End	35.00	1.94	0.08	-0.07	90.82	-0.51	-0.0	-13.70	3.53	-0.03	-0.52	6.33	0.07	0.00	6.85	10.5	2
Right	SpliceT	Origin	35.00	1.94	0.08	-0.07	90.82	-0.51	-0.0	-14.20	3.65	-0.03	-0.45	5.26	0.06	0.00	5.71	8.8	2
Right	Right:SW2	End	36.50	1.83	0.08	-0.07	96.29	-0.56	-0.0	-14.20	3.65	-0.03	-0.44	5.42	0.06	0.00	5.87	9.0	2
Right	Right:SW2	Origin	36.50	1.83	0.08	-0.07	96.29	-0.56	-0.0	-17.10	5.13	-0.03	-0.54	5.42	0.09	0.00	5.96	9.2	2
Right	Right:C5	End	40.00	1.57	0.07	-0.07	114.26	-0.68	-0.0	-17.10	5.13	-0.03	-0.52	6.05	0.08	0.00	6.57	10.1	2
Right	Right:C5	Origin	40.00	1.57	0.07	-0.07	115.55	-0.68	-0.0	-18.75	5.50	-0.04	-0.57	6.11	0.09	0.00	6.69	10.3	2
Right	Tube 2	End	44.29	1.29	0.07	-0.07	139.17	-0.84	-0.0	-18.75	5.50	-0.04	-0.55	6.84	0.09	0.00	7.39	11.4	2
Right	Tube 2	Origin	44.29	1.29	0.07	-0.07	139.17	-0.84	-0.0	-19.58	5.66	-0.04	-0.57	6.84	0.09	0.00	7.41	11.4	2
Right	Right:cbm	End	48.58	1.05	0.06	-0.07	163.47	-1.02	-0.0	-19.58	5.66	-0.04	-0.55	7.48	0.08	0.00	8.03	12.4	2
Right	Right:cbm	Origin	48.58	1.05	0.06	-0.07	235.98	-0.92	-0.3	-50.27	-1.41	-0.03	-1.42	10.79	0.02	0.01	12.21	18.8	2
Right	Right:C6	End	50.00	0.98	0.06	-0.06	233.99	-0.95	-0.3	-50.27	-1.41	-0.03	-1.40	10.45	0.02	0.01	11.86	18.2	2
Right	Right:C6	Origin	50.00	0.98	0.06	-0.06	235.37	-0.95	-0.3	-51.84	-1.09	-0.03	-1.45	10.51	0.02	0.01	11.96	18.4	2
Right	Tube 2	End	55.00	0.80	0.05	-0.06	229.93	-1.11	-0.3	-51.84	-1.09	-0.03	-1.39	9.49	0.02	0.01	10.88	16.7	2
Right	Tube 2	Origin	55.00	0.80	0.05	-0.06	229.93	-1.11	-0.3	-52.89	-0.94	-0.04	-1.42	9.49	0.01	0.01	10.91	16.8	2
Right	Right:C7	End	60.00	0.69	0.05	-0.06	225.25	-1.29	-0.3	-52.89	-0.94	-0.04	-1.37	8.62	0.01	0.01	9.98	15.4	2
Right	Right:C7	Origin	60.00	0.69	0.05	-0.06	226.72	-1.29	-0.3	-54.56	-0.60	-0.04	-1.41	8.67	0.01	0.01	10.08	15.5	2
Right	Right:X1	End	62.00	0.67	0.04	-0.06	225.53	-1.37	-0.3	-54.56	-0.60	-0.04	-1.39	8.37	0.01	0.01	9.76	15.0	2
Right	Right:X1	Origin	62.00	0.67	0.04	-0.06	195.27	-1.37	-0.3	-73.88	-18.20	-0.05	-1.88	7.25	0.25	0.01	9.14	14.1	2
Right	Tube 2	End	66.00	0.65	0.04	-0.05	122.48	-1.55	-0.3	-73.88	-18.20	-0.05	-1.83	4.30	0.24	0.01	6.14	9.4	2
Right	Tube 2	Origin	66.00	0.65	0.04	-0.05	122.48	-1.55	-0.3	-74.78	-18.04	-0.05	-1.85	4.30	0.24	0.01	6.16	9.5	2
Right	Right:C8	End	70.00	0.64	0.03	-0.05	50.30	-1.76	-0.3	-74.78	-18.04	-0.05	-1.80	1.68	0.23	0.00	3.50	5.4	2
Right	Right:C8	Origin	70.00	0.64	0.03	-0.05	51.87	-1.76	-0.3	-76.75	-17.62	-0.06	-1.85	1.73	0.22	0.00	3.60	5.5	2

Right	Tube 2	End	75.00	0.65	0.03	-0.05	-36.21	-2.04	-0.3	-76.75	-17.62	-0.06	-1.78	1.13	0.22	0.00	2.94	4.5	2
Right	Tube 2	Origin	75.00	0.65	0.03	-0.05	-36.21	-2.04	-0.3	-77.97	-17.36	-0.06	-1.81	1.13	0.21	0.00	2.97	4.6	2
Right	Right:C9	End	80.00	0.65	0.02	-0.04	-123.00	-2.35	-0.3	-77.97	-17.36	-0.06	-1.75	3.57	0.21	0.00	5.34	8.2	2
Right	Right:C9	Origin	80.00	0.65	0.02	-0.04	-121.34	-2.35	-0.3	-80.15	-16.85	-0.07	-1.80	3.52	0.20	0.00	5.34	8.2	2
Right	Right:X2	End	85.00	0.63	0.02	-0.04	-205.58	-2.69	-0.3	-80.15	-16.85	-0.07	-1.75	5.59	0.19	0.00	7.34	11.3	2
Right	Right:X2	Origin	85.00	0.63	0.02	-0.04	-268.17	-2.69	-0.3	-114.98	16.18	-0.08	-2.51	7.29	0.19	0.00	9.80	15.1	2
Right	SpliceT	End	88.00	0.60	0.02	-0.04	-219.62	-2.91	-0.3	-114.98	16.18	-0.08	-2.46	5.75	0.18	0.00	8.22	12.6	2
Right	SpliceT	Origin	88.00	0.60	0.02	-0.04	-219.62	-2.91	-0.3	-115.63	16.35	-0.08	-2.47	5.75	0.18	0.00	8.23	12.7	2
Right	Right:C10	End	90.00	0.57	0.01	-0.03	-186.91	-3.07	-0.3	-115.63	16.35	-0.08	-2.44	4.78	0.18	0.00	7.23	11.1	2
Right	Right:C10	Origin	90.00	0.57	0.01	-0.03	-185.16	-3.07	-0.3	-117.49	16.81	-0.08	-2.48	4.74	0.19	0.00	7.23	11.1	2
Right	Tube 3	End	95.00	0.48	0.01	-0.03	-101.13	-3.49	-0.3	-117.49	16.81	-0.08	-2.41	2.45	0.18	0.00	4.87	7.5	2
Right	Tube 3	Origin	95.00	0.48	0.01	-0.03	-101.13	-3.49	-0.3	-118.86	17.12	-0.09	-2.44	2.45	0.19	0.00	4.89	7.5	2
Right	Right:C11	End	100.00	0.37	0.01	-0.02	-15.53	-3.93	-0.3	-118.86	17.12	-0.09	-2.37	0.32	0.49	0.00	2.82	4.3	3
Right	Right:C11	Origin	100.00	0.37	0.01	-0.02	-13.69	-3.93	-0.3	-121.19	17.64	-0.10	-2.41	0.17	0.69	0.00	2.85	4.4	4
Right	Tube 3	End	105.00	0.26	0.00	-0.02	74.50	-4.41	-0.3	-121.19	17.64	-0.10	-2.35	1.62	0.18	0.00	3.98	6.1	2
Right	Tube 3	Origin	105.00	0.26	0.00	-0.02	74.50	-4.41	-0.3	-122.65	17.92	-0.10	-2.37	1.62	0.18	0.00	4.00	6.2	2
Right	Right:C12	End	110.00	0.16	0.00	-0.01	164.08	-4.93	-0.3	-122.65	17.92	-0.10	-2.31	3.34	0.18	0.00	5.66	8.7	2
Right	Right:C12	Origin	110.00	0.16	0.00	-0.01	166.01	-4.92	-0.3	-125.08	18.41	-0.11	-2.36	3.38	0.18	0.00	5.75	8.8	2
Right	Tube 3	End	115.00	0.08	0.00	-0.01	258.07	-5.47	-0.3	-125.08	18.41	-0.11	-2.29	4.97	0.18	0.00	7.27	11.2	2
Right	Tube 3	Origin	115.00	0.08	0.00	-0.01	258.07	-5.47	-0.3	-126.62	18.67	-0.12	-2.32	4.97	0.18	0.00	7.30	11.2	2
Right	Right:C13	End	120.00	0.02	0.00	-0.00	351.40	-6.05	-0.3	-126.62	18.67	-0.12	-2.26	6.42	0.18	0.00	8.68	13.6	2
Right	Right:C13	Origin	120.00	0.02	0.00	-0.00	353.42	-6.05	-0.3	-129.13	19.14	-0.12	-2.31	6.45	0.18	0.00	8.77	13.7	2
Right	Right:g	End	125.00	0.00	0.00	0.00	449.12	-6.67	-0.3	-129.13	19.14	-0.12	-2.25	7.79	0.18	0.00	10.04	15.9	2
Left	Left:t	Origin	0.00	1.19	0.07	-0.00	-0.00	0.00	0.0	-0.13	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
Left	Left:SW1	End	1.50	1.17	0.07	-0.00	0.03	-0.00	0.0	-0.13	0.02	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	2
Left	Left:SW1	Origin	1.50	1.17	0.07	-0.00	0.03	-0.00	-0.0	-3.18	1.51	-0.00	-0.10	0.00	0.10	0.00	0.19	0.3	5
Left	Tube 1	End	6.50	1.11	0.06	-0.00	7.57	-0.02	-0.0	-3.18	1.51	-0.00	-0.10	0.39	0.02	0.00	0.49	0.7	2
Left	Tube 1	Origin	6.50	1.11	0.06	-0.00	7.57	-0.02	-0.0	-3.98	1.64	-0.01	-0.12	0.39	0.03	0.00	0.51	0.8	2
Left	Tube 1	End	10.04	1.08	0.06	-0.00	13.38	-0.04	-0.0	-3.98	1.64	-0.01	-0.12	0.65	0.03	0.00	0.77	1.2	2
Left	Tube 1	Origin	10.04	1.08	0.06	-0.00	13.38	-0.04	-0.0	-4.67	1.76	-0.01	-0.14	0.65	0.03	0.00	0.79	1.2	2
Left	Left:cbm	End	13.58	1.04	0.05	-0.00	19.60	-0.08	-0.0	-4.67	1.76	-0.01	-0.13	0.90	0.03	0.00	1.03	1.6	2
Left	Left:cbm	Origin	13.58	1.04	0.05	-0.00	-182.32	-0.18	-0.3	-25.54	23.98	-0.04	-0.72	8.33	0.36	0.01	9.07	14.0	2
Left	Tube 1	End	18.58	0.96	0.05	0.00	-62.41	-0.37	-0.3	-25.54	23.98	-0.04	-0.69	2.63	0.34	0.01	3.38	5.2	2
Left	Tube 1	Origin	18.58	0.96	0.05	0.00	-62.41	-0.37	-0.3	-26.48	24.15	-0.04	-0.72	2.63	0.35	0.01	3.41	5.2	2
Left	Tube 1	End	22.79	0.88	0.04	0.00	39.23	-0.55	-0.3	-26.48	24.15	-0.04	-0.70	0.44	1.25	0.01	2.45	3.8	4
Left	Tube 1	Origin	22.79	0.88	0.04	0.00	39.23	-0.55	-0.3	-27.39	24.30	-0.05	-0.72	0.44	1.26	0.01	2.47	3.8	4
Left	Left:X1	End	27.00	0.81	0.04	0.00	141.49	-0.74	-0.3	-27.39	24.30	-0.05	-0.70	5.25	0.33	0.01	5.98	9.2	2
Left	Left:X1	Origin	27.00	0.81	0.04	0.00	88.01	-0.74	-0.3	4.54	-8.23	-0.05	0.12	3.27	0.11	0.01	3.39	5.2	2
Left	Tube 1	End	32.00	0.74	0.03	0.00	46.86	-1.00	-0.3	4.54	-8.23	-0.05	0.11	1.62	0.11	0.00	1.75	2.7	2
Left	Tube 1	Origin	32.00	0.74	0.03	0.00	46.86	-1.00	-0.3	3.39	-8.04	-0.06	0.08	1.62	0.10	0.00	1.72	2.6	2
Left	Tube 1	End	37.00	0.70	0.03	0.00	6.67	-1.29	-0.3	3.39	-8.04	-0.06	0.08	0.04	0.39	0.00	0.69	1.1	5
Left	Tube 1	Origin	37.00	0.70	0.03	0.00	6.67	-1.29	-0.3	2.21	-7.84	-0.06	0.05	0.04	0.38	0.00	0.67	1.0	5
Left	Tube 1	End	42.00	0.65	0.02	0.00	-32.53	-1.61	-0.3	2.21	-7.84	-0.06	0.05	0.99	0.10	0.00	1.06	1.6	2
Left	Tube 1	Origin	42.00	0.65	0.02	0.00	-32.53	-1.61	-0.3	1.10	-7.66	-0.07	0.03	0.99	0.09	0.00	1.03	1.6	2
Left	Tube 1	End	46.00	0.60	0.02	0.00	-63.16	-1.88	-0.3	1.10	-7.66	-0.07	0.02	1.82	0.09	0.00	1.85	2.8	2
Left	Tube 1	Origin	46.00	0.60	0.02	0.00	-63.16	-1.88	-0.3	0.09	-7.49	-0.07	0.00	1.82	0.09	0.00	1.82	2.8	2
Left	Left:X2	End	50.00	0.55	0.02	0.00	-93.11	-2.17	-0.3	0.09	-7.49	-0.07	0.00	2.54	0.09	0.00	2.55	3.9	2
Left	Left:X2	Origin	50.00	0.55	0.02	0.00	-125.78	-2.17	-0.3	16.84	10.45	-0.08	0.37	3.42	0.12	0.00	3.80	5.8	2
Left	SpliceT	End	53.00	0.51	0.01	0.00	-94.43	-2.41	-0.3	16.84	10.45	-0.08	0.36	2.48	0.12	0.00	2.85	4.4	2
Left	SpliceT	Origin	53.00	0.51	0.01	0.00	-94.43	-2.41	-0.3	15.78	10.62	-0.08	0.34	2.48	0.12	0.00	2.83	4.3	2
Left	Tube 2	End	58.00	0.42	0.01	0.00	-41.32	-2.83	-0.3	15.78	10.62	-0.08	0.33	1.03	0.12	0.00	1.38	2.1	2
Left	Tube 2	Origin	58.00	0.42	0.01	0.00	-41.32	-2.83	-0.3	14.42	10.85	-0.09	0.30	1.03	0.12	0.00	1.35	2.1	2
Left	Tube 2	End	63.00	0.33	0.01	0.00	12.92	-3.28	-0.3	14.42	10.85	-0.09	0.29	0.16	0.43	0.00	0.87	1.3	4
Left	Tube 2	Origin	63.00	0.33	0.01	0.00	12.92	-3.28	-0.3	13.02	11.08	-0.10	0.26	0.16	0.44	0.00	0.87	1.3	4
Left	Tube 2	End	68.00	0.23	0.01	0.00	68.33	-3.76	-0.3	13.02	11.08	-0.10	0.25	1.51	0.11	0.00	1.78	2.7	2
Left	Tube 2	Origin	68.00	0.23	0.01	0.00	68.33	-3.76	-0.3	11.58	11.32	-0.10	0.23	1.51	0.12	0.00	1.75	2.7	2
Left	Tube 2	End	73.00	0.15	0.00	0.00	124.94	-4.27	-0.3	11.58	11.32	-0.10	0.22	2.61	0.11	0.00	2.83	4.4	2
Left	Tube 2	Origin	73.00	0.15	0.00	0.00	124.94	-4.27	-0.3	10.10	11.57	-0.11	0.19	2.61	0.12	0.00	2.81	4.3	2

Left	Tube 2	End	78.00	0.08	0.00	0.00	182.79	-4.82	-0.3	10.10	11.57	-0.11	0.19	3.60	0.11	0.00	3.79	5.8	2
Left	Tube 2	Origin	78.00	0.08	0.00	0.00	182.79	-4.82	-0.3	8.57	11.82	-0.12	0.16	3.60	0.12	0.00	3.77	5.8	2
Left	Tube 2	End	83.00	0.03	0.00	0.00	241.91	-5.40	-0.3	8.57	11.82	-0.12	0.15	4.52	0.11	0.00	4.68	7.3	2
Left	Tube 2	Origin	83.00	0.03	0.00	0.00	241.91	-5.40	-0.3	7.24	12.04	-0.12	0.13	4.52	0.11	0.00	4.65	7.2	2
Left	Tube 2	End	86.50	0.01	0.00	0.00	284.07	-5.82	-0.3	7.24	12.04	-0.12	0.13	5.11	0.11	0.00	5.25	8.2	2
Left	Tube 2	Origin	86.50	0.01	0.00	0.00	284.07	-5.82	-0.3	6.13	12.23	-0.13	0.11	5.11	0.11	0.00	5.23	8.2	2
Left	Left:g	End	90.00	0.00	0.00	0.00	326.87	-6.26	-0.3	6.13	12.23	-0.13	0.11	5.68	0.11	0.00	5.79	9.1	2

Summary of Brace Forces and Usages for Load Case "NESC 250B":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
X1	-46.75	174.84	180.78	26.74
X2	25.38	174.84	180.78	14.04

Detailed Tubular Davit Arm Usages for Load Case "NESC 250B":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
DA1	DA1:O	Origin	0.00	1.04	0.05	0.01	-187.36	0.02	0.0	-5.18	15.90	-0.00	-0.27	28.70	0.66	0.00	28.99	44.6	2
DA1	#DA1:0	End	5.00	1.04	0.05	-0.17	-107.87	0.01	0.0	-5.18	15.90	-0.00	-0.30	20.47	0.73	0.00	20.80	32.0	2
DA1	#DA1:0	Origin	5.00	1.04	0.05	-0.17	-107.87	0.01	0.0	-5.10	15.54	-0.00	-0.29	20.47	0.72	0.00	20.79	32.0	2
DA1	#DA1:1	End	8.50	1.03	0.05	-0.50	-53.46	0.00	0.0	-5.10	15.54	-0.00	-0.32	11.96	0.78	0.00	12.35	19.0	2
DA1	#DA1:1	Origin	8.50	1.03	0.05	-0.50	-53.46	0.00	-0.0	-5.06	15.26	-0.00	-0.31	11.96	0.76	0.00	12.35	19.0	2
DA1	DA1:A	End	12.00	1.03	0.05	-0.94	-0.02	0.00	-0.0	-5.06	15.26	-0.00	-0.34	0.00	2.16	0.00	3.75	5.8	4
DA1	DA1:A	Origin	12.00	1.03	0.05	-0.94	-0.02	0.00	0.0	-0.00	0.03	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	4
DA1	DA1:T	End	12.75	1.03	0.05	-1.04	0.00	-0.00	0.0	-0.00	0.03	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	4
DA2	DA2:O	Origin	0.00	1.05	0.06	-0.13	-188.61	-0.02	-0.0	4.73	16.04	0.00	0.24	28.89	0.66	0.00	29.16	44.9	2
DA2	#DA2:0	End	5.00	1.06	0.06	-0.60	-108.42	-0.01	-0.0	4.73	16.04	0.00	0.27	20.57	0.74	0.00	20.88	32.1	2
DA2	#DA2:0	Origin	5.00	1.06	0.06	-0.60	-108.42	-0.01	-0.0	4.82	15.63	0.00	0.28	20.57	0.72	0.00	20.88	32.1	2
DA2	#DA2:1	End	8.50	1.06	0.06	-1.15	-53.69	-0.01	-0.0	4.82	15.63	0.00	0.30	12.01	0.78	0.00	12.39	19.1	2
DA2	#DA2:1	Origin	8.50	1.06	0.06	-1.15	-53.69	-0.01	-0.0	4.86	15.33	0.00	0.30	12.01	0.77	0.00	12.38	19.1	2
DA2	DA2:A	End	12.00	1.07	0.06	-1.80	-0.02	-0.00	-0.0	4.86	15.33	0.00	0.33	0.00	2.17	0.00	3.76	5.8	4
DA2	DA2:A	Origin	12.00	1.07	0.06	-1.80	-0.02	-0.00	-0.0	-0.00	0.03	0.00	-0.00	0.00	0.00	0.00	0.01	0.0	4
DA2	DA2:T	End	12.75	1.07	0.06	-1.94	-0.00	-0.00	-0.0	-0.00	0.03	0.00	-0.00	0.00	0.00	0.00	0.01	0.0	4

Detailed Tubular X-Arm Usages for Load Case "NESC 250B":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Condbm	Condbm:O	Origin	0.00	1.04	0.05	-0.00	-5.53	-0.28	0.1	17.14	3.56	0.02	0.88	0.86	0.15	0.01	1.77	2.7	2
Condbm	#sCondbm:0	End	5.00	1.04	0.05	-0.05	12.29	-0.17	0.1	17.14	3.56	0.02	0.88	1.89	0.15	0.01	2.79	4.3	2
Condbm	#sCondbm:0	Origin	5.00	1.04	0.05	-0.05	12.29	-0.17	0.1	17.14	3.12	0.02	0.88	1.89	0.13	0.01	2.79	4.3	2
Condbm	#sCondbm:1	End	9.00	1.04	0.06	-0.07	24.79	-0.09	0.1	17.14	3.12	0.02	0.88	3.80	0.13	0.01	4.69	7.2	2
Condbm	#sCondbm:1	Origin	9.00	1.04	0.06	-0.07	24.79	-0.09	0.1	17.13	2.74	0.02	0.88	3.80	0.11	0.01	4.69	7.2	2
Condbm	Condbm:c2	End	13.00	1.05	0.06	-0.05	35.75	0.00	0.1	17.13	2.74	0.02	0.88	5.48	0.11	0.01	6.36	9.8	2
Condbm	Condbm:c2	Origin	13.00	1.05	0.06	-0.05	35.75	0.00	0.1	12.23	-12.81	0.02	0.63	5.48	0.53	0.01	6.18	9.5	2
Condbm	#sCondbm:2	End	18.00	1.05	0.06	0.02	-28.31	0.10	0.1	12.23	-12.81	0.02	0.63	4.34	0.53	0.01	5.06	7.8	2
Condbm	#sCondbm:2	Origin	18.00	1.05	0.06	0.02	-28.31	0.10	0.1	12.22	-13.27	0.02	0.63	4.34	0.55	0.01	5.06	7.8	2
Condbm	#sCondbm:3	End	22.00	1.05	0.06	0.04	-81.38	0.18	0.1	12.22	-13.27	0.02	0.63	12.48	0.55	0.01	13.14	20.2	2
Condbm	#sCondbm:3	Origin	22.00	1.05	0.06	0.04	-81.38	0.18	0.1	12.18	-13.70	0.02	0.63	12.48	0.57	0.01	13.14	20.2	2

Condbm	Condbm:E	End	26.00	1.05	0.06	-0.07	-136.17	0.26	0.1	12.18	-13.70	0.02	0.63	20.87	0.57	0.01	21.52	33.1	2					

Summary of Clamp Capacities and Usages for Load Case "NESC 250B":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
T	6.178	15.00	15.00	41.19	0.00	0.00	0.00	41.19
FC	0.000	15.00	15.00	0.00	0.00	0.00	0.00	0.00

Summary of Suspension Capacities and Usages for Load Case "NESC 250B":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
sw1	2.817	50.00	50.00	5.63	0.00	0.00	0.00	5.63
sw2	2.817	50.00	50.00	5.63	0.00	0.00	0.00	5.63
c1	15.897	50.00	50.00	31.79	0.00	0.00	0.00	31.79
c2	15.897	50.00	50.00	31.79	0.00	0.00	0.00	31.79
c3	15.897	50.00	50.00	31.79	0.00	0.00	0.00	31.79

Summary of Post Capacities and Usages for Load Case "NESC 250B":

Post Label	Vertical Force (kips)	Tran. Force (kips)	Long. Force (kips)	Cant. Force (kips)	Axial Force (kips)	Vert. Down Capacity (kips)	Vert. Up Capacity (kips)	Trans. Neg. Capacity (kips)	Trans. Pos. Capacity (kips)	Long. Capacity (kips)	Cant. Capacity (kips)	Comp. Capacity (kips)	Tens. Capacity (kips)	Insul. S.F.	Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
CO1	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO2	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO3	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO4	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO5	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO6	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO7	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO8	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO9	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO10	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40
CO11	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00	0.00	18.40

CO12	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00
0.00	18.40																
CO13	0.92	0.23	0.00	0.92	0.23	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	18.40	0.00	0.00
0.00	18.40																

*** Analysis Results for Load Case No. 2 "NESC 250C" - Number of iterations in SAPS 12

Equilibrium Joint Positions and Rotations for Load Case "NESC 250C":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
Right:g	0	0	0	0.0000	0.0000	0.0000	0	13	0
Right:t	0.003061	1.05	-0.01503	-1.3977	0.0022	-0.0002	0.003061	14.05	125
Right:A1	0.002907	0.9521	-0.01384	-1.3951	0.0022	-0.0002	0.002907	13.95	121
Right:C2	0.002676	0.8074	-0.01206	-1.3571	0.0022	-0.0002	0.002676	13.81	115
Right:A2	0.002523	0.7142	-0.01094	-1.3028	0.0022	-0.0002	0.002523	13.71	111
Right:C3	0.002295	0.5833	-0.009471	-1.1888	0.0021	-0.0002	0.002295	13.58	105
Right:C4	0.001928	0.3963	-0.007639	-0.9361	0.0020	-0.0002	0.001928	13.4	94.99
Right:SW2	0.001701	0.3004	-0.006876	-0.7511	0.0020	-0.0002	0.001701	13.3	88.49
Right:C5	0.001583	0.2572	-0.006581	-0.6587	0.0019	-0.0002	0.001583	13.26	84.99
Right:cbm	0.001306	0.1762	-0.00612	-0.4130	0.0018	-0.0002	0.001306	13.18	76.41
Right:C6	0.001263	0.1663	-0.006042	-0.3803	0.0017	-0.0002	0.001263	13.17	74.99
Right:C7	0.0009721	0.1197	-0.005628	-0.1495	0.0016	-0.0001	0.0009721	13.12	64.99
Right:X1	0.0009176	0.1152	-0.005564	-0.1033	0.0015	-0.0001	0.0009176	13.12	62.99
Right:C8	0.0007125	0.1091	-0.005023	-0.0128	0.0014	-0.0001	0.0007125	13.11	54.99
Right:C9	0.0004876	0.1073	-0.00438	-0.0359	0.0012	-0.0001	0.0004876	13.11	45
Right:X2	0.0003894	0.1024	-0.004066	-0.0871	0.0011	-0.0001	0.0003894	13.1	40
Right:C10	0.0003012	0.09147	-0.003526	-0.1518	0.0009	-0.0001	0.0003012	13.09	35
Right:C11	0.0001568	0.05876	-0.002452	-0.2007	0.0007	-0.0000	0.0001568	13.06	25
Right:C12	5.772e-05	0.02514	-0.00142	-0.1657	0.0004	-0.0000	5.772e-05	13.03	15
Right:C13	6.726e-06	0.003356	-0.0004572	-0.0676	0.0001	-0.0000	6.726e-06	13	5
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-13	0
Left:t	0.001508	0.223	0.003122	-0.2047	0.0014	-0.0002	0.001508	-12.78	90
Left:SW1	0.001471	0.2176	0.003132	-0.2047	0.0014	-0.0002	0.001471	-12.78	88.5
Left:cbm	0.001172	0.1753	0.003224	-0.1916	0.0014	-0.0002	0.001172	-12.82	76.42
Left:X1	0.000849	0.1289	0.003347	-0.1298	0.0013	-0.0001	0.000849	-12.87	63
Left:X2	0.0003758	0.09541	0.002361	-0.1192	0.0010	-0.0001	0.0003758	-12.9	40
V1	0.0008528	0.1289	-0.0003276	-0.1298	0.0013	-0.0001	0.0008528	-11.25	63
V2	0.0009139	0.1152	-0.002638	-0.1033	0.0015	-0.0001	0.0009139	11.49	63
V3	0.000378	0.0954	-0.001492	-0.1192	0.0010	-0.0001	0.000378	-11.05	40
V4	0.0003873	0.1024	-0.00125	-0.0871	0.0011	-0.0001	0.0003873	11.25	40
DA1:O	0.001167	0.1753	0.007368	-0.1916	0.0014	-0.0002	0.001167	-14.06	76.42
DA1:A	0.001133	0.1756	0.009408	0.0944	0.0014	-0.0002	0.001133	-26.06	76.66
DA1:T	0.001131	0.1756	0.008171	0.0944	0.0014	-0.0002	0.001131	-26.81	76.68
DA2:O	0.00131	0.1761	-0.01505	-0.4130	0.0018	-0.0002	0.00131	14.42	76.4
DA2:A	0.001351	0.1782	-0.1411	-0.7098	0.0018	-0.0002	0.001351	26.42	76.51
DA2:T	0.001354	0.1783	-0.1504	-0.7099	0.0018	-0.0002	0.001354	27.17	76.52
Condbm:O	0.001172	0.1753	0.003224	-0.1916	0.0014	-0.0002	0.001172	-12.82	76.42
Condbm:c2	0.00124	0.1759	0.00553	0.1158	0.0016	-0.0004	0.00124	0.1759	76.42
Condbm:E	0.001306	0.1762	-0.00612	-0.4130	0.0018	-0.0002	0.001306	13.18	76.41
CO1:O	0.003062	1.049	-0.03333	-1.3977	0.0022	-0.0002	0.003062	14.8	125
CO1	0.003063	1.05	-0.03943	-1.3983	0.0022	-0.0002	0.003063	15.05	125
CO2:O	0.002677	0.8071	-0.03218	-1.3571	0.0022	-0.0002	0.002677	14.66	115
CO2	0.002678	0.8072	-0.03811	-1.3577	0.0022	-0.0002	0.002678	14.91	115
CO3:O	0.002297	0.5831	-0.02916	-1.1888	0.0021	-0.0002	0.002297	14.53	105
CO3	0.002298	0.5832	-0.03436	-1.1894	0.0021	-0.0002	0.002298	14.78	105
CO4:O	0.001931	0.3962	-0.02477	-0.9361	0.0020	-0.0002	0.001931	14.44	94.98
CO4	0.001931	0.3963	-0.02886	-0.9367	0.0020	-0.0002	0.001931	14.7	94.97
CO5:O	0.001586	0.2571	-0.01984	-0.6587	0.0019	-0.0002	0.001586	14.41	84.98
CO5	0.001586	0.2573	-0.02272	-0.6594	0.0019	-0.0002	0.001586	14.66	84.98
CO6:O	0.001266	0.1663	-0.01436	-0.3803	0.0017	-0.0002	0.001266	14.42	74.99

CO6	0.001267	0.1665	-0.01603	-0.3810	0.0017	-0.0002	0.001267	14.67	74.98
CO7:O	0.0009752	0.1197	-0.009157	-0.1495	0.0016	-0.0001	0.0009752	14.47	64.99
CO7	0.0009758	0.1199	-0.009815	-0.1501	0.0016	-0.0001	0.0009758	14.72	64.99
CO8:O	0.0007152	0.1091	-0.005348	-0.0128	0.0014	-0.0001	0.0007152	14.56	54.99
CO8	0.0007157	0.1092	-0.005409	-0.0134	0.0014	-0.0001	0.0007157	14.81	54.99
CO9:O	0.0004897	0.1073	-0.005354	-0.0359	0.0012	-0.0001	0.0004897	14.66	44.99
CO9	0.0004901	0.1074	-0.005516	-0.0366	0.0012	-0.0001	0.0004901	14.91	44.99
CO10:O	0.0003027	0.09147	-0.007901	-0.1518	0.0009	-0.0001	0.0003027	14.74	34.99
CO10	0.000303	0.09164	-0.008569	-0.1524	0.0009	-0.0001	0.000303	14.99	34.99
CO11:O	0.0001578	0.05875	-0.008587	-0.2007	0.0007	-0.0000	0.0001578	14.81	24.99
CO11	0.0001579	0.05892	-0.009469	-0.2014	0.0007	-0.0000	0.0001579	15.06	24.99
CO12:O	5.829e-05	0.02513	-0.006771	-0.1657	0.0004	-0.0000	5.829e-05	14.88	14.99
CO12	5.837e-05	0.0253	-0.0075	-0.1663	0.0004	-0.0000	5.837e-05	15.13	14.99
CO13:O	6.918e-06	0.003354	-0.002759	-0.0676	0.0001	-0.0000	6.918e-06	14.95	4.997
CO13	6.942e-06	0.003524	-0.003059	-0.0683	0.0001	-0.0000	6.942e-06	15.2	4.997

Joint Support Reactions for Load Case "NESC 250C":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
Right:g	-0.03	0.0	-36.68	0.0	0.0	-151.51	0.0	0.0	155.88	0.0	854.53	0.0	-1.7	0.0	0.0	0.05	0.0	0.0
Left:g	-0.04	0.0	-28.53	0.0	0.0	88.05	0.0	0.0	92.56	0.0	714.98	0.0	-1.8	0.0	0.0	0.05	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC 250C":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Right	Right:t	Origin	0.00	12.60	0.04	-0.18	0.23	-0.00	-0.0	-0.36	0.79	-0.00	-0.02	0.00	0.09	0.00	0.16	0.2	5
Right	Right:A1	End	4.00	11.43	0.03	-0.17	3.39	-0.00	-0.0	-0.36	0.79	-0.00	-0.02	0.46	0.02	0.00	0.48	0.7	2
Right	Right:A1	Origin	4.00	11.43	0.03	-0.17	3.39	-0.00	-0.0	-3.51	5.90	-0.00	-0.19	0.00	0.64	0.00	1.13	1.7	5
Right	Tube 1	End	7.00	10.55	0.03	-0.16	21.09	-0.00	-0.0	-3.51	5.90	-0.00	-0.18	2.67	0.16	0.00	2.86	4.4	2
Right	Tube 1	Origin	7.00	10.55	0.03	-0.16	21.09	-0.00	-0.0	-3.71	6.06	-0.00	-0.19	2.67	0.17	0.00	2.87	4.4	2
Right	Right:C2	End	10.00	9.69	0.03	-0.14	39.28	-0.01	-0.0	-3.71	6.06	-0.00	-0.18	4.62	0.16	0.00	4.81	7.4	2
Right	Right:C2	Origin	10.00	9.69	0.03	-0.14	39.54	-0.01	-0.0	-4.19	6.94	-0.00	-0.21	4.65	0.18	0.00	4.86	7.5	2
Right	Right:A2	End	14.00	8.57	0.03	-0.13	67.31	-0.02	-0.0	-4.19	6.94	-0.00	-0.20	7.20	0.17	0.00	7.41	11.4	2
Right	Right:A2	Origin	14.00	8.57	0.03	-0.13	67.31	-0.02	-0.0	-4.44	7.15	-0.00	-0.21	7.20	0.18	0.00	7.42	11.4	2
Right	Tube 1	End	17.00	7.77	0.03	-0.12	88.75	-0.03	-0.0	-4.44	7.15	-0.00	-0.20	8.88	0.17	0.00	9.09	14.0	2
Right	Tube 1	Origin	17.00	7.77	0.03	-0.12	88.75	-0.03	-0.0	-4.67	7.32	-0.00	-0.21	8.88	0.18	0.00	9.10	14.0	2
Right	Right:C3	End	20.00	7.00	0.03	-0.11	110.72	-0.04	-0.0	-4.67	7.32	-0.00	-0.21	10.37	0.17	0.00	10.59	16.3	2
Right	Right:C3	Origin	20.00	7.00	0.03	-0.11	111.00	-0.04	-0.0	-5.23	8.25	-0.00	-0.23	10.40	0.19	0.00	10.64	16.4	2
Right	Tube 1	End	25.00	5.81	0.03	-0.10	152.27	-0.06	-0.0	-5.23	8.25	-0.00	-0.22	12.85	0.18	0.00	13.08	20.1	2
Right	Tube 1	Origin	25.00	5.81	0.03	-0.10	152.27	-0.06	-0.0	-5.66	8.57	-0.01	-0.24	12.85	0.19	0.00	13.10	20.1	2
Right	Right:C4	End	30.00	4.76	0.02	-0.09	195.12	-0.09	-0.0	-5.66	8.57	-0.01	-0.23	14.92	0.18	0.00	15.15	23.3	2
Right	Right:C4	Origin	30.00	4.76	0.02	-0.09	195.43	-0.09	-0.0	-6.34	9.58	-0.01	-0.25	14.94	0.20	0.00	15.20	23.4	2
Right	SpliceT	End	35.00	3.85	0.02	-0.08	243.35	-0.12	-0.0	-6.34	9.58	-0.01	-0.24	16.93	0.19	0.00	17.17	26.4	2
Right	SpliceT	Origin	35.00	3.85	0.02	-0.08	243.35	-0.12	-0.0	-6.66	9.80	-0.01	-0.21	14.07	0.17	0.00	14.29	22.0	2
Right	Right:SW2	End	36.50	3.61	0.02	-0.08	258.05	-0.13	-0.0	-6.66	9.80	-0.01	-0.21	14.52	0.16	0.00	14.73	22.7	2
Right	Right:SW2	Origin	36.50	3.61	0.02	-0.08	258.05	-0.13	-0.0	-7.56	11.76	-0.01	-0.24	14.52	0.20	0.00	14.76	22.7	2
Right	Right:C5	End	40.00	3.09	0.02	-0.08	299.22	-0.16	-0.0	-7.56	11.76	-0.01	-0.23	15.81	0.19	0.00	16.04	24.7	2
Right	Right:C5	Origin	40.00	3.09	0.02	-0.08	299.56	-0.16	-0.0	-8.26	12.72	-0.01	-0.25	15.83	0.20	0.00	16.08	24.7	2
Right	Tube 2	End	44.29	2.55	0.02	-0.08	354.16	-0.20	-0.0	-8.26	12.72	-0.01	-0.24	17.38	0.20	0.00	17.62	27.1	2
Right	Tube 2	Origin	44.29	2.55	0.02	-0.08	354.16	-0.20	-0.0	-8.79	13.04	-0.01	-0.26	17.38	0.20	0.00	17.64	27.1	2
Right	Right:cbm	End	48.58	2.11	0.02	-0.07	410.13	-0.24	-0.0	-8.79	13.04	-0.01	-0.25	18.73	0.20	0.00	18.98	29.2	2
Right	Right:cbm	Origin	48.58	2.11	0.02	-0.07	317.11	-0.22	-0.1	-31.47	7.43	-0.01	-0.89	14.48	0.11	0.00	15.37	23.7	2

Right	Right:C6	End	50.00	2.00	0.02	-0.07	327.64	-0.23	-0.1	-31.47	7.43	-0.01	-0.88	14.62	0.11	0.00	15.50	23.9	2
Right	Right:C6	Origin	50.00	2.00	0.02	-0.07	328.01	-0.23	-0.1	-32.12	8.34	-0.01	-0.90	14.64	0.12	0.00	15.54	23.9	2
Right	Tube 2	End	55.00	1.66	0.01	-0.07	369.71	-0.27	-0.1	-32.12	8.34	-0.01	-0.86	15.24	0.12	0.00	16.11	24.8	2
Right	Tube 2	Origin	55.00	1.66	0.01	-0.07	369.71	-0.27	-0.1	-32.77	8.70	-0.01	-0.88	15.24	0.12	0.00	16.12	24.8	2
Right	Right:C7	End	60.00	1.44	0.01	-0.07	413.19	-0.32	-0.1	-32.77	8.70	-0.01	-0.85	15.78	0.12	0.00	16.63	25.6	2
Right	Right:C7	Origin	60.00	1.44	0.01	-0.07	413.59	-0.32	-0.1	-33.49	9.63	-0.01	-0.87	15.80	0.13	0.00	16.67	25.6	2
Right	Right:X1	End	62.00	1.38	0.01	-0.07	432.85	-0.34	-0.1	-33.49	9.63	-0.01	-0.85	16.05	0.13	0.00	16.90	26.0	2
Right	Right:X1	Origin	62.00	1.38	0.01	-0.07	360.50	-0.34	-0.1	-78.47	-33.12	-0.01	-2.00	13.37	0.45	0.00	15.39	23.7	2
Right	Tube 2	End	66.00	1.33	0.01	-0.06	228.02	-0.39	-0.1	-78.47	-33.12	-0.01	-1.94	7.98	0.43	0.00	9.95	15.3	2
Right	Tube 2	Origin	66.00	1.33	0.01	-0.06	228.02	-0.39	-0.1	-78.99	-32.82	-0.01	-1.95	7.98	0.43	0.00	9.96	15.3	2
Right	Right:C8	End	70.00	1.31	0.01	-0.06	96.75	-0.44	-0.1	-78.99	-32.82	-0.01	-1.90	3.20	0.42	0.00	5.15	7.9	2
Right	Right:C8	Origin	70.00	1.31	0.01	-0.06	97.17	-0.44	-0.1	-79.87	-31.74	-0.02	-1.92	3.22	0.40	0.00	5.18	8.0	2
Right	Tube 2	End	75.00	1.30	0.01	-0.06	-61.53	-0.52	-0.1	-79.87	-31.74	-0.02	-1.86	1.90	0.39	0.00	3.82	5.9	2
Right	Tube 2	Origin	75.00	1.30	0.01	-0.06	-61.53	-0.52	-0.1	-80.61	-31.24	-0.02	-1.87	1.90	0.38	0.00	3.84	5.9	2
Right	Right:C9	End	80.00	1.29	0.01	-0.05	-217.73	-0.60	-0.1	-80.61	-31.24	-0.02	-1.81	6.29	0.37	0.00	8.13	12.5	2
Right	Right:C9	Origin	80.00	1.29	0.01	-0.05	-217.28	-0.60	-0.1	-81.64	-30.01	-0.02	-1.84	6.28	0.36	0.00	8.14	12.5	2
Right	Right:X2	End	85.00	1.23	0.00	-0.05	-367.30	-0.69	-0.1	-81.64	-30.01	-0.02	-1.78	9.96	0.35	0.00	11.75	18.1	2
Right	Right:X2	Origin	85.00	1.23	0.00	-0.05	-479.13	-0.69	-0.1	-142.65	29.76	-0.02	-3.11	12.99	0.34	0.00	16.11	24.8	2
Right	SpliceT	End	88.00	1.16	0.00	-0.04	-389.85	-0.75	-0.1	-142.65	29.76	-0.02	-3.05	10.18	0.34	0.00	13.24	20.4	2
Right	SpliceT	Origin	88.00	1.16	0.00	-0.04	-389.85	-0.75	-0.1	-143.03	30.10	-0.02	-3.06	10.18	0.34	0.00	13.25	20.4	2
Right	Right:C10	End	90.00	1.10	0.00	-0.04	-329.64	-0.79	-0.1	-143.03	30.10	-0.02	-3.02	8.40	0.34	0.00	11.44	17.6	2
Right	Right:C10	Origin	90.00	1.10	0.00	-0.04	-329.17	-0.79	-0.1	-143.83	31.24	-0.02	-3.04	8.39	0.35	0.00	11.44	17.6	2
Right	Tube 3	End	95.00	0.91	0.00	-0.04	-172.99	-0.90	-0.1	-143.83	31.24	-0.02	-2.95	4.15	0.34	0.00	7.13	11.0	2
Right	Tube 3	Origin	95.00	0.91	0.00	-0.04	-172.99	-0.90	-0.1	-144.65	31.85	-0.02	-2.97	4.15	0.34	0.00	7.14	11.0	2
Right	Right:C11	End	100.00	0.71	0.00	-0.03	-13.75	-1.02	-0.1	-144.65	31.85	-0.02	-2.88	0.11	1.25	0.00	3.69	5.7	4
Right	Right:C11	Origin	100.00	0.71	0.00	-0.03	-13.25	-1.02	-0.1	-145.75	33.10	-0.03	-2.90	0.10	1.30	0.00	3.75	5.8	4
Right	Tube 3	End	105.00	0.49	0.00	-0.02	152.25	-1.14	-0.1	-145.75	33.10	-0.03	-2.82	3.26	0.34	0.00	6.11	9.4	2
Right	Tube 3	Origin	105.00	0.49	0.00	-0.02	152.25	-1.14	-0.1	-146.64	33.64	-0.03	-2.84	3.26	0.34	0.00	6.13	9.4	2
Right	Right:C12	End	110.00	0.30	0.00	-0.02	320.44	-1.28	-0.1	-146.64	33.64	-0.03	-2.76	6.48	0.33	0.00	9.26	14.3	2
Right	Right:C12	Origin	110.00	0.30	0.00	-0.02	320.96	-1.28	-0.1	-147.81	34.83	-0.03	-2.78	6.49	0.35	0.00	9.30	14.3	2
Right	Tube 3	End	115.00	0.15	0.00	-0.01	495.10	-1.42	-0.1	-147.81	34.83	-0.03	-2.71	9.49	0.34	0.00	12.22	18.8	2
Right	Tube 3	Origin	115.00	0.15	0.00	-0.01	495.10	-1.42	-0.1	-148.77	35.32	-0.03	-2.73	9.49	0.34	0.00	12.23	18.8	2
Right	Right:C13	End	120.00	0.04	0.00	-0.01	671.67	-1.57	-0.1	-148.77	35.32	-0.03	-2.66	12.22	0.33	0.00	14.89	23.2	2
Right	Right:C13	Origin	120.00	0.04	0.00	-0.01	672.22	-1.57	-0.1	-150.01	36.47	-0.03	-2.68	12.23	0.34	0.00	14.92	23.3	2
Right	Right:g	End	125.00	0.00	0.00	0.00	854.53	-1.73	-0.1	-150.01	36.47	-0.03	-2.61	14.77	0.33	0.00	17.39	27.5	2
Left	Left:t	Origin	0.00	2.68	0.02	0.04	-0.00	-0.00	0.0	-0.08	0.05	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	5
Left	Left:SW1	End	1.50	2.61	0.02	0.04	0.08	-0.00	0.0	-0.08	0.05	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	2
Left	Left:SW1	Origin	1.50	2.61	0.02	0.04	0.08	-0.00	-0.0	-1.07	2.07	-0.00	-0.03	0.00	0.13	0.00	0.23	0.4	5
Left	Tube 1	End	6.50	2.40	0.02	0.04	10.42	-0.01	-0.0	-1.07	2.07	-0.00	-0.03	0.54	0.03	0.00	0.57	0.9	2
Left	Tube 1	Origin	6.50	2.40	0.02	0.04	10.42	-0.01	-0.0	-1.55	2.39	-0.00	-0.05	0.54	0.04	0.00	0.59	0.9	2
Left	Tube 1	End	10.04	2.25	0.02	0.04	18.87	-0.01	-0.0	-1.55	2.39	-0.00	-0.05	0.91	0.04	0.00	0.96	1.5	2
Left	Tube 1	Origin	10.04	2.25	0.02	0.04	18.87	-0.01	-0.0	-1.97	2.66	-0.00	-0.06	0.91	0.04	0.00	0.97	1.5	2
Left	Left:cbm	End	13.58	2.10	0.01	0.04	28.31	-0.02	-0.0	-1.97	2.66	-0.00	-0.06	1.29	0.04	0.00	1.35	2.1	2
Left	Left:cbm	Origin	13.58	2.10	0.01	0.04	-159.52	-0.05	-0.1	-2.81	36.29	-0.01	-0.08	7.29	0.54	0.00	7.42	11.4	2
Left	Tube 1	End	18.58	1.88	0.01	0.04	21.95	-0.09	-0.1	-2.81	36.29	-0.01	-0.08	0.00	2.00	0.00	3.47	5.3	5
Left	Tube 1	Origin	18.58	1.88	0.01	0.04	21.95	-0.09	-0.1	-3.39	36.68	-0.01	-0.09	0.00	2.02	0.00	3.51	5.4	5
Left	Tube 1	End	22.79	1.69	0.01	0.04	176.30	-0.13	-0.1	-3.39	36.68	-0.01	-0.09	6.96	0.51	0.00	7.11	10.9	2
Left	Tube 1	Origin	22.79	1.69	0.01	0.04	176.30	-0.13	-0.1	-3.96	37.04	-0.01	-0.10	6.96	0.52	0.00	7.12	11.0	2
Left	Left:X1	End	27.00	1.55	0.01	0.04	332.16	-0.18	-0.1	-3.96	37.04	-0.01	-0.10	12.32	0.50	0.00	12.45	19.1	2
Left	Left:X1	Origin	27.00	1.55	0.01	0.04	234.75	-0.18	-0.1	55.44	-21.52	-0.01	1.41	8.70	0.29	0.00	10.13	15.6	2
Left	Tube 1	End	32.00	1.44	0.01	0.04	127.13	-0.25	-0.1	55.44	-21.52	-0.01	1.36	4.39	0.28	0.00	5.77	8.9	2
Left	Tube 1	Origin	32.00	1.44	0.01	0.04	127.13	-0.25	-0.1	54.76	-21.03	-0.02	1.35	4.39	0.27	0.00	5.75	8.8	2
Left	Tube 1	End	37.00	1.37	0.01	0.03	21.96	-0.32	-0.1	54.76	-21.03	-0.02	1.30	0.20	0.98	0.00	2.27	3.5	4
Left	Tube 1	Origin	37.00	1.37	0.01	0.03	21.96	-0.32	-0.1	54.04	-20.56	-0.02	1.28	0.20	0.96	0.00	2.23	3.4	4
Left	Tube 1	End	42.00	1.30	0.01	0.03	-80.82	-0.40	-0.1	54.04	-20.56	-0.02	1.24	2.43	0.25	0.00	3.70	5.7	2
Left	Tube 1	Origin	42.00	1.30	0.01	0.03	-80.82	-0.40	-0.1	53.37	-20.13	-0.02	1.22	2.43	0.24	0.00	3.68	5.7	2
Left	Tube 1	End	46.00	1.23	0.01	0.03	-161.34	-0.48	-0.1	53.37	-20.13	-0.02	1.19	4.60	0.24	0.00	5.81	8.9	2
Left	Tube 1	Origin	46.00	1.23	0.01	0.03	-161.34	-0.48	-0.1	52.76	-19.75	-0.02	1.18	4.60	0.23	0.00	5.80	8.9	2

Left	Left:X2	End	50.00	1.14	0.00	0.03	-240.32	-0.56	-0.1	52.76	-19.75	-0.02	1.15	6.52	0.23	0.00	7.67	11.8	2
Left	Left:X2	Origin	50.00	1.14	0.00	0.03	-321.23	-0.56	-0.1	95.91	23.82	-0.02	2.09	8.71	0.27	0.00	10.81	16.6	2
Left	SpliceT	End	53.00	1.06	0.00	0.03	-249.76	-0.62	-0.1	95.91	23.82	-0.02	2.05	6.52	0.27	0.00	8.59	13.2	2
Left	SpliceT	Origin	53.00	1.06	0.00	0.03	-249.76	-0.62	-0.1	95.28	24.20	-0.02	2.04	6.52	0.27	0.00	8.57	13.2	2
Left	Tube 2	End	58.00	0.89	0.00	0.02	-128.77	-0.74	-0.1	95.28	24.20	-0.02	1.98	3.17	0.27	0.00	5.16	7.9	2
Left	Tube 2	Origin	58.00	0.89	0.00	0.02	-128.77	-0.74	-0.1	94.47	24.71	-0.03	1.96	3.17	0.27	0.00	5.15	7.9	2
Left	Tube 2	End	63.00	0.69	0.00	0.02	-5.22	-0.87	-0.1	94.47	24.71	-0.03	1.90	0.02	1.01	0.00	2.60	4.0	5
Left	Tube 2	Origin	63.00	0.69	0.00	0.02	-5.22	-0.87	-0.1	93.62	25.27	-0.03	1.89	0.02	1.03	0.00	2.62	4.0	5
Left	Tube 2	End	68.00	0.50	0.00	0.01	121.12	-1.01	-0.1	93.62	25.27	-0.03	1.83	2.65	0.26	0.00	4.51	6.9	2
Left	Tube 2	Origin	68.00	0.50	0.00	0.01	121.12	-1.01	-0.1	92.75	25.87	-0.03	1.82	2.65	0.27	0.00	4.49	6.9	2
Left	Tube 2	End	73.00	0.32	0.00	0.01	250.46	-1.16	-0.1	92.75	25.87	-0.03	1.77	5.18	0.26	0.00	6.96	10.7	2
Left	Tube 2	Origin	73.00	0.32	0.00	0.01	250.46	-1.16	-0.1	91.84	26.50	-0.03	1.75	5.18	0.27	0.00	6.95	10.7	2
Left	Tube 2	End	78.00	0.17	0.00	0.01	382.99	-1.32	-0.1	91.84	26.50	-0.03	1.70	7.50	0.26	0.00	9.21	14.2	2
Left	Tube 2	Origin	78.00	0.17	0.00	0.01	382.99	-1.32	-0.1	90.90	27.17	-0.03	1.68	7.50	0.27	0.00	9.20	14.2	2
Left	Tube 2	End	83.00	0.06	0.00	0.00	518.86	-1.50	-0.1	90.90	27.17	-0.03	1.64	9.64	0.26	0.00	11.29	17.5	2
Left	Tube 2	Origin	83.00	0.06	0.00	0.00	518.86	-1.50	-0.1	90.09	27.76	-0.04	1.63	9.64	0.26	0.00	11.27	17.5	2
Left	Tube 2	End	86.50	0.02	0.00	0.00	616.04	-1.62	-0.1	90.09	27.76	-0.04	1.60	11.04	0.26	0.00	12.64	19.8	2
Left	Tube 2	Origin	86.50	0.02	0.00	0.00	616.04	-1.62	-0.1	89.39	28.27	-0.04	1.58	11.04	0.26	0.00	12.63	19.8	2
Left	Left:g	End	90.00	0.00	0.00	0.00	714.98	-1.76	-0.1	89.39	28.27	-0.04	1.56	12.36	0.26	0.00	13.92	22.0	2

Summary of Brace Forces and Usages for Load Case "NESC 250C":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
X1	-84.38	174.84	180.78	48.27
X2	61.70	174.84	180.78	34.13

Detailed Tubular Davit Arm Usages for Load Case "NESC 250C":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
DA1	DA1:O	Origin	0.00	2.10	0.01	0.09	-80.51	0.00	0.0	-9.25	6.90	-0.00	-0.48	12.33	0.28	0.00	12.82	19.7	2
DA1	#DA1:0	End	5.00	2.11	0.01	0.19	-46.02	0.00	0.0	-9.25	6.90	-0.00	-0.53	8.73	0.32	0.00	9.28	14.3	2
DA1	#DA1:0	Origin	5.00	2.11	0.01	0.19	-46.02	0.00	0.0	-9.23	6.66	-0.00	-0.53	8.73	0.31	0.00	9.27	14.3	2
DA1	#DA1:1	End	8.50	2.11	0.01	0.17	-22.70	0.00	0.0	-9.23	6.66	-0.00	-0.57	5.08	0.33	0.00	5.68	8.7	2
DA1	#DA1:1	Origin	8.50	2.11	0.01	0.17	-22.70	0.00	-0.0	-9.22	6.48	-0.00	-0.57	5.08	0.32	0.00	5.68	8.7	2
DA1	DA1:A	End	12.00	2.11	0.01	0.11	-0.01	0.00	-0.0	-9.22	6.48	-0.00	-0.63	0.00	0.92	0.00	1.70	2.6	4
DA1	DA1:A	Origin	12.00	2.11	0.01	0.11	-0.01	0.00	0.0	-0.00	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA1	DA1:T	End	12.75	2.11	0.01	0.10	0.00	0.00	0.0	-0.00	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA2	DA2:O	Origin	0.00	2.11	0.02	-0.18	-83.68	-0.00	-0.0	9.03	7.19	0.00	0.46	12.82	0.30	0.00	13.29	20.4	2
DA2	#DA2:0	End	5.00	2.12	0.02	-0.71	-47.72	-0.00	-0.0	9.03	7.19	0.00	0.52	9.05	0.33	0.00	9.59	14.7	2
DA2	#DA2:0	Origin	5.00	2.12	0.02	-0.71	-47.72	-0.00	-0.0	9.04	6.91	0.00	0.52	9.05	0.32	0.00	9.59	14.7	2
DA2	#DA2:1	End	8.50	2.13	0.02	-1.18	-23.51	-0.00	-0.0	9.04	6.91	0.00	0.56	5.26	0.35	0.00	5.85	9.0	2
DA2	#DA2:1	Origin	8.50	2.13	0.02	-1.18	-23.51	-0.00	-0.0	9.05	6.71	0.00	0.56	5.26	0.34	0.00	5.85	9.0	2
DA2	DA2:A	End	12.00	2.14	0.02	-1.69	-0.01	-0.00	-0.0	9.05	6.71	0.00	0.61	0.00	0.95	0.00	1.75	2.7	4
DA2	DA2:A	Origin	12.00	2.14	0.02	-1.69	-0.01	-0.00	-0.0	-0.00	0.02	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA2	DA2:T	End	12.75	2.14	0.02	-1.80	-0.00	0.00	-0.0	-0.00	0.02	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4

Detailed Tubular X-Arm Usages for Load Case "NESC 250C":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.

Condbm	Condbm:O	Origin	0.00	2.10	0.01	0.04	98.37	-0.05	0.0	24.17	-7.00	0.00	1.24	15.07	0.29	0.00	16.32	25.1	2
Condbm	#sCondbm:0	End	5.00	2.11	0.01	-0.06	63.35	-0.03	0.0	24.17	-7.00	0.00	1.24	9.70	0.29	0.00	10.96	16.9	2
Condbm	#sCondbm:0	Origin	5.00	2.11	0.01	-0.06	63.35	-0.03	0.0	24.19	-7.24	0.00	1.25	9.70	0.30	0.00	10.96	16.9	2
Condbm	#sCondbm:1	End	9.00	2.11	0.01	-0.02	34.37	-0.02	0.0	24.19	-7.24	0.00	1.25	5.26	0.30	0.00	6.53	10.0	2
Condbm	#sCondbm:1	Origin	9.00	2.11	0.01	-0.02	34.37	-0.02	0.0	24.19	-7.48	0.00	1.25	5.26	0.31	0.00	6.53	10.1	2
Condbm	Condbm:c2	End	13.00	2.11	0.01	0.07	4.44	0.00	0.0	24.19	-7.48	0.00	1.25	0.68	0.31	0.00	2.00	3.1	2
Condbm	Condbm:c2	Origin	13.00	2.11	0.01	0.07	4.44	0.00	0.0	15.10	-14.31	0.00	0.78	0.00	1.53	0.00	2.77	4.3	4
Condbm	#sCondbm:2	End	18.00	2.11	0.02	0.17	-67.14	0.02	0.0	15.10	-14.31	0.00	0.78	10.28	0.59	0.00	11.11	17.1	2
Condbm	#sCondbm:2	Origin	18.00	2.11	0.02	0.17	-67.14	0.02	0.0	15.07	-14.65	0.00	0.78	10.28	0.60	0.00	11.11	17.1	2
Condbm	#sCondbm:3	End	22.00	2.11	0.02	0.14	-125.72	0.04	0.0	15.07	-14.65	0.00	0.78	19.26	0.60	0.00	20.06	30.9	2
Condbm	#sCondbm:3	Origin	22.00	2.11	0.02	0.14	-125.72	0.04	0.0	15.01	-14.97	0.00	0.77	19.26	0.62	0.00	20.06	30.9	2
Condbm	Condbm:E	End	26.00	2.11	0.02	-0.07	-185.60	0.05	0.0	15.01	-14.97	0.00	0.77	28.43	0.62	0.00	29.22	45.0	2

Summary of Clamp Capacities and Usages for Load Case "NESC 250C":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
T	5.735	15.00	15.00	38.23	0.00	0.00	0.00	38.23
FC	0.000	15.00	15.00	0.00	0.00	0.00	0.00	0.00

Summary of Suspension Capacities and Usages for Load Case "NESC 250C":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
sw1	1.883	50.00	50.00	3.77	0.00	0.00	0.00	3.77
sw2	1.883	50.00	50.00	3.77	0.00	0.00	0.00	3.77
c1	11.194	50.00	50.00	22.39	0.00	0.00	0.00	22.39
c2	11.194	50.00	50.00	22.39	0.00	0.00	0.00	22.39
c3	11.194	50.00	50.00	22.39	0.00	0.00	0.00	22.39

Summary of Post Capacities and Usages for Load Case "NESC 250C":

Post Label	Vertical Force (kips)	Tran. Force (kips)	Long. Force (kips)	Cant. Force (kips)	Axial Force (kips)	Vert. Down Capacity (kips)	Vert. Up Capacity (kips)	Trans. Neg. Capacity (kips)	Trans. Pos. Capacity (kips)	Long. Capacity (kips)	Cant. Capacity (kips)	Comp. Capacity (kips)	Tens. Capacity (kips)	Insul. S.F.	Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
CO1	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00	0.00	13.60
CO2	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00	0.00	13.60
CO3	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00	0.00	13.60
CO4	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00	0.00	13.60
CO5	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00	0.00	13.60

CO6	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO7	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO8	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO9	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO10	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO11	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO12	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																
CO13	0.25	0.68	0.00	0.25	0.68	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	13.60	0.00	0.00
0.00	13.60																

*** Analysis Results for Load Case No. 3 "NESC 250D" - Number of iterations in SAPS 12

Equilibrium Joint Positions and Rotations for Load Case "NESC 250D":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
Right:g	0	0	0	0.0000	0.0000	0.0000	0	13	0
Right:t	0.00497	0.2976	-0.005891	-0.3521	0.0036	-0.0004	0.00497	13.3	125
Right:A1	0.004716	0.2731	-0.005806	-0.3501	0.0036	-0.0004	0.004716	13.27	121
Right:C2	0.004335	0.2368	-0.005624	-0.3424	0.0036	-0.0004	0.004335	13.24	115
Right:A2	0.004083	0.2132	-0.005499	-0.3319	0.0036	-0.0004	0.004083	13.21	111
Right:C3	0.003709	0.1794	-0.005321	-0.3116	0.0035	-0.0004	0.003709	13.18	105
Right:C4	0.003107	0.1287	-0.005036	-0.2668	0.0034	-0.0004	0.003107	13.13	94.99
Right:SW2	0.002735	0.1003	-0.004866	-0.2340	0.0032	-0.0004	0.002735	13.1	88.5
Right:C5	0.002542	0.08645	-0.004775	-0.2174	0.0031	-0.0004	0.002542	13.09	85
Right:cbm	0.002093	0.05728	-0.004561	-0.1695	0.0029	-0.0004	0.002093	13.06	76.41
Right:C6	0.002023	0.05333	-0.00449	-0.1510	0.0028	-0.0004	0.002023	13.05	75
Right:C7	0.001554	0.03677	-0.004015	-0.0451	0.0025	-0.0003	0.001554	13.04	65
Right:X1	0.001466	0.03551	-0.003923	-0.0281	0.0025	-0.0003	0.001466	13.04	63
Right:C8	0.001137	0.03468	-0.003489	0.0058	0.0022	-0.0002	0.001137	13.03	55
Right:C9	0.0007775	0.03584	-0.002957	-0.0035	0.0019	-0.0002	0.0007775	13.04	45
Right:X2	0.0006207	0.03487	-0.002694	-0.0234	0.0017	-0.0001	0.0006207	13.03	40
Right:C10	0.0004801	0.03152	-0.002345	-0.0489	0.0015	-0.0001	0.0004801	13.03	35
Right:C11	0.00025	0.02049	-0.001656	-0.0692	0.0011	-0.0001	0.00025	13.02	25
Right:C12	9.207e-05	0.008804	-0.0009814	-0.0580	0.0007	-0.0000	9.207e-05	13.01	15
Right:C13	1.074e-05	0.001176	-0.000324	-0.0238	0.0002	-0.0000	1.074e-05	13	5
Left:g	0	0	0	0.0000	0.0000	0.0000	0	-13	0
Left:t	0.002325	0.06009	-0.0006977	-0.0162	0.0022	-0.0004	0.002325	-12.94	90
Left:SW1	0.002266	0.05967	-0.0006974	-0.0162	0.0022	-0.0004	0.002266	-12.94	88.5
Left:cbm	0.001798	0.05676	-0.0006401	-0.0089	0.0022	-0.0004	0.001798	-12.94	76.42
Left:X1	0.001293	0.0452	-0.0002857	-0.0481	0.0021	-0.0003	0.001293	-12.95	63
Left:X2	0.0005636	0.02954	-0.000131	-0.0465	0.0015	-0.0001	0.0005636	-12.97	40
V1	0.001301	0.0452	-0.001648	-0.0481	0.0021	-0.0003	0.001301	-11.33	63
V2	0.001458	0.03551	-0.003126	-0.0281	0.0025	-0.0003	0.001458	11.41	63
V3	0.0005683	0.02954	-0.001633	-0.0465	0.0015	-0.0001	0.0005683	-11.12	40
V4	0.0006159	0.03487	-0.001938	-0.0234	0.0017	-0.0001	0.0006159	11.18	40
DA1:O	0.001789	0.05676	-0.0004485	-0.0089	0.0022	-0.0004	0.001789	-14.18	76.42
DA1:A	0.001708	0.05552	-0.08837	0.6671	0.0022	-0.0004	0.001708	-26.18	76.56
DA1:T	0.001703	0.0554	-0.0971	0.6671	0.0022	-0.0004	0.001703	-26.93	76.57
DA2:O	0.002102	0.05728	-0.008225	-0.1695	0.0029	-0.0004	0.002102	14.3	76.41
DA2:A	0.002197	0.0591	-0.1339	-0.8483	0.0029	-0.0004	0.002197	26.3	76.52
DA2:T	0.002203	0.05924	-0.145	-0.8483	0.0029	-0.0004	0.002203	27.05	76.52
Condbm:O	0.001798	0.05676	-0.0006401	-0.0089	0.0022	-0.0004	0.001798	-12.94	76.42
Condbm:c2	0.001944	0.05707	-0.005749	0.0304	0.0025	-0.0008	0.001944	0.05707	76.41
Condbm:E	0.002093	0.05728	-0.004561	-0.1695	0.0029	-0.0004	0.002093	13.06	76.41
CO1:O	0.004975	0.2976	-0.0105	-0.3521	0.0036	-0.0004	0.004975	14.05	125
CO1	0.004977	0.2976	-0.01206	-0.3550	0.0036	-0.0004	0.004977	14.3	125
CO2:O	0.004341	0.2368	-0.0107	-0.3424	0.0036	-0.0004	0.004341	14.09	115
CO2	0.004343	0.2368	-0.01222	-0.3453	0.0036	-0.0004	0.004343	14.34	115
CO3:O	0.003716	0.1794	-0.01048	-0.3116	0.0035	-0.0004	0.003716	14.13	105
CO3	0.003718	0.1794	-0.01187	-0.3145	0.0035	-0.0004	0.003718	14.38	105
CO4:O	0.003114	0.1287	-0.00992	-0.2668	0.0034	-0.0004	0.003114	14.18	94.99
CO4	0.003116	0.1287	-0.01111	-0.2697	0.0034	-0.0004	0.003116	14.43	94.99
CO5:O	0.00255	0.08644	-0.009153	-0.2174	0.0031	-0.0004	0.00255	14.24	84.99
CO5	0.002552	0.08646	-0.01012	-0.2203	0.0031	-0.0004	0.002552	14.49	84.99
CO6:O	0.002032	0.05332	-0.007793	-0.1510	0.0028	-0.0004	0.002032	14.31	74.99

CO6	0.002033	0.05335	-0.008475	-0.1539	0.0028	-0.0004	0.002033	14.56	74.99
CO7:O	0.001561	0.03677	-0.00508	-0.0451	0.0025	-0.0003	0.001561	14.39	64.99
CO7	0.001563	0.03679	-0.0053	-0.0480	0.0025	-0.0003	0.001563	14.64	64.99
CO8:O	0.001143	0.03468	-0.003342	0.0058	0.0022	-0.0002	0.001143	14.49	55
CO8	0.001144	0.0347	-0.00334	0.0029	0.0022	-0.0002	0.001144	14.74	55
CO9:O	0.0007823	0.03584	-0.003051	-0.0035	0.0019	-0.0002	0.0007823	14.59	45
CO9	0.0007831	0.03587	-0.003089	-0.0064	0.0019	-0.0002	0.0007831	14.84	45
CO10:O	0.0004837	0.03152	-0.003756	-0.0489	0.0015	-0.0001	0.0004837	14.68	35
CO10	0.0004842	0.03155	-0.003993	-0.0518	0.0015	-0.0001	0.0004842	14.93	35
CO11:O	0.0002524	0.02049	-0.00377	-0.0692	0.0011	-0.0001	0.0002524	14.77	25
CO11	0.0002528	0.02052	-0.004095	-0.0721	0.0011	-0.0001	0.0002528	15.02	25
CO12:O	9.348e-05	0.008804	-0.002853	-0.0580	0.0007	-0.0000	9.348e-05	14.86	15
CO12	9.367e-05	0.008827	-0.003129	-0.0608	0.0007	-0.0000	9.367e-05	15.11	15
CO13:O	1.12e-05	0.001176	-0.001133	-0.0238	0.0002	-0.0000	1.12e-05	14.95	4.999
CO13	1.126e-05	0.001199	-0.001259	-0.0267	0.0002	-0.0000	1.126e-05	15.2	4.999

Joint Support Reactions for Load Case "NESC 250D":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
Right:g	-0.05	0.0	-12.57	0.0	0.0	-108.13	0.0	0.0	108.85	0.0	299.50	0.0	-2.8	0.0	0.0	0.12	0.0	0.0
Left:g	-0.05	0.0	-7.09	0.0	0.0	-10.36	0.0	0.0	12.56	0.0	199.32	0.0	-2.6	0.0	0.0	0.12	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC 250D":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
Right	Right:t	Origin	0.00	3.57	0.06	-0.07	1.12	-0.00	-0.0	-1.29	0.12	-0.00	-0.07	0.17	0.00	0.00	0.24	0.4	2
Right	Right:A1	End	4.00	3.28	0.06	-0.07	1.62	-0.00	-0.0	-1.29	0.12	-0.00	-0.07	0.22	0.00	0.00	0.29	0.4	2
Right	Right:A1	Origin	4.00	3.28	0.06	-0.07	1.62	-0.00	-0.0	-6.57	0.87	-0.00	-0.35	0.22	0.02	0.00	0.57	0.9	2
Right	Tube 1	End	7.00	3.06	0.05	-0.07	4.25	-0.01	-0.0	-6.57	0.87	-0.00	-0.34	0.54	0.02	0.00	0.88	1.3	2
Right	Tube 1	Origin	7.00	3.06	0.05	-0.07	4.25	-0.01	-0.0	-6.84	0.91	-0.00	-0.35	0.54	0.02	0.00	0.89	1.4	2
Right	Right:C2	End	10.00	2.84	0.05	-0.07	6.98	-0.02	-0.0	-6.84	0.91	-0.00	-0.34	0.82	0.02	0.00	1.16	1.8	2
Right	Right:C2	Origin	10.00	2.84	0.05	-0.07	8.21	-0.02	-0.0	-8.30	1.06	-0.00	-0.41	0.97	0.03	0.00	1.38	2.1	2
Right	Right:A2	End	14.00	2.56	0.05	-0.07	12.43	-0.03	-0.0	-8.30	1.06	-0.00	-0.39	1.33	0.03	0.00	1.72	2.7	2
Right	Right:A2	Origin	14.00	2.56	0.05	-0.07	12.43	-0.03	-0.0	-8.64	1.10	-0.01	-0.41	1.33	0.03	0.00	1.74	2.7	2
Right	Tube 1	End	17.00	2.35	0.05	-0.06	15.73	-0.05	-0.0	-8.64	1.10	-0.01	-0.40	1.57	0.03	0.00	1.97	3.0	2
Right	Tube 1	Origin	17.00	2.35	0.05	-0.06	15.73	-0.05	-0.0	-8.95	1.14	-0.01	-0.41	1.57	0.03	0.00	1.98	3.1	2
Right	Right:C3	End	20.00	2.15	0.04	-0.06	19.14	-0.07	-0.0	-8.95	1.14	-0.01	-0.40	1.80	0.03	0.00	2.19	3.4	2
Right	Right:C3	Origin	20.00	2.15	0.04	-0.06	20.49	-0.07	-0.0	-10.50	1.29	-0.01	-0.47	1.92	0.03	0.00	2.39	3.7	2
Right	Tube 1	End	25.00	1.84	0.04	-0.06	26.95	-0.11	-0.0	-10.50	1.29	-0.01	-0.44	2.28	0.03	0.00	2.72	4.2	2
Right	Tube 1	Origin	25.00	1.84	0.04	-0.06	26.95	-0.11	-0.0	-11.06	1.36	-0.01	-0.47	2.28	0.03	0.00	2.74	4.2	2
Right	Right:C4	End	30.00	1.54	0.04	-0.06	33.75	-0.15	-0.0	-11.06	1.36	-0.01	-0.44	2.58	0.03	0.00	3.03	4.7	2
Right	Right:C4	Origin	30.00	1.54	0.04	-0.06	35.21	-0.15	-0.0	-12.77	1.53	-0.01	-0.51	2.69	0.03	0.00	3.21	4.9	2
Right	SpliceT	End	35.00	1.28	0.03	-0.06	42.86	-0.21	-0.0	-12.77	1.53	-0.01	-0.49	2.98	0.03	0.00	3.47	5.3	2
Right	SpliceT	Origin	35.00	1.28	0.03	-0.06	42.86	-0.21	-0.0	-13.17	1.58	-0.01	-0.42	2.48	0.03	0.00	2.90	4.5	2
Right	Right:SW2	End	36.50	1.20	0.03	-0.06	45.22	-0.23	-0.0	-13.17	1.58	-0.01	-0.41	2.55	0.03	0.00	2.96	4.6	2
Right	Right:SW2	Origin	36.50	1.20	0.03	-0.06	45.22	-0.23	-0.0	-17.03	2.78	-0.01	-0.53	2.55	0.05	0.00	3.08	4.7	2
Right	Right:C5	End	40.00	1.04	0.03	-0.06	54.96	-0.28	-0.0	-17.03	2.78	-0.01	-0.52	2.91	0.04	0.00	3.43	5.3	2
Right	Right:C5	Origin	40.00	1.04	0.03	-0.06	56.54	-0.28	-0.0	-18.73	2.94	-0.02	-0.57	2.99	0.05	0.00	3.56	5.5	2
Right	Tube 2	End	44.29	0.85	0.03	-0.06	69.16	-0.35	-0.0	-18.73	2.94	-0.02	-0.55	3.40	0.05	0.00	3.95	6.1	2
Right	Tube 2	Origin	44.29	0.85	0.03	-0.06	69.16	-0.35	-0.0	-19.39	3.00	-0.02	-0.57	3.40	0.05	0.00	3.97	6.1	2
Right	Right:cbm	End	48.58	0.69	0.03	-0.05	82.05	-0.42	-0.0	-19.39	3.00	-0.02	-0.55	3.75	0.04	0.00	4.30	6.6	2
Right	Right:cbm	Origin	48.58	0.69	0.03	-0.05	183.72	-0.38	-0.1	-47.64	-2.67	-0.01	-1.35	8.39	0.04	0.00	9.74	15.0	2

Right	Right:C6	End	50.00	0.64	0.02	-0.05	179.93	-0.40	-0.1	-47.64	-2.67	-0.01	-1.33	8.03	0.04	0.00	9.36	14.4	2
Right	Right:C6	Origin	50.00	0.64	0.02	-0.05	181.62	-0.40	-0.1	-49.28	-2.55	-0.01	-1.38	8.11	0.04	0.00	9.49	14.6	2
Right	Tube 2	End	55.00	0.51	0.02	-0.05	168.86	-0.46	-0.1	-49.28	-2.55	-0.01	-1.32	6.97	0.04	0.00	8.29	12.8	2
Right	Tube 2	Origin	55.00	0.51	0.02	-0.05	168.86	-0.46	-0.1	-50.11	-2.51	-0.01	-1.35	6.97	0.04	0.00	8.31	12.8	2
Right	Right:C7	End	60.00	0.44	0.02	-0.05	156.32	-0.53	-0.1	-50.11	-2.51	-0.01	-1.30	5.98	0.03	0.00	7.27	11.2	2
Right	Right:C7	Origin	60.00	0.44	0.02	-0.05	158.12	-0.53	-0.1	-51.83	-2.38	-0.02	-1.34	6.04	0.03	0.00	7.38	11.4	2
Right	Right:X1	End	62.00	0.43	0.02	-0.05	153.37	-0.57	-0.1	-51.83	-2.38	-0.02	-1.32	5.69	0.03	0.00	7.01	10.8	2
Right	Right:X1	Origin	62.00	0.43	0.02	-0.05	135.82	-0.57	-0.1	-63.17	-12.59	-0.02	-1.61	5.04	0.17	0.00	6.66	10.2	2
Right	Tube 2	End	66.00	0.41	0.02	-0.04	85.48	-0.64	-0.1	-63.17	-12.59	-0.02	-1.56	3.00	0.16	0.00	4.57	7.0	2
Right	Tube 2	Origin	66.00	0.41	0.02	-0.04	85.48	-0.64	-0.1	-63.89	-12.53	-0.02	-1.58	3.00	0.16	0.00	4.59	7.1	2
Right	Right:C8	End	70.00	0.42	0.01	-0.04	35.36	-0.73	-0.1	-63.89	-12.53	-0.02	-1.54	1.18	0.16	0.00	2.73	4.2	2
Right	Right:C8	Origin	70.00	0.42	0.01	-0.04	37.28	-0.73	-0.1	-65.85	-12.35	-0.02	-1.58	1.24	0.16	0.00	2.84	4.4	2
Right	Tube 2	End	75.00	0.43	0.01	-0.04	-24.49	-0.84	-0.1	-65.85	-12.35	-0.02	-1.53	0.76	0.15	0.00	2.31	3.6	2
Right	Tube 2	Origin	75.00	0.43	0.01	-0.04	-24.49	-0.84	-0.1	-66.81	-12.25	-0.03	-1.55	0.76	0.15	0.00	2.33	3.6	2
Right	Right:C9	End	80.00	0.43	0.01	-0.04	-85.71	-0.97	-0.1	-66.81	-12.25	-0.03	-1.50	2.48	0.15	0.00	3.99	6.1	2
Right	Right:C9	Origin	80.00	0.43	0.01	-0.04	-83.69	-0.97	-0.1	-68.93	-12.03	-0.03	-1.55	2.43	0.14	0.00	3.98	6.1	2
Right	Right:X2	End	85.00	0.42	0.01	-0.03	-143.83	-1.11	-0.1	-68.93	-12.03	-0.03	-1.50	3.90	0.14	0.00	5.41	8.3	2
Right	Right:X2	Origin	85.00	0.42	0.01	-0.03	-188.21	-1.11	-0.1	-93.71	11.31	-0.03	-2.04	5.11	0.13	0.00	7.15	11.0	2
Right	SpliceT	End	88.00	0.40	0.01	-0.03	-154.29	-1.20	-0.1	-93.71	11.31	-0.03	-2.00	4.03	0.13	0.00	6.04	9.3	2
Right	SpliceT	Origin	88.00	0.40	0.01	-0.03	-154.29	-1.20	-0.1	-94.23	11.38	-0.03	-2.02	4.03	0.13	0.00	6.05	9.3	2
Right	Right:C10	End	90.00	0.38	0.01	-0.03	-131.52	-1.27	-0.1	-94.23	11.38	-0.03	-1.99	3.36	0.13	0.00	5.35	8.2	2
Right	Right:C10	Origin	90.00	0.38	0.01	-0.03	-129.39	-1.27	-0.1	-96.10	11.58	-0.03	-2.03	3.30	0.13	0.00	5.34	8.2	2
Right	Tube 3	End	95.00	0.32	0.00	-0.02	-71.49	-1.44	-0.1	-96.10	11.58	-0.03	-1.97	1.72	0.13	0.00	3.70	5.7	2
Right	Tube 3	Origin	95.00	0.32	0.00	-0.02	-71.49	-1.44	-0.1	-97.19	11.71	-0.04	-1.99	1.72	0.13	0.00	3.72	5.7	2
Right	Right:C11	End	100.00	0.25	0.00	-0.02	-12.94	-1.62	-0.1	-97.19	11.71	-0.04	-1.94	0.24	0.34	0.00	2.25	3.5	3
Right	Right:C11	Origin	100.00	0.25	0.00	-0.02	-10.69	-1.62	-0.1	-99.43	11.93	-0.04	-1.98	0.20	0.34	0.00	2.26	3.5	3
Right	Tube 3	End	105.00	0.17	0.00	-0.02	48.95	-1.82	-0.1	-99.43	11.93	-0.04	-1.92	1.06	0.12	0.00	2.99	4.6	2
Right	Tube 3	Origin	105.00	0.17	0.00	-0.02	48.95	-1.82	-0.1	-100.59	12.04	-0.04	-1.95	1.06	0.12	0.00	3.01	4.6	2
Right	Right:C12	End	110.00	0.11	0.00	-0.01	109.16	-2.03	-0.1	-100.59	12.04	-0.04	-1.89	2.22	0.12	0.00	4.12	6.3	2
Right	Right:C12	Origin	110.00	0.11	0.00	-0.01	111.52	-2.03	-0.1	-102.90	12.24	-0.05	-1.94	2.27	0.12	0.00	4.21	6.5	2
Right	Tube 3	End	115.00	0.05	0.00	-0.01	172.72	-2.26	-0.1	-102.90	12.24	-0.05	-1.89	3.32	0.12	0.00	5.21	8.0	2
Right	Tube 3	Origin	115.00	0.05	0.00	-0.01	172.72	-2.26	-0.1	-104.12	12.34	-0.05	-1.91	3.32	0.12	0.00	5.23	8.1	2
Right	Right:C13	End	120.00	0.01	0.00	-0.00	234.41	-2.50	-0.1	-104.12	12.34	-0.05	-1.86	4.27	0.12	0.00	6.14	9.6	2
Right	Right:C13	Origin	120.00	0.01	0.00	-0.00	236.88	-2.50	-0.1	-106.50	12.53	-0.05	-1.90	4.32	0.12	0.00	6.22	9.7	2
Right	Right:g	End	125.00	0.00	0.00	0.00	299.50	-2.76	-0.1	-106.50	12.53	-0.05	-1.85	5.19	0.12	0.00	7.04	11.1	2
Left	Left:t	Origin	0.00	0.72	0.03	-0.01	-0.00	0.00	0.0	-0.11	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
Left	Left:SW1	End	1.50	0.72	0.03	-0.01	0.01	-0.00	0.0	-0.11	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	2
Left	Left:SW1	Origin	1.50	0.72	0.03	-0.01	0.01	-0.00	-0.0	-4.08	1.21	-0.00	-0.13	0.00	0.08	0.00	0.18	0.3	5
Left	Tube 1	End	6.50	0.70	0.02	-0.01	6.05	-0.01	-0.0	-4.08	1.21	-0.00	-0.12	0.31	0.02	0.00	0.43	0.7	2
Left	Tube 1	Origin	6.50	0.70	0.02	-0.01	6.05	-0.01	-0.0	-4.72	1.26	-0.00	-0.14	0.31	0.02	0.00	0.45	0.7	2
Left	Tube 1	End	10.04	0.69	0.02	-0.01	10.52	-0.02	-0.0	-4.72	1.26	-0.00	-0.14	0.51	0.02	0.00	0.65	1.0	2
Left	Tube 1	Origin	10.04	0.69	0.02	-0.01	10.52	-0.02	-0.0	-5.26	1.31	-0.00	-0.15	0.51	0.02	0.00	0.66	1.0	2
Left	Left:cbm	End	13.58	0.68	0.02	-0.01	15.15	-0.03	-0.0	-5.26	1.31	-0.00	-0.15	0.69	0.02	0.00	0.84	1.3	2
Left	Left:cbm	Origin	13.58	0.68	0.02	-0.01	-166.69	-0.08	-0.1	-27.48	18.67	-0.02	-0.78	7.61	0.28	0.00	8.40	12.9	2
Left	Tube 1	End	18.58	0.64	0.02	-0.01	-73.34	-0.15	-0.1	-27.48	18.67	-0.02	-0.75	3.09	0.27	0.00	3.87	5.9	2
Left	Tube 1	Origin	18.58	0.64	0.02	-0.01	-73.34	-0.15	-0.1	-28.22	18.75	-0.02	-0.77	3.09	0.27	0.00	3.89	6.0	2
Left	Tube 1	End	22.79	0.59	0.02	-0.00	5.55	-0.23	-0.1	-28.22	18.75	-0.02	-0.74	0.01	1.00	0.00	1.89	2.9	5
Left	Tube 1	Origin	22.79	0.59	0.02	-0.00	5.55	-0.23	-0.1	-28.94	18.81	-0.02	-0.76	0.01	1.01	0.00	1.91	2.9	5
Left	Left:X1	End	27.00	0.54	0.02	-0.00	84.71	-0.31	-0.1	-28.94	18.81	-0.02	-0.74	3.14	0.25	0.00	3.91	6.0	2
Left	Left:X1	Origin	27.00	0.54	0.02	-0.00	46.76	-0.31	-0.1	-6.37	-4.32	-0.02	-0.16	1.74	0.06	0.00	1.90	2.9	2
Left	Tube 1	End	32.00	0.50	0.01	-0.00	25.18	-0.42	-0.1	-6.37	-4.32	-0.02	-0.16	0.87	0.06	0.00	1.03	1.6	2
Left	Tube 1	Origin	32.00	0.50	0.01	-0.00	25.18	-0.42	-0.1	-7.28	-4.24	-0.02	-0.18	0.87	0.06	0.00	1.06	1.6	2
Left	Tube 1	End	37.00	0.46	0.01	-0.00	3.98	-0.54	-0.1	-7.28	-4.24	-0.02	-0.17	0.05	0.20	0.00	0.41	0.6	4
Left	Tube 1	Origin	37.00	0.46	0.01	-0.00	3.98	-0.54	-0.1	-8.22	-4.16	-0.03	-0.20	0.05	0.19	0.00	0.42	0.6	4
Left	Tube 1	End	42.00	0.42	0.01	-0.00	-16.81	-0.67	-0.1	-8.22	-4.16	-0.03	-0.19	0.51	0.05	0.00	0.70	1.1	2
Left	Tube 1	Origin	42.00	0.42	0.01	-0.00	-16.81	-0.67	-0.1	-9.10	-4.08	-0.03	-0.21	0.51	0.05	0.00	0.72	1.1	2
Left	Tube 1	End	46.00	0.39	0.01	-0.00	-33.14	-0.78	-0.1	-9.10	-4.08	-0.03	-0.20	0.95	0.05	0.00	1.16	1.8	2
Left	Tube 1	Origin	46.00	0.39	0.01	-0.00	-33.14	-0.78	-0.1	-9.90	-4.01	-0.03	-0.22	0.95	0.05	0.00	1.18	1.8	2

Left	Left:X2	End	50.00	0.35	0.01	-0.00	-49.19	-0.90	-0.1	-9.90	-4.01	-0.03	-0.22	1.34	0.05	0.00	1.56	2.4	2
Left	Left:X2	Origin	50.00	0.35	0.01	-0.00	-68.01	-0.90	-0.1	-0.45	6.33	-0.03	-0.01	1.85	0.07	0.00	1.86	2.9	2
Left	SpliceT	End	53.00	0.32	0.01	-0.00	-49.02	-1.00	-0.1	-0.45	6.33	-0.03	-0.01	1.29	0.07	0.00	1.30	2.0	2
Left	SpliceT	Origin	53.00	0.32	0.01	-0.00	-49.02	-1.00	-0.1	-1.29	6.40	-0.03	-0.03	1.29	0.07	0.00	1.32	2.0	2
Left	Tube 2	End	58.00	0.26	0.00	-0.00	-17.01	-1.17	-0.1	-1.29	6.40	-0.03	-0.03	0.33	0.19	0.00	0.49	0.7	3
Left	Tube 2	Origin	58.00	0.26	0.00	-0.00	-17.01	-1.17	-0.1	-2.36	6.49	-0.04	-0.05	0.33	0.19	0.00	0.51	0.8	3
Left	Tube 2	End	63.00	0.20	0.00	-0.00	15.46	-1.35	-0.1	-2.36	6.49	-0.04	-0.05	0.13	0.26	0.00	0.48	0.7	4
Left	Tube 2	Origin	63.00	0.20	0.00	-0.00	15.46	-1.35	-0.1	-3.47	6.59	-0.04	-0.07	0.13	0.26	0.00	0.50	0.8	4
Left	Tube 2	End	68.00	0.14	0.00	-0.00	48.41	-1.55	-0.1	-3.47	6.59	-0.04	-0.07	1.07	0.07	0.00	1.14	1.8	2
Left	Tube 2	Origin	68.00	0.14	0.00	-0.00	48.41	-1.55	-0.1	-4.62	6.69	-0.04	-0.09	1.07	0.07	0.00	1.16	1.8	2
Left	Tube 2	End	73.00	0.09	0.00	-0.00	81.85	-1.76	-0.1	-4.62	6.69	-0.04	-0.09	1.70	0.07	0.00	1.79	2.8	2
Left	Tube 2	Origin	73.00	0.09	0.00	-0.00	81.85	-1.76	-0.1	-5.79	6.79	-0.04	-0.11	1.70	0.07	0.00	1.82	2.8	2
Left	Tube 2	End	78.00	0.05	0.00	-0.00	115.78	-1.98	-0.1	-5.79	6.79	-0.04	-0.11	2.28	0.07	0.00	2.39	3.7	2
Left	Tube 2	Origin	78.00	0.05	0.00	-0.00	115.78	-1.98	-0.1	-7.00	6.89	-0.05	-0.13	2.28	0.07	0.00	2.41	3.7	2
Left	Tube 2	End	83.00	0.02	0.00	-0.00	150.23	-2.22	-0.1	-7.00	6.89	-0.05	-0.13	2.80	0.07	0.00	2.93	4.5	2
Left	Tube 2	Origin	83.00	0.02	0.00	-0.00	150.23	-2.22	-0.1	-8.05	6.98	-0.05	-0.15	2.80	0.07	0.00	2.95	4.6	2
Left	Tube 2	End	86.50	0.00	0.00	-0.00	174.64	-2.39	-0.1	-8.05	6.98	-0.05	-0.14	3.14	0.07	0.00	3.28	5.1	2
Left	Tube 2	Origin	86.50	0.00	0.00	-0.00	174.64	-2.39	-0.1	-8.93	7.05	-0.05	-0.16	3.14	0.07	0.00	3.30	5.2	2
Left	Left:g	End	90.00	0.00	0.00	0.00	199.32	-2.57	-0.1	-8.93	7.05	-0.05	-0.16	3.46	0.06	0.00	3.61	5.7	2

Summary of Brace Forces and Usages for Load Case "NESC 250D":

Brace Label	Forces (kips)	Allowable Compression (kips)	Allowable Tension (kips)	Usage %
X1	-33.15	174.84	180.78	18.96
X2	14.67	174.84	180.78	8.12

Detailed Tubular Davit Arm Usages for Load Case "NESC 250D":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
DA1	DA1:O	Origin	0.00	0.68	0.02	-0.01	-188.51	0.01	0.0	-4.08	15.90	-0.00	-0.21	28.87	0.66	0.00	29.11	44.8	2
DA1	#DA1:0	End	5.00	0.68	0.02	-0.22	-109.03	0.00	0.0	-4.08	15.90	-0.00	-0.23	20.68	0.73	0.00	20.96	32.2	2
DA1	#DA1:0	Origin	5.00	0.68	0.02	-0.22	-109.03	0.00	0.0	-4.00	15.66	-0.00	-0.23	20.68	0.72	0.00	20.95	32.2	2
DA1	#DA1:1	End	8.50	0.67	0.02	-0.59	-54.20	0.00	0.0	-4.00	15.66	-0.00	-0.25	12.13	0.78	0.00	12.45	19.2	2
DA1	#DA1:1	Origin	8.50	0.67	0.02	-0.59	-54.20	0.00	-0.0	-3.96	15.48	-0.00	-0.25	12.13	0.77	0.00	12.44	19.1	2
DA1	DA1:A	End	12.00	0.67	0.02	-1.06	-0.01	0.00	-0.0	-3.96	15.48	-0.00	-0.27	0.00	2.19	0.00	3.80	5.8	4
DA1	DA1:A	Origin	12.00	0.67	0.02	-1.06	-0.01	0.00	0.0	-0.00	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA1	DA1:T	End	12.75	0.66	0.02	-1.17	0.00	-0.00	0.0	-0.00	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA2	DA2:O	Origin	0.00	0.69	0.03	-0.10	-189.50	-0.01	-0.0	3.62	16.01	0.00	0.19	29.02	0.66	0.00	29.23	45.0	2
DA2	#DA2:0	End	5.00	0.69	0.03	-0.50	-109.46	-0.01	-0.0	3.62	16.01	0.00	0.21	20.77	0.74	0.00	21.01	32.3	2
DA2	#DA2:0	Origin	5.00	0.69	0.03	-0.50	-109.46	-0.01	-0.0	3.71	15.73	0.00	0.21	20.77	0.72	0.00	21.02	32.3	2
DA2	#DA2:1	End	8.50	0.70	0.03	-1.00	-54.39	-0.00	-0.0	3.71	15.73	0.00	0.23	12.17	0.79	0.00	12.47	19.2	2
DA2	#DA2:1	Origin	8.50	0.70	0.03	-1.00	-54.39	-0.00	-0.0	3.75	15.53	0.00	0.23	12.17	0.78	0.00	12.47	19.2	2
DA2	DA2:A	End	12.00	0.71	0.03	-1.61	-0.01	-0.00	-0.0	3.75	15.53	0.00	0.25	0.00	2.19	0.00	3.81	5.9	4
DA2	DA2:A	Origin	12.00	0.71	0.03	-1.61	-0.01	-0.00	-0.0	-0.00	0.02	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4
DA2	DA2:T	End	12.75	0.71	0.03	-1.74	-0.00	-0.00	-0.0	-0.00	0.02	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	4

Detailed Tubular X-Arm Usages for Load Case "NESC 250D":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.

Condbm	Condbm:O	Origin	0.00	0.68	0.02	-0.01	-26.63	-0.12	0.0	13.46	5.26	0.01	0.69	4.09	0.22	0.00	4.80	7.4	2
Condbm	#sCondbm:0	End	5.00	0.68	0.02	-0.04	-0.34	-0.07	0.0	13.46	5.26	0.01	0.69	0.01	0.56	0.00	1.21	1.9	4
Condbm	#sCondbm:0	Origin	5.00	0.68	0.02	-0.04	-0.34	-0.07	0.0	13.46	4.96	0.01	0.69	0.01	0.53	0.00	1.16	1.8	4
Condbm	#sCondbm:1	End	9.00	0.68	0.02	-0.07	19.50	-0.04	0.0	13.46	4.96	0.01	0.69	2.99	0.20	0.00	3.70	5.7	2
Condbm	#sCondbm:1	Origin	9.00	0.68	0.02	-0.07	19.50	-0.04	0.0	13.46	4.70	0.01	0.69	2.99	0.19	0.00	3.70	5.7	2
Condbm	Condbm:c2	End	13.00	0.68	0.02	-0.07	38.32	0.00	0.0	13.46	4.70	0.01	0.69	5.87	0.19	0.00	6.57	10.1	2
Condbm	Condbm:c2	Origin	13.00	0.68	0.02	-0.07	38.32	0.00	0.0	9.64	-10.96	0.01	0.50	5.87	0.45	0.00	6.41	9.9	2
Condbm	#sCondbm:2	End	18.00	0.69	0.02	-0.01	-16.51	0.04	0.0	9.64	-10.96	0.01	0.50	2.53	0.45	0.00	3.13	4.8	2
Condbm	#sCondbm:2	Origin	18.00	0.69	0.02	-0.01	-16.51	0.04	0.0	9.63	-11.27	0.01	0.50	2.53	0.47	0.00	3.13	4.8	2
Condbm	#sCondbm:3	End	22.00	0.69	0.02	0.01	-61.58	0.08	0.0	9.63	-11.27	0.01	0.50	9.44	0.47	0.00	9.97	15.3	2
Condbm	#sCondbm:3	Origin	22.00	0.69	0.02	0.01	-61.58	0.08	0.0	9.61	-11.55	0.01	0.49	9.44	0.48	0.00	9.97	15.3	2
Condbm	Condbm:E	End	26.00	0.69	0.03	-0.05	-107.78	0.11	0.0	9.61	-11.55	0.01	0.49	16.51	0.48	0.00	17.03	26.2	2

Summary of Clamp Capacities and Usages for Load Case "NESC 250D":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
T	5.019	15.00	15.00	33.46	0.00	0.00	0.00	33.46
FC	0.000	15.00	15.00	0.00	0.00	0.00	0.00	0.00

Summary of Suspension Capacities and Usages for Load Case "NESC 250D":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
sw1	3.690	50.00	50.00	7.38	0.00	0.00	0.00	7.38
sw2	3.690	50.00	50.00	7.38	0.00	0.00	0.00	7.38
c1	15.850	50.00	50.00	31.70	0.00	0.00	0.00	31.70
c2	15.850	50.00	50.00	31.70	0.00	0.00	0.00	31.70
c3	15.850	50.00	50.00	31.70	0.00	0.00	0.00	31.70

Summary of Post Capacities and Usages for Load Case "NESC 250D":

Post Label	Vertical Force (kips)	Tran. Force (kips)	Long. Force (kips)	Cant. Force (kips)	Axial Force (kips)	Vert. Down Capacity (kips)	Vert. Up Capacity (kips)	Trans. Neg. Capacity (kips)	Trans. Pos. Capacity (kips)	Long. Capacity (kips)	Cant. Capacity (kips)	Comp. Capacity (kips)	Tens. Capacity (kips)	Insul. S.F.	Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Max. Usage %
CO1	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00	0.00
CO2	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00	0.00
CO3	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00	0.00
CO4	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00	0.00
CO5	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00	0.00

CO6	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO7	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO8	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO9	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO10	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO11	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO12	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																
CO13	1.12	0.10	0.00	1.12	0.10	0.00	0.00	0.00	0.00	0.00	5.00	10.00	5.00	1.00	22.46	0.00	0.00
0.00	22.46																

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Right	29.21	NESC 250C	78.6	13	17221.8
Left	22.01	NESC 250C	1.7	21	14604.7

Base Plate Results by Bend Line:

Pole Label	Load Case	Bend Line #	Start X (ft)	Start Y (ft)	End X (ft)	End Y (ft)	Length (in)	Bending Stress (ksi)	Bolt Mom. Sum (ft-k)	# Bolts Acting	Bolt Max Load (kips)	Min Plate Thickness (in)	Actual Thickness (in)	Usage %
Right	NESC 250B	1	1.809	1.265	0.191	2.199	22.430	13.370	21.087	2	53.914	1.164	2.250	26.74
Right	NESC 250B	2	2.199	0.191	1.265	1.809	22.430	12.741	20.095	2	53.914	1.136	2.250	25.48
Right	NESC 250B	3	1.265	-1.809	2.199	-0.191	22.430	4.550	7.175	2	-22.340	0.679	2.250	9.10
Right	NESC 250B	4	0.191	-2.199	1.809	-1.265	22.430	5.160	8.138	2	-22.340	0.723	2.250	10.32
Right	NESC 250B	5	-1.809	-1.265	-0.191	-2.199	22.430	4.903	7.733	2	-21.431	0.705	2.250	9.81
Right	NESC 250B	6	-2.199	-0.191	-1.265	-1.809	22.430	4.274	6.741	2	-21.431	0.658	2.250	8.55
Right	NESC 250B	7	-1.265	1.809	-2.199	0.191	22.430	13.017	20.529	2	54.823	1.148	2.250	26.03
Right	NESC 250B	8	-0.191	2.199	-1.809	1.265	22.430	13.627	21.492	2	54.823	1.175	2.250	27.25
Right	NESC 250B	9	1.439	1.758	-0.367	2.242	22.430	1.099	1.733	1	53.914	0.334	2.250	2.20
Right	NESC 250B	10	2.125	0.803	0.803	2.125	22.430	13.516	21.317	2	53.914	1.170	2.250	27.03
Right	NESC 250B	11	2.242	-0.367	1.758	1.439	22.430	0.943	1.487	1	46.263	0.309	2.250	1.89
Right	NESC 250B	12	1.758	-1.439	2.242	0.367	22.430	0.304	0.479	1	-14.912	0.175	2.250	0.61
Right	NESC 250B	13	0.803	-2.125	2.125	-0.803	22.430	5.026	7.927	2	-22.340	0.713	2.250	10.05
Right	NESC 250B	14	-0.367	-2.242	1.439	-1.758	22.430	0.455	0.718	1	-22.340	0.215	2.250	0.91
Right	NESC 250B	15	-1.439	-1.758	0.367	-2.242	22.430	0.437	0.689	1	-21.431	0.210	2.250	0.87
Right	NESC 250B	16	-2.125	-0.803	-0.803	-2.125	22.430	4.751	7.492	2	-21.431	0.694	2.250	9.50
Right	NESC 250B	17	-2.242	0.367	-1.758	-1.439	22.430	0.281	0.443	1	-13.780	0.169	2.250	0.56
Right	NESC 250B	18	-1.758	1.439	-2.242	-0.367	22.430	0.966	1.523	1	47.396	0.313	2.250	1.93
Right	NESC 250B	19	-0.803	2.125	-2.125	0.803	22.430	13.792	21.751	2	54.823	1.182	2.250	27.58
Right	NESC 250B	20	0.367	2.242	-1.439	1.758	22.430	1.117	1.762	1	54.823	0.336	2.250	2.23
Right	NESC 250C	1	1.809	1.265	0.191	2.199	22.430	22.500	35.485	2	91.240	1.509	2.250	45.00
Right	NESC 250C	2	2.199	0.191	1.265	1.809	22.430	21.318	33.621	2	91.240	1.469	2.250	42.64
Right	NESC 250C	3	1.265	-1.809	2.199	-0.191	22.430	11.581	18.265	2	-53.846	1.083	2.250	23.16
Right	NESC 250C	4	0.191	-2.199	1.809	-1.265	22.430	12.758	20.121	2	-53.846	1.137	2.250	25.52
Right	NESC 250C	5	-1.809	-1.265	-0.191	-2.199	22.430	12.692	20.016	2	-53.611	1.134	2.250	25.38
Right	NESC 250C	6	-2.199	-0.191	-1.265	-1.809	22.430	11.510	18.152	2	-53.611	1.080	2.250	23.02
Right	NESC 250C	7	-1.265	1.809	-2.199	0.191	22.430	21.389	33.733	2	91.475	1.472	2.250	42.78
Right	NESC 250C	8	-0.191	2.199	-1.809	1.265	22.430	22.566	35.590	2	91.475	1.512	2.250	45.13
Right	NESC 250C	9	1.439	1.758	-0.367	2.242	22.430	1.859	2.933	1	91.240	0.434	2.250	3.72
Right	NESC 250C	10	2.125	0.803	0.803	2.125	22.430	22.682	35.772	2	91.240	1.515	2.250	45.36
Right	NESC 250C	11	2.242	-0.367	1.758	1.439	22.430	1.567	2.471	1	76.866	0.398	2.250	3.13
Right	NESC 250C	12	1.758	-1.439	2.242	0.367	22.430	0.806	1.271	1	-39.531	0.286	2.250	1.61
Right	NESC 250C	13	0.803	-2.125	2.125	-0.803	22.430	12.599	19.870	2	-53.846	1.129	2.250	25.20
Right	NESC 250C	14	-0.367	-2.242	1.439	-1.758	22.430	1.097	1.731	1	-53.846	0.333	2.250	2.19
Right	NESC 250C	15	-1.439	-1.758	0.367	-2.242	22.430	1.093	1.723	1	-53.611	0.333	2.250	2.19
Right	NESC 250C	16	-2.125	-0.803	-0.803	-2.125	22.430	12.528	19.757	2	-53.611	1.126	2.250	25.06
Right	NESC 250C	17	-2.242	0.367	-1.758	-1.439	22.430	0.800	1.261	1	-39.237	0.285	2.250	1.60
Right	NESC 250C	18	-1.758	1.439	-2.242	-0.367	22.430	1.572	2.480	1	77.160	0.399	2.250	3.14
Right	NESC 250C	19	-0.803	2.125	-2.125	0.803	22.430	22.753	35.884	2	91.475	1.518	2.250	45.51
Right	NESC 250C	20	0.367	2.242	-1.439	1.758	22.430	1.864	2.940	1	91.475	0.434	2.250	3.73

Right	NESC 250D	1	1.809	1.265	0.191	2.199	22.430	9.616	15.166	2	38.630	0.987	2.250	19.23
Right	NESC 250D	2	2.199	0.191	1.265	1.809	22.430	9.199	14.508	2	38.630	0.965	2.250	18.40
Right	NESC 250D	3	1.265	-1.809	2.199	-0.191	22.430	2.332	3.677	2	-12.222	0.486	2.250	4.66
Right	NESC 250D	4	0.191	-2.199	1.809	-1.265	22.430	2.741	4.323	2	-12.222	0.527	2.250	5.48
Right	NESC 250D	5	-1.809	-1.265	-0.191	-2.199	22.430	2.635	4.156	2	-11.846	0.517	2.250	5.27
Right	NESC 250D	6	-2.199	-0.191	-1.265	-1.809	22.430	2.218	3.498	2	-11.846	0.474	2.250	4.44
Right	NESC 250D	7	-1.265	1.809	-2.199	0.191	22.430	9.313	14.688	2	39.006	0.971	2.250	18.63
Right	NESC 250D	8	-0.191	2.199	-1.809	1.265	22.430	9.723	15.334	2	39.006	0.992	2.250	19.45
Right	NESC 250D	9	1.439	1.758	-0.367	2.242	22.430	0.787	1.242	1	38.630	0.282	2.250	1.57
Right	NESC 250D	10	2.125	0.803	0.803	2.125	22.430	9.740	15.360	2	38.630	0.993	2.250	19.48
Right	NESC 250D	11	2.242	-0.367	1.758	1.439	22.430	0.684	1.079	1	33.556	0.263	2.250	1.37
Right	NESC 250D	12	1.758	-1.439	2.242	0.367	22.430	0.148	0.233	1	-7.240	0.122	2.250	0.30
Right	NESC 250D	13	0.803	-2.125	2.125	-0.803	22.430	2.626	4.141	2	-12.222	0.516	2.250	5.25
Right	NESC 250D	14	-0.367	-2.242	1.439	-1.758	22.430	0.249	0.393	1	-12.222	0.159	2.250	0.50
Right	NESC 250D	15	-1.439	-1.758	0.367	-2.242	22.430	0.241	0.381	1	-11.846	0.156	2.250	0.48
Right	NESC 250D	16	-2.125	-0.803	-0.803	-2.125	22.430	2.512	3.962	2	-11.846	0.504	2.250	5.02
Right	NESC 250D	17	-2.242	0.367	-1.758	-1.439	22.430	0.138	0.218	1	-6.772	0.118	2.250	0.28
Right	NESC 250D	18	-1.758	1.439	-2.242	-0.367	22.430	0.693	1.094	1	34.024	0.265	2.250	1.39
Right	NESC 250D	19	-0.803	2.125	-2.125	0.803	22.430	9.854	15.540	2	39.006	0.999	2.250	19.71
Right	NESC 250D	20	0.367	2.242	-1.439	1.758	22.430	0.795	1.254	1	39.006	0.284	2.250	1.59
Left	NESC 250B	1	1.809	1.265	0.191	2.199	22.430	6.804	10.731	2	28.018	0.830	2.250	13.61
Left	NESC 250B	2	2.199	0.191	1.265	1.809	22.430	6.344	10.006	2	28.018	0.801	2.250	12.69
Left	NESC 250B	3	1.265	-1.809	2.199	-0.191	22.430	6.240	9.841	2	-27.480	0.795	2.250	12.48
Left	NESC 250B	4	0.191	-2.199	1.809	-1.265	22.430	6.683	10.539	2	-27.480	0.823	2.250	13.37
Left	NESC 250B	5	-1.809	-1.265	-0.191	-2.199	22.430	6.442	10.159	2	-26.627	0.808	2.250	12.88
Left	NESC 250B	6	-2.199	-0.191	-1.265	-1.809	22.430	5.982	9.434	2	-26.627	0.778	2.250	11.96
Left	NESC 250B	7	-1.265	1.809	-2.199	0.191	22.430	6.603	10.413	2	28.871	0.818	2.250	13.21
Left	NESC 250B	8	-0.191	2.199	-1.809	1.265	22.430	7.045	11.111	2	28.871	0.845	2.250	14.09
Left	NESC 250B	9	1.439	1.758	-0.367	2.242	22.430	0.571	0.901	1	28.018	0.240	2.250	1.14
Left	NESC 250B	10	2.125	0.803	0.803	2.125	22.430	6.806	10.734	2	28.018	0.830	2.250	13.61
Left	NESC 250B	11	2.242	-0.367	1.758	1.439	22.430	0.457	0.721	1	22.426	0.215	2.250	0.91
Left	NESC 250B	12	1.758	-1.439	2.242	0.367	22.430	0.450	0.710	1	-22.098	0.214	2.250	0.90
Left	NESC 250B	13	0.803	-2.125	2.125	-0.803	22.430	6.689	10.550	2	-27.480	0.823	2.250	13.38
Left	NESC 250B	14	-0.367	-2.242	1.439	-1.758	22.430	0.560	0.883	1	-27.480	0.238	2.250	1.12
Left	NESC 250B	15	-1.439	-1.758	0.367	-2.242	22.430	0.543	0.856	1	-26.627	0.234	2.250	1.09
Left	NESC 250B	16	-2.125	-0.803	-0.803	-2.125	22.430	6.431	10.142	2	-26.627	0.807	2.250	12.86
Left	NESC 250B	17	-2.242	0.367	-1.758	-1.439	22.430	0.429	0.676	1	-21.035	0.208	2.250	0.86
Left	NESC 250B	18	-1.758	1.439	-2.242	-0.367	22.430	0.479	0.755	1	23.489	0.220	2.250	0.96
Left	NESC 250B	19	-0.803	2.125	-2.125	0.803	22.430	7.065	11.142	2	28.871	0.846	2.250	14.13
Left	NESC 250B	20	0.367	2.242	-1.439	1.758	22.430	0.588	0.928	1	28.871	0.244	2.250	1.18
Left	NESC 250C	1	1.809	1.265	0.191	2.199	22.430	17.618	27.785	2	71.708	1.336	2.250	35.24
Left	NESC 250C	2	2.199	0.191	1.265	1.809	22.430	16.628	26.225	2	71.708	1.298	2.250	33.26
Left	NESC 250C	3	1.265	-1.809	2.199	-0.191	22.430	10.898	17.188	2	-49.686	1.050	2.250	21.80
Left	NESC 250C	4	0.191	-2.199	1.809	-1.265	22.430	11.883	18.740	2	-49.686	1.097	2.250	23.77
Left	NESC 250C	5	-1.809	-1.265	-0.191	-2.199	22.430	11.815	18.634	2	-49.447	1.094	2.250	23.63
Left	NESC 250C	6	-2.199	-0.191	-1.265	-1.809	22.430	10.826	17.074	2	-49.447	1.047	2.250	21.65
Left	NESC 250C	7	-1.265	1.809	-2.199	0.191	22.430	16.701	26.339	2	71.947	1.300	2.250	33.40
Left	NESC 250C	8	-0.191	2.199	-1.809	1.265	22.430	17.685	27.892	2	71.947	1.338	2.250	35.37
Left	NESC 250C	9	1.439	1.758	-0.367	2.242	22.430	1.461	2.305	1	71.708	0.385	2.250	2.92
Left	NESC 250C	10	2.125	0.803	0.803	2.125	22.430	17.727	27.957	2	71.708	1.340	2.250	35.45
Left	NESC 250C	11	2.242	-0.367	1.758	1.439	22.430	1.216	1.918	1	59.676	0.351	2.250	2.43
Left	NESC 250C	12	1.758	-1.439	2.242	0.367	22.430	0.769	1.212	1	-37.713	0.279	2.250	1.54
Left	NESC 250C	13	0.803	-2.125	2.125	-0.803	22.430	11.792	18.598	2	-49.686	1.093	2.250	23.58
Left	NESC 250C	14	-0.367	-2.242	1.439	-1.758	22.430	1.013	1.597	1	-49.686	0.320	2.250	2.03
Left	NESC 250C	15	-1.439	-1.758	0.367	-2.242	22.430	1.008	1.589	1	-49.447	0.319	2.250	2.02
Left	NESC 250C	16	-2.125	-0.803	-0.803	-2.125	22.430	11.720	18.483	2	-49.447	1.089	2.250	23.44

Left	NESC 250C	17	-2.242	0.367	-1.758	-1.439	22.430	0.763	1.203	1	-37.415	0.278	2.250	1.53
Left	NESC 250C	18	-1.758	1.439	-2.242	-0.367	22.430	1.222	1.928	1	59.974	0.352	2.250	2.44
Left	NESC 250C	19	-0.803	2.125	-2.125	0.803	22.430	17.800	28.072	2	71.947	1.342	2.250	35.60
Left	NESC 250C	20	0.367	2.242	-1.439	1.758	22.430	1.466	2.312	1	71.947	0.385	2.250	2.93
Left	NESC 250D	1	1.809	1.265	0.191	2.199	22.430	4.368	6.889	2	17.917	0.665	2.250	8.74
Left	NESC 250D	2	2.199	0.191	1.265	1.809	22.430	4.089	6.449	2	17.917	0.643	2.250	8.18
Left	NESC 250D	3	1.265	-1.809	2.199	-0.191	22.430	3.584	5.653	2	-15.924	0.602	2.250	7.17
Left	NESC 250D	4	0.191	-2.199	1.809	-1.265	22.430	3.856	6.081	2	-15.924	0.625	2.250	7.71
Left	NESC 250D	5	-1.809	-1.265	-0.191	-2.199	22.430	3.757	5.925	2	-15.574	0.617	2.250	7.51
Left	NESC 250D	6	-2.199	-0.191	-1.265	-1.809	22.430	3.478	5.486	2	-15.574	0.593	2.250	6.96
Left	NESC 250D	7	-1.265	1.809	-2.199	0.191	22.430	4.195	6.616	2	18.267	0.652	2.250	8.39
Left	NESC 250D	8	-0.191	2.199	-1.809	1.265	22.430	4.467	7.045	2	18.267	0.673	2.250	8.93
Left	NESC 250D	9	1.439	1.758	-0.367	2.242	22.430	0.365	0.576	1	17.917	0.192	2.250	0.73
Left	NESC 250D	10	2.125	0.803	0.803	2.125	22.430	4.378	6.904	2	17.917	0.666	2.250	8.76
Left	NESC 250D	11	2.242	-0.367	1.758	1.439	22.430	0.296	0.467	1	14.528	0.173	2.250	0.59
Left	NESC 250D	12	1.758	-1.439	2.242	0.367	22.430	0.257	0.406	1	-12.621	0.161	2.250	0.51
Left	NESC 250D	13	0.803	-2.125	2.125	-0.803	22.430	3.851	6.074	2	-15.924	0.624	2.250	7.70
Left	NESC 250D	14	-0.367	-2.242	1.439	-1.758	22.430	0.325	0.512	1	-15.924	0.181	2.250	0.65
Left	NESC 250D	15	-1.439	-1.758	0.367	-2.242	22.430	0.317	0.501	1	-15.574	0.179	2.250	0.63
Left	NESC 250D	16	-2.125	-0.803	-0.803	-2.125	22.430	3.745	5.907	2	-15.574	0.616	2.250	7.49
Left	NESC 250D	17	-2.242	0.367	-1.758	-1.439	22.430	0.248	0.392	1	-12.185	0.159	2.250	0.50
Left	NESC 250D	18	-1.758	1.439	-2.242	-0.367	22.430	0.305	0.481	1	14.964	0.176	2.250	0.61
Left	NESC 250D	19	-0.803	2.125	-2.125	0.803	22.430	4.484	7.071	2	18.267	0.674	2.250	8.97
Left	NESC 250D	20	0.367	2.242	-1.439	1.758	22.430	0.372	0.587	1	18.267	0.194	2.250	0.74

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
DA1	44.78	NESC 250D	76.5	1	734.7
DA2	44.98	NESC 250D	76.5	1	734.7

Summary of Tubular X-Arm Usages:

Tubular X-Arm Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
Condbm	44.96	NESC 250C	76.4	6	1717.8

Summary of Brace Usages:

Brace Label	Maximum Usage %	Load Case	Weight (lbs)
X1	48.27	NESC 250C	612.3
X2	34.13	NESC 250C	612.3

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC 250B	44.86	DA2	Tubular Davit

NESC 250C	48.27	X1	Brace
NESC 250D	44.98	DA2	Tubular Davit

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Steel Pole Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	18.78	Right	75.7	14
NESC 250C	29.21	Right	78.6	13
NESC 250D	14.99	Right	75.7	14

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC 250B	Right	19	22.430	129.934	449.121	-6.671	13.792	21.751	2	54.823	1.182	27.58
NESC 250C	Right	19	22.430	150.516	854.528	-1.728	22.753	35.884	2	91.475	1.518	45.51
NESC 250D	Right	19	22.430	107.136	299.504	-2.759	9.854	15.540	2	39.006	0.999	19.71
NESC 250B	Left	19	22.430	5.564	326.870	-6.262	7.065	11.142	2	28.871	0.846	14.13
NESC 250C	Left	19	22.430	89.044	714.984	-1.757	17.800	28.072	2	71.947	1.342	35.60
NESC 250D	Left	19	22.430	9.375	199.316	-2.569	4.484	7.071	2	18.267	0.674	8.97

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Tubular Davit Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	44.86	DA2	76.5	1
NESC 250C	20.45	DA2	76.5	1
NESC 250D	44.98	DA2	76.5	1

Summary of Tubular X-Arm Usages by Load Case:

Load Case	Maximum Tubular X-Arm Usage %	Label	Height AGL (ft)	Segment Number
NESC 250B	33.11	Condbm	76.4	6
NESC 250C	44.96	Condbm	76.4	6
NESC 250D	26.20	Condbm	76.4	6

Summary of Brace Usages by Load Case:

Load Case	Maximum Usage %	Brace Label
NESC 250B	26.74	X1
NESC 250C	48.27	X1
NESC 250D	18.96	X1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)

T	Clamp	41.19	NESC 250B	0.0	
FC	Clamp	0.00	NESC 250B	0.0	
sw1	Suspension	7.38	NESC 250D	100.0	
sw2	Suspension	7.38	NESC 250D	100.0	
c1	Suspension	31.79	NESC 250B	100.0	
c2	Suspension	31.79	NESC 250B	100.0	
c3	Suspension	31.79	NESC 250B	100.0	
CO1	Post	22.46	NESC 250D	1.0	
CO2	Post	22.46	NESC 250D	1.0	
CO3	Post	22.46	NESC 250D	1.0	
CO4	Post	22.46	NESC 250D	1.0	
CO5	Post	22.46	NESC 250D	1.0	
CO6	Post	22.46	NESC 250D	1.0	
CO7	Post	22.46	NESC 250D	1.0	
CO8	Post	22.46	NESC 250D	1.0	
CO9	Post	22.46	NESC 250D	1.0	
CO10	Post	22.46	NESC 250D	1.0	
CO11	Post	22.46	NESC 250D	1.0	
CO12	Post	22.46	NESC 250D	1.0	
CO13	Post	22.46	NESC 250D	1.0	

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC 250B	T	Clamp	Right:A1	0.000	1.543	5.982	6.178
NESC 250B	FC	Clamp	Right:A2	0.000	0.000	-0.000	0.000
NESC 250B	sw1	Suspension	Left:SW1	0.000	1.382	2.455	2.817
NESC 250B	sw2	Suspension	Right:SW2	0.000	1.382	2.455	2.817
NESC 250B	c1	Suspension	DA1:A	0.000	4.920	15.116	15.897
NESC 250B	c2	Suspension	Condbm:c2	0.000	4.920	15.116	15.897
NESC 250B	c3	Suspension	DA2:A	0.000	4.920	15.116	15.897
NESC 250B	CO1	Post	Right:t	-0.000	0.225	0.920	0.947
NESC 250B	CO2	Post	Right:C2	-0.000	0.225	0.920	0.947
NESC 250B	CO3	Post	Right:C3	-0.000	0.225	0.920	0.947
NESC 250B	CO4	Post	Right:C4	-0.000	0.225	0.920	0.947
NESC 250B	CO5	Post	Right:C5	-0.000	0.225	0.920	0.947
NESC 250B	CO6	Post	Right:C6	-0.000	0.225	0.920	0.947
NESC 250B	CO7	Post	Right:C7	-0.000	0.225	0.920	0.947
NESC 250B	CO8	Post	Right:C8	-0.000	0.225	0.920	0.947
NESC 250B	CO9	Post	Right:C9	-0.000	0.225	0.920	0.947
NESC 250B	CO10	Post	Right:C10	-0.000	0.225	0.920	0.947
NESC 250B	CO11	Post	Right:C11	-0.000	0.225	0.920	0.947
NESC 250B	CO12	Post	Right:C12	-0.000	0.225	0.920	0.947
NESC 250B	CO13	Post	Right:C13	-0.000	0.225	0.920	0.947
NESC 250C	T	Clamp	Right:A1	0.000	4.859	3.046	5.735
NESC 250C	FC	Clamp	Right:A2	0.000	0.000	-0.000	0.000
NESC 250C	sw1	Suspension	Left:SW1	0.000	1.772	0.638	1.883
NESC 250C	sw2	Suspension	Right:SW2	0.000	1.772	0.638	1.883
NESC 250C	c1	Suspension	DA1:A	0.000	9.102	6.516	11.194
NESC 250C	c2	Suspension	Condbm:c2	0.000	9.102	6.516	11.194
NESC 250C	c3	Suspension	DA2:A	0.000	9.102	6.516	11.194
NESC 250C	CO1	Post	Right:t	-0.000	0.680	0.250	0.724
NESC 250C	CO2	Post	Right:C2	-0.000	0.680	0.250	0.724
NESC 250C	CO3	Post	Right:C3	-0.000	0.680	0.250	0.724

NESC 250C	CO4	Post	Right:C4	-0.000	0.680	0.250	0.724
NESC 250C	CO5	Post	Right:C5	-0.000	0.680	0.250	0.724
NESC 250C	CO6	Post	Right:C6	-0.000	0.680	0.250	0.724
NESC 250C	CO7	Post	Right:C7	-0.000	0.680	0.250	0.724
NESC 250C	CO8	Post	Right:C8	-0.000	0.680	0.250	0.724
NESC 250C	CO9	Post	Right:C9	-0.000	0.680	0.250	0.724
NESC 250C	CO10	Post	Right:C10	-0.000	0.680	0.250	0.724
NESC 250C	CO11	Post	Right:C11	-0.000	0.680	0.250	0.724
NESC 250C	CO12	Post	Right:C12	-0.000	0.680	0.250	0.724
NESC 250C	CO13	Post	Right:C13	-0.000	0.680	0.250	0.724
NESC 250D	T	Clamp	Right:A1	0.000	0.679	4.973	5.019
NESC 250D	FC	Clamp	Right:A2	0.000	0.000	-0.000	0.000
NESC 250D	sw1	Suspension	Left:SW1	0.000	1.155	3.505	3.690
NESC 250D	sw2	Suspension	Right:SW2	0.000	1.155	3.505	3.690
NESC 250D	c1	Suspension	DA1:A	0.000	3.829	15.381	15.850
NESC 250D	c2	Suspension	Condbm:c2	0.000	3.829	15.381	15.850
NESC 250D	c3	Suspension	DA2:A	0.000	3.829	15.381	15.850
NESC 250D	CO1	Post	Right:t	-0.000	0.095	1.123	1.127
NESC 250D	CO2	Post	Right:C2	-0.000	0.095	1.123	1.127
NESC 250D	CO3	Post	Right:C3	-0.000	0.095	1.123	1.127
NESC 250D	CO4	Post	Right:C4	-0.000	0.095	1.123	1.127
NESC 250D	CO5	Post	Right:C5	-0.000	0.095	1.123	1.127
NESC 250D	CO6	Post	Right:C6	-0.000	0.095	1.123	1.127
NESC 250D	CO7	Post	Right:C7	-0.000	0.095	1.123	1.127
NESC 250D	CO8	Post	Right:C8	-0.000	0.095	1.123	1.127
NESC 250D	CO9	Post	Right:C9	-0.000	0.095	1.123	1.127
NESC 250D	CO10	Post	Right:C10	-0.000	0.095	1.123	1.127
NESC 250D	CO11	Post	Right:C11	-0.000	0.095	1.123	1.127
NESC 250D	CO12	Post	Right:C12	-0.000	0.095	1.123	1.127
NESC 250D	CO13	Post	Right:C13	-0.000	0.095	1.123	1.127

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC 250B	21.992	0.000	68.200	2004.065	0.000	0.000
NESC 250C	44.549	0.000	27.120	3654.155	0.000	0.000
NESC 250D	15.711	0.000	72.725	1524.281	0.000	0.000

*** Weight of structure (lbs):

Weight of Braces:	1224.6
Weight of Tubular Davit Arms:	1469.4
Weight of Tubular X-Arms:	1717.8
Weight of Steel Poles:	31826.5
Weight of Suspensions:	500.0
Weight of Posts:	13.0
Total:	36751.3

*** End of Report

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Branford, CT 06405 F: (203) 488-8587

Subject: Anchor Bolt Analysis Pole #29317

Location: Manchester, CT

Rev. 0: 12/1/21

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 21005.27

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force =	$T_{Max} := 92 \cdot kips$	(User Input from PLS-Pole)
Maximum Shear Force at Base =	$V_{base} := 37 \cdot kips$	(User Input from PLS-Pole)

Anchor Bolt Data:

Use AST MA615 Grade 75

Number of Anchor Bolts =	$N := 8$	(User Input)
Bolt "Column" Distance =	$l := 3.0 \cdot in$	(User Input)
Bolt Ultimate Strength =	$F_u := 100 \cdot ksi$	(User Input)
Bolt Yeild Strength=	$F_y := 75 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Anchor Bolts =	$D := 2.25 \cdot in$	(User Input)
Threads per Inch =	$n := 4.5$	(User Input)

Anchor Bolt Analysis:

Stress Area of Bolt = $A_s := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 3.248 \cdot in^2$

Maximum Shear Force per Bolt = $V_{Max} := \frac{V_{base}}{N} = 4.6 \times 10^3 lbf$

Shear Stress per Bolt = $f_v := \frac{V_{Max}}{A_s} = 1.4 \times 10^3 psi$

Tensile Stress Permitted = $F_t := 0.75 \cdot F_u = 75 \cdot ksi$

Shear Stress Permitted = $F_v := 0.35 F_y = 26.25 \cdot ksi$

Permitted Axial Tensile Stress in Conjuction with Shear = $F_{tv} := F_t \cdot \sqrt{1 - \left(\frac{f_v}{F_v}\right)^2} = 74.89 \cdot ksi$

Bolt Tension % of Capacity = $\frac{T_{Max}}{F_{tv} \cdot A_s} = 37.83 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{F_{tv} \cdot A_s} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

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Subject:	Flange Bolts and Flangeplate Analysis
Location:	Structure #29317 Manchester, CT
Rev. 1: 1/3/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21005.27

Flange Bolt and Flange Plate Analysis:

@ 90-ft

Input Data:

Tower Reactions:

Overturning Moment =	OM := 244·ft·kips	(User Input)
Shear Force =	Shear := 9.8·kips	(User Input)
Axial Force =	Axial := 6.7·kips	(User Input)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 24	(User Input)
Diameter of Bolt Circle =	D_{bc} := 30.75·in	(User Input)
Bolt Minimum Tensile Strength =	F_{ub} := 120·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 1.00·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

Use AST MA588 Grade 50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1.75·in	(User Input)
Flange Plate Diameter =	D_{bp} := 33.5·in	(User Input)
Outer Pole Diameter =	D_{pole} := 26.36·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 15.375 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 3.98 \cdot in$ $d_7 = 14.85 \cdot in$

$d_2 = 7.69 \cdot in$ $d_8 = 13.32 \cdot in$

$d_3 = 10.87 \cdot in$ $d_9 = 10.87 \cdot in$

$d_4 = 13.32 \cdot in$ $d_{10} = 7.69 \cdot in$

$d_5 = 14.85 \cdot in$ $d_{11} = 3.98 \cdot in$

$d_6 = 15.38 \cdot in$ $d_{12} = 0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 13.18 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 1.67 \cdot in$

$MA_2 = 0.00 \cdot in$ $MA_8 = 0.14 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.14 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 1.67 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 2.20 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 16.5 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 2.837 \times 10^3 \cdot in^2$

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

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

Check Flange Bolts:

Maximum Shear Stress = $V_{Max} := \frac{Shear}{N \cdot A_g} = 0.5 \cdot ksi$

Permitted Shear Stress = $F_v := \left(0.35 \cdot F_{ub}\right) = 42 \cdot ksi$

Condition1 = $Condition1 := if\left(V_{Max} \le F_v, "OK", "Overstressed"\right)$ $\frac{V_{Max}}{F_v} = 1.24 \cdot \%$

Condition1 = "OK"

Maximum Tensile Stress = $T_{Max} := \frac{\left(OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N}\right)}{A_n} = 25.7 \cdot ksi$

Permitted Tensile Stress = $F_t := \left(0.75 \cdot F_{ub}\right) = 90 \cdot ksi$

Condition2 = $Condition2 := if\left(\frac{T_{Max}}{F_t} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_t} = 28.60 \cdot \%$

Condition2 = "OK"

Permitted Tensile Stress with Shear = $F_{t.v} := F_t \cdot \sqrt{1 - \left(\frac{V_{Max}}{F_v}\right)^2} = 90 \cdot ksi$

Condition3 = $Condition3 := if\left(\frac{T_{Max}}{F_{t.v}} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_{t.v}} = 28.60 \cdot \%$

Condition3 = "OK"

Flange Plate Analysis:

Force from Bolts =

$$C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$$

$C_1 = 4.4 \cdot kips$ $C_7 = 15.6 \cdot kips$

$C_2 = 8.2 \cdot kips$ $C_8 = 14.0 \cdot kips$

$C_3 = 11.5 \cdot kips$ $C_9 = 11.5 \cdot kips$

$C_4 = 14.0 \cdot kips$ $C_{10} = 8.2 \cdot kips$

$C_5 = 15.6 \cdot kips$ $C_{11} = 4.4 \cdot kips$

$C_6 = 16.1 \cdot kips$ $C_{12} = 0.3 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^2\right)} = 10.8 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 0.9 \cdot Fy_{bp} = 45 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 24.1 \cdot \%$$

Condition1 =

$$Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$$

Condition1 = "Ok"

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Subject:	Flange Bolts and Flangeplate Analysis
Location:	Structure #29317 Manchester, CT
Rev. 1: 1/3/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21005.27

Flange Bolt and Flange Plate Analysis:

@37-ft

Input Data:

Tower Reactions:

Overturning Moment =	OM := 390·ft·kips	(User Input)
Shear Force =	Shear := 30.1·kips	(User Input)
Axial Force =	Axial := 143.0·kips	(User Input)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 28	(User Input)
Diameter of Bolt Circle =	D_{bc} := 43.75·in	(User Input)
Bolt Minimum Tensile Strength =	F_{ub} := 120·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 1.00·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

Use AST MA588 Grade 50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1.5·in	(User Input)
Flange Plate Diameter =	D_{bp} := 46.5·in	(User Input)
Outer Pole Diameter =	D_{pole} := 39.16·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 21.875 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 4.87 \cdot in$ $d_7 = 21.87 \cdot in$

$d_2 = 9.49 \cdot in$ $d_8 = 21.33 \cdot in$

$d_3 = 13.64 \cdot in$ $d_9 = 19.71 \cdot in$

$d_4 = 17.10 \cdot in$ $d_{10} = 17.10 \cdot in$

$d_5 = 19.71 \cdot in$ $d_{11} = 13.64 \cdot in$

$d_6 = 21.33 \cdot in$ $d_{12} = 9.49 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 19.58 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 2.29 \cdot in$

$MA_2 = 0.00 \cdot in$ $MA_8 = 1.75 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_9 = 0.13 \cdot in$

$MA_4 = 0.00 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.13 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 1.75 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 20.1 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 6.699 \times 10^3 \cdot in^2$

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

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

Check Flange Bolts:

Maximum Shear Stress = $V_{Max} := \frac{Shear}{N \cdot A_g} = 1.4 \cdot ksi$

Permitted Shear Stress = $F_v := \left(0.35 \cdot F_{ub}\right) = 42 \cdot ksi$

Condition1 = $Condition1 := if\left(V_{Max} \le F_v, "OK", "Overstressed"\right)$ $\frac{V_{Max}}{F_v} = 3.26 \cdot \%$

Condition1 = "OK"

Maximum Tensile Stress = $T_{Max} := \frac{\left(OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N}\right)}{A_n} = 16.8 \cdot ksi$

Permitted Tensile Stress = $F_t := \left(0.75 \cdot F_{ub}\right) = 90 \cdot ksi$

Condition2 = $Condition2 := if\left(\frac{T_{Max}}{F_t} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_t} = 18.66 \cdot \%$

Condition2 = "OK"

Permitted Tensile Stress with Shear = $F_{t.v} := F_t \cdot \sqrt{1 - \left(\frac{V_{Max}}{F_v}\right)^2} = 90 \cdot ksi$

Condition3 = $Condition3 := if\left(\frac{T_{Max}}{F_{t.v}} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_{t.v}} = 18.67 \cdot \%$

Condition3 = "OK"

Flange Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 8.5 \cdot kips$ $C_7 = 20.4 \cdot kips$

$C_2 = 11.7 \cdot kips$ $C_8 = 20.0 \cdot kips$

$C_3 = 14.6 \cdot kips$ $C_9 = 18.9 \cdot kips$

$C_4 = 17.1 \cdot kips$ $C_{10} = 17.1 \cdot kips$

$C_5 = 18.9 \cdot kips$ $C_{11} = 14.6 \cdot kips$

$C_6 = 20.0 \cdot kips$ $C_{12} = 11.7 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^2\right)} = 16.2 \cdot ksi$$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 45 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 35.9 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Condition1 = "Ok"

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 1 - Site Information

Site ID: CTHA836A
Status: Draft
Version: 1
Project Type: Sprint Retain
Approved: Not Approved
Approved By: Not Approved
Last Modified: 11/3/2021 1:34:15 PM
Last Modified By: Venu.Jaini@T-Mobile.com

Site Name: CTHA836A
Site Class: Self Support Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Not Specified

Latitude: 41.74310555
Longitude: -72.53492777
Address: 39 Steeplechase Dr
City, State: Manchester, CT
Region: NORTHEAST

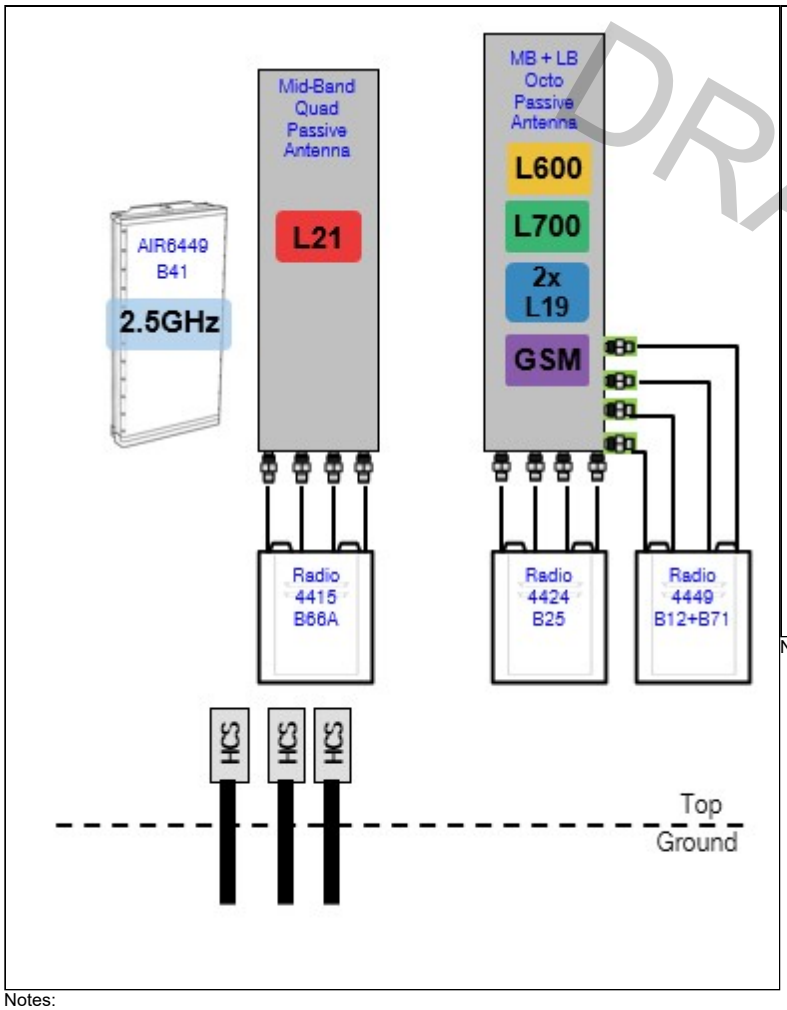
RAN Template: 67E998E 6160			AL Template: 67D998E_1OP (Not Preferred)	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 24	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

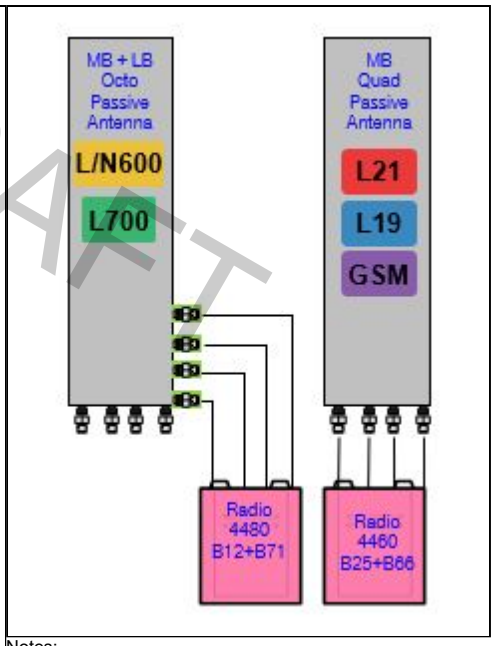
Section 3 - Proposed Template Images

67D5A998C_1xAIR+1xQP+1xOP.jpg



Notes:

67E998E.JPG



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 5 - RAN Equipment

Existing RAN Equipment

----- This section is intentionally blank. -----

Proposed RAN Equipment

Template: 67E998E 6160

Enclosure	1	2	3	4
Enclosure Type	Enclosure 6160	RBS 6601	Ancillary Equipment (Ericsson)	B160
Baseband	BB 6648 (L700, L600, N600); BB 6648 (L2100, L1900)	DUG20 (G1900)		
Hybrid Cable System			Ericsson Hybrid Trunk 6/24 4AWG 100m **(x 2)**	
Transport System	CSR IXRe V2 (Gen2)			

RAN Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 6 - A&L Equipment

Existing Template: Custom
Proposed Template: 67D998E_1OP (Not Preferred)

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	50				50	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	170				170	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	300				300	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 7 - Power Systems Equipment

Existing Power Systems Equipment
----- This section is intentionally blank. -----

	Proposed Power Systems Equipment
Enclosure	1
Enclosure Type	Enclosure 6160

VV-65A-R1

4-port sector antenna, 4x 1695–2690 MHz, 65° HPBW, 1x RET,The two high band arrays utilize a common tilt.

- The RET interface comprises one pair of AISG input/output ports

General Specifications

Antenna Type	Sector
Band	Single band
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	PVC, UV resistant
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, total	4

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
Input Voltage	10–30 Vdc
Internal RET	High band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0

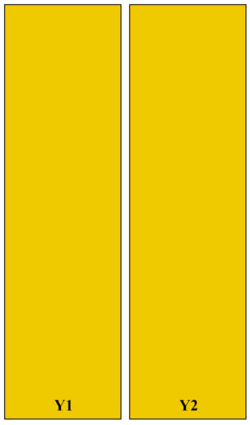
Dimensions

Width	307 mm | 12.087 in
Depth	118 mm | 4.646 in
Length	1390 mm | 54.724 in

VV-65A-R1

Net Weight, without mounting kit	10.8 kg | 23.81 lb

Array Layout



Array ID	Frequency (MHz)	RF Connector	HPBW	RET (SRET)	AISG No.	AISG RET UID
Y1	1695-2690	1 - 2	65°	1	AISG1	CPxxxxxxxxxxxxxxxY1
Y2	1695-2690	3 - 4	65°			

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2690 MHz
Polarization	±45°
Total Input Power, maximum	400 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2500**	**2490–2690**

PRODUCT DATASHEET

APXVAALL24_43-U-NA20

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600, 700, 800, AWS, PCS & BRS applications.

- **24 Inch Width For Easier Zoning**
- **Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality**
- **Superior elevation pattern performance across the entire electrical down tilt range**
- **Includes three AISG RET motors - Includes 0.5m AISG jumper for optional daisy chain of two high band RET motors for one single AISG point of high band tilt control.**
- **Low band arrays driven by a single RET motor**

Technical Features

LOW BAND LEFT ARRAY (617-894 MHZ) [R1]

Frequency Band	MHz	617-698	698-806	806-894
Gain Typical	dBi	15.5	16.1	16.2
Gain Over All Tilts	dBi	15.2 +/- .3	15.6 +/- .5	15.8 +/- .4
Horizontal Beamwidth @3dB	Deg	65 +/-3	64 +/-2	62 +/-3
Vertical Beamwidth @3dB	Deg	9.9 +/- .7	8.6 +/- .7	7.6 +/-.4
Electrical Downtilt Range	Deg	2 to 12		
Upper Side Lobe Suppression Peak to +20	dB	15	14	14
Front-to-Back, at +/-30°, Copolar	dB	25	25	29
Cross Polar Discrimination (XPD) @ Boresight	dB	18	18	17
Cross Polar Discrimination (XPD) @ +/-60	dB	5	5	6
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	400		

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

HIGH BAND RIGHT ARRAY (1695-2690 MHZ) [Y2]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200	2200-2490	2490-2690
Gain Typical	dBi	17.7	18.1	18.7	18.5	18.0
Gain Over All Tilts	dBi	17.1 +/- .6	17.6 +/- .5	18 +/- .7	17.9 +/- .6	17.4 +/- .6
Horizontal Beamwidth @3dB	Deg	67 +/- 5	64 +/- 5	65 +/- 5	62 +/- 7	60 +/- 9
Vertical Beamwidth @3dB	Deg	5.7 +/- .5	5.2 +/- .3	4.7 +/- .6	4.2 +/- .3	4.2 +/- .3
Electrical Downtilt Range	Deg	2 to 12				
Upper Side Lobe Suppression Peak to +20	dB	15	15	14	14	13
Front-to-Back, at +/-30°, Copolar	dB	27	28	26	23	21
Cross Polar Discrimination (XPD) @ Boresight	dB	21	17	14	16	18
Cross Polar Discrimination (XPD) @ +/-60	dB	10	8	7	4	1
3rd Order PIM 2 x 43dBm	dBc	-153				
VSWR	-	1.5:1				
Cross Polar Isolation	dB	25				
Maximum Effective Power per Port	Watt	300				

ELECTRICAL SPECIFICATIONS

Impedance	Ohm	50.0
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	2436 x 609 x 215 (95.9 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	55.7 (122.8)
Weight (Mounting Hardware only)	kg (lb)	12.3 (27.1)
Packing size- HxWxD	mm (in)	2565 x 735 x 390 (101 x 28.9 x 15.4)
Shipping Weight	kg (lb)	77.9 (171.7)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Grounding type		DC Grounded
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1428.0
Wind Load @Rated Wind Side	N	434.0
Wind Load @Rated Wind Rear	N	1544.0
Environmental		ETSI 300-019-2-4 Class 4.1E

Product Specifications

COMMSCOPE®

POWERED BY ANDREW®

ATSBT-TOP-FM-4G

Teletilt® Top Smart Bias Tee

- Injects AISG power and control signals onto a coaxial cable line
- Reduces cable and site lease costs by eliminating the need for AISG home run cables
- AISG 1.1 and 2.0 compliant
- Operates at 10-30 Vdc
- Weatherproof AISG connectors
- Intuitive schematics simplify and ensure proper installation
- Enhanced lightning protection plus grounding stud for additional surge protection
- 7-16 DIN female connector (BTS)
- 7-16 DIN male connector (ANT)

General Specifications

Smart Bias Tee Type	10–30 V Top
Brand	Teletilt®
Operating Frequency Band	694 – 2690 MHz

Electrical Specifications

EU Certification	CE
Protocol	AISG 1.1 | AISG 2.0
Antenna Interface Signal	dc Blocked | RF
BTS Interface Signal	AISG data | dc | RF
Interface Protocol Signal	Data | dc
Voltage Range	10–30 Vdc
VSWR | Return Loss	1.17:1 | 22 dB, typical
Power Consumption, maximum	0.6 W
RF Power, maximum	250 W @ 1850 MHz 500 W @ 850 MHz
Impedance	50 ohm
Insertion Loss, typical	0.1 dB
3rd Order IMD	-158.0 dBc (relative to carrier)
3rd Order IMD Test Method	Two +43 dBm carriers
Electromagnetic Compatibility (EMC)	CFR 47 Part 15, Subpart B, Class B | EN 55022, Class B | ICES-003 Issue 4 CAN/CSA-CEI/IEC CISPR 22:02

Mechanical Specifications

Antenna Interface	7-16 DIN Male
BTS Interface	7-16 DIN Female
AISG Input Connector	8-pin DIN Female
Color	Silver
Grounding Lug Thread Size	M8
Material Type	Aluminum
Lightning Surge Capability	5 times @ -3 kA 5 times @ 3 kA

Product Specifications

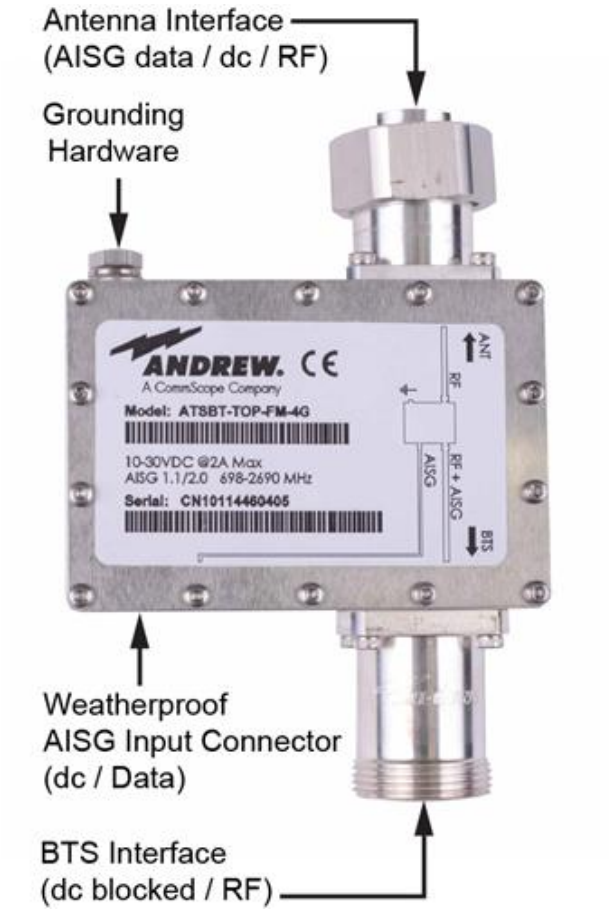
ATSBT-TOP-FM-4G

Lightning Surge Capability Test Method	IEC 61000-4-5, Level X
Lightning Surge Capability Waveform	1.2/50 voltage and 8/20 current combination waveform

Environmental Specifications

Ingress Protection Test Method	IEC 60529:2001, IP66
Operating Temperature	-40 °C to +70 °C (-40 °F to +158 °F)

Interface Port Drawing



Dimensions

Width	94.0 mm | 3.7 in
Depth	50.0 mm | 2.0 in
Height	143.00 mm | 5.63 in
Net Weight	0.8 kg | 1.8 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

January 24, 2022

Eric Breun
Transcend Wireless
10 Industrial Ave Suite 3
Mahwah NJ 07430

RE: T-Mobile Antenna Site CTHA836A, Steeplechase Drive, Manchester CT, Eversource Structure 29317

Dear Mr. Breun:

Based on our reviews of the site drawings, the structural analysis and foundation review provided by Centek Engineering, along with a third-party review performed by Paul J. Ford and Company, we accept the proposed modification.

Please work with Christopher Gelinas of Eversource Real Estate to process the site lease amendment. Please do not hesitate to contact us with questions or concerns. Christopher can be contacted at 860-665-2008, and I can be contacted at (203) 623-0409.

Sincerely,

Richard Badon

Richard Badon
Transmission Line Engineering

Ref: 2022-0111 - CTHA836A Structural Analysis Rev2 (21005.27)
2022-0124_21005.27 CTHA836A_CT33XC538 - Rev3 CDs (S&S)

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTHA836A

39 Steeplechase Drive
Manchester, Connecticut 06040

December 30, 2021

EBI Project Number: 6221008011

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.34%**

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

December 30, 2021

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

Emissions Analysis for Site: CTHA836A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **39 Steeplechase Drive** in **Manchester, 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 39 Steeplechase Drive in Manchester, 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. 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.

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 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.

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

8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna 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.

9) The antennas used in this modeling are the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. 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.

10) The antenna mounting height centerline of the proposed antennas is 121 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A1 MPE %:	**2.69%**	Antenna B1 MPE %:	**2.69%**	Antenna C1 MPE %:	**2.69%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	13,446.73	ERP (W):	13,446.73	ERP (W):	13,446.73
Antenna A2 MPE %:	**3.66%**	Antenna B2 MPE %:	**3.66%**	Antenna C2 MPE %:	**3.66%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	6.34%
no additional carriers	N/A
Site Total MPE % :	6.34%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.34%
T-Mobile Sector B Total:	6.34%
T-Mobile Sector C Total:	6.34%
Site Total MPE % :	6.34%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	121.0	3.22	600 MHz LTE	400	0.80%
T-Mobile 600 MHz NR	1	1577.94	121.0	4.29	600 MHz NR	400	1.07%
T-Mobile 700 MHz LTE	2	695.22	121.0	3.78	700 MHz LTE	467	0.81%
T-Mobile 1900 MHz GSM	4	1076.77	121.0	11.71	1900 MHz GSM	1000	1.17%
T-Mobile 1900 MHz LTE	2	2153.53	121.0	11.71	1900 MHz LTE	1000	1.17%
T-Mobile 2100 MHz LTE	2	2416.30	121.0	13.14	2100 MHz LTE	1000	1.31%
						Total:	**6.34%**

• 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:	6.34%
Sector B:	6.34%
Sector C:	6.34%
T-Mobile Maximum MPE % (Sector A):	6.34%
Site Total:	6.34%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.34%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

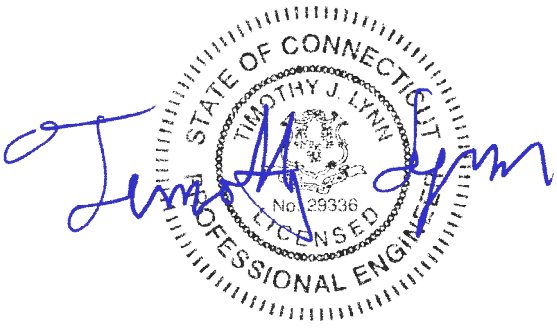
T-Mobile Site Ref: CTHA836A

39 Steeplechase Drive
Manchester, CT

CENTEK Project No. 21005.27

Date: January 27, 2022

Max Stress Ratio = 52%



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

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- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 – CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT

SECTION 3 – REFERENCE MATERIALS (NOT INCLUDED WITHIN REPORT)

- RF DATA SHEET, DATED 11/3/2021

CENTEK engineering

Centered on Solutions℠

January 27, 2022

Mr. Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CTHA836A
39 Steeplechase Drive
Manchester, CT 06040

Centek Project No. 21005.27

Dear Mr. Richers,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the proposed mount, consisting of one (1) ±13-ft low profile platform w/ handrail (SitePro P/N: RMQLP-496-HK) to support the equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

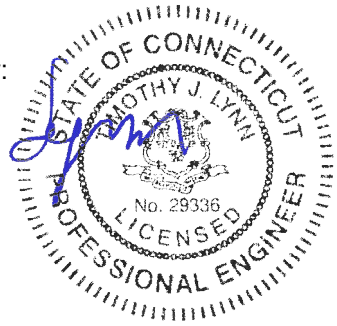
- T-Mobile:
  Three (3) RFS APXVAALL24_43-U-NA20 panel antennas, three (3) Commscope VV-65A-R1 panel antennas and three (3) Andrew ATSBT-TOP-FF-4G Bias-T mounted on the proposed mount with a RAD center elevation of 121-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 97 mph for Manchester as required in Appendix N of the 2018 Connecticut State Building Code.

Based on our review of the installation, it is our opinion that the subject antenna mount has sufficient capacity to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer



CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: TIA-222-G Loads

Location: Manchester, CT

Rev. 0: 1/26/22

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 21005.27

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed $V := 97$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Pole (User Input)

Structure Category = $SC := III$ (User Input)

Exposure Category = $Exp := C$ (User Input)

Structure Height = $h := 125$ ft (User Input)

Height to Center of Antennas = $z_{Ant} := 121$ ft (User Input)

Radial Ice Thickness = $t_i := 1.00$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 1.1$ (User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.95$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1.15$$

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$$

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1.25$$

$$K_{iz} := \left(\frac{z_{Ant}}{33}\right)^{0.1} = 1.139$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.847$$

Velocity Pressure Coefficient Antennas =

$$Kz_{Ant} := 2.01\left(\left(\frac{z_{Ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.317$$

Velocity Pressure w/o Ice Antennas =

$$qz_{Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V^2 \cdot I_{Wind} = 34.669$$

Velocity Pressure with Ice Antennas =

$$qz_{ice.Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V_i^2 \cdot I_{Wind} = 9.212$$

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	TIA-222-G Loads
Location:	Manchester, CT
Rev. 0: 1/26/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21005.27

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXVAALL24-43		
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 =	$WT_{ant} := 150$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 772$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.7$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 273$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 20.9$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 269$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 10$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 129$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 150$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 2 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 754$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 754$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Commscope VV-65A-R1		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 54.7$	in	(User Input)
Antenna Width =	$W_{ant} := 12.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 30$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.5$		
Antenna Force Coefficient =	$Ca_{ant} = 1.29$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.6$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 226$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.7$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 86$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 7.5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 98$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 4.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 56$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 30$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3045$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 8017$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 260$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 260$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	ATSBT-TOP-FM4G Bias Tee		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 5.63$	in	(User Input)
Antenna Width =	$W_{ant} := 3.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.5$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 7$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 0.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 4$	lbs

Wind Load (with ice)

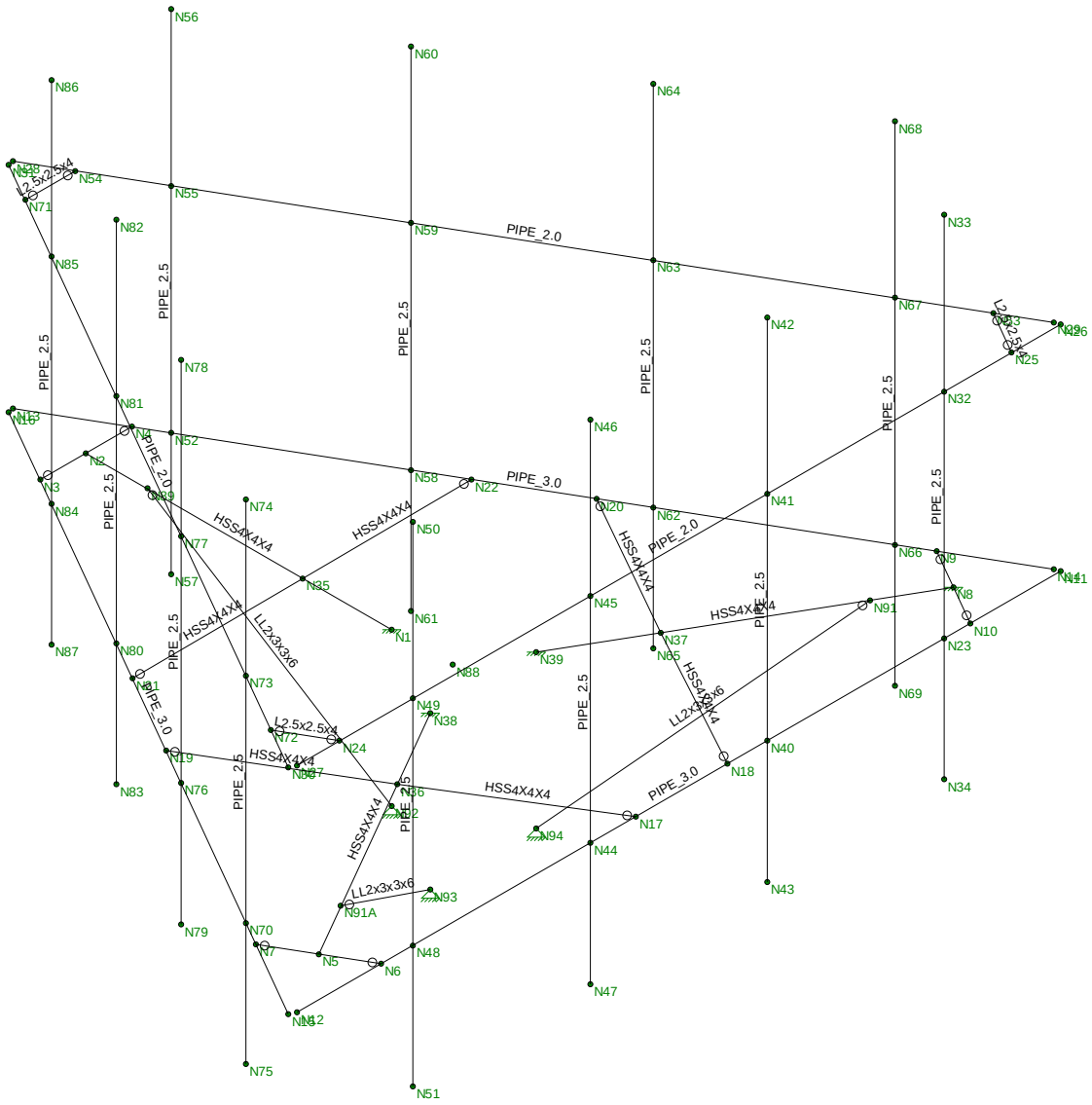
Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 0.7$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 9$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 0.6$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 7$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 2$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 42$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 777$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 25$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 25$	lbs



Envelope Only Solution

Centek		
TJL	CTHA836A	Jan 27, 2022 at 10:05 AM
21005.27	Member Framing	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): LRFD
Adjust Stiffness?	No
RISAConnection Code	AISC 13th(360-05): 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?	No
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 Gr B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Outrigger	HSS4X4X4	Beam	HSS Pipe	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
2	Horz Pipe	PIPE_3.0	Beam	Pipe	A53 Gr B	Typical	2.07	2.85	2.85	5.69
3	Antenna Pipe	PIPE_2.5	Beam	Pipe	A53 Gr B	Typical	1.61	1.45	1.45	2.89
4	Handrail	PIPE_2.0	Beam	Pipe	A53 Gr B	Typical	1.02	.627	.627	1.25
5	Support	HSS4X4X4	Beam	HSS Pipe	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
6	Handrail Corner	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	Double Angle Supports	LL2x3x3x6	Beam	Double Angle (3/8 Gap)	A36 Gr.36	Typical	1.83	4.92	.61	.024

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	Outrigger	5	Segment	Segment	Segment	Segment	Segm...				Lateral
2	M2	Outrigger	5	Segment	Segment	Segment	Segment	Segm...				Lateral
3	M3	Outrigger	5	Segment	Segment	Segment	Segment	Segm...				Lateral
4	M4	Horz Pipe	12.5	Segment		Lbyy						Lateral
5	M5	Horz Pipe	12.475	Segment		Lbyy						Lateral
6	M6	Horz Pipe	12.5	Segment		Lbyy						Lateral
7	M10	Support	2.786			Lbyy						Lateral
8	M11	Support	2.837			Lbyy						Lateral
9	M12	Support	2.786			Lbyy						Lateral
10	M13	Handrail	12.5			Lbyy						Lateral
11	M14	Handrail	12.475			Lbyy						Lateral
12	M15	Handrail	12.5			Lbyy						Lateral
13	M16	Antenna Pipe	8			Lbyy						Lateral
14	M17	Support	2.811			Lbyy						Lateral
15	M18	Support	2.761			Lbyy						Lateral
16	M19	Support	2.736			Lbyy						Lateral
17	M20	Antenna Pipe	8			Lbyy						Lateral
18	M21	Antenna Pipe	8			Lbyy						Lateral
19	M22	Antenna Pipe	8			Lbyy						Lateral
20	M23	Antenna Pipe	8			Lbyy						Lateral
21	M24	Antenna Pipe	8			Lbyy						Lateral
22	M25	Antenna Pipe	8			Lbyy						Lateral
23	M26	Antenna Pipe	8			Lbyy						Lateral
24	M27	Antenna Pipe	8			Lbyy						Lateral
25	M28	Antenna Pipe	8			Lbyy						Lateral
26	M29	Antenna Pipe	8			Lbyy						Lateral
27	M30	Antenna Pipe	8			Lbyy						Lateral
28	M31	Handrail Corner	.821			Lbyy						Lateral
29	M32	Handrail Corner	.821			Lbyy						Lateral
30	M33	Handrail Corner	.821			Lbyy						Lateral
31	M34	Double Angle Supp...	4.717			Lbyy						Lateral
32	M35	Double Angle Supp...	4.717			Lbyy						Lateral
33	M36	Double Angle Supp...	4.717			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	N1	N2			Outrigger	Beam	HSS Pipe	A500 Gr.46	Typical
2	M2	N38	N5			Outrigger	Beam	HSS Pipe	A500 Gr.46	Typical
3	M3	N39	N8			Outrigger	Beam	HSS Pipe	A500 Gr.46	Typical
4	M4	N16	N15			Horz Pipe	Beam	Pipe	A53 Gr B	Typical
5	M5	N13	N14			Horz Pipe	Beam	Pipe	A53 Gr B	Typical
6	M6	N12	N11			Horz Pipe	Beam	Pipe	A53 Gr B	Typical
7	M7	N9	N10			RIGID	None	None	RIGID	Typical
8	M8	N7	N6			RIGID	None	None	RIGID	Typical
9	M9	N3	N4			RIGID	None	None	RIGID	Typical
10	M10	N22	N35			Support	Beam	HSS Pipe	A500 Gr.46	Typical
11	M11	N36	N17			Support	Beam	HSS Pipe	A500 Gr.46	Typical
12	M12	N37	N20			Support	Beam	HSS Pipe	A500 Gr.46	Typical
13	M13	N31	N30			Handrail	Beam	Pipe	A53 Gr B	Typical
14	M14	N28	N29			Handrail	Beam	Pipe	A53 Gr B	Typical
15	M15	N27	N26			Handrail	Beam	Pipe	A53 Gr B	Typical
16	M16	N34	N33			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
17	M17	N35	N21			Support	Beam	HSS Pipe	A500 Gr.46	Typical
18	M18	N36	N19			Support	Beam	HSS Pipe	A500 Gr.46	Typical
19	M19	N18	N37			Support	Beam	HSS Pipe	A500 Gr.46	Typical
20	M20	N43	N42			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
21	M21	N47	N46			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
22	M22	N51	N50			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
23	M23	N57	N56			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
24	M24	N61	N60			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
25	M25	N65	N64			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
26	M26	N69	N68			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
27	M27	N75	N74			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
28	M28	N79	N78			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
29	M29	N83	N82			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
30	M30	N87	N86			Antenna Pipe	Beam	Pipe	A53 Gr B	Typical
31	M31	N53	N25			Handrail Corner	Beam	Single An...	A36 Gr.36	Typical
32	M32	N72	N24			Handrail Corner	Beam	Single An...	A36 Gr.36	Typical
33	M33	N54	N71			Handrail Corner	Beam	Single An...	A36 Gr.36	Typical
34	M34	N91	N94			Double Angle Supports	Beam	Double An...	A36 Gr.36	Typical
35	M35	N89	N92			Double Angle Supports	Beam	Double An...	A36 Gr.36	Typical
36	M36	N91A	N93			Double Angle Supports	Beam	Double An...	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	-1	0	0.	0	
2	N2	-6	0	0.	0	
3	N3	-6	0	0.75	0	
4	N4	-6	0	-0.75	0	
5	N5	3	0	5.196152	0	
6	N6	3.649519	0	4.821152	0	
7	N7	2.350481	0	5.571152	0	
8	N8	3	0	-5.196152	0	
9	N9	2.350481	0	-5.571152	0	
10	N10	3.649519	0	-4.821152	0	
11	N11	3.649519	0	-6.3	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
12	N12	3.649519	0	6.2	0	
13	N13	-7.237418	0	-0.035576	0	
14	N14	3.566249	0	-6.273076	0	
15	N15	3.60955	0	6.298076	0	
16	N16	-7.215768	0	0.048076	0	
17	N17	3.649519	0	.65	0	
18	N18	3.649519	0	-.85	0	
19	N19	-1.131939	0	3.560576	0	
20	N20	-1.17524	0	-3.535576	0	
21	N21	-2.430977	0	2.810576	0	
22	N22	-2.474279	0	-2.785576	0	
23	N23	3.649519	0	-4.4	0	
24	N24	3.649519	3.5	5.5	0	
25	N25	3.649519	3.5	-5.5	0	
26	N26	3.649519	3.5	-6.3	0	
27	N27	3.649519	3.5	6.2	0	
28	N28	-7.237418	3.5	-0.035576	0	
29	N29	3.566249	3.5	-6.273076	0	
30	N30	3.60955	3.5	6.298076	0	
31	N31	-7.215768	3.5	0.048076	0	
32	N32	3.649519	3.5	-4.4	0	
33	N33	3.649519	6	-4.4	0	
34	N34	3.649519	-2	-4.4	0	
35	N35	-2.452725	0	0.	0	
36	N36	1.237334	0	2.143125	0	
37	N37	1.248013	0	-2.161623	0	
38	N38	0.5	0	0.866025	0	
39	N39	0.5	0	-0.866025	0	
40	N40	3.649519	0	-1.5	0	
41	N41	3.649519	3.5	-1.5	0	
42	N42	3.649519	6	-1.5	0	
43	N43	3.649519	-2	-1.5	0	
44	N44	3.649519	0	1.4	0	
45	N45	3.649519	3.5	1.4	0	
46	N46	3.649519	6	1.4	0	
47	N47	3.649519	-2	1.4	0	
48	N48	3.649519	0	4.3	0	
49	N49	3.649519	3.5	4.3	0	
50	N50	3.649519	6	4.3	0	
51	N51	3.649519	-2	4.3	0	
52	N52	-5.59197	0	-0.985576	0	
53	N53	2.93838	3.5	-5.910576	0	
54	N54	-6.587899	3.5	-0.410576	0	
55	N55	-5.59197	3.5	-0.985576	0	
56	N56	-5.59197	6	-0.985576	0	
57	N57	-5.59197	-2	-0.985576	0	
58	N58	-3.102147	0	-2.423076	0	
59	N59	-3.102147	3.5	-2.423076	0	
60	N60	-3.102147	6	-2.423076	0	
61	N61	-3.102147	-2	-2.423076	0	
62	N62	-0.590673	0	-3.873076	0	
63	N63	-0.590673	3.5	-3.873076	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
64	N64	-0.590673	6	-3.873076	0	
65	N65	-0.590673	-2	-3.873076	0	
66	N66	1.9208	0	-5.323076	0	
67	N67	1.9208	3.5	-5.323076	0	
68	N68	1.9208	6	-5.323076	0	
69	N69	1.9208	-2	-5.323076	0	
70	N70	1.964102	0	5.348076	0	
71	N71	-6.587899	3.5	0.410576	0	
72	N72	2.93838	3.5	5.910576	0	
73	N73	1.964102	3.5	5.348076	0	
74	N74	1.964102	6	5.348076	0	
75	N75	1.964102	-2	5.348076	0	
76	N76	-0.547372	0	3.898076	0	
77	N77	-0.547372	3.5	3.898076	0	
78	N78	-0.547372	6	3.898076	0	
79	N79	-0.547372	-2	3.898076	0	
80	N80	-3.058846	0	2.448076	0	
81	N81	-3.058846	3.5	2.448076	0	
82	N82	-3.058846	6	2.448076	0	
83	N83	-3.058846	-2	2.448076	0	
84	N84	-5.570319	0	0.998076	0	
85	N85	-5.570319	3.5	0.998076	0	
86	N86	-5.570319	6	0.998076	0	
87	N87	-5.570319	-2	0.998076	0	
88	N88	0	0	0	0	
89	N89	-5	0	0.	0	
90	N91	2.5	0	-4.330127	0	
91	N91A	2.5	0	4.330127	0	
92	N92	-1	-2.5	0.	0	
93	N93	0.5	-2.5	0.866025	0	
94	N94	0.5	-2.5	-0.866025	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	Reaction	Reaction
2	N38	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N39	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N8	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N92	Reaction	Reaction	Reaction			
6	N93	Reaction	Reaction	Reaction			
7	N94	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Y	-.075	.5
2	M26	Y	-.075	.5
3	M30	Y	-.075	.5
4	M22	Y	-.075	7.5
5	M26	Y	-.075	7.5

Member Point Loads (BLC 2 : Equipment Weight) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
6	M30	Y	-.075	7.5
7	M16	Y	-.015	3
8	M23	Y	-.015	3
9	M27	Y	-.015	3
10	M16	Y	-.015	7
11	M23	Y	-.015	7
12	M27	Y	-.015	7
13	M22	Y	-.002	%50
14	M26	Y	-.002	%50
15	M30	Y	-.002	%50

Member Point Loads (BLC 3 : Ice Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Y	-.377	.5
2	M26	Y	-.377	.5
3	M30	Y	-.377	.5
4	M22	Y	-.377	7.5
5	M26	Y	-.377	7.5
6	M30	Y	-.377	7.5
7	M16	Y	-.13	3
8	M23	Y	-.13	3
9	M27	Y	-.13	3
10	M16	Y	-.13	7
11	M23	Y	-.13	7
12	M27	Y	-.13	7
13	M22	Y	-.025	%50
14	M26	Y	-.025	%50
15	M30	Y	-.025	%50

Member Point Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M26	X	.065	.5
2	M30	X	.065	.5
3	M26	X	.065	7.5
4	M30	X	.065	7.5
5	M22	X	.135	.5
6	M22	X	.135	7.5
7	M23	X	.028	3
8	M27	X	.028	3
9	M23	X	.028	7
10	M27	X	.028	7
11	M16	X	.049	3
12	M16	X	.049	7
13	M22	X	.009	%50
14	M26	X	.009	%50
15	M30	X	.009	%50

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M26	X	.137	.5

Member Point Loads (BLC 5 : Wind X) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M30	X	.137	.5
3	M26	X	.137	7.5
4	M30	X	.137	7.5
5	M22	X	.386	.5
6	M22	X	.386	7.5
7	M23	X	.043	3
8	M27	X	.043	3
9	M23	X	.043	7
10	M27	X	.043	7
11	M16	X	.113	3
12	M16	X	.113	7
13	M22	X	.007	%50
14	M26	X	.007	%50
15	M30	X	.007	%50

Member Point Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M26	Z	.135	.5
2	M30	Z	.135	.5
3	M26	Z	.135	7.5
4	M30	Z	.135	7.5
5	M22	Z	.065	.5
6	M22	Z	.065	7.5
7	M23	Z	.049	3
8	M27	Z	.049	3
9	M23	Z	.049	7
10	M27	Z	.049	7
11	M16	Z	.028	3
12	M16	Z	.028	7
13	M22	Z	.009	%50
14	M26	Z	.009	%50
15	M30	Z	.009	%50

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M26	Z	.386	.5
2	M30	Z	.386	.5
3	M26	Z	.386	7.5
4	M30	Z	.386	7.5
5	M22	Z	.137	.5
6	M22	Z	.137	7.5
7	M23	Z	.113	3
8	M27	Z	.113	3
9	M23	Z	.113	7
10	M27	Z	.113	7
11	M16	Z	.043	3
12	M16	Z	.043	7
13	M22	Z	.007	%50
14	M26	Z	.007	%50
15	M30	Z	.007	%50

Member Distributed Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M15	X	.003	.003	0	0
2	M6	X	.003	.003	0	0
3	M23	X	.003	.003	0	0
4	M24	X	.003	.003	0	0
5	M25	X	.003	.003	0	0
6	M26	X	.003	.003	0	0
7	M30	X	.003	.003	0	0
8	M29	X	.003	.003	0	0
9	M28	X	.003	.003	0	0
10	M27	X	.003	.003	0	0
11	M21	X	.003	.003	0	0
12	M20	X	.003	.003	0	0
13	M14	PX	.003	.003	0	0
14	M5	PX	.003	.003	0	0
15	M13	PX	.003	.003	0	0
16	M4	PX	.003	.003	0	0
17	M35	X	.003	.003	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M15	X	.01	.01	0	0
2	M6	X	.01	.01	0	0
3	M23	X	.01	.01	0	0
4	M24	X	.01	.01	0	0
5	M25	X	.01	.01	0	0
6	M26	X	.01	.01	0	0
7	M30	X	.01	.01	0	0
8	M29	X	.01	.01	0	0
9	M28	X	.01	.01	0	0
10	M27	X	.01	.01	0	0
11	M21	X	.01	.01	0	0
12	M20	X	.01	.01	0	0
13	M14	PX	.01	.01	0	0
14	M5	PX	.01	.01	0	0
15	M13	PX	.01	.01	0	0
16	M4	PX	.01	.01	0	0
17	M35	X	.01	.01	0	0

Member Distributed Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M14	Z	.003	.003	0	0
2	M5	Z	.003	.003	0	0
3	M24	Z	.003	.003	0	0
4	M25	Z	.003	.003	0	0
5	M29	Z	.003	.003	0	0
6	M28	Z	.003	.003	0	0
7	M22	Z	.003	.003	0	0
8	M21	Z	.003	.003	0	0
9	M20	Z	.003	.003	0	0
10	M16	Z	.003	.003	0	0

Member Distributed Loads (BLC 6 : Wind w/ Ice Z) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
11	M34	Z	.003	.003	0	0
12	M35	Z	.003	.003	0	0
13	M4	Z	.003	.003	0	0
14	M13	Z	.003	.003	0	0
15	M1	Z	.003	.003	0	0
16	M36	Z	.003	.003	0	0
17	M3	Z	.003	.003	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M14	Z	.01	.01	0	0
2	M5	Z	.01	.01	0	0
3	M24	Z	.01	.01	0	0
4	M25	Z	.01	.01	0	0
5	M29	Z	.01	.01	0	0
6	M28	Z	.01	.01	0	0
7	M22	Z	.01	.01	0	0
8	M21	Z	.01	.01	0	0
9	M20	Z	.01	.01	0	0
10	M16	Z	.01	.01	0	0
11	M34	Z	.01	.01	0	0
12	M35	Z	.01	.01	0	0
13	M4	Z	.01	.01	0	0
14	M13	Z	.01	.01	0	0
15	M1	Z	.01	.01	0	0
16	M36	Z	.01	.01	0	0
17	M3	Z	.01	.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.033	-.019	2	3.5
2	M1	Y	-.019	-.005	3.5	5
3	M4	Y	-.003	-.006	0	2.5
4	M4	Y	-.006	-.01	2.5	5
5	M5	Y	.0003221	-.006	0	2.495
6	M5	Y	-.006	-.013	2.495	4.99
7	M9	Y	-.006	-.006	.317	1.183
8	M10	Y	-.012	-.012	.242	2.779
9	M17	Y	-.013	-.013	.0003843	2.559
10	M2	Y	-.0005053	-.006	.5	1.4
11	M2	Y	-.006	-.022	1.4	2.3
12	M2	Y	-.022	-.026	2.3	3.2
13	M2	Y	-.026	-.015	3.2	4.1
14	M2	Y	-.015	-.005	4.1	5
15	M4	Y	-8.296e-5	-.005	6.25	7.5
16	M4	Y	-.005	-.011	7.5	8.75
17	M4	Y	-.011	-.01	8.75	10
18	M4	Y	-.01	-.004	10	11.25
19	M4	Y	-.004	-8.296e-5	11.25	12.5
20	M6	Y	-9.688e-5	-.004	0	1.25
21	M6	Y	-.004	-.01	1.25	2.5

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/f..	Start Location[ft,%]	End Location[ft,%]
22	M6	Y	-.01	-.011	2.5	3.75
23	M6	Y	-.011	-.005	3.75	5
24	M6	Y	-.005	-9.688e-5	5	6.25
25	M8	Y	-.006	-.006	.319	1.182
26	M11	Y	-.002	-.009	0	.567
27	M11	Y	-.009	-.013	.567	1.135
28	M11	Y	-.013	-.01	1.135	1.702
29	M11	Y	-.01	-.005	1.702	2.27
30	M11	Y	-.005	-.0006188	2.27	2.837
31	M18	Y	-.001	-.009	0	.552
32	M18	Y	-.009	-.013	.552	1.104
33	M18	Y	-.013	-.01	1.104	1.657
34	M18	Y	-.01	-.006	1.657	2.209
35	M18	Y	-.006	-.0007551	2.209	2.761
36	M3	Y	-.032	-.019	2	3.5
37	M3	Y	-.019	-.005	3.5	5
38	M5	Y	-.009	-.006	7.485	9.98
39	M5	Y	-.006	-.003	9.98	12.475
40	M6	Y	-.013	-.006	7.5	10
41	M6	Y	-.006	.0002987	10	12.5
42	M7	Y	-.006	-.006	.318	1.182
43	M12	Y	-.012	-.012	0	2.537
44	M19	Y	-.012	-.012	.229	2.723

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Equipment Weight	None					15		3	
3	Ice Weight	None					15			
4	Wind w/ Ice X	None					15	17		
5	Wind X	None					15	17		
6	Wind w/ Ice Z	None					15	17		
7	Wind Z	None					15	17		
8	BLC 2 Transient Area Loads	None						44		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.2D + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6																
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6																
3	1.2D + 1.0Di + 1.0Wi (X-d..	Yes	Y		1	1.2	2	1.2	3	1	4	1														
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6																
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6																
6	1.2D + 1.0Di + 1.0Wi (Z-d..	Yes	Y		1	1.2	2	1.2	3	1	6	1														

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	1.858	6	.278	1	-.003	2	.035	2	-.035	3	.037	2
2		min	-3.484	2	.045	5	-1.145	4	-.376	4	-1.183	4	-.156	6
3	N38	max	-1.391	6	.237	3	-2.246	3	-.073	2	.154	4	.539	1
4		min	-2.773	1	.053	5	-4.069	4	-.393	4	-1.073	2	.182	5
5	N39	max	-.07	6	.354	1	.002	3	.231	3	.306	5	.643	1
6		min	-.322	1	.221	5	-.298	5	-.259	5	.052	3	.285	6
7	N8	max	2.143	4	1.6	3	1.186	2	.616	2	-.243	3	-.269	2
8		min	-.733	2	-.47	5	-3.33	4	-.326	6	-1.976	5	-.734	6
9	N92	max	1.05	2	1.906	6	0	3	0	6	0	6	0	6
10		min	-3.023	6	-.667	2	-.037	5	0	1	0	1	0	1
11	N93	max	1.733	6	2.184	6	2.996	6	0	6	0	6	0	6
12		min	1.034	2	1.304	2	1.789	2	0	1	0	1	0	1
13	N94	max	.204	1	.272	1	.113	5	0	6	0	6	0	6
14		min	-.087	5	-.095	5	-.353	1	0	1	0	1	0	1
15	Totals:	max	0	5	6.103	6	0	2						
16		min	-4.937	1	2.24	2	-6.013	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	6	0	6	0	6	0	6	0	6	0	6
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	.002	2	.014	2	.017	4	1.712e-03	3	1.518e-04	1	6.422e-04	6
4		min	0	6	-.018	6	.001	3	-2.797e-03	5	-5.989e-04	5	-8.467e-04	2
5	N3	max	.003	2	.021	5	.017	4	7.428e-03	4	3.417e-04	1	6.422e-04	6
6		min	-.005	4	-.029	3	.001	3	-2.362e-03	2	-3.807e-04	5	-8.467e-04	2
7	N4	max	.006	5	.015	2	.017	4	9.883e-03	5	1.795e-05	4	6.422e-04	6
8		min	0	3	-.03	4	.001	3	-4.124e-04	3	-8.992e-05	2	-8.467e-04	2
9	N5	max	.015	1	-.014	2	.002	4	1.174e-03	2	2.349e-04	5	1.101e-03	2
10		min	0	6	-.026	4	-.006	2	-3.223e-04	6	-5.321e-04	1	-2.266e-03	6
11	N6	max	.017	1	0	2	.001	6	1.227e-03	4	-3.923e-06	5	-4.488e-04	5
12		min	0	5	-.041	6	-.002	2	-3.248e-03	1	-6.688e-04	1	-6.649e-03	1
13	N7	max	.012	1	-.003	6	.004	4	3.918e-03	4	3.418e-04	5	4.124e-03	4
14		min	0	6	-.029	1	-.01	2	-3.047e-03	2	5.296e-05	3	-6.211e-03	2
15	N8	max	0	6	0	6	0	6	0	6	0	6	0	6
16		min	0	1	0	1	0	1	0	1	0	1	0	1
17	N9	max	0	6	0	6	0	6	3.233e-03	5	7.552e-04	4	-1.006e-04	3
18		min	0	1	0	1	0	1	5.805e-05	3	6.926e-05	3	-5.599e-03	5
19	N10	max	0	6	0	6	0	6	3.627e-03	1	3.295e-04	2	-1.315e-03	6
20		min	0	1	0	1	0	1	7.591e-04	6	-7.35e-05	4	-6.283e-03	1
21	N11	max	.001	4	.064	1	0	6	3.619e-03	1	3.145e-04	2	-1.315e-03	6
22		min	-.006	2	.013	6	0	1	7.505e-04	6	-7.35e-05	4	-6.283e-03	1
23	N12	max	.006	1	.053	2	.001	6	1.235e-03	4	-3.923e-06	5	-4.488e-04	5
24		min	0	5	-.058	4	-.002	2	-3.241e-03	2	-6.566e-04	1	-6.649e-03	1
25	N13	max	.006	5	.021	2	.018	4	9.886e-03	5	2.969e-05	4	6.489e-04	6
26		min	0	3	-.115	4	0	3	-4.085e-04	3	-8.653e-05	2	-8.417e-04	2
27	N14	max	0	3	-.001	3	-.001	3	3.229e-03	5	7.44e-04	4	-1.094e-04	3
28		min	-.006	4	-.055	5	-.011	4	5.296e-05	3	6.866e-05	3	-5.606e-03	5
29	N15	max	.015	2	.014	5	0	6	3.922e-03	4	3.295e-04	5	4.117e-03	4
30		min	0	6	-.096	1	-.015	2	-3.044e-03	2	5.363e-05	3	-6.216e-03	2
31	N16	max	0	2	.083	5	.012	4	7.423e-03	4	3.385e-04	1	6.51e-04	6

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
32		min	-.002	4	-.035	3	.003	3	-2.366e-03	2	-3.696e-04	5	-8.4e-04	2
33	N17	max	.006	1	-.02	5	0	6	2.966e-04	6	5.912e-04	1	-5.245e-04	6
34		min	0	5	-.045	1	-.001	2	-7.43e-04	2	-8.179e-05	5	-8.282e-03	1
35	N18	max	.002	2	-.018	6	0	4	6.291e-04	1	1.272e-05	3	-7.549e-04	6
36		min	0	6	-.046	1	0	2	1.019e-05	5	-7.248e-05	5	-8.069e-03	1
37	N19	max	.006	2	.017	2	.005	4	5.943e-03	4	1.832e-04	2	4.085e-03	4
38		min	0	6	-.03	4	0	2	-3.925e-03	2	-1.125e-04	4	-2.672e-03	2
39	N20	max	0	2	.034	5	.004	4	6.942e-03	5	-4.802e-05	3	-2.905e-04	3
40		min	0	4	0	3	0	3	2.372e-04	3	-1.562e-04	4	-4.723e-03	5
41	N21	max	.006	2	.014	2	.006	4	6.986e-03	4	4.364e-04	4	3.26e-03	4
42		min	0	6	-.031	4	0	3	-3.716e-03	2	-3.61e-05	2	-1.667e-03	2
43	N22	max	0	5	.034	5	.006	4	7.982e-03	5	3.736e-04	5	-6.438e-05	3
44		min	0	3	0	3	0	3	1.721e-04	3	-7.952e-06	3	-3.663e-03	5
45	N23	max	.002	2	-.004	6	0	4	2.397e-03	1	3.091e-04	1	-1.344e-03	6
46		min	0	4	-.015	1	0	2	6.91e-04	6	-1.395e-04	4	-7.232e-03	1
47	N24	max	.644	1	-.022	2	.087	4	2.876e-03	4	-1.062e-03	3	2.806e-03	4
48		min	-.169	4	-.073	4	.008	2	2.198e-04	2	-5.721e-03	4	-2.219e-02	1
49	N25	max	.429	5	.014	5	.087	4	1.986e-03	4	2.487e-03	1	-1.733e-03	6
50		min	.085	6	-.017	1	.009	2	-6.988e-05	2	-7.825e-03	5	-1.263e-02	2
51	N26	max	.504	5	.033	4	.087	4	1.984e-03	4	2.477e-03	1	-1.733e-03	6
52		min	.085	3	-.018	2	.009	2	-7.199e-05	2	-7.825e-03	5	-1.263e-02	2
53	N27	max	.623	2	-.024	2	.087	4	2.878e-03	4	-1.061e-03	3	2.806e-03	4
54		min	-.217	4	-.097	4	.008	2	2.212e-04	2	-5.721e-03	4	-2.219e-02	1
55	N28	max	.298	4	.048	2	.685	4	1.623e-02	4	4.084e-03	4	-4.524e-04	3
56		min	.007	3	-.045	4	-.079	2	7.146e-05	3	-4.191e-03	2	-7.333e-03	5
57	N29	max	.263	1	.088	5	.473	4	1.837e-02	4	3.586e-03	5	-1.646e-03	6
58		min	.039	6	-.044	1	.086	3	1.785e-03	3	-3.991e-03	1	-7.057e-03	4
59	N30	max	.408	2	-.009	3	.221	5	8.722e-03	4	7.713e-03	1	3.003e-03	4
60		min	-.047	4	-.062	4	-.523	1	-1.026e-02	1	1.647e-03	6	-8.191e-03	1
61	N31	max	.116	2	.075	2	.663	4	2.064e-02	4	3.858e-03	2	8.835e-03	4
62		min	-.301	4	-.027	6	-.017	1	-3.017e-03	1	-1.778e-04	6	-4.792e-03	2
63	N32	max	.439	1	-.004	6	.087	4	1.76e-03	4	1.956e-03	1	-1.773e-03	6
64		min	.071	6	-.015	1	.009	2	-2.079e-04	2	-6.077e-03	5	-1.276e-02	2
65	N33	max	.839	1	-.004	6	.15	4	2.168e-03	4	1.956e-03	1	-1.775e-03	6
66		min	.124	6	-.015	1	.003	2	-2.079e-04	2	-6.077e-03	5	-1.346e-02	1
67	N34	max	-.032	6	-.004	6	-.016	6	2.397e-03	1	3.091e-04	1	-1.344e-03	6
68		min	-.172	1	-.015	1	-.058	1	6.772e-04	6	-1.395e-04	4	-7.232e-03	1
69	N35	max	0	2	0	2	.006	4	5.513e-04	4	3.301e-04	4	1.1e-04	6
70		min	0	6	-.001	6	0	3	-5.062e-05	2	1.949e-05	3	-1.824e-04	2
71	N36	max	.005	1	-.002	3	.001	4	3.068e-04	4	2.979e-04	2	-1.485e-04	5
72		min	0	5	-.003	4	-.002	2	-1.162e-04	2	-1.426e-05	4	-6.343e-04	1
73	N37	max	.001	4	.001	5	0	5	5.056e-04	5	-1.58e-06	3	-2.421e-04	6
74		min	0	3	-.003	1	0	3	3.998e-05	3	-1.002e-05	4	-7.058e-04	1
75	N38	max	0	6	0	6	0	6	0	6	0	6	0	6
76		min	0	1	0	1	0	1	0	1	0	1	0	1
77	N39	max	0	6	0	6	0	6	0	6	0	6	0	6
78		min	0	1	0	1	0	1	0	1	0	1	0	1
79	N40	max	.002	2	-.017	6	0	4	2.945e-04	6	-9.079e-06	3	-8.92e-04	6
80		min	0	6	-.043	1	0	2	2.191e-04	5	-8.397e-05	5	-8.77e-03	1
81	N41	max	.501	1	-.017	6	.087	4	1.275e-03	4	1.755e-03	1	-1.041e-03	6
82		min	.042	6	-.043	1	.009	2	4.009e-04	3	-3.486e-03	5	-1.367e-02	1
83	N42	max	.915	1	-.017	6	.128	4	1.418e-03	4	1.755e-03	1	-1.042e-03	6

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
84		min	.073	6	-.043	1	.021	2	4.009e-04	3	-3.486e-03	5	-1.382e-02	1
85	N43	max	-.021	6	-.017	6	-.003	5	2.808e-04	6	-9.079e-06	3	-8.919e-04	6
86		min	-.207	1	-.043	1	-.007	1	1.46e-04	5	-8.397e-05	5	-8.696e-03	1
87	N44	max	.013	1	-.02	5	0	6	4.97e-04	6	7.887e-04	1	-5.142e-04	6
88		min	-.001	5	-.041	1	-.001	2	-1.794e-04	2	-1.032e-04	5	-9.484e-03	1
89	N45	max	.594	1	-.02	5	.087	4	1.022e-03	4	2.961e-03	2	-3.287e-04	6
90		min	.018	6	-.041	1	.008	2	-1.672e-04	2	-2.866e-03	4	-1.638e-02	1
91	N46	max	1.088	1	-.02	5	.121	4	1.164e-03	4	2.961e-03	2	-3.288e-04	6
92		min	.028	6	-.041	1	.003	2	-1.672e-04	2	-2.866e-03	4	-1.653e-02	1
93	N47	max	-.012	6	-.02	5	.003	2	4.833e-04	6	7.887e-04	1	-5.141e-04	6
94		min	-.213	1	-.041	1	-.011	6	-1.794e-04	2	-1.032e-04	5	-9.411e-03	1
95	N48	max	.021	1	-.016	2	.001	6	7.061e-04	5	-3.676e-05	6	6.004e-05	5
96		min	0	5	-.04	6	-.002	2	-1.938e-03	1	-5.164e-04	1	-7.621e-03	1
97	N49	max	.672	1	-.017	2	.087	4	2.736e-03	4	-4.375e-04	3	2.882e-03	4
98		min	-.093	5	-.04	6	.008	2	4.907e-04	3	-4.336e-03	4	-2.244e-02	1
99	N50	max	1.44	1	-.017	2	.206	4	4.382e-03	4	-4.375e-04	3	2.884e-03	4
100		min	-.179	5	-.041	6	.024	2	4.919e-04	3	-4.336e-03	4	-2.668e-02	1
101	N51	max	.001	5	-.016	2	.045	1	-3.515e-06	6	-3.676e-05	6	6.002e-05	5
102		min	-.118	1	-.04	6	0	6	-1.937e-03	1	-5.164e-04	1	-5.239e-03	1
103	N52	max	.006	5	.013	2	.017	4	1.025e-02	5	1.029e-04	4	1.861e-04	3
104		min	0	3	-.007	4	.001	3	-3.471e-04	3	-1.127e-04	2	-2.177e-03	5
105	N53	max	.245	2	.061	5	.499	4	1.837e-02	4	3.593e-03	5	-1.645e-03	6
106		min	.04	6	-.024	1	.075	3	1.786e-03	3	-3.989e-03	1	-7.055e-03	4
107	N54	max	.279	5	.034	2	.653	4	1.623e-02	4	4.076e-03	4	-4.545e-04	3
108		min	.01	3	-.029	4	-.046	2	7.03e-05	3	-4.194e-03	2	-7.334e-03	5
109	N55	max	.254	5	.013	2	.608	5	1.626e-02	4	3.151e-03	4	-4.845e-04	3
110		min	.013	3	-.007	4	-.007	3	4.64e-05	3	-3.208e-03	2	-7.748e-03	4
111	N56	max	.486	5	.013	2	1.113	4	1.696e-02	4	3.151e-03	4	-6.197e-04	3
112		min	.031	3	-.007	4	-.005	3	4.644e-05	3	-3.208e-03	2	-7.749e-03	4
113	N57	max	.004	3	.013	2	.009	3	1.025e-02	5	1.029e-04	4	1.998e-04	3
114		min	-.047	5	-.007	4	-.229	5	-3.471e-04	3	-1.127e-04	2	-2.176e-03	5
115	N58	max	.002	5	.028	5	.01	4	8.924e-03	5	4.349e-04	5	-1.058e-04	3
116		min	0	3	0	3	0	3	9.668e-05	3	4.481e-06	3	-4.471e-03	5
117	N59	max	.211	5	.028	5	.533	5	1.396e-02	5	1.267e-03	4	-4.703e-04	3
118		min	.021	3	0	3	.007	3	3.724e-04	3	-2.018e-03	2	-6.385e-03	5
119	N60	max	.402	5	.028	5	.955	5	1.41e-02	5	1.267e-03	4	-4.971e-04	3
120		min	.035	3	0	3	.018	3	3.724e-04	3	-2.018e-03	2	-6.385e-03	5
121	N61	max	-.003	3	.028	5	-.002	3	8.851e-03	5	4.349e-04	5	-9.209e-05	3
122		min	-.105	5	0	3	-.203	5	9.667e-05	3	4.481e-06	3	-4.471e-03	5
123	N62	max	.001	2	.032	5	.006	4	8.066e-03	5	-5.31e-05	3	-3.861e-04	3
124		min	0	6	-.001	3	0	3	3.253e-04	3	-3.188e-04	4	-4.384e-03	5
125	N63	max	.208	5	.032	5	.528	5	1.39e-02	5	-2.611e-04	6	-7.132e-04	3
126		min	.032	3	-.001	3	.026	3	9.478e-04	3	-2.404e-03	1	-7.274e-03	5
127	N64	max	.426	5	.032	5	.948	5	1.404e-02	5	-2.611e-04	6	-7.401e-04	3
128		min	.054	3	-.001	3	.054	3	9.479e-04	3	-2.404e-03	1	-7.275e-03	5
129	N65	max	-.009	3	.032	5	-.007	3	7.993e-03	5	-5.31e-05	3	-3.724e-04	3
130		min	-.104	5	-.001	3	-.187	5	3.253e-04	3	-3.188e-04	4	-4.384e-03	5
131	N66	max	.002	5	.015	5	.004	4	4.715e-03	5	6.467e-04	4	-9.335e-05	3
132		min	0	3	-.001	3	0	3	4.326e-04	3	3.905e-05	3	-4.973e-03	5
133	N67	max	.219	2	.016	5	.536	4	1.873e-02	4	1.827e-03	5	-1.577e-03	6
134		min	.042	6	-.002	3	.058	3	1.853e-03	3	-3.225e-03	1	-6.882e-03	4
135	N68	max	.457	2	.016	5	1.193	4	2.297e-02	4	1.827e-03	5	-1.581e-03	6

Envelope Joint Displacements (Continued)

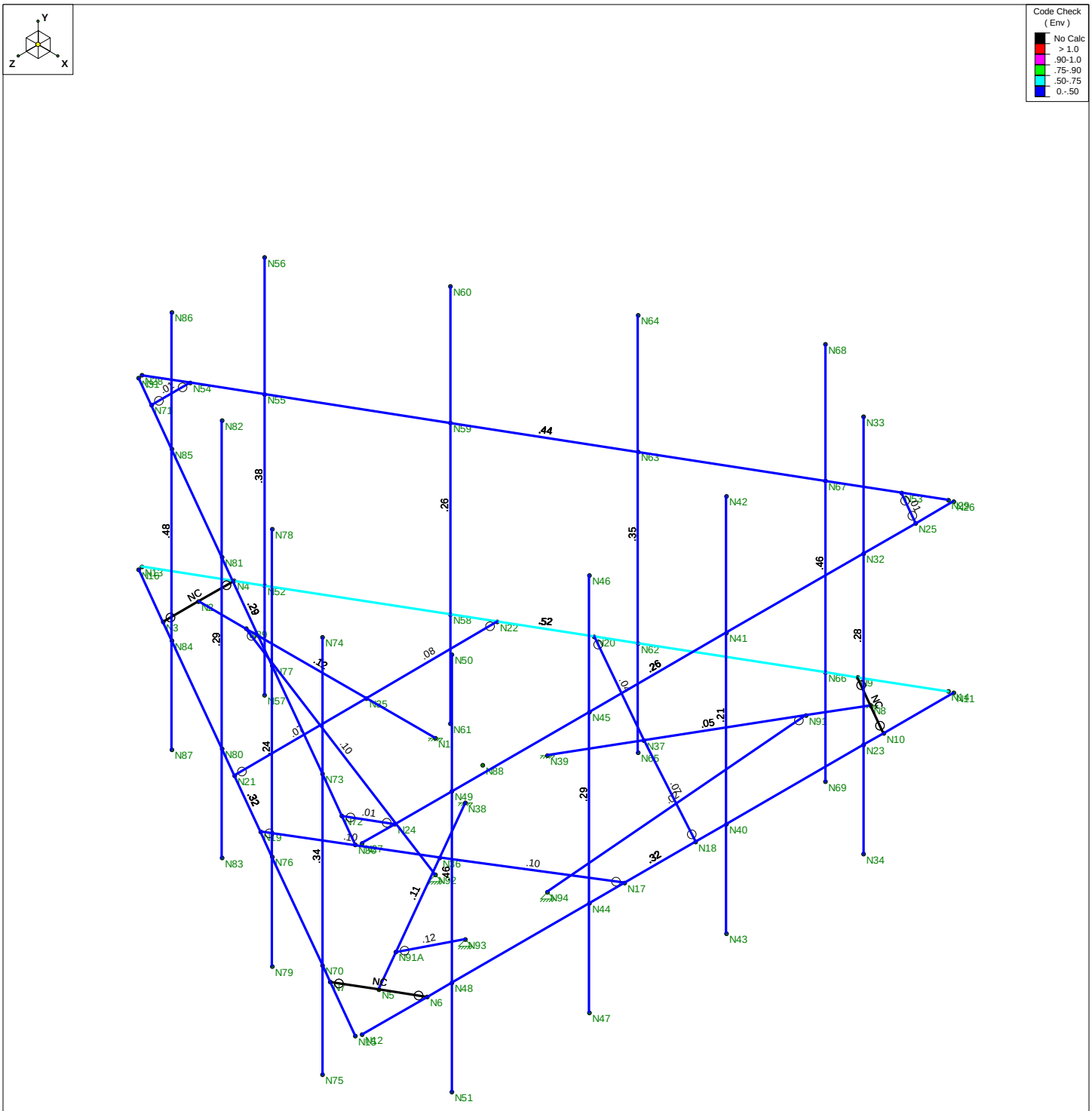
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
136		min	.089	6	-.002	3	.113	3	1.858e-03	3	-3.225e-03	1	-8.348e-03	1
137	N69	max	.003	3	.015	5	-.008	6	2.866e-03	2	6.467e-04	4	1.706e-04	3
138		min	-.117	5	-.001	3	-.068	2	2.594e-04	6	3.905e-05	3	-4.972e-03	5
139	N70	max	.011	1	-.003	3	.006	4	4.818e-03	4	3.659e-04	2	3.713e-03	4
140		min	0	6	-.021	4	-.009	2	-4.558e-03	2	7.11e-05	6	-5.658e-03	2
141	N71	max	.133	2	.052	2	.653	4	2.064e-02	4	3.86e-03	2	8.834e-03	4
142		min	-.296	4	-.029	6	-.046	2	-3.016e-03	1	-1.791e-04	6	-4.793e-03	2
143	N72	max	.373	2	-.007	3	.26	4	8.721e-03	4	7.71e-03	1	3.005e-03	4
144		min	-.069	4	-.045	4	-.461	1	-1.026e-02	1	1.649e-03	6	-8.189e-03	2
145	N73	max	.325	2	-.003	3	.313	4	8.806e-03	4	5.949e-03	1	3.e-03	4
146		min	-.1	4	-.021	4	-.377	2	-1.064e-02	1	1.189e-03	6	-8.015e-03	2
147	N74	max	.575	2	-.003	3	.594	4	9.504e-03	4	5.949e-03	1	3.001e-03	4
148		min	-.19	4	-.021	4	-.696	2	-1.064e-02	1	1.189e-03	6	-8.424e-03	2
149	N75	max	.09	4	-.003	3	.1	2	4.818e-03	4	3.659e-04	2	3.713e-03	4
150		min	-.123	2	-.021	4	-.11	4	-4.557e-03	2	7.11e-05	6	-5.584e-03	2
151	N76	max	.007	1	.015	2	.006	4	6.716e-03	4	2.971e-04	2	3.724e-03	4
152		min	0	6	-.028	4	-.002	2	-4.668e-03	2	-1.05e-04	4	-3.182e-03	2
153	N77	max	.24	2	.015	2	.409	4	1.041e-02	4	3.078e-03	1	5.173e-03	4
154		min	-.155	4	-.028	4	-.232	2	-6.833e-03	2	5.829e-04	6	-5.544e-03	2
155	N78	max	.41	2	.015	2	.724	4	1.056e-02	4	3.078e-03	1	5.173e-03	4
156		min	-.31	4	-.028	4	-.437	2	-6.834e-03	2	5.829e-04	6	-5.687e-03	2
157	N79	max	.091	4	.015	2	.11	2	6.643e-03	4	2.971e-04	2	3.724e-03	4
158		min	-.068	2	-.028	4	-.154	4	-4.668e-03	2	-1.05e-04	4	-3.109e-03	2
159	N80	max	.006	2	.013	2	.011	4	7.979e-03	4	6.895e-04	4	3.948e-03	4
160		min	-.002	4	-.027	4	0	2	-3.47e-03	2	-2.222e-05	2	-2.324e-03	2
161	N81	max	.197	2	.013	2	.514	4	1.377e-02	4	3.825e-03	5	6.834e-03	4
162		min	-.216	4	-.027	4	-.157	2	-4.989e-03	2	2.932e-04	3	-3.992e-03	2
163	N82	max	.32	2	.013	2	.931	4	1.392e-02	4	3.825e-03	5	6.835e-03	4
164		min	-.421	4	-.027	4	-.306	2	-4.989e-03	2	2.932e-04	3	-4.135e-03	2
165	N83	max	.093	4	.013	2	.083	2	7.906e-03	4	6.895e-04	4	3.948e-03	4
166		min	-.048	2	-.027	4	-.179	4	-3.47e-03	2	-2.222e-05	2	-2.251e-03	2
167	N84	max	.004	2	.014	2	.019	4	7.705e-03	4	3.369e-04	1	1.966e-03	4
168		min	-.006	4	-.031	6	0	3	-2.384e-03	2	-2.25e-04	5	-1.211e-03	2
169	N85	max	.158	2	.014	2	.634	4	2.072e-02	4	2.84e-03	2	9.185e-03	4
170		min	-.285	4	-.032	6	-.089	2	-3.003e-03	1	1.663e-04	6	-4.89e-03	2
171	N86	max	.342	2	.014	2	1.351	4	2.496e-02	4	2.84e-03	2	9.19e-03	4
172		min	-.56	4	-.032	6	-.179	2	-3.005e-03	1	1.663e-04	6	-6.536e-03	2
173	N87	max	.041	4	.014	2	.059	2	5.323e-03	4	3.369e-04	1	1.965e-03	4
174		min	-.008	2	-.031	6	-.121	4	-2.384e-03	2	-2.25e-04	5	-2.938e-04	2
175	N88	max	0	6	0	6	0	6	0	6	0	6	0	6
176		min	0	1	0	1	0	1	0	1	0	1	0	1
177	N89	max	.002	2	.005	2	.02	4	1.299e-03	3	1.013e-04	4	6.383e-04	6
178		min	0	6	-.009	6	0	3	-1.858e-03	5	2.478e-05	3	-4.661e-04	2
179	N91	max	0	4	0	5	0	5	2.213e-04	1	4.111e-05	5	-2.518e-05	3
180		min	0	3	-.001	1	0	3	3.961e-05	5	6.535e-06	3	-2.021e-04	5
181	N91A	max	.016	1	-.008	2	.003	4	8.225e-04	2	9.816e-05	2	6.071e-04	2
182		min	0	5	-.011	4	-.007	2	-1.539e-04	6	2.259e-06	6	-1.747e-03	6
183	N92	max	0	6	0	6	0	6	9.299e-04	3	1.218e-03	5	3.646e-04	6
184		min	0	1	0	1	0	1	-1.159e-03	5	-5.664e-04	3	-2.282e-04	2
185	N93	max	0	6	0	6	0	6	5.703e-04	1	7.126e-04	2	3.282e-04	2
186		min	0	1	0	1	0	1	-1.789e-04	6	-7.321e-04	6	-1.202e-03	6
187	N94	max	0	6	0	6	0	6	1.767e-04	5	9.216e-05	1	-1.067e-04	5

Envelope Joint Displacements (Continued)

Joint			X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
188		min	0	1	0	1	0	1	-1.746e-04	3	3.011e-05	6	-2.559e-04	1

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

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
1	M5	PIPE_3.0	.517	1....	4	.315	1....		4 28.345	65.205	5.749	5.749	2....	H3..
2	M30	PIPE_2.5	.478	2	5	.089	5.5		5 30.038	50.715	3.596	3.596	1....	H1..
3	M26	PIPE_2.5	.464	2	4	.085	5.5		1 30.038	50.715	3.596	3.596	2....	H1..
4	M22	PIPE_2.5	.455	2	2	.103	5.5		4 30.038	50.715	3.596	3.596	1....	H1..
5	M14	PIPE_2.0	.435	1...	5	.129	7....		4 6.321	32.13	1.872	1.872	3....	H1..
6	M23	PIPE_2.5	.382	2	4	.092	2		4 30.038	50.715	3.596	3.596	1....	H1..
7	M25	PIPE_2.5	.346	2	4	.067	2		1 30.038	50.715	3.596	3.596	2....	H1..
8	M27	PIPE_2.5	.344	2	1	.140	2		1 30.038	50.715	3.596	3.596	1....	H1..
9	M4	PIPE_3.0	.321	1....	5	.254	1....		5 28.251	65.205	5.749	5.749	1....	H1..
10	M6	PIPE_3.0	.321	1...	2	.211	1...		2 28.251	65.205	5.749	5.749	1....	H1..
11	M13	PIPE_2.0	.291	1....	2	.171	4....		5 6.295	32.13	1.872	1.872	3....	H1..
12	M29	PIPE_2.5	.290	2	4	.086	2		5 30.038	50.715	3.596	3.596	2....	H1..
13	M21	PIPE_2.5	.290	2	2	.082	2		4 30.038	50.715	3.596	3.596	1....	H1..
14	M16	PIPE_2.5	.280	2	2	.143	2		5 30.038	50.715	3.596	3.596	1....	H1..
15	M24	PIPE_2.5	.262	2	4	.063	2		2 30.038	50.715	3.596	3.596	2....	H1..
16	M15	PIPE_2.0	.257	1....	4	.148	4....		2 6.295	32.13	1.872	1.872	3....	H1..
17	M28	PIPE_2.5	.238	2	4	.080	2		1 30.038	50.715	3.596	3.596	2....	H1..
18	M20	PIPE_2.5	.209	2	5	.094	2		5 30.038	50.715	3.596	3.596	1....	H1..
19	M1	HSS4X4X4	.121	5	4	.085	4....	y	4 138.9...	139.518	16.181	16....	2....	H1..
20	M36	LL2x3x3x6	.120	4....	6	.002	4....	y	4 34.077	59.292	6.298	1.713	1....	H1..
21	M2	HSS4X4X4	.112	3....	4	.081	4....	y	6 135.8...	139.518	16.181	16....	2....	H1..
22	M35	LL2x3x3x6	.105	4....	6	.002	0	z	5 34.077	59.292	6.298	1.713	1....	H1..
23	M11	HSS4X4X4	.101	0	1	.100	0	y	1 134.8...	139.518	16.181	16....	1....	H1..
24	M18	HSS4X4X4	.096	0	4	.083	0	y	4 135.1...	139.518	16.181	16....	1....	H1..
25	M10	HSS4X4X4	.081	2....	5	.101	0	y	5 135.06	139.518	16.181	16....	1....	H1..
26	M19	HSS4X4X4	.071	2....	1	.093	2....	y	1 135.2...	139.518	16.181	16....	1....	H1..
27	M17	HSS4X4X4	.070	0	4	.092	0	y	4 134.9...	139.518	16.181	16....	1....	H1..
28	M3	HSS4X4X4	.047	0	1	.044	0	z	4 138.2...	139.518	16.181	16....	1....	H1..
29	M12	HSS4X4X4	.041	0	5	.096	2....	y	5 135.06	139.518	16.181	16....	1....	H1..
30	M34	LL2x3x3x6	.017	2....	1	.001	4....	y	3 34.077	59.292	6.298	1.713	1	H1..
31	M31	L2.5x2.5x4	.011	.4...	5	.182	0	y	5 37.717	38.556	1.114	2.537	1....	H2..
32	M32	L2.5x2.5x4	.011	.4...	1	.196	.8...	y	1 37.717	38.556	1.114	2.537	1....	H2..
33	M33	L2.5x2.5x4	.006	.4...	2	.196	0	y	4 37.717	38.556	1.114	2.537	1....	H2..



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	CTHA836A	Jan 27, 2022 at 10:05 AM
21005.27	Unity Check	Mount.r3d

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 1 - Site Information

Site ID: CTHA836A
Status: Draft
Version: 1
Project Type: Sprint Retain
Approved: Not Approved
Approved By: Not Approved
Last Modified: 11/3/2021 1:34:15 PM
Last Modified By: Venu.Jaini@T-Mobile.com

Site Name: CTHA836A
Site Class: Self Support Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Not Specified

Latitude: 41.74310555
Longitude: -72.53492777
Address: 39 Steeplechase Dr
City, State: Manchester, CT
Region: NORTHEAST

RAN Template: 67E998E 6160			AL Template: 67D998E_1OP (Not Preferred)	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 24	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

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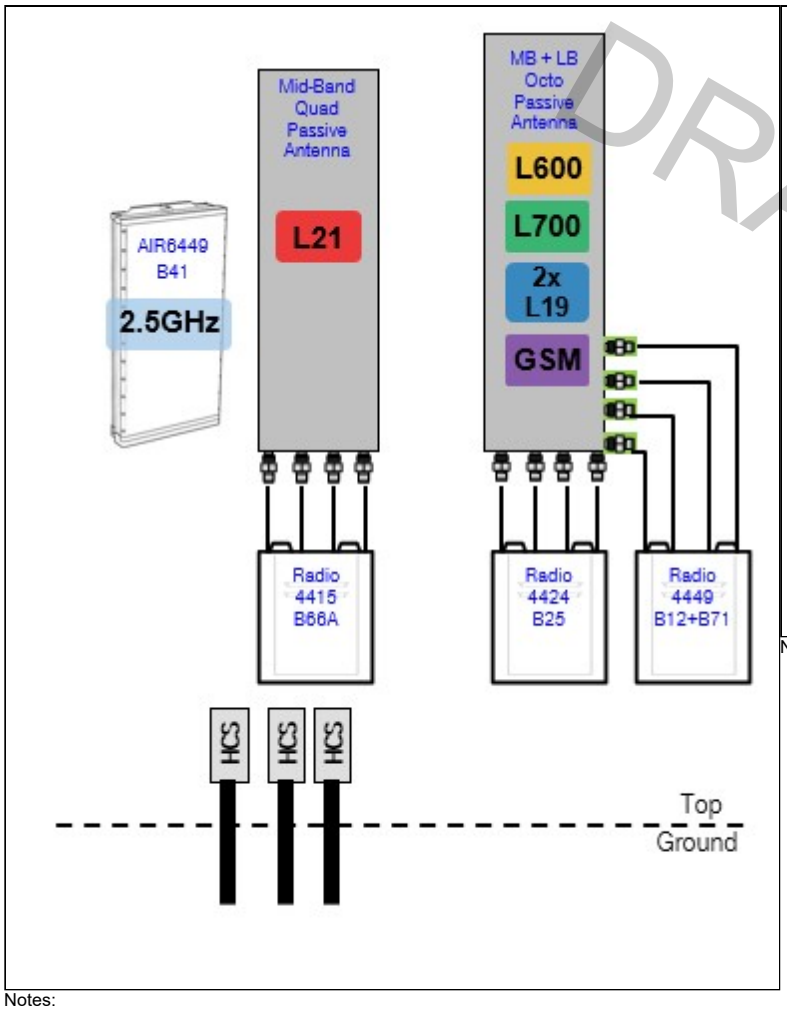
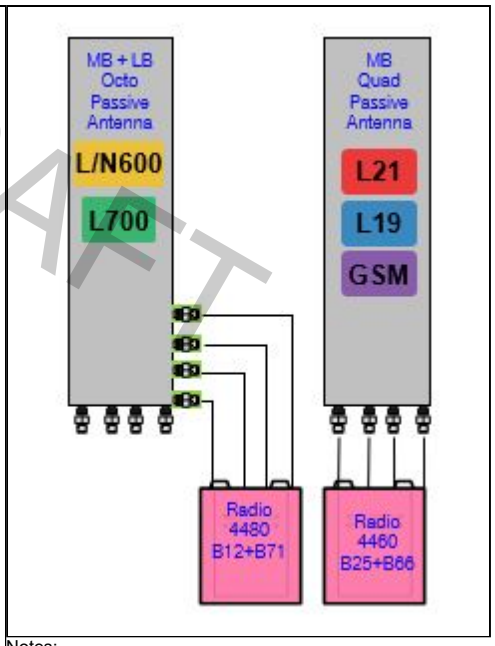
Section 3 - Proposed Template Images

67D5A998C_1xAIR+1xQP+1xOP.jpg



Notes:

67E998E.JPG



Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 5 - RAN Equipment

Existing RAN Equipment

----- This section is intentionally blank. -----

Proposed RAN Equipment

Template: 67E998E 6160

Enclosure	1	2	3	4
Enclosure Type	Enclosure 6160	RBS 6601	Ancillary Equipment (Ericsson)	B160
Baseband	BB 6648 (L700, L600, N600); BB 6648 (L2100, L1900)	DUG20 (G1900)		
Hybrid Cable System			Ericsson Hybrid Trunk 6/24 4AWG 100m **(x 2)**	
Transport System	CSR IXRe V2 (Gen2)			

RAN Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 6 - A&L Equipment

Existing Template: Custom
Proposed Template: 67D998E_1OP (Not Preferred)

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	50				50	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	170				170	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	300				300	
M. Tilt	0				0	
Height	116				116	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech.	L700 L600 N600	L700 L600 N600			L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt						
Cables	7/8" Coax - 125 ft. **(x4)**				7/8" Coax - 125 ft. **(x4)**	SHARED 7/8" Coax - 125 ft. **(x4)**
TMAs						
Diplexers / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

Need to have Bias-T installed for RET control

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	67D998E_1OP (Not Preferred)

CTHA836A_Sprint Retain_1_draft

Print Name: Standard
PORs: New Build_Sprint Keep

Section 7 - Power Systems Equipment

Existing Power Systems Equipment
----- This section is intentionally blank. -----

	Proposed Power Systems Equipment
Enclosure	1
Enclosure Type	Enclosure 6160